# School Based Primary Health Care Programme Evaluation

Final Report

9 December 2014

Prepared for: Counties Manukau District Health Board

Kinnect group

Judy Oakden Consultancy • Research Evaluation Consultancy
The Knowledge Institute • Julian King & Associates

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Prepared for: Counties Manukau District Health Board

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# 1 Executive Summary

## *Background*

The Mana Kidz programme in Counties Manukau DHB is an innovative way of delivering high quality primary health care within high needs communities, for at-risk populations. It is led by National Hauora Coalition and delivered by a network of 12 providers including Primary Health Organisations (PHOs) and Non-Government Organisations (NGOs). An Alliance Leadership Group (ALG) provides governance for the programme.

The Mana Kidz model provides a team of a nurse and a whaanau support worker (WSW), working in school-based clinics. The service includes daily throat swabbing services and treatment and daily assessment of skin infections and treatment. In addition, other health care needs can be attended to in a timely fashion, e.g., immunisation status, child protection issues, referrals for improved housing. The model also provides the opportunity for wider family/whaanau, including pre-school age siblings, to be assessed.

The key purpose of the programme is to improve access to primary health care for children in school Years 1-8 who do not currently access healthcare adequately given their level of need. This should lead to a reduction in the incidence of rheumatic fever (RF) in South Auckland as well as the hospital admission rate for skin infection. The mean age of hospitalisation for RF is in the year 1-8 age group, and skin infections are the most common medical indication for hospitalisations in this age group.

## *Evaluation purpose and methods*

Counties Manukau District Health Board (CMDHB) engaged the Kinnect Group to facilitate an evaluation of the Mana Kidz programme for Year 1-8 students during August-November 2014. The evaluation covers service delivery, outcomes, value for money and what has been learned about the effectiveness of the model. It was undertaken collaboratively by the Kinnect Group together with an evaluation reference group comprising representatives from CMDHB, National Hauora Coalition, and University of Auckland.

The evaluation triangulates evidence from multiple sources including programme, health care and epidemiological data together with narrative feedback from parents/whaanau, children, nurses, whaanau support workers (WSWs), school staff, provider management and programme funders.

## *Findings*

Evaluation evidence from a range of sources consistently indicates that Mana Kidz is an important and effective programme that is making a

substantial contribution to health care for vulnerable children in the age group evaluated. For many low income families, who struggle to afford the costs and/or time off work to visit a GP or pick up medicines, access to primary health care at school through Mana Kidz makes a significant difference to their children's health.

Key findings in relation to programme delivery, outcomes, value for money, and opportunities for improvement are summarised as follows.

### *Programme delivery*

Mana Kidz is well established in selected high needs, Year 1-8 schools in CMDHB which were identified by the likelihood of acute rheumatic fever (ARF) based on historical data. As at September 2014, 97% of all eligible children are consented into the programme (~24,000 children). Mana Kidz now visits 991 classrooms each day in 61 schools. Between February 2013 and September 2014, the programme completed 191,423 throat swabs, of which 20,696 (10.8%) tested positive for Group A Streptococcus (GAS) and 20,176 were treated. Mana Kidz teams have also treated 17,593 skin infections and actioned 4,178 school health referrals.

Mana Kidz teams are highly effective in engaging with children, parents and whaanau. Based on survey and focus group findings, families know about the school clinics, how to access their services, and see the services as worthwhile and valuable. Teams are culturally competent and have postive, trusting relationships with children, families and schools.

The programme is effective with regard to health promotion, with room to improve. The programme started before the national health promotion for RF prevention but now benefits from this initiative. Information on sore throat management, RF prevention and skin infections is delivered to parents/whaanau and children in a range of ways including face to face, telephone and written information. Schools are collaborating with Mana Kidz teams to promote knowledge and awareness. There are opportunities to better integrate Mana Kidz within existing whole-school approaches to health promotion.

Mana Kidz providers are working in partnership with school staff, Special Education Needs Coordinators and/or Social Workers in Schools. They are referring children to local primary care and social service agencies. However, in the absence of comprehensive data it is difficult to gauge the extent to which this is occurring. Overall, anecdotal feedback suggests there is scope for Mana Kidz teams to be making more referrals to primary health care to address unmet needs in school communities.

### *Outcomes*

It is early in the programme to be assessing changes in the prevalence of GAS and skin infections, and too soon to look at ARF and skin infection hospitalisation rates for the schools where the programme has been

implemented. Early indications are consistent with (but do not prove) the programme having its intended effects.

Evidence to date from ongoing cross-sectional studies show a reduction in the prevalence of pharyngeal GAS (as the trigger for ARF) from 2013 to 2014. The first study was conducted in May 2013 (prior to the start of the programme) in a population of 1,299 year 1-8 students in three Mana Kidz schools. At that time, approximately one in three students were found to have untreated infections, either throat or skin. Follow up of the same population in May 2014 shows a marked statistically significant fall in prevalence of pharyngeal GAS using multivariable methods. This decrease has also been seen in another DHB with high RF with similar intervention and repeated studies. In addition, a low GAS pharyngeal burden has been found in a high decile school with an extremely low risk of ARF. While there is no published literature paralleling GAS prevalence reduction with an ARF drop (and the RF case numbers per year are relatively small for statistical purposes), this is a promising lead.

A parallel reduction in the incident GAS+ rate from throat swabs taken in the Mana Kidz programme lends some support to a possible interpretation that Mana Kidz contributed to a reduction in the GAS load within its target population from 2013 to 2014. Throat swabs such as these are dependent on many factors such as presentation of sore throats for swabbing, circulating strains, school factors and season. Further elapsed time is needed to determine whether this result is sustained.

More time is also needed to evaluate the impact of Mana Kidz on prevalence of skin infections and hospitalisation rates for ARF and skin infections.

Health literacy of children and parents/whaanau is improving in Mana Kidz schools. Knowledge has increased in relation to sore throats, RF, how to prevent RF, importance of adhering to medication, as well as skin infections and their treatment. Anecdotally these improvements are leading to gains in sore throat and skin management. Mana Kidz teams reported that there is room for further gains to be made in adherence to medication.

The increased presence of nurses and WSWs has demonstrably increased access to primary health care services for sore throat management (RF prevention) and skin infections. Focus groups indicate that parents are now more likely to present to a GP or school health team where appropriate for sore throats and skin infections.

Anecdotally, there has been an increase in unmet needs being identified in school clinics (e.g., cellulitis, scabies, notifications of abuse, oral, hearing, vision, headlice, housing needs, nutrition, immunisation, mental health and other needs). There is an opportunity for school clinic data to be collected, coded and compiled for the programme overall in order to better demonstrate the nature and extent of needs identified.

### *Value for money*

Overall, Mana Kidz represents good value for money bearing in mind its performance relative to the level of resourcing, its contribution to reducing health disparities and early indications of its possible health impacts.

Investment in the programme has been lower than required to implement the service model piloted at Wiri Central School. Additionally, the workload in schools has been higher than in the pilot. Mana Kidz has a wider scope of responsibilities, a lower staffing ratio and experienced higher than expected incidence of Group A strep throats and skin infections at the start of the programme compared to the original school randomised trial of health access and the subsequent pilot study at Wiri. This could be interpreted as deteriorating social conditions over the decade as exemplified by the rising RF rates (Milne, 2011). As would be expected, this has placed pressure on providers.

Nevertheless, the programme has maintained the recommended, evidence-informed, five days per week class checks, throat swabbing and assessment of skin infections. However, Mana Kidz teams in many schools have struggled to meet their targets for case finding (as required by protocol for non-presenting students with evident pharyngitis) twice per term at current resourcing levels. The current level of resourcing may become more manageable as initial humps in GAS+ and skin infections ease.

Programme funds have been used economically to cover the planned staffing, infrastructure and activities, within budget. The programme is delivered at a reasonable cost per child ($280 per participating child in the 2013/14 financial year, compared to $510 in the pilot). This compares favourably to capitation funding for those with a High Use Health Card at Access practices of $376.50 per annum for 5-14 year olds.

Mana Kidz demonstrably contributes to reducing health disparities and improving the wellbeing of families/whaanau, particularly in Maaori and Pasifika communities. Mana Kidz operates in the most deprived communities of South Auckland, providing services predominantly to Maaori (39%) and Pacific (50%) children in decile 1 and 2 schools. These vulnerable children are those most likely to get RF as well as suffer from other preventable illnesses.

The programme reduces health inequalities by: addressing cost and practical barriers to accessing primary health care and prescription medicines for sore throats and skin infections; increasing awareness and knowledge about relevant health issues; referring and linking families to primary care providers and other community services; and providing children with a positive introduction to primary health care providers and other community services.

There is also emergent evidence of wider benefits for children's education and development resulting from improved health and wellbeing (e.g., through improved attendance and engagement at school).

Previous prospective analysis of a school intervention to reduce the risk of RF estimated that school sore throat clinics would cost approximately $60,000 per quality-adjusted life year (QALY) gained.[1] Skin treatment and prevention of hospitalisations were not included in this model. Qualitative comparison of the modelled results to actual Mana Kidz costs and performance to date suggests the actual cost per QALY of the Mana Kidz programme is likely to remain above that of the prospective cost utility model. The cost utility of the Mana Kidz programme can be determined more precisely in the future when sufficient time has elapsed to determine its efficacy.

It is too soon to quantify the long-term reduction in health service utilisation that might be attributable to the Mana Kidz programme. However, results from the programme to date indicate a credible prospect that resources invested in the programme could contribute to a reduction in the long-term burden associated with preventable hospitalisations and reduced necessary health expenditure downstream, by detecting and treating sore throats and skin infections in schools.

### *Conclusion*

Mana Kidz is well aligned with, and contributes to the Triple Aim of improved population health, improved patient and family/whaanau experience of care, and making the best use of population-based funding. It is also well aligned with the Government's strategic direction toward intervening early to prevent long-term conditions and unnecessary hospitalisation, and better integrating services within health and across the social sector, as articulated in the 2014 Briefing to the Incoming Minister of Health.

The weight of available evidence indicates that the investment in Mana Kidz is worth continuing and that its impacts should be re-evaluated in late 2015 and late 2016.

### *Opportunities for improvement*

Success factors, challenges and transferrable learning from the Mana Kidz programme are detailed in the evaluation findings. Key opportunities for improvement include:

- Consider the relative prioritisation of case finding twice per term and swabbing of self-reported cases

[1] Milne, R.J., Lennon, D., Stewart, J., Scuffham, P., Vander Hoorn, S., Cooke, J., Remenyi, B., Finucane, K., Wilson, N., Nicholson, R., (2011). *Economic Evaluation of a School Intervention to Reduce the Risk of Rheumatic Fever.* Report to the Ministry of Health.

- Ensure providers have sufficient flexibility to reallocate FTE resources between schools based on needs
- Redevelop programme resources to cater for families/whaanau with low levels of literacy or English as a second language
- Streamline processes for collection and collation of programme data from providers
- Collect data on all of the health needs identified and actioned by Mana Kidz teams
- Make skin assessments available to wider family/whaanau, especially preschoolers
- Improve the integration of Mana Kidz within existing whole-school approaches to health promotion
- Link Mana Kidz more systematically with mutually reinforcing organisations and initiatives such as Health Promoting Schools, Fruit in Schools, breakfast programmes, and organisations donating needed items such as toothbrushes, shoes, that support health
- Provide resources for additional supports to address financial barriers such as washing machines in schools
- Further consideration to exploring the needs of the 123 non Mana Kidz schools (including 5 schools identified as carrying a high burden of ARF historically by the scoring system but not included in the original rollout as not in identified geographic clusters) and the model of the Public Health Nursing service that would be most appropriate to meet needs in these schools
- Further investment to leverage the Mana Kidz model for early intervention across a range of high priority primary health care needs
- Improve referral pathways and communications between Mana Kidz and key community services to which they refer children.

# 2 Introduction

This report documents an evaluation of Mana Kidz, the Counties Manukau District Health Board (CMDHB) nurse-led school-based (Year 1-8) primary health care programme, conducted during August-November 2014.

## Background[2]

Rheumatic fever (RF) is a debilitating disease that can lead to serious heart disease. Where a sore throat occurs due to a Group A Streptococcus (GAS) infection, this can lead to an autoimmune reaction that results in RF, the most significant sequelae of which is permanent heart damage which can lead to premature death and/or significant morbidity and costs to the health care system and society. The GAS sore throat is easily treated with antibiotics but, if left untreated, can have serious and lifelong consequences such as cardiac failure and strokes with attendant hospitalisations.

CMDHB has New Zealand's highest incidence of RF, a burden which predominantly impacts on Maaori and Pacific children. Prior to Mana Kidz, CMDHB had a mean annual incidence rate for RF related initial hospital admissions in 5-14 year olds of 93.9 per 100,000.[3] The region has a high concentration of Maaori and Pacific families, and 99% of cases between 2000-2009 involved Maaori and Pacific children. This contrasts with national incidence rates of 40.2 per 100,000 for Māori, 81.2 per 100,000 for Pacific and 2.1 per 100,000 for non-Maaori non-Pacific children aged 5-14.

There is a Ministry of Health expectation, articulated in the Annual Plan, that the rates of hospitalisations for acute rheumatic fever (ARF) per 100,000 population for all ages will decrease by 10% annually compared to a three-year rolling average. In order to achieve this target the Ministry has invested over $70m nationally in initiatives aimed at reducing the incidence of RF. The Ministry of Health is leading a comprehensive programme to implement a wide range of services specifically designed to reduce the incidence of RF including school-based swabbing programmes, primary care rapid response clinics, Pacific Engagement Strategy and the Auckland Wide Healthy Homes Initiative. There is an expectation that DHBs will actively engage and invest in this key result area.[4]

Addressing ARF is complex because of incomplete understanding of the disease itself, the influence of upstream determinants of health (such as housing), inequitable access to primary care and limitations of health

[2] Background information has been drawn from CMDHB policy and briefing papers.
[3] Milne RJ, Lennon DR, Stewart JM, Vander Hoorn S, Scuffham P. 2012. Incidence of acute rheumatic fever in New Zealand children and youth. Journal of Paediatrics and Child Health. (2012)
[4] Letter from Minister of Health to DHB Chief Executives, January 2013.

literacy in the at-risk population. In addition, knowledge of the current best practice for sore throat management is variable in the general primary care workforce.[5]

## Programme description

The Mana Kidz programme is an innovative way of delivering high quality primary health care for targeted conditions in an alternative setting to traditional GP clinic-based care, within high needs communities, to overcome barriers to acccess for at-risk populations. The impetus for establishing the school-based clinics was a RFP from the Ministry of Health for school based throat swabbing services. It was recognised there was an opportunity to leverage off this funding to establish an innovative school based programme providing a more comprehensive health service rather than just RF prevention.

In order to respond to the Ministry RFP, the Child Health Alliance Forum (CHAF) was formed. This alliance had representation from PHOs, NGOs and CMDHB. The National Hauroa Coalition was selected by CHAF to be the Alliance Lead for the contracting and delivery of Mana Kidz.

The key purpose of the programme is to improve access to primary health care for children who do not currently access healthcare adequately considering their level of need. This should lead to a reduction in the incidence of RF in South Auckland as well as the hospital admission rate for skin infection. In addition to these direct savings for the health system, it is also thought that the programme may have a range of other benefits including increasing health literacy, positively influencing health seeking behaviour and addressing unmet need that might not necessarily result in hospitalisations.

School-based clinics are based on the model developed by Professor Diana Lennon, during an extensive research project funded by the Health Research Council (HRC) and CMDHB at Wiri Central School (Gray et al, 2012). The NZ Heart Foundation Guidelines for RF state school based programmes are expectd to reduce the RF incidence within communities with a high incidence of RF.[6]

Mana Kidz services are provided by a network of 12 providers including Primary Health Organisations (PHOs) and Non-Government Organisations (NGOs).

The Mana Kidz model provides a team of a nurse and a whaanau support worker (WSW), working in school-based clinics. The service includes daily throat swabbing services and treatment, daily assessment of skin infections and treatment, general health assessments and referrals. The

[5] Rheumatic Fever Prevention Plan, p3.
[6] www.heartfoundation.org.nz .New Zealand Guidelines for Rheumatic Fever; Proposed Rheumatic Fever primary prevention programme

WSW does classroom visits, throat swabbing and the initial assessment of skin infections prior to referral to the nurse.

CMDHB committed additional resources (Public Health Nurses [PHNs] and investment) to implement Mana Kidz in line with recommendations from the pilot incorporating the treatment of skin infections, inclusion of PHN referral activities and throat swabbing. Child health referrals, assessments and follow up work traditionally undertaken by the PHN service are now undertaken by the Mana Kidz nurses, following the PHN model, in the Mana Kidz schools. Approximately one third of the Mana Kidz nurses came from the PHN service with the remainder being upskilled staff of PHO and NGO providers. The professional model of population-based public health nursing in schools is internationally recognised.

The Mana Kidz model was rapidly rolled out in 2013, with Ministry of Health funding available until December 2015. The programme was implemented in four stages:

- Otara: October 2012
- Mangere: February-March 2013
- Manurewa: May-June 2013
- Papakura: October 2013.

Mana Kidz is operating in 61 decile 1 and 2 schools, reaching approximately 24,000 children (37% of Quintile 5 children in this age group) of whom approximately 50% are Pacific and 39% Maaori.[7] Currently 97% of the eligible population are consented into the programme.[8]

These schools were identified through the development of a school scoring system using four risk factors for RF in Years 1-8 (See Appendix J). Natural groupings of schools were developed based on geographic location, alignment with other programmes and with relevant intermediate schools. This process resulted in eight hubs of 6-8 schools, two hubs in each of the four localities of Otara, Mangere, Manurewa and Papakura.

## Evaluation objectives

CMDHB engaged the Kinnect Group to facilitate an evaluation of the effectiveness and value for money of the Mana Kidz programme. The evaluation covers service delivery, outcomes, value for money and transferrable learning. It was undertaken collaboratively by the Kinnect

[7] Ministry of Education data on the first 59 Mana Kidz schools, July 2013.
[8] Further initiatives (e.g., a different model for children in school years 9-13, and GP Rapid Response clinics) have increased the coverage of vulnerable children including Maaori and Pacific children in Quintile 5.

Group together with an evaluation reference group comprising representatives from CMDHB, NHC and University of Auckland.

This evaluation is only of the Year 1-8 school-based swabbing programme, which, in CMDHB and Mana Kidz, also includes diagnosis and treatment of skin infections as a key unmet need leading to excess hospitalisations.[9]

Four Key Evaluation Questions (KEQs) were developed in a series of workshops with the evaluation reference group. These KEQs are the overarching questions that the evaluation addresses and provide a clear focus and structure for presenting evaluation findings.

### *KEQ1: How well have we delivered the programme?*

This question focuses the evaluation on examining the quality of the delivery of the programme (often called *process evaluation*).

### *KEQ2: To what extent and in what ways are we achieving the intended outcomes?*

Intended outcomes are in many ways an expression of (met or unmet) need. When we ask a question like, 'to what extent are we achieving the intended outcomes?' we are seeking to identify the extent to which identified needs have been met. This is often called *outcome evaluation.*

### *KEQ3: To what extent and in what ways does the intervention represent value for money?*

'Value for money' focuses on the relationship between a programme's performance and the resources invested. The performance of a programme takes into account its outcomes and processes, and the value of these from a number of different perspectives. The value of a programme is not limited to its economic value, although this is often one of the key criteria that inform a value for money assessment.

### *KEQ4: What can be learned about the effectiveness of this model?*

This question is deliberately open and exploratory. It seeks to identify transferrable learning from the programme which may be of value to CMDHB and other stakeholders in different contexts.

[9] O'Sullivan C.E, Baker M.G, Zang J 2010. Increasing hospitalisations for serious skin infections in New Zealand , 1990-2007. Epidemiology and Infection. 2011;15:1-11.

# 3 Methods

In late 2012 and early 2013 CMDHB engaged the Kinnect Group to facilitate a series of workshops with representatives of CMDHB, NHC and University of Auckland ("the evaluation reference group"), to develop key evaluation questions and identify potential data sources for the evaluation.

Subsequently, in early 2014, the Kinnect Group facilitated further workshops with the evaluation reference group to develop evaluative criteria together with a plan and timetable for completion of the evaluation.

The evaluation was undertaken collaboratively by the Kinnect Group and members of the reference group during August-November 2014. The approach and methods are detailed as follows.

## Evaluation-specific methodology

This evaluation uses a framework and methods that are specific to evaluation as distinct from health and social science research more generally.

Evaluation is "the systematic determination of the quality, value or importance of something" (Scriven, 1991) – e.g., an initiative, programme, project, organisation, etc – in order to inform future action. In plainer language, it is the specific job of evaluation to determine *how good* something is, and whether it is good enough (Davidson, 2005).

Evaluative thinking and practice therefore requires engagement with definitions of quality and value. While scientific and social research aims to be "as values-free as possible" (Gluckman, cited in Hubbard, 2012), evaluation uses factual data, together with definitions of quality and value, to draw explicitly evaluative conclusions (Davidson, 2005).

An evaluation framework should use explicit evaluative criteria so that the basis for making evaluative judgements is transparently set out. Scriven's General Logic of Evaluation sets out the underpinning framework of probative inference that underpins all evaluation:

1. Establishing criteria of merit (the aspects of the programme or policy being evaluated that are considered important for evaluation purposes);
2. Defining performance standards (for example, the difference between 'excellent', 'good', 'acceptable' and 'poor' performance;
3. Gathering and analysing evidence of performance against the standards; and

4. Synthesising the results to reach an overall judgment (Fournier, 1995).

One way of implementing this general logic is through the use of evaluative rubrics (King, McKegg, Oakden & Wehipeihana, 2013). For this evaluation, evaluative rubrics were developed for KEQs 1-3, and are set out in Appendix A. These rubrics provide a transparent, agreed basis for making evaluative judgments and a structure for reporting findings.

Within this overarching logic, the evaluation employed a range of data collection and analysis methods, as described below.

## Mixed methods evaluation

The evaluative criteria were addressed through the collection of credible evidence from a range of sources, including quantitative indicators and narrative from a range of stakeholder perspectives.

A mixed method approach enables triangulation, which is one of the ways to improve the validity and reliability of evaluation (Babbie, 2007), where different and multiple data sources and groups of people are included. Davidson (2005, p.55) argues triangulation is vital and advises, "never draw a conclusion based on a single piece of evidence".

The following table summarises the sources of evidence that were used in this evaluation, and provides references to the Appendices where each evidence source is summarised.

Table 1: Evidence sources used in the evaluation

| Source of evidence | Evaluative criteria addressed |
|---|---|
| **Performance monitoring data**<br>(Appendix B)<br>*Data provided by NHC* | • Consents<br>• Swabs taken<br>• Skin assessments completed<br>• GAS infections identified<br>• Children offered and receiving treatment for GAS infections<br>• Acute skin infections identified<br>• Children offered and receiving treatment for acute skin infections<br>• Other health and wellbeing conditions identified<br>• Timeliness of treatments offered and received<br>• Performance against Ministry of Health and National Hauora Coalition performance targets for the programme |
| **Epidemiological and hospitalization data** (including data | • Hospitalisations for acute skin infections (5-14 year olds) |

| | |
|---|---|
| from research in progress)<br>(Appendix C)<br>*Data provided by CMDHB and University of Auckland* | • Hospitalisation rate for ARF |
| **Survey feedback** (parent questionnaires)<br>(Appendix D)<br>*Data provided by CMDHB, analysis by Kinnect Group and CMDHB* | • Knowledge about sore throats, RF prevention and acute skin infections<br>• Awareness of the services<br>• Engagement and satisfaction with clinics<br>• Propensity to use primary care services |
| **Survey feedback** (student questionnaire)<br>(Appendix E)<br>*Data provided by CMDHB, analysis by CMDHB* | • Knowledge of sore throat management, RF prevention and related issues |
| **Focus groups with families/whaanau**<br>(Appendix F)<br>*Conduct of focus groups, analysis and preparation of thematic summary by the Kinnect Group* | • Relationships, engagement and satisfaction with clinics<br>• Cultural value of services<br>• Knowledge about sore throats, RF prevention and acute skin infections<br>• Access to primary health care services and whether this has changed as a result of the services<br>• Success factors, challenges, opportunities for improvement |
| **School nurse and whaanau worker interviews**<br>(Appendix F)<br>*Conduct of interviews, analysis and preparation of thematic summary by the Kinnect Group* | • Service integration; relationships with primary care and social service agencies<br>• Observed changes in the health promotion capacity of school communities<br>• Success factors, challenges, opportunities for improvement, implementation lessons, principles of practice |
| **Provider and other agency interviews**<br>(Appendix G)<br>*Conduct of interviews, analysis and preparation of thematic summary by the Kinnect Group* | • Service integration; relationships with, and referrals from school nurses<br>• Observed changes in the health promotion capacity of school communities<br>• Success factors, challenges, opportunities for improvement, implementation lessons, principles of practice |
| **School staff interviews** (e.g., HPS lead teachers, principals, trustees)<br>(Appendix G)<br>*Conduct of interviews, analysis and* | • HPS, whole-school approaches to RF education<br>• Observed changes in health outcomes, attendance, health promotion capacity of school |

| | |
|---|---|
| *preparation of thematic summary by the Kinnect Group* | communities<br>• Success factors, challenges, opportunities for improvement, implementation lessons, principles of practice<br>• Impacts on schools that no longer have a PHN service. |
| **School case studies** (3)<br>(Appendix H)<br>*Conduct of interviews, analysis and preparation of case studies by the Kinnect Group* | • Examples of good practice in action, and results achieved |
| **Impact on non Mana Kidz schools**<br>(Appendix I)<br>*Data and analysis provided by CMDHB* | • Impact of the reallocation of Public Health Nurses to the Mana Kidz programme |
| **Value for money**<br>(See Findings section)<br>*Data provided by NHC and CMDHB; analysis by Kinnect Group* | • Resourcing, economy, equity, modeling of potential to reduce future health expenditures downstream. |

# 4 Findings

This section presents findings against each of the key evaluation questions (KEQs) in turn: programme delivery, outcomes, value for money, and lessons learned. It triangulates evidence from all relevant sources to address each KEQ. Summaries of individual streams of evidence are provided in the Appendices to this report.

## Programme delivery

### *KEQ1: How well have we delivered the programme?*

Overall, Mana Kidz programme delivery is working as intended. Key findings are summarised as follows. Evidence is summarised in the paragraphs below and detailed in Appendices.

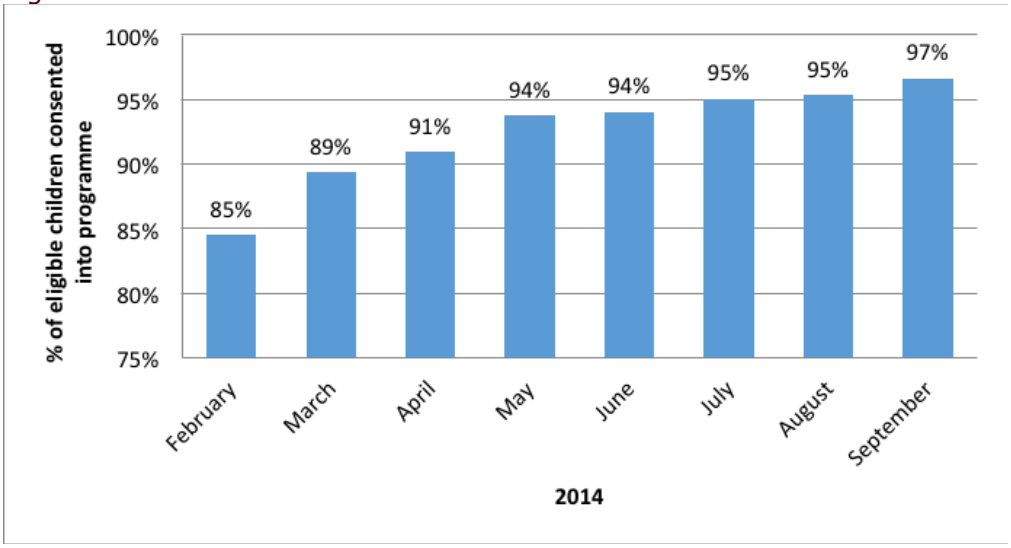
Table 2: Summary of findings – delivery

| | Minimum expectations | Developing effectiveness | Consolidating effectiveness | Highly effective |
|---|---|---|---|---|
| Overall | | | | |
| Consents | | | | |
| Performance targets and fidelity to model | (Data predominantly reports on outputs rather than performance targets and fidelity to model. National Hauora Coalition is confident the model is being followed to a high level of fidelity and agreed that more explicit data should be collected to demonstrate this). | | | |
| Engagement | | | | |
| Health promotion | | | | |
| Service integration | | | | |

### *Consents*

Mana Kidz is highly effective in consenting families into the programme. The consent rate has increased over time, reaching 97% of all eligible children in September 2014 (Figure 1) – approximately 24,000 children. At that time, 56 of 61 (92%) schools had consent rates over 90%.

Figure 1: Consent rate 2014




*Source: National Hauora Coalition*

## *Performance targets and fidelity to model*

Data predominantly reports on outputs rather than performance targets and fidelity to the model. Some targets are monitored via audits; others are accounted for by the model of care (but with no data evidence). Currently audit forms are completed on a paper basis only. It would require a manual exercise to compile the data and NHC could not justify the resource required to collate these records electronically at the time of the evaluation. NHC is confident that the model is being followed to a high level of fidelity and agreed that more explicit data should be collected to demonstrate this. The audit form has been through several improvement cycles and is now ready to move to an electronic basis which will facilitate data analysis in the future.

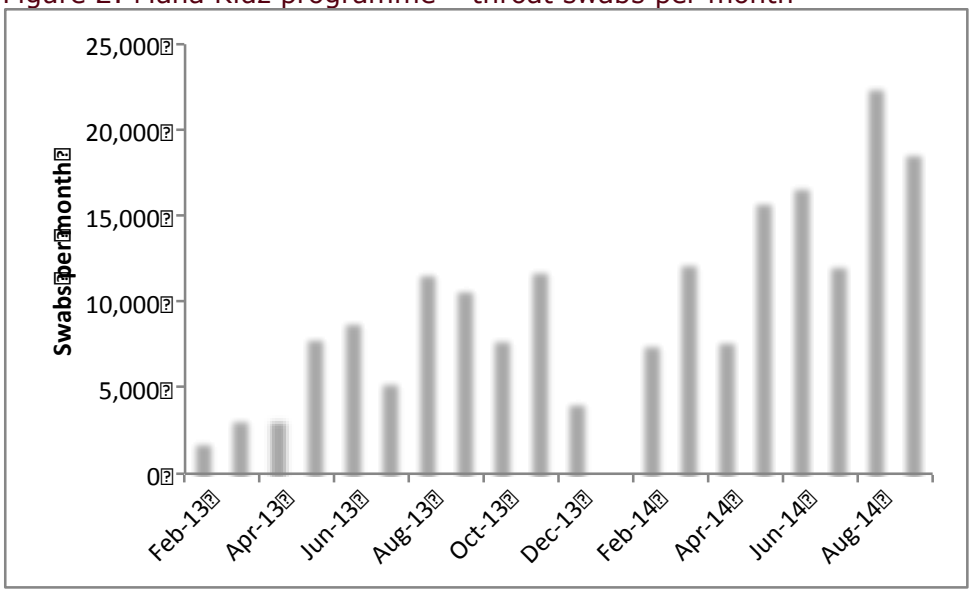
Appendix B provides a summary of key output statistics for the programme, together with an assessment against performance targets where possible.

Between February 2013 and September 2014, the Mana Kidz programme completed:

- 191,423 throat swabs, of which 20,696 (10.8%) tested positive for GAS and 20,176 were offered treatment
- 17,593 skin infections treated
- 4,178 school health referrals actioned (e.g., for notifications of abuse, oral, hearing, vision, headlice, housing needs, nutrition, immunisation, mental health and other needs).

The programme has been in a ramping up phase throughout implementation in 2013 and with increasing consents through 2014. For example, Figure 2 shows the growth in monthly throat swabs.

Figure 2: Mana Kidz programme – throat swabs per month




*Source: National Hauora Coalition*

Mana Kidz now visits 991 classrooms each day (during the four school terms) across the 61 schools. In September 2014, the teams completed 18,761 throat swabs. Of those swabs taken, 1,018 (5%) required follow up and treatment.

The follow up involves contacting parents/whaanau and delivering antibiotics and medicine education to the home. Medication adherence check-ups are undertaken at 3 and 8 days to encourage adherence. In instances where adherence is judged to be poor, a new course of antibiotics is begun. While intensive, this methodology increases the likelihood of eliminating the chance of progression to RF.

Skin infections are a significant component of the daily operation of Mana Kidz clinics. The number and complexity of skin infection cases was greater than anticipated. In 2013, 23,318 possible skin infection presentations were assessed. Of these, 6,774 skin infections were treated (the vast majority with topical cleaning and covering; if antibiotics were needed, fusidic acid (Foban) or, more rarely, Cephalexin or Flucloxicillin were used). In 2014, for the first nine months to 30 September, a total of 10,823 skin infections were treated.

Another key component of Mana Kidz is the child health referral, assessment and follow up work traditionally undertaken by the Public Health Nursing (PHN) service. These are now undertaken by the Mana Kidz nurses following the PHN model in each of the schools. In 2013, the teams received 2,700 referrals and actioned more than 1,490. In 2014, for the first nine months to 30 September, a total of 2,651 cases have been received and 2,130 actioned. A large number of less urgent referrals remain unactioned as a result of workforce constraints.

### Engagement

Overall, evaluation evidence suggests the Mana Kidz programme is highly effective in engaging with children, parents and whaanau.

Interview, focus group and survey feedback indicates that families and children know about the school clinics, how to access their services, and perceive the services as worthwhile and valuable.

Clinics are successfully engaging children and families/whaanau in culturally meaningful ways. Parents and children in the school community have positive, trusting relationships with school Mana Kidz staff, and virtually all parents/whaanau who took part in focus groups (Appendix F) and the parent questionnaire (Appendix D) provided positive feedback about their experiences and satisfaction with the clinics.[10]

> *She always come home* [to me]*. If I don't understand she will explain to me, she will take her time, because I'm not very good at my English.* (Parent)

Over time, Mana Kidz staff have noticed that family/whaanau have "warmed up" to them. For example, there is more interest now and family/whaanau "pick up the phone when you ring them", whereas at the start there was some distrust and phone calls were often not answered. This is a common finding in evaluations of new services in Maaori and Pacific communities; the initial investment of time to build relationships is critical to the success of programmes like Mana Kidz and is one of the reasons for the time it takes to establish a new programme.

> *There's perceptiveness, like the nurse, even if it's very filthy* [in the home]*, she will sit down and have a cup of tea… some kids go home to homes that you just wouldn't see, and that may be unsafe. It's a hard job to go into people's homes, I probably wouldn't be brave enough to go into some houses. Somehow, they've broken down the barriers.* (School staff)

However, while the vast majority of parents are aware of the presence of school nurses and whaanau support workers (WSWs) in schools, awareness of the Mana Kidz brand is low, and there is some confusion between Kidz First and Mana Kidz. It is acknowledged that the Kidz First Public health nurses have continued to use the PHN language rather than actively promoting the Mana Kidz brand.

### Health promotion

The Mana Kidz programme is consolidating effectiveness with regard to health promotion. Parents and children in the school communities are receiving appropriate information on sore throat management, RF prevention and skin infections. This information is delivered in a range of

[10] While the vast majority of feedback was positive, parents at one focus group school raised concerns about communications and follow up contacts, and one respondend to the parent questionnaire provided negative feedback. Details are provided in the Appendices.

ways including face to face (e.g., while swabbing and treating children; home visits), phone calls to parents, and information packs sent home with children. Feedback suggests this is sufficient in the majority of cases (at one school a few parents would have liked more information; at one school nearly all focus group participants said they would have liked more information – see Appendix F).

Staff in all six schools visited for the evaluation were collaborating with Mana Kidz provider teams to actively promote knowledge and awareness about sore throats, RF prevention and skin infections. For example, in all schools, school staff were asking children about sore throats at roll call, reminding children about preventive measures (e.g., sneezing into elbow, washing hands), using hand sanitizers in all classrooms, and sending children to the clinic if they had any concerns.

Teachers are provided with information about sore throats, RF and skin infections. Formal activities to provide this information took place at all the schools at programme commencement. School staff were informed about the conditions in which GAS thrives (e.g., cold, damp rooms without cross ventilation), and how they could prevent spreading within the school (wiping down desks daily to get rid of germs, changing from use of towels to paper towels in washrooms). Feedback from school staff indicated that their awareness has been raised.

> *Teachers are more aware of ways they can prevent the spread of germs, like wiping down tables. There is more awareness of health and wellbeing in the school.* (School staff)

Nearly all Mana Kidz schools (57 out of 61) are Health Promoting Schools,[11] which means they are well placed to integrate Mana Kidz as part of a whole-school approach. However, evidence from school visits overall indicates that there are significant opportunities to improve the efficiency and effectiveness of health promotion by better integrating Mana Kidz within existing whole-school approaches, and these are discussed further elsewhere (see KEQ 4, *Opportunities*).

Of the schools visited, one (see case studies, Appendix H, Clendon Park School) stood out as an exemplar school in integrating Mana Kidz messages and activities within a whole-school approach to health promotion. This school is unusual in having a dedicated nurse and WSW solely focused on the one school (whereas other Mana Kidz teams tend to work across two or more schools).

The current level of resourcing for Mana Kidz enables opportunistic rather than systematic health promotion. While indicating a need and desire to undertake more health promotion, the vast majority of Mana Kidz staff noted that they are too busy with clinic duties to undertake additional health promotion outside of these standard procedures.

[11] http://hps.tki.org.nz/

> *Would be good to do more … But what you would like to see done and what you can do realistically is quite different.* (Mana Kidz staff)

Parents who took part in focus groups were aware of the national health campaign for rheumatic fever as well as messages they had received locally through Mana Kidz. However, the national campaign came after Mana Kidz and as such, sore throats and RF were new conversations at the beginning of the Mana Kidz programme with family/whaanau and school staff without the added benefit of the national campaign.

There was no national campaign for skin infections. The increase in awareness and understanding of skin infections (discussed elsewhere) provides evidence that local health promotion communications were effective.

### *Service integration*

Evaluation evidence indicates that Mana Kidz is developing effectiveness in regard to service integration (and consolidating effectiveness in areas where it has been going longer). Mana Kidz providers are working in partnership with school health teams, Special Education Needs Coordinators, and/or social workers in schools (SwiS). They are referring children to local primary care and social service agencies (e.g., child notifications, hearing and vision clinics, AWHI). However, in the absence of comprehensive outward referral data it is difficult to gauge the extent to which referrals are occurring and how systematically and reliably issues are being identified and referred.

Positive relationships are being built between Mana Kidz providers and other local primary health care providers. Initially there had been some teething issues for Mana Kidz providers seeking to build relationships with some GPs from other providers, but these were said to be improving with ongoing efforts and support from the NHC.

Instances were identified where the school-based programme is contributing to service integration by raising family/whaanau awareness of primary health care and social service agencies in the community and linking them to those services (for example, see case studies, Appendix H, and focus group feedback, Appendix F).

Several providers commented that having a presence in schools had opened their eyes to the levels of unmet need that existed in their communities.

Cases of children disclosing abuse to Mana Kidz staff have reportedly been high (numbers were not available). Feedback suggests that the daily presence of Mana Kidz staff in the schools, and the regular contact that children have with them means that strong and trusting relationships develop.

> *We are doing a huge amount of work in the child protection space. WSW have been involved in these schools for significant periods, they have built robust trust relationships with the children in particular. Now, children are coming forward on a somewhat more regular basis, identifying that they have suffered some type of abuse or trauma at their own hands.* (Provider)

There are significant opportunities for improvement. Overall, anecdotal feedback suggests there is scope for Mana Kidz teams to be making more referrals to primary care to address unmet needs beyond RF and skin infections in the school communities.

Some referral pathways are not working to the satisfaction of Mana Kidz staff. In particular, nurses said they had made referrals to the Auckland-Wide Housing Initiative (AWHI), hearing and vision clinics where they had not heard back so did not know whether the referral had been received and what action (if any) had been taken.

## Programme outcomes

### *KEQ2: To what extent and in what ways are we achieving the intended outcomes?*

It is early in the programme to be assessing changes in the prevalence of GAS and skin infections, and too soon to look at ARF and skin infection hospitalisation rates for the schools where the programme has been implemented. Early indications are consistent with (but do not prove) the programme having its intended effects.

Key findings are summarised as follows. Evidence is summarised in the paragraphs below and detailed in Appendices.

Table 3: Summary of findings – outcomes

| | Minimum expectations | Developing effectiveness | Consolidating effectiveness | Highly effective |
|---|---|---|---|---|
| Overall | | | | |
| Prevalence of GAS | | | | |
| Incidence of ARF | (Too early to determine) | | | |
| Prevalence of skin infections | (Not met at this time) | | | |
| Hospitalisations – skin infections | (Too early to determine) | | | |
| Access to primary care | | | | |
| Health literacy | | | | |

### *Prevalence of Group A Streptococcus*

The Mana Kidz programme was implemented in a series of stages from October 2012 to October 2013. It is relatively early in the programme to be assessing changes in the prevalence of GAS. However, early indications from an ongoing cross-sectional study showed a marked statistically significant reduction using multivariable analysis in pharyngeal GAS burden in a population sample (see below) of Year 1-8 students in three Mana Kidz schools between May 2013 (before the commencement of the programme in those schools) and May 2014.

Cross-sectional studies of pharyngeal GAS are ongoing through the University of Auckland in CMDHB and other DHBs (see Appendix C). An analysis of changes from May 2013 (n=1,299) to May 2014 (n=1,751) in Counties Manukau has been performed. Raw positive pharyngeal GAS rates were 25% in 2013 and 14% in 2014. This was consistent within the three schools surveyed, with changes in rates for individual schools being 23% to 12%, 24% to 14%, and 32% to 15%.

Analysis was performed to account for school clustering, and for age and gender differences. There was evidence of a difference in the rates of pharyngeal GAS between 2013 and 2014 (p=0.01) with the adjusted estimates of rates of 26% (95%CI 20-34%) and 14% (11-18%) for 2013 and 2014 respectively. The relative risk (95%CI) of being pharyngeal GAS positive in 2013 compared to 2014 was 1.8 (1.3-2.3).[12]

Interpretation of this data should be cautious as this change has only been measured at two time points, so a year with particularly low rates of circulating Strep A cannot be ruled out. Also, there is no published literature directly linking pharyngeal GAS prevalence to RF rates. The ongoing cross-sectional study, when completed, may enable such linkages to be made.[13]

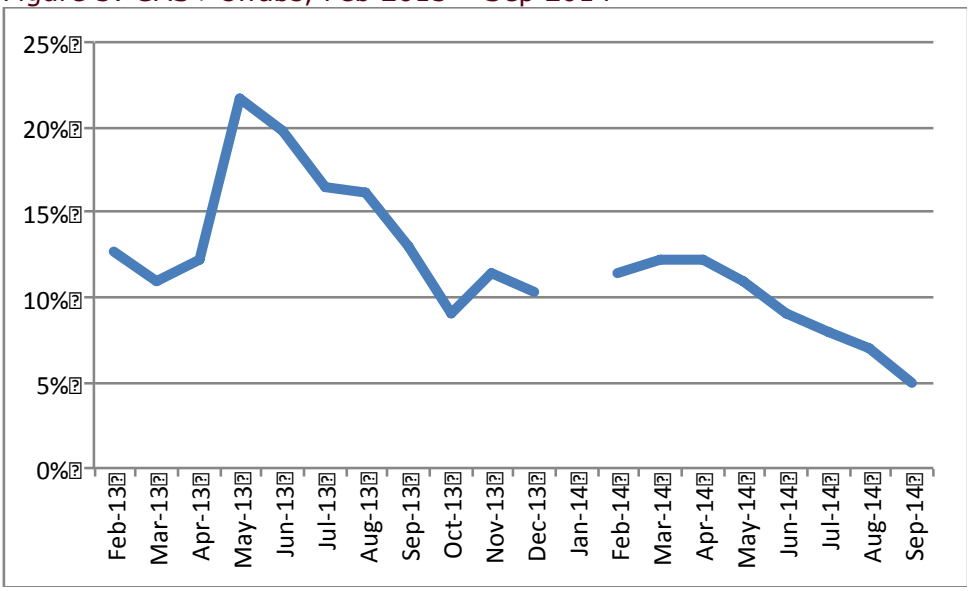
A parallel reduction in the incident GAS+ rate from throat swabs taken in the Mana Kidz programme (Figure 3) lends some support to a possible interpretation that Mana Kidz contributed to a reduction in the GAS load within its target population from 2013 to 2014.

The GAS+ rate initially exceeded expectations with high incidence of GAS+ throat swabs especially through winter 2013, exceeding 20% (compared to 13% in the Wiri Central School pilot). The fall in the GAS+ rate should be interpreted with caution as the denominator was increasing throughout 2013 with the progressive rollout of Mana Kidz,

[12] These results were preliminary as the researchers were awaiting NHI matched to ethnicity to add to the multi-variable model at the time of writing this report.
[13] Studies in China (Lin PIDJ 2008 27:753) demonstrated reduction in classroom pharyngeal GAS with a systematic penicillin intervention. In the US armed forces (Brundage Ped 1996 97:964) reduction in GAS associated respiratory disease, measures of which included throat swabs, was observed with systematic penicillin prophylaxis of troops. The outcome measure of the current NZ cross-sectional study of focused interventions to control GAS pharyngitis as the preceding trigger for RF remains ARF (study C) when such linkages may be able to be made.

and to a lesser extent throughout 2014 as consents continued to increase. Throat swabs such as these are dependent on many factors such as presentation of sore throats for swabbing, circulating strains, school factors, and season. Further elapsed time is needed to determine whether this result is sustained.

Figure 3: GAS+ swabs, Feb 2013 – Sep 2014




*Data Source: National Hauora Coalition*

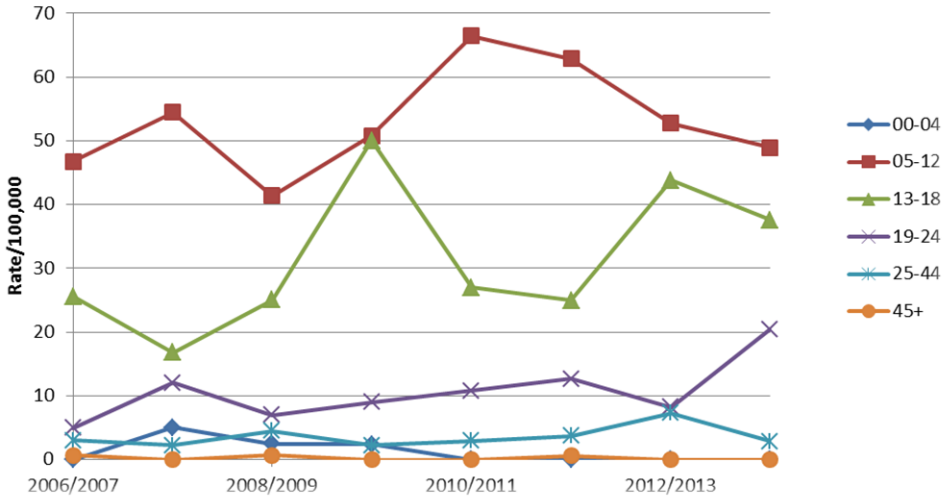
Although the findings above cover a short time period and need to be interpreted with caution, the available evidence is consistent with a possible interpretation that Mana Kidz contributed to a 40-50% reduction in the GAS load within its target population from 2013 to 2014. This interpretation is supported by Bradford Hill Criteria for causal inference of: consistency (similar reductions seen in all three schools in the cross-sectional prevalence data from 2013 to 2014); temporality (the observed reduction in GAS+ rate and prevalence occurred after the implementation of Mana Kidz); and coherence (the cause-effect interpretation is consistent with the theory of change underpinning the programme objectives).

### *Incidence of ARF*

As rates of pharyngeal GAS infection decrease, a reduction in hospitalisations for ARF should eventually be achieved. However, this may take some time to be seen in the overall population because: a) the effect of the Mana Kidz programme is diluted within the (much larger) general CMDHB population of 5-12 year olds; and b) hospitalisations for ARF include cases related to historic infections that may have occurred prior to Mana Kidz. It is thought that multiple exposures to GAS 'prime' the immune system so that many children may have already been exposed to multiple strep infections prior to the programme starting.

It is too soon to expect to see a clear reduction in the incidence of ARF (and the evaluative rubric specifies a reduction by the end of 2016 – see Appendix A). Observed admission rates for 5-12 year olds are a little lower in the most recent two years compared to the preceding two, but with the variability of data it is too soon to know whether this is the start of a decrease or whether the previous two years were just chance high numbers. Further elapsed time is necessary to evaluate the impact of Mana Kidz on ARF rates in Counties Manukau.

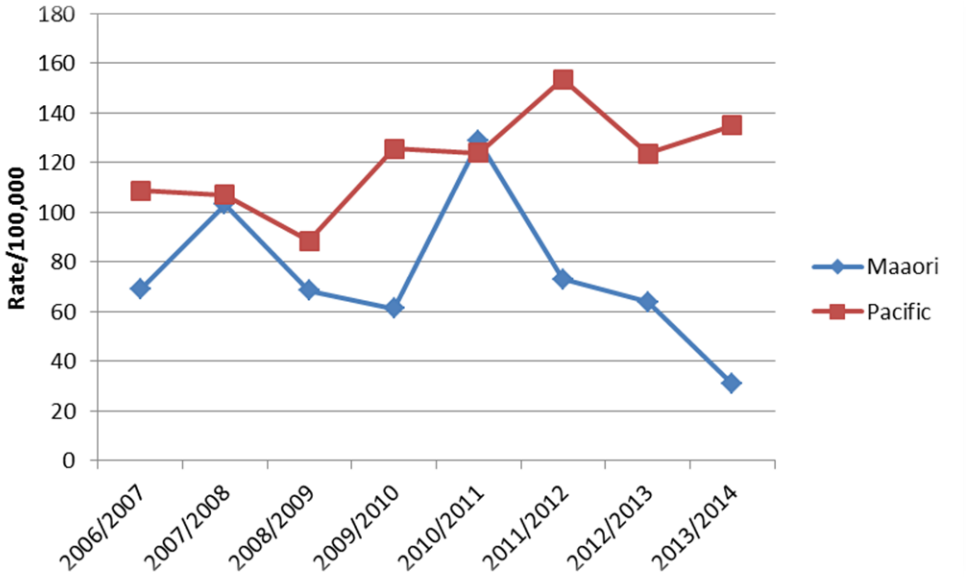
Figure 4: Admission rate per 100,000 for ARF, CMDHB




*Source: NMDS extracted CMDHB. ARF ICD code I00-I02. Primary diagnosis of ARF. Excludes any admissions where that person has been admitted with any ARF or chronic RHD diagnosis from 1990-2005.*

Rates of ARF in Maaori and Pacific children are shown in Figure 5. The rate of ARF in Maaori in the last 12 months was the lowest over the eight year period examined, but it is too early to determine whether this reflects a real drop in admissions or random fluctuation.

Figure 5: Admission rates for CM residents, 5-12 years, by ethnicity




*Source: Numerator: NMDS extracted CM Health. ARF ICD code I00-I02. Primary diagnosis of ARF. Excludes any admissions where that person has been admitted with any ARF diagnosis from 1990-2005. Denominators: Statistics New Zealand projected population CMDHB updated 2013.*

Subsequent years' data may show further reductions in ARF incidence. Anecdotal accounts were received of paediatricians commenting that recent months' admissions have been the lowest they have seen in their careers.

### *Prevalence of skin infections*

The cross-sectional prevalence study in three schools (as described above) has not shown any difference in rates of skin infection between 2013 and 2014 (p=0.4). The adjusted estimates of rates were 19% (95%CI 10%-39%) and 14% (7%-29%) for 2013 and 2014 respectively. The relative risk (95%CI) of having a skin infection in 2013 compared to 2014 was 1.4 (0.7-2.7).

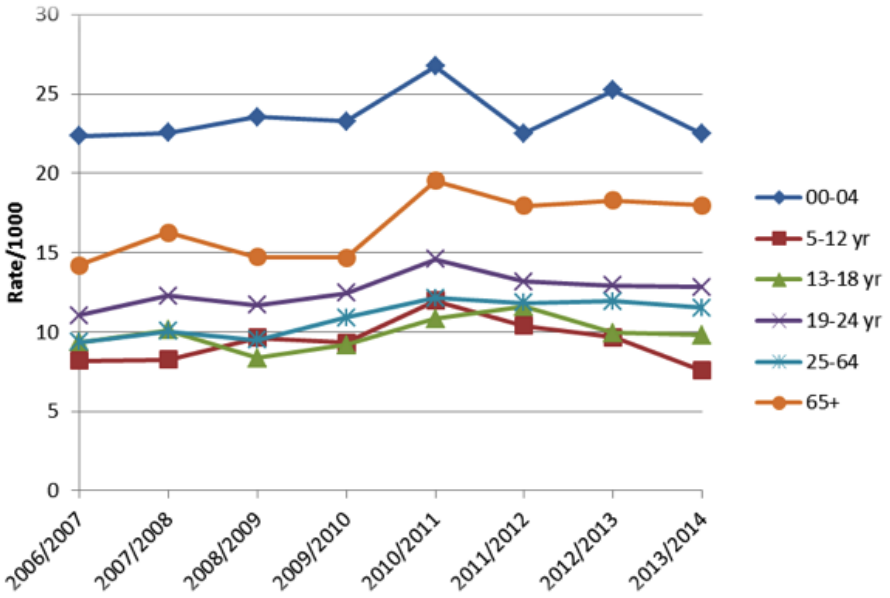
Although there was a raw 28% reduction, which if looked at naively is highly significant, once the school effect is incorporated, a difference cannot be demonstrated as the three schools were very different with Weymouth Intermediate being very high in 2013 (31%) and dropping to 11% while Weymouth Primary started low (10%) and increased to 16%, and Finlayson did not change much (19% to 17%).

More time is needed to evaluate the impact of Mana Kidz on the prevalence of skin infections. The prevalence of skin infections may not change if the underlying social circumstances of children (e.g., frequency of bathing, clothes washing) does not change. However, hospitalisations should reduce due to early detection and treatment of skin infections under the Mana Kidz programme.

### *Hospitalisation – skin infections*

Figure 6 shows hospitalisations for skin infections, by age group. Hospitalisations for skin infections among 5-12 year olds peaked in 2010/11. Although subsequent years show fewer hospitalisations in this age group, it is too soon to determine whether this reflects a real drop or whether the preceding years were chance high numbers.

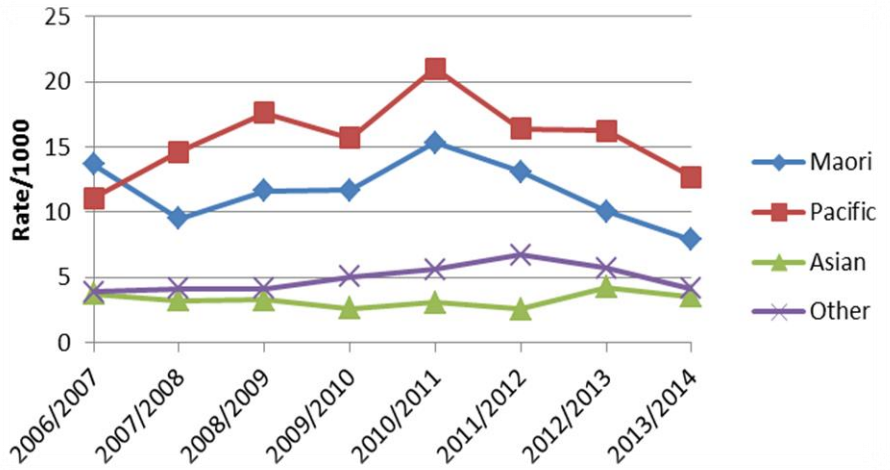
Figure 6: Admissions/1,000 for skin infections, CMDHB




*Source: National Minimum Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013.*

As shown in Figure 7, admission rates per 1,000 for skin infections among Maaori and Pacific 5-12 year olds were similar. As noted above, it is too soon to determine whether the apparent reduction is a real drop or whether preceding years were chance high numbers.

Figure 7: Admissions/1,000 for skin infection 5-12 years, by ethnicity




*Source: National Minimum Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013*

There were no other major health initiatives implemented at the same time as the Mana Kidz programme in Counties Manukau that could explain any changes in skin infection hospitalisation rates (see Appendix C). Furthermore, the trend was not seen in other DHBs in the metro Auckland region. Staff consulted in February 2014 also commented that there was a noticeable reduction of primary school age children presenting with skin infections at Middlemore Hospital including for paediatric dermatology appointments.[14]

### *Access to primary health care*

Overall, Mana Kidz is developing effectiveness in improving access to primary health care. The increased presence of registered nurses and school health teams, with delegated prescribing for antibiotic treatments as required, has demonstrably increased access to primary care services for RF and skin infections.

The 2014 parent questionnaire found that 94% of children who had had a sore throat or skin infection in the past year had seen the school nurse, and 25% of respondents had taken a sick child (for any reason) to the school nurse in the past year. This does not show a change but demonstrates significant awareness and utilisation of the school-based service.

Access to clinics in schools increases access to primary care for families who would struggle to get to the doctor because of costs or logistics. Focus group and survey feedback indicates that many parents have put off visiting the doctor or picking up prescriptions due to cost and/or inability to take children during working hours.

Mana Kidz provides an opportunity for vulnerable children to engage with primary health care during school hours, which they may not otherwise have had.

> *Sometimes we overlook that children can't access primary care... it has to be with an adult. This way we are accessing the children that aren't accessing healthcare.* (Provider)

Focus group feedback suggests parents/whaanau (including some who may not have previously engaged effectively with health services) are more likely to present to a GP or school health team where appropriate for sore throats and skin infections. However, it is unclear to what extent families may be more likely to present for *any* health problem.

Focus group feedback also suggests that the programme increases access to social support services, as nurses refer family/whaanau for further assistance (e.g., home insulation, oral, hearing, vision, nutrition, immunisation, mental health and other needs). Services within schools work together to provide holistic care to vulnerable children. For example,

[14] General Manager, Kidz First and Women's Health Division, cited in CMDHB briefing paper on Mana Kidz, March 2014.

Mana Kidz collaboration with school health teams, Special Education Needs Coordinators and/or SWiS facilitates access to services such as AWHI, CYF, hearing and vision clinics.

Programme data shows a total of 4,178 school health referrals actioned from February 2013 to September 2014. However, the nature of these referrals has not been recorded systematically. There is an opportunity for school clinic data to be collected, coded and compiled for the programme overall. This would better demonstrate the nature and extent of needs identified.

### *Health literacy*

Overall, the Mana Kidz programme is consolidating effectiveness with regard to health literacy.

Findings from focus groups, surveys and stakeholder feedback indicates that child and parent health literacy has improved. For example, focus groups indicate that most parents/whaanau know more about sore throats, rheumatic fever, how to prevent it, and the importance of adhering to medication (though the effects of the national RF health promotion efforts are difficult to distinguish from those of Mana Kidz). Many also know more about skin infections including the importance of changing dressings, cleaning hands before and after, and how to break the cycle of recurrence (Appendix F). Similarly, the parent questionnaire (Appendix D) and child questionnaire (Appendix E) show improvements in health literacy.

> *My son knows, if he's got a sore throat go see somebody, tell somebody. Before he just used to let it go, have drinks and drink it away. He never used to tell me until they started testing them* [at school]. (Parent)

Anecdotally, these improvements in health literacy have led to improvements in sore throat and skin management. Available evidence does not provide a clear indication of whether adherence to medications has improved; however, responses to the parent questionnaire provide an indication that adherence was high in 2014 – e.g., 91% of respondents whose child had been prescribed antibiotics for a sore throat, had completed their 10 day course of treatment.

Mana Kidz teams reported that there is room for further gains to be made in adherence to medication. Accounts were given of children needing to be prescribed medication 2-3 times before they complete a course of treatment. It is not clear how frequently this occurs.

# Value for money

### *KEQ3: To what extent and in what ways does the intervention represent value for money?*

Overall, Mana Kidz represents good value for money bearing in mind its performance relative to the level of resourcing, its contribution to reducing health disparities and early indications of its possible health impacts. Mana Kidz is well aligned with, and contributes to the Triple Aim of improved population health, improved patient and family/whaanau experience of care, and making the best use of population-based funding.

Key findings are summarised as follows. Evidence is summarised below and detailed in Appendices.

Table 4: Summary of findings – value for money

| | Acceptable VFM | Good VFM | Excellent VFM |
|---|---|---|---|
| Overall | | | |
| Resourcing | | | |
| Economical use of funds | | | |
| Reducing health inequalities | | | |
| Cost utility | (Too early to determine) | | |
| Reduction in long-term burden associated with preventable health care expenditures | (Too early to determine) | | |
| Wider benefits for children's education and development | | | |

### *Resourcing*

The current funding model for Mana Kidz is a four year commitment, funded through a combination of: direct Ministry of Health funding for throat swabbing in schools (53%); CMDHB funding (22%); Additional CMDHB funding through the deployment of PHNs (24%); and Middlemore Foundation funding (<1%). Table 5 shows a breakdown of funding committed to the programme.

Table 5: Four-year funding sources for the Mana Kidz programme

| Funding year | MOH | CMDHB | PHNs | Foundation | Total |
|---|---|---|---|---|---|
| **2012/2013** | 2,034,810 | 896,163 | | | 2,930,973 |
| **2013/2014** | 2,386,575 | 1,172,740 | 1,680,000 | 140,000 | 5,379,315 |
| **2014/2015** | 3,286,575 | 1,172,740 | 1,680,000 | 140,000 | 6,279,315 |
| **2015/2016** | 1,643,288 | 586,370 | 840,000 | 140,000 | 3,209,658 |
| **Total** | **9,351,248** | **3,828,013** | **4,200,000** | **420,000** | **17,799,261** |

Initial investment into Mana Kidz was lower than required to implement the service model developed during the pilot programme at Wiri Central School. The current funding level for Mana Kidz is 58% of the funding required to fully implement the programme.[15] This resourcing shortfall was known prior to the commencement of the programme and there was an explicit expectation that providers would need to contribute resources. It was agreed that an assessment of the impact of the programme was needed to determine whether a next level of investment was appropriate.

The Alliance Leadership Group (ALG) considered all of the options for best use of the funding available to ensure the greatest coverage, the evidence and the likelihood of success. It was agreed that a lower workforce ratio would be implemented to enable a larger number of children to have access to the service. It was anticipated that system efficiencies should be developed to see whether the model could operate at lower staffing ratios.

The workload in schools was higher than that experienced in the Wiri Central School pilot. The Mana Kidz programme has a wider scope of responsibilities, a lower staffing ratio and, for a few months in the winter of 2013, higher than expected incidence of strep A sore throats at a 20-25% positivity rate.

As would be expected, this placed pressure on the providers including Kidz First nurses. Pressures eased over summer in early 2014. However, by this time key and successful providers expressed concern and were considering withdrawing from the programme. They noted that they had used their resources to support the programme and provided professional and service delivery support to the school teams from their existing resources to ensure the success of the programme (as noted above, there had been an explicit expectation from the outset that providers would need to contribute).

In response to concerns the ALG implemented changes to the programme including a quality improvement process to improve workflows and clinic practices, and $400,000 from within the Child, Youth and Maternity

[15] Background information on Mana Kidz funding has been drawn from CMDHB briefing papers.

budget was reallocated as one-off funding from January to July 2014 to reduce pressure on the providers and ensure key providers did not exit the programme due to workload and cost pressures.

The ALG also seriously considered reducing class checks (throat swabbing) from five to three days per week. After deliberation this was rejected as it would not be possible to fully evaluate the impact of the reduction if the programme did not operate at the recommended, evidence-informed, five day level.

In early 2013 the ALG sought support from the Counties Manukau Executive Leadership Team (ELT) to invest a further $2.12 million in the Mana Kidz programme to increase staffing ratios. Part of the rationale for this was that it would be impossible to evaluate the programme if resourcing had not allowed the model to be implemented as envisioned. If the evaluation showed no effect it would not be possible to determine whether this was because the model was not effective or because it had not been fully implemented due to lack of resource. This funding was not approved.

In addition to the funding summarised above, the programme utilised publicly funded health services for laboratory tests (at $6 per throat swab, accounting for ~10% of programme costs) and medicines (for GAS treatments and skin infections).[16]

Total resourcing of the Mana Kidz programme during the evaluation period (February 2013 to September 2014) is therefore estimated at $11.85 million as shown in Table 6, with $8.35 million of this being in addition to the resources already being used by CMDHB (in relation to PHNs) prior to the establishment of Mana Kidz.

Similarly, in the most recent financial year (1 July 2013 to 30 June 2014) estimated resources of $6.72 million were used in the programme, including $5.43 million in addition to pre-existing PHN resources.

Table 6: Estimated total cost of Mana Kidz to date

| Funding year | Total Feb 2013 – Sep 2014 | FY July 2013 to June 2014 |
|---|---|---|
| 2012/2013 programme funding | 2,930,973 | - |
| 2013/2014 programme funding | 5,379,315 | 5,379,315 |
| 2014/2015 first quarter, programme funding | 1,569,829 | - |
| Additional one-off funding Jan-Jun 2014 | 400,000 | 400,000 |
| Lab tests – throat swabs | 1,148,538 | 675,204 |

[16] First choice for GAS treatment is Amoxil once daily at a cost of $16.18 (Pharmac Schedule). Other options include penicillin, IM benzathine or Erythromycin. There are also second-line drugs for recurrent strep. The vast majority of skin treatments are topical cleaning and covering. If antibiotics are needed, fusidic acid (Foban, at $3.25), and rarely, Cephalexin ($5.70) or Flucloxiccilin ($22.00) are used.

| | | |
|---|---|---|
| Medication – GAS treatment | 326,440 | 203,899 |
| Medication – skin treatment | 94,474 | 63,672 |
| Not included in estimate: in-kind contributions from providers | - | - |
| **Total** | **11,849,569** | **6,722,090** |
| Total *additional* funding (excl PHNs) | 8,348,064 | 5,431,054 |

These estimates exclude in-kind contributions from providers as outlined above, which could not be quantified based on available data.

These estimates also may under-represent input from Professor Diana Lennon as Clinical Advisor. Some provision for this is reflected in DHB funding at a 0.2 FTE basis. However, for model replication purposes it should be noted that this may underestimate the true cost. Additionally, input from key DHB staff has been estimated at 0.4 FTE.

The level of resourcing may become more manageable as initial humps in GAS+ and skin infections ease. Accordingly Mana Kidz teams may start to have improved capacity for health promotion and actioning referrals for wider health needs.

### *Economical use of funds*

Programme funds have been used economically to cover the planned staffing, infrastructure and activities, within budget.

The programme is delivered at reasonable cost per child. Total costs in 2013/14 equate to an average cost of $280 per participating child per year. This compares favourably to capitation funding for those with a High Use Health Card at Access practices of $376.50 per annum for 5-14 year olds.[17, 18, 19]

The alliancing model that brings together 12 providers into an outcomes-based contracting environment was a factor in the initial success of the programme. These providers used their existing contracts and resources to support the Mana Kidz programme. As noted above, providers have also contributed resources to support the programme.

Mana Kidz providers and funders have had a focused effort on ensuring the efficiency and effectiveness of the programme. The specific improvements have been:

[17] Capitation rates for 5-14 year olds without a HUHC are $126.34 for females and $116.38 for males.
[18] In comparison, the Wiri Central School pilot was provided at a cost of $510 per student per year (comprising $420 staffing, $80 swabs, and $10 consumables).
[19] As another point of comparison, a paediatric outpatient consult costs $410.23 for first specialist appointment and $277.73 for follow up (2014/15).

*Workforce:*

- Increasing the competency and scope of practice of WSWs through training programmes
- Encouraging families to come into school to reduce home visit requirements.

*Reducing duplication of effort:*

- Placement of fusidic acid (Foban – topical skin treatment) in clinics to reduce nursing time to obtain script and improve treatment revisions
- Revision of forms to reduce data requirements not critical to the programme
- Annual revision of the Manual of Operations to simplify procedures.

*Reducing direct costs to the programme:*

- Use of the physicians supply order (PSO) system for medical dispensing means the nurse can supply the medication immediately; this has significantly reduced the cost of pharmaceuticals to CMD of $70,000 as the cost of pharmaceuticals are met by Pharmac.

### *Reducing health inequalities*

Mana Kidz demonstrably contributes to reducing health inequalities and improvements in the wellbeing of families/whānau, particularly in Maaori and Pasifika communities.

Prior to Mana Kidz, CMDHB had the highest mean annual incidence rate for rheumatic fever related initial hospital admissions in 5-12 year olds, at 93.9 per 100,000.[20] The region has a high concentration of Maaori and Pacific families, and 99% of cases between 2000-2009 involved Maaori and Pacific children. This contrasts with national incidence rates of 40.2 per 100,000 for Maaori, 81.2 per 100,000 for Pacific and 2.1 per 100,000 for non-Maaori non-Pacific children aged 5-12.

The CMDHB Maaori Health Plan 2013-14 and the Pacific Health Development Annual Plan 2013-14 have an explicit focus on improving health outcomes for the district's Maaori and Pacific people respectively – including a specific focus on sore throat treatment.

Mana Kidz operates in the most deprived communities of South Auckland, of decile 1 and 2 schools made up of 39% Maaori and 50% Pacific

[20] Milne RJ, Lennon DR, Stewart JM, Vander Hoorn S, Scuffham P. 2012. Incidence of acute rheumatic fever in New Zealand children and youth. Journal of Paediatrics and Child Health. (2012)

children.[21] These vulnerable children are those most likely to get RF. Schools in Mana Kidz accounted for 85% of RF cases in CMDHB prior to the programme.

Mana Kidz reduces health inequalities for these children and their families/whaanau, by:

- Addressing cost and practical barriers to accessing primary health care and prescription medicines for sore throats and skin infections
- Increasing awareness and knowledge about sore throats, rheumatic fever and skin infections, including their prevention and treatment
- Referring and linking families/whaanau to primary care providers and other community services to meet a range of needs
- Providing children with a positive introduction to primary health care and how to engage in seeking care when they are sick
- Swabbing nearly 200,000 sore throats, treating over 20,000 GAS infections, and reducing the GAS load in these vulnerable communities
- Treating over 17,000 skin infections.

Mana Kidz providers contribute to reducing health inequalities by engaging families/whaanau in ways that are appropriate to their cultures and circumstances. Many families have high needs and multiple risk factors to their health (e.g., poor housing, low incomes, family violence, smoking and other factors). Some have not historically experienced good engagement with mainstream health services. Given these realities, engaging effectively with high needs whaanau can at times be time-intensive.

The total at-risk population in Counties Manukau extends beyond the 61 low decile schools currently in the Mana Kidz programme. The current reach of the programme represents approximately 37% of the 65,000 Quintile 5 children[22] but includes many of the poorest and most at-risk among these children.

### *Impact on PHN services delivered in other schools*

The establishment of Mana Kidz resulted in the reallocation of PHNs from a district wide school visiting model to a more targeted and intense school based nursing service in 61 Mana Kidz schools.[23] This has resulted

[21] Ministry of Education data on the first 59 Mana Kidz schools, July 2013.
[22] Ministry of Health, projected domiciled population of Maaori, Pacific and non-Maaori non-Pacific Quintile 5 children aged 4-19 years, 2011, cited in CMDHB briefing paper.
[23] One of the primary drivers for establishing Mana Kidz was the requirements by the MoH for CMDHB to introduce throat swabbing in schools for the primary prevention of

in a change in the service delivery model to non Mana Kidz schools in the district. There are 184 schools in Counties Manukau district and therefore 123 schools (predominantly decile 3 or higher) without a Mana Kidz programme (see Appendix I for details).

The reallocation of 20.4 PHN FTE to Mana Kidz has resulted in 9 FTE nursing time being available to provide the immunisation programme, ear clinics, supporting Health Promoting Schools work, child protection support and nursing support for the non Mana Kidz schools. As a result of the reduction in FTE there is no capacity for the PHN service to proactively engage with schools about other health issues and limited capacity to respond to child health referrals.

From the PHN service perspective the needs of the 123 schools without a Mana Kidz programme vary. There are seven schools that clinical staff consider to have very high unmet need and would benefit from increased PHN support. There are 27 schools that have been identified as requiring weekly visits, 10 requiring fortnightly visits, 32 that require monthly visits and 53 that were assessed as having low needs and could contact the PHN service on an as needed basis. There are two decile 1 schools and ten decile 2 schools without a Mana Kidz programme.

*Survey feedback* from respondents in 54 schools (with a decile spread similar to that of all non Mana Kidz schools) which do not have a Mana Kidz team (detailed in Appendix I) indicates that while nearly half of the survey respondents had previously had a PHN visit less than monthly, 44/54 (81%) felt that the PHN had at least some impact on the health and wellbeing of their students and that the reduction in PHN service had had at least some impact on managing the health and wellbeing of their students.

While the majority of schools were still referring to the PHN service, a large percentage (39%) were not. Comments suggest some were not referring because they had no need to while others had lost faith in the PHN service and therefore did not attempt to engage with the service. Of the schools that responded to the survey, 43/54 (80%) indicated they would prefer to return to the previous model compared with the status quo.

There is acknowledgment from the PHN management that prior to the Mana Kidz programme being established there were high needs schools where needs could not be meet with the resource available. There is a clear indication from recent qualitative work undertaken, as part of the evaluation of Mana Kidz programme, that the extra health resource provided by this programme has gone a long way towards addressing these needs. Senior PHN management are clear that returning to the previous PHN service model is not desired for these schools.

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ARF. Therefore the methodology for identifying high risk schools was driven by the risk of students developing ARF rather than other health needs.

There has, however, been a perceived impact, from both schools and the PHN service, on the non Mana Kidz schools in terms of the decrease in PHN resource and what this means for the health and wellbeing of their students. This is despite the introduction of SWiS in many schools.

The survey results suggest that while the previous PHN service contact with schools varied in frequency the relationship with the PHN service was valued. The survey indicated that for many schools having some degree of engagement with a PHN service was valued even if this translated into relatively small contact time. For some schools the change in the PHN service capacity has had minimal impact. Other schools have gone from having weekly visits to much less frequent contact with the PHN nursing service and the schools are clear this has been detrimental to the health and wellbeing of their students.

In considering the future of Mana Kidz, further consideration needs to be given to exploring the needs of non Mana Kidz schools and to the model of PHN nursing service that would be most appropriate. The needs of these schools vary with most identified by the PHN service as only needing a responsive PHN service when needs are identified or monthly visits. There are a smaller number of schools that are felt to need more intensive support. Ideally more resource should be made available in order to allow more regular proactive contact between the PHN service and those schools which need it.

### *Cost-utility*

Milne et al[24] undertook a prospective cost-utility analysis of a school intervention to reduce the risk of rheumatic fever. The study estimated that school sore throat clinics would cost approximately:

- $60,000 per quality-adjusted life year (QALY) gained, or
- $190,000 per ARF case averted, or
- $2 million dollars per death averted.

The base scenario assumed an average cost of $135 per child per year, an incidence rate of 75/100,000, and a 59% reduction in ARF cases (among other factors). Sensitivity analysis found that the results were most sensitive to the efficacy (reduction in ARF cases) and cost of the intervention, and moderately sensitive to the ARF incidence rate.

The main benefits of the intervention were found to be improved access to personal health care and prevention of premature death for Maaori and Pacific people rather than improvements in quality of life. The study concluded that "sore throat clinics in low decile schools were likely to reduce the risk of ARF and thereby improve the survival of Maaori and

[24] Milne, R.J., Lennon, D., Stewart, J., Scuffham, P., Vander Hoorn, S., Cooke, J., Remenyi, B., Finucane, K., Wilson, N., Nicholson, R., (2011). *Economic Evaluation of a SchoTol Intervention to Reduce the Risk of Rheumatic Fever.* Report to the Ministry of Health.

Pacific children, although they appear to be poorly cost effective from a New Zealand Government perspective" and that "implementation of this intervention would reduce the striking disparity between Maaori/Pacific and others" (p9).

Qualitative comparison of the modelled results to actual Mana Kidz costs and performance to date yields the following observations (Table 7).

Table 7: Qualitative comparison of Mana Kidz to modelled programme

| Factors reducing the cost per QALY of Mana Kidz compared to Milne et al (2011) | Factors increasing the cost per QALY of Mana Kidz compared to Milne et al (2011) |
|---|---|
| **Incidence of rheumatic fever:** Baseline incidence of RF in 5-12 year olds in CMDHB was 93.9/100,000 – higher than the assumed rate of 75/100,000 in the model. Furthermore, the incidence in the decile 1 and 2 Mana Kidz schools is likely to be higher than the Counties Manukau average.<br><br>Sensitivity analysis by Milne et al found that a 33% increase in the incidence rate (from 75 to 100) resulted in a 9% reduction in the cost per QALY. Therefore, we assume, the incidence rate in Mana Kidz schools would drive a small reduction in the cost per QALY. | **Cost per child:** Cost of Mana Kidz in 2013/14 was $280 per child, roughly double the assumed cost in the base case modeled by Milne et al. *Note that the Mana Kidz cost includes skin assessment and treatment whereas the model only includes assessment and treatment of GAS sore throats.*<br><br>Sensitivity analysis by Milne et al found that an 11% increase in the cost per child (from $135 to $150) resulted in a 19% increase in the cost per QALY. Therefore, we assume, doubling the cost per child would result in a significant increase in the cost per QALY. |
| **Scope:** Mana Kidz treats not only sore throats but has also treated over 17,000 skin infections and actioned over 4,000 other health referrals. It is not yet clear what impact this is having on hospitalisations. CMDHB analysis shows average costs of $4,077 per admission for skin infections in 5-12 year olds during the 2014 fiscal year. Illustratively, prevention of 50 hospitalisations would produce savings of ~$200,000 or 3% of annual Mana Kidz costs.<br><br>If incorporated in the model, the treatment of skin infections would also have a modest effect on quality-adjusted life years (principally a quality improvement as the vast majority of skin infections are treated before they become life threatening). These factors together would drive a small reduction in the cost per QALY. | **Efficacy:** While it is too early to assess a reduction in the ARF rate in the Mana Kidz programme, available evidence suggests a possible 40-50% reduction in GAS prevalence to date (bearing in min the caveats stated in the outcome evaluation above).<br><br>Sensitivity analysis by Milne et al found that halving the efficacy (from 59% to 30%) resulted in a 131% increase in the cost per QALY. Therefore, we assume, an efficacy rate of 40-50% would result in a significant increase in the cost per QALY. |

While the precise effects of these considerations on the overall cost utility of the Mana Kidz programme cannot be interpolated from the available data (e.g., because relationships between variables may be non-linear), the balance of factors presented above suggest that Mana Kidz to date has delivered improved health outcomes at a higher cost per QALY than that modelled by Milne et al. This is principally due to the costs of programme delivery (which our findings suggest are already at the low end of resources required to deliver the programme) and programme efficacy (which may have been optimistic in the model). Therefore, the cost per QALY of the Mana Kidz programme is likely to remain above that

of the prospective cost utility model. Skin treatment and prevention of related hospitalisations were not included in this model.

The cost utility of the Mana Kidz programme can be determined more precisely in the future when sufficient time has elapsed to determine its efficacy. At that time, it may be possible to re-run the model using updated cost and performance data (the 2011 report states that a copy of the Markov model, developed using TreeAge Pro Suite software, may be obtained from the author for non-commercial purposes on request).

### *Reduction in long-term burden associated with preventable health expenditures*

It is too soon to quantify the long-term reduction in health service utilisation that might be attributable to the Mana Kidz programme. However, results from the programme to date indicate a credible prospect that resources invested in the programme could contribute to a reduction in the long-term burden associated with preventable hospitalisations and reduced necessary health expenditure downstream, by detecting and treating sore throats and skin infections in schools.

Hospital costs related to ARF and RHD can be significant. On average, the public health care price per admission for people with ARF or RHD was $9,837 in the 2013/14 financial year (data provided by CMDHB). In cases where valve repair/replacement surgery is required, costs exceed $100,000 (Milne et al, 2011).

As indicated by the cost utility modelling by Milne et al, together with the costs and performance of the programme to date, such offsets would be well below the cost of the programme but may contribute to the programme being delivered at an acceptable net cost given its contribution to reducing disparities in access to health care and prevention of premature death for Maaori and Pacific people.

### *Wider benefits for children's education and development*

There is emergent anecdotal evidence of wider benefits for children's education and development resulting from improved health and wellbeing (e.g., through improved attendance and engagement at school). Feedback from school staff indicates that it is difficult to identify in the data they collect as to how Mana Kidz may have contributed to improved attenance. However, some school staff were able to point to individual cases where attendance had been an ongoing issue that had been resolved after Mana Kidz involvement with the child and/or family/whaanau.

## Lessons learned

### *KEQ4: What can be learned about the effectiveness of this model?*

This section builds on the findings above. It identifies success factors, challenges, opportunities, implementation lessons, and principles of practice that may be appropriate to other settings.

### *Success factors*

The following factors were identified that contribute to the success of the Mana Kidz programme.

*No cost and accessibility to families/whaanau*: From the perspectives of focus group participants, key success factors are that the programme provides access to primary care services and medications for sore throats and skin infections free of charge, located at school. It is important to parents/whaanau that Mana Kidz teams have a strong presence in the schools (e.g., being visible, enaging with parents, and attending parent evenings).

*Home visits:* The home visits are considered key to engaging hard to reach families/whaanau. It also allows for Mana Kidz staff to put children's health issues into a context, and to identify needs that could be addressed by additional supports.

*Attributes of Mana Kidz staff:* Nurses and WSWs bring a range of attributes and attitudes that were identified as important. Key examples, as detailed in Appendices F (whaanau focus groups) and G (provider interviews), include: relationship skills; understanding of the community; cultural confidence and competence; communication skills; ability to work autonomously; physical fitness; and a positive, non-judgmental attitude.

*Matching ethnicity of staff with that of the school population*: While not essential, having Mana Kidz staff that 'look and talk like' the people they work with was thought to support better engagement.

*Staff qualifications and backgrounds*: Having either life experience that enable staff to relate to family/whaanau and children, and/or relevant qualifications (e.g., for WSW – health sciences, overseas nursing qualifications) was considered a factor for success.

*Spending time with children and family/whaanau*: Stakeholders consistently indicated that Mana Kidz staff need to spend time with children outside of clinic (e.g., in the playground during lunch breaks, attending school activities outside of clinic hours) and with family/whaanau (e.g., being present at parent evenings, making home visits) to build trust and rapport.

*Effective relationships and communication with school staff*: Feedback suggests that it is important that Mana Kidz staff develop a good understanding of school protocols and procedures, make an effort to get

to know school staff and ensure school staff understand why the clinic is there, report to the board of trustees on how the programme is performing, and work collaboratively with principals and senior staff. Meanwhile, school staff need to keep Mana Kidz staff updated on school activities so that both parties can perform their duties without interfering with the other.

*Appropriate space for the clinic*: Clinics need to be big enough to accommodate a few children simultaneously, and/or have a dedicated space where children can wait for their turn without disturbing others in the school. Preferably, it should be easily accessible within the school grounds, while also allowing for confidentiality (sick bays for example are not appropriate for this reason). The clinic also needs to have running water and a sink for washing hands and equipment.

*Laptops and internet access for Mana Kidz staff:* Having a laptop and access to internet at the schools enables Mana Kidz staff to enter notes or access information as they go, rather than at the end of the day at home or at the provider's head office. It also provides some flexibility for them to take work home.

*Patient management system*: A system that allows for Mana Kidz staff and GP practices from the same provider to access notes on children after an intervention (e.g., what outcome of swab was, what medication has been provided) as well as access to children's health history, and family trees, enables Mana Kidz staff to work effectively.

*Regularity of the clinic*: Having school clinics open every day helps ensure that Mana Kidz becomes an integral part of the school, and instils a sense of stability and commitment to the school community (as well as being a core feature of the piloted model considered important to its efficacy).

*The nurse and WSW combination*: The two roles were seen to complement each other well in terms of the different tasks and duties that need to be performed (e.g., health promotion, administrative, clinical).

*Standing orders*: The ability for nurses to provide medication under delegated authority from a named medical practitioner adds to a seamless and efficient service.

### *Challenges*

The following challenges were identified.

*Resourcing:* The Mana Kidz programme was implemented in accordance with the most important features of the intended model, including daily classroom throat swabbing, assessment of skin infections and attending to child health referrals, despite the level of resourcing being well below that identified as necessary to fully implement the model. If the programme had been fully resourced, it is more likely that targets for case finding would be met and that a greater number of child health

referrals could be attended to. The level of resourcing may become more manageable as initial humps in GAS+ and skin infections ease.

*Meeting key performance indicators*: Undertaking two class screens (case finding) per term as per contractual expectations has been a challenge for all providers. There are a high number of children who self-report, and who present for matters other than sore throats and skin infections. CYF-related matters, for example, can be time consuming, with nurses sometimes spending up to two hours on the phone at time of notification. Meanwhile, expectations on Mana Kidz staff have increased over time (e.g., to include hearing and vision, monitoring of immunisation).

*Staffing*: Distributing the dedicated number of FTE across schools, employing people in the context of school terms (e.g., having to restrict staff to taking leave during school holidays), and having access to appropriate back-up staff to cover sick and annual leave (because no funding for 'floating staff'), bearing in mind the specificity of Mana Kidz staff roles.

*Working with general practices*: Feedback suggests that some GPs are not consistently following RF or skin infection evidence based peer reviewed guidelines, and that the communication channels between GPs and Mana Kidz staff are not always effective (when they come from different providers). For example, there are existing ethical obligations but no explicit protocol for GPs to check what school a child goes to, and then to advise the appropriate provider if they administer antibiotics for a sore throat. One provider reported a few isolated incidences of antibiotics being prescribed for the same child by both a GP and a nurse.

*Transience*: Families in Counties Manukau are highly transient. Staff are finding that many families/whaanau change addresses, surnames and phone numbers on a regular basis, sometimes multiple times during a term.

*Language barriers*: With such a diverse ethnic mix of people in Counties Manukau, Mana Kidz teams do not always cover the range of languages spoken at the schools. When language is a barrier, it is difficult to know whether information has been understood. It can also be a very time consuming process to deliver information to these families/whaanau.

*Medication compliance*: As indicated elsewhere, adherence to treatment is an issue with many family/whaanau.

### *Opportunities*

The following areas for improvement were identified for consideration as the programme continues, and when implementing other future similar programmes.

*Case finding as a primary strategy:* Case finding was part of the original randomised controlled trial of school based access to sore throat

management, to ensure shy children would get sore throat management on a regular basis. In this way the pharyngeal GAS burden could be better controlled. It is part of the evidence-based mangual of operations for the Mana Kidz programme. Mana Kidz staff suggested the effectiveness of the programme might be improved if case finding was implemented as a primary strategy, supported by self-reported cases. Currently self-report is prioritised, with case finding being subject to time and resources available. Performance data indicates case finding targets have not been met in a third to a half of schools. Potential benefits of prioritising case finding include the ability to detect cases among children who do not self-report (e.g., those who are shy or asymptomatic), a better overview of children to be followed up (e.g., those who are absent on a case finding day), and less time dealing with unnecessary 'repeat visitors' to the clinic.

*Greater flexibility to deliver:* Providers perceived that they are required to maintain the FTE allocations by school that are specified in their contracts. Providers have learned which schools require more resource and may be able to deliver the programme more efficiently if there is some flexibility built in for them to reallocate FTE between schools. NHC has indicated that it is open to this occurring. This should be communicated more explicitly to providers.

*Whole-school approaches to health promotion:* Whole-school approaches are an effective way to create change and improve health and wellbeing in schools (Lister-Sharp et al, 1999; Stewart-Brown, 2006; Vreeman and Carroll, 2007). Such approaches view the school as a multidimensional interactive system, and use a process for change that involves the whole school community working together. Currently use of whole-school approaches with Mana Kidz is variable. Mana Kidz teams are well engaged with their schools. Schools support Mana Kidz but this could be better linked to school activities. The vast majority of participating schools are Health Promoting Schools and do use whole-school approaches, but often this does not include RF or skin infections. Increased use of whole-school approaches for health promotional activities could help to raise awareness of Mana Kidz, sore throats, RF and skin infections. Opportunities include:

- Linking RF, skin infections and the presence of the primary care clinic within the school's health curriculum (for example, more schools could use the "Sore Throats Matter" resource)[25]
- Using parent-teacher evenings and other school events as health promotion opportunities to engage and educate family/whaanau more
- Mana Kidz teams having a stronger presence in the school (e.g., attending more school meetings such as daily karakia, staff morning teas; putting notices in school newsletters; having a presence on school websites)

[25] http://www.hpa.org.nz/files/documents/Sore%20Throats%20Matter.pdf

- A scheduled visit to meet the nurse and WSW as part of school enrolment processes
- Mana Kidz teams keeping school staff better informed (e.g., if a child is on antibiotics, and when class screening will occur)
- Providing more options for family/whaanau engagement (e.g., inviting parents to be present at the time of dispensing medication; text reminders in addition to follow up phone calls; ability to leave a message for Mana Kidz staff on the school answerphone; free text or phone access to clinics).

*Programme resources:* Health literacy is known to be a key determinant of health status in Counties Manukau,[26] and it is important that programme resources be as user friendly as possible for the target population. Feedback indicates that the Mana Kidz brochure and consent form are experienced by some families/whaanau as wordy and hard for some parents to understand. Family/whaanau members asked for more pictorial resources that are easier to understand, and for material to be provided in more languages for key population groups in Mana Kidz communities (e.g., te reo Maaori, Samoan, Cook Island Maori).

*Data integration:* Currently providers use their own individual data collating processes. As such, overall programme data is inefficient to collate (i.e., has to be done manually) for analysis at programme level. An integrated data management system across providers would streamline these processes.

*Data collection:* Anecdotally, there has been an increase in unmet needs being identified in school clinics (e.g., cellulitis, scabies, notifications of abuse, oral, hearing, vision, headlice, housing needs, nutrition, immunisation, mental health and other needs). Overall health needs identified and actioned are currently counted, but are not categorised. More comprehensive data would better demonstrate the nature and extent of needs identified.

*Shared notes system:* A notes system that all Counties Manukau GPs and Mana Kidz nurses could access would help to facilitate a seamless and responsive service.

*Programme scope:* A number of stakeholders suggested that throat swabbing and skin assessments should be available to wider

[26] For example, a December 2012 CMDHB Board paper (Sinclair, 2012) noted that health literacy has been found to be a better predictor of health status than age, income, employment, ethnicity or education level. Research suggests that adults with limited health literacy experience more serious medication errors, higher rates of ED visits and hospitalisations, worse preventive care and health outcomes for their children, and increased mortality compared with individuals with adequate health literacy. CMDHB data analysis in 2006 found that the population of Counties Manukau had significantly lower skills in both literacy and numeracy than the national results. Evidence also indicates that Maaori and Pacific have poor health literacy, even after adjusting for factors such as age, education and income.

family/whaanau members, especially preschoolers, in order to provide a simple, accessible, one-stop service for the whole family (this was the intention of the initial model but has not been able to be realised because of resource constraints). It was also suggested that the programme include wider supports. For example, a few family/whaanau highlighted the cost of washing bedding if they do not own a washing machine or dryer at home. Some had paid in the vicinity of $100 each time they had to wash bedding. Providing washing machines in schools could be one way to help ensure bedding is washed regularly. Another example was an unmet need for resources for flea treatment.

*Meeting the needs of non Mana Kidz schools:* In considering the future of Mana Kidz, further consideration needs to be given to exploring the needs of the 123 non Mana Kidz schools and to the model of PHN nursing service that would be most appropriate. The needs of these schools vary with most only needing a responsive PHN service when needs are identified or monthly visits. A smaller number of schools may need more intensive support. Ideally more resource should be made available in order to allow more regular proactive contact between the PHN service and those schools which need it.

*Further investment to leverage the Mana Kidz model for early intervention across a range of high priority primary care needs:* The 2014 Briefing to the Incoming Minister of Health indicates a strategic direction toward early intervention to prevent long-term conditions and unnecessary use of hospital services. There is potential to enhance use of the Mana Kidz model to meet wider needs in vulnerable school communities, by upskilling nurses to provide assessments and treatments for other high priority amenable needs. Examples include management of mild asthma; injury prevention; and immunisation.

*Link to mutually reinforcing programmes.* A benefit of the Mana Kidz programme has been the ability of teams to bring in donated items for the children, including free toothbrushes, shoes, blankets, pyjamas. These items have been passed on to teachers to distribute. Building on these successes, there is an opportunity for Mana Kidz to link more systematically with related organisations and initiatives such as Fruit in Schools, breakfast programmes, and organisations donating needed items such as toothbrushes, shoes, that support health. There is an opportunity for the schools based health system to be part of a community based hub similar to the Victory Model.[27]

*Referral pathways and communications:* Some referral pathways are not working to the satisfaction of Mana Kidz staff. In particular, nurses said they had made referrals to AWHI, hearing and vision clinics where they had not heard back so did not know whether the referral had been received and what action (if any) had been taken. There is an opportunity

[27] http://www.victorycommunitycentre.co.nz/hubs

to improve these feedback loops and ensure a realistic mutual set of expectations is understood by all parties.

*Revise Mana Kidz manual:* Revise the handbook based on evaluation findings together with more extensive consultation of Mana Kidz staff.

### *Implementation lessons and principles of practice*

At a strategic level, the following implementation lessons and principles of practice were identified.

*Using a single provider model has to date been more effective and efficient than a mixed provider model - but there is value in continuing to invest in collaborative ways of working.*

The issues that stood out in regard to the mixed model included:

- Having the nurse and WSW worker coming from different organisational cultures, and with different expectations on their respective roles
- Reduction of the WSW role to that of administrative support (over and above throat swabs)
- Where the nurse already had an established relationship with the school, it has been a challenge for the WSW to develop a relationship with the school also
- Perceptions amongst providers that schools found mixed model services 'fragmented' (i.e., lack of clarity around who the school should contact if there is an issue with programme delivery).

All providers and Mana Kidz staff preferred the single model approach. Benefits of this model included:

- Providing more scope for the WSW to undertake other tasks (e.g., health promotion, home visits) because there is organisational agreement about what WSWs can and cannot do, and an understanding of the background and skill sets that the WSWs bring to the team
- Easier for one organisation to manage performance of team
- Stronger 'team approach'
- Better accountability (e.g., if there are any issues with programme delivery, a single provider can more easily put in place supervision or review practice).

There is potential to further leverage collaboration with PHNs in a primary health care setting to provide more benefit to communities. While the mixed model has been challenging, there is value in continuing with this model.

It was suggested that an alternative approach to operationalising the mixed model could involve secondment of PHNs to providers.

*Choose a brand name that is not too similar to names of other local service providers.* The name *Mana Kidz* caused some confusion in school communities because of its similarity to Kidz First, particularly since Kidz First Public Health Nurses already had a presence in many schools. It is acknowledged that the Kidz First Public health nurses have continued to use the PHN language rather than actively promoting the Mana Kidz brand.

*Support a collaborative and respectful relationship between providers*. Ensure there is appropriate time prior to programme commencement for providers and funders to get together and discuss processes for service implementation and delivery (e.g., ensure there is a shared understanding of programme deliverables, discuss individual interpretations of the manual of operations), and to develop rapport and strong foundation for ongoing collaboration.

*Schools need sufficient time to prepare for the programme*. School communities need time to 'get their head' around what is being proposed, to discuss with Boards of Trustees, to get buy-in, and to deal with the logistics of bringing the service into the school (e.g., finding suitable location for the clinic). A good introduction to the programme by the funder and the provider is important. It has taken approximately one year for clinics to become embedded within schools.

At an operational level, the following implementation lessons were identified.

*Designate Mana Kidz staff to certain schools, but ensure some staff have experience of working in all schools covered by their provider*. This way, internal team members can more easily cover for sick or annual leave.

*Use the WSW role as an opportunity for workforce development*. The WSW role was considered a great stepping stone into the health workforce, for community members who have an interest in health, have health related diplomas (e.g., health sciences), and for overseas trained nurses, and/or mothers who wants to get back into the workforce.

*Student nurses can provide additional support.* Some providers had found it useful to bring in nursing students to provide additional support at busy times (e.g., to enable them to get through two class case findings per term).

*Face-to-face engagement is important for working with Pasifika populations*. Many Pasifika people in these communities have English as a second language and have low levels of literacy. Taking the time to engage with them face-to-face is more effective than providing written resources.

*Mana Kidz staff work remotely, which can be isolating.* To keep Mana Kidz staff motivated and engaged, they need opportunities to catch up as a team.

*Mana Kidz staff should keep manual tracking records of what they do in the clinics.* Keeping records of tasks and outputs is important for personal safety, accountability and if electronic systems fail. This was considered particularly important for staff in the mixed provider model.

*WSWs can bring more to the programme than what was initially expected of them*. In particular, they can be a great resource for undertaking health promotional activities within the schools. To retain staff in these roles it is important to provide opportunities and challenges for them to stay interested.

*Only bring 4-5 children to the clinic at once*. Taking bigger groups can be disruptive to the rest of the class, and there is more likelihood of the children misbehaving while waiting to be swabbed.

*School staff need to be constantly reminded about Mana Kidz.* Provide information about RF, sore throats, skin infections on a regular basis. Keep school staff updated on how things progress, including providing the board of trustees with outcomes/output data.

*The launch of the national RF campaign and the programme could have been better timed.* The national campaign came after the launch of Mana Kidz and as such, sore throats and RF were new conversations at the beginning of the Mana Kidz programme with family/whaanau and school staff, without the added benefit of the national campaign.

# 5 Conclusions

Evaluation evidence from a range of sources – including programme data and feedback from parents/whaanau, school staff and Mana Kidz teams – consistently indicates that Mana Kidz is an important and effective programme that is making a substantial contribution to health outcomes for vulnerable children.

For many low income families, who struggle to afford the costs and/or time off work to visit a GP or pick up medicines, access to primary health care at school makes a significant difference to their children's health. Mana Kidz is improving awareness, knowledge and healthy behaviours in relation to sore throats and skin infections. It is also addressing a range of other needs in the community.

Mana Kidz teams are engaging effectively with school communities including children, parents/whaanau and school staff, and there are emergent indications that this is beneficial not only in terms of direct access to primary health care for immediate health issues, but also increasing children's and families' future propensity to access primary care services. There are high levels of stakeholder satisfaction with the programme from parents/whaanau, children, teachers, provider staff and management.

It is early in the programme to be assessing changes in the prevalence of GAS and skin infections, and too soon to look at ARF and skin infection hospitalisation rates for the schools where the programme has been implemented. Early indications are consistent with (but do not prove) the programme having its intended effects. In particular, early evidence from ongoing cross-sectional studies shows a marked statistically significant reduction in the prevalence of pharyngeal GAS from 2013 to 2014. More time is needed to evaluate the impact of Mana Kidz on skin infection prevalence and hospitalisation rates for ARF and skin infections.

Overall, Mana Kidz represents good value for money bearing in mind its performance relative to the level of resourcing, its contribution to reducing health disparities and early indications of its possible health impacts. Despite investment in the programme being lower than required to implement the piloted service model, the programme has maintained the recommended, evidence-informed, five days per week class checks, throat swabbing and assessment of skin infections. However, Mana Kidz teams in many schools have struggled to meet their targets for case finding twice per term.

Mana Kidz is well aligned with, and contributes to the Triple Aim of improved population health, improved patient and family/whaanau experience of care, and making the best use of population-based funding. It is also well aligned with the Government's strategic direction toward intervening early to prevent long-term conditions and unnecessary hospitalisation, and better integrating services within health and across

the social sector, as articulated in the 2014 Briefing to the Incoming Minister of Health.

The weight of available evidence indicates that the investment in Mana Kidz is worth continuing and that its impacts should be re-evaluated in late 2015 and late 2016.

Success factors, challenges and transferrable learning from the Mana Kidz programme are detailed in the evaluation findings. Key opportunities for improvement include:

- Consider the relative prioritisation of case finding twice per term and swabbing of self-reported cases
- Ensure providers have sufficient flexibility to reallocate FTE resources between schools based on needs
- Redevelop programme resources to cater for families/whaanau with low levels of literacy or English as a second language
- Streamline processes for collection and collation of programme data from providers
- Collect data on all of the health needs identified and actioned by Mana Kidz teams
- Make skin assessments available to wider family/whaanau, especially preschoolers
- Improve the integration of Mana Kidz within existing whole-school approaches to health promotion
- Link Mana Kidz more systematically with mutually reinforcing organisations and initiatives such as Health Promoting Schools, Fruit in Schools, breakfast programmes, and organisations donating needed items such as toothbrushes, shoes, that support health
- Provide resources for additional supports to address financial barriers such as washing machines in schools
- Further consideration to exploring the needs of the 123 non Mana Kidz schools (including 5 schools identified as carrying a high burden of ARF historically by the scoring system but not included in the original rollout as not in identified geographic clusters) and the model of the Public Health Nursing service that would be most appropriate to meet needs in these schools
- Further investment to leverage the Mana Kidz model for early intervention across a range of high priority primary health care needs

- Improve referral pathways and communications between Mana Kidz and key community services to which they refer children.

# Appendix A: Evaluative Criteria

Evaluative criteria provide a transparent basis for making evaluative judgements to address the KEQs. It is good evaluation practice to identify explicit criteria to guide evaluative judgments (Davidson, 2005). This approach also facilitates efficient evaluation processes and focused, concise evaluative reports (King, McKegg, Oakden & Wehipeihana, 2013).

Rubrics were used to address Key Evaluation Questions 1-3:

- KEQ 1: How well have we delivered the programme?
- KEQ 2: To what extent and in what ways are we achieving the intended outcomes?
- KEQ 3: To what extent and in what ways does the intervention represent value for money?

KEQ 4 (What can be learned about the effectiveness of this model?) builds on the findings from KEQs 1-3. This question was addressed by identifying and discussing:

- Success factors
- Challenges
- Opportunities for improvement
- Implementation lessons
- Principles of practice that may be appropriate to other settings.

Additionally, CMDHB sought to understand the impact of the programme on health services delivered in other schools, where the Public Health Nursing service was withdrawn. This was explored through a survey of principals of schools that no longer have a PHN service.

## KEQ1: How well have we delivered the programme?

Table 8 sets out an evaluative rubric for KEQ1. The rubric cross-references Ministry of Health and National Hauora Coalition performance targets for the programme, and these are detailed in Tables 9 and 10.

Table 8: Rubric for KEQ1 (programme delivery)

| The delivery of the programme will be judged… | If the following criteria are met… Consents | Performance targets and fidelity to model | Engagement | Health promotion | Service integration |
|---|---|---|---|---|---|
| **Highly effective**<br><br>(includes all criteria for consolidating effectiveness) | 95% of eligible children are consented into the programme.[28] | 95% of those eligible for treatment for GAS complete a course of effective treatment.<br><br>95% of those eligible for treatment for skin infections complete a course of effective treatment. | Clinics successfully engage children and families/whaanau in culturally meaningful ways. Parents and children in the school community have positive, trusting relationships with school Mana Kidz staff. | The vast majority of participating schools are Health Promoting Schools *and/or* a whole-school approach to health promotion/ education is evident, e.g., relevant health and wellbeing topics are integrated into the school curriculum; schools implementing or planning to implement the new HPS RF guidelines and skin kit.[29] | The school-based programme contributes to service integration by raising family/ whaanau awareness of primary health care and social service agencies in the community and linking them to those services.[30] |
| **Consolidating effectiveness**<br><br>(includes all criteria for developing effectiveness) | 90% of eligible children are consented into the programme. | 90% of those eligible for treatment for GAS complete a course of effective treatment.<br><br>90% of those eligible | Children and families/whaanau provide positive feedback about their experiences and satisfaction with the | The vast majority[31] of participating schools are collaborating with the Mana Kidz provider teams to actively promote knowledge | Mana Kidz providers, in partnership with school health team have established positive relationships with local primary care and social |

[28] The consent follows the child
[29] Potential case studies include (but are not limited to) Nga Iwi School, Dawson Primary School and Papakura Normal Primary School.
[30] The Turuki Health Care / Nga Iwi School relationship was identified as an exemplar for a strong provider relationship with the school community.
[31] "Vast majority" means usually three quarters or more.

| | | | | | |
|---|---|---|---|---|---|
| | | for treatment for skin infections complete a course of effective treatment. | clinics in the vast majority of cases. | and awareness. | service agencies. |
| **Developing effectiveness**<br><br>(includes all minimum expectations) | 85% of eligible children are consented into the programme. | Ministry of Health and National Hauora Coalition performance targets for throat swabbing are consistently met (see Table 9).<br><br>80% of those eligible for treatment for GAS complete a course of effective treatment.<br><br>Performance expectations for skin assessments are consistently met (see Table 10).<br><br>80% of those eligible for treatment for skin infections complete a course of effective treatment. | Children and families/whaanau are generally knowledgeable about, and recognize the value of the school clinics. | At least 50% of participating schools are collaborating with the Mana Kidz provider teams to actively promote knowledge and awareness. | Mana Kidz providers, in partnership with school health team are working to build positive relationships with local primary health care and social service agencies. |
| **Minimum expectations** | 80% of eligible children are consented into the programme. | Ministry of Health and National Hauora Coalition performance targets for throat swabbing are generally met, allowing for | Children and families/whaanau are generally aware of the school clinics and know when and how to access their services. | Appropriate information on sore throat management, RF prevention and skin infections is delivered to parents and children | Mana Kidz providers, in partnership with school health team, are actively working to link school communities with local primary |

| | | | | | |
|---|---|---|---|---|---|
| | | reasonable exceptions (see Table 9).<br><br>70% of those eligible for treatment for GAS complete a course of effective treatment.<br><br>Performance expectations for skin assessments are generally met, allowing for reasonable exceptions (see Table 10).<br><br>70% of those eligible for treatment for skin infections complete a course of effective treatment.<br><br>Household tracing, case finding (2x per term) and skin treatment are occurring in accordance with the model in all schools. | Feedback indicates that the services are culturally acceptable. | in the school communities. | health care and social service agencies. |
| **Ineffective** | Minimum expectations not met. | Minimum expectations not met. | Minimum expectations not met. | Minimum expectations not met. | Minimum expectations not met. |

Table 9: Performance targets for school based RF clinics

| Contract | Targets |
|---|---|
| Ministry of Health contract with National Hauora Coalition | • 100% of sore throats where GAS is likely, are swabbed within five days of symptoms<br>• 95% of laboratory test results are received within two business days<br>• 95% of people with a positive swab result commence treatment within four business days of their swab<br>• All schools listed in the service coverage section of the contract, are enrolled in the rheumatic fever prevention programme[32]<br>• Demonstration of 100% of relevant school staff being engaged in the advocacy and support process<br>• 100% of children swabbed have a consent form, or guardian present (with documented evidence to support this)<br>• 100% of all eligible household contacts are offered throat swabbing<br>• 95% of laboratory test results are received within two business days<br>• 95% of people with a positive swab result commence treatment within four business days of their swab |
| National Hauora Coalition contracts with providers | • 97% of school days are serviced<br>• 100% of children have daily access to throat swabbing via class checks<br>• 97% of eligible households/families (3 episodes GAS+) receive home visit (or contact) |

Table 10: Performance expectations for skin & other interventions

| Expectations defined for evaluation purposes |
|---|
| • 100% of identified skin infections are given appropriate treatment<br>• 95% of people with acute skin infections commence treatment within two business days of their assessment<br>• 100% of children treated have a consent form, or guardian present (with documented evidence to support this)<br>• 100% of children have daily access to skin assessments via class checks<br>• (The number of home visits for an acute skin infection will also me measured, but will not be evaluated, i.e., there is currently no target for the % who will benefit from this). |

## KEQ2: To what extent and in what ways are we achieving the intended outcomes?

Table 11 sets out a rubric for programme outcomes. Bearing in mind that this evaluation was completed in 2014 (too soon to measure the longer term intended outcomes of the programme), the rubric outlines two sets of expectations, for mid-2014 and end-2016 respectively.

[32] There are three outstanding primary (Year 1-8) schools which would qualify for the full service based on the scoring system. This may put the programme at risk due to the infectious nature of GAS.

Table 11: Rubric for KEQ2 (programme outcomes)[33]

| The delivery of the programme will be judged… | If the following criteria are met… Hospitalisations – skin infections | Prevalence of GAS and skin infections; Incidence of ARF | Access to primary health care | Health literacy |
|---|---|---|---|---|
| **Highly effective**<br><br>(includes all criteria for consolidating effectiveness) | By mid-2014: 50% reduction in hospitalization rate in children from schools with the intervention compared to the rates expected from their pre-intervention rates.[34] | By mid-2014: 40% reduction in GAS load and skin infections.<br><br>By end-2016: 50% reduction in the ARF rate. | A significant[35] increase in unmet needs being identified in school clinics.[36] | Improved health literacy leads to significantly[35] greater levels of adherence to treatment than seen previously and increased use of drop-in clinics. |
| **Consolidating effectiveness**<br><br>(includes all criteria for developing effectiveness) | By mid-2014: 40% reduction in hospitalization rate in children from schools with the intervention compared to the rates expected from their pre-intervention rates. | By mid-2014: 30% reduction in GAS load and skin infections.<br><br>By end-2016: 40% reduction in the ARF rate. | Families/whaanau are more likely to present to their GP or school health team where appropriate for any health problem – and this includes families who may not have previously engaged effectively with health services.[37] | Improved health literacy leads to any improvement in adherence to treatment and/or increased use of drop-in clinics. |

[33] In addition to addressing the criteria set out in the rubric, further analysis will be investigated including description of improvements in educational attendance and achievement, and reductions in other serious sequalae related to relevant health issues apart from RF and skin infections.
[34] "Hospitalisation rate" refers to relevant inpatient admissions per 1,000 Maaori and Pacific Year 1-8 children in the participating schools, where a clinic has been in operation for at least six months.
[35] In this rubric, "significant" means practically significant, not just statistically significant.
[36] This can be quantified through pre-post comparison of school nurse case data.
[37] This will be indicated by survey data, focus group feedback and case studies.

| | | | | |
|---|---|---|---|---|
| **Developing effectiveness**<br><br>(includes all minimum expectations) | By mid-2014: 30% reduction in hospitalization rate in children from schools with the intervention compared to the rates expected from their pre-intervention rates. | By mid-2014: 20% reduction in GAS load and skin infections.<br><br>By end-2016: 30% reduction in the ARF rate. | Participation by students, families/whaanau and school community increases with the increased presence and availability of school RNs and health teams. | Improving family/whaanau and child *health literacy* about sore throats, RF prevention and skin infections is evident. |
| **Minimum expectations** | By mid-2014: any reduction in hospitalization rate in children from schools with the intervention compared to the rates expected from their pre-intervention rates. | By mid-2014: Any significant[38] reduction in GAS load and skin infections.<br><br>By end-2016: 30% reduction in the ARF rate.[39] | (The increased presence of school RNs and health teams is itself an increase in access to primary health care). | Improving family/whaanau and child *awareness* about sore throats, RF prevention and skin infections is evident. |
| **Ineffective** | Minimum expectations not met. | Minimum expectations not met. | Minimum expectations not met. | Minimum expectations not met. |

[38] In this rubric, "significant" means practically significant, not just statistically significant.
[39] ARF rate based on the Auckland Regional Rheumatic Fever Register.

## KEQ3: To what extent and in what ways does the intervention represent value for money?

Table 12 sets out an evaluative rubric for value for money.

Table 12: Rubric for KEQ3 (value for money)

| Criteria | Description |
|---|---|
| Resourcing | The programme is adequately resourced to enable implementation in accordance with the intended model. |
| Economical use of funds | Programme funds are used economically to cover the planned staffing, infrastructure and activities, within budget.<br>The programme is delivered at a reasonable cost per eligible child. |
| Equity | The programme demonstrably contributes to reducing health inequalities and improvements in the wellbeing of families/whaanau, particularly in Maaori and Pasifika communities. |
| Cost-utility (if feasible) | Comparison of actual programme costs and outputs with previous published analysis indicates that the programme is delivered at a reasonable cost per quality-adjusted life year gained.[40] |
| Reduction in preventable health care burden and costs | Early results from the programme (as at mid-2014) indicate a credible prospect that resources invested in the programme will contribute to reduction in the long-term burden associated with preventable hospitalisations and reduced necessary health expenditure downstream. |
| Wider benefits for children | There is evidence of wider benefits for children's education and development resulting from improved health and wellbeing (e.g., through improved attendance and engagement at school).[41] |
| **VFM judgment** | **Description** |
| Excellent VFM | Clear evidence of criterion being met |
| Good VFM | Criterion met with no significant issues or problems, but some room for improvement |
| Acceptable VFM | On balance, criterion is met but there is significant room for improvement |
| Poor VFM | Criterion not met; significant issues or problems |

[40] Milne et al (2011) undertook a prospective cost-utility analysis of a school intervention to reduce the risk of rheumatic fever. The study estimated that school sore throat clinics would cost about $60,000 per QALY gained, $190,000 per ARF case averted, or $2 million per death averted.

[41] This is quantifiable from school RN data.

# Appendix B: Performance monitoring data

Data predominantly reports on outputs rather than performance targets and fidelity to the model. Some targets are monitored via audits; others are accounted for by the model of care (but with no data evidence). Currently audit forms are completed on a paper basis only. It would require a manual exercise to compile the data and NHC could not justify the resource required to undertake this at the time of the evaluation. NHC is confident that the model is being followed to a high level of fidelity and agreed that more explicit data should be collected to demonstrate this. The audit form has been through several improvement cycles and is now ready to move to an electronic basis which will facilitate data analysis in the future.

## Programme outputs

Mana Kidz now visits 991 classrooms each day (during term time) across the 61 schools. Between February 2013 and September 2014, the Mana Kidz programme completed:

- 191,423 throat swabs, of which 20,696 (10.8%) tested positive for GAS and 20,176 were treated
- 17,593 skin infections treated
- 4,178 school health referrals actioned (e.g., for notifications of abuse, oral, hearing, vision, headlice, housing needs, nutrition, immunisation, mental health and other needs).

The following paragraphs provide additional detail on the level of Mana Kidz programme activity.

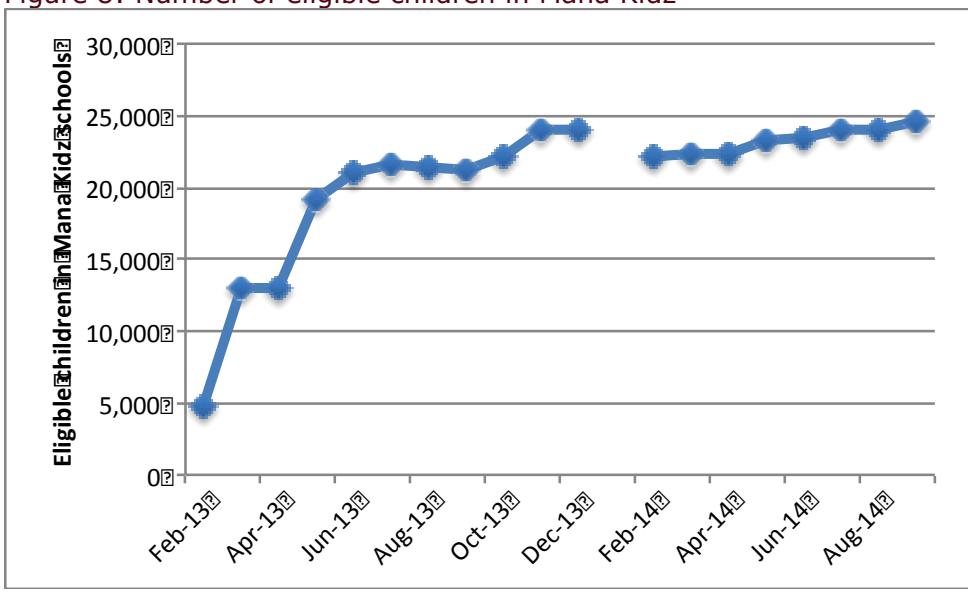
### *Number of eligible children*

The Mana Kidz programme was implemented in four stages:

- Otara: October 2012
- Mangere: February-March 2013
- Manurewa: May-June 2013
- Papakura: October 2013.

Figure 8 shows the number of eligible children each month and demonstrates the growth in the programme during 2013 during its progressive rollout. The more gradual growth in 2014 reflects roll growth in the schools during the year plus the addition of two further schools part way through the year.

Figure 8: Number of eligible children in Mana Kidz

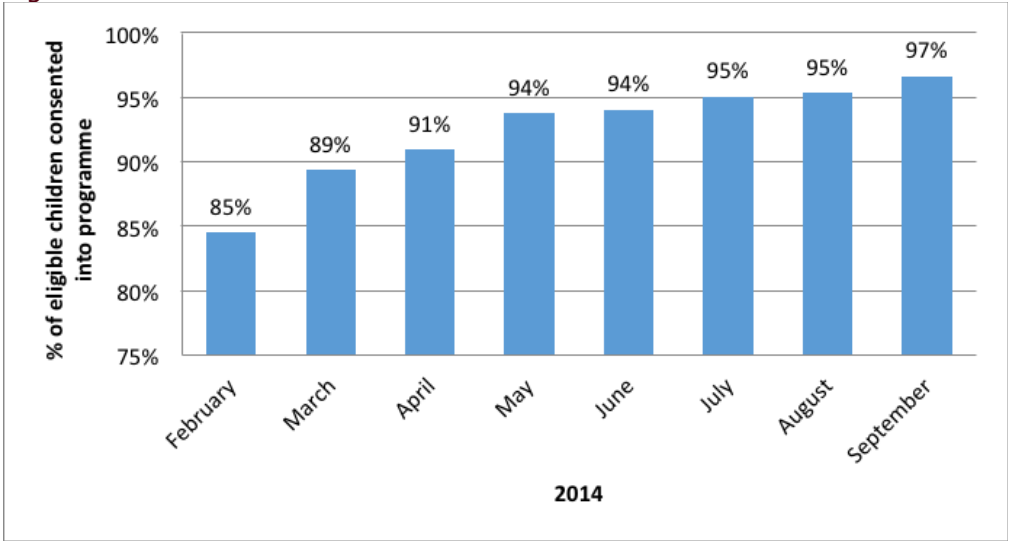



*Source: National Hauora Coalition*

## *Consents*

The programme has been in a ramping up phase throughout implementation in 2013 and with increasing consents through 2014. The consent rate reached 97% in September 2014 (Figure 9). At that time, 56 of 61 schools (92%) had consent rates over 90%.

Figure 9: Consent rate 2014



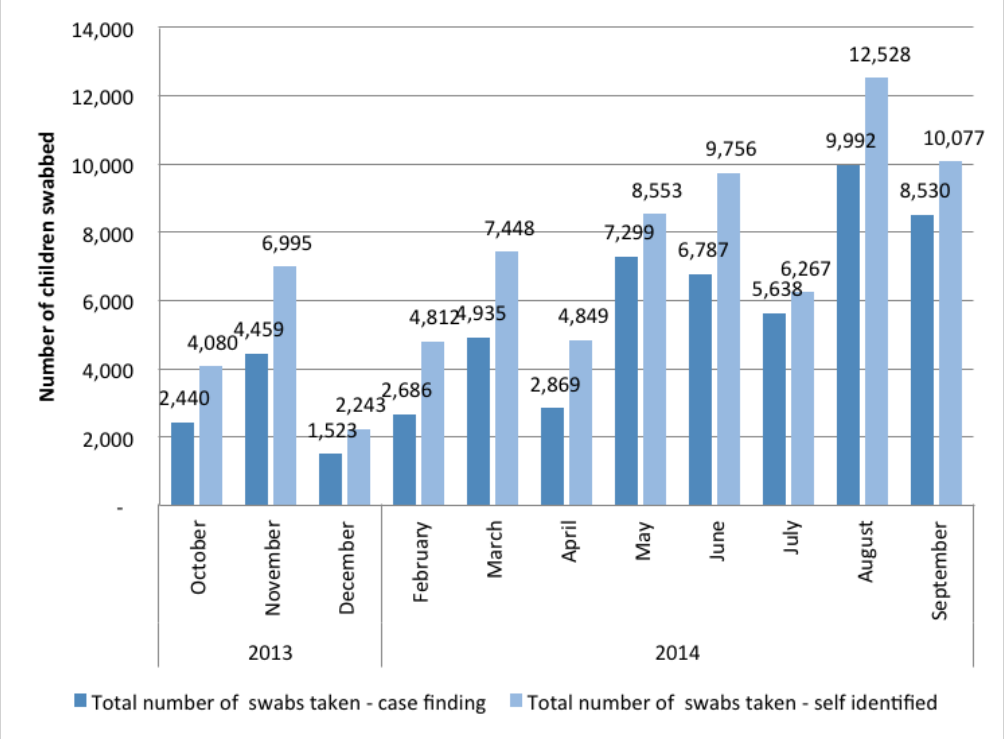

*Source: National Hauora Coalition*

## *Throat swabs*

Figure 10 shows numbers of swabs taken via self-identification (in daily class checks) and through case finding (twice per term). It demonstrates

that both case finding and self-identification make an important contribution to the overall number of swabs taken.

Figure 10: Mana Kidz programme – throat swabs by month and source

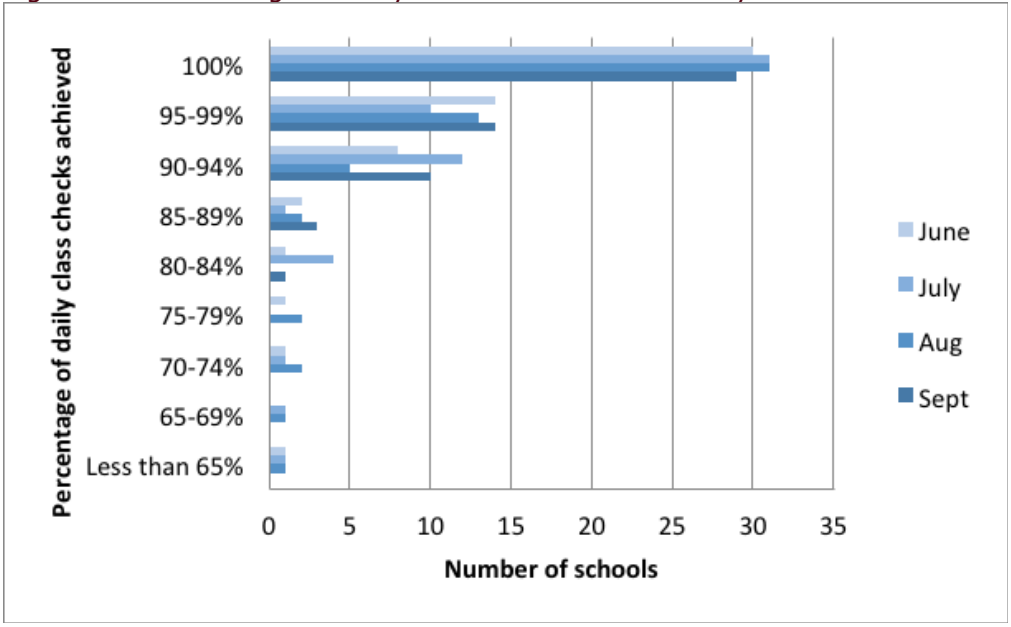



*Source: National Hauora Coalition*

## *Daily class checks*

Figure 11 shows the percentage of daily class checks achieved by number of schools during June-September 2014. For example, in September, 29 schools had 100% of their classrooms visited on a daily basis. The graph shows that the vast majority of schools are completing the vast majority of classroom checks.

Figure 11: Percentage of daily class checks achieved by number of schools



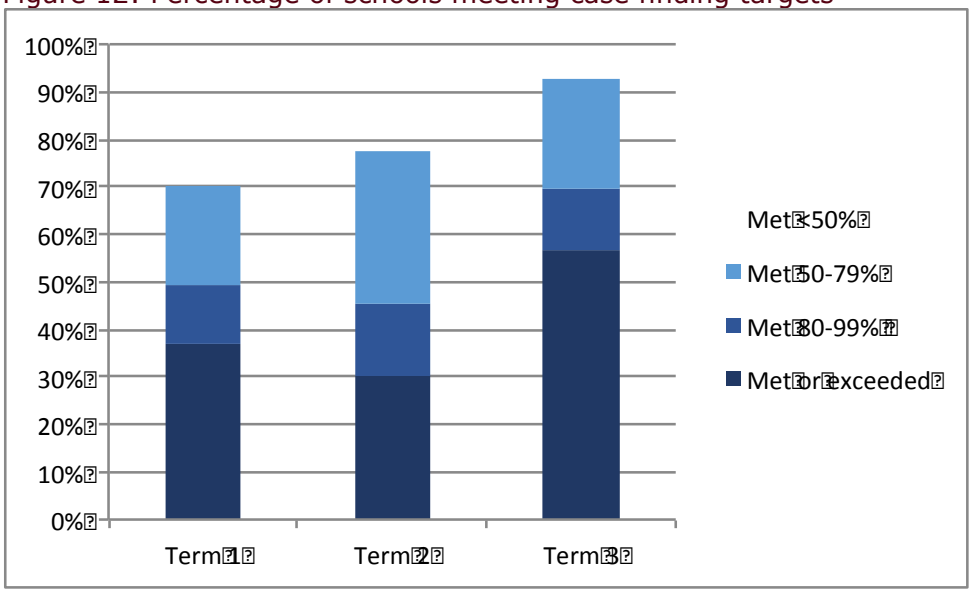

*Source: National Hauora Coalition*

## *Case finding*

Available data for Terms 1-3, 2014, shows that Mana Kidz teams in many schools are not meeting their targets for case finding twice per term. However, the number of schools where targets were met increased in Term 3. As shown in Figure 12, in Term 3, 30 out of 53 schools (57%) met or exceeded their target for case finding while 13% completed 80-99% of case finding checks, 23% completed 50-79% and 8% completed less than 50%.

This accords with provider interview feedback that keeping up with case finding is not always possible at the current resourcing level with self-identification being used as the priority method. However, it needs to be noted that this data has some acknowledged accuracy issues due to provider reporting discrepancies.

Figure 12: Percentage of schools meeting case finding targets

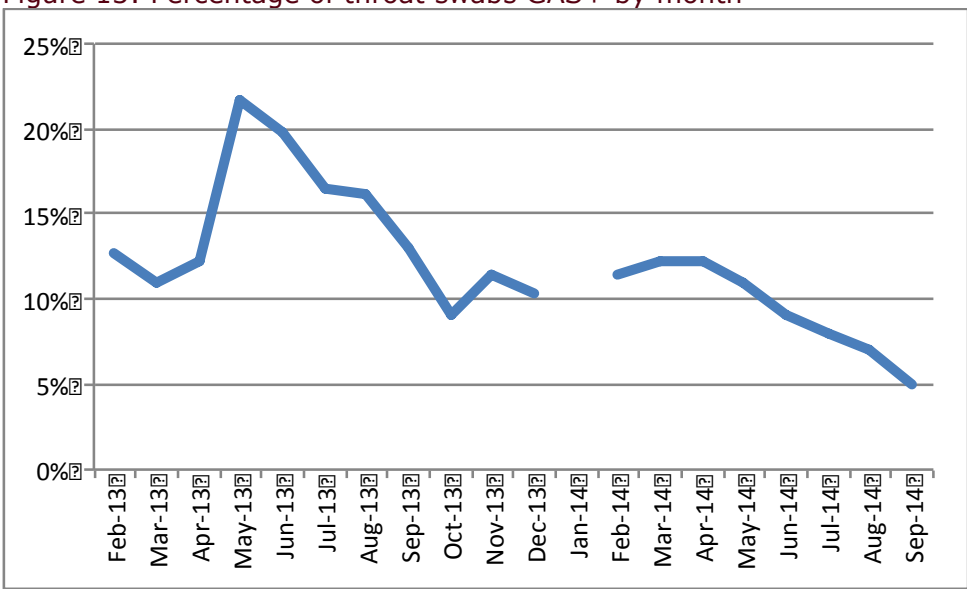



*Source: National Hauora Coalition*

### *Positive throat swabs*

Figure 13 summarises the percentage of throat swabs that tested positive for Group A Streptococcus each month. The GAS+ rate initially exceeded expectations with high incidence of GAS+ throat swabs especially through winter 2013, exceeding 20% (compared to 13% in the Wiri Central School pilot). The fall in the GAS+ rate should be interpreted with caution as the denominator was increasing throughout 2013 with the progressive rollout of Mana Kidz, and to a lesser extent throughout 2014 as consents continued to increase. Nevertheless, it does indicate that fewer GAS+ tests are occurring as a percentage of those tested.

Figure 13: Percentage of throat swabs GAS+ by month

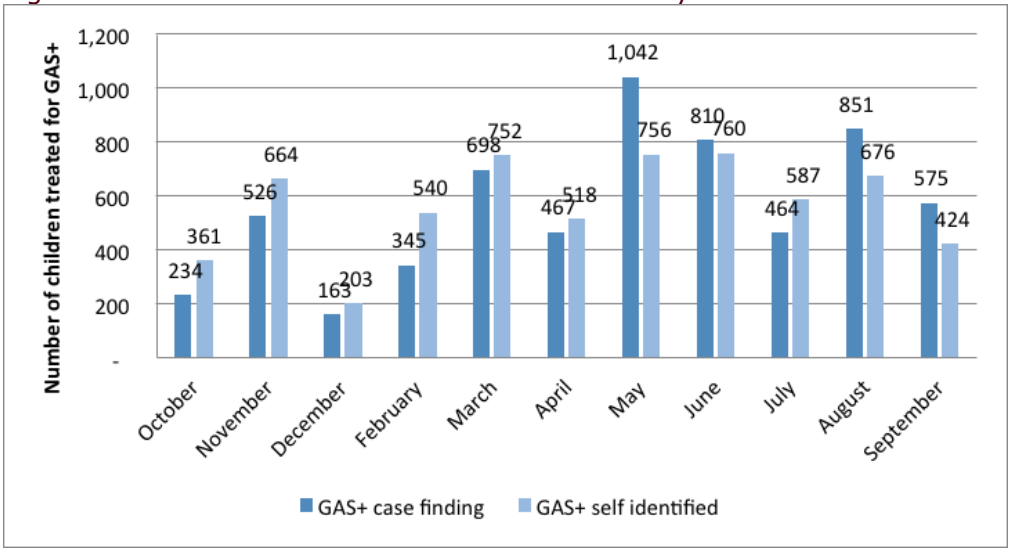



*Data Source: National Hauora Coalition*

### *Number of GAS positive swabs treated*

Numbers of GAS positive swabs treated each month (October 2013 to September 2014) are summarised in Figure 14. This graph distinguishes those identified via self-identification (in daily class checks) and through case finding (twice per term). It shows that both case finding and self-identification make an important contribution to the overall number of positive results treated.

Figure 14: Number of children treated for GAS+ by source

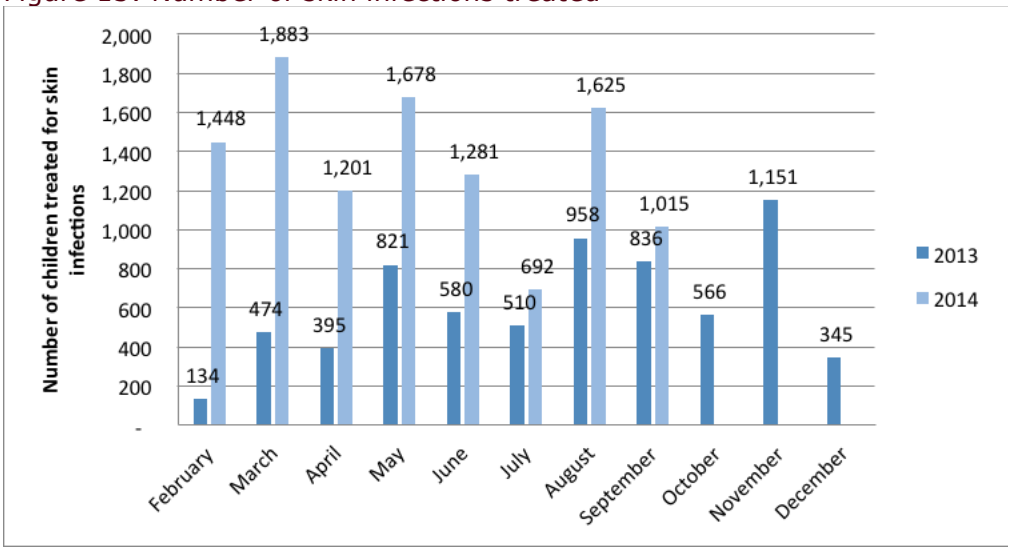



*Source: National Hauora Coalition*

### *Skin infection management*

Skin infections are a significant component of the daily operation of Mana Kidz clinics. The number and complexity of skin infection cases was greater than anticipated. Numbers of children treated for skin infections are summarised in Figure 15. In 2013, there were 23,318 presentations with skin infections requiring assessment. Of these, 6,774 were treated (the vast majority with topical cleaning and covering; if antibiotics were needed, fusidic acid (Foban) or, more rarely, Cephalexin or Flucloxicillin were used). In 2014, for the first nine months to 30 September, a total of 10,823 skin infections were treated.

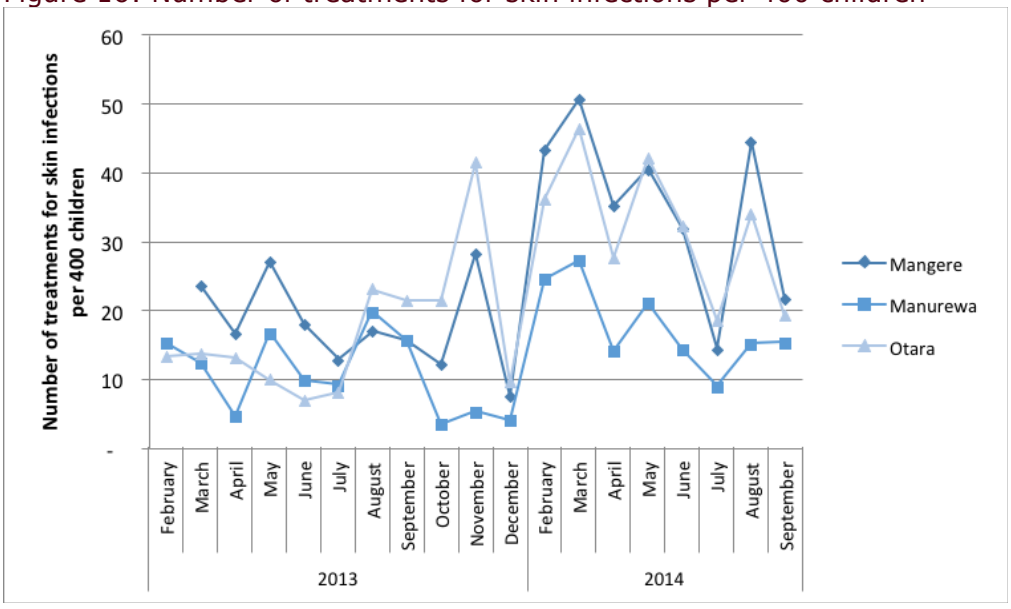
Figure 15: Number of skin infections treated




*Source: National Hauora Coalition*

Figure 16 shows the number of treatments for skin infections as a rate per 400 children, by locality. The increase in early 2014 aligns with a deliberate push to increase Mana Kidz teams' focus on skin infections as the initial hump of GAS+ throat swabs eased.

Figure 16: Number of treatments for skin infections per 400 children



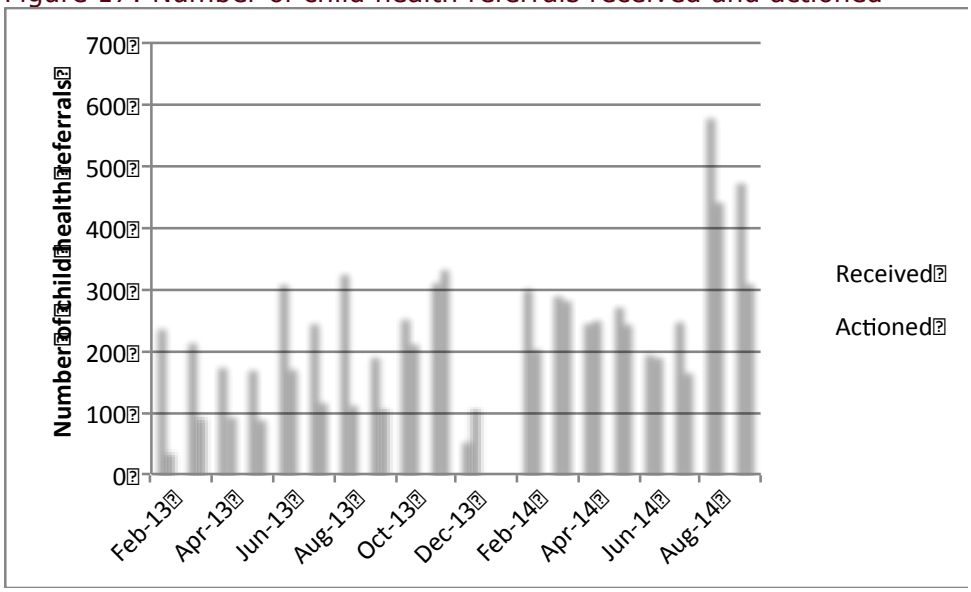

*Source: National Hauora Coalition*

## *General child health*

Another key component of Mana Kidz is the child health referral, assessment and follow up work traditionally undertaken by the PHN service. These are now undertaken by the Mana Kidz nurses in each of the

schools. In 2013, the teams received 2,537 referrals and actioned 1,527. In 2014, for the first nine months to 30 September, a total of 2,651 cases have been received and 2,130 actioned. A large number of less urgent referrals remain unactioned as a result of workforce constraints.

Figure 17: Number of child health referrals received and actioned




*Source: National Hauora Coalition*

# Appendix C: Epidemiological and hospitalization data

## Rheumatic Fever Hospitalisations

*Analysis provided by Dr Pip Anderson, Counties Manukau Health*

There is an expectation, reflected in Counties Manukau Health Annual Plan and Rheumatic Fever Prevention Plan that CM Health will, as a result of investment in Acute Rheumatic Fever (ARF) prevention, see hospitalisations for ARF /100,000 for all ages decrease by 10% annually compared to a three year rolling average. This is being calculated by the Ministry of Health as an incidence figure on the basis of ICD-10 discharge data.

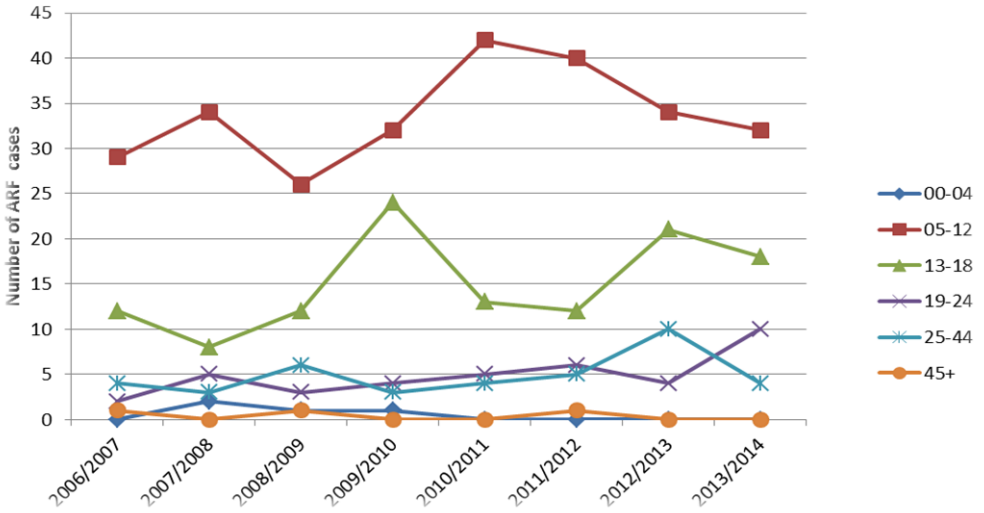
Having manually audited the Counties Manukau discharge data for the 2013/14 year there is some misclassification of ARF; both cases of ARF incorrectly coded as Rheumatic Heart disease (RHD) and RHD incorrectly coded as ARF. In addition coders are required to code for the condition being investigated even if the patient is subsequently found not to have disease. The result is people admitted for investigation for ARF, who do not have ARF after investigations, being captured by an ARF code. This is consistent with current coding rules. While the MoH recognizes that ICD discharge data overestimates ARF incidence it has been determined to use this data source for national and historical consistency.[42]

In an attempt to measure incidence of ARF the MoH have developed a methodology which excludes any ARF admissions (ICD-10 I00-I02) where that person has been admitted with any ARF diagnosis or RHD from 1988-2005 and if they were admitted more than once following this period they are only counted once. The MoH report on these data six-monthly.

The following data was extracted from a copy of the encrypted National Minimum Dataset (NMDS) held by CM Health using the same methodology as the MoH. Due to the timing of when the data was extracted the numbers may vary slightly when compared to MoH figures. If the algorithm was not applied and all admissions coded as ARF the number of admissions would be higher as repeat admissions for one individual would be included (often during the period when the diagnosis is being established) and, in addition, it would capture true recurrences which are currently being excluded. This more accurately reflects workload for clinical services.

[42] An audit by Te Aro Moxen found NMDS overestimated cases by 30% and missed ~9% of cases ARF.

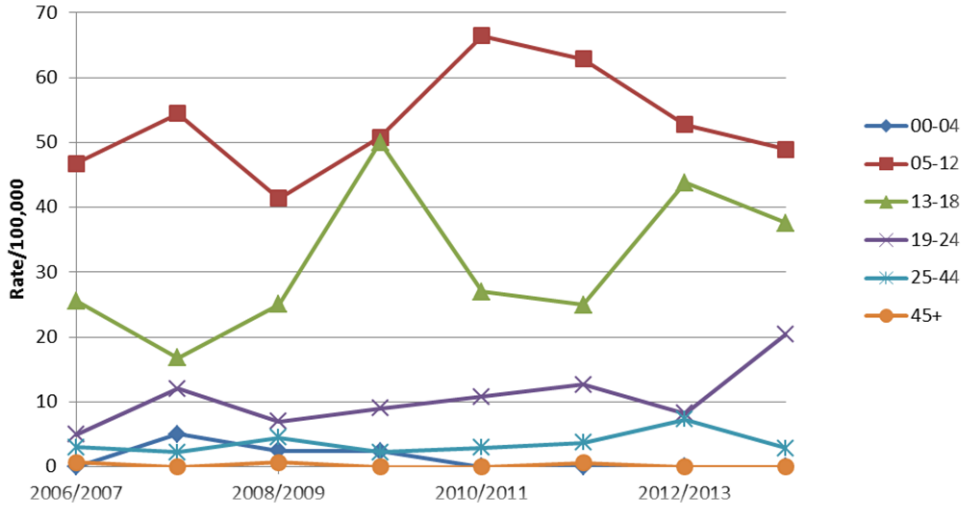
Figure 18: Number of admissions for CMDHB residents, by age group, by financial year




*Source: NMDS extracted CMDHB. ARF ICD code I00-I02. Primary diagnosis of ARF. Excludes any admissions where that person has been admitted with any ARF or chronic RHD diagnosis from 1990-2005. Discharge date used.*

Figure 19 shows the same data as above but as age adjusted rates. The highest rate is in the 5-12 year olds with rates ranging from 47/100,000 to 66/100,000 over the 8 year period shown.

Figure 19: Acute rheumatic fever rates/100,000 by age group




*Source: Numerator: NMDS extracted CM Health. ARF ICD code I00-I02. Primary diagnosis of ARF. Excludes any admissions where that person has been admitted with any ARF diagnosis from 1990-2005. Denominators: Statistics New Zealand projected population CMDHB updated 2013.*

It is well recognised that Pacific peoples have the highest rates of ARF in New Zealand followed by Maaori. The following table shows that the vast majority of ARF cases in Counties residents have occurred in Pacific and Maaori people.

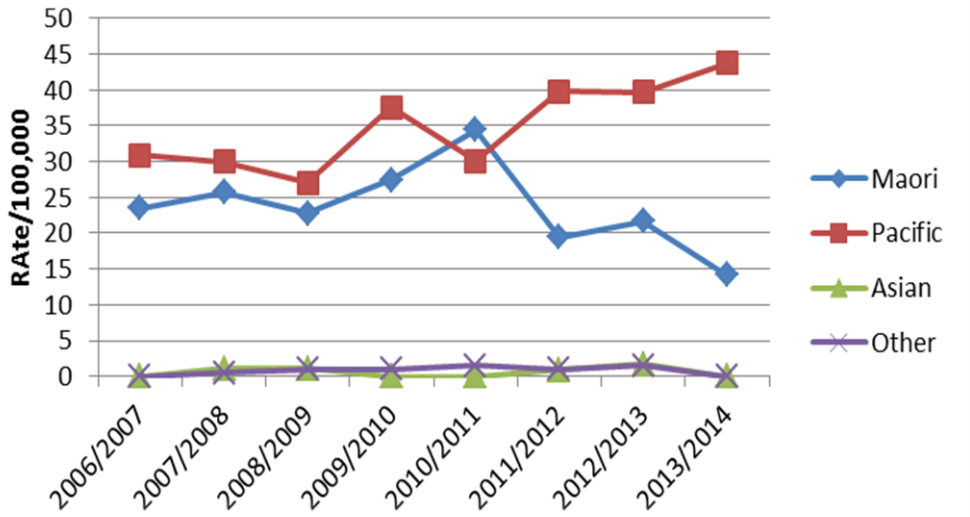
Table 13: Cases of ARF in CMDHB residents, by ethnicity

| | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 |
|---|---|---|---|---|---|---|---|---|
| Maaori | 18 | 20 | 18 | 22 | 28 | 16 | 18 | 12 |
| Pacific | 30 | 30 | 28 | 40 | 33 | 45 | 46 | 52 |
| Asian | 0 | 1 | 1 | 0 | 0 | 1 | 2 | 0 |
| Other | 0 | 1 | 2 | 2 | 3 | 2 | 3 | 0 |
| Grand Total | 48 | 52 | 49 | 64 | 64 | 64 | 69 | 64 |

*Source: NMDS extracted CM Health October2014. ARF ICD code I00-I02. Primary diagnosis of ARF. Excludes any admissions where that person has been admitted with any ARF diagnosis from 1990-2005. Discharge date used.*

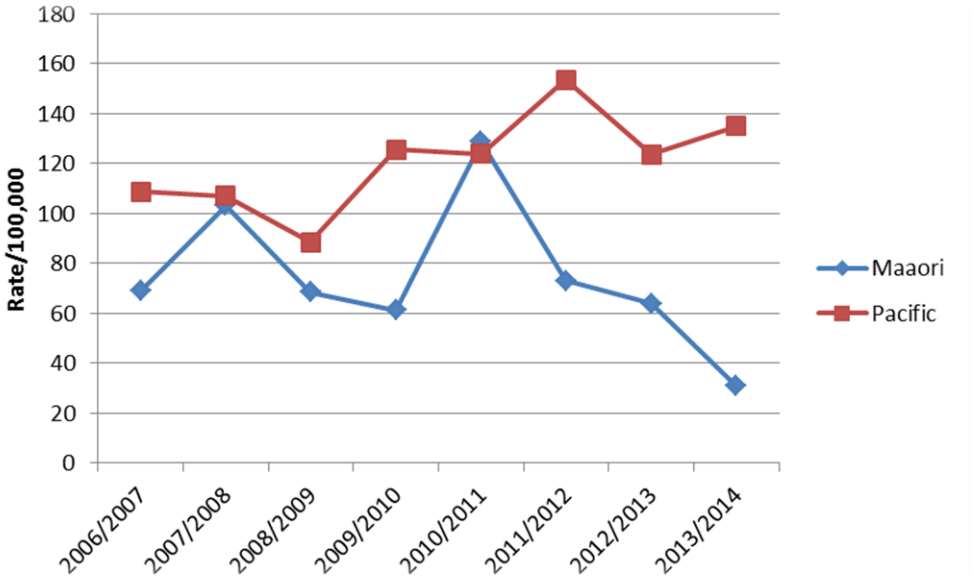
Rates of ARF in Maaori and Pacific residents of Counties Manukau are shown in Figure 20 for all ages, and for children in Figure 21. The rate of ARF in Maaori in the last 12 months was the lowest over the eight year period examined, but it is too early to determine whether this reflects a real drop in admissions or random fluctuation.

Figure 20: Admission rate/100,000, for all age CM residents, by ethnicity




*Source: Numerator: NMDS extracted CM Health. ARF ICD code I00-I02. Primary diagnosis of ARF. Excludes any admissions where that person has been admitted with any ARF diagnosis from 1990-2005. Denominators: Statistics New Zealand projected population CMDHB updated 2013.*

Figure 21: Admission rates for CM residents, 5-12 years, by ethnicity




*Source: Numerator: NMDS extracted CM Health. ARF ICD code I00-I02. Primary diagnosis of ARF. Excludes any admissions where that person has been admitted with any ARF diagnosis from 1990-2005. Denominators: Statistics New Zealand projected population CMDHB updated 2013.*

## Skin Infections

*Analysis provided by Dr Pip Anderson, CM Health*

The following analysis describes admissions for Counties Manukau residents to any DHB with a diagnosis of skin infection. The coding used was developed by O'Sullivan and Baker[43] and is consistent with the New Zealand Child and Youth Epidemiology Service data published three-yearly. These codes are different from the codes used to define ASH skin infections and cellulitis.

The data is presented in two ways. Skin infection number and rates are shown where skin infection was the primary diagnosis and therefore the main reason for hospital admission. In addition, data are also included for when skin infection was in any of the coded diagnoses. These data attempt to help understand the burden of skin infections in the population.

[43] O'Sullivan C.E, Baker M.G, Zang J 2010. Increasing hospitalisations for serious skin infections in New Zealand , 1990-2007. Epidemiology and Infection. 2011;15:1-11. Skin infection include codes - Impetigo (L010, L011); Cutaneous Abscess/Furuncle/Carbuncle (L02); Cellulitis (L03); Acute Lymphadenitis (L04); Pilonidal Cyst with Abscess (L050); Other Infections Skin/Subcutaneous Tissue (L08); Infections of Other Anatomical Sites (H000, H600, H601, H602, H603, H620, H624, J340, K610, H050, N482, N492, N499, N764 A46); Infected/Unspecified/Other Dermatitis (L303, L308, L309);Insect/Spider Bites (S1013, S1083, S1093, S2013, S2033, S2043, S2083, S3083, S3093, S4083, S5083, S6083, S7083, S8083, S9083, T0903, T1108, T1303, T1403, T633, T634,T009); Post Traumatic/Open Wound Infection (T793, T8901, T8902); Scabies (B86); Varicella with Other Complications (B018)

There were not any other major health initiatives implemented at the same time as Mana Kidz programme in Counties Manukau that could explain the decrease in skin infection hospitalisation rates. There was an initiative under the *Saving 20,000 Days Campaign* which initially focused on improving outpatient management of soft tissue infections but it was soon realised outpatient treatment through Primary Options for Acute care (POAC) was being utilised and that most skin infections referrals to hospital were appropriate. There was also a small pilot in one Otara primary care practice which focused on health literacy and improving the knowledge and skill of the practice nurses. A paediatric skin infection guideline has been developed for primary care in general practice but this has yet to be formally implemented.

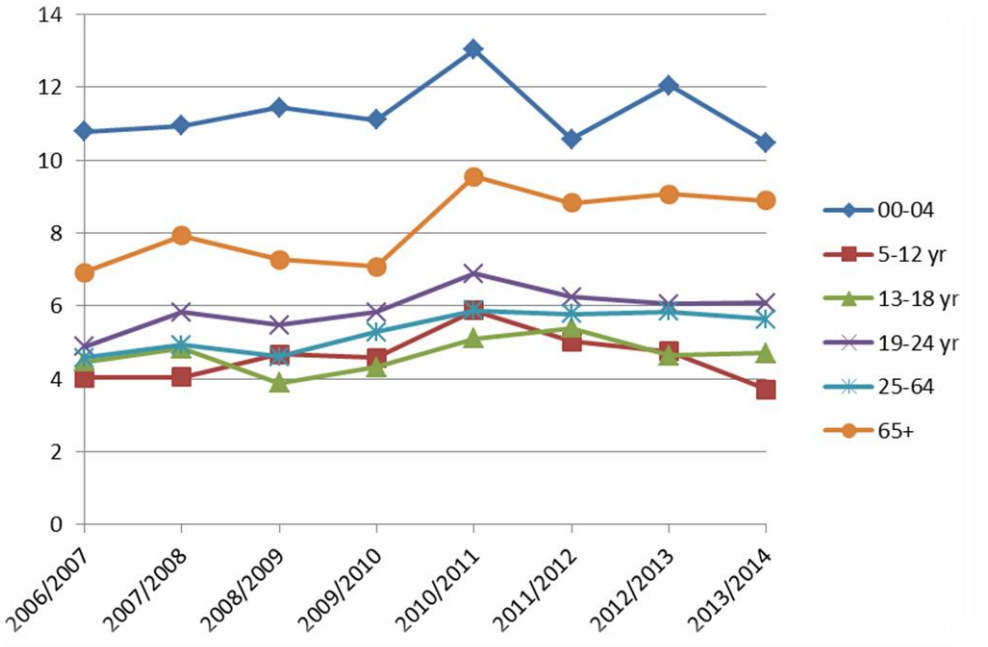
Skin infection hospitalisation rates for 5-12 year olds in northern Regional DHBs are included by way of comparison.

Table 14: Number of CM Health Residents admitted with a skin infection (primary diagnosis) by age

| | *00-04* | *05-12* | *13-18* | *19-24* | *25-64* | *65+* | *Grand Total* |
|---|---|---|---|---|---|---|---|
| 2006/2007 | 415 | 250 | 209 | 196 | 1058 | 282 | 2410 |
| 2007/2008 | 434 | 252 | 230 | 241 | 1159 | 335 | 2651 |
| 2008/2009 | 464 | 293 | 186 | 235 | 1101 | 318 | 2597 |
| 2009/2010 | 460 | 288 | 207 | 259 | 1284 | 323 | 2821 |
| 2010/2011 | 550 | 371 | 246 | 317 | 1454 | 454 | 3392 |
| 2011/2012 | 449 | 320 | 259 | 296 | 1449 | 440 | 3213 |
| 2012/2013 | 507 | 306 | 222 | 293 | 1484 | 474 | 3286 |
| 2013/2014 | 438 | 243 | 225 | 297 | 1456 | 486 | 3145 |

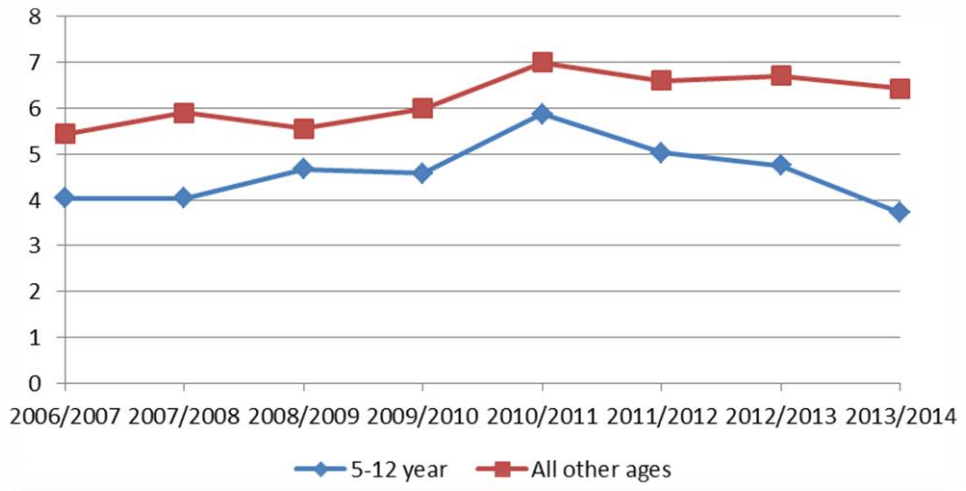
*Source: National Minimum Data Set. Extracted by Dean Papa October 2014.*

Figure 22: Admission rate/1000 for CM Health residents for skin infection (Primary diagnosis) by age



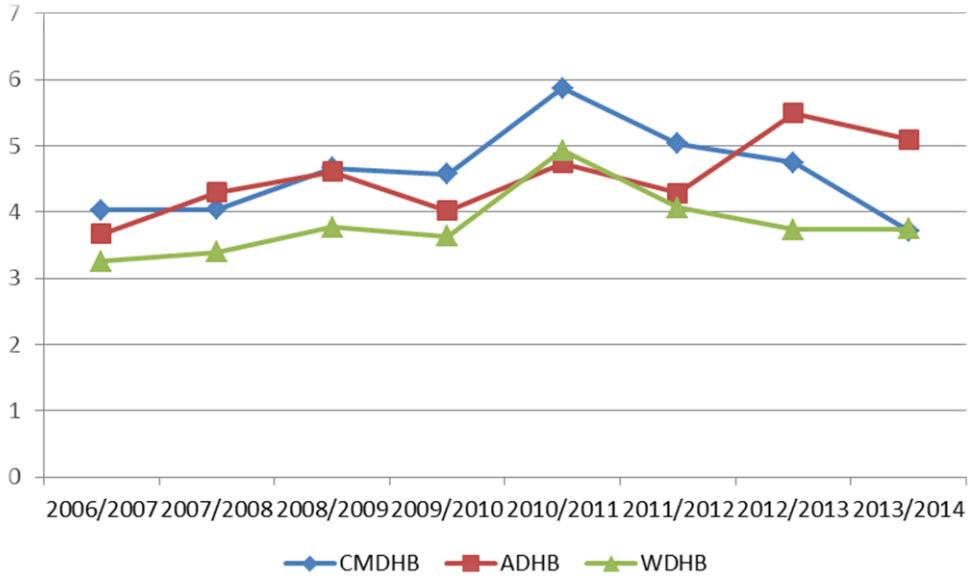

*Source: National Minimum Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013.*

Figure 23: Admission rate/1000 for CMDHB residents with skin infections (Primary diagnosis)



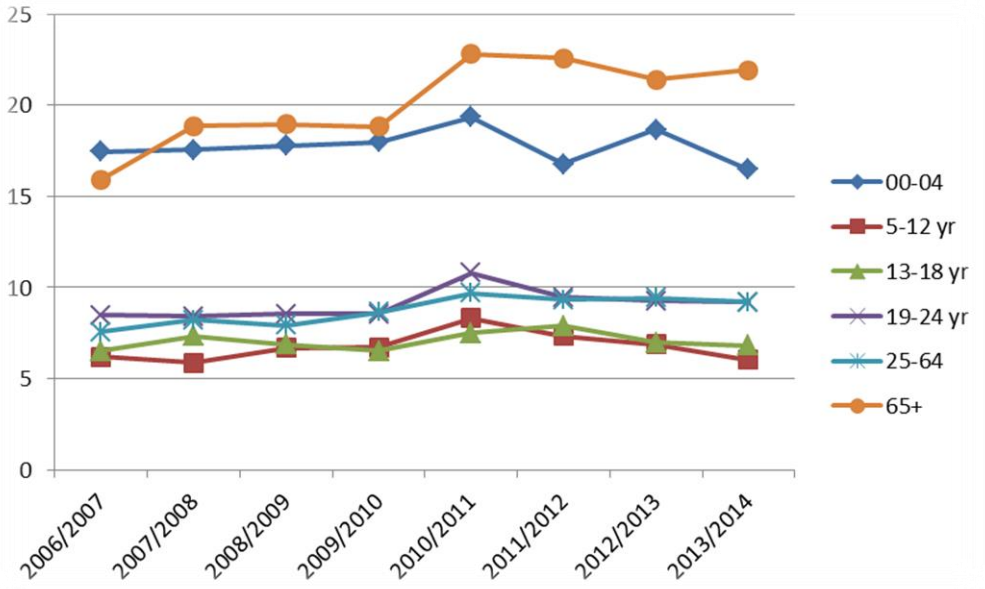

*Source: National Minimum Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013.*

Figure 24: Hospital admission/1000 by DHB of residence for 5-12 year olds, for skin infection (primary diagnosis only)



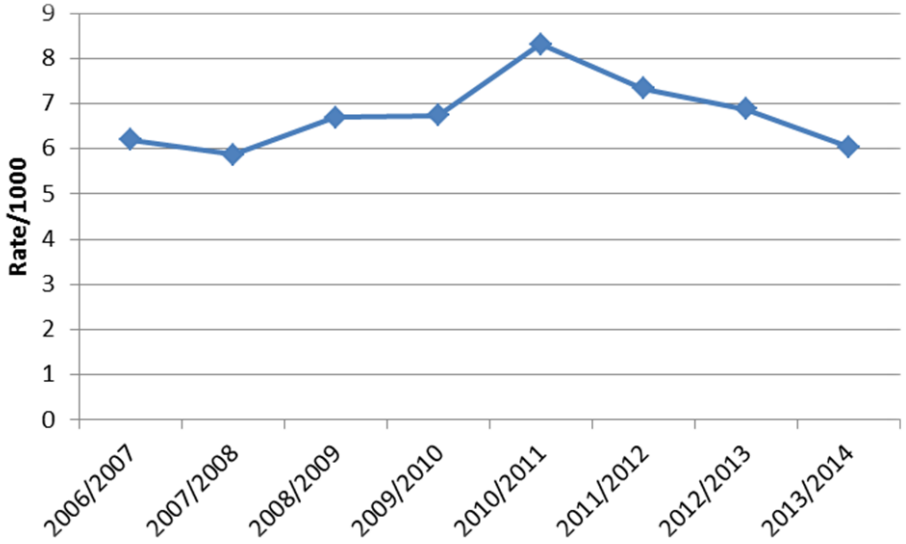

*Source: National Minimum Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013.*

Figure 25: Admissions/1000 for skin infection (any diagnosis) for CM Health residents, by age



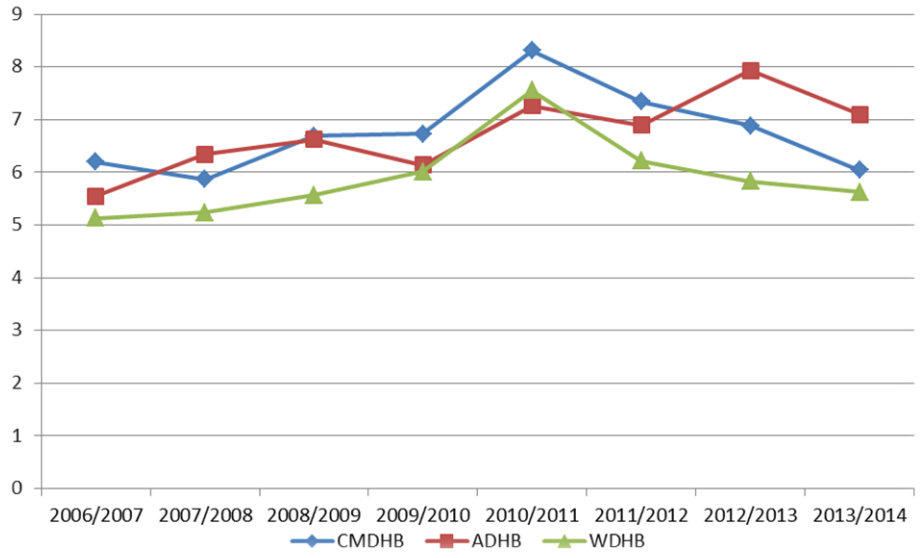

*Source: National Minimum Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013.*

Figure 26: Admissions/1000 for skin infection (any diagnosis) for CM Health residents, 5-12 year olds




*Source: National Minimum Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013*

Figure 27: Admission rate/1000 for 5-12 year olds for skin infection (any diagnosis) by DHB of residence



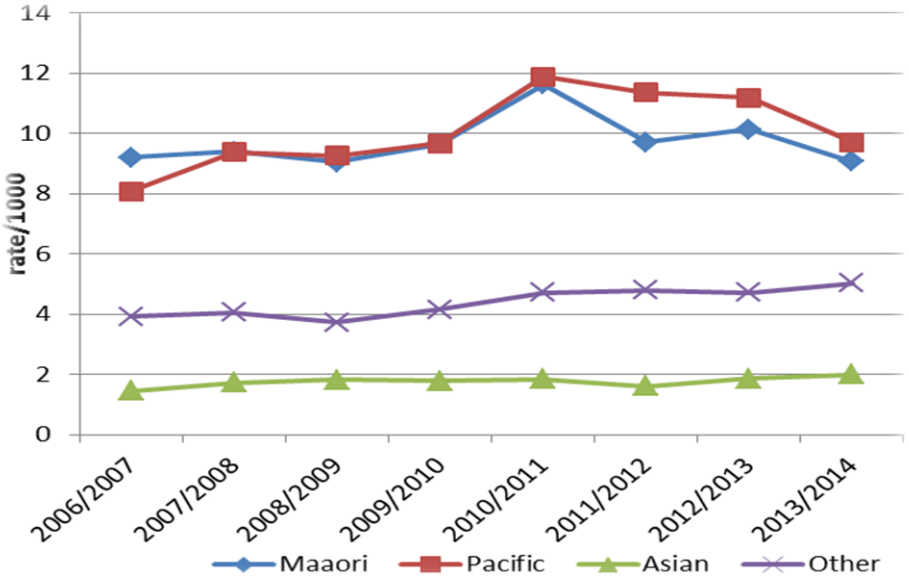

*Source: National Minimum Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013*

Table 15: Admission numbers for CM Health residents by ethnicity

| | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/214 |
|---|---|---|---|---|---|---|---|---|
| Maori | 706 | 732 | 716 | 775 | 945 | 797 | 843 | 766 |
| Pacific | 783 | 940 | 957 | 1032 | 1305 | 1285 | 1298 | 1155 |
| Asian | 118 | 149 | 167 | 173 | 189 | 173 | 210 | 236 |
| Other | 803 | 830 | 757 | 841 | 953 | 958 | 935 | 988 |
| Grand Total | 2410 | 2651 | 2597 | 2821 | 3392 | 3213 | 3286 | 3145 |

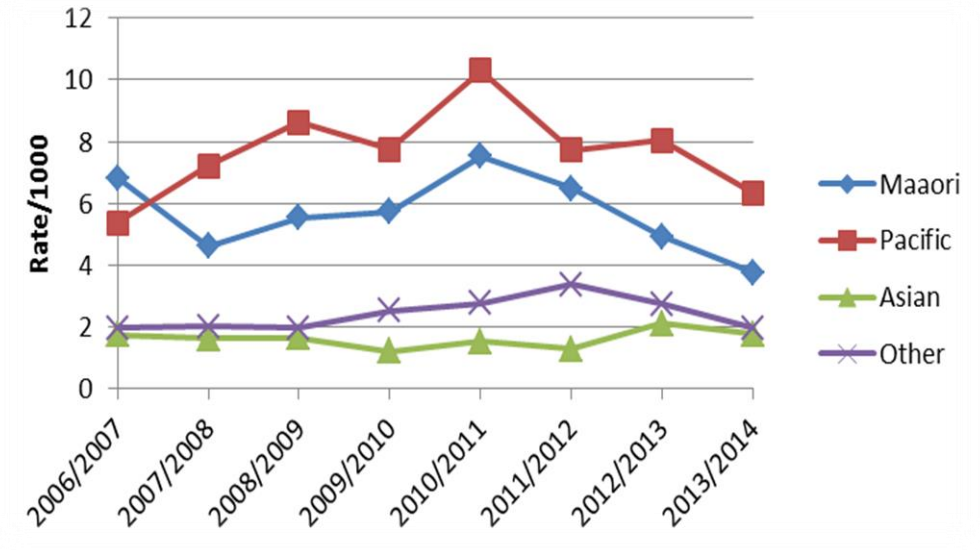
*Source: National Minimum Data Set. Extracted by Dean Papa October 2014.*

Figure 28: Admission/1000 for skin infections (primary diagnosis) for CM Health residents by ethnicity, all ages



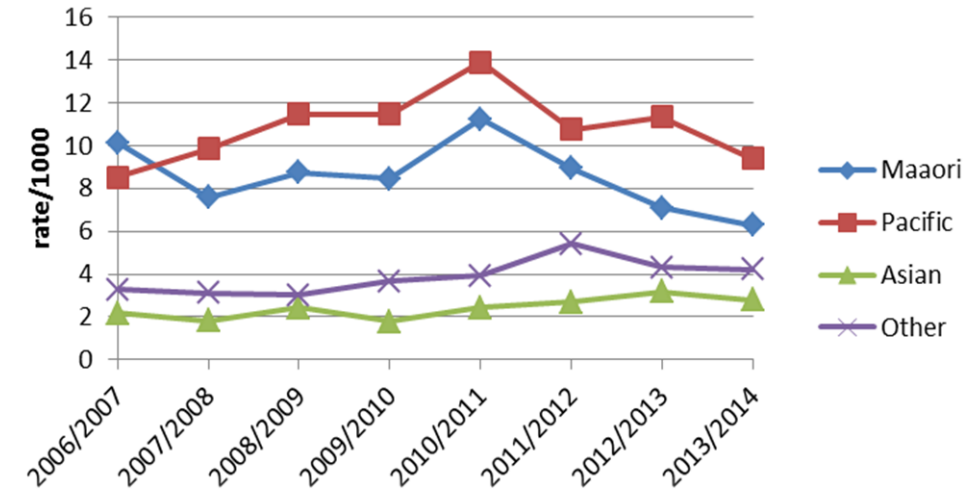

*Source: National Minimum Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013*

Figure 29: Admission/1000 for skin infection (primary diagnosis) 5-12 years, by ethnicity, 2006/07-2013/14




*Source: National Minimum Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013*

Figure 30. Admissions/1000 for skin infections (any diagnosis) 5-12 years by ethnicity, 2006/7-2013/14




Source: National Minimal Data Set. Extracted by Dean Papa October 2014. Denominator: Statistics NZ population projections 2013

## Cross-sectional studies of GAS and skin infections

*Information provided by Professor Diana Lennon, Department of Population Health, University of Auckland*

Cross-sectional studies of pharyngeal Group A Streptococci (GAS) are ongoing through the University of Auckland in CMDHB and other DHBs. Repeat cross-sectional GAS studies have been undertaken in Counties Manukau and Eastern Bay of Plenty. A study in Auckland DHB is underway as at October 2014.

Cross-sectional prevalence studies commenced in May 2013 in a study population of 1,299 year 1-8 students in three Mana Kidz schools before the start of the programme. Approximately 1 in 3 students were found to have untreated infections, either throat or skin.

### *GAS prevalence*

A preliminary analysis of changes from May 2013 (n=1,299) to May 2014 (n=1,751) in CMDHB has been performed. Raw positive pharyngeal GAS rates were 25% in 2013 and 14% in 2014. This was consistent within the three schools surveyed, with changes in rates for individual schools being 23% to 12%, 24% to 14%, and 32% to 15%.

Analysis was performed to account or school clustering, and for age and gender differences. In order to look at the change in GAS pharyngeal prevalence a generalised mixed model with a log link and binomial distribution was used with positive or negative for GAS as the outcome, age, gender and year as explanatory variables and school nested within year as a random effect.

**Results:** There was evidence of a difference in the rates of pharyngeal GAS between 2013 and 2014 (p=0.01) with the adjusted estimates of rates of 26% (95%CI 20-34%) and 14% (11-18%) for 2013 and 2014 respectively. The relative risk (95%CI) of being pharyngeal GAS positive in 2013 compared to 2014 was 1.8 (1.3-2.3).

These results are preliminary as the researchers were awaiting NHI matched to ethnicity to add to the multi-variable model at the time of writing this report.

Interpretation of this data should be cautious as there is no published literature directly linking pharyngeal GAS prevalence to RF rates. Studies in China (Lin PIDJ 2008 27:753) demonstrated reduction in classroom pharyngeal GAS with a systematic penicillin intervention and in the US armed forces (Brundage Ped 1996 97:964) reduction in GAS associated respiratory disease was observed with systematic penicillin prophylaxis of troops. The outcome measure of this study of focussed interventions to control GAS pharyngitis as the preceding trigger for RF remains ARF (study C) when such linkages may be able to be made.

### *Skin infection prevalence*

In order to look at the change in skin infection prevalence, a generalised mixed model with a log link and binomial distribution was used with positive or negative for occurrence of some skin infection as the outcome; age, gender and year as explanatory variables; and school nested within year as a random effect.

**Results:** A difference in the rates of skin infection in 2013 and 2014 could not be demonstrated (p=0.4). The adjusted estimates of rates were 19% (95%CI 10%-39%) and 14% (7%-29%) for 2013 and 2014 respectively. The relative risk (95%CI) of having a skin infection in 2013 compared to 2014 was 1.4 (0.7-2.7).

Although there was a raw 28% reduction, which if looked at naively is highly significant, once the school effect is incorporated, a difference cannot be demonstrated as the three schools were very different with Weymouth Intermediate being very high in 2013 (31%) and dropping hugely (11%) while Weymouth Primary started low (10%) and increased to 16%, and Finlayson did not change much (19% to 17%).

# Appendix D: Parent Questionnaires

In May 2013 and May 2014, parents of students attending three schools in Manurewa (Clendon Park School, Finlayson Park School and Waimahia Intermediate School [formerly Weymouth Intermediate]) were asked to complete a questionnaire to gauge their understanding of key concepts relevant to sore throats, rheumatic fever and skin infections; use of primary health care services including the school-based primary health care services; and satisfaction with the programme.

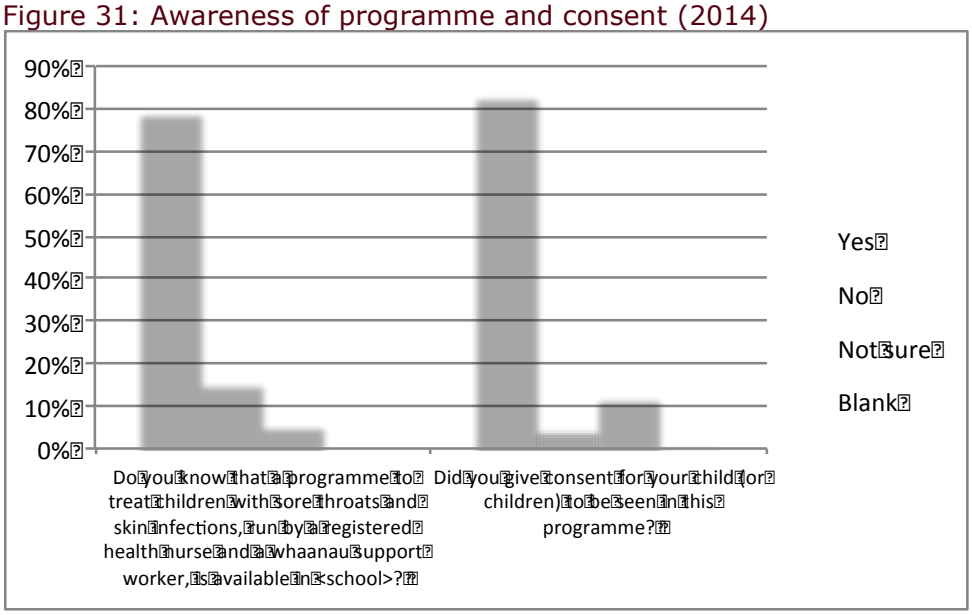
In 2013 the survey was undertaken prior to the commencement of the Mana Kidz programme in the schools. A total of 439 parents responded to the survey. In 2014 a total of 235 parents responded.

The vast majority of respondents (65%) lived in rented housing including 18% Housing NZ and 47% other (2014).

## Awareness of programme and consent

In 2014, around four-fifths of parents were aware of the programme and had given consent for their children to be seen in the programme (the stated rate of consent was slightly higher than the rate of awareness, suggesting some parents may not have understood questions; nevertheless, overall responses indicate high rates of awareness and consent among respondents). These questions were not asked in 2013 as the questionnaire was undertaken prior to the commencement of the Mana Kidz programme.

Figure 31: Awareness of programme and consent (2014)




Of the eleven people who had not consented, four were not aware of the programme or did not recall being given a consent form; two preferred to

see their own GP; three gave other reasons; and two did not give a reason.

## Use of the programme

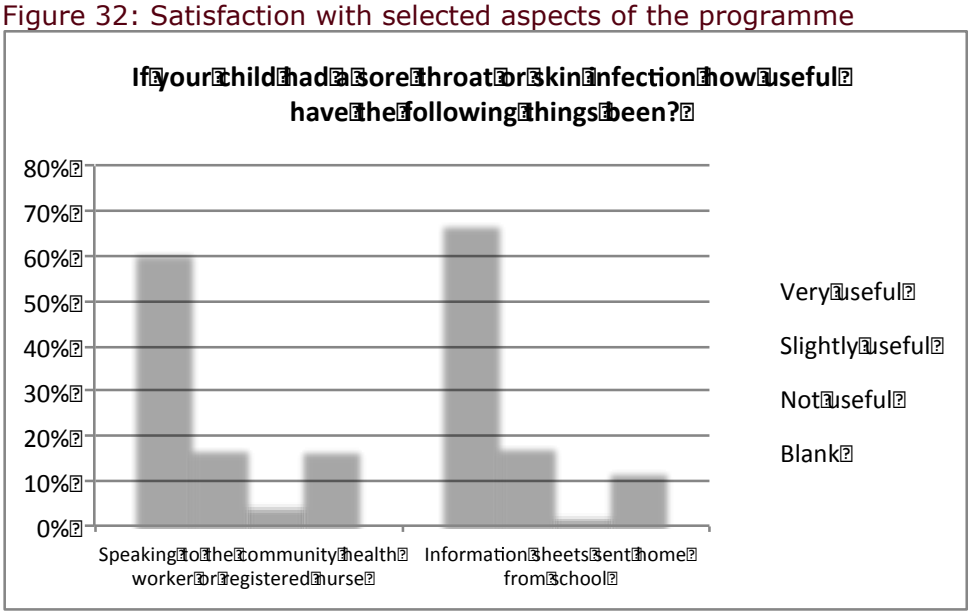
In 2014, 57% of respondents (133 parents) indicated that any of their children had had a sore throat or skin infection during the last year while a pupil of one of the survey schools.

Of these, 94% (125 parents) indicated their child had been seen by the Mana Kidz school health team (nurse or WSW) last time they had a skin infection or sore throat.

## Satisfaction with the programme

The vast majority of respondents (78%) indicated that they found speaking to the community health worker or registered nurse either very useful or slightly useful. Similarly, the vast majority (85%) were satisfied with the information sheets sent home from school (Figure 32).

Figure 32: Satisfaction with selected aspects of the programme




Free text responses to the question, 'What were the best things about the programme?' predominantly covered the following themes:

- Regular sore throat checks at school (19 respondents)
- Free/don't have to take child to doctor (14)
- Reassuring to have nurse/WSW presence at school (12)
- Teaching children/parents to take care of their health (10)

- Early detection and treatment of sore throats and skin infections (9)
- Easy, quick, accessible, home visits (7).

In response to the question, 'Are there any changes that would make this programme more useful for your family?', recurrent themes included:

- More information (5 respondents) – e.g., *Send out more information about all the causes of rheumatic fever, not just one reason; Raise awareness; more information on treatment or prevention.*
- Better communications with families (4) – e.g., *Hold a parent's evening with all different languages; Contacting parents if or when child has been seen; Let me know as soon as they get sore throat.*
- Expand scope (4) – e.g., *Link families together so whole whaanau gets checked; allergies; eat healthy and exercise more.*

One respondent said, *If the nurse wasn't so rude and demeaning towards the parent that would be nice!*

One respondent felt the programme should be offered at more schools: *Be at all my children's schools.*

Another said, *More funding so that this type of care can be guaranteed for the future.*

## Adherence to treatment

In 2014, 56% of respondents (132 parents) indicated that any of their children had been prescribed antibiotics for a sore throat in the past year.

Of these, 91% (120 parents) reported that their child had taken the antibiotic for 10 days.

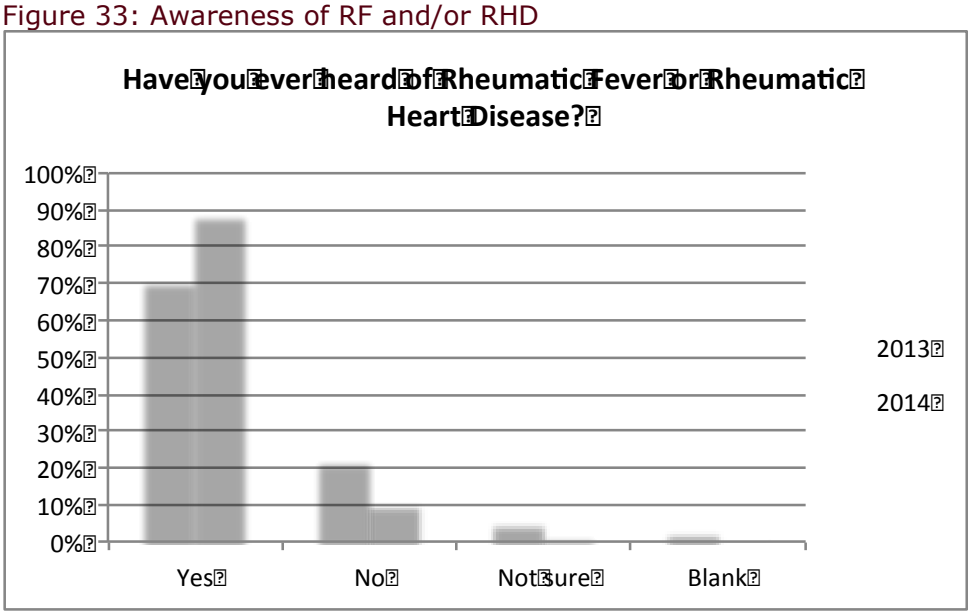
Similarly, 25% of respondents (58 parents) indicated that any of their children had been treated for a skin infection in the past year,[44] and responses suggest a high adherence rate in completing the course of treatment.[45]

[44] The question actually asked, 'were any of your children prescribed antibiotics for a skin infection in the last year?'. The rate of affirmative responses is more consistent with *any* treatment for skin infections and it was postulated that parents would not necessarily recall whether the treatment was antibiotic or other.
[45] 58 parents indicated their child had been prescribed antibiotics for a skin infection in the last year, and 62 parents indicated their child took the antibiotic for at least 5 days, suggesting some respondents did not understand questions.

## Health literacy (awareness and knowledge)

The percentage of parents who had heard of RF or RHD increased from 71% in 2013 to 89% in 2014 (Figure 33).

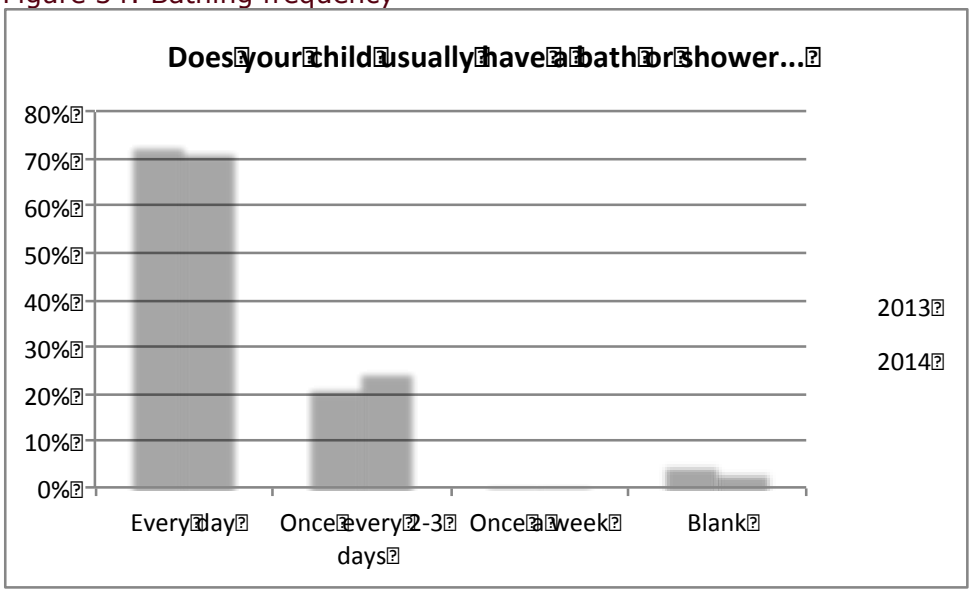
Figure 33: Awareness of RF and/or RHD




In 2014, 56% of parents indicated that they had learned anything new about sore throats or skin infections in the past year. Free-text responses predominantly mentioned learning that sore throats can lead to RF and the seriousness of this (55% of those who indicated they had learned anything new). Small numbers of other responses variously mentioned increased awareness of skin infections, the importance of completing a course of medication, and the value of generally being aware and putting children's health first.

The vast majority of children (72-73%) had a bath or shower every day (Figure 34).

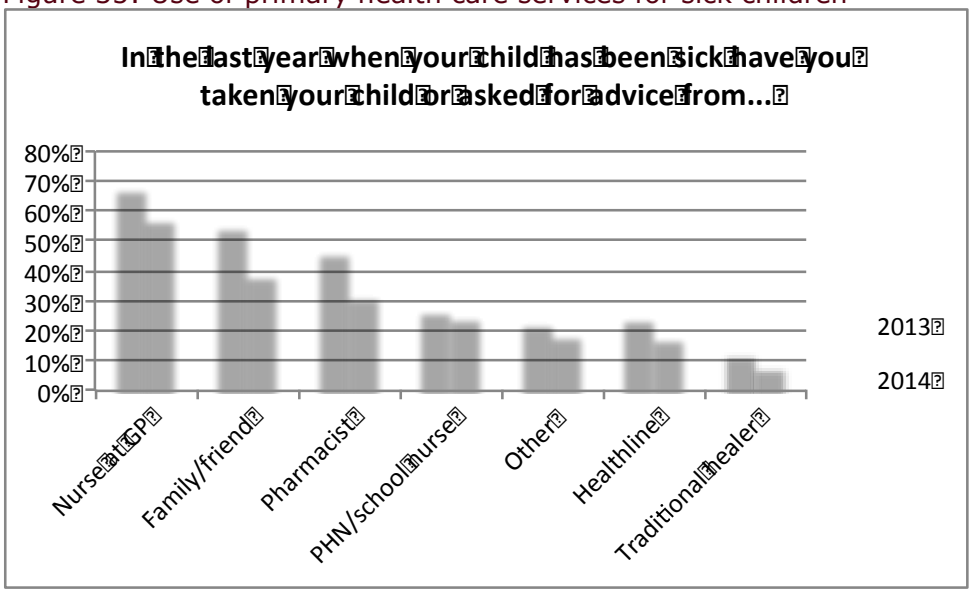
Figure 34: Bathing frequency




## Use of primary health care services

Survey feedback indicates that the school nurse is an important source of primary health care and advice for parents. In 2014, 25% of respondents had taken a sick child to the school nurse (Figure 35).

Figure 35: Use of primary health care services for sick children




The survey indicates cost is a significant deterrent for accessing primary health care for some families: In 2013, 19% of respondents had *ever* put off a visit to the doctor when their child had a sore throat or skin infection to keep costs down, and 28% had *ever* put off picking up a script because of cost.

In 2014, parents were asked whether they had put off a visit to the doctor *in the past year* when their child had a sore throat or skin infection (14% had) and whether they had put off picking up a script because of cost *in the past year* (24% had).

# Appendix E: Student Questionnaires

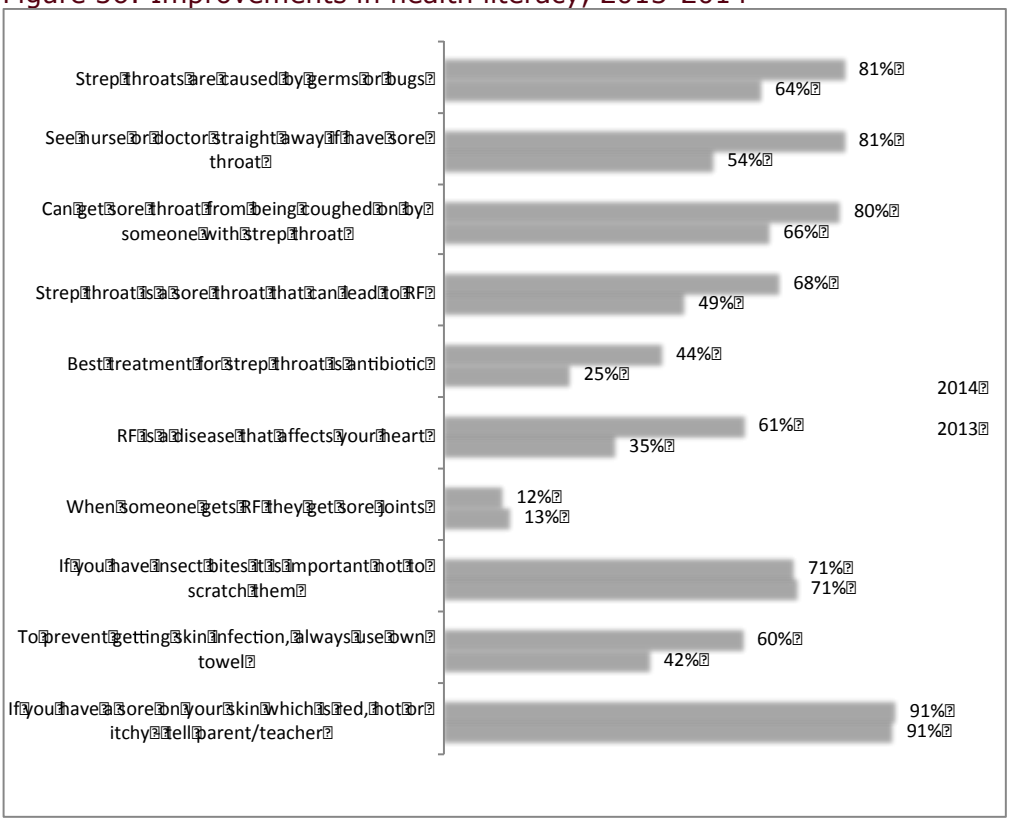
In May 2013 and May 2014 students attending three schools in Manurewa (Clendon Park School, Finlayson Park School and Waimahia Intermediate School [formerly Weymouth Intermediate]) were asked to complete a questionnaire of 10 questions to gauge their understanding of key concepts re sore throats, rheumatic fever and skin infections. Teachers arranged for the students to complete the questionnaires during class time.

In 2013 the 457 student questionnaires were completed by students aged between 7-13 years with 80% of students being aged 8-12 years (n=414). In 2014 608 students completed questionnaire aged between 5-14 years. Of these 67% (409) were aged between 8-12 years.

In order to make the sample comparable the results from the students aged 8-12 years were compared. This provided similar numbers of students of the same age at both time points although the 2014 sample had slightly more 8-10 year olds (75) compared to the 2013 sample (52).

Overall between 2013 and 2014 the percentage of students who got the correct answer increased for 8 out of 10 questions (Figure 36).

Figure 36: Improvements in health literacy, 2013-2014



# Appendix F: Focus groups with families/whaanau

Six focus groups, at six schools, were undertaken with family/whaanau. In total 34 mothers and grandmothers took part. Fifty-three percent identified as Pasifika, 35% as Maaori, and 12% as New Zealand Pakeha, English or European.

Schools were purposely selected to provide a mix of schools that are performing differently. The participating schools included three where the programme is working well; two where the programme was facing challenges; and one that is performing somewhere in the middle.

## Relationships, engagement and satisfaction with clinics

### *Family/whaanau awareness and engagement*

All family/whaanau interviewed have children who had tested positive to Group A Beta Haemolytic Streptococcus (GAS) through the Mana Kidz programme. As such, they were aware that there was a 'nurse' or a 'sore throat clinic' operating at their school.

There was less awareness however, about the name of the programme. While the vast majority of family/whaanau could vaguely recall the Mana Kidz brochure and consent form, the name of the programme had not stuck with them, and it appears that the consent form had 'been signed off with other paperwork'. Most family/whaanau had been surprised when they received a phone call from the school clinic to advise them that a child in their care had tested GAS positive, and needed reminding about the programme.

The majority of family/whaanau were familiar with the processes of self-identification and classroom checks; that Mana Kidz staff swab for sore throats, and provide medication when tests are positive; and that the clinics deal with skin infections. Many also knew that the clinics could provide resources for head lice and refer on to appropriate services for hearing and vision. At one school (where the programme is facing challenges), family/whaanau understanding of Mana Kidz was limited to its focus on throat swabs and skin infections.

For the most part, family/whaanau were not familiar with the two distinct roles within the clinics – a nurse and a whaanau support worker (WSW), and appeared to refer to any Mana Kidz staff as 'the nurse'.

The vast majority of family/whaanau indicated that they knew about the location of the clinic within the school, were familiar with its hours of operation, and that they had been provided with contact details for the nurse. Family/whaanau at one school noted that they could free text '798' and the nurse would contact them. This was useful if they had a missed call from the nurse but had no credit available on their phone.

In one school (where the programme is facing challenges), family/whaanau did not know where the clinic was located, they were not aware of how to contact the clinic, and they stated they had not been provided with contact details for the nurse.

Feedback suggests that the vast majority of family/whaanau will tell their children to go to the clinic if they have sore throats or skin infections. The majority of family/whaanau also indicated that they would feel comfortable about contacting the nurse if they had any questions or concerns, and a few had done so (e.g., when realised had forgotten to give medication).

Many family/whaanau indicated that their children are aware of the clinics and positive about accessing them – e.g., they 'love the nurses'. They also commented that their children will initiate visits to the clinic themselves.

### *Family/whaanau satisfaction with the programme*

The vast majority of family/whaanau provided positive feedback on the clinics – a direct indicator of their high level of satisfaction. Core aspects of the programme that they liked included:

- The easy access to the clinic within the school… *It's awesome to have it at school, it's the convenience, I'm so busy with routines after school with all my kids... Having to go to the doctor after school as well… yeah nah… it's usually a three-hour wait.*
- The follow up… *I like that they* [Mana Kidz staff] *always carry on checking, they follow up until it's finished and re-swab if necessary.*
- The sticker chart… [The] *sticker chart is a great idea, it really works. My* [girl] *loves it, she made sure it* [medication given] *was done… she would remind me* [to give the medication].
- Free medication… *it's a breather that I can get it* [medication] *free through school.*
- Medication being brought to the school for family/whaanau to pick up… *I like that they provide the antibiotics, and that we don't have to go to the doctor. I don't have a car so makes it easier. They've made it so simple. It's made my life so much easier.*
- Home visits… *When you have to get three kids ready just to walk all the way to school again* [to pick up medication]*, and you get a 'knock knock' on your door you go yay!*

The majority of family/whaanau also expressed satisfaction with the personal characteristics of Mana Kidz staff. They found them non-judgemental, calm, caring, and friendly, while also being direct and straight to the point.

> *She's cool, she talks with a nice calm voice, she doesn't give attitude, and she doesn't judge.* (Parent)
>
> *They* [Mana Kidz staff] *are just so friendly, real approachable. The nurse, as soon as you see her she greets you with a smile, always asks you 'how are you?' before she gets into… 'your son has strep'.* (Parent)
>
> *She gives you the information you need, that's what a lot of parents want to have, they don't want to hear anything else, they just want to know how their child is, and how do I fix my child if there is anything wrong, and that's what I like. She's very straight to the point. And if you don't do it right she'll let you know, in a nice way.* (Parent)

Additionally, some family/whaanau noted that the clinics provide children with a positive introduction to health services, for which they were grateful.

> *With the nurses being so friendly and mother-like, it makes them* [the children] *feel comfortable about getting their throats swabbed.* (Parent)

Despite this positive feedback from the majority of family/whaanau, a few individuals at one school (where the programme was facing challenges) indicated that they felt uncomfortable with the follow up checks. Although this had more to do with the characteristics of a nurse (e.g., being 'too intense', talking too much) who was no longer working at the school than the process itself, they believed that a text reminder would be a better option for family/whaanau who are likely to be busy with work or other children during the day.

At the other school where the programme was facing challenges, family/whaanau generally believed that throat swabbing in schools was a good idea. Nonetheless, they were dissatisfied with some aspects of the programme and how it was delivered. For example:

- Due to family/whaanau lack of awareness about the programme, receiving a phone call from someone they did not know, advising them that their child has tested GAS positive, had been unsettling.
- While most family/whaanau indicated that they had been provided with sufficient information during that first contact, one mother expressed concern that the person who had contacted her was not able to answer her questions, nor able to pronounce her son's name correctly.
- There was concern that prescription medication is sent home with young children, and that family/whaanau had not been invited to be present if medication was dispensed at school.

- One parent had been provided inconsistent information about the dosage of antibiotics, with her son claiming one dosage (as told by nurse) and the bottle another.
- No contact details had been provided with their children's medication so family/whaanau did not know who to contact if they had questions or concerns.

Feedback from family/whaanau at this school also indicated that none had received a follow up call from the clinic after the initial phone call and that no information had been provided about how spreading of GAS could be prevented.

One mother from this school, however, was very positive that her child had been given antibiotics at school as she found it hard to get to the doctor and/or the pharmacy. It should also be noted that school staff from this school were not aware of any dissatisfaction with the programme, and provided positive feedback about Mana Kidz staff. The impression was that Mana Kidz staff engaged well with family/whaanau.

## Cultural value of services

Feedback suggests that the vast majority of clinics engage children and families in culturally meaningful ways. Predominantly, feedback indicated that most family/whaanau who participated in focus groups did not mind what culture the nurse was from or what language she spoke as long as she was knowledgeable and 'nice'.

Some family/whaanau acknowledged that Mana Kidz staff were of the same ethnicity as them and therefore could speak their language. Others indicated that if the nurse did not speak their language, she would be mindful of taking the extra time to ensure that they understood the information being provided.

> *She always come home* [to me]. *If I don't understand she will explain to me, she will take her time, because I'm not very good at my English.* (Parent)

Other family/whaanau who had seen Mana Kidz staff engage with children at the school, noted that they treat them equal.

> *Nurses at this school, their manners, doesn't matter what background the kid has, they treat them all equally, they have such patience.* (Parent)

As indicated elsewhere, one family/whaanau expressed dissatisfaction with Mana Kidz staff not being able to pronounce her son's name.

## Impacts

### *Increased knowledge about sore throats, RF prevention and acute skin infections*

The vast majority of family/whaanau interviewed indicated that they have learnt new things about sore throats, RF, and prevention of both from engagement with the nurse. They had all learnt all of the following:

- Sore throats can be a sign of GAS
- GAS may lead to RF if untreated, and that RF can lead to heart disease – which can be fatal
- Treatment of GAS has to be followed through or the bacteria will not go away
- How to administer medication to treat GAS.

A few family/whaanau also reported having learnt that:

- Someone can be a carrier of GAS without having the symptoms
- GAS does not necessarily come with a temperature
- There are different forms of antibiotics available, e.g., tablets, formula, and injections.

Family/whaanau acknowledged that the current national RF campaign helps reinforce and support acceptance of these messages.

In the same school where family/whaanau had expressed some dissatisfaction with the programme, the vast majority of family/whaanau did not recall having been provided with any information other than that their child had tested GAS positive, how to administer the medication, and the importance of adhering to the treatment.

Similarly, in another school (where the programme was facing challenges), about half of parents did not feel they had been provided with sufficient information about why their children had contracted GAS, and how they can prevent it from spreading.

> *I still don't know much about it* [GAS] – *my daughter has had it twice. The pamphlet* [consent form] *listed all the possible scenarios but we didn't fit into any of these living conditions. I sort of know what happens* [from TV advertising] *but I don't know how it develops to RF, what other symptoms there are… I just know that if a swab comes back positive then need medication to prevent RF.* (Parent)

Although learnings about skin infections/diseases were not as widespread, about half of family/whaanau indicated they now knew a little more, including that:

- Some skin infections are contagious
- It is important to wash hands before and after changing dressings
- Once the sore goes from the skin, the bacteria are no longer present
- They can prevent the spread of skin diseases, such as scabies, by ensuring family members do not share clothing/blankets/bedding, washing all household bedding at once in hot water, and drying washing in dryer or outside in the sun.

The majority of family/whaanau in all the schools indicated that more information, e.g., through 'health promotion fun days', would be of value. They also suggested that health promotion take place in the community (e.g., at the mall).

The majority of family/whaanau indicated that they have shared their learnings about sore throats, RF, and skin infections with family/whaanau and friends. Most commonly, they have advised them to always get a sore throat checked by a school nurse or a doctor. They have also passed on information about the importance of adhering to treatment, that GAS can develop into RF and how the spread of GAS can be prevented through good hygiene.

### *Changed behavioural patterns*

Because of learning about sore throats, RF and skin infections, the majority of family/whaanau indicated that they now respond differently to related symptoms. They noted that in the past, they would have waited until their children had a temperature, and/or until they appeared 'really unwell' before taking action. They now:

- Take their children to a doctor and/or tell their children to see the school nurse if they indicate that they have a sore throat and/or have flu like symptoms
- Check with the children on pick up from school that they did go to see the nurse
- Take action (e.g., send to nurse, go to doctor, or treat self) if their children have any skin irritations, scratches, wounds.

The following quotes illustrate these changed behaviours:

> *They* [*children] might complain about a sore throat but still jumping around… now I take them to the doctor… or tell them to go and see the nurse at school… and if I pick up my children from school I make sure they have actually gone to see the nurse by going to see the nurse myself.* (Parent)

> *Before if he* [child] *said he had a sore throat I didn't take him to the doctor… you know, if no temperature then I wouldn't bother… or I wouldn't have gone to the doctor that soon.* (Parent)

> *If my girl says in the morning she's got a sore throat, I make sure she sees the nurse that day, if it's in the weekend I will take her to the doctor. I wouldn't have done that before.* (Parent)

Many family/whaanau also noted that their children now tell them when they have a sore throat, or feel unwell in any other way, and that they initiate visits to the nurse themselves, things they would not have done in the past.

> *My son knows, if he's got a sore throat go see somebody, tell somebody. Before he just used to let it go, have drinks and drink it away. He never used to tell me until they started testing them* [at school]. (Parent)

In those schools where family/whaanau had learnt about how sore throats and skin infections may spread, and how it can be prevented, the majority now discourage their children from sharing drink bottles/cups, cutlery, beds, and clothing with siblings and other children. Many family/whaanau now have colour coordinated drink bottles/cups for their children.

### *Increased access to primary health care social support services*

Findings suggest that Mana Kidz has increased family/whaanau access to primary health care, by having a presence in the schools.

Family/whaanau noted a range of barriers that keep them from going to the doctor, including that they are busy with other children, hold down multiple jobs, do not have GP clinic close by, and/or do not have a car. Having school-based clinics help to ensure that their children's health is monitored better.

Nearly all family/whaanau indicated that they were already registered with a GP prior to engaging with the programme, anecdotal accounts suggest (as detailed elsewhere) that they are more likely to access their GP than before, because:

- They understand the consequences of leaving GAS and skin infections untreated
- The nurse has referred them to the doctor for health issues outside the scope of the clinic (e.g., lump on neck, swabbing of other

family/whaanau members, asthma, ongoing issues with eczema, hearing and vision issues).

Findings also suggest that the programme increases access to social support services as nurses refer family/whaanau for further assistance. For example:

- One parent, whose child had presented with three positive throat swabs, has had her house insulated, a kitchen fan and heaters installed, and been provided with drapes through the AWHI programme. She said her house is now warmer and her children's asthmatic symptoms are presenting less often.
- One parent, whose four children had each tested positive for GAS twice, and who lived in an overcrowded house with 20 whaanau members, was given a medical certificate by the nurse so that she could get priority for a Housing New Zealand home. The nurse also swabbed others in the household, and referred some for swabbing at a nearby clinic. Now that she is in her new house, whaanau have been referred to the AWHI programme.

## Success factors and opportunities for improvement

Family/whaanau believed that the following factors are important for successful school clinics:

- That they remain cost-free (i.e., in terms of medication)
- Having a strong presence in the schools (i.e., Mana Kidz staff being visible, engage with parents, attend parent evenings)
- Characteristics of Mana Kidz staff, with attributes such as:
  - Positive and non-judgmental
  - Persistent and direct, yet humble and sensitive
  - Ability to remember names of children and family/whaanau, and pronounce them correctly
  - Ability to provide the right level of information, without 'telling' family/whaanau what to do.

Opportunities for improvement were also identified, including:

- Provide more options for family/whaanau involvement (i.e., inviting family/whaanau to be present at time of dispensing medication)
- Have a stronger presence in the school (e.g., Mana Kidz staff attending parent evenings, putting notices in school newsletters, having a presence on school websites)

- Provide more options for how to engage with family/whaanau (i.e., text reminder instead of follow up phone calls)
- Increase access to clinics (e.g., ability to leave a message for Mana Kidz staff on the school answerphone, free text or phone services)
- Consider providing a free self-washing service or subsidy for washing bedding if there are issues with scabies, head lice in homes[46]
- Do more health promotional activities to engage and educate family/whaanau more (e.g., a family/whaanau 'fun day', have a presence in the community)
- Expand the scope of the programme (e.g., to include other health ailments, include all family/whaanau members at risk, not just those between 3-19 years of age)
- Make the Mana Kidz brochure/consent form more user friendly (e.g., less text, more pictures, make available in different languages such as te reo Maaori, Samoan and Cook Island).

[46] A few family/whaanau highlighted the cost of washing 'everything at home' if they do not own a washing machine and/or dryer. Some had paid in the vicinity of $100 to clean all bedding.

# Appendix G: Stakeholder interviews

Stakeholders consist of provider management representatives ('provider') from Turuki Health Care, ProCare, Kidz First, East Tamaki Healthcare and Healthstar Pacific; nurses and whaanau support workers (WSW) ('Mana Kidz staff'); and senior, teaching and other staff from six participating schools ('school staff').

In total 36 stakeholders took part (18 school staff, 11 providers, and 7 Mana Kidz staff).

## Service integration

Mana Kidz staff in all schools visited for the evaluation work in partnership with the school Special Educational Needs Coordinators (SENCO) teachers or teams, Social Workers in Schools (SWiS), health lead teachers and/or principals. Collaborative approaches include Mana Kidz nurses attending SENCO meetings, sharing of information, doing joint home visits, and discussing potential referrals to local social service agencies in the first place, but also primary health care service agencies.

Most commonly, these collaborations may lead to engagement with:

- The Auckland-wide Healthy Housing Initiative (AWHI), as evidenced also in family/whaanau feedback (Appendix F) and the exemplar case studies (Appendix H)
- Child Youth and Family (CYF)
- Hearing and vision clinics.

In one school, the nurse and the SENCO teacher (who is also currently undertaking the SWiS role) work together on applications for 'Strengthening Families' – a government led multi-disciplinary approach that brings together agencies that can provide support for family/whaanau.

In another school, the nurse had recently been invited to take part in a family group conference with a whaanau, CYF social worker and the SWiS. She felt that the collaborative relationship with the SWiS was strengthening.

Other social or primary health care service agencies (or similar) that Mana Kidz staff/providers had linked in with or referred to include:

- Government agencies (e.g., police, Housing New Zealand)
- Health care (General Practices, Manukau Super Clinic, Community Health Workers, District Nurses, Public Health Nurses, Rapid Response Clinics)
- Allied health professionals (e.g., dentists, optometrists, chemists)

- Other (e.g., Sisters of Mercy, Taikura Trust [assistance and support for people with disabilities]).

A few provider representatives and nurses noted that some primary care providers appeared concerned that Mana Kidz is going to take work from their practices, and that this appeared to have stifled collaboration between the two parties (particularly when the general practitioner [GP] and Mana Kidz staff are from different providers).

It was added, however, that collaboration appeared to be improving. Rapid Response'[47] training in associated General Practices was seen to have supported this improvement as it enhances understanding and increases awareness of sore throats and RF, as well as the Mana Kidz programme. National Hauora Coalition (NHC) had also reportedly helped resolve some of these issues by visiting GPs. Feedback suggests that these practices are now more in tune with sore throat management than other practices.

## Health Promotion

Feedback suggests that appropriate information on sore throat management, RF prevention and skin infections is delivered to family/whaanau and children in the school communities.

Information about other health ailments are also provided, including education on scabies, head lice, eczema, boils, oral health, flea treatment, nutrition, and asthma.

### *Raising awareness amongst family/whaanau*

Primarily, family/whaanau are informed over the phone or via home visits at the time of positive result from a throat swab, or a skin infection being identified. Mana Kidz staff advised that this information includes:

- The issue at hand (e.g., Group A Beta Haemolytic Streptococcus [GAS], skin infection)
- The importance of treatment, and what might happen if not adhered to
- What the treatment regime looks like
- How to prevent spread and/or recurrence.

One school staff member noted that the programme provides 'continuity of care', by providing family/whaanau with not only a course of treatment but information around the presenting issue.

[47] A Ministry of Health contract for GPs to run free sore throat clinics. Targets children who are not covered in schools, or for those who need access after school hours. All 3-19 year olds can access the free clinics.

> *They take the time to talk to parents about how to do things – there's more education about nits, the need to wash bedding, to wipe down the sofa. They are taking the time to bring education into homes. We* [schools] *used to send students home for having nits, and say that they* [children] *couldn't come back till cleared but no one gave advice on how to address issues.* (School staff)

While most providers indicated that Mana Kidz staff attend parent evenings and/or other school events that family/whaanau attend,[48] feedback from Mana Kidz and school staff suggests that this only occurs in one of the schools visited as part of the evaluation (exemplar school). It may be that these activities do occur in other schools that were not part of the evaluation.

Mana Kidz staff from another exemplar school are currently in discussions with the principal about being present at parent interviews, but this had not yet eventuated. They were also looking into opportunities for Mana Kidz staff to be involved in the enrolment process (e.g., that nurse meets with family/whaanau at time of enrolment).

All Mana Kidz staff indicated that they provide information/health messages in school newsletters/notices. This information can be related to RF or anything else that is currently an issue at the school, e.g., head lice, scabies.

### *Raising awareness amongst children*

Promoting awareness and knowledge amongst children primarily takes place at the time of swabbing, or them presenting at the clinic for other health ailments. Once per term, Mana Kidz staff will formally remind children (e.g., via assembly, in individual classes) about telling the teacher if they have a sore throat. Mana Kidz staff may also provide health information/messages when they go through classes to pick up children who have self-identified with a sore throat or skin infection, particularly if there has been an issue in a particular class (e.g., clusters of GAS positives).

> *Last term we had one class that kept coming up with GAS positive, so went in impromptu – talked to them* [children] *about hand hygiene, how they can prevent things.* (Mana Kidz staff)

Provider feedback indicates that some Mana Kidz staff give little prizes for children who seem to have taken on the health messages they are providing, e.g., if they consistently sneeze into their elbow, or blow their nose properly, to acknowledge and encourage them to continue with changed behaviours.

One provider (ProCare) noted that their WSWs have recently initiated a health promotion programme; '*Stop the Spread of Strep A'*. They have

[48] Feedback suggests that these types of activities took place in all the schools at the time of programme commencement, but has not continued in the majority of schools.

trialled it in two schools and children have learnt about GAS, how it can develop to RF, why adherence to medication is important, how you get GAS throat infections, and how to stop it from spreading. It will now be modified and rolled out to all the schools from this provider. This is further detailed in the Clendon Park exemplar case study (Appendix H). ProCare nurses and managers have been very supportive of the WSW role expanding into the health promotion space.

While indicating a need and desire to undertake more health promotion, the vast majority of Mana Kidz staff noted that they are too busy with clinic duties to undertake additional health promotion outside of these standard procedures.

> *Would be good to do more … But what you would like to see done and what you can do realistically is quite different.* (Mana Kidz staff)

### *Working with school staff*

In addition to providing health promotion to family/whaanau and children, teachers are provided with information about sore throats, skin infections, and RF.

Formal activities to provide this information took place at all the schools at programme commencement. Most providers also indicated that school staff had been informed about the conditions in which GAS thrives (e.g., rooms without cross ventilation; cold, damp rooms), and how they could prevent spreading within the school (wiping down desks daily to get rid of germs, changing from use of towels to paper towels in washrooms). Feedback from school staff indicated that their awareness has been raised.

> *Teachers are more aware of ways they can prevent the spread of germs, like wiping down tables. There is more awareness of health and wellbeing in the school.* (School staff)

Health education for teachers since programme commencement appears to be for the most part informal, such as conversations taking place in the staff room and Mana Kidz staff talking to school staff individually if there is an issue in a particular class room. All school staff felt comfortable about approaching Mana Kidz staff if they have any questions. All school staff interviewed noted that Mana Kidz staff have become an integral part of their school communities.

There was one exception where ongoing health promotion activities targeted to school staff appeared more formal and regular (e.g., through presentations at professional development days, staff meetings etc). This is further detailed in the exemplar case study; Clendon Park (Appendix H).

The extent to which the schools visited for this evaluation collaborate with Mana Kidz staff to actively promote knowledge and awareness varies. At a minimum, it appears that nearly all school staff remind children about preventative measures[49] such as hand hygiene and coughing into the elbow. A few individual school staff (from schools that is performing in the middle, and not performing well) have gone further than this and linked Mana Kidz, sore throats and RF to classroom learning. For example, one teacher had used a RF resource as reading material for literacy, and another had role-played nurse and doctor roles – to make children understand the purpose of throat swabbing.

Feedback indicates that school staff were provided with, or shown where to access, educational resources about sore throats and RF at programme commencement (e.g., Heart Foundation's Sore Throat Matters teaching units available online). It is not clear whether these had been used by school staff.

### *Whole school activities*

There is good evidence that whole school approaches (such as Health Promoting Schools [HPS]) are effective in creating change and improving health and wellbeing. Lister-Sharp et al. (1999) concluded in their summary of evidence as to the success of school health promotion initiatives, that those that use a whole school model, and therefore are supported by school community, environmental and policy changes in line with the initiative, are more successful than curriculum based only programmes.

All schools visited as part of the evaluation are HPS. However, while they all appeared to have healthy practices such as hand washing/use of hand sanitizers built into the classroom programme, there was no clear evidence that whole school approaches have been formally used for Mana Kidz and/or sore throats, RF and skin infections. One nurse (Nga Iwi School) indicated that she had initiated talks with the principal about a nurse meet and greet at time of enrolment to support initial engagement and awareness of the clinic.

Evidence of linking sore throats and RF with whole school activities was only evident at one school (see Clendon Park, Appendix H), where the 'glitter handshake', which shows how germs spread by touch, is part of a school wide end of term health topic taught by teachers. The vast majority of school staff were open to linking sore throat, RF and skin infection topics with the curriculum.

> *It would be useful to have RF working in with the general health programme, like in a health component. Would be good to have at least once a year to bring into the curriculum.* (School staff)

[49] This is in addition to standard procedures across all schools for teachers to ask students every morning if they have a sore throat.

While provider feedback indicates that there is collaboration between Mana Kidz and HPS, only three Mana Kidz staff reported having collaborated with HPS coordinators. One nurse (from an exemplar school) had worked with the HPS coordinator to develop a resource for skin infections, however this happened at a national level and was not specific for the Mana Kidz programme and the schools she works in. Another nurse had collaborated with the HPS coordinator around the importance of nail, and other, hygiene for preventing skin infections. Together they presented to teachers and school classes.

### *Observed changes in the health promotion capacity of school communities*

All stakeholders believed that Mana Kidz had increased health promotion capacity of school communities. As detailed in the previous sections:

- School staff are more aware of sore throats, RF and skin infections and are able to promote practical measures for preventing these from spreading
- If children, family/whaanau or school staff have any questions they can approach Mana Kidz staff
- By virtue of Mana Kidz teams being present in schools, awareness is being raised amongst children, family/whaanau and school staff.

## Impacts

### *Access to primary health care*

Findings suggest that a significant number of unmet needs are identified in school clinics.

> *One kid had to have all her teeth taken out, she wasn't aware that other kids are not in pain all the time.* (Provider)
>
> *The fact that kids don't know how to blow their nose properly, it's a big thing about caring for their ears, if they struggle to blow their nose, it's generally a problem with ears.* (Mana Kidz staff)

Unmet needs identified through the clinics are consistently the same across providers and include:

- Head lice
- Scabies
- Housing needs (e.g., lack of heating, lack of appliances such as fridges and washing machines, overcrowding, un-hygienic)
- Cellulitis
- Oral health (e.g., rotten teeth)

- Ear/hearing issues (e.g., weeping ears, glue ear, deafness)
- Lack of or incomplete immunisation
- Poor nutrition
- Mental health issues (e.g., depression, suicidal thoughts)
- Abuse
- Family violence.

Cases of vulnerable children disclosing abuse to Mana Kidz staff have been high. Feedback suggests that the daily presence of Mana Kidz staff in the schools, and the regular contact that children have with them means that really strong and trusting relationships develop.

> *As we've gone along, being two years into this now. We are doing a huge amount of work in the child protection space. WSW have been involved in these schools for significant periods, they have built robust trust relationships with the children in particular. Now, children are coming forward on a somewhat more regular basis, identifying that they have suffered some type of abuse or trauma at their own hands.* (Provider)

One provider mentioned having put in place additional training for their staff in this area to ensure they are able to deal with these issues appropriately.

Findings suggest that family/whaanau are more likely to present to their GP or school health team where appropriate for sore throats and skin infections, as well as other health ailments. This includes family/whaanau who may not have previously engaged effectively with health services. Anecdotal accounts include:

- Provider staff seeing families in GP clinics in weekends and school holidays
- Children increasingly accessing school clinics for a range of health issues
- School office staff receiving phone calls from family/whaanau asking if their children can access the school clinic
- Whole families coming into school clinics for swabs
- Mana Kidz staff referring children/families to GPs, District Nurses, Public Health Nurses
- Mana Kidz staff getting notifications from GPs that referrals have been followed through.

All stakeholders noted that access to primary care is challenging for families, who might be holding down more than one job/working shifts, not have a vehicle, and/or have other children to look after. Similarly, one

principal highlighted that in their area, there is only one doctor available two hours per week and there is no chemist within walking distance. Another principal noted that many of the family/whaanau in her school community are very reluctant to go to the doctor, because they worry about costs, but also because of a fear of being 'logged into a system'. Mana Kidz provides an opportunity for these children to engage with primary health care, which they may not otherwise have had.

> *Sometimes we overlook that children can't access primary care... it has to be with an adult. This way we are accessing the children that aren't accessing healthcare.* (Provider)

One provider indicated that family/whaanau know about services available to them but they will not necessarily engage (e.g., due to worries about costs, logistical issues). At times, their Mana Kidz staff have taken the child and parent to a secondary appointment, or a parent has given permission for their child to be taken.

School staff also noted that some family/whaanau owe money at the pharmacy, which deters them from going there. It was their perception that, Mana Kidz staff will do what they can to work around these kinds of issues.

> *It's all about removing the barriers, they* [Mana Kidz staff] *don't say they can't do things. They are very flexible – will make the situation work for our Pasifika and Maaori families.* (School staff)

These examples indicate that the programme contributes to reducing health inequalities for families/whaanau in participating schools. However, some providers felt that overall the programme is not equitable, because services have been removed from other decile 1-5 schools.

### *Health literacy*

Feedback indicates that health literacy amongst family/whaanau, and children, has improved because of the programme.

For example, Mana Kidz and school staff reported that many of the family/whaanau that they engage with now appear to understand that sore throats and skin infections need to be attended to.

> *Parents now know where to go and when, what to look out for rather than brushing it under the rug, even with eczema they are more proactive taking them to clinic before it flares up – before it gets infected.* (Mana Kidz staff)

Anecdotal accounts also suggest that more:

- Family/whaanau ask their children to go to the clinic
- Family/whaanau contact school office to ask if their children can see the nurse
- Children come to school with changed dressings and cleaned sores

- Family/whaanau contact the nurse if they have forgotten to give medication
- Family/whaanau understand the messages that Mana Kidz staff deliver (e.g., in the first year nurses would spend a long time telling family/whaanau about GAS, RF and associated treatments. Family/whaanau now know these things and less time is spent going over this information).

Increased health literacy is further evidenced in family/whaanau feedback (Appendix F).

Mana Kidz staff noted that whaanau/family are now more aware of who they are and what they are doing in the schools. Therefore, engaging with them is getting easier (e.g., more family/whaanau now respond to phone calls, making it easier to provide information). Mana Kidz staff did, however, highlight that there are still many hard to reach family/whaanau who still need to be educated.

All stakeholders agreed that for the majority of children, health literacy has vastly increased because of the programme. School staff in particular had noticed this increase, evidenced by:

- High numbers of self-reporting children, suggesting they understand that sore throats or skin infections needs to be attended to… *Kids are more aware, they would never tell you in the past if they had a sore throat.* (Teacher)
- Children displaying an understanding of what is 'not normal', now asking teachers or Mana Kidz staff questions … *Kids are more aware, they are able to ask the nurse questions, like one girl wanted to see the nurse to ask why her throat was sore, even though she'd taken her medicine it was still sore. Normally, our kids won't ask questions.* (Teacher)
- Children knowing how to interact with Mana Kidz staff – as health professionals… *Kids are familiar with the nurse now. It's been a huge benefit for them. Some didn't know how to act and what to do. They now know how to behave with nurse, so they know then how to behave if they go to the doctor.* (Teacher)
- Children being more 'willing to' reveal skin infections.

Feedback suggests that family/whaanau do not always have the knowledge to look after their children's' health. Mana Kidz staff are teaching the children to take care of themselves to the extent that this is appropriate. Anecdotally, many children tell Mana Kidz when family/whaanau forget to give them the medication, and some indicate that they have changed dressings and cleaned skin infections themselves. A lack of user friendly resources for family/whaanau about RF, sore throats and skin infections was considered an issue amongst some providers and Mana Kidz staff.

### *Adherence to treatment*

Despite the perception that health literacy has improved, and referring to data that suggest substantial drops in positive throat swabs, providers and Mana Kidz staff could not say for sure whether the programme has led to better adherence to treatment as this was not measured formally. Staff are very aware that the 10 day course of antibiotics for a GAS sore throat is vital to the prevention of ARF.

Often children and family/whaanau provide different responses when asked if treatment has been followed. Mana Kidz staff have found that with some family/whaanau, adherence does not appear to 'kick in' until their child's third or fourth positive swab result. Feedback also indicates that adherence to treatment tends to drop after day five, and in weekends because there are fewer routines, and children may go and stay with another parent if they live separately, or with grandparents. In addition, medication is often shared with other family members.

In some instances, where adherence has been identified as an issue, children are given medication by the nurse at the school through the Direct Observation Therapy (DOT) trial. In these instances, Mana Kidz staff will create a plan with family/whaanau, and send home enough medication to cover them for weekends.

A few stakeholders noted that some family/whaanau have been reported to CYF for neglecting to give their children medication. It was considered difficult to know 'at what point it is considered neglect', but it appears that any notifications made have been backed by principals.

The sticker chart sent home to familu/whaanau with the medication was seen to help with adherence. Children reportedly get excited about completing the chart and bringing it back to the nurse - 'working as a reminder' for family/whaanau.

Currently Mana Kidz is taking part in a Ministry of Health sponsored proposal to explore ways of measuring adherence and improving it where warranted.

### *Observed changes in health outcomes*

Findings suggest that Mana Kidz is having a positive impact on children's health outcomes.

Providers all noted a substantial drop in positive throat swabs, referring to numbers such as 33% when the programme started, down to a current 8%. Mana Kidz staff have noticed this drop in positives, and reported that there used to be clusters of children who continuously tested positive which have now dispersed.

> *Numbers have dropped dramatically, only had ten in whole of August compared to 30 a week when I started.* (Mana Kidz staff)

The vast majority of school staff, as well as Mana Kidz staff, reported that children's skin conditions have improved vastly since the start of the programme. Scratches to the skin are being seen to immediately, so there are not as many skin infections occurring. Skin infections are dealt with early, so they do not flare up badly. School sores and scabies, which were commonplace in most of the schools prior to the programme, have been vastly reduced. School staff also commented that children look healthier.

> *You can see difference in children's health. Skin infections used to get so bad that kids were not able to walk. That way it was obvious. We do not see this anymore.* (School staff)

> *I'm no longer making referrals to PHNs for school sores.* (School staff)

> *When I first started, probably six out of ten [children] had scabies. Now there is no scabies at the school.* (Mana Kidz staff)

Some school staff noted that improved health and wellbeing may also be linked to other school-based programmes such as fruit and milk in schools.

Other health professionals not directly linked to Mana Kidz are anecdotally noticing benefits of the programme also. For example, paediatricians and ED managers have reported to providers/nurses about changes they are seeing in their roles.

> *The good thing about this programme, recently we've been contacted by the ED manager, he is flabbergasted as everybody else because the amount of skin condition admissions for children in Counties Manukau is zero to none after this programme commenced. That shows us that we are doing something good in the community.* (Mana Kidz staff)

### *Wider benefits*

Feedback from school staff suggests that it is difficult to identify in the data they collect how Mana Kidz may have contributed to improved attendance. However, some school staff were able to point to individual cases where attendance had been an ongoing issue that had been resolved after Mana Kidz involvement with the child and/or family/whaanau.

Some school staff also noted that in the past, many children would be so itchy that they found it difficult to concentrate in class. With the reduction of scabies, fleas and head lice this was no longer an issue, so educational outcomes may improve.

Providers highlighted the wider benefits of the programme in terms of its advantage for families, and society, when hospitalisation is avoided.

*These little kids with scabies… some of them would have ended up in hospital if it wasn't for the programme. If a child doesn't turn up in hospital, it's not just a child that hasn't got into the hospital pyjamas. It's the parents that haven't had to pay hospital parking fees, the parents who've been able to keep going to work to earn money to pay rent rather than taking time off to sit with the child at the hospital, it's the public health or Kidz First nurses that aren't going to have to go home and do post-op checks on the child, you know, it's a huge ripple that is really important*. (Provider)

## Success factors and challenges

There were a number of factors that were seen to contribute to positive service processes and impacts, which should be considered when developing other similar services. These included:

*Employing the right staff*: Providers and school staff believed that having the right staff in the clinics is a primary key to success. A range of attributes and characteristics were identified as important, including:

- Passion for children – having a genuine interest in children, and the ability to build trust and rapport with them.
- Commitment to the cause – having an interest in children's health and wellbeing, and preferably, a desire to stay in the role for a long period of time.
- Understanding of the community – in terms of cultural and religious beliefs, protocols and traditions; current social, financial and housing issues and needs; and existing barriers to health care.
- Relationship skills – the ability to build rapport and establish effective relationships with school staff, children, family/whaanau, and other health professionals.
- Communications skills – ability to adapt communication style to suit the recipient, e.g., someone with English as a second language, children, family/whaanau who do not know medical jargon, and to assertively deliver important health messages.
- Culturally confident and competent – ability to engage with family/whaanau in culturally meaningful ways, e.g., have understanding of cultural protocols, make an effort to learn how to pronounce names, interest in or ability to speak the languages spoken by the school community, knowing when to draw on others' cultural/language expertise.
- Ability to work autonomously – working in Mana Kidz school clinics can be isolating. Staff need to be self-starters, problem solvers and be able to plan and undertake tasks without supervision. They

also need to be flexible, with ability to work around school activities and family/whaanau routines.

- Physical fitness – Mana Kidz staff spend a lot of time going between classrooms and the clinic. In some schools, there are over 40 classes, and staff need to be able to move quickly to meet programme targets.
- Non-judgmental – Mana Kidz staff need to be able to take people as they come, they cannot 'blame parents' for issues that present.

*Matching ethnicity of staff with that of the school population*: While not essential, having Mana Kidz staff that 'look and talk like' the people they work with was thought to support better engagement.

*Staff qualifications and backgrounds*: Having either life experience that enable staff to relate to family/whaanau and children, and/or relevant qualifications (e.g., for WSW – health sciences, overseas nursing qualifications) was considered a factor for success.

*Spending time with children and family/whaanau*: Stakeholders consistently indicated that Mana Kidz staff need to spend time with children outside of clinic (e.g., in the playground during lunch breaks, attending school activities outside of clinic hours) and with family/whaanau (e.g., being present at parent evenings, making home visits) to build trust and rapport.

*Appropriate space for the clinic*: Clinics need to be big enough to accommodate a few children simultaneously, and/or have a dedicated space where children can wait for their turn without disturbing others in the school. Preferably, it should be easily accessible within the school grounds, while also allowing for confidentiality (sick bays for example are not appropriate for this reason). The clinic also needs to have running water and a sink for washing hands and equipment.

*Effective relationships and communication with school staff*: Feedback suggests that it is important that Mana Kidz staff develop a good understanding of school protocols and procedures, make an effort to get to know school staff and ensure school staff understand why the clinic is there, report to the board of trustees on how the programme is performing, and work collaboratively with principals and senior staff. Meanwhile, school staff need to keep Mana Kidz staff updated on school activities so that both parties can perform their duties without interfering with the other.

*Patient management system*: A system that allows for Mana Kidz staff and GP practices from the same provider to access notes on children after an intervention (e.g., what outcome of swab was, what medication has been provided) was. Access to children's health history, and family trees, enables Mana Kidz staff to work effectively if there are any wider family/whaanau concerns.

*Laptops and internet access for Mana Kidz staff:* Having a laptop and access to internet at the schools enables Mana Kidz staff to enter notes or access information as they go, rather than at the end of the day at home or at the provider's head office. It also provides some flexibility for them to take work home.

*Regularity of clinic*: Having school clinics open every day helps ensure that Mana Kidz becomes an integral part of the school, and instils a sense of stability and commitment to the school community.

*No cost and accessibility*: Having access to free health care in a location that family/whaanau and children 'spend time anyways' supports engagement by family/whaanau.

*Home visits:* The home visits are considered key to engaging hard to reach families/whaanau. It also allows for Mana Kidz staff to put children's health issues into a context, and to identify needs that could be addressed by additional supports.

*The nurse and WSW combination*: The two roles were seen to complement each other well in terms of the different tasks and duties that need to be performed (e.g., health promotion, administrative, clinical).

*Standing orders*: The ability for nurses to provide medication under delegated authority from a named medical practitioner adds to a seamless and efficient service

### *Challenges*

The following challenges were identified:

- *Meeting key performance indicators*: Undertaking two class screens per term as per contractual expectations has been a challenge for all providers. There are a high number of children who self-report, and who present for other things than the programme was initially intended for. CYF related matters for example, can be time consuming, with nurses sometimes spending up to two hours on the phone at time of notification. Meanwhile, expectations on Mana Kidz staff have increased over time (e.g., to include hearing and vision, monitoring of immunisation).
- *Resourcing*: All providers have put in resources in kind to make the programme effective (e.g., management, PD, hiring additional staff to meet targets). Many have also brought in student nurses to provide additional supports.
- *Staffing*: Distributing the dedicated number of FTEs across schools, employing people in the context of school terms (e.g., having to restrict staff from taking leave during school holidays), and having access to appropriate back-up staff to cover sick and annual leave (because no funding for 'floating staff'), bearing in mind the specificity of Mana Kidz staff roles.

- *Working with general practices*: Feedback suggests that GPs are not consistently following RF and/or skin infection guidelines, and that there is a lack of effective communication channels between GPs and Mana Kidz staff (when they come from different providers). For example, there is no protocol for GPs to check what school a child goes to, and then to advise the appropriate provider if they administer antibiotics for a sore throat. One provider reported a few isolated incidences of antibiotics being prescribed by both a GP and a nurse.
- *Transience*: Families in Counties Manukau are highly transient. Staff are finding that many families/whaanau change addresses, surnames and phone numbers on a regular basis, sometimes multiple times during a term.
- *Language barriers*: With such a diverse ethnic mix of people in Counties Manukau, Mana Kidz teams do not always cover the range of languages spoken at the schools. When language is a barrier, it is difficult to know whether information has been understood. It can also be a very time consuming process to deliver information to these families/whaanau.
- *Medication compliance*: As indicated elsewhere, adherence to treatment is an issue with many family/whaanau.

## Opportunities for improvement

Areas for improvement were identified and should be considered as the programme continues, and when implementing other future similar programmes. These included:

- *Programme focus*: Changing the focus of the programme to class screenings (e.g., 2-3 per term) and sibling/family follow-ups to ensure all children are tested, including those who do not have symptoms or are too shy to put their hand up. This would mean less interruption of children's learning time and help reduce the number of 'repeat visitors' to the clinic. Self-reporting would remain an important focus of the programme.
- *FTE distribution*: Now that providers know which schools require more resource, allow flexibility for providers to manage numbers of FTE per school.
- *Health promotion*: Increased use of whole-school approaches for health promotional activities could help to raise awareness of Mana Kidz, sore throats, RF and skin infections (e.g., introducing a mandatory meeting with the nurse on enrolment).
- *Streamlining communication channels and referral pathways across Counties Manukau services*: Improve the feedback loop with

hearing and vision clinics and the AWHI programme (i.e., needs to be quicker and easier to access).

- *Programme resources*: Translate Mana Kidz resources into other languages, such as Te reo Maaori, Samoan, Cook Island Maaori. Aim for pictorial resources that are easy to understand.
- *Data management*: Currently providers use their own individual data collating systems. As such, overall programme data is difficult to collate (i.e., has to be done manually) for analysis. An integrated data management system across providers would streamline these processes.
- *Programme scope*: Expand the programme scope to include other health ailments (e.g., provide resources for flea treatment on an ongoing basis). Open up the programme to pre-schoolers, making it as simple and accessible as possible for families at risk.
- *Washing machines in schools*: Many family/whaanau do not have washing machines, and due to financial constraints are unable to utilise laundromats regularly. Washing machines in schools would help with family/whaanau hygiene, and allow for family/whaanau to wash all bedding and clothes if there are cases of fleas, scabies, or head lice, to stop the cycle of recurrence.
- *The Mana Kidz handbook/manual*: Revise the handbook based on evaluation findings, and/or discussions with Mana Kidz staff.
- *Shared note system*: A note system that all Counties Manukau GPs and Mana Kidz nurses can access would help to facilitate a seamless and responsive service.

## Implementation lessons and principles of practice

At a ***strategic level***, the following implementation lessons were identified:

*Using a single provider model is more effective and efficient than a mixed provider model.* The issues that stood out in regard to the mixed model included:

- Having the nurse and WSW worker coming from different organisational cultures, and with different expectations on their respective roles
- Reduction of the WSW role to that of administrative support (over and above throat swabs)
- Where the nurse already had an established relationship with the school, it has been a challenge for the WSW to develop a relationship with the school also

- Perceptions amongst providers that schools found mixed model services 'fragmented' (i.e., lack of clarity around who the school should contact if there is an issue with programme delivery).

All providers and Mana Kidz staff preferred the single model approach. Benefits of this model included:

- Providing more scope for the WSW to undertake other tasks (e.g., health promotion, home visits) because there is organisational agreement about what WSWs can and cannot do, and an understanding of the background and skill sets that the WSWs bring to the team
- Easier for one organisation to manage performance of team
- Stronger 'team approach'
- Better accountability (e.g., if there are any issues with programme delivery, a single provider can more easily put in place supervision or review practice).

It was suggested that an alternative to the mixed model approach would be secondment of PHNs to providers.

*Choose a name that is not too similar to names of other local service providers.* The name Mana Kidz was seen to cause some confusion amongst schools because of its similarity to Kidz First, particularly since Kidz First Public Health Nurses already had a presence in many schools. It is acknowledged that the Kidz First Public health nurses have continued to use the PHN language rather than actively promoting the Mana Kidz brand.

*Support a collaborative and respectful relationship between providers*. Ensure there is appropriate time prior to programme commencement for providers and funders to get together and discuss processes for service implementation and delivery (e.g., ensure there is a shared understanding of programme deliverables, discuss individual interpretations of the manual of operations), and to develop rapport and strong foundation for ongoing collaboration.

*Schools need sufficient time to prepare for the programme*. School communities need time to 'get their head' around what is being proposed, to discuss with board of trustees, to get buy-in, and to deal with the logistics of bringing the service into the school (e.g., finding suitable location for the clinic). A good introduction to the programme by the funder and the provider is important. It has taken approximately one year for clinics to become embedded within schools.

*At an **operational level**, the following implementation lessons were identified:*

*Designate Mana Kidz staff to certain schools, but ensure some staff have experience of working in all schools covered by their provider*. This way, internal team members can more easily cover for sick or annual leave.

*Use the WSW role as an opportunity for workforce development*. The WSW role was considered a great stepping stone into the health workforce, for community members who have an interest in health, have health related diplomas (e.g., health sciences), and for overseas trained nurses, and/or mothers who wants to get back into the workforce.

*Student nurses can provide additional support.* Some providers had found it useful to bring in nursing students to provide additional support at busy times (e.g., to enable them to get through two class case findings per term).

*Face-to-face engagement is important for working with Pasifika populations*. Many Pasifika people have English as a second language and have low levels of literacy. Taking the time to engage with them face-to-face is more effective than providing written resources.

*Mana Kidz staff work remotely, which can be isolating.* To keep Mana Kidz staff motivated and engaged, they need opportunities to catch up as a team.

*Mana Kidz staff should keep manual tracking records of what they do in the clinics.* Keeping records of tasks and outputs is important for personal safety, accountability and if electronic systems fail. This was considered particularly important for staff in the mixed provider model.

*WSWs can bring more to the programme than what was initially expected of them*. In particular, they can be a great resource for undertaking health promotional activities within the schools. To retain staff in these roles it is important to provide opportunities and challenges for them to stay interested.

*Only bring 4-5 children to the clinic at once*. Taking bigger groups can be disruptive to the rest of the class, and there is more likelihood of the children misbehaving while waiting to be swabbed.

*School staff need to be constantly reminded about Mana Kidz.* Provide information about RF, sore throats, skin infections on a regular basis. Keep school staff updated on how things progress, including providing the board of trustees with outcomes/output data.

*The launch of the national RF campaign and the programme could have been better matched.* The national campaign came after the launch of Mana Kidz and as such, sore throats and RF was a new conversation with family/whaanau, as well as school staff.

# Appendix H: School Case Studies

The following report includes three case studies of the Mana Kidz programme delivery in three schools, by three different providers. The schools; Nga Iwi School, Clendon Park School and Wiri Central School are considered 'exemplar' schools of Turuki Health Care, ProCare and Kidz First respectively (i.e., where the programme is working well).

In delivering the Mana Kidz programme there have been two types of delivery models. In the 'single provider model', the same provider employs the nurse and WSW. In the 'mixed provider model', a Kidz First Public Health Nurse (PHN) works with a WSW employed by another provider organisation. The exemplar schools are single provider model schools.

The case studies demonstrate that the clinics within the three schools are all delivered in accordance with the Mana Kidz Manual of Operations. For example:

- Family/whaanau have to consent for children to be throat swabbed.
- Teachers ask children to self-report sore throats and skin infections at roll call every morning.
- WSWs walk around all school classes and bring self-reported children to the clinic for swabbing, or addressing skin infections.
- When all self-reported children have been throat swabbed, Mana Kidz staff do classroom 'case finding'. Case finding involves swabbing all consented children from each class twice per term. Siblings of children who test positive for GAS are also throat swabbed.
- The WSW swabs sore throats, while the nurse attends to skin infections and other clinical tasks such as writing prescriptions. The WSW undertakes most of the administrative tasks, such as updating class lists and ensuring that the clinic is up to date with parental consents.
- If antibiotics are required, for treatment of Group A Beta Haemolytic Streptococcus (GAS) and skin infections, additional consent has to be gained from family/whaanau.
- All children under treatment for GAS have a five and ten day follow up.
- If family/whaanau are not able to pick up children's' medication from the pharmacy or the school, Mana Kidz staff will make home visits to drop it off.

- In all three schools, Mana Kidz staff spend the afternoons doing administrative tasks, picking up medication from the pharmacy, and delivering medication to family/whaanau.

Although the forementioned processes were evident in the three schools, the case studies have covered these to various degrees, depending on the feedback that stakeholders provided.

Feedback from school staff and family/whaanau in three schools where the *mixed* provider model is used, suggests that similar practices are in place.

## Case Study 1: Ngai Iwi School

### Introducing the School

Nga Iwi is a decile 1 contributing school (years 1-6), situated in Mangere, South Auckland. It has a roll of approximately 450 students. The school community is largely Pasifika, followed by Maaori. It has strong links to the local marae, and has bilingual units.

There are two distinct groups within the community: one that is transient; another that is stable, with many parents having done their schooling at Nga Iwi also. School staff assert that many family/whaanau struggle financially, often holding down multiple jobs to make ends meet. They also noted that generally, family/whaanau are very aspirational about their children's educational future.

Nga Iwi is a Health Promoting School (HPS). It receives fruit from the Fruit in Schools initiative, has a breakfast programme in place, and provides healthy lunches only in the canteen. Nga Iwi is also a KidsCan school. The charity has contributed to the breakfast programme, but also provided raincoats, shoes and knitted beanies for the children, which helps keep them dry and warm. The school has Social Worker in Schools (SWiS) onsite, and has access to a public health nurse.

Prior to the Mana Kidz programme, Nga Iwi was a trial school for a rheumatic fever trust initiative so already had some awareness of RF and related issues.

During the visit to Nga Iwi School, the principal, three teachers, Mana Kidz staff (i.e., one nurse and one whaanau support worker [WSW]), one receptionist, and ten family/whaanau members were interviewed. Three senior provider representatives were also consulted.

### The provider: Turuki Health Care

Turuki Health Care, a charitable trust based in Mangere, is the provider of Mana Kidz at Nga Iwi School. The organisational approach towards Mana

Kidz is that of Whaanau Ora, which puts emphasis on the overall wellbeing of whaanau.

When Mana Kidz was initiated, Turuki Health Care recruited with the 'community in mind'. Across their Mana Kidz clinics, they now have staff who are Maaori, Nuean, Tongan, Samoan, Burmese, Pakeha, and Indian. In terms of the WSW role, they looked for people who had life skills that would enable them to relate to the community and/or who had a passion for health and youth. The organisation sees great value in the WSW role as a stepping stone into the health or social service sectors. As such, when they recruited for nurses, they looked for people who would treat the WSW role as an extension of their own.

> *We recruited nurses who were open to the fact that WSWs weren't going to be their hand maidens their administrators, that actually they were a respected and valued workforce even though they are un-regulated, and making sure that while the buck stropped with the registered nurse they were to support and train the WSW.* (Provider)

With a considerable amount of work in the child protection area, Turuki Health Care has provided Mana Kidz staff with appropriate training (e.g., 'Child Protection Training' provided by 'Child Matters'), and has also hired (at own cost) a senior social worker to provide support to the team.

## *Mana Kidz at Nga Iwi School*

### *Implementing the programme*

Nga Iwi School's Senior Management Team were responsible for practical aspects of the implementation of Mana Kidz, such as discussing ways to get consent from family/whaanau and finding a suitable location for the clinic. The room that had been used in the previous rheumatic fever swab initiative was cleared out and made available for programme staff.

For the launch of the programme, school staff, family/whaanau and children were invited. The principal described the launch as a 'great success'. For example, Turuki Health Care introduced the processes and procedures to teachers, including flow charts for the referral pathway – while also talking informally to children and family/whaanau about the programme and RF prevention in general.

### *Every day practice*

Nga Iwi School has an allocated 0.5 FTE for Mana Kidz. The clinic is open between 9am and 1.30pm, five days per week.

In line with the manual of operations, children self-report sore throats and/or skin infections at time of roll call every morning. Once all the self-reported children have been swabbed, the WSW will turn focus to class room sore throat case finding. The WSW does throat swabs throughout

the day, while the nurse concentrates on more clinical tasks such as writing prescriptions and addressing skin infections. Many of the children present with eczema, and depending on the wound or the skin care required, the nurse will clean and treat.

For those students who test positive for GAS and/or who have a skin condition that requires antibiotics, treatment will commence as soon as possible. The majority of the time, the nurse calls the parent to gain consent. At times however, the WSW may support the nurse with this task. At this stage, they will also inform the family/whaanau of the potential implications if GAS is left untreated, relevant information about the type of medication prescribed and the treatment regime, as well as how RF can be prevented. For those who test positive, siblings are also tested.

> *We always reassure them what the medication is for, always answer questions and let them know they can call us. And also how they might have contracted the sore throat. (Mana Kidz staff)*

Turuki Health Care and its pharmacy is conveniently located across the road from Nga Iwi School. Family/whaanau are encouraged to pick up the medication from there, 'to get them used to where Turuki is'. However, family/whaanau also have the option of picking up the medication from school. If neither of these options work for the family/whaanau, medication may be sent home with the child, or a home visit will be made.

The five and ten day follow-ups, to ensure treatment is adhered to, are made by the nurse or the WSW. Mana Kidz staff have found that it is useful to speak with both the parent and the child as these may 'have different stories, and it can be hard to tell sometimes who tells the truth'. They encourage children to bring their sticker charts back as another way of checking adherence.

The nurse and WSW highlighted their collaborative approach, which they noted was possible because they both work for the same provider.

> *We share jobs,* [I] *just can't write a script or treat a child. Everything is else is like a team effort. (Mana Kidz staff)*

In addition to addressing sore throats and skin infections, the clinic fulfils a public health function, including undertaking hearing and vision checks, and addressing (e.g., treating or referring on to other health/social service providers) any other health ailments that children present with.

### *Working with school staff*

The nurse and WSW work with school staff to raise the profile of the clinic, and to ensure it is an integral part of the school. For example, the nurse takes part in regular Special Education Needs Coordinator (SENCO) meetings, a multi-disciplinary approach that involves teachers (including

Resource Teacher Behaviour and Learning, teachers of English to speakers of other languages) social workers, and community liaisons. She also collaborates with the Principal, for example they discuss potential child notifications. She has also presented ideas to include Mana Kidz staff in enrolment and parent interview processes, which would provide an opportunity for health promotion and rapport building; and to introduce new school-wide, health related policies for scabies.

To prompt teachers about the self-reporting process at roll call, the nurse will sometimes send out email reminders, which seems to increase the numbers of children who come through the clinic. Teachers find Mana Kidz staff 'very obliging'. If things are busy in the classroom, Mana Kidz staff were seen to make allowances for students, for example pick them up at later in the day for their throat swab. Similarly, Mana Kidz staff find teachers to be very supportive of their work.

At a strategic level, Turuki Health Care has shared programme data with the school Board of Trustees. The Principal noted that this had been highly appreciated, and had strengthened board members' buy-in to the programme as they can clearly see a decline in GAS positives.

### *Health promotion*

Health education is a constant undertaking for Mana Kidz staff. As indicated elsewhere, it happens when contact with family/whaanau is made, but also in one-on-one encounters with students. For example, when students present to the clinic they are educated on how to look after themselves, about the importance of adhering to treatment, and how to prevent the condition from spreading, and occurring again. When school wide issues present the nurse will provide information to family/whaanau through the school newsletter. Health education has been provided to family/whaanau and children in relation to boils, scabies, head lice, eczema, dental issues, vision and hearing, and diet and nutrition.

Mana Kidz staff acknowledged that health promotional activities have not been ongoing at the school since programme commencement because there has been little time available for it… *the time we spend here… it's more important to get the work* [i.e., clinic duties] *done*. They noted that they were reasonably new to the school, and that they hoped to undertake more health promotional activities going forward.

The WSW for example, was interested in talking to the principal about raising awareness of Mana Kidz, sore throats, RF and skin infections amongst teachers. She would like to relay information for teachers to bring into the classrooms, particularly around infection control measures (e.g., basic hygiene, importance of not sharing drinks, etc). She also noted that teachers have asked questions about skin infections, so information will be added into the school newsletter.

### *Engaging with children and their family/whaanau*

Building trusting and respectful relationships with children and their family/whaanau plays an important role in the delivery of Mana Kidz at Nga Iwi School. The experience of the nurse and WSW, is that the link to family/whaanau starts with the students. As such, they make sure they provide a safe and friendly environment for them.

> *It doesn't take much with the kids, they are so happy at school, and so happy to come into the clinic. We always let them get anything off their chest if they want to before we start swabbing, to create a comfortable environment. But we also have to be strict, like if they play up we take them to office.* (Mana Kidz staff)

Mana Kidz staff noted that the key indicators that children feel comfortable are increasing numbers of self-referrals, and students disclosing personal things to them (e.g., of abuse in the home). Often students who are enrolled with Turuki Health Care, and who are brought into its GP clinic, will point out Mana Kidz staff… *kids will say, hey mum, that's my nurse!* This makes engaging with family/whaanau easier.

Contact with family/whaanau generally takes place when treatment is needed (be it for sore throat or skin infections) or if a referral is needed for another health ailment. The majority of this engagement takes place over the phone, and as detailed above, health education in regard to the issue presenting will be provided. Mana Kidz staff have found that they need to be friendly but direct when they talk to family/whaanau – or messages may not to get through.

> *Trying to inform parents without undermining them is challenging. Have had to be quite straight to the point- a couple of parents said that's what they needed to hear.* (Mana Kidz staff)

While overall, Mana Kidz staff find that family/whaanau respond well to their engagement, and that their awareness of the clinic is increasing, they noted that some family/whaanau are difficult to engage with because they are concerned about the intentions of the programme. To 'win' family/whaanau over, Mana Kidz staff work hard to reassure them that they are there in the best interest of the child.

> [When doing home visits] *a lot of the time, we stand at door, we don't want to intrude. We talk to them in calm tone, reassuring them that we are not there to invade in any privacy, only there for the child and that is it.* (Mana Kidz staff)

Mana Kidz staff noted that family/whaanau have started to contact them if they have concerns or questions, that they are becoming more comfortable about sharing information with, and allow them into their homes… *these are indicators that there is a relationship there, and that there is trust*.

There is also a sense that many family/whaanau understand and take on board the information provided.

> *We know that when the medication has been taken properly, they* [family/whaanau] *have understood. The positive rates have dropped down quite a bit since I started. It's a good indication that the programme is working and that information is being received.* (Mana Kidz staff)

School staff feedback validated these inroads, indicating that family/whaanau appear to be more aware of the clinic, with a few calling the office to ask about the clinic's opening hours and if children can see the nurse even if they have not self-reported in class (e.g., because of shyness). Office staff had also seen a whole family come in for throat swabs after a child's second positive throat swab results.

### *Working with a culturally diverse population*

The nurse and WSW at Nga Iwi School are Maaori and Samoan respectively. While having a 'brown face' helps break down barriers – they are also able to converse with these population groups in their own languages, which helps to build rapport and trust.

Due to the culturally diverse population within the school, however, many other languages are spoken (e.g., Cook Island Maaori, Tongan). If family/whaanau do not understand information provided, Mana Kidz staff will seek support from other Mana Kidz WSWs who speak these other languages. There is also a school staff member who can support them with issues relating to language barriers. Sometimes, Mana Kidz staff will develop relationships with aunties or older siblings who can translate back to the family/whaanau.

### *Service integration*

Mana Kidz staff work closely with the SWiS worker at Nga Iwi School. If there are any concerns about a student's welfare, the nurse will discuss this with the SWiS, ensuring confidentiality is not breached. The nurse indicates that their relationship is getting stronger, for example, she has been invited to take part in family group conferences with the SWiS and Children Youth and Family Social Workers. Due to the transient nature of many families, phone numbers and addresses often changing, Mana Kidz staff also collaborate with the SWiS to ensure they are up to date with family/whaanau' contact details.

For those students who test positive for GAS three times, referrals are made to the Auckland Wide Housing Initiative (AWHI) helping ensure that family/whaanau get support to make their home environments more conducive to good health. The nurse indicated that one student who would repeatedly test positive, has not done so since whaanau participation in AWHI.

The nurse sometimes makes referrals back to children's GP for treatments she cannot undertake in the school clinic, for example ear syringing. Referrals are often made to hearing and vision clinics, and sometimes to optometrists.

## Family/whaanau perspectives

Although family/whaanau were not familiar with the name Mana Kidz specifically, they were all aware of the clinic, and saw this as 'part and parcel' of the school.

All family/whaanau interviewed have children who have tested positive to GAS through the school clinic. They found that Mana Kidz staff had made a lot of effort to get a hold of them to provide them with information, and that they are good at following up. One parent was surprised to get a visit from the school nurse at work.

> *I'm really hard to get hold of… so when the nurse didn't get any response from me, she came and saw me at work. (Parent)*

Family/whaanau were highly satisfied with Mana Kidz staff, indicating they are always available, nice and friendly but straight forward, and that they provide them with useful information. They all felt they knew more about sore throats, and RF – how RF develops (e.g., that it can affect the heart), how sore throats can be treated and RF prevented, including how to give medication, and the importance of adhering to the treatment.

> *I didn't know how serious it can get… I didn't know that my son could end up in hospital if he doesn't take his medication.* (Parent)

> *She* [nurse] *explains how to give the medication. It's helpful. And she tells us there are better options, like if the syrup doesn't work then perhaps its best to look at having the injection.* (Parent)

Family/whaanau also indicated that their children have a good awareness of sore throats, having had the children explain to them the potential repercussions of not treating GAS.

> *Yeah, my son explained to me how bad it* [sore throats] *could get, then I went away and read about it* [in the Mana Kidz consent form*] and realised he knew what he was talking about. He has listened* [to the nurse]. (Parent)

All family/whaanau interviewed now take sore throats more seriously, including getting their children checked out by a GP, something they would not have done before.

> *I don't brush it off anymore, I take it more seriously, in the old days it would have just been a sore throat, now I will take [children] straight to doctor.* (Parent)

> *I will most definitely take kids to see someone sooner, like taking them to a GP, I would not have done it in the past… usually I'll*

> *wait for coughing, a runny nose… till they can't move… then, OK you are sick! We're busy, it's so hard to fine the time. (Parent)*
>
> *I've gotten into a habit of doing things for him [her son] that I wasn't doing before. Like checking his throat and skin. It* [the Mana Kidz programme] *has made me aware I'm too hard, now I listen to him. Now alarm bells go off. If I notice eczema is getting a bit red, I will attack it straight away.* (Parent)

The vast majority of family/whaanau had passed on their learnings about rheumatic fever to others, including cousins, friends, sister in law, and other members of the extended family.

In addition to learning and getting support around sore throats, family/whaanau indicated that Mana Kidz staff have identified other health issues also, including skin infections, asthma, and vision and hearing. Subsequently, they had been referred to other service providers, such as optometrists and the AWHI programme.

All family/whaanau were relieved that their children were getting cared for at the school. Many indicated that they were too busy to go and pick up prescriptions, or that they had limited means by which to get to the chemist (e.g., having no car, or no money to put petrol in the car).

> *They've made it so simple. She's* [the nurse] *even offered to come and drop it off – she makes sure parents get it. It has made my life so much easier.* (Parent)

## Impacts

Since the nurse and the WSW started working in the clinic at Nga Iwi School, they have seen the number of GAS positives drastically reduce. They also believe that the number of children presenting with serious skin infections are fewer and farther between.

As evidenced elsewhere, the health literacy of the Nga Iwi School community has increased because of the programme. There is better awareness and knowledge about sore throats and the progression to RF, how to treat sore throats, and where to take children if symptoms present. Family/whaanau are more likely to take their children to their GP, and they are passing on their knowledge to other whaanau members.

Mana Kidz also appears to contribute to reducing health inequalities for families of the Nga Iwi School community. The children have better access to health care, and having Mana Kidz staff collect prescriptions for the them increases their likelihood of improved health and wellbeing as family/whaanau often do not have the time (e.g., because holding down multiple jobs) or the money to do so themselves.

# Case Study 2: Clendon Park School

## Introducing the school

Clendon Park School in Manurewa, South Auckland, caters for Year 1-6 mainstream students and Year 1-8 Maaori and Samoan bi-lingual students. It is a decile 1 school with a current role of 585 students. The school community is largely Maaori and Pasifika.

School staff described the school as inclusive, where involvement by family/whaanau and the wider school community is encouraged. They have an open door policy to entice engagement. Staff noted that the school community is transient, with family/whaanau frequently moving houses for socioeconomic reasons.

Clendon Park School values holistic health and wellbeing of children. It has been a Health Promoting School (HPS) for approximately 15 years. The school has a breakfast club, is part of the fruit and milk in schools initiatives, and provides lunches for children who come to school without. Physical education programmes are an integral part of the curriculum. A social worker is attached to the school.

Clendon Park School used to have many children who showed up with school sores that would stay untreated. They have also had children over the years who have developed RF. Their motivation to take part in Mana Kidz was to enable the school to better look after children's health and wellbeing.

During the visit to Clendon Park School, the principal, the deputy principal, two teachers, Mana Kidz staff (i.e., one nurse and one whaanau support worker [WSW]), and five family/whaanau members were interviewed. In addition, one provider representative was consulted.

## The provider: ProCare

Mana Kidz at Clendon Park School is provided by ProCare, a network of qualified general practitioners (GPs) and general practice teams, representing general practices across the greater Auckland region.

As a primary care provider, ProCare's relationships with practice teams are strong. In fact, approximately 90% of general practices in Manurewa are ProCare practices. This means that effective communication channels exist between Mana Kidz staff and General Practitioners (GPs), enabling continuity of care. ProCare is also a 'Rapid Response' (Ministry of Health funded free sore throat clinics) provider.

When recruiting for the Mana Kidz programme, ProCare looked for people who match the ethnicities in the community, as they believe this supports effective engagement with children and their family/whaanau. ProCare described the WSW role as an 'entry-level health position', and all of their WSWs have undergraduate health science degrees. ProCare has

Community Health Workers that work with their Maaori and Pasifika populations. These provide support and expertise to Mana Kidz staff when necessary.

In recognition that the WSW role (in particular) can become quite monotonous, ProCare has been supportive of staff wanting to expand the scope of their practice.

> *All staff have been open minded and proactive. They become experts quite quickly, they wanted more and more challenges and we don't want them to get bored and leave*. (Provider)

For example, WSWs have developed a plan for a health promotion programme that they have recently trialled in two schools (see health promotion below).

## Mana Kidz at Clendon Park School

### *Implementing the programme*

At the time of programme implementation, ProCare and NHC representatives visited Clendon Park School. They presented to school staff about the programme – e.g., what it would look like and how it would affect school staff's day-to-day routine. At the time, Clendon Park School had a Kidz First Public Health Nurse (PHN) who visited once per week. This change over to Mana Kidz only brought some confusion as to 'who was doing what' at the school.

Clendon Park School had an unused disabled toilet block that was suitable for the clinic. This was subsequently re-furbished for Mana Kidz. It is centrally located, has a washbasin, is easy to clean, and can ensure confidentiality.

### *Every day practice*

Clendon Park School has an allocated 0.5 FTE. The clinic is open between 9am and 12.30pm, five days per week. The nurse and WSW work in Clendon Park school only, as opposed to other Mana Kidz staff who cover multiple schools.

In line with the manual of operations, children self-report sore throats and/or skin infections at time of roll call every morning. Teachers fill out forms that are collected by student runners.

In the mornings, the WSW swabs self-reported children, as well as any siblings of any children who have tested positive for GAS in the days prior. If any of these siblings are absent, the family/whaanau are contacted to arrange a home visit. Once all self-reported children have been swabbed, the WSW shifts focus to classroom case findings. Meanwhile, the nurse addresses skin-infections, contacts family/whaanau

of children who have tested GAS positive, and writes prescriptions. Follow up calls to family/whaanau are carried out by the nurse or the WSW.

All activities are structured around class and break times. For example, in the first block of classes the nurse contacts family/whaanau. During the lunch break, the nurse goes to the pharmacy to pick up prescriptions, while the WSW organises information packs to go with the medication. After lunch, they do home visits.

It was acknowledged by Mana Kidz staff that they do not commonly meet the programme target of two class case findings per term. This is influenced by how readily accessible children are (i.e., the learning programme at the school does not allow for more interruption than what is already caused), the need to pick up the medication in the afternoon, and/or insufficient staffing. They believed that the programme should focus on class case findings, with self-reported sore throats as a secondary focus.

The nurse and WSW noted that they have a partnership role at the school. They share tasks as necessary depending on how busy they are and/or the type of relationship they have with individual families (e.g., nurse may swab, while WSW do follow up calls to family/whaanau). This helps free up time for the nurse to address a range of other needs at the school (e.g., hearing and vision, immunisation, etc).

### *Working with school staff*

The Clendon Park School Mana Kidz team has been proactive in engaging and working with school staff. Since the opening of the clinic, they have made an effort to elicit feedback from school staff about 'what is working or isn't working' with the programme. They have also actively worked to raise and maintain awareness about the programme, and what they do in the clinic (see also, health promotion below).

> *It's important that they know who we are and what we do, what we provide. At the start, teachers thought we only did throat swabs so we gave out pamphlets and brochures to tell teachers exactly what we do, like that we give out free medication and deal with skin infections.* (Mana Kidz staff)

For example, the nurse has held a PowerPoint presentation and presented on programme data to the Special Education Needs Coordinator (SENCO) group, a multi-disciplinary approach that involves school team leaders and key people who work with children who need extra support for learning.

Because of ongoing communication, Mana Kidz staff have found that school staff have 'warmed up to them'. They now ask questions and seek their support (e.g., if a child has been off for long period teachers may ask the nurse to check in with the family, and work out a plan for the

child to get back to school), and send children through to the clinic if they have any concerns about their health.

The provider has strongly encouraged Mana Kidz staff to engage with school staff.

> *We've had to give them the freedom, mentoring, and encouragement to take a proactive approach with staff in school.* (Provider)

School staff were very positive about Mana Kidz, and their feedback reflect the efforts made to engage.

> *They came into the school a while back, and they were very informative from the start… they've spoken to staff at professional development days and staff meetings and they keep us informed about numbers* [of GAS positives]. (School staff)

While some staff noted that having to let children go to the clinic in the mornings can be disruptive, they acknowledged that 'there is no other way' because swabs need to get to the lab in the afternoons. They also acknowledged that the times when the WSW comes to pick up children for their swabs provide opportunities for learning as 'questions can be answered on the spot'. A senior school staff member noted that the programme had 'not created extra work for the school' but instead it had provided opportunities for information sharing (e.g., about living conditions) which can help the school meet student needs.

All school staff considered Mana Kidz staff as an integral part of the school… *they're like [school] staff members, they're included in shared morning teas, and they'll write notes on the white board for being out of the office.* (School staff)

### *Health promotion*

Health promotion plays a large part in the delivery of Mana Kidz at Clendon Park School… *we're trying to find new ways to get everyone on board. The goal is to get numbers down, if they know how it spreads, and take medication this is more likely to happen*. (Mana Kidz staff)

When children present to the clinic Mana Kidz staff will provide information about the condition they are presenting with. With skin infections for example, the nurse will talk about how to keep the wound clean and covered, the workings of bugs and infections, and encourage children's involvement in the actual cleaning and dressing process… *we put a lot of emphasis on self-caring, so that they are able to look after it* [the infection].

As noted elsewhere, ProCare's WSWs have recently developed a health promotion plan. One aspect of this plan is to deliver health education to children about 'how to stop the spread of GAS'. They have found that there has been a lot of focus on how to prevent RF (i.e., by adhering to

medication), but not so much about preventing GAS which they consider important for children to know. The initiative will soon be implemented at Clendon Park School, and includes activities from National Heart Foundation resources such as using a spray bottle with fine mist to illustrate how germs spread through coughing and using 'glitter handshakes' to illustrate how germs spread through touch.

Another initiative that the WSW and the nurse are working on is a whole-school sticker chart competition. This initiative will focus on medication adherence. First, classes will be informed about infection control measures, how RF fever develops and the importance of adherence. All classes in the school will then be asked to enter a design for a sticker chart. One winning chart from each syndicate will be chosen and printed up for them to use.

For family/whaanau, health education primarily takes place over the phone or in their home. Information packs are also sent home with the children, for example about skin infections. Mana Kidz staff make sure at least one of them participate in any afterhours school where family/whaanau may be present activities (e.g., parent nights, 'Fia Fia nights' when children perform). Having a table with information resources provides an opportunity for health promotion, and rapport building. Mana Kidz staff also write something for the school newsletter every fortnight.

School staff acknowledged the health education provided to family/whaanau by Mana Kidz staff.

> *They take the time to talk to parents about how to do things – there's more education about nits, the need to wash bedding, to wipe down the sofa. They are taking the time to bring education into homes. We* [schools] *used to send students home for having nits, and say that they* [children] *couldn't come back till cleared but no one gave advice on how to address issues.* (School staff)

Mana Kidz staff engagement with Clendon Park School staff includes providing health education. They have informed school staff about:

- Infection control measures, such as wiping down desks and tables with alcohol every day, ensuring that children wash their hands properly
- Scabies prevention (e.g., clean carpets once per term), after school staff expressed concern about the prevalence of this at the school
- Where GAS positives come from, and the kind of environment that the bacteria thrive in (e.g., rooms without cross ventilation).

In addition, Mana Kidz staff have provided school staff with resources such as posters (e.g., illustrating the five second rule for washing hands), and National Heart Foundation education resource packs that help teachers bring RF health education into classroom activities. The resource

packs have been utilised by the school in end of term two school-wide health topics. The glitter handshake for example is covered in one lesson.

Because of these activities, school staff reported being more aware of sore throats, RF, skin infections, and general infection control measures than before.

> *That general feedback to teachers has been useful, like they* [Mana Kidz staff] *noticed that the highest incidences of positive swabs were coming from rooms that didn't have the curtains pulled or no cross ventilation. That was very good for us to hear about. Because, obviously they are some of the conditions that cause problems.* (School staff)

> *I think also, teachers are more aware of ways they can prevent the spread of germs, the wiping down tables more regularly, things like sneezing, and also being aware of children who live in houses with lots of family members, that they tend to be more at risk.* (School staff)

Mana Kidz staff acknowledged that they have not linked in with Health Promoting Schools (HPS) for health promotion, but indicated that this may happen in the future.

### *Engaging with children and their family/whaanau*

When engaging with children at Clendon Park School, the nurse and the WSW have their separate 'roles' to play. Jokingly, they describe the nurse as 'the nice one' and the WSW as the 'tough one', but emphasises that this provides a good balance for children who develop strong bonds, respect and appreciation for them as a team. They have made an effort to learn children's names and report that they know 'mostly every single child' at the school by their first and last names. They also know what classroom they are in.

School staff were impressed with the rapport Mana Kidz staff have built with the children, how they have taken the time to know each child. They also noted that children 'want to go to them', that they want to tell the nurse or WSW if they have a problem.

> *They know all kids by their names. That's 580 odd kids! And they know their brothers and sisters and what ethnic groups they're from.* (School staff)

> *A lot of things are being disclosed, even though there is a SWiS worker at the school, they will disclose things to them* [Mana Kidz staff]*. It's interesting how it comes out at the strangest of times.* (School staff)

Mana Kidz was considered by many school staff to provide an opportunity for children to learn, in a safe and familiar environment, that 'going to the doctor is not bad, that they are not going to be judged'.

Mana Kidz staff at Clendon Park School sees great value in building strong relationships with family/whaanau. In addition to engaging with family/whaanau over the phone, home visits are common practice. An integral part of the job, is taking part in after hour's school activities is. In addition to providing opportunities for health education, it provides Mana Kidz staff with opportunities to have informal chats with family/whaanau, build relationships and provide a face for the programme.

Over time, Mana Kidz staff have noticed that family/whaanau have 'warmed up' to them. For example, there is more interest now and family/whaanau 'pick up the phone when you ring them', whereas at the start there was some distrust and phone calls were often not answered. Some family/whaanau have also brought their children to the nurse when unwell, instead of taking them to the doctor. Mana Kidz staff noted that family/whaanau now often express gratitude towards them.

> *Parents seem to be very grateful. They come and say hello at expos, they have taken to us. They are always thanking us for giving them medication.* (Mana Kidz staff)

> *They see that we make an effort, like we take the medicine to their house. We're in their face all the time. We have to be patient, they observe more than listen to what you say, sometimes they are even mean to you. But having been here, been stable… because they think that we're* [programme providers] *are going to move on… parents are now slowly warming up. (Mana Kidz staff)*

Again, school staff were impressed with the inroads Mana Kidz staff have made in terms of their engagement with family/whaanau. Those interviewed described the nurse and WSW as friendly, culturally sensitive, perceptive, approachable, informative, and professional. School staff also highlighted that they are highly visible around the school. Their perception was that Mana Kidz staff had built good rapport with family/whaanau.

> *They are people who care very much about each individual, there is no judgement, no blaming parents. I've never heard them comment negatively about parents.* (School staff)

> *There's perceptiveness, like the nurse, even if it's very filthy* [in the home]*, she will sit down and have a cup of tea… some kids go home to homes that you just wouldn't see, and that may be unsafe. It's a hard job to go into people's homes, I probably wouldn't be brave enough to go into some houses. Somehow, they've broken down the barriers.* (School staff)

> *Feedback from parents is good. Programme is one that is very well respected by the community.* (School staff)

One school staff member highlighted a notable difference between having Mana Kidz based at the school, and the previous approach of a visiting PHN.

> *There's this spin-off effect, they're here at parent meetings, functions, they will make themselves available, as opposed to one person coming in once a week. Having their face around the school, makes parents feel safe about the service.* (School staff)

### *Working with a culturally diverse population*

Mana Kidz staff approaches all children and their family/whaanau as equals. They do not consider themselves to alter the way they engage with people because of their ethnicity, instead they make sure they are always humble.

Although one Mana Kidz staff member is Samoan, she did not make this explicit to family/whaanau when she started working at the school. For her it is very important to stay neutral to ensure Maaori and other ethnicities are treated equal. When necessary, however, she will use her language to communicate with Samoan children or families if there is an issue with comprehension. She emphasised how culturally aware her Scottish counterpart is… *she* [Mana Kidz staff] *is so culturally aware now, she tries to speak their* [family/whaanau] *language*.

School staff had noticed how Mana Kidz staff attend to individual families not by their role in the clinic (i.e., nurse versus WSW) but by who might be best at getting the message across in the most appropriate way. Overall, school staff considered the Mana Kidz team to be culturally responsive and aware, with an ability to engage well with anybody no matter their cultural background.

> *The team itself, they are very well liked, they get along well with people, they know how to communicate. Even though* [Mana Kidz staff] *is Scottish they both have personalities that can cut across any cultural issues. They just genuinely want for kids to have better health, they are very supportive, there are no barriers.* (School staff)

### *Service integration*

Mana Kidz staff work closely with the SWiS worker at Clendon Park School. They liaise back and forth about aspects of financial arrangements, access to community services cards, Child Youth and Family matters, and potential referrals to the Auckland Wide Housing Initiative (AWHI).

The Mana Kidz nurse also refers to Rapid Response clinics, and hearing and vision clinics. She has recently started to refer children on for immunisation at their GP. The nurse works closely with ProCare GPs, and the Mana Kidz manager continuously works to raise awareness of the programme within their practices, encouraging communication between the two. The nurse noted that she had found it challenging to deal with practices from other providers.

Another benefit of the programme has been Mana Kidz ability to bring in donated items for the children, including free toothbrushes, shoes,

blankets, pyjamas. These items have been passed on to teachers to distribute.

## Family/whaanau perceptions

All family/whaanau could recall getting the Mana Kidz brochure and consent form to fill out. They considered the information easy to understand, but noted 'there was a lot of text'. They thought it would be difficult to understand for people with English as a second language and suggested that it is translated into other languages also.

All family/whaanau have children who have tested GAS positive through Mana Kidz, and as such, they were highly aware of the sore throat clinic.

When first being contacted by Mana Kidz staff, family/whaanau had been advised that their child had tested positive to GAS. They all recall being informed about what GAS is, how their child may have contracted GAS, what they need to do to treat it, and how to prevent it from spreading. These were all new learnings for all family/whaanau interviewed.

> *I learnt that strep throat can lead to RF – which can affect the heart. If you have RF, you can't over exercise, it can be dangerous.* (Parent)

> *I was concerned when I found out it [throat swab] was positive, but then she told me it's not RF yet.* (Parent)

One family/whaanau had also had her child treated for a skin infection, so the nurse had contacted her over the phone to inform her, and to ask for permission to prescribe antibiotic cream. The nurse told her of the importance of keeping the infection clean and dry. When the child arrived home, she had the cream with her and a leaflet with information about how to treat the infection. Because she knew what to do, the infection 'healed up fast'. All family/whaanau interviewed reported having passed learnings onto others.

Family/whaanau reported that their children had become very aware and knowledgeable about sore throats and skin infections since the programme started, now telling them if they think they need to go and see the nurse, or letting someone know if they have a sore throat. All their children 'love the nurse' and sometimes goes to see Mana Kidz staff 'just for a cuddle or a chat'. They were grateful for the practice their children were provided, to engage with health workers… *they are not scared to tell you they are not well, they trust them* [Mana Kidz staff]'.

Family/whaanau were very grateful for the clinic, because the random tests had picked up children of theirs who had never complained about sore throats. Nearly all family/whaanau had other children who had been swabbed also as a result of the initial GAS positive result (i.e., sibling swab), some of which had come out positive also. In one family/whaanau, the nurse had suggested they all get swabbed because of recurring GAS positives, and it turned out that the mother was a carrier.

They also noted the advantage of having the sore throat clinic in the school. All considered it a challenge to visit a GP, because they tend to work during the day. One family/whaanau indicated that she would always have to 'think twice' about going to the doctor, because she would likely not be able to afford any medication prescribed*… it's a breather that I can get it* [medication] *free through school*. Some family/whaanau indicated that the nurse had supported them with other health ailments of their children (including hearing issues, and a 'lump'), which they were grateful for.

All family/whaanau interviewed are now more aware of sore throats and have changed how they respond to flu like symptoms.

> *Now I ask my kids, do they have a sore throat. And when they do I go to the doctor and ask for swabs.* (Parent)

> *I wouldn't have thought of taking my kids to doctor for sore throats before. If they have sore throats, I'd rather be safe than sorry. I dint know anything about RF until the nurses came in. Now I send them [kids] straight to the nurse.* (Parent)

All family/whaanau interviewed now consider preventative measures. For example, they have asked their children not to share bottles/cups or food with others, to wash hands regularly, not to drink directly out of water fountains. Some had provided their children with their own bottles.

Overall, family/whaanau were highly satisfied with Mana Kidz. They found the staff nice, respectful and easy to talk to. If there are things they do not understand, they feel comfortable about asking questions.

## Impacts

Mana Kidz staff have noticed a drastic drop in GAS positives since programme commencement. Their data suggests that positives have gone from 33% to 8%. Similarly, skin infections are 'not as bad as they used to be'. Mana Kidz staff are increasingly finding that when they phone family/whaanau about skin ailments, the child has already been taken to the doctor and is about to start treatment. School staff also reported less cases of GAS positives and skin infections in their classes.

As evidenced elsewhere, health literacy has improved with family/whaanau knowing more about sore throats, how to prevent them and would more readily take their children to the doctor. Children are perceived to be more aware, and increasingly take own initiative to visit the clinic (e.g., through self-reporting, indicating to family/whaanau they need to go). School staff noted that there is less resistance to medical care now, with more family/whaanau signing the Mana Kidz consent form. School staff also have better understanding of sore throats, RF, skin infections and associated infection control measures.

There is also increased capacity for health promotion at the school, with information and expertise being readily available, and shared on a regular basis with the whole school community.

School staff noted a slight increase in family/whaanau contact with the school, as they are encouraged to pick up medication from the school office. If school staff know they are coming in, they will take this opportunity to engage. Some school staff also reported that school office gets phone calls from family/whaanau letting them know that their child has a sore throat and that they are taking the child to the doctor. There are also an increased number of family/whaanau who talk to school staff about how long to keep their children at home if they are unwell, with family/whaanau having become 'more confident about keeping kids home for two days' when there has been a positive swab.

School staff perception was that the Mana Kidz programme might have contributed to a slight increase in attendance at Clendon Park School. Some children who used to stay home because of ongoing skin conditions, reportedly now spend more time in school.

## Case Study 3: Wiri Central School

### Introducing the school

Wiri Central School is a decile 1 full primary school catering for students in years 0 to 8. It has a current role of 455 children. The school community is predominantly Maaori and Pasifika (98%), with Samoan being the most common ethnicity.

School staff described the school community as supportive, taking part in children's activities. There is a high level of transience however, with about one third of the school roll turning over annually. There is predominantly state, or other rental, housing in the area which is discretely bounded by motorways and industry.

Wiri Central School is a Health Promoting School (HPS), a Fruit in Schools school and takes part in the KickStart Breakfast programme. Each school term starts with a health focus for children's learning.

Wiri Central School was the pilot school for the Mana Kidz programme. There has also been a similar programme in the past, making Mana Kidz the 'third round' of RF programmes at the school.

During the visit to Wiri Central School, the principal, the deputy principal, two teachers, Mana Kidz staff (i.e., one nurse and one whaanau support worker [WSW]), and three family/whaanau members were interviewed. In addition, four provider representatives were consulted.

## The provider: Kidz First

Kidz First - Community Health provides an integrated child, youth and family focused service. This includes a comprehensive range of services for the child, young person and their families/whaanau in the South Auckland region. Services are provided in and from a number of settings and environments including Manukau SuperClinic, community outpatient clinics, schools and preschools and the family's home.[50] Kidz First Public Health Nursing (Kidz First) is one of the services provided, and some of these nurses are currently working in the Mana Kidz programme.

As a public health nursing service provider, Kidz First already had an experienced nursing workforce to deliver Mana Kidz. In particular, they had vast experience of working within schools. As the provider of the Wiri Central School pilot, they also knew what to look for when recruiting Whaanau Support Workers (WSWs). Subsequently, they now have a WSW workforce made up of young women fluent in te reo Maaori or Samoan, with undergraduate health science degrees. They are growing in their knowledge of what they can do in the schools, and can increasingly be delegated tasks such as taking medication to families' homes.

## Mana Kidz at Wiri School

### *Implementing the programme*

Because the Mana Kidz pilot programme had been run at Wiri Central School, the school community were already familiar with what was to come. Also, the clinic that had been used in the pilot was simply re-opened for Mana Kidz. School staff noted however, that if they knew the programme was going to continue, they would like to arrange for a more suitable location for Mana Kidz, which is dedicated to the programme, and which offers better access for family/whaanau. Currently, the clinic is located opposite interview rooms and it can be noisy when children line up in the corridor for their swabs.

The launch of the programme involved presentations to school staff, family/whaanau and children to create awareness. The school newsletter was also used to get information out to family/whaanau.

### *Every day practice*

Wiri Central School has an allocated 0.5 FTE. The clinic is open between 9am and 12.30pm, five days per week.

The WSW starts her day at the Kidz First office. She collates all the things she needs to set up the 'throat and skin stations' in the clinic. When she gets there, she sets up the stations before starting to collect children who have self-reported with sore throats and skin infections. She generally

[50] See: http://www.countiesmanukau.health.nz/funded-services/hospital-specialist/services/kidzfirst/communityhealth.htm

gets about eight students at a time to come with her. Once she has done the 20 classrooms in the school, she will move on to class case findings. She aims to complete one class per day.

Meanwhile the nurse focuses on clinical tasks such as skin infections, writing prescriptions, and contacting family/whaanau whose children have tested positive to GAS. She will introduce herself and ensure they know where she is calling from as family/whaanau sometimes forget about the programme, and/or a child may not have complained about a sore throat, which can cause confusion. She advises family/whaanau of the positive test result, always stressing that it is not yet RF, gains consent for treatment, and offers them the opportunity to ask any questions. She will also make arrangements as to how the medication will be picked up, encouraging pick-up from school to so that there is an opportunity to engage face-to-face.

The afternoons are spent on administrative tasks, and getting medication to family/whaanau. If family/whaanau are unable come into the school to get the medication, it may be sent home with the child (senior students only), or home visits will be made. At times, Mana Kidz staff deliver medication to family/whaanau cars, as they pass by the school to pick up their children. They have also met family/whaanau in supermarkets and malls… *we just want to make sure the child gets it* [medication].

Mana Kidz staff deal with a range of unmet needs throughout the day, including head lice, hearing and vision, immunisation monitoring, enuresis, school sores, injuries in the playground, cellulitis and scabies.

### *Working with school staff*

The nurse at Wiri Central School attends monthly Special Education Needs Coordinator (SENCO) meetings, a multi-disciplinary approach that involves school staff, Social Workers in Schools (SWiS), and outside agencies.

There are no other formal links with school staff. However, the nurse has informal catch ups with the principal 'all the time'. They have an understanding that if the principal would like the nurse involved with any follow up with family/whaanau (e.g., as PHN input) she will provide support.

School staff noted that Mana Kidz staff mix with them in the staff lunchroom, and approach them about any issues that might be presenting in their classes. Generally, when a child tests positive for GAS, the nurse will let the relevant teacher know and they may talk about how to prevent it from happening again.

School staff were supportive of the programme… *what sells it is when you see that sick children are seen to and look better.* They will bring any concerns to the nurse's attention (e.g., if a child continuously has a cold) and felt comfortable about asking questions.

### Health Promotion

Health education at Wiri Central School is an ongoing undertaking. Primarily, children are educated when they present to the clinic. For example, while being swabbed, Mana Kidz staff will talk to them about sore throats, how they are treated, and how they may be prevented. Mana Kidz staff will often refer to the national television ads about RF, since many children appear to know these. If Mana Kidz staff see long nails on children, they will talk to them about the importance of keeping them trimmed, if they see children cough without covering their mouths they will talk to them about the importance of doing so… *it's the on the spot things that you see and address*. Mana Kidz may also ask teachers to reinforce the messages they are trying to deliver.

> *They may ask a teacher to talk about why they* [children] *need to wash their hands… they need to hear things from a lot of people before they believe you.* (School staff)

Much of the health education is impromptu. For example, when one class kept coming up with GAS positives Mana Kidz talked to the teacher and the children about hand hygiene, and how they can prevent GAS from spreading.

Similarly, health education for school staff happens on an as needs basis. If there are issues in particular classrooms, Mana Kidz staff will provide information to the leaders of learning (managers of teachers in the different syndicates) in the first instance, and then to the relevant teachers. Sometimes they approach teachers directly… *they will talk to the teacher if there is an issue, and provide strategies to deal with that* [issue]. (School staff)

For family/whaanau, health education primarily takes place over the phone or in their homes. Information packs are also sent home with children, along with their medication. In addition to sore throats, RF and skin infections, Mana Kidz staff have talked to family/whaanau about other things such as smoking cessation and nutrition.

Mana Kidz staff acknowledged that more health promotion could be done at the school. They hoped that, as GAS positives reduce they get more time for these activities.

> *Would be good to do more … But what you would like to see done and what you can do realistically is quite different.* (Mana Kidz staff)

The nurse at Wiri Central School has worked with the HPS coordinator on a couple of occasions. Although this has been in relation to skin infections, it was on a national level and not specific for this school.

All school staff were open to the idea of linking Mana Kidz specific health education with the curriculum and whole-school activities.

### *Engaging with children and family/whaanau*

Engagement with children takes place in the classrooms (e.g., as they are picked up and taken to the clinic by the WSW) and in the clinic while being attended to. The WSW also likes to engage with children at other times if she is able. If she walks around during morning tea and lunch breaks for example, she will engage with the children - comment on what is happening. She will also reinforce positive things announced in the school newsletter (e.g., congratulate individual students on achievements). She knows most kids by name and the majority of parents' names. She also knows who are brother and sister with whom.

As indicated elsewhere, family/whaanau are engaged with over the phone, through home visits, or wherever Mana Kidz staff need to be to ensure they are provided with medication for their children.

School staff commented that Mana Kidz staff are very supportive and professional in their engagement with family/whaanau, and that they are warm and caring, meanwhile direct and to the point. School staff also noted that family/whaanau appear to engage well with Mana Kidz staff. They are often reluctant at the start but once they have had a face-to-face meeting – 'they are happy'. However, school staff identified that there may be opportunities for Mana Kidz staff to be more visible in the school, e.g., take part in 'family nights', or regularly be at the school during pick-up times.

### *Working with a culturally diverse population*

The majority of the Pasifika families at the school speak English. However, the WSW will often speak Samoan with Samoan families, which they seem to appreciate. Mana Kidz staff noted that they have other Kidz First colleagues who speak a range of different languages who they can ask for support if needed. They noted however that they have to be mindful when offering additional cultural specific support as some family/whaanau 'take offence' from this.

### *Service integration*

The nurse at the school works closely with the SWiS, liaising with her about any social concerns they may have about a particular child. The SWiS was considered to be very 'accessible in the school', and readily provides support to Mana Kidz staff. For example, one father who was reluctant to engage, had a good relationship with the SWiS so she talked to him over the phone and delivered medication for his son instead of the nurse.

Mana Kidz staff have also linked in with Child Youth and Family, Manukau SuperClinic, the Auckland Wide Housing Initiative (AWHI), and Sisters of Mercy.

Provider representatives noted that primary health referral pathways were better understood by Kidz First now that they are a Mana Kidz provider.

Mana Kidz staff link in with local GPs, and since 2013 processes for communication and collaboration have been improved (e.g., Mana Kidz nurses are now able to access some electronic discharge summaries). There are also 'care update cards' provided to family/whaanau in their information packs which they are asked to take to their doctors. However, family/whaanau do not always follow through on this.

## Family/whaanau perceptions

Overall, family/whaanau from Wiri Central School were highly satisfied with the Mana Kidz programme. All family/whaanau interviewed have children who had tested GAS positive. Two of them had also had Mana Kidz staff address skin infections on their children.

They could all recall the Mana Kidz brochure and consent form, and although they indicated that it was informative, they noted that it would have been easier for them to understand if it had been available in their first language, Samoan.

One aspect of the service that the family/whaanau valued included the 'convenience' it provides in terms of providing them with relevant information, being easily accessible in the school, and offering home visits for medication drop off. They were all financially strained, and neither of them had access to a vehicle during the day.

> *When you have to get three kids ready just to walk all the way to school again* [to pick up medication], *and you get a 'knock knock' on your door you go yay!* (Parent)

Family/whaanau commented that Mana Kidz staff were good communicators, respectful and caring. The information provided by Mana Kidz staff was considered easy to understand, and family/whaanau were grateful for the follow ups to see how they were getting on… *I like that she calls and asks how the kids are.*

As a result of Mana Kidz being provided at Wiri Central School, family/whaanau reported having learnt a range of new things about sore throats and RF, including: that RF can be dangerous; that a person can be GAS positive without showing any symptoms; the importance of adhering to the medication; and preventative measures.

They had also learnt that skin infections can be contagious, to wash hands before and after changing dressings, and to wash all bedding and clothing in hot water and dry in dryer or in the sun to break the cycle of bacteria spread.

All family/whaanau reported that they have changed the way they respond to sore throats and skin infections, being more likely to take their children to the doctor – or send them to the nurse at the school.

> *They* [*children] might complain about a sore throat but still jumping around… now I take them to the doctor… or tell them to*

> *go and see the nurse at school… and if I pick up my children from school I make sure they have actually gone to see the nurse by going to see the nurse myself.* (Parent)

It was noted that the national television campaign about RF helped reinforce the messages provided by Mana Kidz staff. Family/whaanau all reported that they now try and make family, friends and neighbours more aware about sore throats and RF.

Family/whaanau believed that the programme could be improved by allowing all family/whaanau members to be swabbed at the school or in the home, if they were at risk. Having to take those who are not covered by the programme to another location for swabbing was seen as a barrier.

## Impacts

Mana Kidz and school staff reported a heightened awareness amongst children, school staff and family/whaanau about sore throats, RF and skin infections. For example, family/whaanau now call the school office to ask if their children can go and see the nurse for a sore throat or skin infection, teachers are more aware of the need for good hygiene, while children are more aware that having a sore throat or a skin infection is 'not normal', and needs attending to. A noticeable reduction in, and severity of, skin infections was also reported. Scabies for example used to be common, but is now not often seen.

One school staff member believed that adherence to medication has likely improved because of the programme. While other RF programmes delivered at the school in the past provided medication also, she considered there to be a much stronger emphasis on education, and ongoing engagement and follow up with family/whaanau this time around.

As evidenced elsewhere, health literacy has improved with family/whaanau knowing more about sore throats, how to prevent them and would more readily take their children to the doctor. Their knowledge about skin infections is also increased.

School staff noted that they have seen better attendance on individual cases, because Mana Kidz staff have been able to attend to 'home factors' that were contributing to children being unwell, such as overcrowding and damp and cold housing (e.g., through referrals to AWHI).

# Appendix I: Impact on non Mana Kidz schools

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## Impact of the reallocation of Kidz First Public Health Nurses to the Mana Kidz Programme

The establishment of Mana Kidz resulted in the reallocation of Kidz First Public Health Nurses (PHN) from a district wide school visiting model to a more targeted and intense school based nursing service in 61 schools[51]. One of the primary drivers for establishing Mana Kidz was the requirement by the Ministry of Health for CM Health to introduce throat swabbing in schools for the primary prevention of Acute Rheumatic fever (ARF). Therefore the methodology for identifying high risk schools was driven by the risk of students developing ARF rather than other health needs.

The reallocation of Kidz First PHN capacity to Mana Kidz has resulted in a change in the service delivery model to non-Mana Kidz schools in the district. The expectation is that schools with a Mana Kidz programme will have the services previously delivered by the Public Health Nurses delivered by the Mana Kidz provider in addition to the new aspects of the programme. There are 184 schools in Counties Manukau district and therefore 123 schools without a Mana Kidz programme.

The purpose of this paper is to outline how the pre Mana Kidz PHN nursing service operated, what level of service is currently being provided to non-Mana Kidz schools as well as summarise results from a survey of non-Mana Kidz Schools about the impact of the change of PHN service delivery.

## Public Health Nursing Service prior to the establishment of Mana Kidz

The Public Health Nurses (PHNs) were seen to provide a pivotal population based preventative and primary health nursing service to schools, communities, children young people and their families/ Whaanau as well other health and well-being agencies. It should be noted the programme had never been formally evaluated.

PHNs are registered nurses who have a suite of competencies related to population/public health practice (e.g. independent vaccinator certificate) as well as primary health nursing care. The PHN is trained in provided services in a partnership model based on the advanced nursing skills and knowledge of assessment, critical decision making and comprehensive understanding of the effect that the social determinants of health have on achieving health goals for clients.

[51] Kidz First PHN provide school based services in 29 of the 61 schools with rest provided by providers contracted through National Hauora Coalition (NHC)

The Kidz First Public Health nurses were (and still are) employed by the CM Health and are primarily focused on the health and wellbeing of primary and intermediate school aged children and their whaanau. Historically the PHN nurses have been part of the Kidz First Community Health services group and have been managed by a Service Manager who reported to the GM Kidz First and Women's Health.

The services provided to Schools in Counties Manukau by the Kidz First Public Health Nursing Service included:

### *School Based Vaccination Services*

- Boostrix (Adult type Tetanus,-diphteria-acellular Pertussis vaccine) – 1 dose offered to all Year 7 students. Year 11/12 completion was 5138 vaccinations
- Gardasil (HPV) – 3 doses offered to all female Year 8 students. Year 11/12 completion was 8720 vaccinations (for all 3doses)
- New school entrant immunisation catch up
- Students who have not completed preschool vaccinations are offered a catch up programme at school with parent consent.

The school based vaccination service was undertaken 35 weeks of the year and was well planned each year to allow for all the school holidays, public holidays and school activities. Vaccinations took place 3 days per week with teams of 10-12 PHN's (depending on the size and cluster of students) per session to maximise the numbers vaccinated during that session. This equated to 4 FTE per annum but had flexibility to scale up teams to deliver the programme in line with school timetables and holidays.

Liaison with schools, follow-up with parents was mostly done by the team of 5 FTE whaanau Support Workers, enabling the Kidz First PHNs to focus on the clinical service delivery.

### *Ear Health*

The PHN service provided 6 Ear Clinics (8.00 am - 1pm across the Counties Manukau District for 3 to 18 year olds.

The schedule for these was:

- Pukekohe fortnightly
- Botany fortnightly
- Papakura weekly
- Mangere weekly
- Manurewa weekly
- Otara weekly

### *Core Public Health Nursing Activities*

The Kidz First PHN service provided services to all schools in Counties Manukau. The level of resource allocated to each school is based on the

decile rating and residual resource available, when the district wide activities had been scheduled.

The PHN team provided services within a family whaanau context and the PHNs have expertise in the following:

- Growth and Development
- Language Development
- Health Promotion/education
- Immunisation
- Communicable Diseases
- Sexual Health
- Obesity
- Diabetes
- Respiratory/Skin Conditions
- Allergy
- Wound Care
- Enuresis/ encopresis

Specialist Areas of Expertise include:

- Community profile
- Cultural competency
- Child Protection
- Ear Health
- Otomicroscopy ( in Ear Clinic)
- Hearing Loss in Children and young people
- Otoscopic Examination
- Tympanometry

There were 2 PHNs (with specialist competencies in Ear Health) allocated to each clinic. With an average of 5 clinics per week and 7 hrs per clinic (including clinical administration time this equates to 2 FTE).

### Table 16. Public Health Nursing Service FTE prior to Mana Kidz 2012

| Function | Role | Total FTE |
|---|---|---|
| Over all areas | Clinical Nurse Manager | 3 FTE |
| Over all areas | Clinical Nurse Educator – part of Ko Awatea | 1 FTE |
| Comprehensive suite of services including; Population Health Programmes (immunisations)<br>School and Ear Health and Health Promoting Schools (HPS) | PHN | 28 FTE (inclusive of 4 FTE HPS PHN activity) |
| Health Promoting Schools | Health Promotion Workers | 3FTE |
| Healthy Housing/ Snug Homes | PHN | 4 FTE |
| Healthy Housing/ Snug Homes | Community Support Worker | 2FTE |
| School Based Vaccination Programmes | Community Support Worker | 5FTE |

Schools were visited weekly, twice weekly or monthly depending on the identified needs of students, the support services within schools, as well as the community profile (decile rating) in terms of having accessible health services and families' ability to access them. Some schools were not visited regularly but were aware of the PHN service and would make contact if needed. All schools in the area were engaged due to School based vaccination and Hearing and Vision programmes.

## Impact of reallocation of PHN workforce to Mana Kidz

The reallocation of 20.4 FTE to Mana Kidz has resulted in 9 FTE nursing time being available to provide the vaccination programme, ear clinics, supporting Health Promoting Schools work, child protection support and nursing support for the non-Mana Kidz schools. In addition the Healthy Housing FTE has been lost as a result of discontinuation of the programme. With this FTE the immunisation programme and ear clinics have continued and resource has been prioritised to responding to any child protection concerns. As a result of the reduction in FTE there is no capacity for the PHN service to proactively engage with schools about other health issues and limited capacity to respond to non child-protection child health referrals.

From the PHN service perspective the schools without a Mana Kidz programme vary in terms of the needs of the school. Table 17 lists the non Mana Kidz schools and the frequency with which the PHN service estimates they need to be visited. There are 27 schools that have been identified as requiring weekly visits, 10 requiring fortnightly visits, 32 that require monthly visits and 53 schools that were assessed to have low needs and could contact the PHN service on an as needed basis. There is one new faith based school where the level of need is unclear. There are seven schools that are felt by clinical staff to have very high unmet need and would benefit from increased PHN support. These schools include Pukehoke North, Holy Cross, South Auckland SDA , Homai School, Papatoetoe East School, Papatoetoe West School, Redoubt North School.

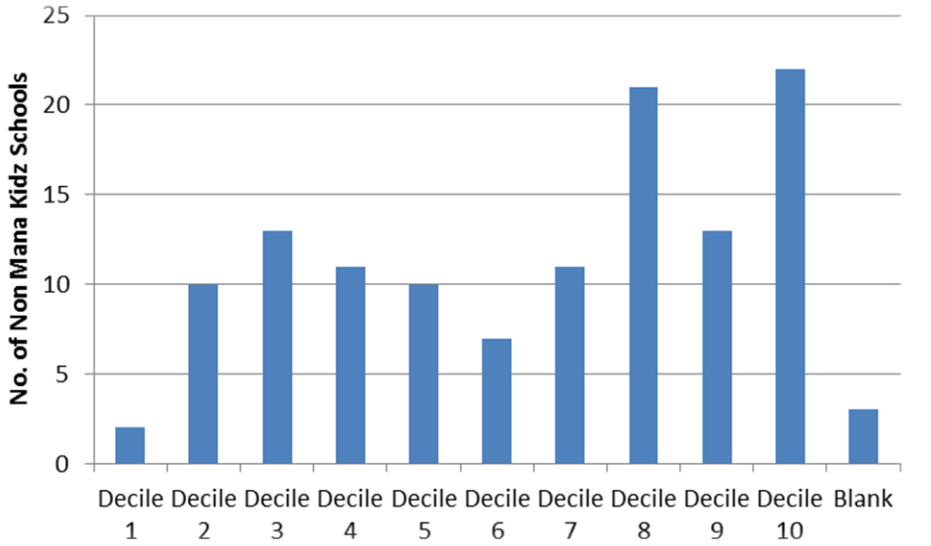
Another crude way to estimate the likely needs of a school is using the school decile rating system. Deciles are the way in which the Ministry of Education allocates additional funding to schools to enable them to overcome the barriers to learning facing student from low socio-economic households. A school's decile rating indicates the extent to which it draws its students from low socio-economic communities[52],[53]. While this system is imperfect it gives some indication of the likely health needs of the school community. There are two decile 1 schools without a Mana Kidz programme and ten decile 2 schools without a Mana Kidz programme. The

[52] http://www.minedu.govt.nz/Parents/AllAges/EducationInNZ/SchoolsInNewZealand/SchoolDecileRatings.aspx

[53] It is worth noting the decile system is the reverse scale to the commonly used for NZdep area level measure of socio economic deprivation. Decile 1 schools have the highest proportion of students from low socio-economic communities, whereas decile 10 schools are the 10 percent of schools with the lowest proportion of these students.

Ministry of Education has just released the updated decile ratings. As a result there are 49 schools which have had a drop in their decile rating with 15 additional schools becoming decile 1 schools (primary and intermediate).

Figure 37. Number of Non Mana Kidz schools by decile




*Source: Public Health Nursing service. Note decile rating reversed for schools compared to NZdep Index ie highest needs schools are decile 1. From PHN service October 2014.*

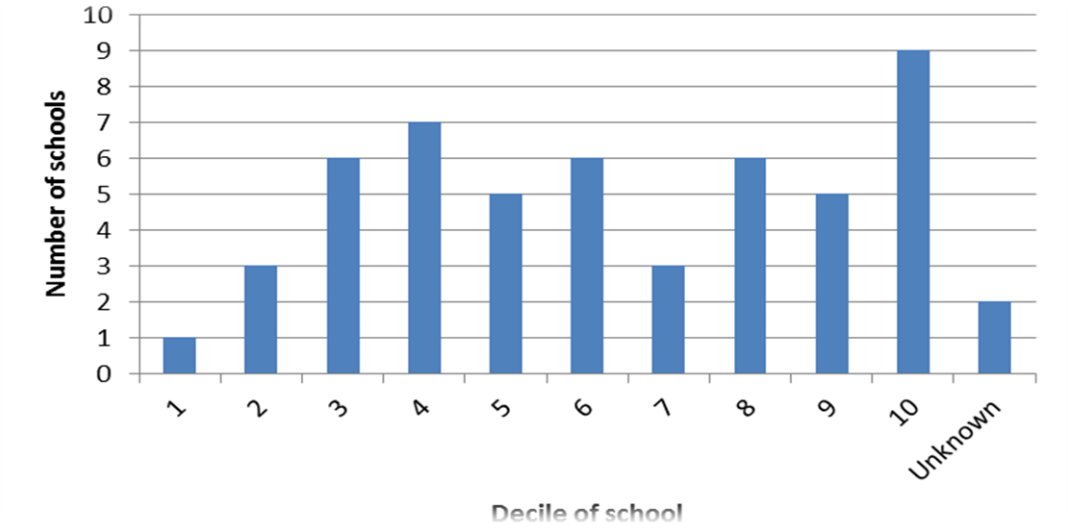
## Feedback from Non Mana Kidz Schools

An electronic survey was developed to send out to the schools which do not have a Mana Kidz team. The aim of the survey was to understand what the impact of the reduction in the PHN service FTE had been on these schools. An invitation was sent to 115 schools for which an e-mail contact was available.

The survey was sent via e-mail and could be completed on line or returned by fax. There were 10 questions. Most people who completed the survey included the name of the school but there was an option to provide anonymous feedback.

In total there were 54 responses giving a response rate of 47%. More schools with a higher decile rating (least deprived) responded to the survey than schools with a lower decile rating (Figure 37) however this reflects the overall distribution of non Mana Kidz schools (Figure 38).

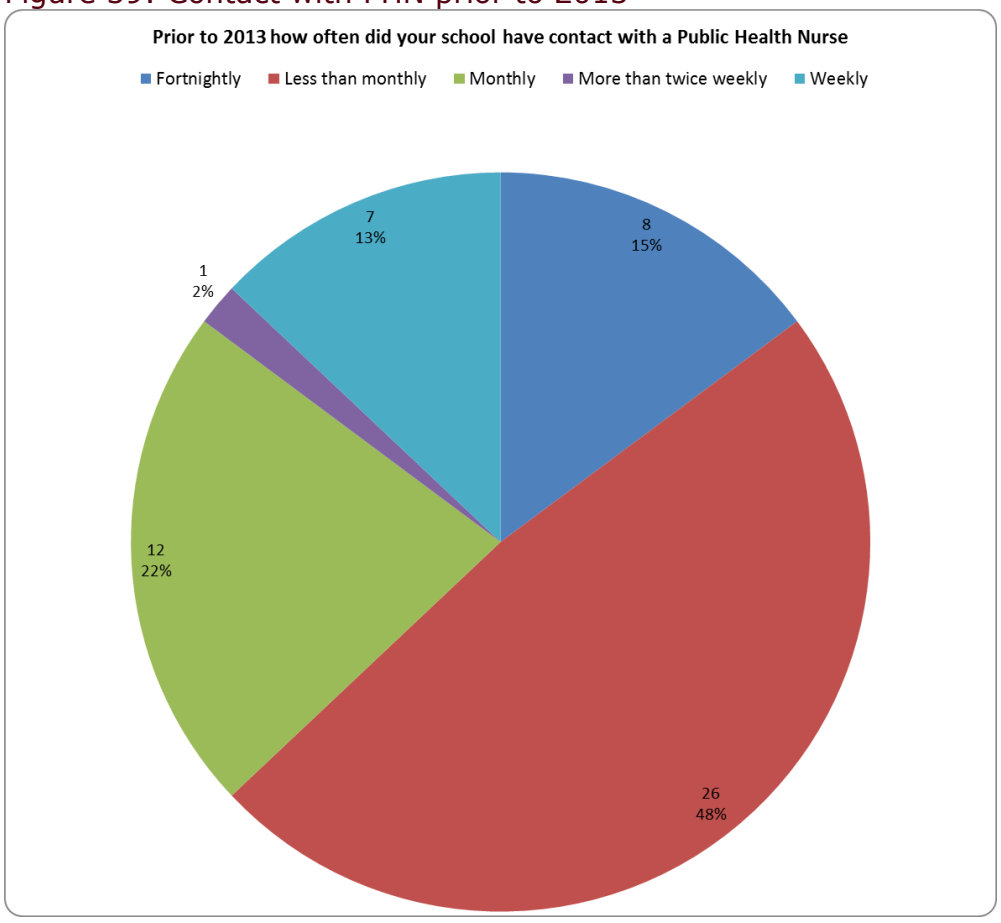
Figure 38. Non Mana Kidz schools which responded to survey by decile




Of those that completed the survey 26 schools (48%) were visited by the PHN less than monthly, with one school commenting they would physically only see the nurse once a year and another school noting the nurse visited twice a year. Prior to the reallocation of PHN resource 7 (13%) schools which responded had been visited weekly (Figure 39). One school commented *"This regular contact was important in the health outcomes for our students and built a strong relationship with the PHN in supporting and engaging with whanau".*

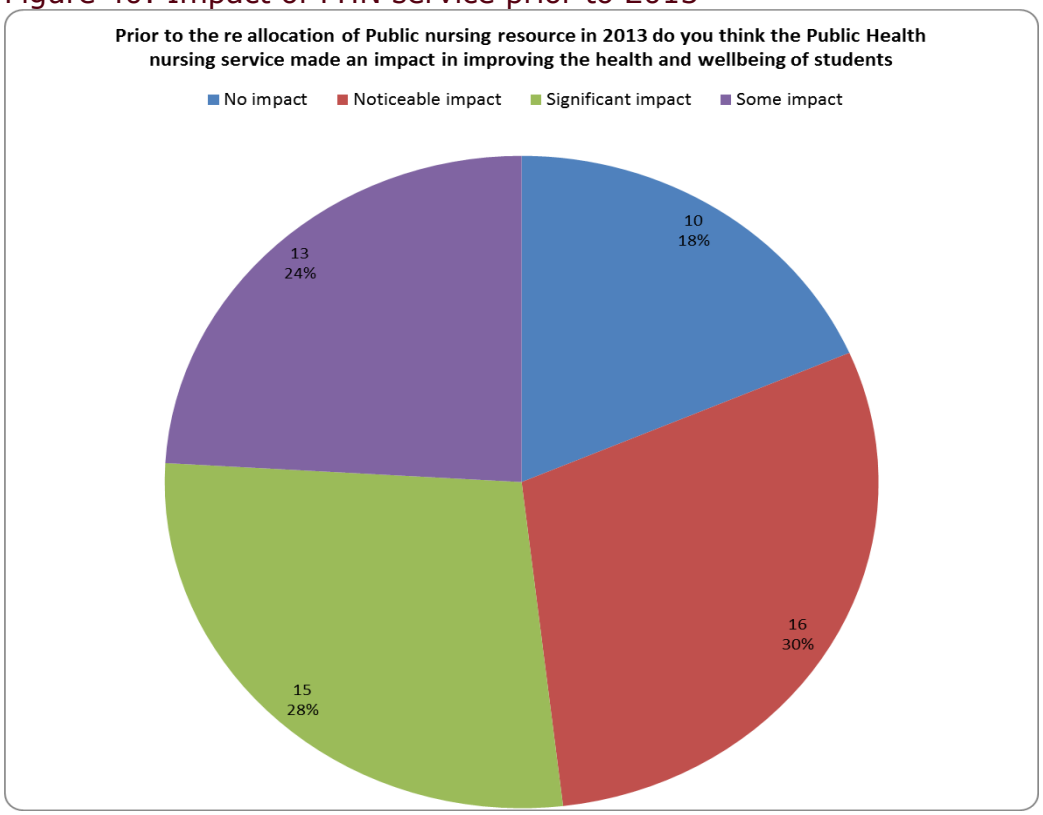
One decile 10 noted that monthly contact "*was a valid amount of visits as it established relationships and therefore a working relationship. Being a decile 10 school it was often information we needed and links to help agencies eg mental health or a medium between home and families and school."*

Figure 39: Contact with PHN prior to 2013




When asked about the impact of the PHN service on improving the health and wellbeing of students 18% of schools responded that they felt the PHN had no impact, 24% felt the PHN had some impact, 30% felt there was a noticeable impact and 28% of schools felt the PHN nursing service had a significant impact on the health and wellbeing of their students (Figure 40).

Figure 40: Impact of PHN service prior to 2013




Comments reflected this different perspective on the value of the PHN service with some schools being clear that the existence of the PHN service was important. Positive comments included that the PHN service *"Enabled us to work in partnership. especially with vulnerable families and at risk students."*

"*We are a decile 2 school in the heart of South Auckland of course the PHN is needed and made a significant impact when available."*

*"Knowing we could access timely and appropriately qualified and experienced staff was a great comfort for our families."*

There were also comments that suggested the previous PHN service did not have much impact on the student's health and wellbeing. It was not clear whether this was because the needs in these schools are less or that the service was minimal.

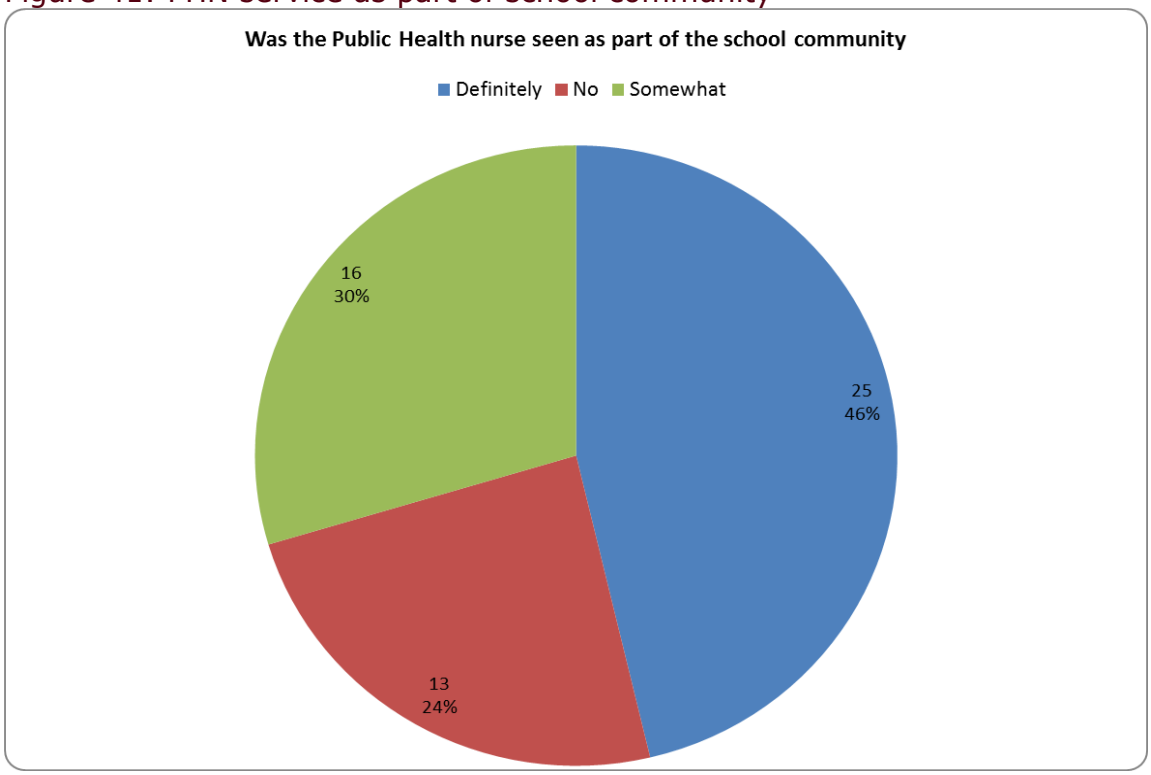
"*N/A as we do not make use of the public health service enough to note any change"*

*"PHN not readily available to our school. We sought advice as needed but no presence at school".*

When asked if the PHN was seen as part of the school community 46% responded she was definitely seen as part of the school community, 30%

that she was somewhat part of the community while 24% were clear that the PHN was not seen as part of the school community (Figure 41).

Figure 41: PHN service as part of school community




A number of schools comments reflected that the PHN was part of the community and her expertise and ability to engage with families was valued. One comment suggested that the role of the PHN in the community was person dependent.

*"Depended on the person. Some were wonderful attended Special needs meetings etc and were part of the school community. Some not so much."*

A number of comments reflected that the PHN was not felt to be part of the school community and rather came in as required for specific tasks.

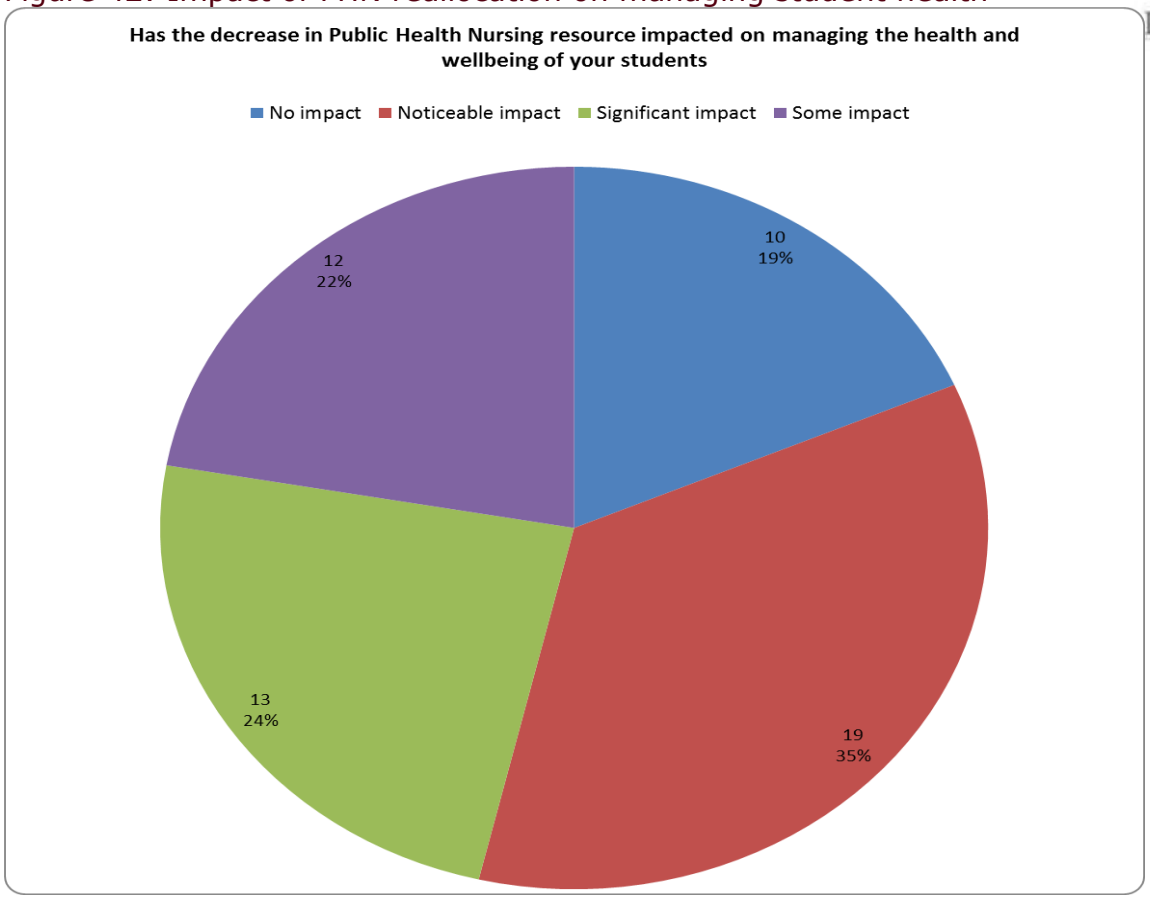
*"Didn't see them often enough"*

*"Not visible to staff or parents"*

*"Only really in terms of the immunisations"*

Of the schools surveyed 19% reported that the change in PHN resourcing had had no impact on managing the health and wellbeing of their students while 24% reported it had had a significant impact (Figure 42).

Figure 42: Impact of PHN reallocation on managing student health




All but one of the comments reflected the schools that reported the change in service that impacted on the health and wellbeing of their students to some degree.

Examples given included:

*"I now have to contact children's doctor to get support for health and wellbeing. This can be very difficult"*

*"Losing that regular contact means that we don't have those conversations, they do not know the families etc."*

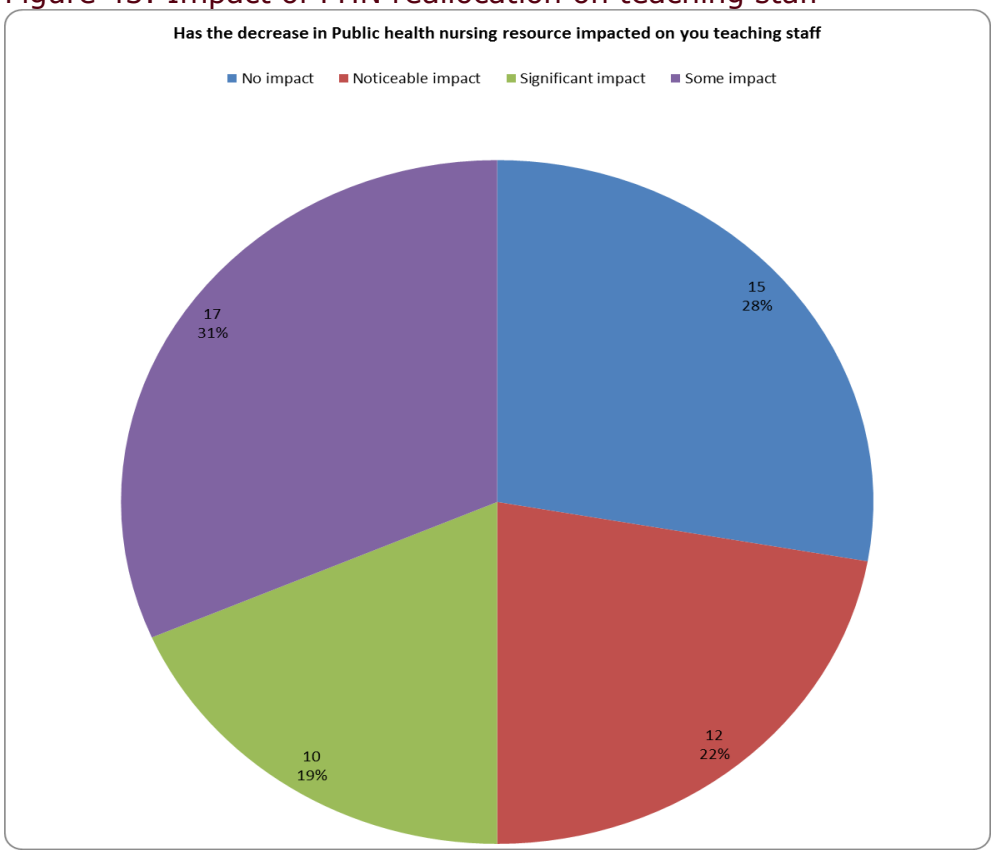
*"There have been numerous situations where we would have involved the PHN if she was available on site"*

*"When we required assistance or advice from a public health nurse we could always ask for help. We have serious issues at our school such as replacing a MIKEY button etc. All of our students have profound disability. We feel vulnerable."*

One school noted that things had improved with the reconfiguration of the service stating *"The resource has improved for us as we have a more reliable contact".*

When asked about the impact of the decreased nursing resource on teaching staff 28% reported it had had no impact while 41% reported it had had noticeable or significant impact on staff (Figure 43).

Figure 43: Impact of PHN reallocation on teaching staff




The majority of schools surveyed are still referring children to the PHN service when needed (61%) (Figure 44) and knew how to do this (74%) (Figure 45).

Figure 44: Schools still referring children to PHN service

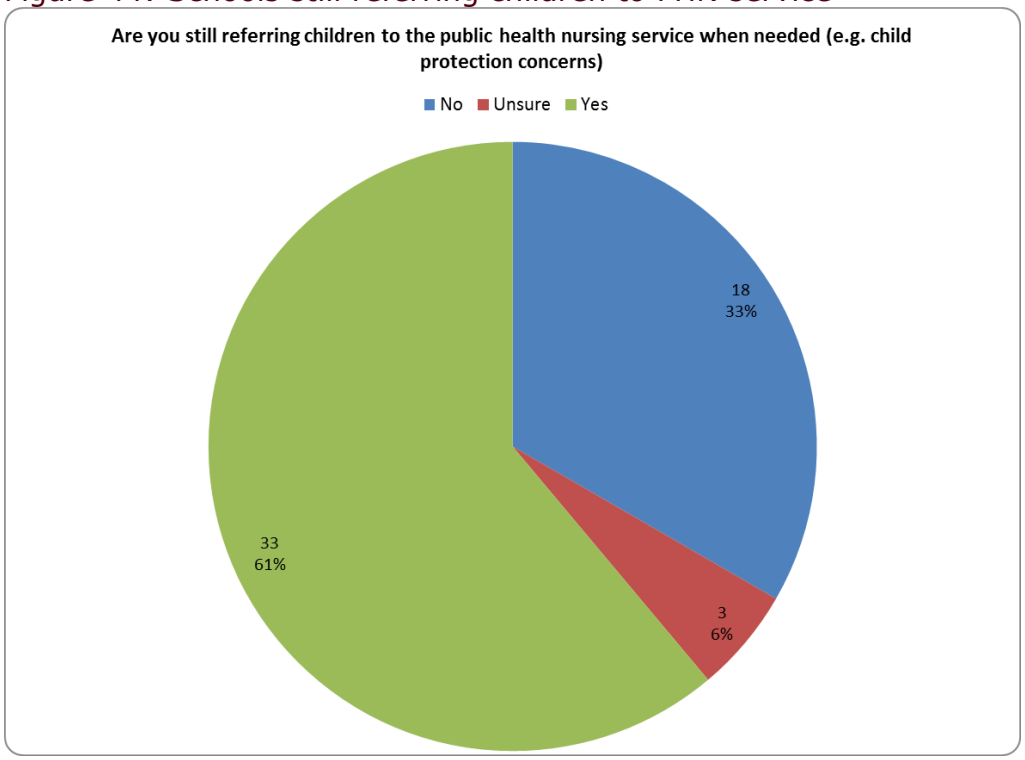
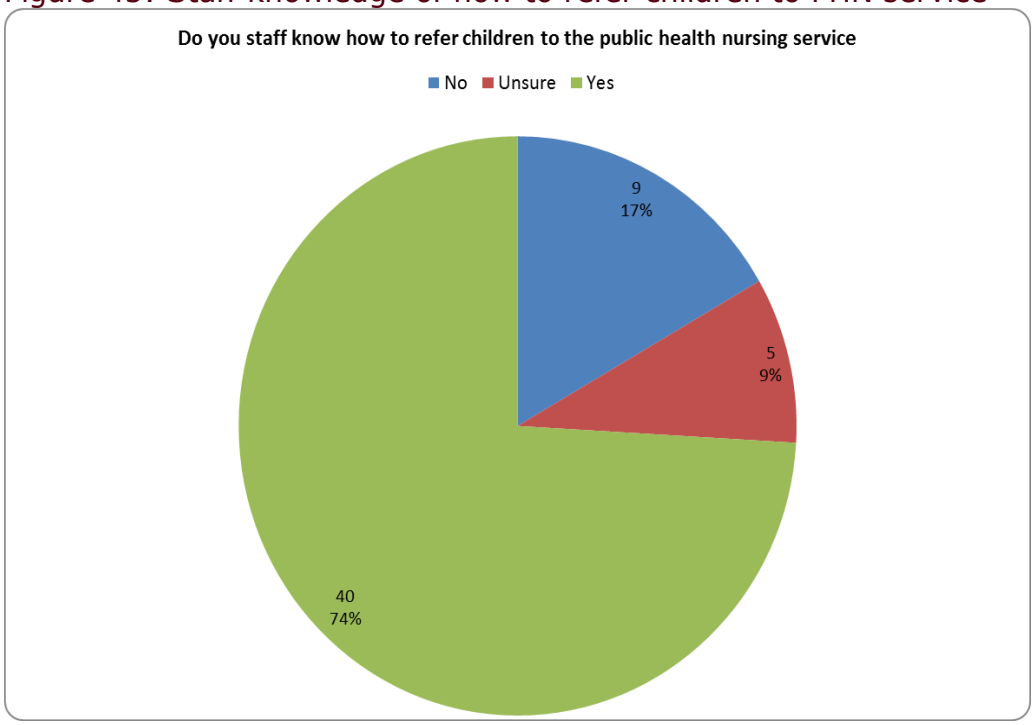



Figure 45: Staff knowledge of how to refer children to PHN service




A number of schools commented they no longer refer to the PHN because of the lack of resources available and many commented that schools refer

straight to CYF . There were also comments that the current service was not able to meet other health needs *"There is no response or too delayed a response to be worthwhile. Often told that the nurses were out of office immunising for the week".*

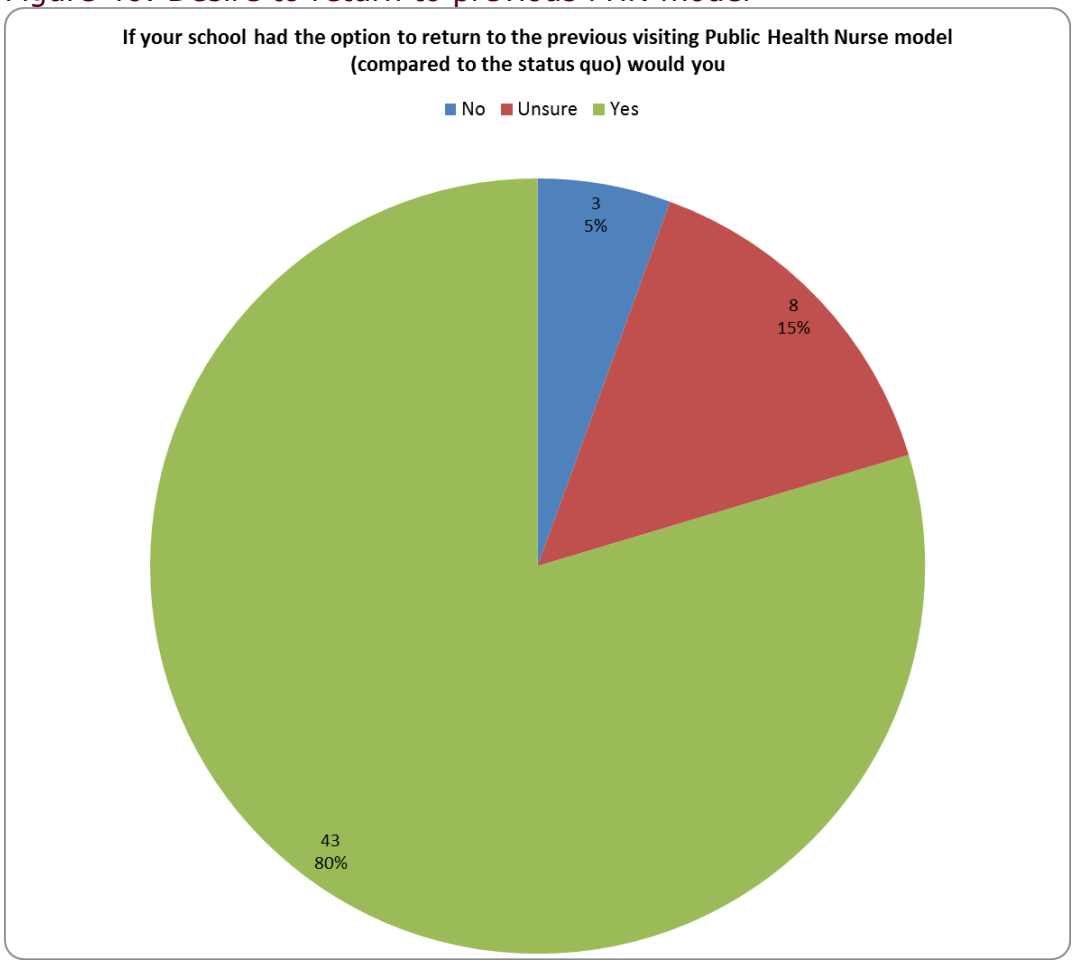
Some schools indicated that they have stop referring to the PHS service because…

*"There is no point. They ask me as the principal and we have a no response so often from the service that we didn't bother ringing after four times."*

Of the schools who responded to the survey 80% said they would return to the previous model of PHN service if they had the option with 15% being unsure while 5% of schools would not (Figure 46). Many comments reflected the value of having a PHN regular contact with a PHN and the importance of the support they provided.

Of the schools surveyed 61% expressed they would be interested in attending a focus group, if one was to be held, to explore the issues further.

Figure 46: Desire to return to previous PHN model



In summary while nearly 50% of the survey respondents had a PHN visit less than monthly over 82% felt the PHN had at least some impact on the health and wellbeing of their students and a similar percentage (81%) felt the reduction in PHN service had had at least some impact on managing the health and wellbeing of their students. While the majority of schools were still referring to the PHN service a large percentage (39%). From the comments this varied between schools. Some were not referring because they had no need to while others had lost faith in the service and therefore did not attempt to engage with the PHN service. Of the schools that responded to the survey 80% indicated they would prefer to return to the previous model compared with the status quo.

## Other feedback

The wait time for programmes such as the enuresis programme in non-Mana Kidz schools has also been impacted with the waiting list numbers in non-Mana Kidz schools double to triple the numbers in Mana Kidz schools. This has been particularly noted in the Paediatric Outpatient referral numbers as GPs now refer to the clinic when children cannot access the PHN enuresis programme.

## Considerations going forward

There is acknowledgement from the PHN management that prior to the Mana Kidz programme being established there were high needs schools where needs could not be met with the resource available. There is a clear indication from recent qualitative work undertaken, as part of the evaluation of Mana Kidz programme, that the extra health resource provided by this programme has gone a long way towards addressing these needs. Senior PHN management are clear that returning to the previous PHN service model is not desired for these schools

There has however been a perceived impact, from both schools and the PHN service, on the non Mana Kidz schools in terms of the decrease in PHN resource and what this means for the health and wellbeing of their students. This is despite the introduction of Social Workers in School in many schools.

The impact of the reduced Kidz First PHN service is particularly evident in the schools in the Eastern Suburbs and Franklin where there are no Mana Kidz clinics and substantially reduced PHN FTE e.g. Franklin had 4 FTE PHNs and currently has 1.40 FTE.

The survey results presented above suggest that while the previous PHN service contact with schools varied in frequently the relationship with the PHN service was valued. The survey indicated that for many schools having some degree of engagement with a PHN service was valued even if this translated into relatively small contact time. For some schools the change in the PHS service capacity has had minimal impact on them while others have gone from having weekly visits to much less frequent contact

with the PHN nursing service and the schools are clear this has been detrimental to the health and wellbeing of their students.

In considering the future of Mana Kidz further consideration needs to be given to exploring the needs of non Mana Kidz schools and to the model of school health nursing service that would be most appropriate. The needs of these schools vary with most identified by the PHN service as only needing a responsive PHN service when needs are identified or monthly visits. There are a smaller number of schools (particularly decile 2 and 3 schools) that are felt to need more intensive support. Ideally more resource should be made available in order to allow more regular proactive contact between the PHN service and those schools which need it.

Table 17: Non Mana Kidz schools and frequency with which the PHN service estimates they need to be visited

**Otara and Eastern**

| School Name | Roll | Plan visit per wk |
|---|---|---|
| Holy Cross | 563 | Weekly |
| Mt Richmond (Bairds) | 14 | Weekly |
| Papatoetoe West | 704 | weekly |
| Redoubt North | 730 | weekly |
| SDA Primary | 300 | weekly |
| Papatoetoe East | 503 | weekly |
| Papatoetoe Intermediate | 848 | weekly |
| Papatoetoe South | 596 | weekly |
| Puhinui Primary | 576 | weekly |
| Riverina Primary | 223 | weekly |
| Anchorage Park Primary | 160 | weekly |
| Pakuranga Intermediate | 438 | monthly |
| Papatoetoe Central | 612 | weekly |
| Howick Intermediate | 449 | weekly |
| Elm Park Primary | 603 | weekly |
| Pakuranga Heights | 420 | Monthly |
| Riverhills Primary | 83 | Monthly |
| Sancta Maria Primary | 237 | No Visit Required |
| Farm Cove Intermediate | 535 | No Visit |
| Howick Primary | 315 | Monthly |
| MacLeans Primary | 265 | No Visit |
| St Marks Convent | 281 | No Visit |
| Wakaaranga Primary | 640 | No Visit |
| Baverstock Oaks | 619 | No Visit |
| Bucklands Beach Int | 754 | No Visit |
| Elim Christian Junior | 542 | No Visit |
| Pigeon Mountain Primary | 497 | No Visit |

| | | |
|---|---|---|
| Star of the Sea | 487 | No Visit |
| Willowbank Primary | 770 | No Visit |
| Beachlands | 473 | No Visit |
| Botany Downs Primary | 428 | No Visit |
| Bucklands Beach Primary | 413 | No Visit |
| Cockle Bay Primary | 700 | No Visit |
| Maraetai Primary | 263 | No Visit |
| Mellons Bay Primary | 497 | No Visit |
| Mission Heights Junior | 655 | Monthly |
| Mission Heights Primary | 481 | Monthly |
| Owairoa Primary | 700 | No Visit |
| Point View Primary | 850 | No Visit |
| Shelly Park | 384 | No Visit |
| Somerville Intermediate | 969 | Monthly |
| St Kentigern | 1686 | No Visit |
| Sunnyhills Primary | 511 | No Visit |

**Mangere**

| School Name | Roll | Plan visit per wk |
|---|---|---|
| Sir Keith Park Special | 133 | Fortnightly |
| Al- Madinah School | 487 | weekly |
| Zayed College | 92 | monthly |
| Mangere Bridge | 353 | Fortnightly |
| Waterlea | | Fortnightly |
| Westmount | 145 | No visit |
| Pacific Christian | 77 | No visit |

**Manurewa**

| School Name | Roll | Plan visit per wk |
|---|---|---|
| Homai | 275 | weekly |
| Clayton Park | 475 | weekly |
| Manurewa Central | 524 | Fortnightly |
| South Auckland Middle School | 116 | Fortnightly |
| Hill Park | 513 | monthly |
| Everglade | 530 | monthly |
| Reremoana | 500 | monthly |
| Destiny School | 180 | not sure |
| Manukau Christian | 100 | no visit |
| The Gardens | 604 | monthly |
| Rosehill Special based at Green Meadows | | monthly |

**Pukekohe/Franklin**

| School Name | Roll | Plan visit per wk |
|---|---|---|

| | | |
|---|---|---|
| Pukekohe North | 250 | Weekly |
| Kura Port Waikato | 30 | Monthly |
| Te Kohanga | 59 | Monthly |
| Tuakau Primary | 197 | Weekly |
| Mercer | 22 | Monthly |
| Waikaretu | 11 | No Visit |
| Harrisville | 205 | Fortnightly |
| Kaiaua | 40 | weekly |
| Paerata | 101 | weekly |
| Tuakau College | 650 | No Visit |
| Awhitu | 126 | Monthly |
| Kingsgate | 51 | Monthly |
| Kura Waiuku | 11 | No Visit |
| Parkside | 130 | Monthly |
| Pokeno | 143 | Monthly |
| Puni | 206 | Monthly |
| View Road | 190 | Monthly |
| Mauku | 70 | Monthly |
| Pukekohe Hill | 620 | weekly |
| Pukekohe Intermediate | 580 | weekly |
| Onewhero | 473 | Monthly |
| Pukeoware | 203 | fortnightly |
| Sandspit | 380 | fortnightly |
| St. Josephs | 410 | weekly |
| Waiuku Primary | 357 | Monthly |
| Aka Aka | 85 | Monthly |
| Buckland | 274 | Monthly |
| Glenbrook | 254 | Monthly |
| Karaka | 243 | No Visit |
| Mangatangi | 105 | No Visit |
| Mangatawhiri | 88 | No Visit |
| Otaua | 134 | No Visit |
| Patumahoe | 280 | monthly |
| Pukekawa | 100 | No Visit |
| Valley | 389 | monthly |
| Waipipi | 122 | No Visit |
| Bombay | 349 | No Visit |
| Paparimu | 23 | No Visit |
| Pukekohe East | 167 | No Visit |
| Te Hihi | 220 | No Visit |
| Waiau Pa | 338 | No Visit |
| Ararimu | 118 | No Visit |
| Eden Christian Academy | 43 | No Visit |

| | | |
|---|---|---|
| Pukekohe Christian | 212 | No Visit |

## Papakura

| School Name | Roll | Plan visit per wk |
|---|---|---|
| Papakura Normal Primary | 672 | weekly |
| Rosehill Special | 154 | fortnightly |
| Orere Primary | 35 | No Visit |
| Rosehill Intermediate | 355 | weekly |
| Opaheke Primary | 611 | 2 weekly |
| Papakura Central Primay | 350 | weekly |
| Ardmore Primary | 368 | monthly |
| Confier Grove Primary | 540 | weekly |
| Drury Christian | 32 | No Visit |
| Hunua Primary | 101 | No Visit |
| Brookby Primary | 112 | No Visit |
| Drury Primary | 430 | No Visit |
| Drury Primary | 434 | No Visit |
| Ramarama Primary | 217 | No Visit |
| Alfriston Primary | 345 | No Visit |
| Clevedon Primary | 376 | No Visit |
| Hingaia Peninsula | 94 | No Visit |
| Strathallan | 299 | No Visit |

# Appendix J – School RF scores by community board area

*Authors: Catherine Jackson, Diana Lennon and Ron King. Paper provided by CMDHB.*

## Methodology

A school scoring system was developed to inform prioritisation decisions. Because school populations are small, and ARF is a relatively rare event in comparison to GAS pharyngitis, the likelihood of an ARF event occurring in any particular school is rare. GAS carriage and pharyngitis rates in Auckland schools are unknown, but are likely to influenced by the same school features that influence the likelihood of a case of ARF happening. Therefore, school features that influence the likelihood of an ARF case occurring have been used to construct a school score.

Two locality based elements were included, because whole of community approaches have been shown to be effective aimed at reducing GAS carriage / pharyngitis in the community in which a child moves (i.e. family/whanau, school). These elements were:

- *ARF Rate*: the smoothed ARF rate in the CAU where the school is located. This rate is based on cases addresses at the time of diagnosis and determines the ARF rate in communities where children live.
- *School Case Density*: the case density in schools within a geographic location. Using cases school addresses at the time of diagnosis, case density is measured as cases per square kilometre. A high school case density means the school either experienced high numbers of cases themselves or is located near other schools that have experienced high numbers of cases during the study period (1998-2010).

Two features of schools that are associated with high rates of ARF are included, school decile and the proportion of the school roll that is Māori or Pacific.

To calculate the school score the following steps were taken. Schools were ranked in relation to every other school in the Auckland Region for the first two factors and given a score out of 250 based on the percentile they fell into. The school decile was converted to a score out of 250 using the following formula (11-school decile*250). The proportion of the 2010 roll in each school was converted to a score out of 250. These four factors were summed with no further weighting to give each school a score out of 1,000.

### *Results and Discussion*

The rate of acute rheumatic fever in school children in the Auckland Region is correlated to the score of the school they attend (Figure 47).

The number of schools by score and the number of students that attend these schools is shown in Table 18.

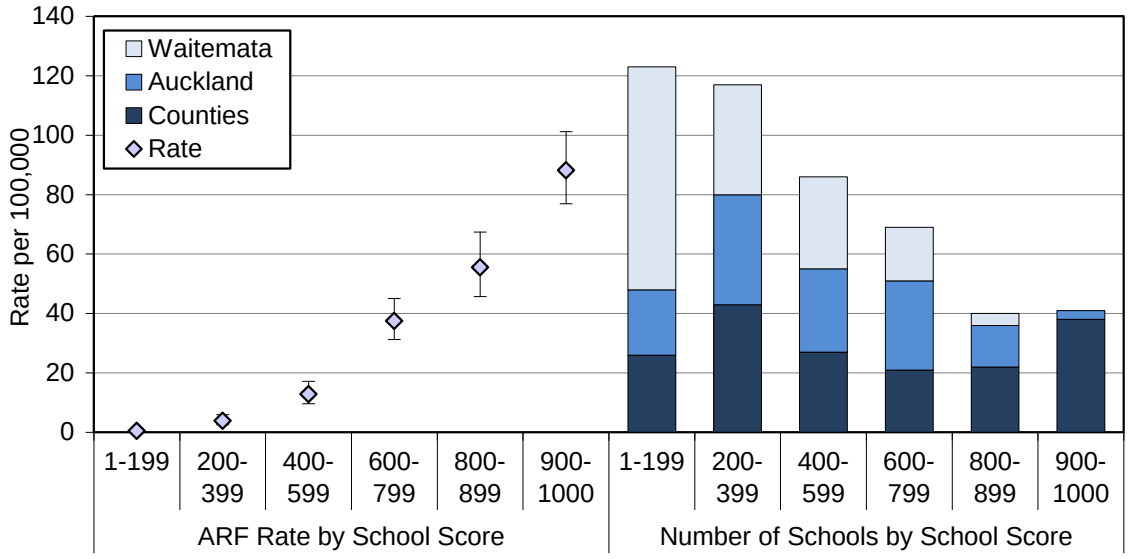
Applying this score to schools in the Auckland Region attended by Year 1-8 students identified 81 schools with a score ≥800; 61 in CMDHB (now 60 due to recent amalgamation of 2 schools), 17 in ADHB, and 4 in WDHB. Nearly two thirds of cases (62.2%) of ARF during 1998-2010 occurred in children attending a school that scored ≥800 (Table 19). However, this proportion varied by DHB and was 83.4% for CMDHB, 34.8% for ADHB, and only 8.6% in WDHB. In general, schools in ADHB and WDHB score lower than in CMDHB because there are fewer census area units with a high rate of ARF, and the case density in schools is lower because cases are more dispersed both by residence and in schools.

### *Conclusion*

This scoring system is appropriate for use in CMDHB because of the distribution of cases. Prioritising school programmes using this scoring system is likely to target the group of schools where cases are most likely to occur.

This analysis suggests that using this scoring system in ADHB and WDHB is less likely to be successful, and different approaches should be considered.

Figure 47: ARF Rates in School Children by School Score of the School Attended, and Number of Schools by School score, Auckland Region 1998-2010




*Note: Only includes schools attended by children in Year 1-8. Error bars indicate 95% confidence intervals.*

Table 18: Number of Schools and Students in the Auckland Region by School Score

| School Score | Auckland Region | | Counties Manukau | | Auckland DHB | | Waitemata DHB | |
|---|---|---|---|---|---|---|---|---|
| | No. of Schools | No. of Students | No. of Schools | No. of Students | No. of Schools | No. of Students | No. of Schools | No. of Students |
| 1-199 | 123 | 59,340 | 26 | 12,305 | 22 | 12,218 | 75 | 34,817 |
| 200-399 | 117 | 45,249 | 43 | 14,187 | 37 | 17,653 | 37 | 13,409 |
| 400-599 | 86 | 27,502 | 27 | 7,775 | 28 | 9,145 | 31 | 10,582 |
| 600-799 | 69 | 23,589 | 21 | 8,939 | 30 | 8,712 | 18 | 5,938 |
| 800-899 | 40 | 14,283 | 22 | 9,119 | 14 | 3,954 | 4 | 1,210 |
| 900-1000 | 41 | 17,963 | 38 | 17,363 | 3 | 600 | 0 | 0 |
| **Total** | **476** | **187,926** | **177** | **69,688** | **134** | **52,282** | **165** | **65,956** |

*Note: Only includes schools attended by children in Year 1-8.*

Table 19: Cases of ARF during 1998-2010 by School Score

| School Score | Auckland Region | | Counties Manukau | | Auckland DHB | | Waitemata DHB | |
|---|---|---|---|---|---|---|---|---|
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| 1-199 | 4 | 0.8 | 1 | 0.3 | 0 | 0.0 | 3 | 4.3 |
| 200-399 | 23 | 4.6 | 4 | 1.3 | 8 | 7.1 | 11 | 15.7 |
| 400-599 | 46 | 9.3 | 15 | 4.8 | 9 | 8.0 | 22 | 31.4 |
| 600-799 | 115 | 23.1 | 31 | 9.8 | 56 | 50.0 | 28 | 40.0 |
| 800-899 | 103 | 20.7 | 65 | 20.6 | 32 | 28.6 | 6 | 8.6 |
| 900-1000 | 206 | 41.4 | 199 | 63.2 | 7 | 6.3 | 0 | 0.0 |
| **Total** | 497 | 100.0 | 315 | 100.0 | 112 | 100.0 | 70 | 100.0 |

*Note: Only includes schools attended by children in Year 1-8.*