



# Evaluation of school-based health services in primary and intermediate schools (Mana Kidz)

Counties Manukau Health



## Report Information

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Prepared for Counties Manukau Health

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## Disclaimer

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Disclaimer: The information in this document is presented in good faith, using the information available to us at the time of preparation. In undertaking this evaluation, we have relied significantly on information and data provided by the National Hauora Coalition and Counties Manukau Health, which has not been independently verified. It is provided on the basis that the authors of the document are not liable to any person or organisation for any damage or loss which may occur in relation to taking or not taking action in respect of any information or advice within this document

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# Executive Summary

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Mana Kidz, introduced in 2012, provides primary health care services through nurses and whaanau support workers to approximately 34,000 tamariki aged 5-12 in 88 low decile schools and kura in Counties Manukau.<sup>1</sup> The participating schools serve communities in socioeconomically deprived areas with a high proportion of students identified as being Maaori or belonging to a Pasifika ethnic group. Initially focused on sore throat checks in order to prevent acute rheumatic fever (ARF), the scope has broadened in response to needs of tamariki and whaanau, and persistent barriers to accessing primary care in these communities. Mana Kidz now also includes skin infection management, health assessments, respiratory health, healthy weight, immunisations, hearing and vision checks, mental health and wellbeing, home visiting, and connecting tamariki and whaanau with other health and social supports.

Mana Kidz is led by the National Hauora Coalition (NHC) and delivered through a network of Maaori and Pasifika providers, as well as Kidz First Public Health Nurses. An Alliance Leadership Group (ALG) provides governance for the programme with representatives of NHC, Counties Manukau Health (CM Health) and Maaori and Pasifika primary care expertise.

NHC and its network provide intensive support to the highest-needs schools (“Level 1”) including daily throat swabbing and treatment and daily assessment of skin infections and other health needs. Less-intensive support is provided to other high needs schools (“Level 2”). The programme provides multiple access points including the presence of nurses and whaanau support workers in the schools, home visits, and more recently an 0800 line established in response to Covid-19 lockdowns.

Mana Kidz was last evaluated in 2014 and was found to be an effective intervention, improving health outcomes for children in priority population groups and highly valued by school communities. In 2020, CM Health identified a need to review Mana Kidz outcomes and identify how the programme may be improved.

The objectives of this evaluation are to:

- Identify the impact of Mana Kidz on the health and social wellbeing of children and their whaanau
- Identify mechanisms and success factors that support effectiveness
- Assess the extent to which Mana Kidz provides value for money
- Identify opportunities for improvement and considerations for future development or scaling.

The evaluation draws together evidence from interviews and surveys, with programme data, ARF notifications data, hospitalisation data, and programme documentation. A broad range of programme stakeholders participated in interviews, including Mana Kidz nurses, Kidz First nurses, whaanau support workers, provider leaders, NHC and CM Health representatives, school leaders and whaanau. A total of 138 people directly contributed feedback to the evaluation through 67 interviews and 71 survey responses (Appendix A). Additionally, data were analysed from recent surveys conducted by NHC, including 112 responses collectively to two school surveys and 110 responses to a whaanau survey.

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<sup>1</sup> CM Health services are located and delivered within the boundary of the Waikato-Tainui Iwi. Accordingly, CM Health uses the double vowel instead of the macron in all te reo Maaori written communication. <https://www.countiesmanukau.health.nz/about-us/use-of-the-double-vowel-in-te-reo-maaori-at-cm-health/>

## Health and wellbeing impacts

Available evidence suggests Mana Kidz is an effective programme. The presence of nurses and whaanau support workers in schools provides access to free primary care so that health and wellbeing issues can be identified and addressed quickly. Consequently, Mana Kidz identifies and treats Group A Streptococcal (GAS) infections, which may reduce incidence of ARF through sore throat management. Similarly, Mana Kidz identifies and treats skin infections, and addresses other health issues by referring tamariki to appropriate service providers.

Although programme data doesn't provide direct evidence of health and wellbeing impacts, it demonstrates the reach and volume of Mana Kidz services, and the nature and extent of health and wellbeing needs identified and addressed. For example, in 2019 Mana Kidz had services available to approximately 34,000 children. Over 110,000 throat swabs were taken, of which 11.6% (12,921) tested positive for GAS. All received antibiotics, with 82% adhering well to the full course of treatment. The programme also conducted over 12,000 skin assessments with 1,400 resulting in antibiotic treatment, and nearly 12,000 health and wellbeing assessments (Appendix B).

Mana Kidz focused initially on sore throat and skin assessments, though nurses who identified wider health issues would respond to them. The scope of Mana Kidz widened from 2017 so that tamariki attending sore throat and skin assessments are also assessed for wider health and wellbeing needs. Numbers of referrals to Mana Kidz nurses (from teachers or community service providers) and assessments grew during 2018-2019, with the most common reasons for health and wellbeing interventions being recorded as general health promotion/education (26%), new entrant immunisation checks (23%), hygiene (17%), ear health assessment (7%), head lice (5%), oral health (4%) and nutrition (4%). The level of Mana Kidz activity reduced during the Covid-19 pandemic because of lockdowns, school closures and redeployment of staff as detailed below.

Whaanau, school principals, nurses and whaanau support workers generally consider Mana Kidz is effective at identifying and treating sore throats which may help to prevent ARF and is effective at detecting and treating skin infections and other health needs early which may prevent them from deteriorating. According to these stakeholders, having access to Mana Kidz at school reduces burden on general practice and emergency departments. However, from available data it is unclear to what extent changes in ARF and skin infection rates may be attributable to Mana Kidz.

ARF notifications for 5-12 year olds in the CM Health region peaked at 37 notifications in 2012 and then declined to 13 notifications in 2016. Reasons for the decline during that period are unclear, though the timing coincides with the rollout of Mana Kidz. Notifications then increased to 23 in 2017 and 35 in 2018, before starting a new downward trend in 2019 (29), 2020 (23) and 2021 (18). The most recent decline is likely to reflect impacts of Covid-19 including lockdowns, school closures and travel restrictions. It is unclear whether this is a temporary or enduring effect, and more evidence is needed before causes can be properly determined. It is being investigated further.

CM Health reviewed patterns of hospitalisation to understand trends in admissions in recent years (Appendix G).<sup>2</sup> This descriptive data analysis does not allow us to draw conclusions around causality. All-cause admissions trended downward over 2016-2020. This trend pre-dates Covid-19 effects and was more marked for hospitalisations of children who had been engaged with Mana Kidz at any point than for those who had not. A similar (though not identical) pattern was seen in hospitalisations for skin infections. This may reflect downward trends in 'burden of disease' among children engaged with Mana Kidz. However, other possibilities need to be considered including a

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<sup>2</sup> It is known that hospital coding over-estimates ARF admissions. In the Auckland region Episurv surveillance data, entered by ARPHS, is considered to be the most Accurate ARF data.

reduction in access to care and increased threshold of admission, changes in treatment approaches, and other societal and environmental drivers

All published evidence, post implementation of Mana Kidz, is consistent with the proposition that the school-based sore throat programme in Counties Manukau has reduced the burden of ARF in this population (Lennon et al., 2017; Jack et al., 2018), though this work was undertaken before the increase in case numbers seen in 2018. Evidence from similar approaches in the Bay of Plenty is also consistent with this proposition (Walsh et al., 2020).

## **Mechanisms and success factors**

Factors that support the success of Mana Kidz, according to key themes from stakeholders' feedback, include effective leadership from ALG, NHC and providers, a commissioning model that strengthens community providers, having dedicated and knowledgeable clinical champions, and a diverse workforce that is culturally concordant with the communities it serves and is strongly committed to the kaupapa.

Stakeholders also emphasised the strengths of Mana Kidz as a nurse-led, school-based approach; being nurse-led brings clinical credibility and confidence to the programme, while being school-based ensures ready access and a constant presence.

Standing orders widen the scope of practice and ability to meet needs. Mana Kidz effectiveness is also supported by the combination of proactive class checks and self-identification for sore throats in Level 1 schools, a holistic and whaanau-centred approach, and having multiple access points. Relationships are considered to be strong at all levels, and systems and processes are functioning well to support effective delivery.

Mana Kidz is valuable for tamariki and whaanau because it breaks down barriers to access and engagement in primary care. Health and wellbeing issues can be identified and addressed quickly, including some that might otherwise go unnoticed. Mana Kidz nurses and whaanau support workers also support good adherence to medications and refer whaanau to other community services. Additionally, Mana Kidz provides opportunities to build trusting relationships with health professionals and empowers tamariki and whaanau to look after their own health. Whaanau and tamariki are considered more likely to act on health and wellbeing issues because they are better informed and access to primary care is easier.

Mana Kidz is valuable for schools because it provides a dedicated and consistent focus on student health. Having nurses on site and able to conduct home visits, and the 0800 number, makes it easy for whaanau and school staff to access health-related information, advice, and support from a trusted health voice. Mana Kidz also facilitates links to the broader health system. By providing these supports, Mana Kidz contributes to a healthier school environment, which supports better school attendance and engagement.

For the healthcare system, Mana Kidz is likely to reduce pressure on primary care by being easy and free to access for tamariki and whaanau, and stakeholders believe it reduces pressure on secondary care through early detection and treatment. Mana Kidz nurses and whaanau support workers also strive to support continuity of care, facilitating follow up and discharge planning. Mana Kidz complements and supports other health initiatives that benefit the community (e.g., hearing, vision, mental health, social wellbeing, asthma). Further, it provides a flexible community-based workforce (e.g., conducting home visits when whaanau cannot come to school) and is available to respond to crises (most recently Covid-19, and earlier meningococcal disease and measles outbreaks). While

these benefits are of value to the sector, it does put additional pressure on the Mana Kidz workforce.

## Value for money

Value for money (good use of resources to create worthwhile value) was assessed using a bespoke framework developed in consultation with the evaluation reference group. The framework recognises that for Mana Kidz, efficiency is not an end in of itself but rather a means to the end of improving equity – addressing disparities in access to timely primary and preventive health services, in order to prevent serious consequences of GAS infections, skin infections, and other health issues.

Available evidence, assessed through the evaluative lens of agreed criteria and standards, indicates that Mana Kidz represents good value for money overall. Mana Kidz is strongly equity-oriented and works effectively with tamariki Maaori, children from Pasifika ethnic groups, and other children and families/whaanau in these low-decile school communities. The programme delivers its services efficiently, and it effectively addresses significant needs in the highest-priority schools. The programme is delivered at a reasonable cost per child.

Value for money could be more strongly evidenced if performance was reported against explicit targets or expectations (rather than reported without targets) and disaggregated by ethnicity for all key outputs, cases identified, and treatments given (in addition to the current ethnicity breakdown reported for GAS throat swabbing). Economic evaluation was out of scope, but comparison of current cost data and available efficacy estimates with a 2011 cost-utility study on the ARF prevention component of the programme suggests current cost-effectiveness may fall within a similar-to-higher range than the modelled estimates, if all other parameters are assumed equal. An updated economic evaluation, if undertaken in the future, would strengthen conclusions about the cost-effectiveness of Mana Kidz.

## Challenges and opportunities

The Covid-19 pandemic response had significant impacts on Mana Kidz. Many registered nurses from Mana Kidz were redeployed into managed isolation facilities, community-based assessment, testing centres and later, vaccination clinics. Lockdowns and school closures disrupted Mana Kidz operations as shown in programme data for 2020 and 2021 (Appendix B). For example, the number of sore throat assessments conducted each year grew from 45,000 in 2015 to a peak of nearly 200,000 in 2019, before declining to 144,000 in 2020 and 523 in 2021.

Consequently, some adaptations were made to the management and delivery of the services. As the country moved between alert levels, Mana Kidz continued to communicate with schools, whaanau and communities, providing updates at each level change regarding service changes, reiterating Covid-19 facts and reassuring whaanau by ensuring service delivery through either face-to-face visits when needed or virtually. In response to lockdowns, Mana Kidz established an 0800 line in 2020 which schools and whaanau can use to contact Mana Kidz clinical staff if they have any child health-related concerns. The 0800 service aims to connect whaanau with the appropriate team or service where applicable. It has been well utilised, receiving 6,840 calls between November 2020 and October 2021.

Some schools continued to engage with Mana Kidz during the pandemic. Others were unable to do so owing to the redeployment of staff. Covid-19 interrupted Mana Kidz relationships with schools and principals, which will be essential to rebuild. It has also created backlogs in other work such as vaccinations, and vision and hearing checks, which could impact Mana Kidz teams. Kidz First nurses

were deployed elsewhere and were not involved in Mana Kidz during 2020-2021 – so new nurses who have joined Kidz First during this time will need induction into Mana Kidz when they start working as part of the Mana Kidz network in schools.

Funding for Mana Kidz over the last four years has not kept pace with cost drivers, including inflation, population growth and the expanding scope of services. Consequently, there is a growing gap between what Mana Kidz is expected to deliver, and the resources provided to meet those expectations. Requests for NHC and Mana Kidz staff to undertake extra work beyond the scope of the contract adds further pressure. Additionally, schools ask Mana Kidz staff to help with general health tasks (e.g., first aid, giving insulin and Ritalin). Staff do the extra work to meet needs, but it can further disrupt core business by drawing on already limited resources. Staff often work extra hours to make up the time spent on the additional tasks. Nurses and whaanau support workers often commented that they are exhausted and there is a high risk of staff burnout. Covid-19 has exacerbated these issues.

Mana Kidz staff excel at engaging with whaanau. Still, it is also an ongoing challenge due to transiency, changes in primary caregivers, language barriers, trust barriers, and parents being too busy to engage. Whaanau, tamariki, Mana Kidz staff and school staff come and go, and new relationships must be built on an ongoing basis. Similarly, though Mana Kidz effectively breaks down barriers to accessing primary care and supporting more equitable outcomes, underlying socioeconomic challenges remain such as increasing cost of living, loss of jobs during the Covid-19 pandemic, and low-quality housing. As these kinds of socioeconomic factors are determinants of health and wellbeing, stakeholders said whaanau needs are becoming more complex. More could be done to address these needs through Mana Kidz, with additional resources.

Operational challenges also include working conditions in some schools (e.g., poor Wi-Fi, unsuitable clinic space) and sometimes poor communication from primary care and community services impedes the ability of Mana Kidz staff to support continuity of care. At the time of this evaluation, the future role of Mana Kidz in the evolving Covid-19 pandemic response and the structure and role of school-based primary care in the context of health system reforms were causing uncertainty for programme staff and leaders.

Opportunities and areas for development include:

- Ensure that the place for equitable, effective, efficient school-based services is recognised in the health system reforms
- Expand Mana Kidz (e.g., cover more schools; upskill the workforce to meet a broader range of health needs; develop a mobile service as an additional access point and extra capacity; employ a roving GP to support nurses to address health needs)
- Strengthen Pasifika leadership in Mana Kidz (NHC has striven to do so with some successes, but the need remains including a gap in Pasifika leadership on the ALG)
- Improve service integration (e.g., improve data sharing with the primary health care sector; strengthen linkages with relevant community services to provide direct care, health promotion and education)
- Link Mana Kidz with the proposed Tamariki Hinengaro Wellbeing Approach as part of a seamless school-based network of wellbeing services
- Improvements to programme data and reporting to support monitoring, evaluation and decision-making
- Review the level of funding for Mana Kidz to ensure resources allocated to the programme are aligned with its objectives and community needs
- Review the allocation of resources within the programme (e.g., between ARF and wider health needs; between schools based on differential needs).

## Conclusion

Mana Kidz is an efficient and effective programme that improves equity of access to primary care and provides significant value to tamariki, whaanau, schools and the healthcare system. After ten years of serving the highest-needs school communities in South Auckland, Mana Kidz is a proven and trusted platform for delivery. Significant unmet needs remain, and Mana Kidz could do more if resourced commensurately.

# 1 Introduction

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Children living in Counties Manukau face significant health issues, including higher admission rates for skin infections (Duncanson et al., 2018) and high rates of ARF (MoH, 2020; Lennon, Stewart & Anderson, 2016). This occurs in the context of several challenges including persistent barriers to accessing primary health care, poverty, racism, poor quality and overcrowded housing.

Nearly one-quarter (24%) of the most socioeconomically deprived tamariki in Aotearoa live in the CM Health catchment. Within this catchment, 45% of tamariki live in areas of high deprivation, and over half (53%) are Maaori or belong to a Pasifika ethnic group. The public health literature draws a strong relationship between socioeconomic circumstances and wellbeing outcomes, with clear evidence that tamariki in adverse socioeconomic circumstances in Aotearoa have poorer health and wellbeing outcomes, across many health conditions, compared to more affluent peers.<sup>3</sup>

Mana Kidz is a free, nurse-led, school-based programme that provides high quality primary health care for targeted conditions, for tamariki within communities that have been under-served by other parts of the health system. The programme operates in 88 schools and kura, reaching approximately 34,000 children. Currently 97% of the eligible population have consented into the programme.<sup>4</sup>

Of the 88 schools, 59 schools in deciles 1-2 receive a “Level 1” service. This is an intensive programme with a registered nurse and whaanau support worker in the school providing daily sore throat swabbing services and treatment, sore throat case finding for all students twice per term,<sup>5</sup> daily assessment of skin infections and treatment, general health assessments and referrals.

In Level 1 schools, there is a two-pronged approach to identifying infections. Teachers ask children to self-report sore throats and skin infections at roll call every morning. The whaanau support worker then brings all self-reported children to the clinic for swabbing or to address skin infections. Case finding of sore throats is also undertaken, where all consented children from each class are swabbed twice per term. Siblings of children who test positive for GAS are also swabbed. The whaanau support worker does most of the initial assessments prior to referring children to the nurse, as well as administrative tasks and daily classroom visits. The nurse attends to skin infections and other clinical tasks such as writing prescriptions. Consent is required for swabbing, and additional consent has to be gained for treatment requiring antibiotics.

The health teams in Level 1 schools aim to create a space within the school where whaanau, school community and tamariki can come when there are any health queries or concerns. Other health care needs often addressed include ear health and hearing, eye health and vision, and child protection concerns. The model also provides the opportunity for wider whaanau to be assessed both in the school health clinic and within their homes.

The remaining 29 schools in deciles 1-3 receive a “Level 2” service, with a registered nurse for eight hours per week (or according to the school’s need), primarily focused on urgent concerns and sore throat management based on self-identification. There is no regular sore throat case finding.

The programme is led by the National Hauora Coalition (NHC) in partnership with CM Health and is delivered by a network of local providers: Tāmaki Health Care, Pasefika Family Health Group, Turuki

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<sup>3</sup> Source: Tamariki Hinengaro wellbeing approach business case.

<sup>4</sup> Additional initiatives (e.g., a different model for children in school years 9-13, and GP Rapid Response clinics) have further increased the coverage of vulnerable children including Maaori and Pasifika children in the lowest socioeconomic quintile.

<sup>5</sup> Prior to 2017 nurses were required to be available in schools 3 days per week. This was increased to 5 days per week in Level 1 schools from 2017. However, at various times the requirement was temporarily reduced back to 3 days per week reflecting factors such as a shortage of nurses, a measles epidemic in late 2019, and Covid-19. The service has now resumed at 5 days per week.

Health Care, Te Hononga O Tāmaki Me Hoturoa, South Seas, Tongan Health Society and Kootuitui/Papakura Marae.

Public health nurses from CM Health’s Kidz First service were also involved in delivering Mana Kidz up until early 2021. They worked alongside a whaanau support worker from another provider, in what was referred to as a ‘mixed provider model’. Kidz First involvement was initially reduced as parts of its workforce were redeployed to respond to the 2019 Measles outbreak. Its involvement was reduced further, to the point of no delivery by early 2021, as public health nurses were re-deployed again to assist with the Covid-19 response.

The Mana Kidz programme is governed by an alliance leadership group (ALG) chaired by NHC Clinical Director and comprised of CM Health representatives and Maaori and Pasifika primary care expertise. Funding for the programme comes from a combination of sources including CM Health baseline funding and ARF prevention funding from the Ministry of Health. Additionally, CM Health contributes resources in kind including: a Public Health Physician; Paediatric infectious disease consultant, a recently appointed programme and contracts manager resource; the general managers of Kidz First and Child, Youth and Maternity; and Kidz First nurses until their redeployment in early 2021.

## Programme design

Mana Kidz provides a team of a nurse and a whaanau support worker, working in school-based clinics. Mana Kidz has built a diverse workforce that is concordant with the communities it serves in terms of cultural and ethnicity.

The Mana Kidz Model of Care is based on the following key principles:

### Whaanau-centred

- Tamariki-focused and whaanau centred
- Strengths-based approach
- Culturally appropriate and competent

### Service excellence

- Evidence-informed clinical framework underpins service delivery
- Systemic support for safety, continuous learning and efficiency
- Measurable outcomes and performance indicators to demonstrate impact

### Transformative

- Proactive approach to primary healthcare barriers—intensive, relational, free, community-based, mobile
- Catalyst for delivering better services
- Challenge and disrupt traditional ways of delivering health and social services

### Collaboration and integration

- Collaboration for collective impact; shared goals, decision-making and resourcing
- Coordination/integration with a range of health and social service providers.

In all Mana Kidz schools, oral Amoxicillin is supplied once daily for ten days for GAS infection, as recommended by the *New Zealand Rheumatic Fever Guidelines* (Heart Foundation of NZ, 2014), by the nurse through standing orders. All children under treatment for GAS have five and ten-day

follow-ups. Home visits are made where whaanau are unable to pick up medication from the pharmacy. There has been a focus on increasing the use of intramuscular penicillin (IM Bicillin) in an effort to improve compliance, especially for those children who have a family history of ARF. For skin infections, medication choices are guided by locally developed evidence-based peer reviewed skin infection management guidelines.

Recently, all Mana Kidz providers have had the addition of at least one Community Nurse Prescriber within their team. Nurse prescribers are able to prescribe 30 different medications, extending the range of treatments that can be directly accessed through Mana Kidz for tamariki and their whaanau.

Mana Kidz providers work in partnership with school teams which, depending on the school, may include a lead teacher responsible for student health, Special Education Needs Coordinators (SENCO), and/or social workers in schools (SWIS). They refer children to local primary care and social service agencies (e.g., child notifications, hearing and vision clinics, AWHI Healthy Homes Initiative).

## History and development of the programme

Professor Diana Lennon (from Population Child and Youth Health in the Department of Paediatrics at the Faculty of Medical and Health Sciences, University of Auckland) spearheaded the development of a pilot at Wiri Central School, offering sore throat management together with a broader range of services in a school setting. Professor Lennon advocated strongly for the government to invest in ARF prevention. Dame Tariana Turia, previously leader of the Maori Party, was a strong supporter of the ARF prevention kaupapa and secured funding for the ARF primary prevention programme while working with the National-led government under a Confidence and Supply Agreement.<sup>6</sup>

In 2011, The Ministry of Health announced funding for an ARF primary prevention programme and introduced a five-year Better Public Services Target in 2012. The Ministry released an RFP for the establishment of school-based clinics as part of the broader ARF prevention programme.

In Counties Manukau, CM Health brought together a network of primary care and community health providers to respond to the RFP as the Ministry had indicated that the funding would not be awarded to DHBs. This group of PHOs and NGOs became formalised as the Child Health Alliance Forum (CHAF). The National Hauora Coalition (NHC) was identified as the lead agency of this alliance with their Clinical Director providing strong leadership of this collective. The opportunity was recognised to leverage off the rheumatic fever funding to establish a more comprehensive school-based health service, building on lessons from the Wiri Central School pilot. A response to the RFP was developed by CHAF and submitted by NHC on behalf of CHAF to deliver a school based ARF prevention programme in CM Health.

CM Health and NHC developed an effective partnership to develop and refine the model of care, alongside other providers. NHC then led the implementation of the service, coordinating a provider network made up of PHOs, primary care providers, community health providers and Kidz First Community Health (in which public health nurses employed through Kids First became part of the Mana Kidz network).

Mana Kidz was rolled out incrementally to geographic clusters of schools, in four initial stages: Otara (October 2012); Mangere (February-March 2013); Manurewa (May-June 2013); and Papakura (October 2013). The schools were identified through the development of a school scoring system which used four variables including the smoothed ARF rate in Census Area Unit (CAU) where a school

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<sup>6</sup> <https://www.auckland.ac.nz/en/news/2018/05/25/professor-diana-lennon-onzm-obituary.html>

was located, school case density, school decile and proportion of roll who identified as being Maaori or belonging to a Pasifika ethnic group.

In 2017, through a business case process, funding for Mana Kidz was increased to enable the programme to be extended to all remaining decile 1-3 schools in the district, resulting in the current system of Level 1 and Level 2 schools.

Focusing initially on sore throat and skin infection management, Mana Kidz quickly developed into a more comprehensive health service in primary and intermediate schools in response to the needs of tamariki and whaanau. Delivering services into schools as part of a broader primary care network was seen as an important opportunity to address the well documented and persistent barriers to accessing primary health care in South Auckland communities. In addition to sore throat and skin infection management the programme now includes health assessments, respiratory health, healthy weight, immunisations, hearing and vision checks, mental health and wellbeing, home visiting, housing support referrals, ongoing support and education for children with rheumatic heart disease (RHD) as well as connecting children and whaanau with other health and social supports within the community.

## Previous evaluation of Mana Kidz

Mana Kidz was previously evaluated in 2014. The evaluation found that Mana Kidz was an effective intervention, improving health outcomes for children in priority population groups, and highly valued by school communities (King, Moss & McKegg, 2014). Subsequently, a 2016 paper, based on this evaluation, was published in the *New Zealand Medical Journal* (Anderson et al., 2016).

## Current evaluation of Mana Kidz

In 2020, CM Health identified a need to re-evaluate Mana Kidz, to provide evidence and insights that can inform the development, implementation and improvement of school-based health and wellbeing programmes in CM Health and Aotearoa-wide. Broadly, the objectives of the current evaluation were to: identify the impact of Mana Kidz on the health and social wellbeing of children and their whaanau; identify mechanisms and success factors that support effectiveness; assess the extent to which Mana Kidz provides value for money; and identify opportunities for improvement and considerations for future development.

Accordingly, this evaluation addressed four key evaluation questions (KEQs):

1. To what extent, and in what ways, does Mana Kidz impact on the health and wellbeing of children and their whaanau?
2. What mechanisms and success factors support the effectiveness of Mana Kidz?
3. To what extent does Mana Kidz provide value for money?
4. What opportunities are there to improve or further develop Mana Kidz?

The evaluation used a mix of qualitative and quantitative methods including stakeholder interviews and surveys, analysis of programme data, epidemiological data, and hospitalisation data, together with programme documentation.

A broad range of programme stakeholders participated, including Mana Kidz nurses, whaanau support workers, provider leaders, NHC and CM Health representatives, school leaders and whaanau. A total of 138 people directly contributed feedback to the evaluation through 67

interviews and 71 survey responses (**Appendix A**). Additionally, data were analysed from recent surveys conducted by NHC, including 112 responses to two school surveys and 110 responses to a whaanau survey.

No control or comparison group was available to support causal inferences. The quantitative component of the evaluation provides descriptive analysis of trend data.

## Overview of this report

The next four sections of this report address the four KEQs in turn, synthesising evidence from all sources. These sections focus on providing concise findings.

- Section 2 summarises health and wellbeing impacts of Mana Kidz
- Section 3 identifies mechanisms and success factors that support the programme's effectiveness
- Section 4 evaluates the extent to which Mana Kidz provides value for money
- Section 5 identifies challenges, opportunities and areas for programme development.

To provide a brief-readable summary of findings, sections 2-5 are organised according to key themes identified in qualitative feedback. Where appropriate, significant findings cross-reference programme data, survey data, and/or interview quotes.

Further detail is provided in a series of Appendices:

- Appendix A describes the methods used in the evaluation
- Appendix B provides analysis of Mana Kidz programme data and ARF incidence data
- Appendix C provides thematic analysis of stakeholder interviews
- Appendix D provides results from the survey of Mana Kidz nurses and whaanau support workers, conducted by the evaluation team
- Appendix E summarises relevant information from surveys of schools and whaanau, conducted by NHC
- Appendix F provides additional data and stakeholder feedback on the current level of resourcing and related pressures for Mana Kidz
- Appendix G provides analysis of hospitalisation data conducted by CM Health
- Appendix H lists the publications and other documents cited in the report.

## 2 Health and wellbeing impacts

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This section addresses KEQ 1: **To what extent, and in what ways, does Mana Kidz impact on the health and wellbeing of children and their whaanau?** It triangulates stakeholder feedback from interviews (Appendix C), surveys (Appendices D-E), and data analysis (Appendix B).

**Mana Kidz provides easy, fully funded access to advice, care and treatment, enabling health and wellbeing issues to be addressed promptly.** The presence of nurses and whaanau support workers in schools enables health and wellbeing issues to be addressed directly while children are at school, without the unnecessary delays, fees, transport barriers, wait times and other barriers whaanau often face when attempting to access primary care through general practice. Whaanau and school staff spoke of the ease and speed of accessing treatment for tamariki through Mana Kidz once the whaanau support worker or nurse had identified a health or wellbeing issue. Whaanau value going straight from school to the pharmacy to pick up a script or have medication delivered to their homes.

*When you speak to the nurse you get the information faster and then you can act straight away. It's much faster than going to my doctor. (Parent)*

**Mana Kidz is effective at identifying and treating sore throats, skin infections and meeting a range of other wellbeing needs.** Programme data demonstrates the reach of Mana Kidz and the volume of services it provides. Although this doesn't provide direct evidence of health and wellbeing impacts, it demonstrates the effectiveness of Mana Kidz in identifying and addressing relevant needs. For example, in 2019 (before the Covid-19 pandemic), Mana Kidz was available to approximately 34,000 children. Over 110,000 swabs were taken, of which 11.6% (12,921) tested positive for GAS. All received antibiotics, with 82% adhering well to the full course of treatment. The programme also conducted over 12,000 skin assessments with 1,400 resulting in antibiotic treatment, and nearly 12,000 health and wellbeing assessments covering immunisation checks, hearing, nutrition, head lice and numerous other health and wellbeing issues (Appendix B).

**Stakeholders<sup>7</sup> believe Mana Kidz identifies sore throats, skin and other health and wellbeing issues that may otherwise go unnoticed.** Tamariki do not always tell their parents about a sore throat but are more likely to tell the nurse. Further, some whaanau noted that their tamariki are often asymptomatic. Most whaanau believed that without Mana Kidz, sore throats and skin infections identified by Mana Kidz would sometimes go unnoticed and untreated. Mana Kidz staff also conduct "top to toe" health assessments opportunistically while undertaking throat swabs. This enables them to identify other health issues that may not be picked up at home.

*Without [Mana Kidz], kids would just be sitting there with sore throats. (Parent)*

**Mana Kidz support contributes to better medication adherence.** Mana Kidz staff follow up to ensure tamariki complete their prescribed courses of medication. Records show good antibiotic adherence in 82-91% of cases (Figure 17, Appendix B). In addition to checking in with whaanau and tamariki, Mana Kidz staff provide them with resources (e.g., sticker charts), rewards (e.g., health packs) and health information. Whaanau and school feedback, and Mana Kidz data (as described above), indicate this support contributes to good medication adherence.

*Some families stop taking medication when they feel a little better. Mana Kidz help them make sure they take the medicine. (School leader)*

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<sup>7</sup> Where specific stakeholder groups are not identified, it means the feedback reflects all stakeholder groups.

**Whaanau and tamariki are more likely to act on health and wellbeing issues because they are better informed and access to care is easier.** Whaanau said that because of the knowledge they had gained through Mana Kidz, and the ease of access to the service, they were more likely to access primary care. For example, whaanau interviewed generally had little or no knowledge of ARF before their child was identified with GAS. Similarly, nurses and whaanau support workers mentioned improved health literacy including improved awareness and familiarity with GAS throat, ARF and skin conditions as well as knowing when and where to seek treatment.

*I didn't realise it was that bad until it happened to my daughter. Just getting that information was a wake-up call for the rest of my family and kids, that it's a serious fever. (Parent)*

**Stakeholders believe that Mana Kidz improves tamariki and whaanau health and wellbeing.** For some tamariki, GAS infection is a one-off occurrence, treated with one course of antibiotics. Others experience recurrent infections that can take more time, more attempts, and different treatment approaches. Whaanau were grateful for the ongoing support from Mana Kidz when issues persisted and education that resulted in behaviour change, such as closing curtains at night and airing the house during the day, in recognition of the importance of a warm dry home in preventing sore throats. Some whaanau had been referred for housing interventions, resulting in improved living conditions. Stakeholders widely consider Mana Kidz is likely to help prevent ARF.

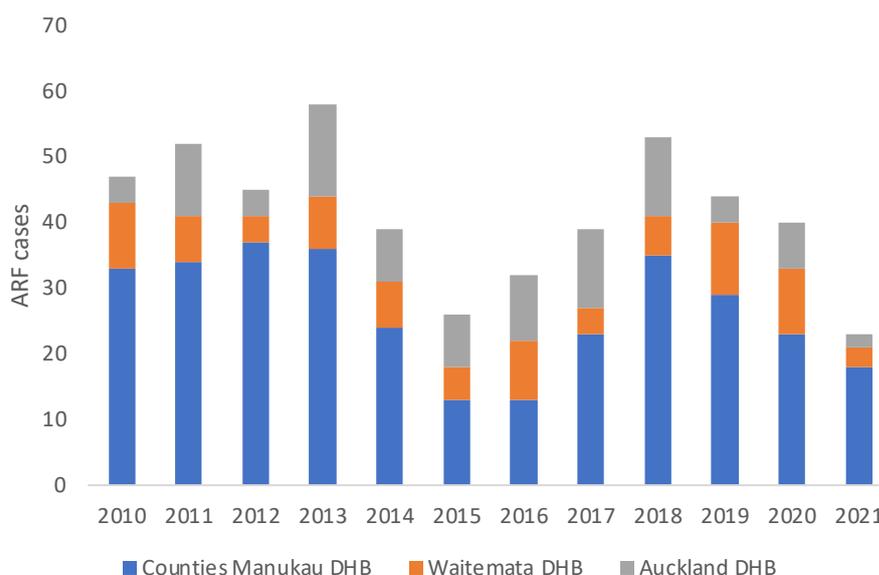
*I honestly think that if this service hadn't been available at school when my oldest (sic) son was younger, he would probably have ended up with rheumatic fever. Getting that referral to Healthy Homes made a huge difference. (Parent)*

Skin issues are also better managed and treated. Mana Kidz provides support with the management and treatment of skin infections by cleaning wounds/grazes, providing medication, applying creams and ointments during school hours, monitoring developments, and informing whaanau of how to best prevent and treat. Feedback from school leaders and whaanau indicates that this support has led to skin issues being well managed and/or cleared up completely.

*[The nurses] know my children have eczema. They always update me on new information, or if things aren't quite working out, if the eczema is still there after a couple of days, they will recommend something else just to help clear things up. (Parent)*

**It is unclear to what extent changes in ARF rates may be attributable to Mana Kidz.** ARF notifications to the Auckland Regional Public Health Service (ARPHS) for 5-12 year olds in CM Health peaked in 2012 and then reduced over the next three years (Figure 1). Reasons for the decline at that time are unclear, though the timing coincides with the rollout of Mana Kidz. Notifications increased again in 2017 and 2018, before starting a new downward trend in 2019, 2020 and 2021. The most recent downturn in notifications is likely to reflect impacts of Covid-19 including lockdowns, school closures and travel restrictions. It is unclear whether this is a temporary or enduring effect, and more evidence is needed before causes can be properly determined. Reasons for the recent drop in notifications are being investigated further.

Figure 1: ARF notifications to Auckland Regional Public Health Service – 5-12 year olds, 2010-2021



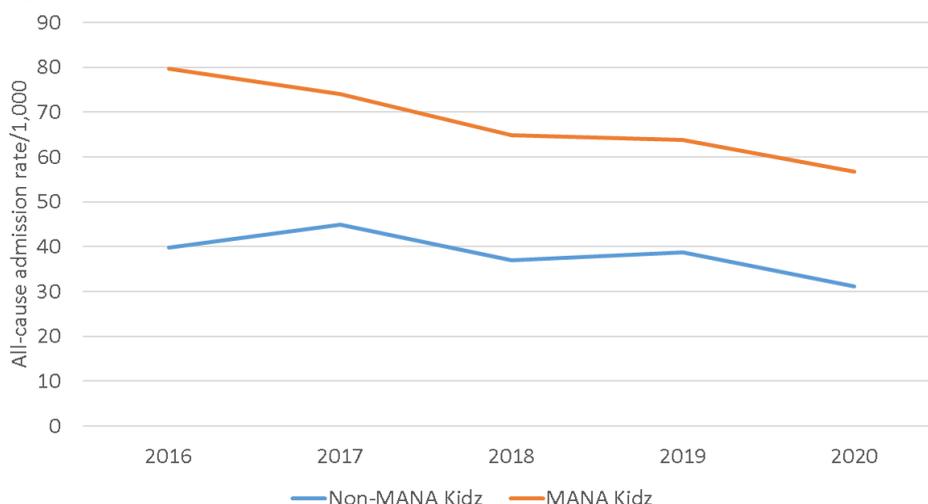
CM Health reviewed patterns of hospitalisation to understand trends in all-cause admission and hospitalisations for skin infections, ARF and RHD in recent years.<sup>8</sup> Time trend analysis of all-cause admissions suggested a downward trend of admissions over 2016-2020.<sup>9</sup> This trend pre-dates Covid-19 effects and was more marked for hospitalisations of children who had been engaged with Mana Kidz at any point than for those who had not (Figure 2). A similar pattern was seen in hospitalisations for skin infections (Figure 3).

This descriptive data analysis does not allow us to draw conclusions around causality. The downward trend in all-cause admissions may reflect a downward trend in ‘burden of disease’ among children engaged with Mana Kidz. However, other possibilities need to be considered including a reduction in access to care and increased threshold of admission, changes in treatment approaches, and other societal and environmental drivers (Appendix G).

<sup>8</sup> It is known that hospital coding over-estimates ARF admissions. In the Auckland region Episurv surveillance data, entered by ARPHS, is considered to be the most accurate ARF data.

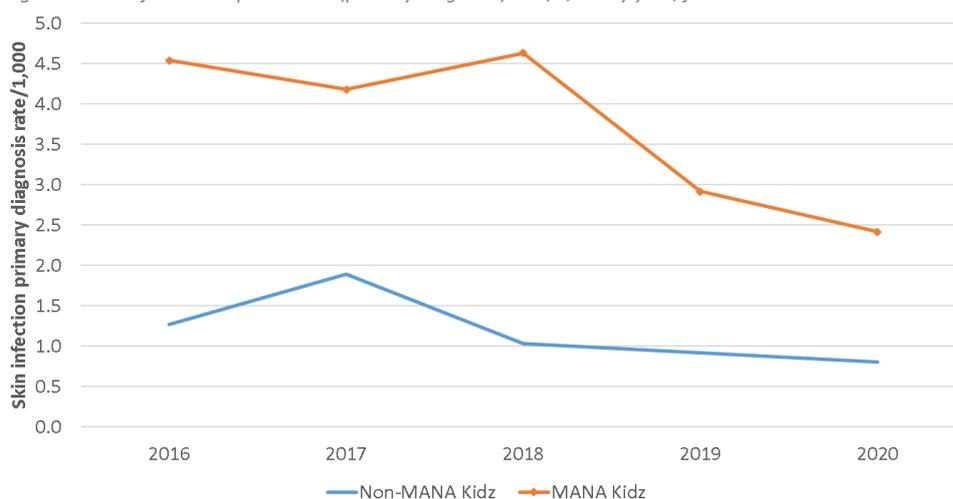
<sup>9</sup> Hospitalisation rates were substantially higher in Mana Kidz schools than non-Mana Kidz schools, suggesting the programme is providing health services to those children with the highest risk of poor health outcomes. This is discussed further in section 4.

Figure 2: All-cause admission rate/1,000 to CM Health facilities for CM children aged 5-12 years by calendar year, Mana Kidz vs non-Mana Kidz.



Numerator: Linked Mōhio CM Health facility admissions 2016-2020 calendar years for CM domiciled children present in Mōhio database at any time during period 2016-2020. Admissions include 'null' diagnostic codes. Denominator: Mōhio database used in combination with Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year) to generate Mana Kidz and non-Mana Kidz denominators.

Figure 3: Skin infection hospitalisation (primary diagnosis) rate/1,000 by year, for Mana Kidz vs non-Mana Kidz 5-12 year old CM Children



Numerator: Linked Mōhio CM Health facility admissions 2016-2020 calendar years for CM domiciled children present in Mōhio database at any time during period 2016-2020. Admissions include 'null' diagnostic codes. Denominator: Mōhio database used in combination with Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year) to generate Mana Kidz and non-Mana Kidz denominators.

**All published evidence, post implementation of Mana Kidz, is consistent with the proposition that the school-based sore throat programme in schools in Counties Manukau has reduced the burden of ARF in this population.** A 2017 paper in the *Paediatric Journal of Infectious Disease* reported that the programme was associated with a 58% reduction in ARF presentations over two years of clinic availability (Lennon et al., 2017). A 2015 national evaluation of ARF prevention programmes also reported a statistically significant reduction in ARF presentations for children aged 5-12 years, and noted that Mana Kidz was effective in preventing ARF (Jack et al, 2018), though this work was undertaken before the increase in case numbers seen in 2018. A retrospective cohort study of school-based sore-throat programmes in the Bay of Plenty concluded that school-based programmes with Māori health workers conducting sore throat swabbing and GP/nurse support reduced first-presentation ARF incidence in Māori students in the highest risk settings (Walsh et al., 2020).

## 3 Mechanisms and success factors

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This section addresses KEQ 2: **What mechanisms and success factors support the effectiveness of Mana Kidz?** Key themes from stakeholder interviews (Appendix C) and surveys (Appendices D-E) are summarised below – including how Mana Kidz adds value for tamariki, whaanau, schools and the healthcare system, factors that support the success of Mana Kidz, and strengths of Mana Kidz.

### Value of Mana Kidz for tamariki and whaanau

**Mana Kidz has built a diverse workforce that is well matched to the communities it serves in terms of culture and ethnicity.** The workforce comprises many people who live in the community, speak relevant languages, and know the needs of and appropriate ways to work with whaanau and tamariki.

*They make everything easy to understand. Each time my kids have got strep they just repeat the information, they don't say you should know this already. They don't make me feel dumb, or like it's my fault. (Parent)*

**Mana Kidz is designed to address inequities, particularly access and engagement with primary care.** By nature of its design (e.g. school-based, relational, targeted, free), stakeholders said the service breaks down barriers to access and engagement (e.g., financial, transport, time, mistrust, and language). Having providers within these low decile schools, a culturally concordant workforce, their commitment to the kaupapa, and flexibility to do home visits are widely considered to be critical aspects of improving access. Examples were given where Mana Kidz had helped whaanau to access additional financial assistance for hearing and vision aids, transported tamariki to specialist appointments when whaanau could not take unpaid leave, and sourced other assistance for whaanau struggling financially.

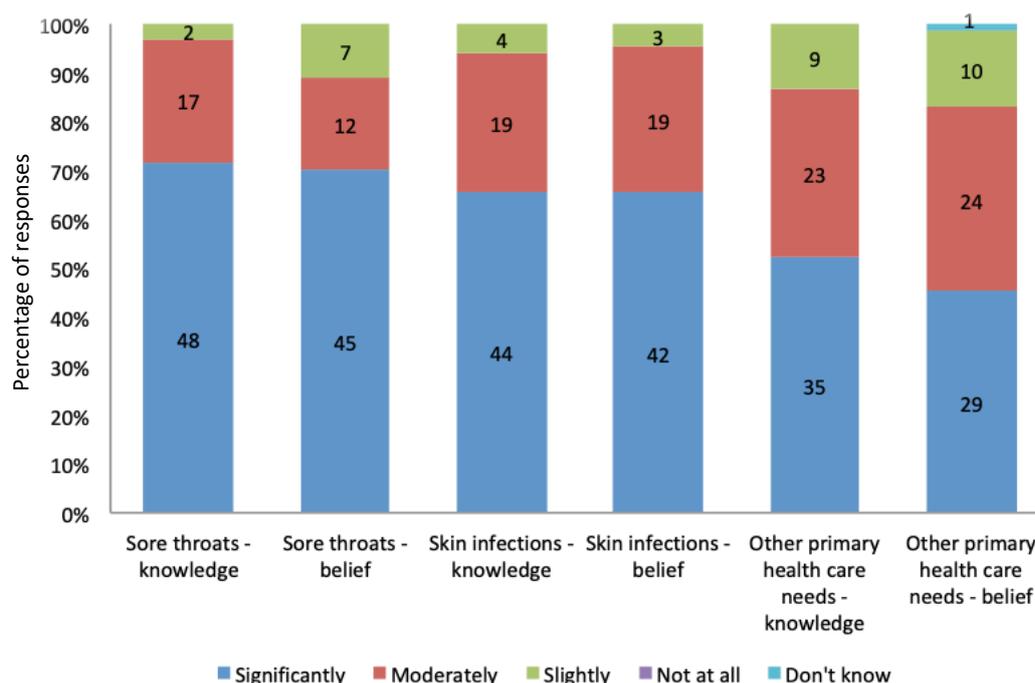
*Many of our families struggle to find their way through systems. We like that Mana Kidz is culturally responsive, can respond to the needs, and does not require big waiting lists. (School leader)*

**Mana Kidz provides opportunities to build trusting relationships with health professionals.** For tamariki, this can have long-lasting effects. For whaanau, engaging and developing relationships with Mana Kidz staff contrasted with experiences of short consults with different GPs that cost them both time and money and, at times, may be stifled by cultural and language barriers. Nurses and whaanau support workers observed increases in tamariki and whaanau confidence to access primary care.

*Some parents don't go to the doctor because they don't feel safe for whatever reason. If our [tamariki] build strong relationships with our health workers, they will expect to receive similar experiences wherever they are in the health service. I hope this will remove some of the barriers that may stop them from going to the doctor. (School leader)*

**Mana Kidz empowers tamariki and whaanau.** Whaanau said at interviews that they had learned and understood more about looking out for, preventing, and managing sore throats and skin conditions. They had also learned about different aspects of health and wellbeing such as oral health and healthy eating. Similarly, most respondents to the nurses and whaanau support workers survey indicated Mana Kidz had significantly or moderately impacted whaanau and tamariki knowledge about sore throats, skin infections, and other primary health care needs and contributed to strengthening whaanau belief in themselves that they can take action to address these issues (Figure 4).

Figure 4: Impacts on knowledge (n=67) and belief in self (n=64) from survey of nurses and whaanau support workers



Feedback from all stakeholder groups indicated that tamariki act on this knowledge by taking their medication, looking after skin conditions, looking after younger siblings, and presenting when they have concerns. Whaanau become more involved in managing health conditions and are more likely to contact the nurse when they have health concerns.

**Mana Kidz has developed into a comprehensive primary care service** that offers care, treatment and support over and above issues relating to sore throats and skin infections. Stakeholders gave examples of Mana Kidz providing support to tamariki and whaanau for hearing, vision, asthma, dental, enuresis, encopresis, head lice and diabetes. This is corroborated by the range of needs recorded in programme data (Figures 22-24, Appendix B). Stakeholders said that Mana Kidz staff attend to any health issue directly or through referral. A comprehensive school-based service adds value for tamariki and whaanau, providing them with a wider range of easily accessible services and supports.

*Any questions, to do with anything they've been really helpful. (Parent)*

**Mana Kidz provides reassurance that tamariki general health and wellbeing are upheld while at school.** Whaanau were grateful for having a nurse-based service at their school. It increased their confidence that if tamariki have any worries or hurt themselves when at school, someone is there who cares and has the skills to help. Some whaanau noted that the presence of Mana Kidz in the school was the key reason for choosing that school.

*Knowing that the children have a health service within the school that is able to support their health needs is amazing. I think they [tamariki] are really lucky. (Parent)*

**Mana Kidz supports educational achievement.** School leaders and whaanau were clear that tamariki who are physically and mentally well achieve better at school. Health issues can impact on their attendance and interfere with their ability to focus on learning.

*If the programme wasn't there we could expect to see absenteeism due to illness increasing and having an impact in terms of the kids' educational trajectory. (School leader)*

## Value of Mana Kidz for schools

**Mana Kidz provides a dedicated and consistent focus on student health.** Teachers are often stretched and cannot always respond to health issues. For school leaders, it is reassuring to know that student health issues can be addressed immediately and followed up. The ability of Mana Kidz staff to follow up with whaanau kanohi ki te kanohi (face to face) was considered key to whaanau buy-in and engagement. It is tough for schools to provide this level of follow up without Mana Kidz.

*We get things solved straight away. That is a really good impact for our families. (School leader)*

**Mana Kidz provides ease of access to health-related information, advice and support.** During medical emergencies or outbreaks, such as measles and Covid-19, principals said Mana Kidz reduced anxiety in school communities by providing information and hands-on support. They also noted that Mana Kidz supports schools with health-related topics in class, and first aid.

**Mana Kidz provides a direct link to the broader health system and resources.** School leaders, particularly those in a SENCO role, highlighted the value of Mana Kidz nurses': ability to access past medical histories of students who transfer from other schools; knowledge of referral pathways; knowledge of health-related events in the community; ability to expedite health-related processes; and ability to access resources such as rapid antigen tests (RATs), masks and sanitisers.

**Mana Kidz provides a trusted health voice.** It was more difficult for schools to engage whaanau in tamariki health before Mana Kidz and persuade whaanau to take tamariki to the doctor. In contrast, school leaders found that whaanau more readily follow the lead of Mana Kidz nurses because they are health professionals and their voice "carries a little more weight".

*It's really useful because some of those parents feel more assured by a health professional than they do by a teacher. (School leader)*

**Mana Kidz schools are becoming more trusted places for whaanau.** Mana Kidz staff strive to build relationships with whaanau and tamariki that are trusting, comfortable and safe. They also provide support and resources that help whaanau through difficult times (e.g., food hampers, medication). School leaders said this support contributes to schools becoming more trusted places for whaanau who may need consistency, continuity, and routine when other parts of life are not going as expected.

**School leaders said that Mana Kidz contributes to a healthier school environment** that is more conducive to learning. They believed that without Mana Kidz, their school population would be in poorer health with increased transmission of contagious diseases, and health problems would be exponentially greater and more severe.

**School leaders said Mana Kidz supports schools' ability to implement holistic approaches to learning and child development** – recognising the connectedness between mind, body and spirit in the learning process. The health expertise of nurses and whaanau support workers, helping to keep tamariki well, complements schools' education expertise, enhancing the collective ability to attend to children's physical, personal, social, emotional, and spiritual wellbeing as well as cognitive aspects of learning. In some schools, Mana Kidz is part of a wider wrap-around team with SENCO, social workers in schools (SWIS) and other agencies that work together to address the complexities that some whaanau face. In other schools, management were in discussions with their Mana Kidz provider about what a more collaborative approach may look like in the future.

**Mana Kidz supports better school attendance.** School leaders said that before Covid-19, Mana Kidz was already ensuring students were less likely to be held back from educational attainment due to

health issues. In the wake of Covid-19 this support became invaluable when, for example, whaanau were anxious about tamariki returning to school. Mana Kidz, together with other social service agencies is increasingly included in plans for dealing with attendance issues. Having tamariki back is a priority for schools.

*What we want from an education perspective is, we want them at school. Maaori and [children from Pacific ethnic groups] are our priority learners, if this isn't taken care of, we won't have them at the school. (School leader)*

## Value of Mana Kidz for the health care system

**Mana Kidz may reduce pressure on primary and secondary care.** Early detection, treatment and follow up by the Mana Kidz team may mean there is less likelihood of tamariki needing hospital care. Mana Kidz also helps reduce GP walk-ins of primary school-aged children, because whaanau have access to the nurse at school.

*With Mana Kidz... it took some pressure off our general practices, particularly for our kids. We had quite a high walk-in rate of children under 12 at the time. We were consistently seeing all these kids for a range of different skin issues, lots of different kinds of health issues. But it would always be at the 'too late' phase of care where we'd have to either send them off to hospital, or we were banging our heads against a brick wall wondering why they didn't come in weeks or months earlier. And then what we saw is, Mana Kidz allowed whaanau... to have their kids looked after from a health perspective... We saw in a couple of months the value that Mana Kidz had in the area and for our kids and our schools. (Provider lead)*

**Mana Kidz can support continuity of care.** In those instances where tamariki need health care, Mana Kidz nurses and whaanau support workers make efforts to support better continuity of care, with some providers facilitating follow up and discharge planning. Mana Kidz nurses and whaanau support workers also help tamariki get to their appointments when needed. The support of Mana Kidz staff can help facilitate effective interactions between whaanau and other health care providers.

*The best thing is having someone in the background that has our back. Without that backing, it was like people thought we were making it up. When Mana Kidz got involved reality set in for the doctors and now, we're getting way better care for our daughter. (Parent)*

**Mana Kidz workforce is flexible and available to respond to crises.** Mana Kidz workforce can engage with communities, work with tamariki, and have skill sets that can be redeployed when necessary. This has proven particularly valuable in the last two years in the context of the Covid-19 pandemic, as well as historically with meningococcal disease, and measles outbreaks. The flexibility of the workforce is also evident in the engagement with schools and whaanau (e.g., home visits, adapting to changes in school programmes, accessing support of colleagues), contributing to their ability to meet whaanau needs.

*If they can't get me with a phone call they will do a house call. They know that I sometimes pop home for lunch between my two jobs, so they will try and catch me on that off chance. (Parent)*

While the benefits of a flexible workforce are of value to the sector, it does put additional pressure on the workforce.

## Factors that support the success of Mana Kidz

Thematic analysis of stakeholder feedback from interviews and surveys, across all stakeholder groups, identified the following factors that support the success of Mana Kidz.

**Leadership of Mana Kidz is recognised as a key contributor to its success.** This includes having NHC, a Maaori-led PHO, as the lead organisation, looking after the DHB relationship and ensuring the programme is equity-focused. The leadership within the providers, most of which are Maaori or Pasifika (reflecting the communities they work in), and the cohesiveness of providers working together are also important success factors.

**The commissioning model strengthens community providers.** NHC commissioned existing community health and social service providers to deliver the Mana Kidz programme. This approach has supported a synergy where Mana Kidz could leverage existing relationships and services while providers could build their services and reach. This has further cemented providers as credible and effective in their communities, enabling them to attract other funding and contracts. NHC is effective in its commissioning role, with good communication, relationships, training, clinical support, and programme systems and processes including quality standards and performance monitoring.

**The ALG, providing governance of Mana Kidz** by NHC and CM Health, with Maaori and Pasifika<sup>10</sup> representation and relevant expertise in infectious diseases and public health, has supported Mana Kidz to stay abreast of developments internationally, informing ongoing improvements to the programme.

**Having dedicated and knowledgeable clinical champions** in both CM Health and NHC is a key strength and a vulnerability. A lot has been resting on these champions since the programme's start. They carry much institutional memory and tacit programme knowledge that would be lost if they move on.

**Commitment to the Mana Kidz kaupapa** at all levels underpins the programme's success. Mana Kidz nurses and whaanau support workers bring a "heart first" approach, are non-judgemental and sensitive to whaanau realities. They go "above and beyond" to ensure tamariki and whaanau needs are met, including working extra hours, and finding out-of-the-box solutions to issues and problems.

**Being nurse-led** is considered to bring clinical credibility and confidence to the programme, contributing to buy-in from whaanau and school staff. It ensures timeliness in diagnosing and treating on the spot. Standing orders widen the scope of practice, and the ability to meet the needs of tamariki and whaanau.

*[Mana Kidz] is totally delivered in a nurse-led model. That's important to consider when looking at the number of GPs that are available in Counties Manukau. (Programme leader)*

**Being school-based** enables easy access to the programme for tamariki and whaanau, and a constant presence for relationships and trust to develop. It enables opportunistic engagement that may lead to support or intervention. Having a nurse in the school allows for prompt diagnosis and immediate treatment.

**The proactive approach to identifying and treating ARF and skin infections** is considered key to Mana Kidz effectiveness. Regular class checks bring whaanau support workers up close with

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<sup>10</sup> The Pasifika member is no longer on the ALG as they were needed in the Covid-19 response. Pasifika membership has been challenging for ALG to secure as there is a limited pool to draw on, and demand is high.

tamariki, so they are assessed for other health issues at their sore throat check. Mana Kidz staff follow up with absentees. Follow up supports adherence to medications.

**The combination of class checks and self-identification** is critical to the programme's effectiveness. Class checks ensure that as many tamariki as possible are checked periodically, while self-identification helps identify infections between class checks. Programme data shows that approximately equal numbers of throat swabs from self-identification and case finding result in a positive test (Figure 16, Appendix B). This is also corroborated by previous research by Professor Lennon and colleagues, which found that combining the two strategies ensures timely detection, with each strategy contributing around half of the GAS throats detected.

**Mana Kidz nurses and whaanau support workers take a holistic and whaanau-centred approach** to primary care. Community-based providers offer a range of services (e.g., social, housing, pharmaceutical, traditional Maaori) that the Mana Kidz team can wrap around tamariki and whaanau as needed.

**There are different ways into the programme.** Mana Kidz provides multiple options for tamariki and whaanau to access services. For tamariki, this includes self-identification, class checks, a daily presence of Mana Kidz staff in Level 1 schools, and the ability for school staff or whaanau to refer them. For whaanau, there is the presence of Mana Kidz at the school, staff who look and speak like them, resources available in different languages, and the Mana Kidz 0800 number, established in response to Covid-19 lockdowns.

## Strengths of Mana Kidz

Thematic analysis of stakeholder feedback from interviews and surveys, across all stakeholder groups, identified the following strengths of Mana Kidz.

**Relationships are strong at all levels.** Providers consider NHC is supportive, easy to engage with, quick to respond and communicates clearly with providers. School leaders spoke positively about NHC and providers' communication with schools. There is collegiality and deep respect between providers, and between nurses and whaanau support workers. There are effective relationships between Mana Kidz staff and schools, though gaining school acceptance has sometimes required negotiation and relationship building over time.

Mana Kidz teams' relationships with tamariki are underpinned by manaakitanga and aroha<sup>11</sup>. . Tamariki trust and feel comfortable with Mana Kidz staff. Relationships with whaanau are also positive: most whaanau in NHC's 2018-19 survey were satisfied with the service and most said they would recommend Mana Kidz to a friend or colleague (Figure 41, Appendix E). However, nurses and whaanau support workers said it can be hard to form relationships with whaanau – for example, they may be too busy to engage or need time to develop trust. Building relationships is an ongoing process and needs to be actively maintained. Meanwhile, whaanau, tamariki, Mana Kidz staff and school staff come and go, and new relationships must be built.

**Mana Kidz delivers effectively.** As detailed in section 2 and Appendix B, the programme has consistently maintained high consent rates and effectively identifies and treats GAS infections, skin infections, and addresses other health and wellbeing needs. Mana Kidz supports good adherence to medications.

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<sup>11</sup> Manaakitanga is an inclusive approach and duty of care that supports people in need and includes acts of kindness and generosity (Mead, 2003; Ruwhiu, 2009). Aroha is acts of care, compassion and empathy and working with aroha (mahi aroha) upholds the mana of others (Edwards, 2010).

**Mana Kidz processes and activities function well.** Most Mana Kidz nurses and whaanau support workers who responded to a survey in late 2021 indicated that sore throat management, skin infection treatment, initial assessment and case findings were all working well (detailed in Appendix D). The majority were satisfied with health promotion and education, identifying, and addressing wider health issues, and management of symptomatic whaanau, though some indicated that these aspects could be improved.

**Whaanau are supported into better housing, where possible.** When tamariki present with recurrent GAS, Mana Kidz checks in with whaanau around housing conditions. If issues such as overcrowding and/or damp, cold housing are identified, nurses provide advice to improve the situation. Where needed, Mana Kidz refers whaanau for housing assessments and housing interventions (e.g., AWHI Healthy Homes Initiative). However, the current demand for housing stock can bring long waiting times and uncertainty.

**Whaanau awareness of Mana Kidz is high, with room to improve.** A survey of whaanau conducted by NHC, completed in early 2019, received 110 responses from whaanau in 30 schools. Most respondents were aware that if their child was sick, or if they were worried about their child's health, they could be seen by Mana Kidz staff at school. Respondents also knew that the Mana Kidz team were available to help with sore throats. Awareness that the team could help with other conditions was lower. Stakeholder feedback concurs there is room to improve whaanau awareness of Mana Kidz, as discussed in section 5.

## 4 Value for money

This section addresses KEQ 3: **To what extent does Mana Kidz provide value for money?** It draws on findings from the preceding two sections, together with additional analysis, to provide summative judgements of the performance and value of Mana Kidz.

Table 1 summarises the value for money assessment including criteria (aspects of performance) and ratings. To provide a transparent basis for these ratings, a predetermined and agreed set of criteria (aspects of performance) and standards (levels of performance) were developed, defining what good value for money (good use of resources to create worthwhile value) would look like in the Mana Kidz context (King, 2017; 2019).<sup>12</sup>

The criteria and standards, detailed in Appendix A, highlighted the intent of Mana Kidz to create value through equity – addressing disparities in access to timely primary and preventive health services to prevent serious consequences of ARF, skin infections and other health needs in low socioeconomic areas of South Auckland. Through this lens, efficiency is not an end in of itself, but rather a means to the end of delivering on equity.

To minimise repetition, the summaries of evidence below are brief and cross-reference other sections that present relevant evidence in greater detail. The ratings for equity and effectiveness of direct results, equity of outcomes and cost-effectiveness reflect limitations in the available evidence; Mana Kidz may meet a higher standard, but stronger evidence would be required to determine this.

Table 1: Value for money assessment of Mana Kidz

Criteria	Adequate	Good	Excellent
Relevance (right needs, right schools, right design)			
Care and respect for whaanau and school resources			
Appropriate service configuration			
Appropriate level of financial resources			
Equity of delivery			
Productivity of delivery			
Equity of direct results			
Effectiveness of direct results			
Equity of outcomes			
Cost-effectiveness			
<b>Value for Money overall</b>			

### Relevance

Relevance means doing the right things – e.g., the extent to which intervention objectives and design respond to demonstrated needs and priorities (OECD, 2019).

**Stakeholder feedback and data suggest that Mana Kidz is addressing the right needs.** Children living in the CM Health catchment face significant health issues, including high rates of ARF and high

<sup>12</sup> This approach, called 'Value for Investment', is used globally to evaluate complex and hard-to-measure programs and policies. The approach was also used in the 2014 evaluation of Mana Kidz. [www.julianking.co.nz/vfi/](http://www.julianking.co.nz/vfi/)

admission rates for skin infections. This occurs in the context of several challenges including persistent barriers to accessing primary health care, poverty, racism, poor quality and overcrowded housing (King et al., 2014). Current programme data, hospitalisation data, and stakeholder feedback suggest that the needs addressed by Mana Kidz remain relevant.

Analysis by CM Health shows that ARF hospitalisations occurred almost exclusively in Maaori and Pasifika ethnic groups in Counties Manukau from September 2015 to September 2021, with a predominance of Pasifika children in the 5-12 year old age group. Similarly, Pasifika and Maaori children are over-represented in admissions for skin infections (Appendix G).

The depth, breadth, and interconnectedness of tamariki and whaanau needs, together with the Mana Kidz ethos of recognising individual and whaanau needs holistically (rather than siloed by diagnosis or sector), means that prioritisation of needs is a challenge: all the needs addressed through Mana Kidz are high priority. Furthermore, the nature of underlying socioeconomic determinants of health in South Auckland means that the level of need will continue to exist even as Mana Kidz responds to presenting primary care needs.

**Evidence indicates Mana Kidz works with the right schools.** The programme operates in the most deprived communities of South Auckland, in low decile schools<sup>13</sup> with 51% children from Pasifika ethnic groups and 31% Maaori tamariki.<sup>14</sup> These vulnerable children are those most likely to get ARF and be admitted with potentially preventable conditions. The first 59 Mana Kidz Level 1 schools accounted for 85% of ARF cases in CMDHB before the programme (King et al., 2014).

Children engaged in Mana Kidz schools are over-represented in CM Health all-cause hospital admission data. They are also over-represented in hospitalisations for dermatitis and eczema, skin infections, bronchitis and bronchiectasis, asthma and rheumatic fever (Appendix G). This confirms that Mana Kidz schools have been appropriately selected for an ARF prevention approach and demonstrates the ongoing equity potential of continuing to provide strong school-based services in these schools. The majority of admissions for tamariki engaged with Mana Kidz were for Maaori (32%) and children from Pasifika ethnic groups (55%), reflecting the ethnic mix of the populations served within the schools (Appendix G).

Stakeholders agree Mana Kidz is provided in the right schools – though some advocated for the service to be available in more schools.

Feedback from school leaders in two Level 2 schools indicated that although less time is spent in these schools, Mana Kidz still provides a worthwhile focus on student health through this model and it is seen as an improvement on the ad-hoc visits provided previously by a public health nurse. Nonetheless, stakeholders more generally see potential for Mana Kidz to work more effectively in Level 2 schools, and other schools not currently served by Mana Kidz, if resourced to do so.

**Mana Kidz is well-designed** to address issues of access and engagement with primary care for tamariki and whaanau in low decile schools in South Auckland communities. Key features, detailed in section 3 (Mechanisms and success factors), include: a workforce that is a good cultural fit with the communities; being school-based and nurse-led; providing a comprehensive wrap-around service; and flexibility and ability to do home visits.

**Overall**, evidence indicates Mana Kidz meets all expectations defined for the Relevance criterion (Table 4, Appendix A) at the **Excellent** level (Table 5, Appendix A).

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<sup>13</sup> Level 1 schools are predominantly Decile 1 (84%) and Decile 2. Level 2 schools are from Deciles 1-3.

<sup>14</sup> Ministry of Education data (July 2021) on 86 Mana Kidz Level 1 and 2 schools matched to NHC list. Of these, Level 1 schools had 57% Pasifika and 33% Maaori children, and Level 2 schools had 39% Pasifika and 28% Maaori children.

## Stewardship of resources

**Mana Kidz demonstrates care and respect for whaanau and school resources.** Feedback from whaanau and school staff indicates they value the services that Mana Kidz provides to the school community and consider it is worth the time it costs them to participate. Clear communication with school staff and whaanau are key to minimising disruption. For example, nurses give teachers advance notification of classroom visits. School staff surveyed in 2020 were predominantly satisfied with the level of communication between the Mana Kidz health team and the school (Appendix E). Overall, evidence indicates Mana Kidz meets the definition of **Excellent** performance against this criterion.

**Mana Kidz has an appropriate service configuration** to deliver high quality, fit-for-purpose services economically. The alliancing model, bringing together providers into an outcomes-focused contracting environment, is an important factor in the success of the programme. Under this model, NHC commissioned community health and social service providers to deliver Mana Kidz, both leveraging and enhancing the providers' expertise, relationships, reputations, contracts, and resources to support the Mana Kidz programme. The quality and appropriateness of Mana Kidz is underpinned by the school-based nurse-led service model, access to whaanau support workers to support non-clinical tasks, cultural fit of staff and the comprehensive wrap-around approach. Overall, evidence indicates Mana Kidz meets the definition of **Excellent** performance against this criterion.

**The level of resourcing has not kept pace with cost drivers and should be reviewed.** Mana Kidz is funded through Ministry of Health and CM Health baseline funding, totalling \$5.14 million in 2021/22. In addition, CM Health contributes significant resources in kind including 10.6 FTE Kidz First nurses and 6.8 FTE whaanau support workers (before their redeployment to contribute to the Covid-19 pandemic response) and programme leadership (in particular, Public Health Physician and recently appointed programme and contracts manager resource, as well as the general managers of Kidz First and Child, Youth and Maternity). NHC and providers also contribute time and resources beyond those explicitly funded. The programme also utilises publicly funded health services for laboratory tests (estimated by CM Health at \$1m per annum before the Covid-19 pandemic but varying depending on the level of swabbing activity) and medicines (funded through the normal process for prescribing funded medication to children).<sup>15</sup>

The level of direct funding for Mana Kidz has stayed constant for the last four years, aside from a \$91,460 increase in CM Health funding from 2020/21, a 1.8% increase in total direct (MoH and CM Health) funding. This contrasts with Consumer Price Index inflation of 13% and wage index inflation of 15% over the last four years.<sup>16</sup> Moreover, Mana Kidz now operates in 88 schools and kura with a combined roll of approximately 34,000 children, up from 61 schools and 24,000 children in 2017. Additionally, funding has not kept pace with changes in the scope of Mana Kidz services. The volume of additional work can disrupt core business and draws on already limited resources. As a result, there is a high risk of staff burnout. Nurses and whaanau support workers often commented that they are exhausted due to the growing scope, expectations and needs with no corresponding increase in resources. Covid-19 has exacerbated these issues.

The observation that funding has not kept pace with cost drivers, together with stakeholder accounts of the impact this has had on Mana Kidz providers and staff, supports a rating of **Adequate**

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<sup>15</sup> Based on Mana Kidz data and Pharmac schedule prices, the cost of antibiotics for sore throats totalled around \$70,000 over the past four years.

<sup>16</sup> RBNZ Inflation Calculator: <https://www.rbnz.govt.nz/monetary-policy/inflation-calculator>

for the level of financial resources, as defined in Appendix A. Resourcing issues are described in further detail in Appendix F.

## Equity of delivery

Mana Kidz exists to address inequities in access to timely primary and preventive health services, prevent serious consequences of GAS pharyngitis, skin infections, and to address other health inequities that disproportionately affect tamariki Maaori, Pasifika children, and children in low socioeconomic areas of South Auckland. Therefore, equity of delivery and outcomes are central to achieving good value for money from Mana Kidz.

Stakeholders consider that Mana Kidz is configured appropriately and delivered by service providers who are well connected to their communities, who employ nurses and whaanau support workers with the right cultural competencies and cultural fit to engage effectively with tamariki and whaanau. Nurses and whaanau support workers build strong relationships with schools, whaanau and tamariki. As a result, Mana Kidz effectively targets and reaches those in greatest need.

NHC data corroborates this view, with high consent rates and the majority of Mana Kidz students receiving sore throat assessments being of Pasifika (57%) and Maaori (30%) descent (Appendix B), commensurate with the cultural mix of enrolments in Mana Kidz schools.<sup>17</sup>

Mana Kidz breaks down cost and practical barriers to accessing and engaging in primary health care and prescription medicines, including financial, transport, time, mistrust, and language. Nurses and whaanau support workers empower tamariki and whaanau to learn about and lead their own health, increasing awareness and knowledge about sore throats, ARF, skin infections and other health issues, including their prevention and treatment. They also refer and link whaanau to primary care providers and other community services to meet a range of needs.

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 be time-intensive.

Overall, Mana Kidz meets criteria for **Excellent** equity of delivery as defined in Appendix A.

## Productivity of delivery

While Mana Kidz exists to address inequities, it is also important that it does so efficiently, to maximise its reach and effectiveness with the available resources. According to the NZ Productivity Commission (2017), efficiency can be broken down into two components: technical efficiency and allocative efficiency. We add two more 'efficiencies' to this framework: dynamic and relational efficiency. Definitions of these terms, and their application to Mana Kidz, are summarised as follows.

**Technical efficiency** means maximising productivity by using the least resources necessary to deliver the required quality and quantity of outputs. The Mana Kidz programme is delivered at a reasonable cost per child. Total direct funding in 2019/20 equates to an average cost of \$214 per participating child for the year.<sup>18</sup> If the cost of Kidz First staff in 2019 is added, the average cost was \$283 per

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<sup>17</sup> Ministry of Education data (July 2021) on 86 Mana Kidz schools matched to NHC list: Level 1 schools had 57% Pasifika and 33% Maaori children; Level 2 schools had 39% Pasifika and 28% Maaori children. Level 1 and 2 schools collectively had 51% Pasifika and 31% Maaori children.

<sup>18</sup> \$5,049,006 (MoH and CM Health funding of Mana Kidz) / 23,598 consented children as at the end of Term 2, 2020 = \$213.96 per consented child.

child. This compares favourably to capitation funding for those with a High Use Health Card at Access practices of \$437.46 for 5-14 year olds.<sup>19</sup>

**Allocative efficiency** means resources are allocated to the right mix of inputs.<sup>20</sup> Mana Kidz has consistently delivered services across all participating schools since its establishment (notwithstanding service disruptions brought about by the Covid-19 response including lockdowns and redeployment of staff) – indicating that Mana Kidz resource allocation provides an appropriate mix of inputs to support efficient delivery.

Opportunities were identified to review the allocation of resources across the programme. It may be time to revisit whether resource allocation should be dominated by sore throat management with the intention of preventing ARF or whether wider factors should now be given more weight when allocating resources to the programme. Allocation of nurse and whaanau support worker FTE between schools is currently determined in proportion to roll size, which does not account for differences in need. Level 1 and 2 schools are also determined by decile rating. Also, several stakeholders suggested that Mana Kidz works better for schools when one provider serves a school rather than the mixed provider (DHB/NGO) model.

**Dynamic efficiency** means learning, improving, and responding to changes in context, to become more efficient over time.<sup>21</sup> Mana Kidz improves its ability to work equitably and efficiently through continuous learning, reflection, improvement, and adaptation of its approaches at strategic (e.g., ALG), management and operational levels. Mana Kidz providers and funders have a shared focus on refining the programme. Examples include:

- Strengthening the equity response, in recognition of the need to improve Pasifika health outcomes, including initiatives to establish Pasifika leadership, workforce development, and two Pasifika leadership roles in the ALG.<sup>22</sup>
- Increasing the competency and scope of practice of whaanau support workers through training and development programmes informed by evidence, programme data and feedback from stakeholders.
- Improvements to follow up and continuity of care and support.<sup>23</sup>
- Mana Kidz involvement in a range of research studies and pilots.<sup>24</sup>
- Revision of forms to reduce data requirements not critical to the programme.
- Regular revisions to the Manual of Operations to streamline procedures.
- Use of Physicians Supply Order (PSO) system for medical dispensing, enabling nurses to supply certain medications immediately.

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<sup>19</sup> Capitation rates for 5-14 year olds without a HUHc are \$144.47 for females and \$135.23 for males.

<sup>20</sup> In economic theory, allocative efficiency occurs where the distribution of goods and services in the economy matches consumers' preferences, and price is equal to the marginal cost of production. In public services, allocative efficiency can be used analogously to refer to distributing resources to the right mix of interventions to meet needs or strategic objectives.

<sup>21</sup> In economic theory, dynamic efficiency refers to the idea of optimising resource allocation over time so that no generation can be made better off without another being worse off. In more practical terms, this idea relates to improving productivity over time, e.g., by adopting new technology. Dynamic efficiency provides a moving picture of improvements in technical and allocative efficiency over time.

<sup>22</sup> The National Hauora Coalition, Anderson, P., Brown, R., Wheeler, J., McKree Jansen, R. (2020). Pacific Fono: a community-based initiative to improve rheumatic fever service delivery for Pacific Peoples in South Auckland. *Journal of Primary Health Care*. 2020;12(4): 384-390

<sup>23</sup> Examples include a Rheumatic Fever Support Plan developed by NHC to ensure tamariki and whaanau are provided with discharge support and information, collaboration between NHC and CM Health to identify and provide discharge support to tamariki diagnosed with ARF, and proactive identification and follow up of students with more than three GAS+ results twice per year.

<sup>24</sup> Examples include a nurse-led study to improve medical adherence through use of IM Bicillin, the Waha Nui Light AI trial using an innovative camera with infrared and artificial intelligence to diagnose GAS, an information sharing pilot with the Social Wellbeing Board aimed at improving integration across multiple services and agencies, and review of Mana Kidz effectiveness at preventing ambulatory hospitalisations facilitated through a data sharing agreement between NHC and CM Health.

**Relational efficiency** refers to the extent to which communication and trust throughout the network of Mana Kidz providers, schools, and primary and community care providers supports efficient delivery. Without good communication and trust, resources would be wasted. The weight of stakeholder feedback indicates that Mana Kidz has strong working relationships at all levels, including NHC and providers, NHC and schools, between providers, between nurses and whaanau support workers, with school staff, and with tamariki and whaanau. Establishing new relationships (as people move on) and maintaining existing relationships is an ongoing process.

Some challenges remain, especially around supporting continuity of care because of ineffective lines of communication with some health and social services. For example, Mana Kidz staff spoke of not hearing back from services they had referred whaanau to and missed appointments where they could have facilitated attendance had they been aware.

Overall, Mana Kidz meets the definition for an **Excellent** rating for efficient delivery as defined in Appendix A.

## Equity of direct results

This criterion was defined as improved equity for Maaori, Pasifika and other Mana Kidz children in: GAS infections identified; children offered and receiving treatment for GAS infections; acute skin infections identified; and children offered and receiving treatment for acute skin infections; and other health and wellbeing referrals.

From the data provided, these specific indicators could not be broken down by ethnicity. Nonetheless, available data suggests that Mana Kidz reduces health inequities of whaanau in low decile schools. As detailed above, 82% of children in Mana Kidz schools are of Pasifika and/or Maaori descent, and 87% of children who received sore throat assessments were Pasifika and/or Maaori. Although GAS infections identified could not be disaggregated by ethnicity in Mana Kidz data, it is known from ARF notifications (Appendix B) and hospitalisation data (Appendix G) that Pasifika and Maaori children are at the greatest risk.

These statistics suggest that Mana Kidz contributes significantly to reducing health inequities. Given the low socioeconomic circumstances of all Mana Kidz school communities, it is reasonable to infer that Mana Kidz addresses health inequities through the direct results tracked in performance data, including GAS and skin infections identified and treated, and other health and wellbeing referrals.

Overall, available evidence suggests Mana Kidz meets criteria for **Good** equity of direct results, as defined in Appendix A. The ability to disaggregate relevant data by ethnicity could strengthen this rating in future evaluations.

## Effectiveness of direct results

This criterion was defined as performance against national, DHB and NHC performance targets or expectations for detection and treatment of conditions. A subsequent review of quarterly monitoring reports and contracts showed regular performance reporting, but few explicit targets or expectations for the indicators. The reports did show that Mana Kidz met expectations for two rounds of case-finding class screening in Level 1 schools and that 99-100% of treatments for GAS throats and skin infections met targets for timeliness.

Programme data provided by NHC is summarised in Appendix B. This shows the activity level across a range of indicators and key results for the programme. Notwithstanding the lack of clear targets or expectations, the weight of performance data shows that before the Covid-19 pandemic, the

programme worked with increasing numbers of children and whaanau over time, with consistently high consent rates across all providers, performing consistently in throat swabbing, detection and treatment of GAS, skin checking, detection and treatment of skin infections, antibiotic follow up, and with growth in health and wellbeing interventions and referrals.

Similarly, stakeholder feedback (summarised in section 3) suggests Mana Kidz is effective, consistently maintaining high consent rates, effectively identifying and treating GAS infections, skin infections, supporting good adherence to medications, and addressing other health and wellbeing needs.

Overall, available evidence suggests Mana Kidz meets criteria for **Good** effectiveness of direct results, as defined in Appendix A. The ability to compare performance data to explicit targets or expectations could strengthen this rating in future evaluations.

## Equity of outcomes

As explained above, Mana Kidz improves equity of access by having services delivered and accessible free of charge in schools. Mana Kidz performs strongly on equity of delivery.

With regard to equity of *outcomes*, this criterion was defined as improved equity of:

- Health and wellbeing of tamariki and whaanau (in particular, ARF incidence and hospitalisations, and skin infection hospitalisations)
- Knowledge and self-efficacy when it comes to sore throats, skin infections and other primary health care needs
- Relationship with (and therefore propensity to use) primary care.

These health and wellbeing impacts could not be directly measured but were canvassed in stakeholder interviews and surveys. This evidence suggests that Mana Kidz contributes to reducing health inequities and improving the wellbeing of whaanau in low socioeconomic school communities with predominantly Pasifika and Maaori rolls.

CM Health continues to have high rates of ARF in children from Pasifika ethnic groups and tamariki Maaori. Before Mana Kidz, Counties Manukau had the highest mean annual incidence rate nationally for ARF-related initial hospital admissions in 5-12 year olds, at 93.9 per 100,000.<sup>25</sup> The region has a high concentration of Maaori and Pasifika families, and all of the cases between 2010-2021 involved Maaori and Pasifika children. Directly comparable incidence data for 2020/21 were not identified, but Ministry of Health data for all age groups shows CM Health as having the highest rates of first-episode ARF hospitalisations from 2007-2020. ARF notifications have declined over the last three years, likely related to Covid-19 lockdowns, school closures and travel restrictions (Appendix B).

Stakeholders believe Mana Kidz improves equity of outcomes by developing whaanau and tamariki knowledge and self-efficacy in understanding the potential seriousness of sore throats and skin infections, and knowing when and how to seek help with these and other primary health care needs. Similarly, stakeholders said that Mana Kidz strengthens whaanau relationships with, and propensity to use primary care, and that it brings more comprehensive equity benefits for children's education and development resulting from improved health and wellbeing, through improved attendance and engagement at school (Appendices C, D, E).

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<sup>25</sup> 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*.

Overall, available evidence suggests Mana Kidz meets the definition of **Good** equity of outcomes as defined in Appendix A.

## Cost-effectiveness

Cost-effectiveness analysis, in health economics, examines the relationship between the costs and consequences of Mana Kidz, ideally in comparison with alternatives. **Economic analysis was out of scope** for this evaluation. However, a prospective cost-utility analysis of a school intervention to reduce the risk of ARF has been undertaken previously (Milne et al., 2011).<sup>26</sup> **That analysis only looked at the potential cost-effectiveness of sore throat management and thus ARF prevention, which is only one part of the current Mana Kidz programme.** It estimated that school sore throat clinics would improve access to personal care and prevent premature death for Maaori and Pasifika people at a cost of approximately \$60,000 per quality-adjusted life year (QALY) gained.

**In the paragraphs below, the assumptions and findings reported from the 2011 study are qualitatively compared with current Mana Kidz performance, to consider (with due caution) whether inferences may be made about the current cost-effectiveness of Mana Kidz.** Although the current evaluation cannot attribute a long-term reduction in health service utilisation to Mana Kidz, results from the programme do suggest that it could plausibly 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, skin infections, and other primary care needs 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 at CM Health was \$14,675 in the 2020/21 fiscal year, compared to \$9,837 in 2013/14 as reported in the previous evaluation (King et al., 2014).<sup>27</sup> In cases where valve repair/replacement surgery is required, costs exceed \$100,000 (Milne et al., 2011). As indicated by the cost-utility study, cost offsets to the healthcare system would not cover the full cost of the programme but would serve to reduce the net cost of Mana Kidz. When impacts on quantity and quality of life are taken into account, Mana Kidz may be seen as cost-effective given its contribution to reducing disparities in access to health care and prevention of premature death for Maaori and Pasifika people.

The cost-utility model was sensitive to assumptions about programme efficacy (Milne et al., 2011). The model assumed a 59% efficacy rate in the base scenario, which is very close to the 58% reduction in ARF presentations that was subsequently attributed to Mana Kidz (Lennon et al., 2017).

The model was also sensitive to cost assumptions, with an 11% increase in the cost per child driving a 19% increase in the cost per QALY. Current costs average \$283 per child per year, including direct programme funding and Kidz First staff. If 60% of this cost is assumed to be attributable to ARF prevention efforts (as was assumed in the 2011 study) then current ARF prevention costs would average \$170 per child per year – 26% higher than the originally modelled costs of \$135 per child per year. As an alternative point of comparison, the Ministry of Health funding component, targeting ARF reduction through Mana Kidz (\$2m per year) equates to approximately \$85 per child.<sup>28</sup>

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<sup>26</sup> 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.

<sup>27</sup> It is known that coding for RHD is poor and includes high-cost cases that are not ARF-related (e.g., multiple valve disease and tricuspid valve disease). Nonetheless, coding algorithms have remained consistent for the two periods shown. If RHD valve disease and non-RHD valve disease costs are reasonably similar, then the pooled costs are still representative of RHD costs, or potentially better as they are averaged over a larger pool to spread the impact of outliers.

<sup>28</sup> As noted earlier, this compares favourably to capitation funding for 5-14 year olds with a High Use Health Card at Access practices.

This analysis has only considered the ARF prevention component of the programme and has been unable to draw conclusions about the value of health impacts and downstream reductions in health service utilisation associated with skin infections and other health and wellbeing needs.

Together, available efficacy and cost information suggest Mana Kidz cost-effectiveness on ARF prevention may fall within a similar-to-higher range than the modelled estimates, if all other parameters are assumed equal. Thus, a rating of **Adequate** is conservatively applied to cost-effectiveness. An updated cost-utility analysis, considering full programme costs and the full spectrum of downstream health service utilisation impacts and impacts on quality and quantity of life, would strengthen any conclusions reached about cost-effectiveness.

## Value for money overall

**Mana Kidz represents good value for money.** The programme is strongly equity-oriented and performs strongly on equity criteria. It delivers services efficiently and effectively. Mana Kidz is delivered at a reasonable cost per child, but the current level of resourcing has not kept pace with underlying cost drivers and should be reviewed. Value for money could be more strongly evidenced if performance was reported against explicit targets/expectations and disaggregated by ethnicity for all indicators of outputs, cases identified, and treatments given. Economic evaluation was out of scope but, if undertaken in the future, would strengthen conclusions about cost-effectiveness.

## 5 Challenges and Opportunities

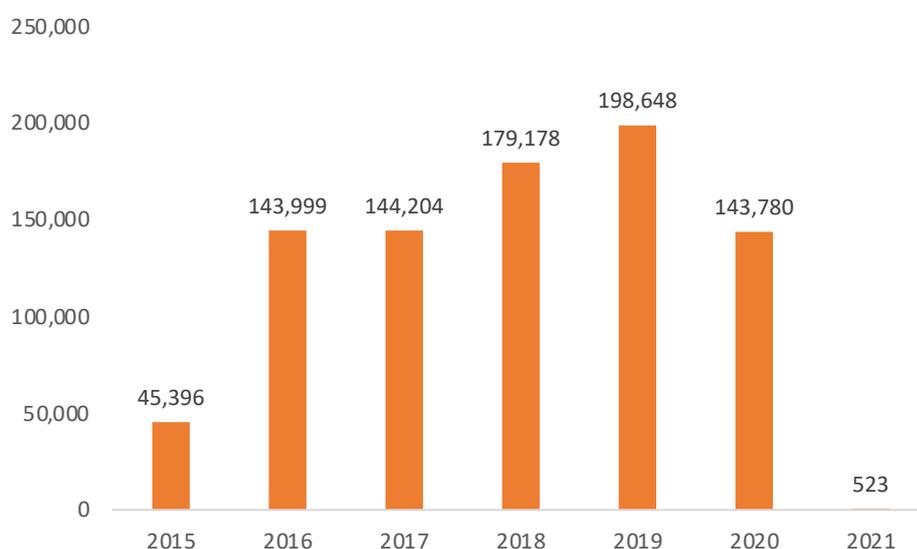
This section addresses KEQ 4: **What opportunities are there to improve or further develop Mana Kidz?** First key issues, problems and challenges are summarised, and then opportunities for improving and further developing Mana Kidz are canvassed.

### Issues, problems and challenges

**The Covid-19 pandemic, and the pandemic response**, had significant impacts on Mana Kidz. Many registered nurses from Mana Kidz were redeployed into managed isolation facilities, community-based assessment, testing centres and later, vaccination clinics while Mana Kidz operated on reduced staff. Lockdown periods, where children were encouraged (Alert Level 3) or required (Alert Level 4) to learn from home, also impacted on Mana Kidz. These impacts continued to affect the programme during Alert Levels 1-2; Mana Kidz staff and school leaders commented that after schools reopened, some anxiety remained in the communities and a significant proportion of children did not immediately return to school. Meanwhile, the nursing workforce continued to be needed for Covid-19 testing, gradually returning to Mana Kidz as more students returned to school (and after the workforce had completed their testing and stand-down periods).

The impact of these challenges is evident in programme data. For example, the number of sore throat clinics grew each year from 2015 to a peak of nearly 200,000 in 2019, before declining to 144,000 in 2020 and 523 in 2021 (Figure 5). A similar decline in activity is seen in other Mana Kidz indicators including skin infections identified and health and wellbeing referrals (Appendix B).

Figure 5: Sore throat clinics: Number of assessments 2015-2021



During the pandemic, some adaptations were made to the management and delivery of the services. As the country moved between alert levels, Mana Kidz continued to communicate with schools, whaanau and communities, providing updates at each level change regarding service changes, reiterating Covid-19 facts and reassuring whaanau by ensuring service delivery through either face-to-face visits when needed or virtually. In response to lockdowns, Mana Kidz established an 0800 line in 2020 which schools and whaanau can use to contact Mana Kidz clinical staff if they have any child health-related concerns. The 0800 service aims to connect whaanau with the appropriate team

or service where applicable. It has been well utilised, receiving 6,840 calls between November 2020 and October 2021.

Some schools continued to engage with Mana Kidz during the pandemic. Others were unable to do so owing to the redeployment of staff. Covid-19 interrupted Mana Kidz relationships with schools and principals, which will be essential to rebuild. It has also created backlogs in other work such as vaccinations, and vision and hearing checks, which could impact Mana Kidz teams. Kidz First nurses were deployed elsewhere and were not involved in Mana Kidz during 2020-2021 – so new nurses who have joined Kidz First during this time will need induction into Mana Kidz.

**Funding for Mana Kidz** has stayed relatively constant for the last four years, not keeping pace with cost drivers including inflation, population growth and changes in the scope of services. During that time, school rolls have increased, along with challenges and whaanau needs. Meanwhile, Mana Kidz has expanded its scope to try and meet a wider range of needs. These issues are summarised in section 4 and detailed in Appendix F.

**Requests for NHC and Mana Kidz staff to undertake extra work** beyond the scope of the contract was commonly cited as an operational challenge. Examples include supporting the rollout of the immunisation programme and other services leveraging Mana Kidz relationships to access schools (e.g., vision and hearing, mental health programmes, social wellbeing programmes).

**Schools also ask Mana Kidz staff to help with general health tasks** such as first aid, administering insulin and Ritalin. Despite this being a free service to the school, it is apparent that some schools' expectations do not match the scope; according to NHC there are challenges in some schools about what they want Mana Kidz teams to do and how they will function, compared to what was agreed at the outset. Staff do this extra work to meet needs and maintain relationships with schools. However, the volume of additional work can disrupt core business by drawing on already limited resources. Staff often work extra hours to make up the time. Further pressures can come from needs at the boundary between Mana Kidz and Oranga Tamariki or SWIS. The education aspects of Mana Kidz, which many consider vital, are the first to be crowded out by these other pressures.

**High risk of staff burning out** is a consequence of these challenges. Nurses and whaanau support workers often said they are exhausted from the growing scope, expectations and needs with no increase in resources. One nurse described the expectations on them to be that of 'jack-of-all-trades', without sufficient clinical support. In addition, if someone is off sick or on leave, they must provide cover. Covid-19 has exacerbated these issues. NHC noted that this is an operational problem to be resolved at the provider level; nonetheless NHC contributes support to cover for additional workforce on the programme and/or training or leave cover not accounted for in contracts.

**Whaanau engagement**, while a strength, is also a challenge. Transient whaanau, changes in primary caregivers, language barriers, trust barriers, and busy parents are perpetual challenges. There remains room to improve awareness of Mana Kidz, ARF, and skin infections. Stakeholder feedback indicates that whaanau are not always aware that they can go in and see the nurse at school about their own or their child's health, and only learn about Mana Kidz when the nurse or whaanau support worker contacts them because their tamariki have a health issue. When giving consent for the programme, whaanau may not always understand what they are agreeing to. For example, whaanau, whaanau support workers, nurses, and principals said that whaanau did not always read all of the documentation in the enrolment pack, they just sign it all off because it is difficult to understand.

**Breaking down barriers to accessing primary care and supporting more equitable outcomes**, though a strength, remains an ongoing challenge as well. While Mana Kidz is breaking down barriers to access for tamariki, it is less clear to what extent it can do this for whaanau. Many barriers stem

from persistent socioeconomic determinants of health such as crowded households, damp homes, low incomes, and time-poor parents working multiple jobs. The capacity to conduct home visits has diminished because of time pressures and resource constraints. Some stakeholders expressed concerns that the programme runs the risk of becoming “transactional”, e.g., meeting swabbing targets without being able to spend sufficient time to identify the wider needs of tamariki and whaanau.

**Working conditions in some schools** include operational barriers such as poor Wi-Fi (which impedes efficient reporting) and Mana Kidz clinics being poorly located in the school with low visibility. Tamariki sometimes have a long walk from their class, or lack privacy due to Mana Kidz working out of a shared space. For some schools, it is challenging to house Mana Kidz better within their facilities.

**Working with kura kaupapa.** One nurse who had worked in a kura kaupapa setting spoke about the richness of culture and language and the sense of tatou (togetherness). However, access to community-based health services was lacking. Amongst whaanau, there was a high mistrust of the system, which was hard to address within Mana Kidz work hours (once a week during school term). A lack of trust means that engaging with whaanau is more challenging. Home visits and Facebook seemed to be effective ways to connect with whaanau. As in English-medium schools, tamariki and whaanau have multiple needs, including low-quality housing, that impact their overall health and wellbeing.

An interview with a kura kaupapa tumuaki (principal) provided insights on how services like Mana Kidz can support an ‘as and by Maaori’ approach, building tino rangatiratanga, where Maaori are self-determining. Tino rangatiratanga is the right for Maaori to exercise their authority and agency and provide culturally responsive and inclusive opportunities. When services are provided ‘as and by Maaori’, Maaori providers (including hapuu and iwi), rangatahi, whaanau, and the community have ownership over the service delivery to meet their needs. This is an equity approach with Te Tiriti-based foundations: “Indigenous peoples have control...and indigenous knowledge and science are the norm. The legitimacy and validity of Indigenous principles [and] values are taken for granted. It does not exclude Western methods but includes them only as far as they are seen to be useful” (Wehipeihana, 2019, p. 381). In this context, Mana Kidz would support ambitions and resources adequately.

**Poor communication between South Auckland services.** Mana Kidz staff cannot always support continuity of care to the extent they would like because of ineffective lines of communication with some health and social services. Mana Kidz staff spoke of not hearing back from services they had referred whaanau to, missed appointments by tamariki where they could have facilitated attendance had they been aware, and instances where they had spent time facilitating and transporting for an appointment but were not aware of outcomes or follow up.

**The mixed provider model:** Several interviewees suggested Mana Kidz works better for schools when one provider serves a school rather than the shared DHB/NGO model. When one provider serves a school, stakeholders feel there is better cohesion in regards to organisational culture, expectations, systems and processes.

**Uncertainty.** When interviews were being conducted (November 2021 – April 2022), Mana Kidz staff faced uncertainty about their roles in the evolving Covid-19 pandemic response and uncertainties around the structure and role of Mana Kidz in the context of health system reforms. Additionally, poor communication from CM Health about re-tendering of the Mana Kidz programme (including not notifying NHC when the tender was issued) caused uncertainty for NHC and questions from providers and communities. This impacted on the Mana Kidz workforce looking for new roles, and

slight tensions between the NHC and some of its key providers due to not being able to confirm contract extensions earlier. Although CM Health subsequently extended the contract, this took an unusually long time to finalise. Changes in CM Health personnel in charge of Mana Kidz during 2021 may have contributed. The appointment of a new project manager means there is now a key person in the DHB with clear responsibility for Mana Kidz.

## Opportunities and areas for development

**Ensure the place for equitable, effective, efficient school-based services is recognised in the health system reforms.** After ten years of serving the highest-needs school communities in South Auckland, Mana Kidz is a proven and trusted platform for delivery. There is a continuing need to support tamariki within these schools with a quality school-based health programme. Analysis of hospitalisation data by CM Health found that hospital admissions at CM Health are strongly correlated with children attending Mana Kidz schools. Mana Kidz children are over-represented for dermatitis and eczema, skin infections, bronchitis and bronchiectasis, asthma, and rheumatic fever. This pattern reflects the known and enduring pattern of inequities driven by underlying socioeconomic determinants of health and wellbeing. It also highlights the opportunity for Mana Kidz, with appropriate resourcing, to provide more prevention and management particularly for skin and respiratory conditions (Appendix G).

**Expand Mana Kidz.** Significant unmet needs remain, and Mana Kidz could do more if resourced commensurately. Although Mana Kidz has increased the number of schools it works with, this has not occurred to the extent proposed in the 2016 business case, which sought endorsement for implementing a School Health Network in Counties Manukau. Building on the Mana Kidz programme, the envisioned network could reach all primary and intermediate schools in CM Health.<sup>29</sup> This would facilitate better integration of health, education and social services in schools to address the needs of children with high health and social needs and decrease demand for general practice and hospital-based services.

Other examples of Mana Kidz unmet potential include:

- Upskilling the workforce to meet a broader range of health needs, such as asthma, mental health, bronchiectasis, diabetes, healthy eating, and sexual health
- Providing fuller vision and hearing screening, so whaanau don't have to take time off work to go to the super clinic
- Providing a whaanau-centred model of immunisation using the non-regulated workforce and catching up on childhood immunisations
- Providing an additional resource to address socioeconomic determinants of health
- Developing a mobile Mana Kidz service that can have drop-in days at school and do home visits, along with a stronger focus on addressing socioeconomic determinants of health
- Introducing stronger links with primary care to support nurses in addressing health needs promptly
- Introducing rotational nurse/whaanau support worker to cover for leave and help ease the mounting pressure on staff
- Further investigate the use of digital health technology (such as iPads), including their potential to enhance efficiency and reach, and/or working more collaboratively with iMoko in schools where both iMoko and Mana Kidz are present.

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<sup>29</sup> CM Health has estimated that tamariki engaged with Level 1 Mana Kidz schools in 2021 represented around 36% of the 5-12 year old CM Health population (Appendix G).

**Strengthen Pasifika leadership in Mana Kidz.** NHC has striven to facilitate strong Pasifika leadership to mirror the strong Maaori leadership of Mana Kidz. However, there remains a need to continue these efforts. ARF rates, for example, remain higher among people of Pasifika descent than those of Maaori though the gap has narrowed the recent fall in ARF rates during the Covid-19 pandemic (Figure 30, Appendix B).

**Opportunities for better service integration.** These include:

- Working more closely with the primary health sector in terms of data sharing and access to GPs and other health professionals
- Strengthening linkages between Mana Kidz and providers' internal services that may assist in meeting the needs of whaanau (e.g., social workers, asthma specialists, etc.)
- Connecting more consistently with SWIS
- Linking in with other services in the community (e.g., Heart Foundation) for support, educational resources, guest speakers, etc.

**Linking Mana Kidz with the proposed Tamariki Hinengaro Wellbeing Approach.** Funding has been sought through the Budget 2022 Mana Ake investment to provide mental wellbeing support to primary and intermediate school-aged students aged 5-12.<sup>30</sup> There is an opportunity to connect these two health-funded services in schools as part of a seamless school-based network of wellbeing services.

**Improvements to programme data and reporting,** including:

- Developing and reporting against a more explicit set of targets and/or expectations
- Coding of ethnicity to enable breakdowns for key indicators at every level from consent through to activity, case detection and treatment
- Review indicators in light of programme developments to ensure reporting covers important aspects of activity and is useful for understanding programme effectiveness and informing future improvements
- Better integration of patient management systems across Mana Kidz providers.

**Review the level of funding for Mana Kidz.** The concerns expressed by stakeholders, together with the observation that Mana Kidz funding has not kept pace with inflation, population growth and the expanded remit of Mana Kidz, are sufficient to warrant a comprehensive review of Mana Kidz scope and funding to ensure the resources allocated to the programme are aligned with its objectives and community needs.

This review should include consideration of resourcing for:

- FTE for service delivery, training and development
- FTE for two class checks per term for schools given roll growth
- Mobile service, weekend and after-hours support
- More competitive and equitable salary funding relative to other contracts (and ensuring increases are passed through to staff) to support retention and fair pay
- A nurse practitioner or additional expertise to help with mental health.

**Review the allocation of resources between ARF and wider health needs.** Opportunities were identified to review the allocation of resources. It may be time to revisit whether resource allocation should be dominated by sore throat checks or whether wider factors should now be given more

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<sup>30</sup> <https://www.beehive.govt.nz/release/govt-expands-mana-ake-provide-more-school-based-mental-wellbeing-support>; <https://www.health.govt.nz/about-ministry/what-we-do/budget-2022-vote-health>

weight – such as health promotion/education, mental health, behavioural needs, and healthy eating/nutrition.

**Review the allocation of resources to schools based on needs.** Allocation of nurse and whaanau support worker FTE between schools is currently determined in proportion to roll size (which does not account for differences in need and sometimes results in 0.2 or less FTE being allocated to a school), and decile (for Level 1 and Level 2 schools). The basis of FTE allocation could be reviewed, and potentially give providers greater flexibility to allocate FTE across their schools based on their intimate local knowledge of needs. The balance of resources between schools of different decile levels, and between Level 1 and 2 Mana Kidz schools, could also be reviewed.

## Appendix A: Methods

The evaluation combined mixed methods (qualitative and quantitative) including stakeholder interviews and surveys, analysis of programme data, epidemiological and hospitalisation data, and programme documentation.

### Key evaluation questions

The following key evaluation questions (KEQs), agreed in advance with the evaluation reference group, are the overarching, ‘big picture’ questions that guided the evaluation. KEQs support clarity of evaluation design and reporting. The structure of this report aligns with the KEQs, providing explicit answers to each KEQ in turn. Table 2 summarises the four KEQs, together with the methods used to address each question.

Table 2: Key evaluation questions and associated methods

Key evaluation questions	Methods used
<b>KEQ 1:</b> To what extent, and in what ways, does Mana Kidz impact on the health and wellbeing of children and their whaanau?	Descriptive analysis of programme data, epidemiological data and hospitalisation data, together with thematic analysis of stakeholder feedback.
<b>KEQ 2:</b> What mechanisms and success factors support the effectiveness of Mana Kidz?	Thematic analysis of stakeholder feedback, guided by sub-questions (detailed below).
<b>KEQ 3:</b> To what extent does Mana Kidz provide value for money?	Value for money criteria and standards to synthesise relevant quantitative and qualitative evidence and provide transparent judgements of value for money including equity, efficiency and effectiveness.
<b>KEQ 4:</b> What opportunities are there to improve or further develop Mana Kidz?	Systematic analysis of findings from the first three KEQs, together with direct stakeholder feedback on opportunities for improvement, and a workshop with the evaluation reference group between the draft and final reports.

### Data analysis

This evaluation updates data analysis from the 2014 evaluation report (King, Moss & McKegg, 2014). It also includes additional analysis, reflecting the programme’s more recent expansion into health and wellbeing assessments and referrals.

Data analysis investigated both programme delivery and outcomes, including:

- Consent rates
- Assessments and throat swabs
- GAS positive rates
- Skin infections identified
- Antibiotic adherence for GAS and skin infections
- Health and wellbeing referrals
- Immunisation checks
- ARF notifications
- ARF hospitalisations

- Skin infection hospitalisations
- Other health conditions as data permitted.

While KEQ 1 focuses on health and wellbeing outcomes, no control or comparison group was available to support causal inferences. The quantitative component of the evaluation provides descriptive analysis of Episurv surveillance data of ARF notifications to ARPMS and programme data, together with stakeholder feedback.

Additionally, CM Health provided analysis of hospitalisation data linked to Mana Kidz data, focusing on the period 2016 to 2020.<sup>31</sup> This enabled the analysis to differentiate children who had been admitted to CM Health facilities and had been engaged with Mana Kidz at any point, and those who had not (though the temporal relationship between Mana Kidz engagement and hospitalisation was not examined). CM Health domiciled children aged 0-14 years who were admitted to other DHBs were excluded from this analysis. These descriptive outputs cannot be used to make causal inferences. Full details of methods and analysis, provided by CM Health, are set out in Appendix G.

## Stakeholder engagement

This evaluation has a strong qualitative focus, complementing the Mana Kidz programme data and epidemiological data already reported regularly to CM Health. Stakeholder feedback provided qualitative evidence needed to address all KEQs. The following evaluation sub-questions were addressed through stakeholder engagement. The questions in bold text represent key themes addressed, while the more detailed questions represent sub-themes and interview prompts.

### **How effective is Mana Kidz, for whom, and why?**

- What are the most/least effective aspects of Mana Kidz?
- Are there any approaches, or any providers, that stand out as particularly effective? Why?
- For whom is Mana Kidz the most/least effective?
- How effective is Mana Kidz for schools and their communities? For whaanau?

### **How equitable is Mana Kidz?**

- To what extent do tamariki and whaanau experience equity (e.g. a sense of manaakitanga, recognition of their mana and strengths)?
- To what extent do Mana Kidz design, delivery and service configuration support equity (e.g. avoiding systemic racism and facilitating prioritisation of resources in proportion to need and disadvantage)?
- To what extent does Mana Kidz have the right leadership, service providers, workforce, ways of working, cultural competence and cultural fit to support equity of access?
- To what extent does Mana Kidz contribute to strengthening whaanau knowledge and self-efficacy when it comes to sore throats, skin infections and other primary health care needs?
- To what extent does Mana Kidz contribute to strengthening whaanau relationships with (and therefore propensity to use) primary care?

### **What factors are critical to the success of Mana Kidz?**

- What features of Mana Kidz ways of working make it successful? (For example, how are relationships and trust with whaanau different in Mana Kidz than in other programmes, and

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<sup>31</sup> Hospitalisation data extracted by CM Health were NHI-linked to the NHC-held Mōhio (Mana Kidz) data set through Healthsafe, a secure data linkage platform administered by CM Health. The linkage was undertaken in line with data agreement parameters specified with Healthsafe's data stewards' group.

what value does this add? To what extent does Mana Kidz improve access to primary care by reducing time and cost barriers?)

- What other factors enable Mana Kidz to be successful?
- What factors limit the success of Mana Kidz?
- To what extent are the right needs being prioritised?
- To what extent are the right interventions and approaches being used to meet the needs?

#### **What components of Mana Kidz provide the greatest/least value?**

- If budget increased, what should be the first things to add?
- If budget decreased, what should be the first things to drop?
- Should Mana Kidz do less of anything, to enable it to do more of something else that provides greater value?

#### **How could Mana Kidz be improved?**

- What improvements could more effectively and efficiently meet the needs of tamariki and whaanau? (For example, any changes to the nature, scale, or scope of services, or to the service configuration?)
- In what ways could the model of care be developed to provide additional services (for example, what emerging needs could Mana Kidz potentially contribute to meeting?)
- Are there any changes in the operating environment that represent opportunities for Mana Kidz to do things better? (For example, health system reforms)
- Are there emerging technologies that could help Mana Kidz to better meet the needs of tamariki and whaanau? (For example, use of mobile devices to detect conditions such as skin infections and refer children to other primary care providers)
- How well does Mana Kidz continuously learn and improve? (For example, how alert are providers to monitoring data, stakeholder feedback, new innovations emerging)
- Are there any problems, challenges or gaps that need to be addressed to make Mana Kidz more effective? (For example, deployment of the workforce to contribute to emergency response has been seen as both a strength and an operational challenge)

A broad range of programme stakeholders participated, including Mana Kidz nurses, whaanau support workers, provider staff, NHC and CM Health representatives, as well as school staff and whaanau. Stakeholder engagement was conducted during the last quarter of 2021 and the first quarter of 2022, a period that included Covid-19 lockdowns, school closures and redeployment of some Mana Kidz staff.

Most interviews were conducted via Zoom, with the remainder by phone. Most interviews were individual, one-on-one discussions, but some Mana Kidz provider interviews included 2-3 staff and one interview involved 8 staff. Schools, whaanau and providers were facing multiple challenges during this period, which affected the number of interviews that could be completed. To maximise opportunities for participation, recruitment of whaanau continued between the draft and final reports. The consistent support of NHC, providers and school leaders to recruit participants is acknowledged with sincere thanks.

Table 3 summarises the mix and scope of stakeholders and engagement methods, together with the processes that were followed to recruit participants. This engagement plan was designed to balance depth and breadth of engagement within the available budget and pandemic-related operational constraints.

Table 3: Stakeholders, engagement methods, and numbers of stakeholders

Stakeholder groups	Engagement methods and numbers	Recruitment methods
Mana Kidz nurses Kidz First nurses Whaanau support workers	Online survey (35 nurses, 29 whaanau support workers, 5 managers, 2 team leaders) Interviews (8 nurses including 6 Mana Kidz nurses, 2 Kidz First nurses, 11 whaanau support workers, and 1 admin person who was part of a group interview).	The survey was promoted through a staff training day and through NHC and provider networks. NHC and providers assisted in recruiting interview participants.
Providers <sup>32</sup> NHC CM Health	Provider interviews (including 7 nurse leads and 2 programme leads across 6 providers including Kidz First. South Seas and Papakura Marae did not participate in these interviews but did respond to the nurses and whaanau support workers survey). Interviews with NHC (7) and CM Health (2) staff.	Each organisation nominated representatives to take part in these interviews.
School Principals	Interviews with school principals (11) (In addition to direct engagement, NHC school surveys from 2016 and 2020 were analysed with 112 responses collectively).	NHC and providers assisted in recruiting principals.
Whaanau	Interviews with whaanau (18) (In addition to direct engagement, NHC's 2019 whaanau survey was analysed with 110 responses).	Providers and schools assisted in recruiting whaanau. Once whaanau agreed to participate, their contact details were given to the evaluation team.

Interviews followed a semi-structured format. Semi-structured interviews do not follow a predetermined structure but are guided by the evaluation sub-questions. Participants provided feedback in the areas most relevant to their knowledge and expertise. While the collective feedback covers all evaluation sub-questions, some interviews didn't cover all sub-questions.

The evaluation team followed the Code of Ethics and Guidelines for the Ethical Conduct of Evaluations of the Australian Evaluation Society ([www.aes.asn.au](http://www.aes.asn.au)).

Thematic analysis was carried out by the evaluation team, against the themes covered by the evaluation sub-questions. This report summarises key findings within each theme, supported by quotes where appropriate. Quotes are attributed to membership of a stakeholder group (e.g. Nurse, Whaanau, Principal, etc.) but care has been taken to ensure individuals cannot be identified.

## Value for money

The value for money component of the evaluation addresses KEQ 3, using the *Value for Investment* approach (King, 2017; 2019).<sup>33</sup> This approach hinges on developing agreed criteria (aspects of performance) and standards (levels of performance) that reflect the value proposition of Mana Kidz and define good value for money on a context-specific basis. These criteria and standards were used to make evaluative judgements from the available evidence. This approach was also used in the 2014 Mana Kidz evaluation (King, Moss & McKegg, 2014).

<sup>32</sup> Kidz First, Papakura Marae, Pasefika Family Health Group Trust (formerly Healthstar), Te Hononga o Tamaki me Hoturoa, South Seas Healthcare, Tongan Health Society, Total HealthCare, Turuki Healthcare.

<sup>33</sup> [www.julianking.co.nz/vfi/](http://www.julianking.co.nz/vfi/)

Table 4 sets out the value for money criteria for Mana Kidz. There are three overarching criteria: equity, effectiveness, and efficiency – recognising that the value of Mana Kidz centres on addressing disparities in access to timely primary and preventive health services, to prevent serious consequences of ARF, skin infections, and to address other health inequities in low socioeconomic areas of South Auckland. Mana Kidz aims to improve equity, and to do so effectively and efficiently.

Table 4: Value for money criteria for Mana Kidz

Equity criteria	Efficiency and effectiveness criteria
<p><b>Relevance</b></p> <p>Mana Kidz is addressing the right needs (evidence-based and prioritised) for the Counties Manukau context</p> <p>Mana Kidz works with the right schools (those with the highest needs) for the Counties Manukau context</p> <p>Mana Kidz has the right design to effectively meet the greatest needs in the Counties Manukau context.</p>	
<p><b>Stewardship of resources (equity perspective)</b></p> <p>Mana Kidz has an appropriate level of financial resources to enable delivery of the programme of intended reach, scope, scale and quality</p> <p>Mana Kidz demonstrates care and respect for the resources of whaanau, tamariki, schools and teachers – minimising time and cost barriers to participation.</p>	<p><b>Stewardship of resources (efficiency perspective)</b></p> <p>Mana Kidz has an appropriate service configuration to deliver high quality, fit-for-purpose services economically</p>
<p><b>Delivery (equity perspective)</b></p> <p>The right service providers, ways of working, cultural competence and cultural fit (Goodwin, Sauni &amp; Were, 2015) support equity of access.</p> <p>Mana Kidz design, delivery and service configuration avoid systemic racism and facilitate the prioritisation of resources proportionate with levels of need and disadvantage (proportionate universalism).</p> <p>Tamariki and whaanau experience equity (e.g. a sense of manaakitanga) and data shows equity for Maaori, Pasifika and other Mana Kidz children in: consent rates, swabs taken, skin assessments completed, and other health and wellbeing assessments.</p> <p>Mana Kidz improves its ability to deliver equity through continuous learning, reflection, improvement and adaptation of its approaches.</p>	<p><b>Delivery (efficiency perspective)</b></p> <p>Communication and trust throughout the network of providers and schools supports efficient delivery.</p> <p>Mana Kidz resource allocation provides the right mix of inputs to support efficient delivery.</p> <p>Mana Kidz is delivered at reasonable cost per child</p> <p>Mana Kidz improves its ability to work efficiently through continuous learning, reflection, improvement and adaptation of its approaches.</p>
<p><b>Direct results (equity perspective)</b></p> <p>Improved equity for Maaori, Pasifika and other Mana Kidz children in:</p> <ul style="list-style-type: none"> <li>• GAS infections identified</li> <li>• Children offered and receiving treatment for GAS infections</li> <li>• Acute skin infections identified</li> <li>• Children offered and receiving treatment for acute skin infections</li> <li>• Other health and wellbeing referrals.</li> </ul>	<p><b>Direct results (effectiveness perspective)</b></p> <p>Performance against national, DHB and NHC performance targets or expectations for detection and treatment of conditions.</p>

<b>Outcomes (equity perspective)</b>	<b>Outcomes (cost-effectiveness)</b>
<p>Improved equity of:</p> <ul style="list-style-type: none"> <li>• Health and wellbeing of tamariki and whaanau (in particular, ARF incidence and hospitalisations, and skin infection hospitalisations)</li> <li>• Knowledge and self-efficacy when it comes to sore throats, skin infections and other primary health care needs</li> <li>• Relationship with (and therefore propensity to use) primary care.</li> </ul> <p><i>Due to limitations highlighted in the data analysis section above, health and wellbeing impacts could be directly measured but were explored through analysis of epidemiological and hospitalisation data disaggregated by ethnicity, and stakeholder feedback.</i></p>	<p><i>Cost-effectiveness analysis of Mana Kidz is out of scope but has been undertaken previously (Milne et al., 2011). This evaluation qualitatively compared modelled assumptions, results and sensitivity analysis with actual Mana Kidz performance to date.</i></p>

Value for money standards are set out in Table 5. Each criterion rated using the definitions shown in the second column of the table. Subsequently, an overall rating of value for money was made for all criteria collectively, using the definitions in the third column.

Table 5: Value for money standards

<b>Standards</b>	<b>Applied to each criterion individually</b>	<b>Applied to all criteria together for an overall rating of value for money</b>
<b>Excellent</b>	<p>Meeting all expectations* bearing in mind context, or substantively exceeding expectations.</p> <p>There may be room for incremental improvements.</p>	<p>Mana Kidz is rated 'excellent' for equity of delivery and equity of direct results, and either 'good' or 'excellent' for all other criteria.</p>
<b>Good</b>	<p>Generally meeting reasonable expectations, allowing for minor exceptions.</p> <p>Some improvements may be needed.</p>	<p>Mana Kidz is rated at least 'good' for equity of delivery and equity of direct results, and at least 'adequate' for all other criteria.</p>
<b>Adequate</b>	<p>Not meeting all expectations but fulfilling minimum bottom-line requirements* and showing acceptable progress.</p> <p>Significant improvements may be needed.</p>	<p>Mana Kidz is rated at least 'adequate' for equity of delivery and equity of direct results, and for all or nearly all other criteria.</p>
<b>Poor</b>	<p>Not fulfilling minimum bottom-line requirements or not showing acceptable progress.</p> <p>Urgent improvements are needed.</p>	<p>Criteria for 'adequate' not met.</p>

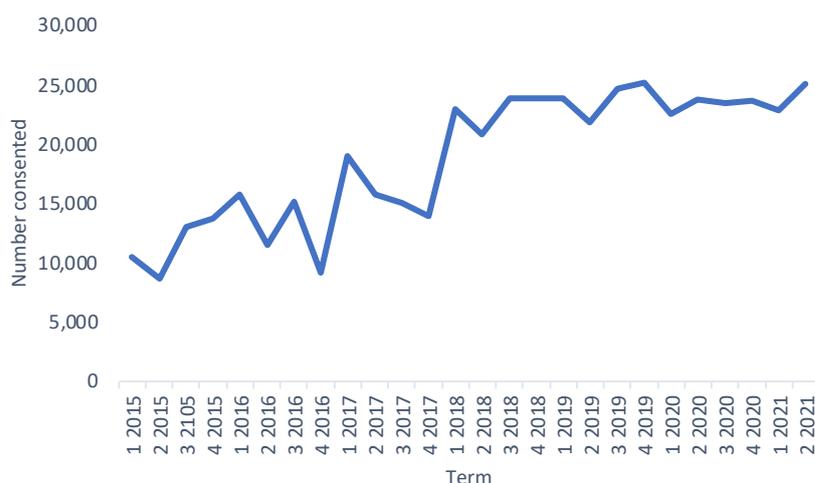
\*Expectations are represented by the criteria as defined in Table 4; minimum bottom-line requirements align with Mana Kidz contract.

# Appendix B: Mana Kidz Data

## Consents

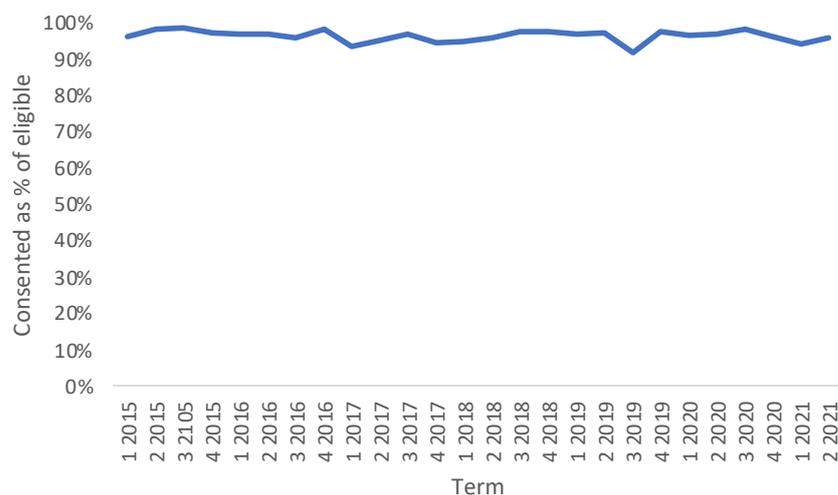
Mana Kidz has worked with an **increasing number of children** and whaanau over time. Figure 6 shows growth in the number of children consented into Mana Kidz Level 1 schools from Term 1, 2015 to Term 2, 2021.<sup>34</sup> While the general trend of increasing numbers can be seen, some of the apparent fluctuation in numbers prior to 2018 reflects missing data from some schools for some periods. Each nurse is responsible for reporting the consenting data for their school.<sup>35</sup>

Figure 6: Growth in number of children consented into Mana Kidz in Level 1 schools, 2015-2021



The **consent rate** has remained high as the number of schools has grown (Figure 7).

Figure 7: Consent rate in Mana Kidz Level 1 schools, 2015-2021



Consent rates were high across all providers. Table 6 shows consent rates by provider for the most recent four terms for which data were available.

<sup>34</sup> The programme overall covers approximately 34,000 children. However, prior to late 2021 the Level 2 schools did not have consent processes. The programme has now rolled out a consent form for Level 2 schools (approved by ALG in late 2021).

<sup>35</sup> Variation in consent numbers is also affected by the timing of students enrolling/leaving schools and lags in submitting and recording consent forms. In general, nurses count the school roll and consented record at the end of each term.

Table 6: Consent rates by provider

Consent rate	Term 3 2020	Term 4 2020	Term 1 2021	Term 2 2021
Pasefika Family Health Group Trust	99%	97%	99%	98%
Kidz First	99%	91%	-	-
Papakura Marae	98%	98%	93%	97%
South Seas Healthcare	96%	98%	99%	99%
Total Healthcare	98%	99%	98%	95%
Te Hononga o Tamaki me Hoturoa	99%	99%	91%	96%
Tongan Health Society	99%	99%	98%	97%
Turuki Healthcare	97%	97%	90%	93%

## GAS throats

Figure 8 shows the **number of individuals** seen in sore throat clinics each year (count of unique NHIs), disaggregated by source. The number of people seen each year was relatively steady from 2016-2019, dropping during the Covid-19 pandemic.<sup>36</sup> Under the Covid-19 alert system that operated from 21 March 2020 to 2 December 2021:<sup>37</sup>

- During Level 3-4 lockdowns (23 March-14 May 2020; 12-31 August 2020; 28 February-7 March 2021, 17 August-2 December 2021), children were encouraged (Level 3) or required (Level 4) to learn from home, and nurses were redeployed into testing stations, so Mana Kidz operated on reduced staff.
- During Levels 1-2, schools reopened but some anxiety remained in the communities and a significant proportion of children did not immediately return to school. Meanwhile, the nursing workforce continued to be needed for Covid -19 testing, gradually returning to Mana Kidz as more students returned to school (and after the workforce had completed their testing and stand-down periods).
- NHC advised that when schools first reopened, school nurses were initially not permitted to swab children with sore throats, because sore throat was included in the case definition for Covid -19. From late March to mid-June 2020, nurses could prescribe antibiotics empirically for sore throats but did not swab children. Sore throat swabbing resumed from June 2020.

<sup>36</sup> NHC reported counts of individuals within each category. Within-category totals cannot be aggregated because some individuals may be counted within more than one category.

<sup>37</sup> Source: timeline of key events: <https://covid19.govt.nz/about-our-covid-19-response/history-of-the-covid-19-alert-system/>

Figure 8: Sore throat clinic: number of individuals seen, 2014-2021

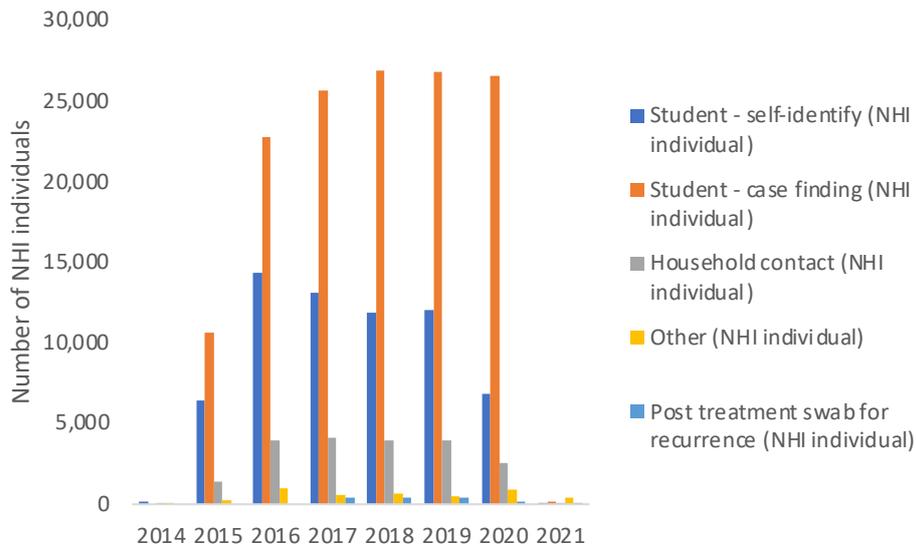


Figure 9 shows the number of **sore throat assessments** carried out each year. Total assessments increased year-on-year from 2015-2019, decreasing in 2020 and 2021. Most assessments were sourced through case finding (76%) and self-identification (20%).

Figure 9: Sore throat clinics: Number of assessments, 2014-2021

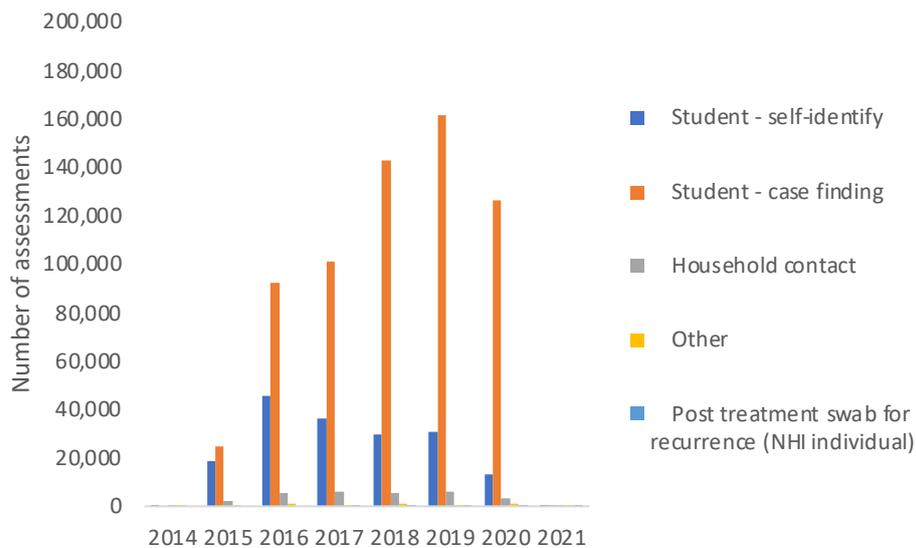
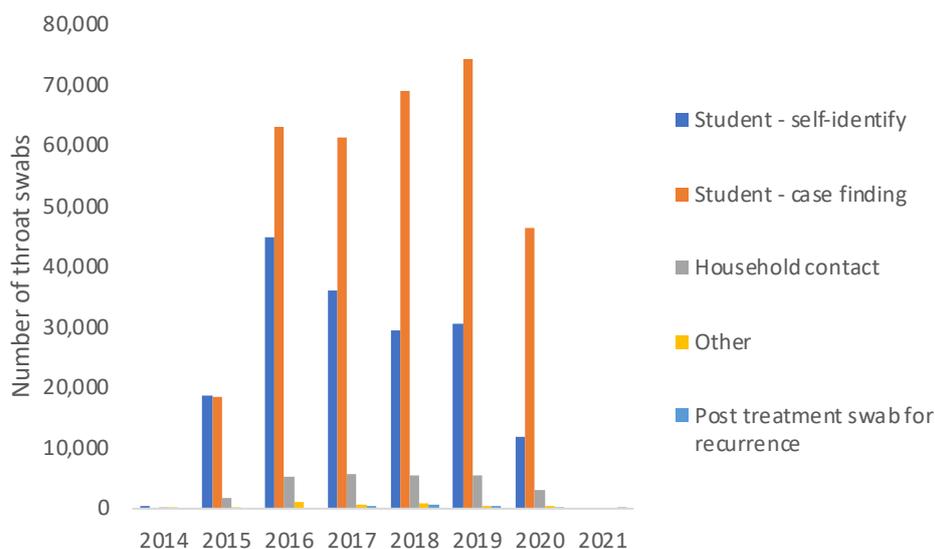


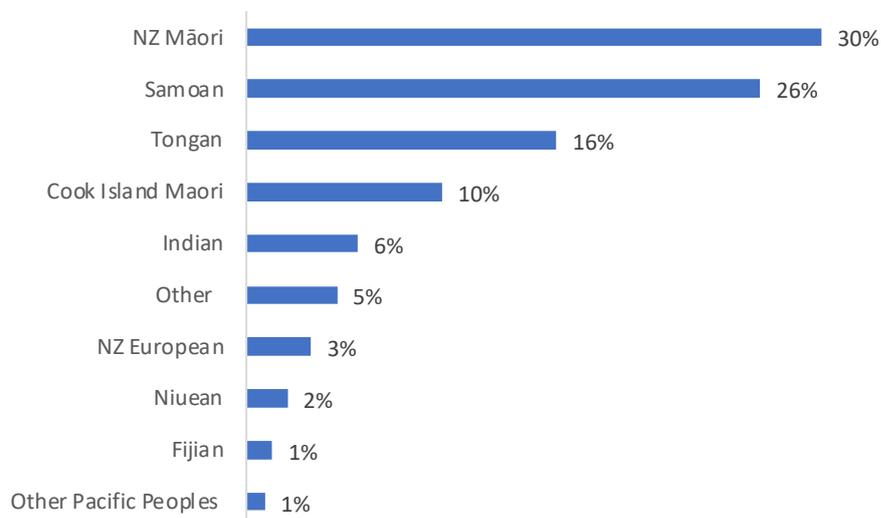
Figure 10 breaks down numbers of **throat swabs taken** by source. In the four years prior to the COVID-19 pandemic, throat swabs were steady at between 104,000-114,000 each year.

Figure 10: Throat swabs taken, 2014-2021



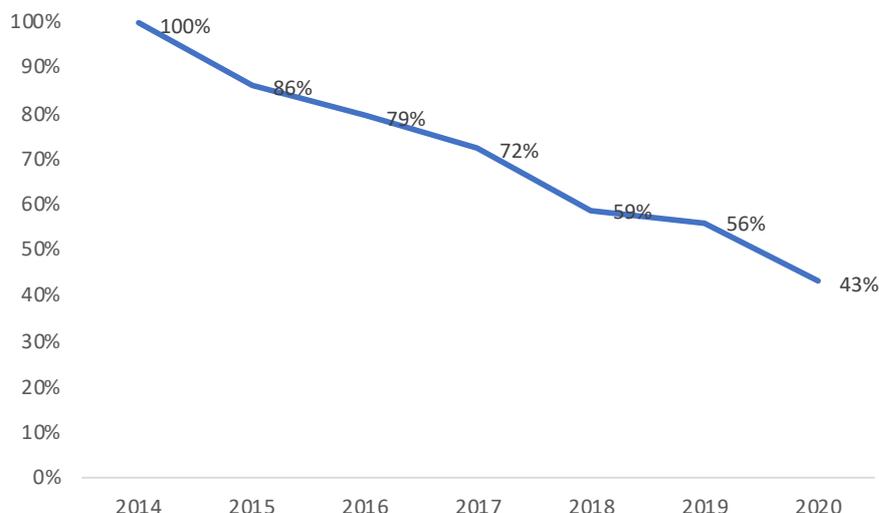
Data for the one-year period from Term 3 2019 to Term two 2020 indicates that most Mana Kidz students who received sore throat assessments were of Pasifika (57%) and/or Maaori (30%) descent (Figure 11).

Figure 11: Ethnicity of students who received sore throat assessments



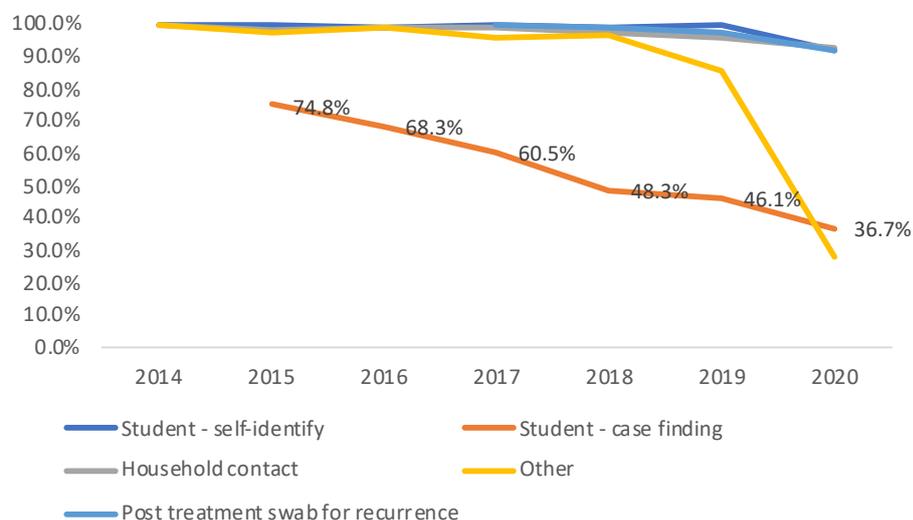
The **proportion of assessments that resulted in a throat swab** has steadily reduced over time (Figure 12).

Figure 12: Proportion of assessments where a throat swab was taken, 2014-2020



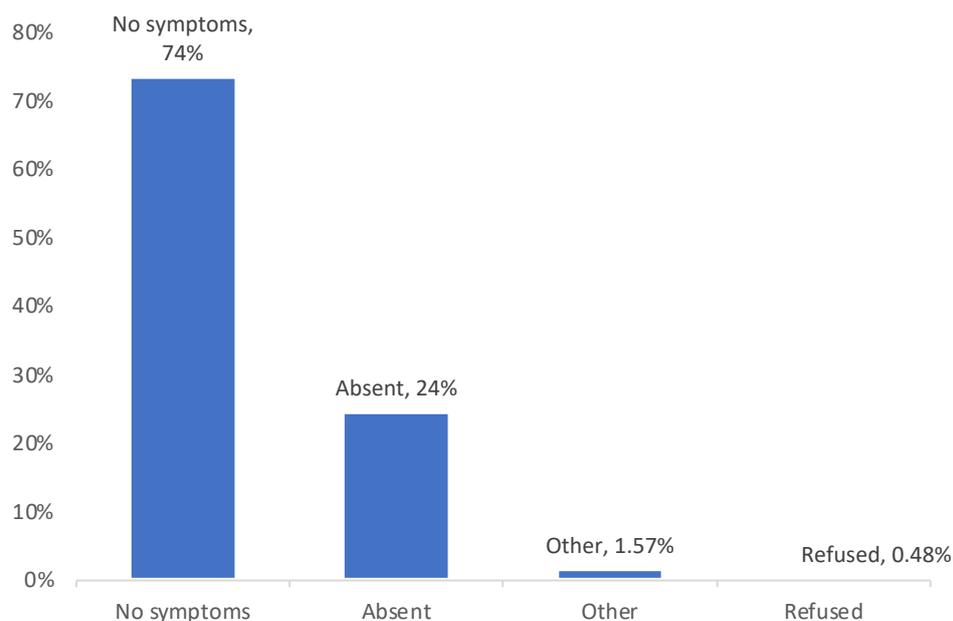
The trend shown in Figure 12 above was driven by a decrease in the percentage of case finding assessments where a throat swab was taken (Figure 13). NHC advised that the downward trend in case finding assessments resulting in a throat swab reflects a successful push by NHC for nurses and whaanau support workers to only swab where indicated. The ‘other’ category represents a very small proportion of total cases (<2%) and includes, for example, school staff who present to the nurse with a sore throat.

Figure 13: Proportion of assessments where a throat swab was taken, by source



**Reasons for not taking a throat swab** were recorded during 2019 and 2020 (Figure 14). During this time, throat swabs were not taken in 38.8% of children who had a sore throat assessment, with the main reason – in nearly three quarters of cases – being no symptoms that would warrant a swab. In nearly a quarter of cases, the child was absent. Very few children refused a swab when offered.

Figure 14: Reasons for throat swabs not taken (2019-2020)



Overall, the **percentage of throat swabs that were GAS positive** remained between 10-15% each year (Figure 15) – compared to 26% in a cross-sectional study of 2013 data (cited in King et al., 2014). Generally the percentage of swabs resulting in a positive test is toward the lower end of this range during Terms 1 and 4, and toward the higher end of the range during Terms 2 and 3.

Figure 15: Percentage of throat swabs resulting in a positive test, 2015-2020

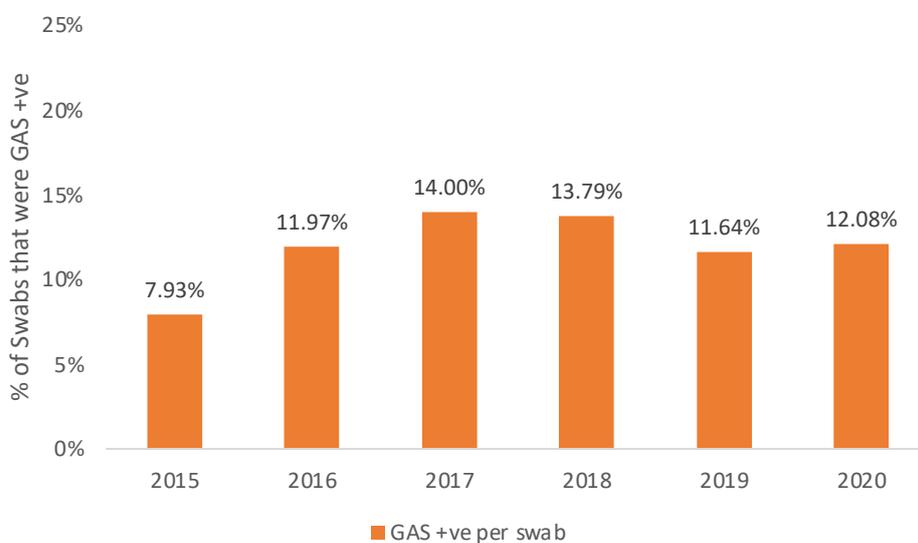
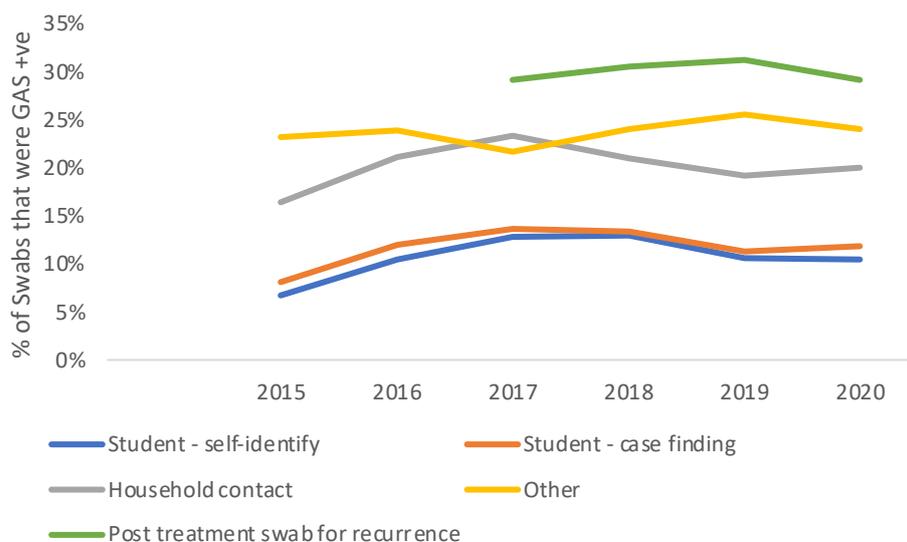


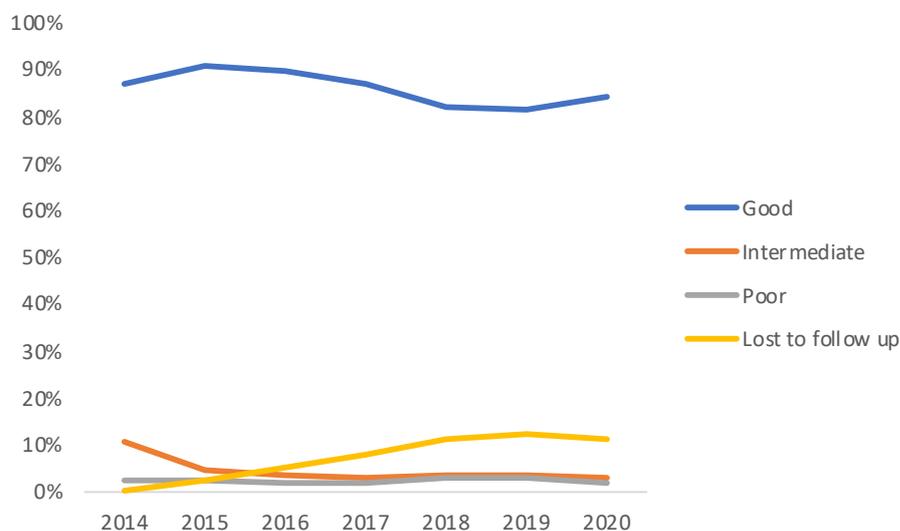
Figure 16 disaggregates the **GAS+ rate by source**. This highlights the importance of swabbing household contacts. Initially, Mana Kidz nurses were permitted to swab but not treat household contacts, instead recommending they go to their GP for treatment if the swab was positive. Since 2019, Mana Kidz nurses have been able to use Standing Orders to treat family members aged 3-45 years and in generally good health. GAS positive rates were very similar for case finding and children who self-identified with sore throats (historically, the GAS positive rate was higher for those identified through case finding). Post-treatment swabs for recurrence (third GAS+ sore throat in a three-month period), and the ‘other’ category (which includes school staff presenting to the nurse with sore throats) had relatively high GAS positive rates (but represented a very small percentage of total numbers swabbed).

Figure 16: Percentage of throat swabs resulting in a positive test, by source



Children who test positive for GAS are given a ten-day course of antibiotics or offered a one-off IM penicillin. Nurses monitor children’s **adherence to oral antibiotic treatment** by following up with children directly, and with their parents. Instances where the dose is taken for nine or ten out of ten days are rated ‘good’. Missing two doses is rated ‘intermediate’ and missing three doses is rated ‘poor’. Cases lost to follow up are also recorded. Overall the records show good antibiotic adherence in more than four-fifths (82-91%) of cases (Figure 17). Note these adherence rates are self-reported and accuracy of this data is unknown.

Figure 17: Antibiotic adherence for GAS



Mana Kidz aims to start antibiotic treatment within 4 days of a GAS+ culture result. The performance monitoring report for Term 4 2020 stated that **99% of students were treated within 4 days of the GAS+ result**. Of the 1,839 children who tested positive for GAS, 14 were not provided treatment within 4 days. Each case was investigated and had all medication arranged during lockdown but were harder to follow up as staff were working remotely. Oral Amoxicillin was the predominant treatment, accounting for 94% of antibiotic treatments, followed by Cephalexin (3%), IM Bicillin (2%) and Erythromycin (1%).

## Skin infections

The **total number of skin infections** identified peaked at 15,141 in 2018, reducing in 2019 and 2020 (Figure 18). A clinical trial during 2018-2019, involving dedicated nursing resources for impetigo, may have influenced the drop in 2019. The further drop in 2020 may reflect the impact of the Covid-19 pandemic on Mana Kidz activity, or it could represent a decrease in infections with better infection control resulting from the Covid-19 response. 2021 is excluded from the graph as only 18 skin infections were identified.

Figure 18: Skin infections identified, 2015-2020

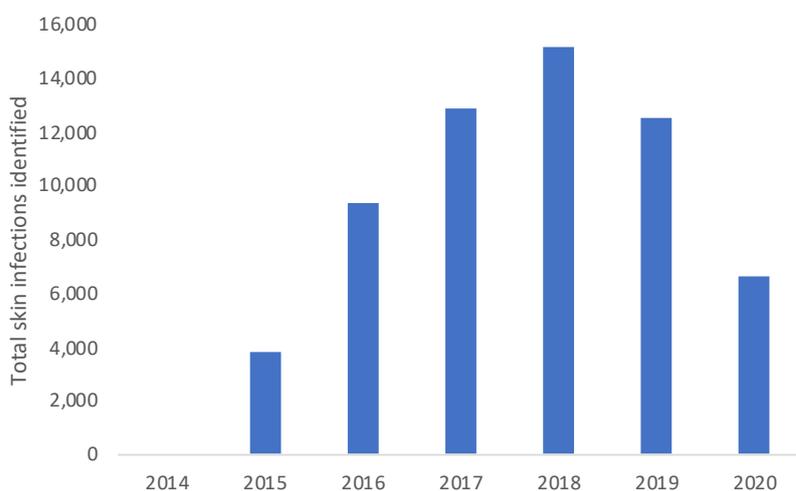
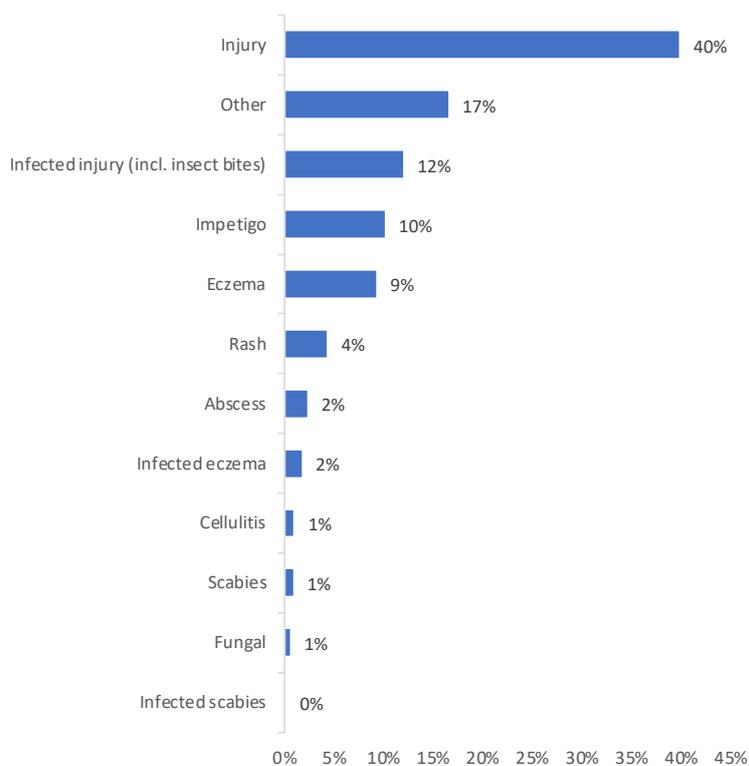


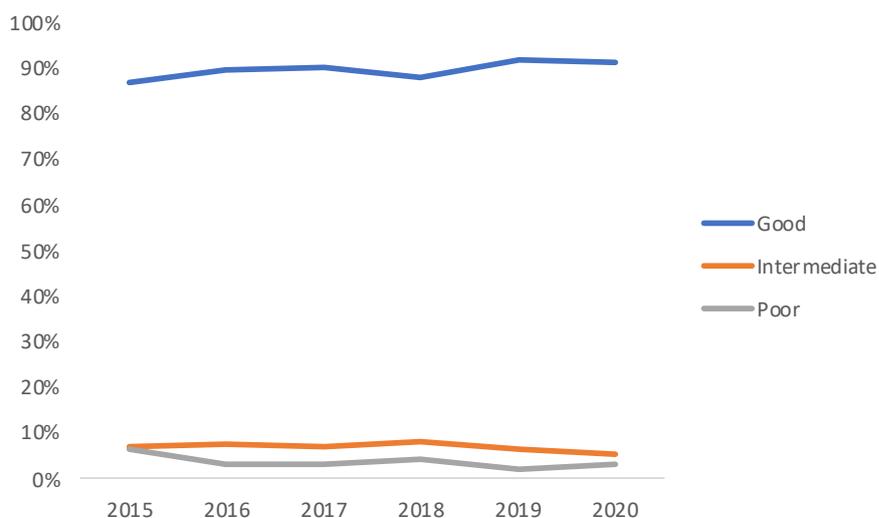
Figure 19 disaggregates skin infections by **conditions treated**. Overall, injuries and infected injuries accounted for over half (52%) of cases seen.

Figure 19: Skin assessments: conditions seen, 2015-2020



**Skin treatment adherence** has been good in the vast majority (87-92%) of cases (Figure 20).

Figure 20: Skin treatment adherence, 2015-2020



## Health and wellbeing referrals

Mana Kidz nurses can receive a referral from any teacher or community service provider for health and wellbeing concerns. Children are also opportunistically assessed for wider health and wellbeing when attending sore throat and skin assessments. **Numbers of referrals and opportunistic assessments** are shown in Figure 21. Prior to 2017, Mana Kidz was focused on sore throats and skin infections, though nurses who identified wider health issues would respond to them. The scope was officially expanded to health and wellbeing more generally (within existing funding) in 2017. This explains the growth in referrals and opportunistic assessments since this time. The graph also shows numbers of intervention plans developed, which closely tracked referrals in.

Figure 21: Health and wellbeing referrals and assessments, 2015-2021

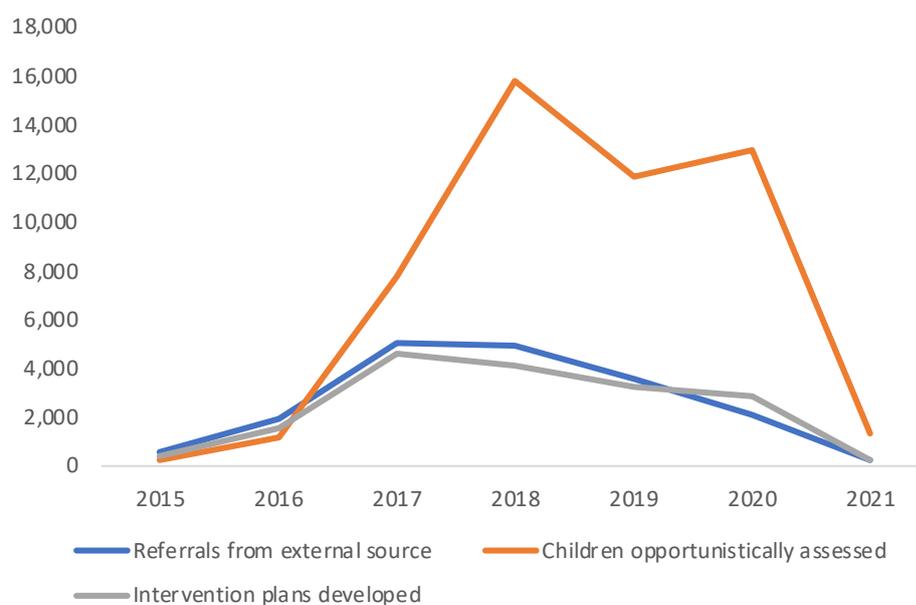
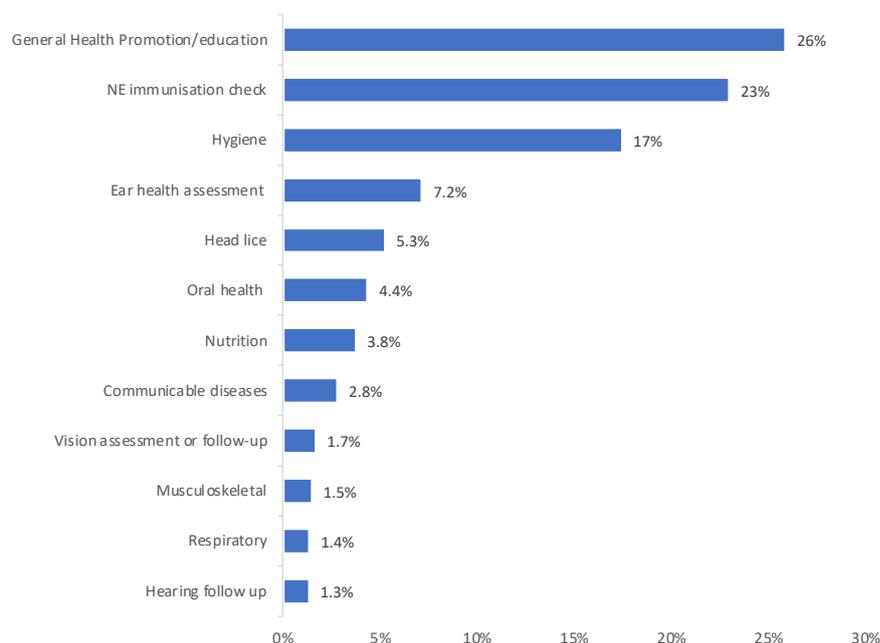


Figure 22 summarises **health and wellbeing interventions by reason**. While these reasons were many and varied, more than three quarters (79%) were in the five areas of general health promotion/ education, new entrant immunisation checks, hygiene, ear health assessment, and head lice.

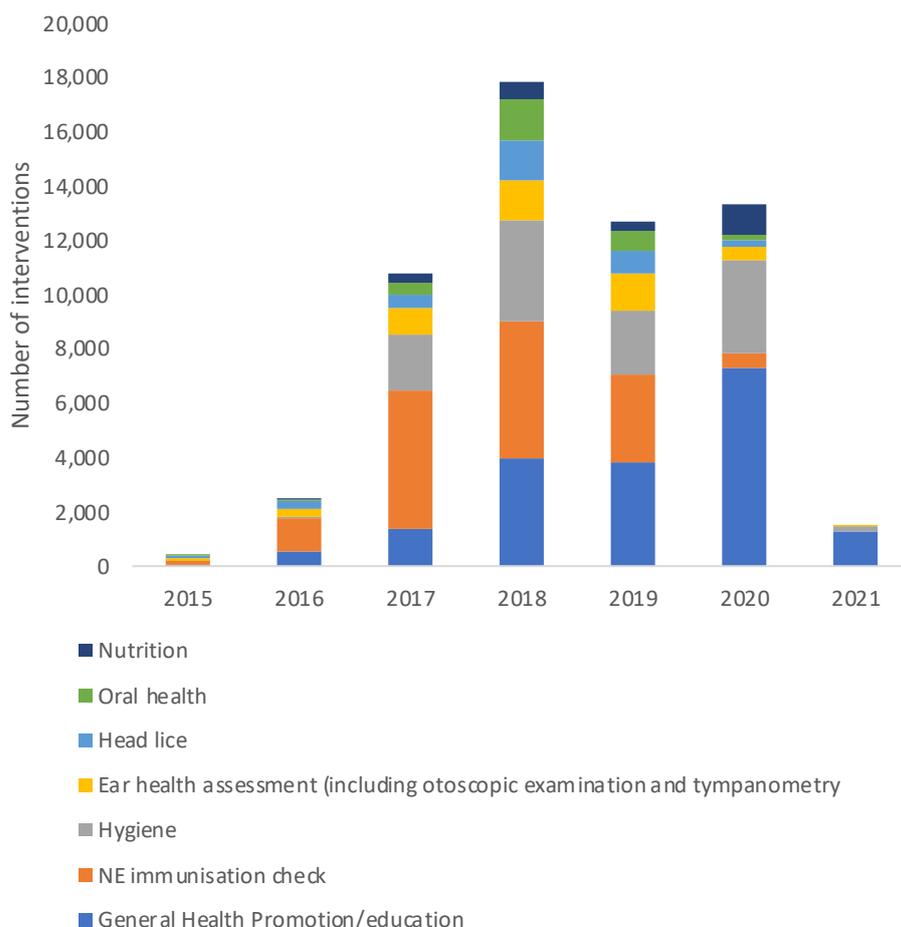
Figure 22: Health and wellbeing interventions by reason, 2015-2020



Reasons for health and wellbeing interventions are not fixed across time. While general health promotion/education, new entrant immunisation checks and hygiene were key categories every year, each year has seen a different mix and shifting emphasis (Figure 23). For example, school staff have become more aware of childhood obesity in the last two years, and an increasing number of referrals have been for nutrition and exercise advice. This is demonstrated in both the general health promotion/ education category (a catch-all for any work nurses do one-on-one with students) and the nutrition category. Similarly, referrals for hygiene have increased.

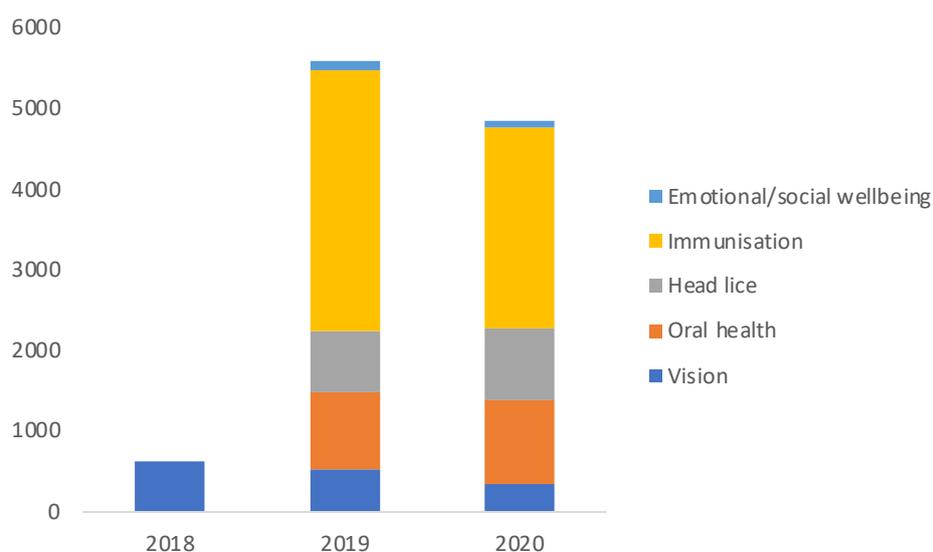
In some instances the apparent shifts may reflect changes in the way data were recorded. For example, new entrant immunisation checks peaked during 2017-2018. More recently some of these may have been recorded under a separate immunisation category.

Figure 23: Changes over time in key health and wellbeing interventions



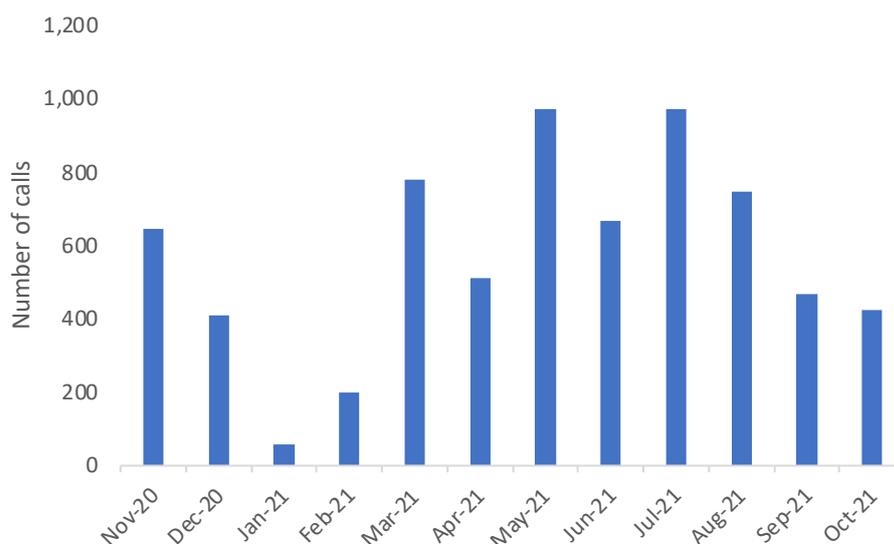
**Child health assessments and reviews** have been recorded since 2019. A breakdown of these is shown in Figure 24. 2021 is excluded because of low numbers (total 25).

Figure 24: Child health assessments and reviews, 2019-2020



The **0800 line** started in Term 4 2020. NHC provided data showing 6,840 calls in total to the 0800 line for the 12 month period November 2020 to October 2021 (Figure 25). No other data such as demographics, reasons for call, or actions taken, were available at this time.

Figure 25: Calls to Mana Kidz 0800 line, November 2020-October 2021



## Quarterly performance reporting

Another source of performance data is NHC’s performance reports to CM Health, which provide quarterly snapshots of performance against a set of narrative headings and indicators. Table 7 summarises indicators drawn from the most recent four quarterly reports provided to the evaluation team, covering Terms 1-4, 2020. Reporting formats changed over time and some indicators were not reported for all four periods. For the most part, no targets were stated – except for time to treatment for GAS throats and skin infections, which showed 99-100% of cases being treated within targets for timeliness. The reports also included narrative (not reproduced here) indicating Mana Kidz met expectations for two rounds of case-funding class screening in Level 1 Mana Kidz schools, follow up to ensure antibiotic adherence, as well as a steady rate of health promotion and awareness raising activities in school communities.

Table 7: Summary of indicators from quarterly performance reports prepared by NHC, 2020

	Term 4 2020	Term 3 2020	Term 2 2020	Term 1 2020
<b>Consenting</b>				
Enrolled students	26940	24117		
Consented students	25697	23429		
Consent rate	95%	97%		
<b>Classroom contacts</b>				
Classes contacted	1103	1051		
<b>Teaching staff related education</b>				
Teacher learning sessions	78	75		
<b>Promotional activities delivered</b>				
Promotion activities	97	114		
<b>Enrolment in PHO</b>				
Queries to enrol in PHO	48290	31321		
Students enrolled in a PHO	4982	3363		
<b>Sore throat clinics</b>				
Sore throat assessments	47937	31368	30263	34059
Individual children assessed	23930	20739	21555	19811
Sore throat swabs	20532	12020		
GAS+	1839	1202		

% of sore throat swabs that were GAS+	9%	10%		
<b>Medication to treat GAS+</b>				
Time to treat (target within 4 days of result)	1825	1188		
Percentage treated within target time	99%	99%		
<i>Medication for treatment of GAS+</i>				
. Oral amoxicillin	1624	1348	1787	2163
. Cephalixin	14	9	12	28
. Bicillin (IM)	125	39	28	54
. Erythromycin	14	20	25	18
<i>Delivery method for medication</i>				
. Directly at clinic	933	689	1080	1337
. Delivered to home	490	501	532	630
. Pick up from pharmacy	205	150	142	175
Antibiotics given under nurse prescribing	252	260	252	498
Adherence checking	100%	100%		
<b>Recurrent sore throat assessment and GAS+ results</b>				
Households that had 3+ GAS in last three months	53	50		
% of qualifying whaanau contact traced for GAS+ recurrence	100%	100%		
% of qualifying whaanau received contact from Mana Kidz	100%	100%		
Household contacts given sore throat swabs	772	438		
<b>Referrals to other social or health supports for whaanau</b>				
Eligible whaanau offered referrals	100%	100%		
Whaanau who accepted referrals	71%	72%		
<b>Skin assessment clinic</b>				
Skin assessments	1732	1380	1071	2638
Treated with antibiotics	742	163	5554	
Time to treat (target within 48 hours)				
Percentage treated within target time	100%	100%		
Completed antibiotics with good or intermediate rating	90%	52%		
Reviewed for skin health concerns	946	652	554	1522
Serious skin infections requiring transfer to GP or hospital	0	0		
<b>Child health</b>				
Child health assessments in quarter	5413	9402	4337	1794
Intervention plans developed	326	1236		
Students referred from source external to Mana Kidz team	479	950		
Referred onwards for further assessments	141	434		

During the period shown in the table above, there were changes to management of sore throats within the Mana Kidz network, due to temporary closures of schools and the Mana Kidz programme. From 24 March, 2020 to 17 June, 2020, no throat swabs were done because LabTests were not processing any swabs,<sup>38</sup> and because the governance group determined that no throat swabs could be undertaken for tamariki who notified the health team of any Covid-19 symptoms.<sup>39</sup> If dropping off medication to the home, arrangements were made to place medications in the mailbox or on the doorstep, with social distancing maintained at all times (Mana Kidz quarterly report, Term 2, 2020).

<sup>38</sup> Any Maaori or Pasifika people who had a sore throat were treated with antibiotics empirically (Mana Kidz quarterly report, Term 2, 2020).

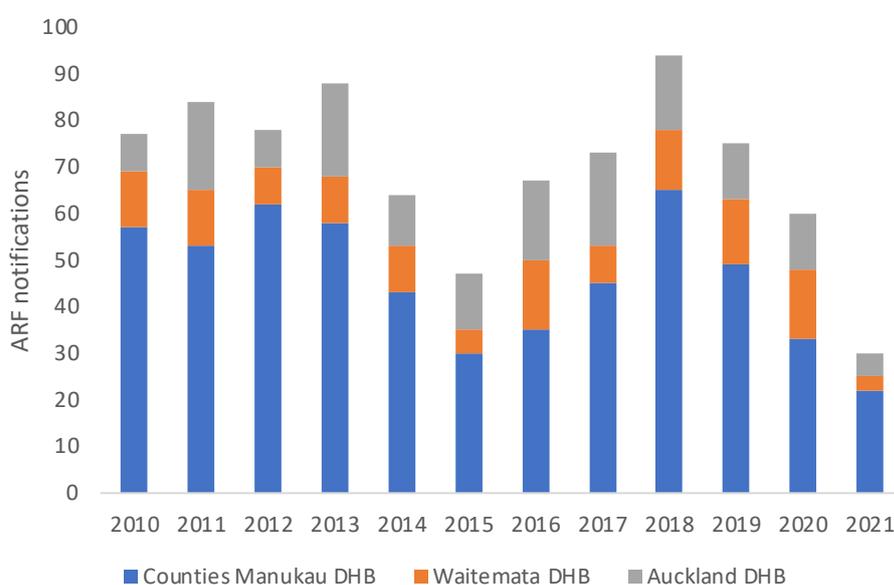
<sup>39</sup> The Covid-19 suspect case definition included sore throats, as follows: "Any acute respiratory infection with at least one of the following symptoms: cough, sore throat, shortness of breath, head cold (e.g. runnin nose, sneezing, post-nasal drip), loss of smell, with or without fever" (Mana Kidz quarterly report, Term 2, 2020).

## Acute rheumatic fever incidence

Cases of ARF are reported to Auckland Regional Public Health Service (ARPHS). Although these data cannot be used to infer outcomes of Mana Kidz (there is no counterfactual, and many of the determinants of ARF are outside the control of Mana Kidz) it is nonetheless relevant to examine trends in notifications over time and compare trends in Counties Manukau with the rest of the Auckland region.

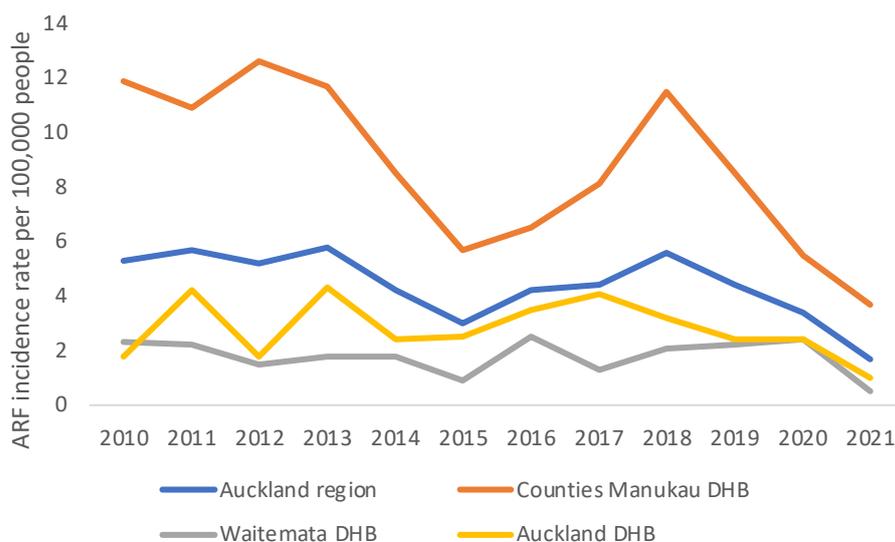
Overall, ARPHS has received between 55-94 **ARF notifications** annually, with two-thirds (66%) of these being in Counties Manukau (Figure 26). Notifications have fluctuated, dropping from 2013 to 2015 before rising to a peak in 2018 and then falling again. The significant reduction in 2021 may reflect a decrease in infections with better infection control resulting from the Covid-19 pandemic response.

Figure 26: ARF notifications to Auckland Regional Public Health Service – all ages and ethnicities, 2010-2021



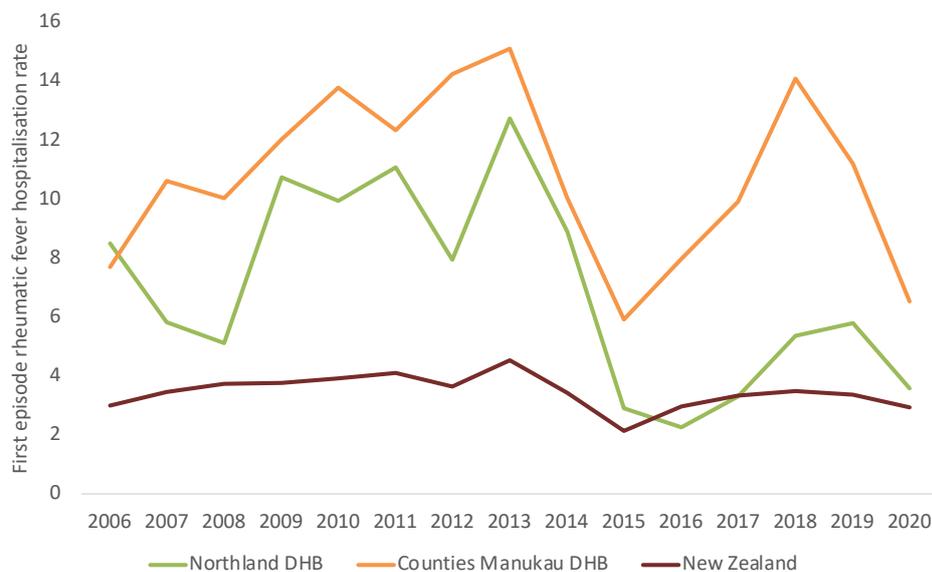
Counties Manukau has the highest burden of ARF in metro Auckland region for all ages and ethnicities combined (Figure 27). This may reflect the underlying demographics and socio-economic status in Counties Manukau compared to neighbouring DHBs, as well as the higher rate of notifications as shown in the previous graph.

Figure 27: ARF incidence rate per 100,000 people, Auckland region – all ages and ethnicities, 2010-2021



Similarly, Ministry of Health data shows CM Health as having the highest rates of first-episode ARF hospitalisations since 2007.<sup>40</sup> For comparison, the second-highest DHB (Northland) and the rates for New Zealand overall are shown. Figure 28 relies on hospital coding data, which is known to over-estimate cases of ARF by up to 30%, whereas the previous figure is based on ARF notifications to ARPHS and is not directly comparable.

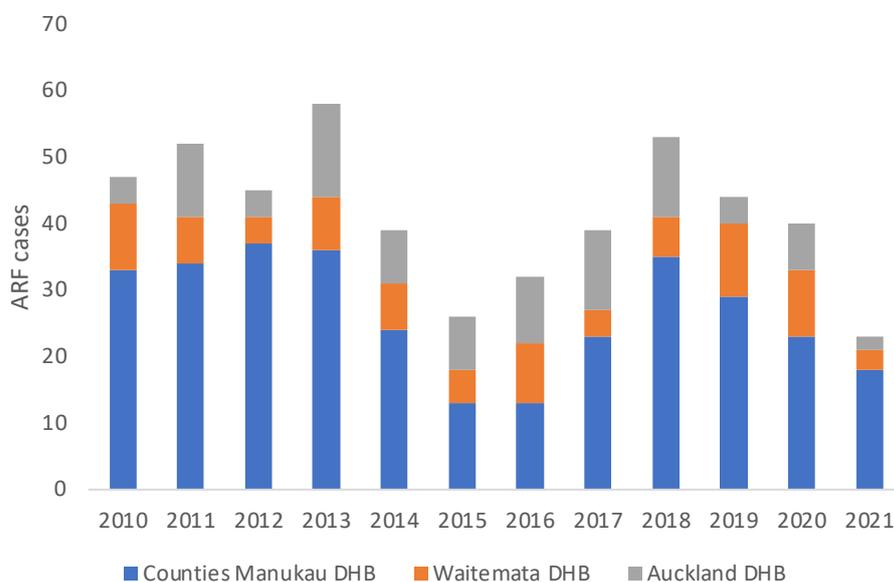
Figure 28: First episode ARF hospitalisation rate per 100,000 people – all ages and ethnicities, 2006-2020



<sup>40</sup> <https://www.health.govt.nz/our-work/diseases-and-conditions/rheumatic-fever/reducing-rheumatic-fever>

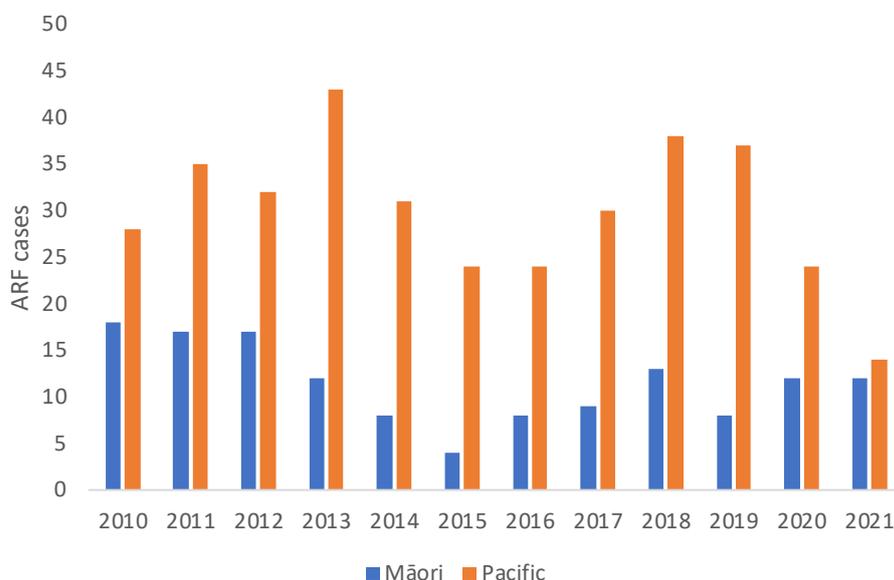
Of particular relevance to the Mana Kidz programme, the majority of ARF cases (59%) occur in **children aged 5-12** – and Counties Manukau accounts for the majority (63%) of ARF cases in 5-12 year olds in the Auckland region (Figure 29).

Figure 29: ARF notifications to Auckland Regional Public Health Service – 5-12 year olds, 2010-2021



In the Auckland region, ARF almost exclusively affects people of **Pasifika** (73%) and **Māori** descent (27%) (Figure 30). Ethnicity breakdowns were not available in the ARPHS reports for Counties Manukau DHB or for 5-12 year olds. However, hospitalisation data presented in Appendix G shows that ARF is seen almost exclusively in Māori and Pasifika ethnic groups in Counties Manukau with a predominance of Pasifika children in the 5-12 year old age group.

Figure 30: ARF notifications to Auckland Regional Public Health Service by ethnicity (all ages), 2010-2021



## Appendix C: Interview themes

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This note summarises key themes from 67 stakeholder interviews undertaken as part of the evaluation between November 2021-April 2022. These interviews included eight nurses, eleven whaanau support workers, one team administrator, seven nurse leads from six providers, 11 school leaders, 18 whaanau<sup>41</sup> and 11 senior staff<sup>42</sup> from National Hauora Coalition (NHC), Counties Manukau Health (CM Health) and two providers.

### To what extent and in what ways does Mana Kidz impact tamariki and whaanau wellbeing?

#### *Identifies sore throats and other health and wellbeing issues that may otherwise go unnoticed*

Whaanau shared that Mana Kidz had identified GAS infections on numerous occasions among their tamariki. They indicated that their tamariki (particularly the younger ones) do not always tell them about a sore throat but are likely to tell the nurse. Further, some whaanau noted that their tamariki are often asymptomatic. For whaanau, calls from Mana Kidz to inform them of positive throat swabs often took them by surprise. Most whaanau believed that without Mana Kidz, sore throats would go unnoticed and subsequently untreated.

*Without [Mana Kidz], kids would just be sitting there with sore throats. (Parent)*

We also heard that Mana Kidz staff conduct “top to toe” health assessments while undertaking throat swabs. This enables them to identify other health issues that tamariki may not have disclosed to an adult or that adults may not have noted.

*Also, I have seen a lot of kids with infected or large wounds. When I call parents to explain, they have no idea that the kid had it. (Whaanau support worker)*

*I thought [my daughter] just wasn't listening; it was through the nurse I found out she's got [hearing] issues. (Parent)*

#### *Provides instant access to advice, care and treatment, enabling health and wellbeing issues to be addressed promptly*

The presence of Mana Kidz staff in schools enables health and wellbeing issues to be dealt with directly, “on the spot”, without unnecessary delays.

*When you speak to the nurse you get the information faster and then you can act straight away. It's much faster than going to my doctor. (Parent)*

Stakeholders<sup>43</sup> believed that this prompt response helped prevent sore throats and skin conditions, and other health and wellbeing issues from deteriorating. Whaanau and school staff spoke of the ease and speed of accessing treatment for tamariki through Mana Kidz once the whaanau support worker or nurse had identified a health or wellbeing issue.

*When my kids have had strep throat, and I haven't realised, within a couple of days of being tested they have been able to get on to medication. (Parent)*

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<sup>41</sup> This includes 15 mothers, one father and two grandmothers.

<sup>42</sup> These stakeholders are collectively referred to as programme leaders.

<sup>43</sup> Where specific stakeholder groups are not identified, it means the feedback reflects all stakeholder groups.

*They know when and where to go and what to say. Pretty much, they get things done. (Parent)*

*We get things solved straight away. That is a really good impact for our families. (School leader)*

For whaanau, going straight to the pharmacy to pick up a script or having medication delivered to the home was highly valued. Work, transport needs, and other commitments (e.g., church, study, looking after elderly whaanau) can delay access to primary care or prevent it entirely. Long waiting times of sometimes up to three hours deterred many from seeing a doctor.

*It's convenient for me, she's [the nurse] made it easy, because sometimes I don't always have the vehicle. (Parent)*

Mana Kidz can provide the necessary information and referrals for health issues they are not resourced to deal with directly. Examples were provided where Mana Kidz had been able to help expedite a health response, such as direct access to a GP or specialist.

#### **Interventions and referrals help treat and prevent sore throats**

Whaanau feedback indicates that for some tamariki, GAS infection was a one-off occurrence for which one course of antibiotics helped. Others, however, experienced recurrent infections that took more time, multiple attempts, and sometimes different treatment approaches (e.g., other types of antibiotics, including injection). These differences existed across and within families. Whaanau were grateful for the ongoing support provided by Mana Kidz when issues persisted.

Whaanau attributed other types of Mana Kidz interventions and supports to preventing more sore throats, including education that has resulted in behaviour change. For example, learning about the importance of a warm, dry home in preventing sore throats, whaanau were now closing curtains at night and airing out the house during the day. Whaanau also told their tamariki not to share bottles and lunches, and to wear jerseys on colder days. They also alluded to dietary changes. Some whaanau had been referred for housing interventions or been provided letters of support for their housing applications, resulting in improved living conditions.

*We were living with mum, but it was too packed. Since we moved house, [my daughter] hasn't had a sore throat. (Parent)*

One mother said her son went from getting Strep throat three to four times a year, to once or not at all after her house was insulated through the Healthy Homes initiative.

*I honestly think that if this service hadn't been available at school when my oldest son was younger, he would probably have ended up with rheumatic fever. Getting that referral to Healthy Homes made a huge difference. (Parent)*

#### **Skin issues are better managed and treated**

Mana Kidz provides support with the management and treatment of skin issues by cleaning wounds/grazes, providing scripts/medication, applying creams and ointments during school hours, keeping an eye on developments and informing whaanau of how to best prevent and treat. Feedback from school leaders and whaanau indicates that this support has led to skin issues being well managed and/or cleared up completely.

*It's hard to think of one example. There's been so many with skin ailments, and the skin has improved. (School leader)*

*[The nurses] know my children have eczema. They always update me on new information, or if things aren't quite working out, if the eczema is still there after a couple of days, they will recommend something else just to help clear things up. (Parent)*

*With the eczema, now I know what to do and I know what works. (Parent)*

#### **Whaanau and tamariki act on health and wellbeing issues because they are better informed and access to care is easier**

Whaanau said they were more likely to act when signs and symptoms of sickness arose, after they engaged with Mana Kidz. This was particularly so regarding sore throats and applied to other ailments such as grazes, other skin issues, and asthma. This was attributed to knowledge gained through Mana Kidz, and the ease of access to the service. Whaanau interviewed generally had no, or very limited, knowledge of ARF before Mana Kidz identified their tamaiti (child) with GAS. They said, without the information provided by the nurse, they would have just given their tamaiti Pamol or Paracetamol if they complained about a sore throat.

*I didn't realise it was that bad until it happened to my daughter. Just getting that information was a wake-up call for the rest of my family and kids, that it's a serious fever. (Parent)*

*Yes, because without them explaining to me about rheumatic fever, I wouldn't know. I would just take it [sore throat] as a normal sickness. (Parent)*

Whaanau spoke of having quick and easy access to Mana Kidz (e.g., direct line, "hail down the nurse" at school). They said they will call the nurse or tell their tamariki to go and see her if they have any concerns. Feedback also indicates that tamariki self-report to Mana Kidz staff.

*When I pick [the] kids up, they will say, 'I have already seen the nurse at the school'. Why? I ask. 'Because I felt dizzy', or something. They always know what to do if they feel sick. (Parent)*

*The kids are aware that if they feel unwell they can reach out for help. (Grandparent)*

#### **Support contributes to better medication adherence**

Mana Kidz staff work hard to ensure that prescribed courses of antibiotics (or other medications and creams) are completed by tamariki. In addition to checking in with whaanau and tamariki during the course of the antibiotics, they provide them with resources (e.g., sticker charts), rewards/incentives (e.g., health packs for tamariki), and information about the risks associated with ARF and the importance of medical adherence, reminders and encouragement. Feedback indicates that this support contributes to better medication adherence.

*She [the nurse] did say that usually, some families, once it's cured, they stop, but with this, we have to continue the antibiotics right till it's finished so that it can heal completely. (Parent)*

*It's a great system with the charts. The kids are excited about getting that reward, so they definitively remember themselves to take that medication. (Parent)*

*Because sometimes when you are busy, having the chart there you could remember if you did or didn't give it. (Parent)*

*Some families stop taking medication when they feel a little better. Mana Kidz help them make sure they take the medicine. (School leader)*

## What is the value of Mana Kidz?

### Value of Mana Kids for tamariki and whaanau

#### *Addresses issues of equity*

Mana Kidz is designed to address equity issues, particularly access and engagement with primary care. By nature of its design (e.g., school-based, relational, targeted, free), we heard that the service breaks down a range of barriers to access and engagement, including financial, transport, time, need for other tamariki to be looked after, mistrust, and language. It seems the service is particularly useful for single mothers, who may otherwise struggle to get to the doctor because of a combination of these barriers. Having providers situated within the school communities, a workforce that is a good cultural fit with the diverse South Auckland communities and is committed to the kaupapa, and flexibility to do home visits are also critical aspects of improving access.

*I think she's a lifesaver to be honest. It's really hard to [go to the] doctor because of the time consumed. (Parent)*

*When I first started [as a whaanau support worker], I didn't realise how many parents were unable to take their children to the doctor. (Whaanau support worker)*

*Many of our families struggle to find their way through systems. We like that Mana Kidz is culturally responsive, can respond to the needs, and does not require big waiting lists. (School leader)*

We heard examples where Mana Kidz had:

- Helped whaanau access additional financial assistance for hearing and vision aids when Work and Income support had not covered the total cost
- Transported tamariki to specialist appointments when whaanau could not take unpaid leave
- Helped whaanau access diagnostics and support for tamariki with special needs (including physiotherapy, disability allowance, learning support)
- Conducted throat swabs on whaanau members (e.g., parents, younger siblings, cousins)
- Sourced food hampers when whaanau struggled financially
- Linked whaanau with traditional Maaori practitioners (e.g., for rongoa) when mainstream services were not suitable.

*So I think access for our kids, but also access in the sense that a lot of our whaanau are the blue-collar workers, you know, they're on shift work. A lot of them are low, minimum wage. They can't take time off to take their kids to the doctor because they don't get paid. And I mean, I think that's a real equity issue. (School leader)*

*Mana Kidz told me I could apply for disability allowance for [my daughter]. That really helps. For seven years we had to make do with what we've got, and nobody told us about the allowance before. We'd just been trying to do everything on our own and to be honest, didn't really know what we were doing. Sometimes I'd feel like a bad parent. (Parent)*

By detecting and treating GAS throats and skin conditions early and other health and wellbeing issues, Mana Kidz contributes to better health outcomes for tamariki. Overrepresented in ARF presentations, tamariki Maaori and Pasifika benefit the most from prevention.

#### *Provides opportunities to build trusting relationships with health professionals*

Mana Kidz allows tamariki to build positive relationships and connections with health professionals that may have long-lasting effects. This is important for tamariki who may not otherwise get the chance to access healthcare because of the barriers their caregivers face. Similarly, for whaanau, the service provides space, time, and ongoing opportunities to engage and develop relationships with health professionals. This process contrasts with short consultations with different GPs that may cost them both time and money and, at times, might be stifled by cultural and language barriers.

*When we go to take them to the doctor, they refer to what the nurse does. I can see that they are not as scared. (Parent)*

*When you see a different doctor every time, you don't have that doctor-patient relationship. (Parent)*

*I know when I was a kid, I used to dread going to the doctor every time. Our nurses are so friendly. They know all the kids and the kids always feel really comfortable around them. (Parent)*

*Some parents don't go to the doctor because they don't feel safe for whatever reason. If our [tamariki] build strong relationships with our health workers, they will expect to receive similar experiences wherever they are in the health service. I hope this will remove some of the barriers that may stop them from going to the doctor. (School leader)*

*[The nurse] always listens to [the children's] side of the story. She always asks, 'How can I help you? How are you feeling?', and it takes time to establish this. All the time, it becomes second nature for the children to answer these things. (School leader)*

#### **Helps whaanau determine when they should seek medical assistance**

Mana Kidz nurses help whaanau determine when they should see a doctor, or take their tamariki to the doctor, when they have health and wellbeing concerns. Some whaanau spoke of having asked their Mana Kidz nurse for advice regarding their own health, to check whether it was serious enough to warrant further attention.

*I have been sick a couple of times and I've talked with the nurse to see if she thinks I need to do anything like go see my doctor. (Parent)*

Other whaanau said the nurse had told them that they could come to her for their own wellbeing concerns, but that they had not needed to yet.

#### **Empowers tamariki and whaanau**

Tamariki and whaanau learn and understand more about looking out for, preventing and better looking after sore throats and skin conditions through one-on-one engagement with Mana Kidz staff and other health promotional activities. They also learn about different aspects of health and wellbeing, such as oral health and healthy eating. Mana Kidz staff and whaanau shared that tamariki act on this knowledge by taking their medication, looking after skin conditions, looking after younger siblings and presenting when they have concerns (e.g., with a sore throat). Whaanau become more involved in managing health conditions (e.g., giving antibiotics and applying creams). They also act more proactively about tamariki health over time (e.g., making calls to nurses directly).

*I moved from Tonga in 2012 and didn't know anything, didn't know what is [sic] a sore throat. But when kids go to the school, and the nurse gave information I know the meaning and they bring the medicine. I can understand more about rheumatic fever now. (Parent)*

*It's good because they always let me know what is happening with my child. And they will give me some advice too. (Parent)*

*If the nurse gives [my tamariki] antibiotics to take home, she shares with them how it helps. So they come home and tell me what the nurse has said, like, 'just give it once a day, don't miss it, give it a tick when it's done'. (Parent)*

Some whaanau who had been referred to specialist services or support felt that their involvement with Mana Kidz had given them credibility when meeting with doctors and specialists. Mana Kidz was seen to have a standing in the community, which meant that other health professionals responded differently.

*The best thing is having someone in the background that has our back. Without that backing, it was like people thought we were making it up. When Mana Kidz got involved reality set in for the doctors and now, we're getting way better care for our daughter. (Parent)*

A positive spinoff is that Mana Kidz staff model potential career aspirations and prospects for tamariki and whaanau. One whaanau interviewed was now working as a whaanau support worker, and she said she had no idea that type of job existed prior to engaging with the service.

#### ***Provides a comprehensive service as part of the primary care offering***

Mana Kidz has developed into a comprehensive primary care service that offers care, treatment and support over and above issues relating to sore throats and skin infections. We heard that Mana Kidz had provided support to tamariki and whaanau regarding hearing, vision, asthma, disability, dental, enuresis, encopresis, head lice, diabetes and learning and behavioural challenges. Staff will attend to "any health issue", whether directly or through referring on. Having a comprehensive school-based service as part of the primary care offering adds value for tamariki and whaanau. It provides them with a wider range of easily accessible services and supports and takes pressure off whaanau.

*Any questions, to do with anything they've been really helpful and talking through things with my younger daughter when she was going through her peak of being really unwell [with a lung condition]. (Parent)*

*I'm not stressing out having to worry about going to the doctor to get cream and stuff. (Parent)*

#### ***Supports better educational trajectory***

School leaders and whaanau were clear that tamariki who are physically and mentally well achieve better at school. Itchy skin, sore throats, and issues with hearing and vision can be distracting for tamariki. It may interfere with their ability to focus on learning and impact their attendance rate.

*If the programme wasn't there we could expect to see absenteeism due to illness increasing and having an impact in terms of the kids educational trajectory. (School leader)*

Many families are from immigrant backgrounds. Their tamariki are the first generation that has access to the opportunity for education early in life. Therefore, school leaders and whaanau considered it important that these tamariki have the chance to make the most of this opportunity.

*It's a right as a human being, to not be held back [educationally] by these types of issues. (School leader)*

Two whaanau noted that the Mana Kidz nurse had provided school staff with information about their tamariki learning difficulties (due to disability or developmental delays), which had helped create a more supportive learning environment for them. One of these whaanau, a grandmother,

also described how a referral from the Mana Kidz nurse had led to her grandson getting diagnosed with ADHD. Subsequently, he was prescribed Ritalin and provided with three different types of learning supports: reading recovery; teacher aide; and Learning and Behaviour (RTLB) support.

*If you have the right people, the right information, you know you are safe, and I'm grateful. It was her korero, her interaction with us, her concern that helped us get where we are.  
(Grandmother)*

#### ***Provides reassurance that tamariki general health and wellbeing is upheld while at school***

Whaanau were grateful for having a nurse-based service at their school. It provided reassurance that their tamariki were looked after when they were not there. Whaanau felt confident that if their tamariki have any worries or hurt themselves when at school, someone is there who cares and has the medical skills to help. One parent described that their disabled daughter has sensitivities and gets bullied by other tamariki because of her disability. Mana Kidz has become a safe place where she goes for support.

Some whaanau also noted that the service had been the key reason for their school choice.

*It's a really good established commitment from the government to have a programme like this.  
(Parent)*

*Knowing that the children have a health service within the school that is able to support their health needs is amazing. I think they [tamariki] are really lucky. (Parent)*

### **Value of Mana Kidz for schools**

#### ***Provides a dedicated and consistent focus on student health***

Teachers are often stretched and do not always pick up (or cannot act) on health issues. For school leaders, it is reassuring to know that there is a consistent level of triage happening at the school. Student health issues can be addressed immediately and be followed up on when longer-term involvement is needed.

One school leader recalled times before Mana Kidz when the Public Health Nurse provided rheumatic fever initiatives. He noted that visits were infrequent and far between, and when health issues were identified, it was usually "too late". They lost a child in their school community to ARF at the time.

*It was like the ambulance at the bottom of the cliff, so the challenge of healing was much harder. (School leader)*

The ability of Mana Kidz staff to follow up with whaanau 'kanohi ki te kanohi' (face to face) was considered key to whaanau buy-in and engagement with health issues, particularly regarding whaanau Maaori and Pasifika. It is typically very difficult for schools to provide this level of follow-up.

Only two level 2 schools were engaged with through the evaluation. Feedback from these school leaders indicated that although less time is spent in these schools, Mana Kidz still manages to provide a dedicated and consistent focus on student health through this model. One of these school leaders appreciated having someone in the school at set times (twice a week), which was an improvement from the ad-hoc visits provided previously by a public health nurse. This enabled them to deal with any health issues 'there and then', with less waiting involved. The other school leader described well functioning processes for communication, including a Google Doc where school staff record any concerns for the nurse to respond to. Feedback suggested that sore throats was not a big

problem in these two schools, which likely contributed to the ability for this model of care to respond well to other health needs.

#### ***Provides ease of access to health-related information, advice and support***

Over and above identifying and treating health issues, Mana Kidz offers easy access to medical information and advice for school staff and whaanau.

*It's not just the checks and things with children. Questions that staff have, they [Mana Kidz] can answer straight way. Having that support on site is truly valuable. (School leader).*

*So, for example, if we have a child with diabetes or a child who is immunocompromised, it's sometimes quite nice to know that [Mana Kidz] are in the loop and that the parents feel they can talk to them as well. (School leader)*

Ease of access to health-related information, advice and support was considered useful in several contexts. For example, at times of medical emergencies or outbreaks such as measles in 2019 and Covid-19 in 2020, Mana Kidz has been able to help reduce anxiety in school communities by providing information and hands-on support. Another example is using nurses as the first port of call when exploring barriers to learning.

*So I know that Mana Kidz, our nurse, we will often refer to her initially just to have a look in ears and eyes, because often sight and hearing [problems] is the first thing we try to eliminate if a child's got any learning issues. (School leader)*

Mana Kidz also supports schools with health-related topics in class (e.g., the nurse may hold presentations, interact with the children, provide resources) and First Aid. In some schools, the Mana Kidz nurse even helps keep sickbay supplies up to date. Although many teachers have some first aid training, we were told it would be daunting for them to deal with more serious health issues such as broken bones, seizures or other health emergencies.

*It gives us peace of mind having medical professionals on site. (School leader)*

#### ***Provides a direct link to the broader health system and resources***

In addition to ease of access to medical information, advice and support, Mana Kidz provides schools with a direct link to the wider health system and resources. School leaders, particularly those in a special education needs coordinator (SENCO) role, highlighted the value of having nurses work alongside them. Aspects that were considered particularly useful include their:

- Ability to access past medical histories of students who transfer from other schools (e.g., to help understand the extent they may be at risk of ARF)
- Knowledge of referral pathways and health-related funding avenues
- Knowledge of health-related events in the community (e.g., vaccination drives)
- Ability to expedite health-related processes
- Ability to access resources such as Rapid Antigen Tests (RATs), masks and sanitisers.

School leaders also told us that Mana Kidz has helped keep schools up to date with staff vaccinations (e.g., for measles, flu and Covid-19). Enabling this to occur onsite was appreciated as it reduced the need for staff to take time off work.

One school leader described how Mana Kidz facilitated eye exams for a class of students after a teacher expressed concerns. It turned out that five tamariki in this one class needed glasses.

### **Supports holistic approaches to learning**

Mana Kidz plays a crucial role in supporting schools' holistic approaches to learning. It complements schools' education expertise by helping to ensure tamariki are ready to learn by being 'healthy in body' and 'in place to learn'. In some schools, Mana Kidz is part of a wider wrap-around team with SENCO, social workers in schools (SWIS) and other agencies that work together to address the complexities that some whaanau face. In other schools, management were in discussions with their Mana Kidz provider about what a more collaborative approach may look like in the future.

*Without [Mana Kidz], there would be a missing link. (School leader)*

### **Provides a trusted health voice**

We heard that it was difficult for schools to engage whaanau in tamariki health before Mana Kidz. One of the biggest challenges was persuading whaanau to take their tamariki to the doctor. Although school staff would advise whaanau to do so, whaanau would usually take tamariki home instead, and it was rare for them to report back. In contrast, it was the perception of school leaders that most whaanau follow Mana Kidz nurses' lead because they are health professionals, and their voice "carries a little more weight".

*It's really useful because some of those parents feel more assured by a health professional than they do by a teacher. (School leader)*

### **Supports better attendance**

School leaders involved with Mana Kidz before the Covid-19 pandemic noted that the programme had always supported attendance and that students were less likely to be held back from educational attainment due to health issues.

*There are individual cases, where we would have been struggling with families, and then things just come together magically. We see the symptoms resolve, and the kids are happy back at school. (School leader)*

In the wake of Covid-19, however, Mana Kidz support in this regard became invaluable. School leaders told us that many tamariki were anxious about returning to school or that whaanau were anxious because they had at risk whaanau members. Some tamariki had not been at school since August 2021. In one school, there had been no contact at all with about 3-5% of students since the last lockdown.

As a result, Mana Kidz, alongside other social service agencies, is increasingly being included in plans for dealing with attendance and engagement issues. At one school, Mana Kidz will be part of a wrap-around approach to put systems in place to strengthen whaanau so that tamariki can come back to school. They have an initial list of 20 whaanau to work with. When there are health-related barriers to returning to school in the upcoming school term, the Mana Kidz nurse will engage with whaanau in their homes, develop a plan that addresses their concerns, and explain the protocols to minimise any risks. Having tamariki back is a priority for schools.

*What we want from an education perspective is, we want them at school. Maaori and [children from Pacific ethnic groups] are our priority learners, if this isn't taken care of, we won't have them at the school. (School leader)*

### **A healthier school is a better place to learn**

Mana Kidz contributes to a healthier school environment that is more conducive to learning. School leaders shared that if children are well, they are more likely to be happy and excited about learning. School leaders believed that without Mana Kidz, their school population would be in poorer health

with increased transmission of contagious diseases. Subsequently, health problems would be exponentially greater and more severe.

### *The school is becoming a more trusted place for whaanau*

Mana Kidz staff build relationships with whaanau and tamariki that are trusting, comfortable and safe. They also provide support and resources that help whaanau through difficult times (e.g., food hampers, medication). This support contributes to schools becoming more trusted places for whaanau who may need consistency, continuity and routine when other parts of life are not going as expected.

## **Value of Mana Kidz for primary care (including providers)**

### *Reduces pressure on primary and secondary care*

There is less likelihood of sore throats and skin conditions progressing to an acute state and tamariki needing hospital care because Mana Kidz provides early identification and follow-up and keeps an eye on any developments.

*If we didn't have Mana Kidz there would be a lot more kids coming in to ED who didn't need to, or to ED much worse off. (Senior Staff)*

We also heard that Mana Kidz helps reduce the demand for GPs (e.g., fewer walk-ins of primary school-aged children) because whaanau have access to the nurse at school.

*With Mana Kidz... it took some pressure off our general practices, particularly for our kids. We had quite a high walk-in rate of children under 12 at the time. We were consistently seeing all these kids for a range of different skin issues, lots of different kinds of health issues. But it would always be at the 'too late' phase of care where we'd have to either send them off to hospital, or we were banging our heads against a brick wall wondering why they didn't come in weeks or months earlier. And then what we saw is, Mana Kidz allowed whaanau... to have their kids looked after from a health perspective... We saw in a couple of months the value that Mana Kidz had in the area and for our kids and our schools. (Provider lead)*

### *Supports continuity of care*

In those instances where tamariki need health care, Mana Kidz contributes to better continuity of care, with some providers facilitating follow up and discharge planning. As indicated elsewhere, Mana Kidz also helps make sure tamariki make it to appointments, by reminding whaanau and in some instances providing transport (e.g., when there are issues around access to a vehicle, or when whaanau are unable to take time off work).

### *Complements and supports other health initiatives*

Mana Kidz complements other health-related initiatives in schools that benefit the community. These initiatives include hearing and vision, mental health, social wellbeing, asthma and research programmes. Mana Kidz has longstanding relationships with schools and whaanau, which helps open doors and gain buy-in to these other initiatives.

### *Provides a workforce that's flexible and available to respond to crises*

Mana Kidz staff can engage with the community, work with tamariki and have a skill set that can be redeployed when necessary. Having a skilled and flexible workforce has proven particularly useful in the last two years in the context of the Covid-19 pandemic, meningococcal disease, measles outbreaks and the like.

## What is Mana Kidz doing well?

### *Relationships are strong at all levels*

Mana Kidz has positive working relationships, including between:

- NHC and providers: NHC is considered supportive, easy to engage with, quick to respond and communicates clearly with providers.
- NHC/providers and schools: According to stakeholders, including school leaders, NHC and providers are good at communicating with schools. Some school leaders applauded their provider for being open and transparent at times of staff turnover and/or during the many changes over the Covid-19 pandemic. It was important for the relationships with schools that they are well informed.
- Providers: Feedback indicates good relationships and deep respect between providers. Collaboration and communication generally worked well, with examples of staff learning from each other and sharing ideas and resources.
- Nurses and whaanau support workers: Similarly, supportive relationships and deep respect were evident between nurses and whaanau support workers. Along with the ebb and flow of different work priorities, either will step in to support the other when necessary/time allows.
- Mana Kidz staff and school management: In most cases, there are strong relationships between Mana Kidz staff and schools. Many Mana Kidz staff have worked in their school(s) for several years and felt well included and respected. For some, getting to a place of acceptance has required negotiation and relationship building over time and demonstrating the value of Mana Kidz to the school. School buy-in is key for Mana Kidz to work effectively. Although some providers have stronger relationships with schools and principals than others, having the principal on board is critical to the programme's success. Where Mana Kidz works well, provider staff are clear about respecting school boundaries and working flexibly not to disrupt the teaching and learning programme. School leaders highlighted essential qualities such as openness, honesty, politeness, etiquette, good communication, and relationship-building skills. Having the school community and tamariki at the heart of decision-making was key to success.
- With tamariki and whaanau: Relationships with tamariki are strong, clearly underpinned by manaakitanga and aroha. Stakeholders told us that tamariki trust and feel comfortable with Mana Kidz staff and that some Mana Kidz staff know the names of all tamariki at their school(s). Relationships with whaanau were also strong but harder to form in some instances, including parents being too busy to engage, transiency, and mistrust. Some whaanau acknowledged that they had been suspicious to start with, but now they have a really strong bond with their Mana Kidz nurse. While cultural fit between staff and whaanau is a key factor supporting relationship building, being approachable, empathetic, kind and polite were considered most important. Providers are also well respected in their communities, with staff in and of these communities. These are also key factors that aid success.

The following quotes illustrate these findings.

*They've [Mana Kidz staff] been amazing to work with and work alongside. (School leader)*

*She [the nurse] interacts with everybody, I see that day in and day out. She pretty much knows all the families and the children. (Parent)*

*The nurse at the school, she is really helpful and not only that but really considerate with parents and really polite, the way she approaches you. (Parent)*

*Our kids know and trust [Mana Kidz], and have no problem going to see them. (School leader)*

It is clear from stakeholder feedback that building constructive relationships takes time and is an ongoing process – relationships need to be actively maintained. Meanwhile, people come and go (tamariki, whaanau, Mana Kidz staff, principals, teachers), and new relationships must be formed.

#### *Core aspects of the service are successfully achieved*

Mana Kidz has maintained consistently high consent rates. Whaanau, school principals, nurses, whaanau support workers generally consider Mana Kidz is effective at identifying and treating sore throats which may help to prevent ARF, and is effective at detecting and treating skin infections and other health needs early which may prevent them from deteriorating. As indicated above, Mana Kidz also supports medical adherence with nurses' follow-up.

#### *Provided in the 'right schools'*

Mana Kidz targets lower decile schools in South Auckland to ensure an equity response. Feedback indicates that Mana Kidz serves the 'right schools' in terms of needs. While school leaders considered their communities to have many strengths, they also described them as some of the most vulnerable. We heard that many whaanau are in low-paid employment and work multiple jobs to meet the high costs of food and rent. Overcrowding and poor housing conditions are also common, contributing to and exacerbating health and wellbeing issues such as sore throats, skin conditions, and asthma. For many whaanau, the cost of putting petrol in the car may stop them from going to the doctor because they have to prioritise other costs such as food and rent. One school leader described the living situation of one of his staff members and noted how this reflects his school community. This teacher lives with 14 people and shares a "women's bedroom" with the other women while her husband sleeps on the couch or in a tent.

#### *Whaanau are supported into better housing*

When tamariki present with recurrent GAS, Mana Kidz checks in with whaanau around housing conditions. If issues such as overcrowding and/or damp, cold housing are identified, nurses give ideas and suggestions for how the housing situation could be improved. Where needed, Mana Kidz refers whaanau for housing assessments and housing interventions (e.g., AWHI Healthy Homes Initiative). Mana Kidz Nurses and School Leaders gave examples of whaanau moving into healthier homes. Some whaanau also had direct experience of being supported into healthier homes. However, these stakeholders also noted that the current demand for housing stock meant long waiting times and uncertainty around housing opportunities.

#### *Whaanau-centred, holistic and wrap-around approach*

Stakeholder feedback indicates that Mana Kidz nurses and whaanau support workers take a more holistic and whaanau-centred approach to primary care than the traditional GP model. The existing community-based providers can offer different services (e.g., social, housing, pharmaceutical, traditional Maaori) that Mana Kidz can wrap around tamariki and whaanau as needed.

Mana Kidz will also consider the wider whaanau when tamariki test positive for GAS, particularly when there are recurrent positive results and/or there are some whaanau members at risk. A few whaanau told us that they had been provided with swabs for their whole family that they could bring back to the nurse for analysis. One father tested positive through this approach. We also heard of instances where Mana Kidz staff had tracked down cousins of positive cases to get them tested, if they knew that the wider whaanau had gathered during the weekend.

#### *NHC commissioning strengthens community providers*

NHC commissioned existing community health and social service providers to deliver the Mana Kidz programme. This approach has supported a synergy, where Mana Kidz could leverage existing

relationships and services, and providers could build their services and reach. This has further cemented providers as credible and effective in their communities, enabling them to attract other funding and contracts.

## What enables Mana Kidz to work effectively?

### *Strong leadership*

The leadership of Mana Kidz is a key contributor to its success. Aspects of the current leadership that stood out include:

- Having a Maaori-led PHO as the lead organisation for Mana Kidz, looking after the relationship with the DHB, and ensuring the programme is equity focused.
- NHC is effective in its commissioning role, including communication, relationships, training, clinical support, and programme systems and processes (including setting quality standards and monitoring performance).
- The leadership within the providers, most of which are Maaori or Pasifika (reflecting the communities they work in), and the cohesiveness of providers working together.
- Having dedicated and knowledgeable clinical champions from both the DHB and NHC. While this is a key strength, it is also a potential vulnerability. A lot has been resting on these champions since the programme's start, and they carry a lot of institutional memory that would be lost if they move on.
- An Alliance Leadership Group (ALG) with members committed to the kaupapa. ALG has Maaori and Pasifika<sup>44</sup> representation and relevant expertise in infectious diseases and public health. This membership ensures a Maaori and Pasifika lens. It also allows ALG to keep abreast with relevant developments internationally, informing ongoing improvements to the programme.

### *Committed people*

The success of Mana Kidz is heavily reliant on having the right people to deliver the service. People with a "heart first" approach, who follow through, are non-judgmental and sensitive to the different realities that whaanau find themselves in.

*The nurse knows I work two jobs and that I'm a solo mum. She will always remind me to take time for myself. She'll say, just take a bit of time. Even if its just five minutes a day just to look after your own wellbeing. She's really awesome like that. (Parent)*

There is high commitment to the Mana Kidz kaupapa at all levels. We heard of dedicated champions at the strategic level, and dedicated staff at the operational level. Mana Kidz staff go over and beyond to ensure tamariki and whaanau needs are met, including working extra hours, and finding out-of-the-box solutions to issues and problems.

*Out of the kindness of her heart, she reached out. She didn't need to. (Grandmother)*

### *A diverse workforce that is well matched to community*

Cultural capacity and competence are essential for equity. Mana Kidz has built a diverse workforce, well matched to the communities it serves in terms of culture and ethnicity. The workforce lives in the community, speaks many of the different languages spoken, and knows the needs and appropriate ways to work with whaanau and tamariki. Although there is always room for

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<sup>44</sup> The Pasifika member is no longer on the ALG as they were needed in the Covid-19 response. Pasifika membership has been challenging for the group to secure as there is a limited pool to draw on, and demand is high.

improvement, the cultural fit of Mana Kidz is considered a strength. It is significantly more diverse than, for example, the inpatient nursing workforce in the region.

*They make everything easy to understand. Each time my kids have got strep they just repeat the information, they don't say you should know this already. They don't make me feel dumb, or like it's my fault. (Parent)*

#### **Nurse-led**

As mentioned elsewhere, being nurse-led brings clinical credibility and confidence to the Mana Kidz programme, contributing to buy-in from whaanau and school staff. It ensures timeliness and prevents delays in its ability to diagnose and treat on the spot. Standing orders widen the scope of practice and the ability to meet the needs of tamariki and whaanau. Stakeholders highlighted the value of the nurse-led approach in the context of on-going GP shortages in Counties Manukau.

*[Mana Kidz] is totally delivered in a nurse-led model. That's important to consider when looking at the number of GPs that are available in Counties Manukau. (Programme leader)*

Feedback suggests that the Mana Kidz service could benefit from bringing up the basic skill levels of nurses (e.g., for ear health, which is currently in the hands of public health nurses). Some stakeholders also suggested that specialisations for nurses (e.g., asthma, nutrition, mental health) would allow the service to respond better to whaanau needs and create opportunities for career progression.

#### **School-based**

Being school-based ensures easy access to the programme for tamariki and whaanau, who may face barriers to seeing a GP. It provides a constant presence, allowing time and space for relationships to develop. It also offers opportunistic engagement (e.g., the nurse checking in with whaanau at drop off/pick up time) that may lead to support or intervention. For transient whaanau, tamariki still get continuity of care through Mana Kidz (if they stay in the school or change to another Mana Kidz school).

*When I drop my kids at school they [Mana Kidz] always come and meet me and talk about my kids. (Parent)*

#### **Proactive approach**

Mana Kidz proactive approach to identifying and treating ARF and skin infections is key to its effectiveness. Regular class checks ensure that all tamariki who are present get assessed 'top to tail' at the same time as their sore throat check. Nurses and whaanau support workers follow-up with absentees. Having the nurse in the school allows for prompt diagnosis and immediate treatment, preventing health issues from deteriorating. Follow-up supports medical adherence, contributing to better health outcomes for tamariki and whaanau.

#### **The combination of class checks and self-identification**

Combining class checks and self-identification is key to Mana Kidz success. As noted above, class checks ensure that as many tamariki as possible get checked periodically. Self-identification helps identify any flare-ups between class checks. Combining the two is important as those reluctant to self-identify often come out positive for GAS throat. For some children, particularly the younger ones, it may take some time to understand what a 'sore throat' is and feels like. Until they do, they will not put their hand up to self-refer. School leaders also noted that some tamariki have developed high tolerance levels to pain, and they may also be unlikely to self-identify. Programme leaders mentioned previous research by Professor Lennon and colleagues. Their study found that the two

strategies (class checks and self-identification) contributed around 50% each to identifying GAS throats. Class checks also bring whaanau support workers up close with tamariki. This is key to identifying health and wellbeing issues other than sore throats and skin conditions.

*We can't rely on self-referrals. Kids can get used to putting up with pain and don't necessarily refer. It's critical that we have the proactive approach, to make sure they do get looked at.*  
(School leader)

### **There are different ways into the programme**

Mana Kidz provides a suite of options for tamariki and whaanau to access the programme and its services. For tamariki, this includes self-identification, class checks, a daily presence of Mana Kidz staff in the school, and the ability for school staff or whaanau to refer them. For whaanau, there is the presence of Mana Kidz at their school, staff who look and speak like them and resources available in different languages. Mana Kidz 0800 number (established in response to Covid-19 lockdowns) provides another point of contact that has been beneficial to whaanau when they lack credit on their phones or can't contact the nurse.

### **Flexibility of the workforce**

The Mana Kidz workforce is flexible and responsive, contributing to the programme's ability to meet the needs of whaanau. This is evident in the engagement with schools and whaanau (e.g., ability to do home visits, adapting to changing school programmes, utilising skills of other colleagues when facing language barriers, etc.), and in the ability to pivot, adapt, and respond to various crises including Covid-19 (e.g., by doing class checks via the phone, sourcing and delivering kai and hygiene packs to whaanau, as well as redeployment to contribute to the wider pandemic response) and the recent measles outbreak.

*If they can't get me with a phone call they will do a house call. They know that I sometimes pop home for lunch between my two jobs, so they will try and catch me on that off chance.*  
(Parent)

### **Continuous learning and development**

Mana Kidz is constantly working to improve. Evidence from stakeholder feedback and programme data informs learning and development. The programme is regularly reflected on at the strategic (e.g., ALG), management and operational levels. This has contributed to improvements to the programme's equity response (to Pasifika in particular), follow-up and continuity of care and support (through information sharing between NHC and the DHB), and operational processes (through sharing learning between staff and/or providers) amongst other things. Mana Kidz also conducts its own research, including a nurse-led study to improve medication adherence through intramuscular penicillin (IM Bicillin). Mana Kidz has also been involved in external research, including the Light AI Waha Nui trial - use of an innovative camera that uses infrared and artificial intelligence to diagnose GAS throats.

## **Issues, problems and challenges**

### **Funding and resourcing**

Funding for Mana Kidz has stayed relatively constant for the last five years, not keeping pace with inflation, population growth or changes in the scope of services. During that time, school rolls have increased, along with challenges and whaanau needs. Meanwhile, Mana Kidz has consciously and deliberately expanded its scope to try and meet a wider range of needs.

NHC and providers are reportedly absorbing a lot of the pressure and funding shortfalls arising from these developments. However, this is not sustainable, and staff are at risk of burnout. Programme leaders also noted that there is no additional resource for trying new things to improve and develop the Mana Kidz programme.

*I think resource constraint often does drive innovation but that's limited and eventually resource constraint will break the system. So I'm worried that we're heading in that direction.  
(Senior staff)*

Another issue is the way resources are allocated between schools. Mana Kidz is intended to work in the schools with the highest need, and need is currently based on decile rating. Nursing and whaanau support worker FTE are assigned between Mana Kidz schools in proportion to roll size. This sometimes results in 0.2 or less FTE being allocated to a school. However, there are differences in the level of need that are not accounted for by roll size. For example, some level 2 schools reportedly have multiple ARF cases that require more management, which is not reflected in the current allocation of resources. Meanwhile, other level 2 schools in the Mana Kidz catchment area already have existing wrap-around services for their students and so there may be less need for the service (e.g., Blind and Low Vision Education Network NZ [BLENNZ]). Although providers are contracted because they know their communities, they have no flexibility to reallocate resources between schools in response to different levels of need. Whaanau and principals commonly suggested increased presence by the nurse at the school as an opportunity for improvement.

Pay parity issues persist between community-based and DHB nurses, making it difficult to attract and retain staff. Mana Kidz staff, including whaanau support workers, speak multiple languages and have other skills not reflected in their pay. Further, the current funding arrangement involves providers taking overheads out of the FTE funding, lowering pay rates. This is an issue that NHC is currently working to address with providers.

All these resourcing issues together place increasing pressure on the programme's ability to meet the needs of their school communities. These pressures are further discussed in the Value for Money section.

### **Operational challenges**

Interviewees identified several operational challenges. These centred on:

- Expectations on NHC and Mana Kidz staff to undertake extra work over and beyond what the programme is contracted to do. Examples include supporting the rollout of the immunisation programme and helping other services that don't have the relationships with the schools to 'get into the school' (e.g., vision and hearing, mental health programmes, social wellbeing programmes).
- Schools also ask Mana Kidz staff to help with general health tasks such as first aid, giving insulin and Ritalin. Staff do this extra work to meet needs and maintain relationships with the schools. However, the volume of additional work can disrupt core business and draws on already limited resources. Staff often work extra hours to make up the time. Further pressures can come from needs at the boundary between Mana Kidz and Oranga Tamariki or SWIS. The education aspects of Mana Kidz, which many consider vital, are the first to be crowded out by these other pressures.
- High risk of staff burning out. Nurses and whaanau support workers say they are exhausted due to the growing scope, expectations and needs with no increase in resources. One nurse described the expectations on them to be that of 'jack-of-all-trades', without sufficient clinical support. In addition, if someone is off sick or on leave, they have to provide cover. Covid-19 has exacerbated these issues.

- Whaanau engagement. While this is something Mana Kidz does well, there are also challenges. Mana Kidz staff work with transient whaanau, who frequently change addresses and phone numbers. Primary caregivers may also change over time. Staff spend an “extraordinary amount of time” trying to contact caregivers. There are also language barriers, trust barriers and family dynamics that staff have to work through. Meanwhile, many whaanau are very time-poor and find it challenging to engage.
- Working conditions in some schools. Some staff experience operational barriers to working efficiently, including poor Wi-Fi, which impacts reporting. Some are also poorly located within the school and have low visibility. Tamariki may have a long walk from their class or lack privacy due to working out of a shared space. Some school leaders expressed a desire to be able to house Mana Kidz better but noted it was challenging without any resources to support this.
- The mixed provider model. Interviewees suggested Mana Kidz works better for schools when one provider serves a school rather than the shared DHB/NGO model.

#### *Ongoing challenges to breaking down barriers to primary care and supporting more equitable outcomes*

Mana Kidz was initially set up to break down barriers to primary care. While this is occurring for tamariki, it is not clear to what extent it does so at a whaanau level. While Mana Kidz can address some barriers (such as awareness of the service), many barriers stem from persistent socioeconomic determinants of health, including crowded households, damp homes, low incomes, and time-poor parents working multiple jobs. When Mana Kidz started, there was a greater focus on home visits to build trust for the workforce to understand the issues facing whaanau. There is less home visiting now because of the aforementioned time pressures and resource constraints. This is potentially problematic because it may mean staff are less able to tailor interventions to meet whaanau needs. The programme runs the risk of becoming ‘transactional’, for example, meeting swabbing targets without being able to spend enough time to identify the wider needs of tamariki and whaanau. One school leader noted that their Mana Kidz service battles socio-economic issues daily. Their workload would never diminish unless these are directly addressed.

*She’s [the nurse] holding the line, and that’s all she can do. (School leader)*

*Some days you get 20 positives and each is an hour’s work. If that’s what you’re faced with on Monday morning... you can imagine how much time each family gets with you. (Nurse)*

Some interviewees questioned whether Mana Kidz could fully address equity within its current funding arrangement and structure. These interviewees believed that funding needs to go directly to Maaori to provide the service (rather than through a DHB), and iwi and hapuu should to be involved in decision-making and design.

#### *Bureaucracy*

Interviewees expressed some frustration with the bureaucracy of the programme, such as;

- Having to work in the confines of the DHB (e.g., everything having to go through them for approval)
- The time that is taken to make decisions (e.g., the frequency of ALG meetings means it can be months before a decision is made)
- Changing reporting requirements (by the DHB).

However, it is a balancing act; several interviewees acknowledged that some of these processes might be necessary to ensure the programme’s robustness.

#### *Awareness of Mana Kidz and ARF*

Feedback indicates that there remains room to improve awareness of Mana Kidz and ARF:

- Whaanau are not always aware that they can go in to see the nurse at the school and only learn about Mana Kidz when the nurse or whaanau support worker contacts them because their tamariki have a health issue
- When giving consent for the programme, whaanau may not always understand what they are agreeing to (e.g., because of language barriers). Feedback from whaanau, school leaders and Mana Kidz staff indicate that whaanau just see the consent form as another paper to sign as part of the enrolment process and so do not take the time to read it properly
- The scope of Mana Kidz is not always known. For some, it's perceived as just a place to get medicine
- Whaanau awareness of ARF has improved, particularly amongst those who have accessed the service, but for some whaanau it is still limited.

#### *Poor communication between South Auckland services*

Mana Kidz staff cannot always support continuity of care to the extent they would like, because of ineffective lines of communication with some health and social services. Mana Kidz staff spoke of not hearing back from services they had referred whaanau to and missed appointments by tamariki where they could have facilitated attendance had they been aware.

#### *Covid-19 pandemic response*

The Covid-19 pandemic response has diverted significant nursing and leadership time away from other health services, including Mana Kidz. Some schools continued to engage with Mana Kidz during the pandemic. In contrast, some school leaders shared that their nurse had been re-deployed and/or have had to help cover other schools limiting their ability to meet whaanau needs in their community. Many were worried that ARF would peak again as a result.

At the same time, the closure of schools, and the reluctance of some whaanau to return tamariki to schools when they reopened, has impacted levels and types of Mana Kidz activity. As noted elsewhere, there are expectations that Mana Kidz nurses will support schools in bringing tamariki back into the classroom. It is unclear how this will fit in with providing the core parts of the service again. There were also growing concerns around the role of Mana Kidz in addressing the backlog of other work, including vaccinations, vision, and hearing checks, etc. This may bring added disruptions to the schools.

Covid has interrupted Mana Kidz relationships with schools and principals, which will be essential to rebuild. Kidz First nurses were deployed elsewhere and haven't been involved in Mana Kidz during 2020/21 – so new nurses who have joined Kidz First during this time will need induction into Mana Kidz.

#### *Uncertainty*

When these interviews were conducted (November 2021 – April 2022), Mana Kidz staff faced uncertainty about their roles in the evolving Covid-19 pandemic response. For example, they were unsure whether they would be involved in testing and/or vaccinations for 5-11 year olds, and if so, what the PPE and operational requirements would be. Nurses were keen to see rapid antigen testing adopted in schools to limit the disruption to learning.

Adding to the pandemic-related pressures and insecurity is the wider uncertainty around where Mana Kidz will sit when the health system reforms come into play.

Additionally, poor communication from the DHB about the re-tendering of the Mana Kidz programme (including not notifying NHC when the tender was issued) caused uncertainty for NHC

and questions from providers and communities. Although the DHB subsequently extended the contract, this took an unusually long time to finalise. Changes in DHB personnel in charge of Mana Kidz during 2021 may have contributed to this discontinuity. The appointment of a new project manager means there is now a key person in the DHB with clear responsibility for Mana Kidz.

At the time of interviewing, decisions were awaited about when the backfill by NHC of 12 FTE across 21 schools for Kidz First would end.

### *Working with kura kaupapa*

Few comments were made throughout the nurse and whaanau support worker interviews directly related to working in a kura kaupapa setting. Therefore, it isn't easy to draw comparisons with English medium schools. However, there did appear to be some specific considerations for Mana Kidz when working with kura kaupapa.

One nurse who had worked in a kura kaupapa setting spoke about the richness of culture and language and the sense of *tatou tatou* (togetherness). However, access to community-based health services was lacking. Amongst whaanau, there was a high mistrust of the system, which was hard to address and minimise within Mana Kidz work hours (e.g., once a week during school term). A lack of trust means that engaging with whaanau is more challenging. Home visits and Facebook seemed to be effective ways to connect with whaanau. As in English-medium schools, tamariki and whaanau have multiple needs, including low-quality housing, that impact their overall health and wellbeing.

There was only one interview with a kura kaupapa tumuaki (principal). Insights shared at the interview focused on how services like Mana Kidz can support an 'as and by Maaori' approach, building *tino rangatiratanga*, where Maaori are self-determining. *Tino rangatiratanga* is the right for Maaori to exercise their authority and agency and provide culturally responsive and inclusive opportunities.

When services are provided 'as and by Maaori', Maaori providers (including hapuu and iwi), rangatahi, whaanau, and the community have ownership over the service delivery to meet their needs. This is an equity approach with Te Tiriti-based foundations: "Indigenous peoples have control...and indigenous knowledge and science are the norm. The legitimacy and validity of Indigenous principles [and] values are taken for granted. It does not exclude Western methods but includes them only as far as they are seen to be useful" (Wehipeihana, 2019, p. 381).

## **Opportunities and areas for development**

### *Expand Mana Kidz*

After ten years of serving the highest-needs school communities in South Auckland, Mana Kidz is a proven and trusted platform for delivery. Significant unmet needs remain, and Mana Kidz could do more if resources increased. Examples include:

- Expanding Mana Kidz into more schools, to reach more tamariki and whaanau
- Upskilling the workforce to meet a broader range of health needs, such as asthma, mental health, bronchiectasis, diabetes, healthy eating, and sexual health
- Providing fuller vision and hearing assessments, so whaanau don't have to take time off work to go to the super clinic
- Providing a whaanau-centred model of immunisation using the non-regulated workforce and catching up on childhood immunisations
- Providing additional resources to address socioeconomic determinants of health

- Developing a mobile Mana Kidz service that can have drop-in days at school and do home visits, along with a stronger focus on addressing socioeconomic determinants of health
- Introducing a roving GP to support nurses in addressing health needs promptly
- Introducing rotational nurse/whaanau support worker to cover for leave and help ease the mounting pressure on staff.

#### *Review the extent and allocation of resources*

Given the significant concerns raised, it would be timely to revisit whether:

- Mana Kidz is sufficiently resourced to do the job it is expected to do
- Rheumatic fever should continue to be the dominant factor in resource allocation, or whether wider factors should now receive more weight
- Schools could be provided with some resource to provide dedicated clinics for Mana Kidz
- Some resource could be earmarked for programme development and improvements.

#### *Embed school-based services in the primary care network*

School-based primary care services seem to be well accepted in secondary schools and are the norm in Mana Kidz schools. Should school-based primary care become universal in primary and intermediate schools? There is also potential to strengthen multi-disciplinary teams in primary and intermediate schools.

#### *Strengthen Pasifika leadership in Mana Kidz*

NHC has striven to facilitate strong Pasifika leadership to mirror the strong Maaori leadership of Mana Kidz. However, there remains a need to continue these efforts. For example, Pasifika ARF rates remain higher than those of Maaori.

#### *Reshape the service model*

There are aspects of the service model that could be revisited to ensure the model is as effective as it can be. For example (some of which have been alluded to elsewhere):

- Create greater flexibility for providers to allocate FTE across their schools, as they know best where the highest needs are
- Review the number of class checks per term and frequency of self-IDs – perhaps with greater flexibility for providers to match the frequency to school needs
- Expand the model to include more schools and other areas of need, such as mental health, healthy eating, etc
- Provide more support for level 2 schools.

#### *Service integration*

Opportunities for better service integration include:

- Working more closely with the primary health sector in terms of data sharing and access to GPs and other health professionals
- Strengthening linkages between Mana Kidz and providers' internal services that may assist in meeting the needs of whaanau (e.g., social workers, asthma specialists, etc.)
- Connecting more consistently with SWIS
- Linking in with other services in the community (e.g., Heart Foundation) for support, educational resources, guest speakers, etc.

### *Reconsider the type of data collected and for what purpose*

Programme data is primarily collected for monitoring purposes and is not considered useful for understanding programme effectiveness and/or supporting ongoing improvements. Opportunities for improvement include:

- Collect better quality data that is more nuanced and illustrates what the service does or does not do, rather than a high quantity of data
- Collect more robust outcomes data
- Allocate resources towards being able to use the data meaningfully.

### *Technology*

Opportunities to adopt technology in Mana Kidz include:

- Having one, or better integrated, patient management systems for Mana Kidz providers. When kids move between schools, their history does not necessarily follow them. Therefore, a new provider may be unaware of persistent GAS.
- Revisit the idea of using digital health technology such as iPads. These technologies have the potential to enable greater efficiency and extend the reach for a given level of resources. For example, digital technology could support 'universal proportionalism' reaching more schools while retaining more intensive approaches for higher needs schools. Over the last two years, Covid-19 has pulled staff in other directions, so these opportunities have not progressed.
- It is understood that a GAS vaccine is in the pipeline, though the timing is uncertain.

## Appendix D: Survey of nurses and whaanau support workers

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An online survey of Mana Kidz registered nurses and whaanau support workers was undertaken by the evaluation team in July/August 2021. Seventy (N=70) Mana Kidz staff responded to the survey. Half of the respondents were registered nurses (n=35; 50%). Whaanau support workers made up two fifths (n= 29; 41%). Five managers and two team leads<sup>45</sup> also responded (n=6).

Length of time in the Mana Kidz programme varied, from those who had worked more than four years (n=28; 40%), to 1-3 years (n=22; 34%) or less than one year (n=20; 29%) in the programme.

Respondents collectively spanned eight Mana Kidz providers including Turuki Healthcare (n=20; 29%); Tongan Health Society (n=10; 14%); Te Hononga o Tāmaki me Hoturoa (n=9; 13%); Pasefika Family Health Group Trust (n=9; 11%); Papakura Marae and South Seas Healthcare (n=6; 9% respectively); and Tamaki Healthcare, National Hauora Coalition and Kidz First having only two responses each. Two respondents answered 'other'; one specified Pasefika Health, and one did not specify.

### **To what extent, and in what ways, does Mana Kidz impact on the health and wellbeing of children and their whaanau?**

#### *Outcomes*

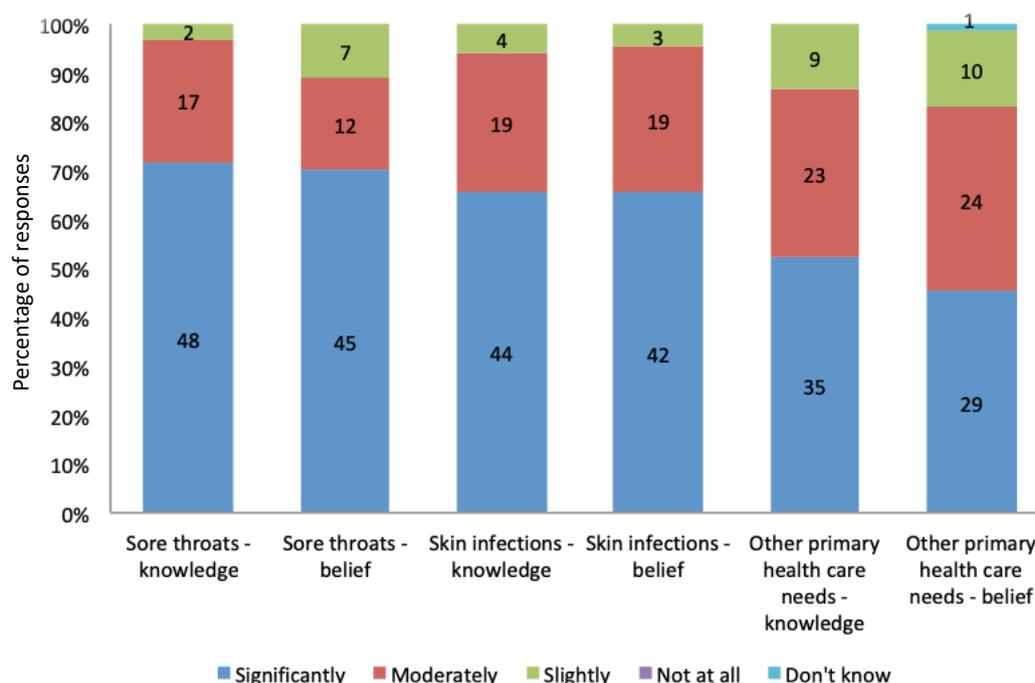
The survey asked, 'to what extent does mana Kidz contribute to strengthening whaanau knowledge about sore throats, skin infections and other primary health care needs?'

Responses were overwhelmingly positive, with nearly all indicating that the programme does so to a 'significant' or 'moderate' degree. The survey also asked, 'to what extent does Mana Kidz contribute to strengthening whaanau belief in themselves that they can address and do something about sore throats, skin infections and other primary health care needs?' Again, there was a positive response with the vast majority indicating it does so to a significant or moderate extent. These responses are shown in Figure 31.

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<sup>45</sup> One team lead also identified as a whaanau support worker and has only been counted once.

Figure 31: Impact on knowledge (n=67) and belief in self (n=64)



Forty-three respondents (61%) answered the open-ended (free-text) question: ‘*what are the key outcomes for tamariki and whaanau that you are seeing in your role*’. Their answers centred on:

- **Improved health and wellbeing outcomes**, with reference made to reduced cases of ARF, fewer skin infection related hospitalisations, skin conditions and infections being better controlled, fewer GAS throat presentations, hearing and vision cases being resolved and overall, healthier tamariki and whaanau (n=15)
- **Improved health literacy**, with reference made to more awareness and familiarity with GAS throat, ARF and skin conditions in terms of prevention, treatment and management as well as knowing when and where to seek treatment (n=13)
- Tamariki and whaanau having **trusting and positive relationships** with Mana Kidz staff (i.e., health professionals) (n=9)
- **More empowered tamariki and whaanau** who take action in regards to their own or their tamariki health, including seeing or contacting the Mana Kidz nurses about any concerns, seeking care early, ensuring medication is completed, staying on track with kids’ hygiene (n=9)
- Improved (e.g., easy, free, culturally concordant) and more timely **access** to primary and tertiary health care (=9)
- **Improved living conditions** as a result of referrals, particularly in terms of warmer, healthier, larger homes (n=4)
- **Reduced stigma** around accessing information and help (n=2)
- **Alleviating pressures for whaanau** as a result of prompt treatment and care, and kids coming to school every day (n=1).

For example, one respondent’s quote exemplified the importance of the trusting relationship with Mana Kidz, and how it can lead to improved access and wellbeing:

*Whaanau are advising their children to come see us if they have a sore throat. Children are confidently coming to the nurse if they have a sore throat and sores. Whanau are able to trust school nurse now and confidently refer and reassure their children that we are here to help.*  
 (Whaanau support worker)

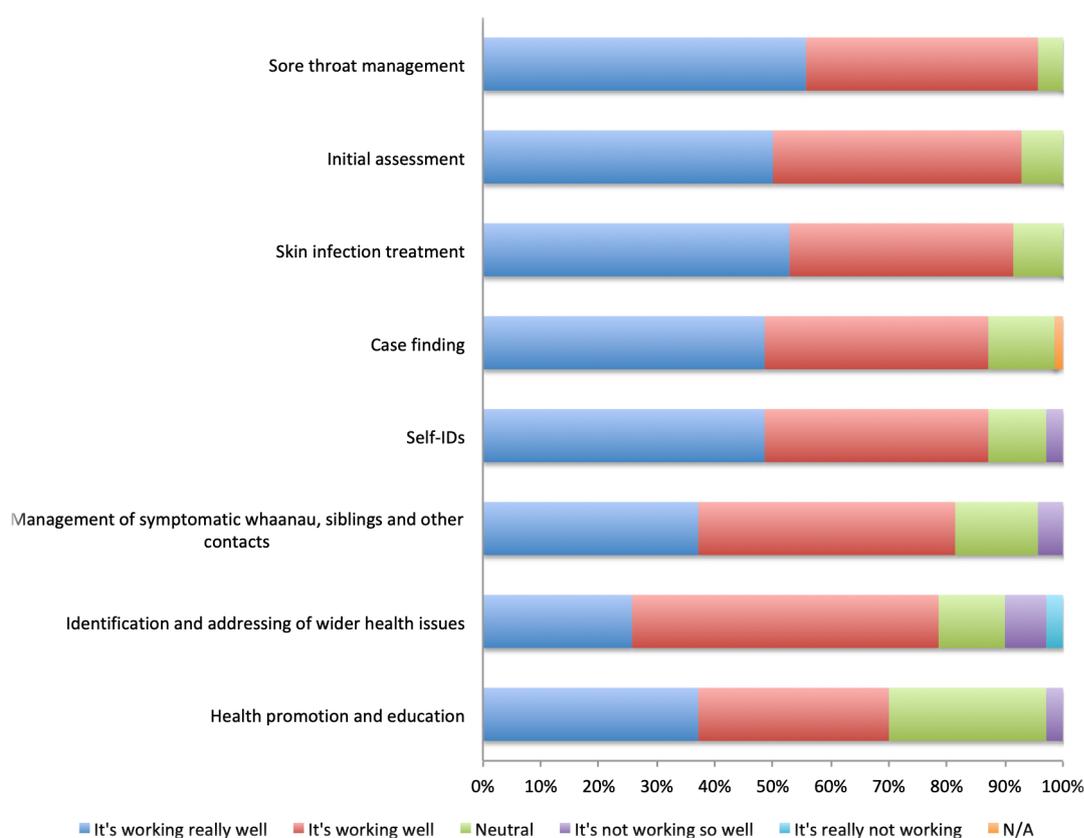
## What mechanisms and success factors support the effectiveness of Mana Kidz?

### Key processes and activities

Overall, Mana Kidz processes and activities were considered to function well. The survey asked: ‘Thinking generally about Mana Kidz, please indicate how well you think the following processes/activities are functioning in your everyday work.’

Sore throat management, skin infection treatment, initial assessment and case findings were considered the most well functioning processes with a clear majority of respondents indicating they work ‘really well’ (49-56%), or ‘well’ (39-40%). Although the other processes were considered to function well also, there were more people who felt neutral (11-27%), and some who felt they were not working well (between 3-7%) (Figure 32).

Figure 32: Effectiveness of Mana Kidz key processes (N=70)



Respondents indicated that health promotion and education is a key area that staff would like more time and resource allocated to. In particular, they felt under-resourced in terms of FTE to undertake health promotion and education and that they lacked sufficient training to provide education and

support in regards to some emerging needs (e.g., mental health and behavioural needs). A desire for other professional development was also identified in the responses. Asthma assessment, te reo Maaori, how to address wider health issues and skin health were mentioned as areas of interest/need.

### Communication and collaboration

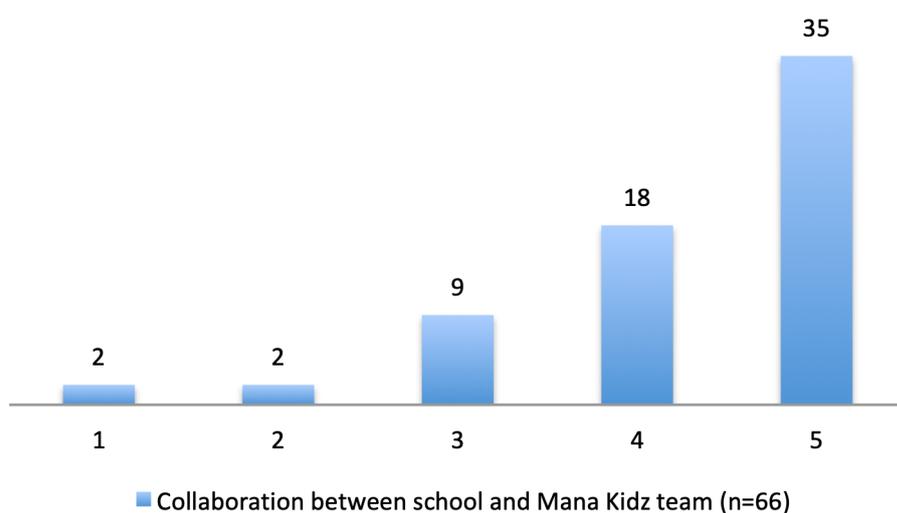
Responses regarding communication were positive. Nearly all (between 88-94%) respondents indicated that there is good communication within Mana Kidz teams and across the Mana Kidz provider network, and that Mana Kidz leadership keeps them well informed.

In terms external communication, there was a wider range of responses. About half to two thirds agreed with the statements 'information sharing between Mana Kidz and external providers (e.g., SENCO, SWIS) is easy' and communication from 'Ministry of Health' and 'Counties Manukau Health' to Mana Kidz is good. Remaining respondents neither agreed nor disagreed (between 18-31%), or disagreed (between 12-15%).

A similar range of responses was found regarding collaboration. About two thirds agreed with the statements 'we work collaboratively with other Mana Kidz teams' and 'other providers'. Remaining respondents neither agreed nor disagreed (24% and 31% respectively), or disagreed (16% and 10% respectively) with the statements. Meanwhile, information sharing within the Mana Kidz provider network was considered easy to the vast majority of respondents.

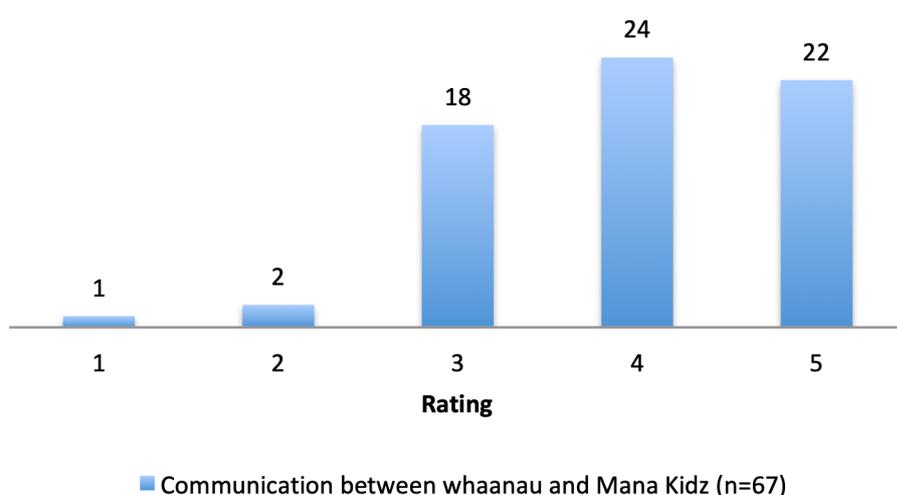
Collaboration between Mana Kidz and schools, whaanau works fairly well. When asked 'on a scale of 1-5, with 1 being 'not very good' and 5 being 'very good', how would you rate collaboration between the school you spend most of your time in, and the Mana Kidz team at that school?', the average rating was 4.2.

Figure 33: Collaboration between schools and Mana Kidz, distribution of ratings



When asked 'on a scale of 1-5, with 1 being 'not very good' and 5 being 'very good', how would you rate collaboration between whaanau and the Mana Kidz team in the school that you spend most of your time in?', the average rating was 4. The distribution of responses is illustrated in Figure 34.

Figure 34: Communication between whaanau and Mana Kidz, distribution of ratings



Qualitative (free-text) feedback indicated that building strong relationships with school staff and management as well as tamariki and whaanau is key for communication and collaboration to function well. In turn, strong relationships support buy-in to the programme from these stakeholders. Strong relationships take time to build, and this is helped by a receptive community.

### Resources

For the most part, respondents felt that Mana Kidz has sufficient resources to address the needs of tamariki and whaanau, particularly in regard to clinical supplies and Mana Kidz printouts, such as forms and communication material (84% and 85% respectively). Although the majority of respondents (65%) felt FTE resources were sufficient, about one fifth felt this was not the case. Overall, nurses who had worked longer in the Mana Kidz programme were less likely to consider resources sufficient, particularly in regards to FTE.

The key issue reported in the qualitative feedback with regard to resourcing was a view that current FTE was insufficient in relation to school roll and needs. Some respondents suggested that needs is a better indicator of hours required than school roll. One respondent said that nurses are stretched, impacting on their wellbeing, and the services and care they provide. Another suggested that an extra nurse who can cover leave across all providers would help take some pressure off.

*I honestly feel over worked. I love this programme and believe that I am making a big big difference in our community but this job can wear me down and I feel some days can get so busy. (Registered Nurse)*

In terms of resources, issues highlighted included: resources taking a long time to arrive; being provided very few printed resources and subsequently having to print themselves, which takes time (consent forms were identified as particularly challenging); not getting sufficient stock levels of resources in one go and often running out; limited resources in regards to skin infections and a need for more user friendly dressings. It was also noted that Ministry of Health no longer provide printed ARF information to go to whaanau, with the medication and that current stock levels are running out. Further, it was noted that Mana Kidz staff supplies stickers and incentives for tamariki themselves, out of their own pockets.

The survey also asked about the value of having nurse prescribers as part of the Mana Kidz team. Fifty respondents (71%) replied to this open-ended question, and the overarching comment was 'very' or 'extremely' valuable. The nurse prescriber role was seen to 'widen the scope' of the service

(as they can prescribe more than nurses under standing orders) and enable timely access to treatment and medication that would otherwise require GP involvement. It was noted that accessing a GP was difficult for many whaanau as they may have to take time off work, there are long waiting times, they may have money owed to the practice, not be able to afford to put petrol in their car, and/or they have many other children in the household, making it difficult to go. It was also noted that having nurse prescribers promotes leadership and allows for further autonomy in nurse-led clinics. Some felt this part of the Mana Kidz workforce should be increased.

### **Equity**

Nearly all (91% or more) respondents to the survey agreed that:

- Mana Kidz is in the schools with the highest needs in the Counties Manukau area
- Mana Kidz is well set up to reach Maaori and Pasifika kids
- Mana Kidz is addressing the right health needs in the Counties Manukau area.

Two respondents wanted to expand the Mana Kidz role to address underlying contributors of poor health both through additional programme offerings (e.g., healthy eating), and through community action (e.g., submissions regarding proposed transport, health, education policies and opposing alcohol outlets). Some responses also alluded to sexual and mental health needing attention, and for asthma to be addressed more systematically.

### **Most and least effective aspects of Mana Kidz**

According to 59 respondents, the '*most effective aspects of Mana Kidz*' were considered to be:

- **Ability for early detection and prevention** of GAS throat, ARF and skin infections in the first instance, but also for early detection and prevention of other health and wellbeing issues (n=14)
- **Being school-based**, enabling easy and timely access to health care - thus breaking down barriers to access (n=13)
- **Providing health related education**, particularly around throat/skin care management (n=8)
- **Targeting those in most need** (Maaori, Pasifika, vulnerable communities) (n=7)
- **Working under standing orders, and having nurse prescribers**; ensuring quick and easy access to medications and enabling treatment to commence immediately (n=7)
- **The focus on reducing ARF** (n=6); and doing so through class screening and swabbing in schools, enabling them to capture many children (n= 3)
- **Cultural concordance** with the communities Mana Kidz is working in (n=3).

According to 46 respondents, '*least effective aspects of Mana Kidz*' included:

- **Insufficient resourcing**, particularly in regards to FTE. This means that some aspects of the role may not be fulfilled (e.g., addressing health care issues other than throat and skin) (n=9)
- **Whaanau engagement**, in terms of communication, language barriers, adherence to medication, lack of understanding/awareness of the programme, reaching non-consented whaanau, parents being busy (n=7)
- **Inadequate skills** in some areas of expanded scope; particularly in terms of asthma and ear and vision assessments but also other aspects such as identifying suicide risk (n=5)
- Some **systems and processes** such as long waiting times for lab results, time needed to complete Mōhio forms for negative throat swabs, direct access to GPs in regards to treating certain conditions such as encopresis and enuresis (n=4)
- The **shared provider model** (i.e., when there are staff from two different providers at one school) and working across schools (n=3)

- The **scope of the programme**, in terms of its reach (i.e., being delivered only in Counties Manukau when there is need elsewhere also), ability to address social needs and integration with other services (e.g., Whaanau Ora) (n=3).
- **Takes away the responsibility of parents** (n=1)
- A further nine respondents expressed the view that there were no 'least effective aspects of Mana Kidz' while three responded N/A and two 'don't know'.

## What opportunities are there to improve or further develop Mana Kidz?

The survey asked, 'if you could change one thing about Mana Kidz, what would it be?' Of 40 respondents, ten indicated they would change nothing. Other responses centred on:

- Aspects of the Mana Kidz model (n=9) such as a desire for:
  - More service integration (e.g., with Whaanau Ora)
  - Access to health promoters for mental health and sexual health
  - Having all schools serviced by a single provider, rather than the mixed provider model currently present in some schools
  - Direct access to some specialists for whaanau (e.g., for mental health), instead of putting them on a DHB waiting list
  - Reducing some current service offerings, such as removing some Public Health Nurse concerns (e.g., encopresis treatment) and undertaking one swab per term instead of two (to enable the team to focus on other health issues)
  - Nurses to work in one school only, so they can dedicate all their time there (e.g., travelling across schools takes up valuable time)
- More FTE and funding (n=8)
- Staff resources, training and support, including (n=8):
  - Further training in regards to skin, ear and vision assessment, child health more generally and whaanau engagement strategies (e.g., strategies for empowering whaanau)
  - More training opportunities during school holidays
  - Improved resources, such as better access to cars, faster internet, quality dressings
  - Increased clinical support from NHC; maybe a 0800 number or app for staff (e.g., for ordering, advice, etc.).
- Consent forms, including (n=4):
  - Being clearer about what Mana Kidz is, and what they do
  - Being able to spend more time with whaanau to build trust and promote the initiative, "rather than whaanau signing a form they haven't read or do not understand"
  - Having one consistent consent form through to year 8
  - Enabling online consent, as some schools are changing to online enrolments (and some children have been missed for consent as a result).
- Pay parity/better pay recognition (n=2)
- No monthly reporting (n=1)
- Extend geographic scope (n=1)
- Better buy in from schools (n=1).

Respondents also offered other ideas, as per quotes below.

*I think that there is a huge amount of general health issues that Mana Kidz is well positioned to help address in our schools, would probably like to see more focus and resource on*

*addressing mental health and behavioural needs that could benefit from health input and assessment. (Registered Nurse)*

*MK could also work collaboratively with other great programs to address for mental health i.e. programs like Te Wa Korero that teaches tamariki and rangatahi to build connections, their identity and building resilience. (Registered Nurse)*

*Resources to easily identify pharmacies or participating stakeholders would be helpful for whanau. This would provide more options and reduce barriers to access these supports available through MK. (Whaanau support worker)*

## Appendix E: School and whaanau surveys conducted by NHC

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The following surveys, conducted by NHC, were analysed to provide additional information to supplement the interviews conducted by the evaluation team. As the surveys were conducted prior to the evaluation, they were not designed to directly address the evaluation questions. Nevertheless they contain relevant information which is summarised as follows.

### School/kura survey 2016

NHC surveyed staff of Mana Kidz schools/kura in 2016. A total of 44 responses were received, from 33 schools/kura (some responded more than once). NHC provided deidentified survey data to the evaluation team. Relevant findings are summarised here.

In general, respondents did not perceive Mana Kidz as being too disruptive to classes, and saw the service as important. “We view this as a valuable service, we manage interruptions”.

Awareness was highest of Mana Kidz services in relation to sore throat assessment and prevention of ARF (10 responses). Awareness of other services, including skin assessment and treatment, immunisation catch up, asthma management support, supporting schools in health education activities, and support with managing other communicable diseases, was much lower (1-2 responses for each).

A substantial majority of responses indicated satisfaction with:

- The professionalism of Mana Kidz staff when working with school staff and children (37 out of 39), with many of the free text comments praising the nurses and whaanau support workers – e.g. “The Mana Kidz team are amazing and have developed a great relationship with our students and the key staff who work closely with them. I could not be happier. Thank you for the service”;
- The level of partnership between the Mana Kidz team and their school (36 out of 38);
- The level of communication between the Mana Kidz team and the school (30 out of 36);
- The Mana Kidz service in their school/kura overall (36 out of 37 answered ‘excellent service’ or ‘great service’).

Satisfaction was more mixed with regard to the level of communication about the wider programme. Of 36 responses, 18 were ‘satisfied’, 9 were ‘sometimes satisfied’, 2 were ‘hardly ever satisfied’, and 7 answered ‘other’ – with comments generally calling for more communication about the wider programme, e.g. monthly reports or a once-per-term sit-down meeting.

All responses indicated that Mana Kidz was seen to be having a positive impact on health of children: Of 36 responses, 34 saw ‘very positive impact’ and 2 saw ‘some impact’. Specific impacts mentioned included the following themes:

- Early intervention and addressing health issues – e.g. “A large number of children are receiving the treatment they need”; “Near on perfect throat screening for rheumatic fever, and all those with strep throat are caught very early on”;
- Improved understanding of health – e.g. “Children have a better understanding of how to care for themselves when they get injuries and scrapes”; “Tamariki are self-identifying when they need to see the nurse which is putting them in charge of their health and needs”;

- Increased confidence in primary care – e.g. “[Children’s] perception of going to see the nurse has changed... they are more self-managing when wanting to see the nurse”; “Mana Kidz have built positive relationships with students and parents/caregivers”;
- Improved health and wellbeing – e.g. “Huge improvement in general health and skin”; “Less illness”.

Suggestions for improvement included:

- More communications and information about what Mana Kidz staff do and don’t do
- Contact details and list of services available for students and whaanau
- More communication with school Principals and staff on commencement of the service in a new school/kura, so that procedures are mutually understood and agreed.

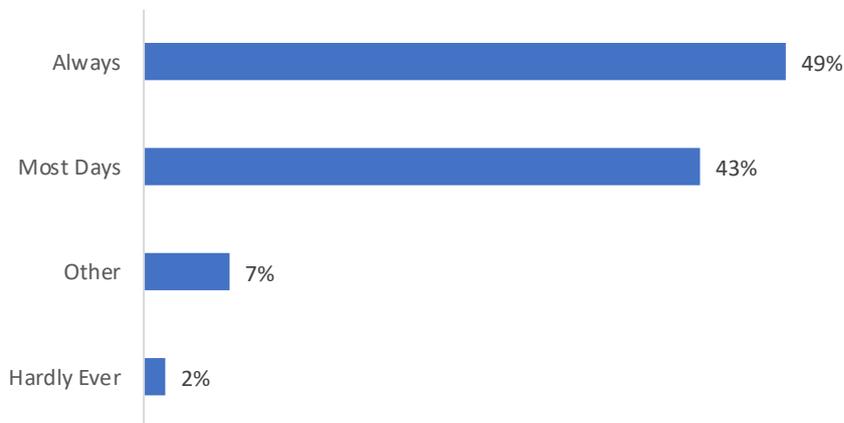
Respondents were emphatic that the service needs to continue – e.g. “Now that this is in schools it needs to be maintained and strengthened”; “Do not take it away!”

## School/kura survey 2020

Mana Kidz school/kura staff were surveyed again in 2020. A total of 68 responses were received from 48 schools, covering all providers. Results have previously been reported by NHC (Mana Kidz, 2020).<sup>46</sup> NHC provided their report and deidentified survey data to the evaluation team. Relevant findings are summarised here.

Responses indicated that children have good access to services in the Mana Kidz clinics, with 92% indicating children have access always (49%) or most days (43%) (Figure 35).

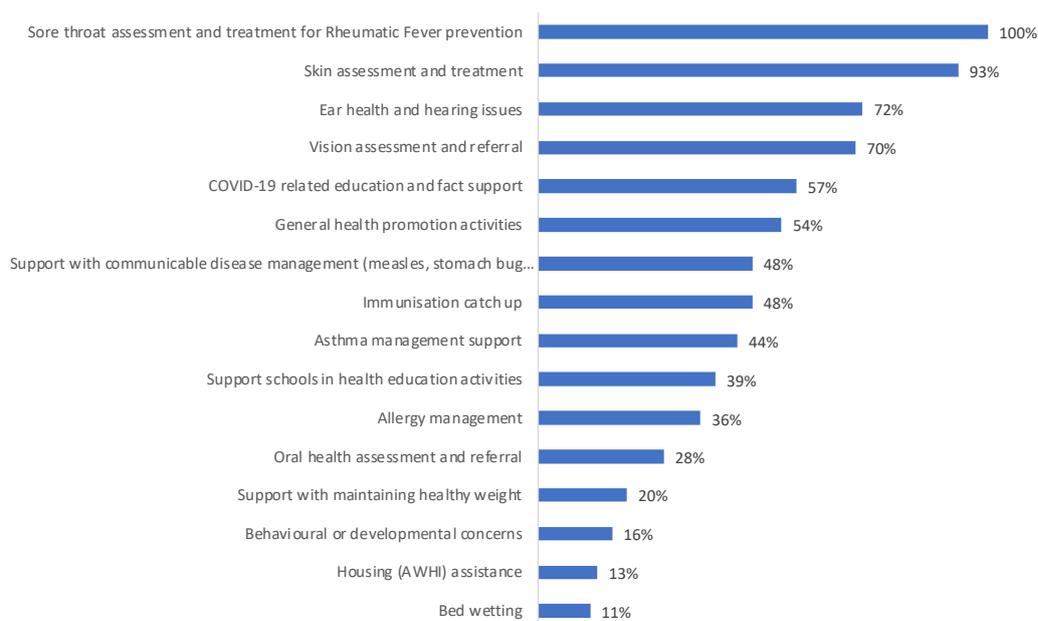
Figure 35: Are children able to access health services in the Mana Kidz clinic when they need to?



Respondents were generally aware that Mana Kidz provided sore throat assessment and treatment for ARF prevention, and skin assessment and treatment. Awareness of other services was more variable, as summarised in Figure 36.

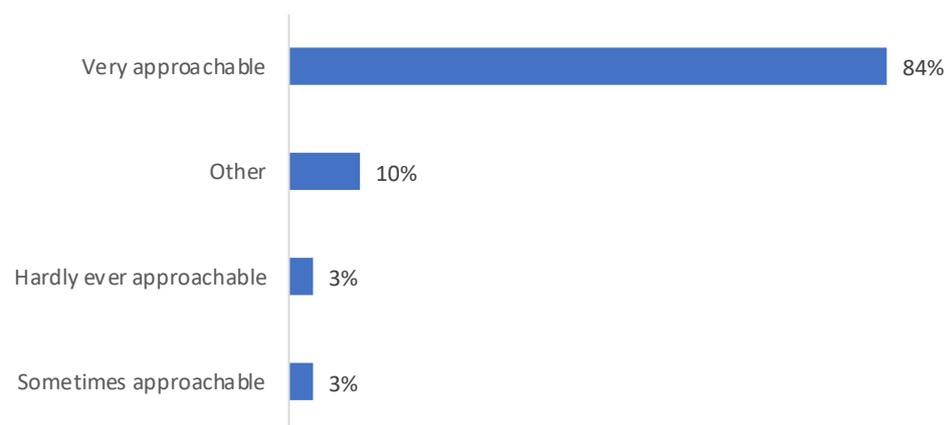
<sup>46</sup> Mana Kidz (2020). *Results from the School Survey 2020*. Powered by the National Hauora Coalition.

Figure 36: Mana Kidz provides the following services; please select all that you are aware of in your school



The Mana Kidz health team was generally seen as very approachable (Figure 37).

Figure 37: How approachable would you rate the Mana Kidz health team when working with school staff and children?



Respondents also rated highly the level of partnership between the Mana Kidz health team and the school (Figure 38), and level of communication between the Mana Kidz health team and the school (Figure 39).

Figure 38: Do you feel there is a good level of partnership between the Mana Kidz health team and your school?

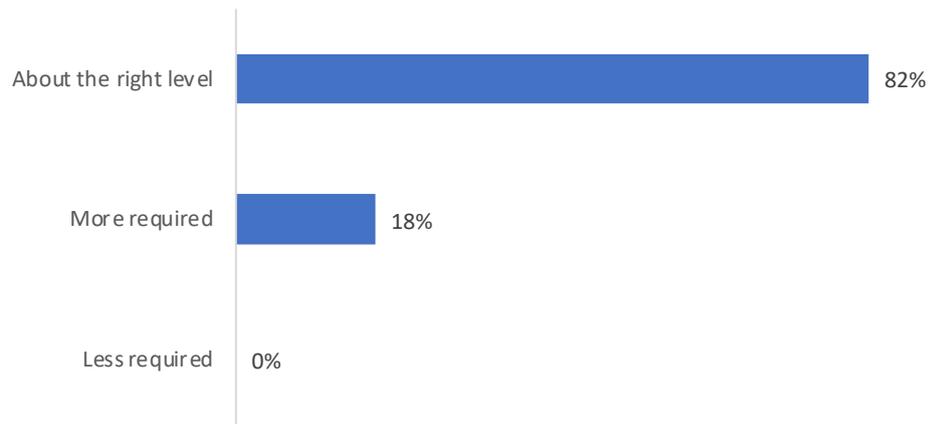
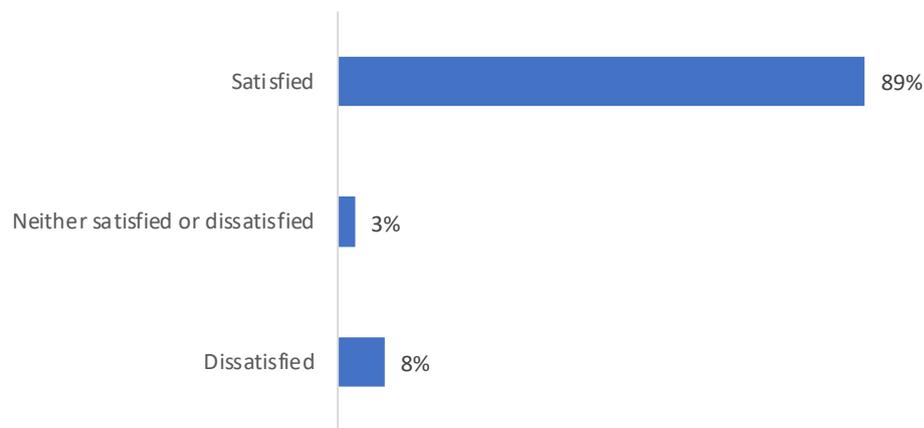
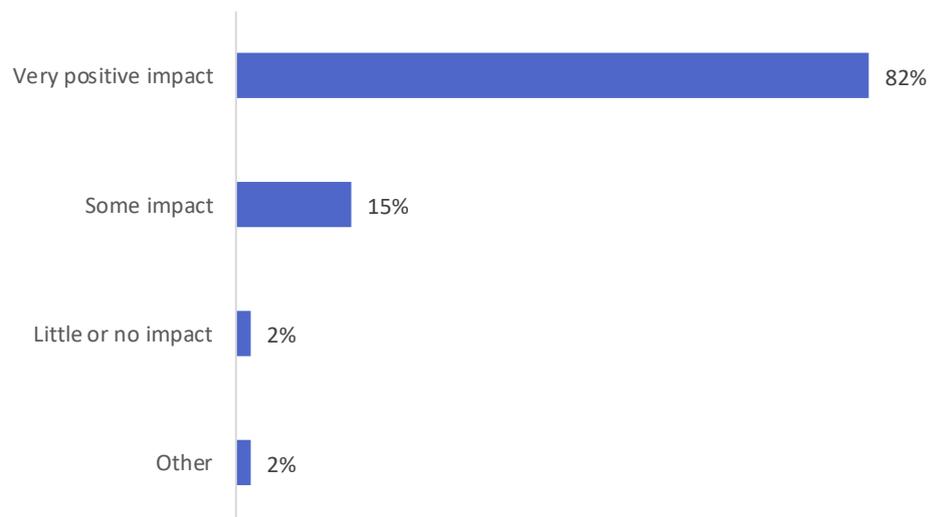


Figure 39: Are you satisfied with the level of communication between your Mana Kidz health team and your school?



Nearly all respondents rated the programme has having a very positive impact (82%) or some impact (15%) on the health of children and whaanau (Figure 40).

Figure 40: Do you feel that Mana Kidz is having a positive impact on the health of children and whaanau in your school?



### **Minimising disruption from class checks**

It is known that class checking has potential to lead to disruption in the classroom. The survey asked school staff: "In order to provide services we appreciate there may be some disruption to the classroom. Do you have any suggestions on how to minimise this disruption?"

Free-text responses indicated that disruptions are often seen as minimal, well tolerated and worthwhile. For example:

*Our nurse has done a fantastic job in ensuring minimal disruption to tamariki.*

*We believe our students' health is equally as important as their learning so we don't have a problem with this.*

*We have a system that is working well.*

*We are happy with our current process.*

Another key theme was that communication with schools is key to minimising this disruption. This was working better in some schools than in others. For example:

*The nurses are efficient and let teachers know in advance of any screening to be done.*

*No disruptions as we allow notice to teachers before the nurses go around to the classrooms.*

*Knowing when class checks are going to happen is helpful (having a schedule).*

*We request our team to give us at least 48 hours notice via email for class checks so our teachers can plan for this. This often doesn't happen however, which makes it difficult for our teachers. Daily checks are fine as our staff know our mana nurses and the disruption of students taken out is generally minimised by the staff being respectful of each other and the students knowing the nursing staff.*

A few respondents noted that there were not set times for class checks and they would prefer to have them on a regular schedule so that they occur at the same time each week.

Other suggestions to improve communication between the Mana Kidz team and school staff included:

- Regular meetings and information sharing (e.g., attend a whole-staff meeting once per term) regarding current trends in health in the community and any student issues all staff should be aware of
- Regular email updates/reports to relevant staff regarding actions taken/needed for individual students (e.g. maintain and circulate a spreadsheet weekly).

### **Most useful aspects of Mana Kidz**

Free-text responses indicated that these school staff thought the most useful aspects of Mana Kidz included:

- Regular checks of students' health (throat swabs and skin checks were predominantly mentioned, but there were also isolated mentions of head lice, weight checks and first aid support)

- The flexibility and availability of the Mana Kidz health team to be contacted any time – e.g. “checks in on students when we are concerned”, “always available to see any child instantly”, “treat our kids when they would not get this at home”
- Being located in the school and available for face to face consultation and referrals
- The friendly, approachable, communicative, reliable, culturally sensitive and aware nature of the Mana Kidz team – e.g. “If we have any concerns, they are very helpful”
- Administering medication at schools, reminding tamariki and parents about medication
- Health promotion and education for whaanau
- Conducting home visits
- “Stays connected with us, our school and community”.

### *Response of the health team during COVID-19 lockdowns*

Respondents were asked, “How did you find the response of the health team during COVID-19 lockdowns?”

Free-text responses indicated that nearly all respondents were satisfied with the health team’s response during this period, though many said they didn’t know very much about exactly what the health team did during lockdowns.

Examples of positive responses included:

*Really good. Still available but responsive to our on-site protocols. Communicated with us well so we knew what their protocols and priorities were too.*

*They were able to provide some guidance during the pandemic and information about the virus.*

*Our team are very good communicators and were readily available during the lockdowns in a timely manner.*

*Regular information via email was appreciated. This was passed on to families.*

*Outstanding our families really appreciated the phone calls from the school's Mana Kidz nurse and we really valued their professionalism.*

*Absolutely wonderful.*

*Extremely helpful and supportive.*

A few respondents were less-satisfied and gave the following feedback, which in the context of the pandemic response may largely reflect the wider challenges affecting the health and education systems rather than a shortcoming of the Mana Kidz health teams per se:

*I have no idea what the team did during lockdowns. I do know that as we returned to school there was NO communication till we returned to Level 2 and then at the last minute we were provided with a set of unrealistic procedures that did not adhere to child safety guidelines.*

*Very minimal, would have appreciated more help, guidance and support from our Mana health team.*

*Sent students home who came back to school unwell – understandable but made it harder to get children back to school.*

*A little confusing.*

*Not present at school.*

#### **DHB deployment of school-based health teams in response to COVID-19**

Respondents were asked, “Do you have any feedback about the DHB deployment of some of the school-based health teams in response to COVID-19?”

Free-text responses indicated that most respondents were unsure how the teams had been deployed, or did not have any specific feedback. More substantive responses indicated that staff understood the priority and importance of deploying staff to assist with the pandemic response.

*I think everyone did what they needed to do for the betterment of NZ so I trusted what DHB were doing.*

*This was not an ideal situation but in the short term we had access to people on-call in urgent situations.*

*We understand that it is a priority and appreciate the work the team do.*

*It is good to see the Team New Zealand response of everyone responding where they could to manage this worldwide crisis.*

#### **Opportunities**

The survey asked, “Is there anything else you would like to see from your Mana Kidz health team?”

Around half of the responses were simply “no” or “not really” or “thank you”.

Suggestions for improvements included:

#### **Integrating Mana Kidz into the school**

*We would like to work in partnership with our Mana Kidz team.*

*More interaction with staff.*

*A scheduled time to meet.*

*Just attend our Pastoral Meeting with short sharp feedback.*

*Communication. Accurate data for the Board. Relationships developing with whaanau and high needs students.*

#### **Service continuity**

*Full-time hours 9am to 3pm every day, support us to create a community clinic for our children and their whaanau.*

*More time actually on school grounds.*

*In an ideal world we would keep the same staff but understand that this is not always possible.*

*We find it hard when our team changes constantly. It is hard to make them feel like part of our family when they keep changing.*

*Reliable, regular attendance by the same team.*

### **Additional services**

*Provide education services, e.g., talking to girls about puberty and hygiene.*

*Working more with obese students.*

### **Concerns about privacy and safety**

*Not having antibiotics sent home in children's school bags.*

*A greater level of care in confidentiality around whaanau information, and students' health needs/issues. Revision around the Privacy Act.*

*Some team members we have found unprofessional.*

## **Whaanau survey 2019**

A survey of whaanau conducted by NHC, open from the end of 2018 to the end of Term 1, 2019, received 110 responses from whaanau in 30 schools. Aside from the school the child attended, other details (such as age and ethnicity of children) were not captured.

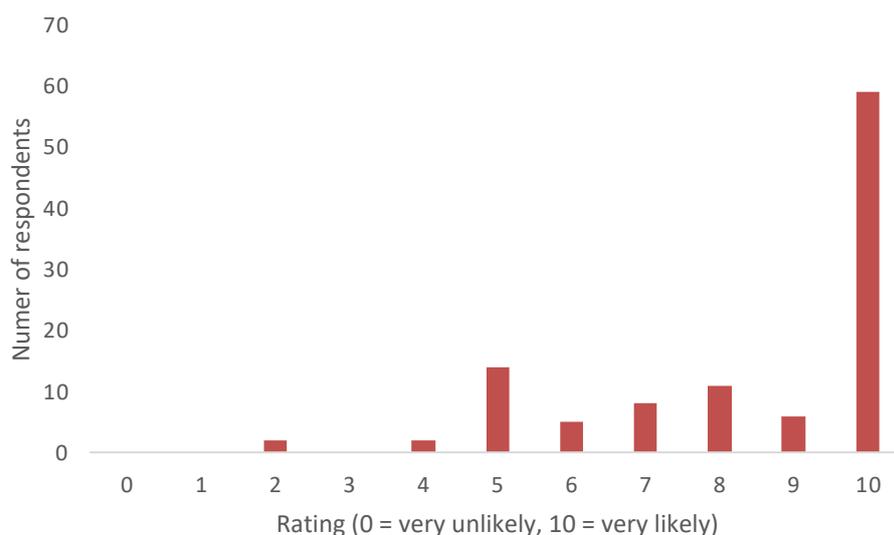
Most respondents were aware that if their child was sick they could be seen by the school nurse (96/110) and indicated that if they were worried about their child's health, they would be 'likely' or 'very likely' to have them seen by the school nurse (84/110).

Most respondents were aware that the Mana Kidz team were available to help with sore throats (84/110). Awareness that they could help with other conditions was lower, ranging from night-time bed wetting (7/110) and long-term conditions (17/110) to head lice (59/110) and skin infections (65/110).

Of the respondents who had interacted with the Mana Kidz service (89/110), the vast majority were either 'satisfied' or 'very satisfied' with the health service (81/89).

Most respondents would recommend Mana Kidz to a friend or colleague (Figure 41).

Figure 41: Whaanau survey (N=107): How likely is it that you would recommend Mana Kidz to a friend or colleague?



Free-text feedback was predominantly positive and included comments like “thank you” and “keep up the good work”. Issues and opportunities for improvement included the following:

#### **Increasing whaanau awareness of Mana Kidz**

*Communication from school to parents, newsletter. A letter to parents on a regular basis as a reminder to parents.*

*I had little or no idea about the service so was a bit thrown off when I got a phone call about my son, so more education and promotion.*

*Just knowing the school has nurses. I’m sure a lot of our parents don’t know.*

*Have more awareness of what assessments and screening the school nurse can do.*

*To put the word out more. Inform the parents that the school nurse is there to help.*

*Maybe advertise on Facebook or website. Text or email parents.*

*Awareness of the school nurses themselves and qualifications so I am familiar enough with them that I could trust my child being tended to by them.*

*What warrants being seen by a school nurse, just general sickness that we are 50/50 on going to the doctors for, or any concerns, medical or sores, etc?*

*Is there a consent to the process? I would let my child be seen by the school nurse.*

#### **Winning the trust of children**

*The ability to win the trust of children and encourage them to talk about their problems.*

*Try to give them free toothbrush or free water bottle, something that attracts their interest in what nurses are trying to do for their health.*

#### **Enhancing the service**

*Need to increase the number of nurses like two nurses in every school.*

*Try to add healthy program in school as part of school subject.*

#### **Connecting/communicating with families**

*Our school nurse does not seem to connect very well with families. She speaks very fast which also which is hard for second language learners to grasp what she is saying. Other than that she is very thorough.*

*To let us know whether the GAS was captured in a regular school check or whether my child self-presented to the clinic for a sore throat. This helps us parents be more aware to get our kids screened if they tend not to say they have sore throats because they are scared of having throat swabs and therefore the only time they are screened is when there are classroom checks.*

*Improvements where no accusations and allegations are blown out of proportion over poor health of a child, even though parents are doing the best they can. The struggle is real for many families in Aotearoa.*

### **Concerns about privacy and safety**

*There have been instances where the school nurse has stripped my child down and examined their body on complaining of nausea and cough. I feel that only a doctor should be qualified to do this and therefore take my children from now on straight to the doctor if any problems should arise at school.*

*Please listen because I had talked to one and told them no Amoxicillin and I got Amoxicillin.*

## Appendix F: Level of resourcing

Mana Kidz is funded through a combination of Ministry of Health and CM Health baseline funding. Table 8 summarises the financial resources allocated to Mana Kidz over the past four years. Direct MOH and CM Health funding allocated to Mana Kidz totalled \$5.05m per year for 2018/19 and 2019/20, increasing to \$5.14m per year for 2020/21 and 2021/22.

Table 8: Four-year direct funding sources for the Mana Kidz programme

Funding year	MOH	CM Health	Total
2021/22	2,000,356	3,140,110	5,140,466
2020/21	2,000,356	3,140,110	5,140,466
2019/20	2,000,356	3,048,650	5,049,006
2018/19	2,000,356	3,048,650	5,049,006

Source: CM Health

In addition to direct funding, CM Health contributed staff from Kidz First in kind. In 2019 this included 10.6 FTE nurses and 6.8 whaanau support workers, at a cost of \$1,535,600. These staff were redeployed during 2020 with Covid-19 lockdowns, and were officially backfilled by NHC from 1 March 2021 via a new contract. At the time of this evaluation, decisions were awaited about whether the backfill agreement would end on 1 July 2022 or 1 January 2023.

Mana Kidz also utilised publicly funded health services for laboratory tests (estimated by CM Health at \$1m per annum prior to the Covid-19 pandemic but varying depending on the level of swabbing activity) and medicines (funded through the normal process for prescribing funded medication to children).<sup>47</sup>

Additional to these resources are in-kind contributions including un-funded time and resources contributed by providers and NHC, and the time and expertise of CM Health staff, in particular the Public Health Physician and Project Manager. These could not be reliably quantified based on available data.

### Resourcing has been a challenge for Mana Kidz from the outset

As detailed in the previous evaluation (King et al., 2014), the initial investment in Mana Kidz was lower than required to implement the service model developed during the pilot programme at Wiri Central School. This shortfall was known prior to commencement of the programme and there was an explicit expectation that providers would need to contribute resources. It was agreed that the impact of the programme would be evaluated to determine whether a higher level of investment was appropriate. The ALG considered all options for best use of available funding to ensure greatest coverage, in light of the evidence and 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, and that system efficiencies should be developed to support this.

Because of funding constraints, the nurse and whaanau support worker FTE were considerably less than the Wiri Pilot, relative to the number of consented children. The Mana Kidz programme had a wider scope of responsibilities, a lower staffing ratio and at some times, higher than expected

<sup>47</sup> Based on Mana Kidz data and Pharmac schedule prices, the cost of antibiotics for sore throats totalled around \$70,000 over the past four years.

incidence of GAS throats. This placed significant pressure on providers, to the extent that some considered withdrawing from the programme. In response to the concerns, ALG implemented changes including a quality improvement process to improve workflows and clinic practices. In early 2013, ALG sought support from the Counties Manukau Executive Leadership Team (ELT) to increase the investment in the programme to increase staffing ratios.

## **Funding over the last four years has not kept pace with inflation, roll growth or increased scope of Mana Kidz**

Funding for Mana Kidz has stayed fairly constant for the last four years (aside from a 1.8% increase from 2020/21), without adjustment for inflation, population growth or changes in scope of services. In contrast, during this time, inflation has increased by 13% (CPI) to 15% (wages),<sup>48</sup> and school rolls have increased, along with whaanau needs and challenges. Meanwhile, Mana Kidz has expanded its scope to try and meet a wider range of needs. NHC and providers are reportedly absorbing a lot of the pressure and funding shortfalls arising from these developments. This is unsustainable.

To substantiate this claim, at the request of the evaluation team, NHC consulted internally and with six providers to ask what they do in addition to contracted activities. Of note:

- FTE covered in the contract for the Mana Kidz workforce does not account for staff members being on annual, sick or study leave. Temp agency staff can't step in as Mana Kidz has specialised training and sign-off is needed before a new staff member can start in the programme.
- As the programme scope has intensified and school rolls have increased, NHC nurses have stepped in to help meet the "majorly underestimated" workload including class checks, self-IDs, treatment, referrals, follow up, education, helping with immunisations, home visits, transportation, and advice outside of the Mana Kidz programme.
- The NHC contract includes 1.0 FTE Nurse, 1.0 FTE Project Manager, 0.2 FTE GP Liaison and Clinical Director. However, it takes an additional 2.0 FTE nurses, 0.5 FTE Administrator, and 1.0 FTE Programme Lead to maintain the programme (and this doesn't include the additional workload associated with the Covid-19 response).
- There is limited resource for workforce training and development. NHC found additional funding to try and help the workforce to be trained and equipped in areas like mental health, and nasal pharyngeal swabbing for whaanau support workers.
- The 0800 number roster impacts on NHC nurses through provision of follow up, advice, support, and contacting whaanau. Some of this work is not Mana Kidz related but whaanau needing advice or direction. These are logged on the Kordia phone system.

Additionally, the following tasks were identified by NHC and providers as additional work not covered by contracted funding:

- Application for sponsorship to meet whaanau basic needs (e.g., hygiene packs, supermarket vouchers, toothbrushes and toothpaste) or small incentives for tamariki to take ten-day courses of antibiotics (e.g., certificates, stickers)
- Committee and other ARF-related work – e.g., ARF case review, presentations, review of ARF research-related applications, showing researchers or others interested in how the Mana Kidz programme works, meetings and liaising with others who want to set up similar components of programmes elsewhere (e.g., Social Wellbeing Board Prototype involved significant time from the Leader Service Delivery, Mana Kidz Team Lead and a Mana Kidz nurse)

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<sup>48</sup> RBNZ Inflation Calculator: <https://www.rbnz.govt.nz/monetary-policy/inflation-calculator>

- Weekend checking of lab results if they are due back and treatment is needed
- Weekend delivery of medication and treatment to whaanau at home to ensure medication adherence
- Translation (written and oral)
- Attendance at whaanau hui (after hours) – Kura
- Home treatments (scabies, headlice, skin infections) and follow up treatments
- Home visits often occur after hours, with “more home visiting required each term”
- Additional reporting and writing up – e.g., where ALG request information or want to know more detail (this can include additional meetings with schools and/or providers) or guests associated with ALG, CM Health, or MOH request more information
- Working/training/supporting secondary school health teams in the same area who are not as well-equipped or experienced
- Transporting tamariki/whaanau to specialist or primary care appointments
- Face to face attendance, support and advocacy with whaanau at primary care appointments
- GP education and encouragement – e.g., for GP clinics to swab Maaori and Pasifika tamariki who have sore throat or throat redness (etc) at appointments
- Ongoing tracking of vulnerable whaanau who have moved house, changed phone number or school to ensure they are followed up at their new clinic or school (this is common and takes considerable time)
- Increasing social issues and needs such as: household overcrowding; unhealthy houses; inability of whaanau to afford medication, transport, doctor visits, and healthy food; mental health issues including increased risk of suicide, anxiety, and violence
- Increased need to provide health promotion and education including ARF (after the cessation of media campaigns), Covid-19, and vaccination.

The volume of additional work can at times disrupt core business and draws on already limited resources. Staff often work extra hours to make up the time. As a result, there is a high risk of staff burnout. Nurses and whaanau support workers often said they are exhausted due to the growing scope, expectations and needs with no corresponding increase in resource. Covid-19 has exacerbated these issues.

Each of the nine nurses consulted by NHC estimated that for them individually, extra time associated with these tasks ranged between 3 to 6 additional hours each week. NHC estimated an FTE gap of at least 1.0 FTE in each Level 1 school, and 3.0 FTE at NHC.

In the survey of nurses and whaanau support workers (Appendix D), respondents indicated that health promotion and education is a key area that they would like more time and resource allocated to. In particular, they felt under-resourced in terms of FTE to undertake health promotion and education and that they lacked sufficient training to provide education and support for some emerging needs such as mental health and behavioural needs.

# Appendix G: Analysis of hospitalisation data conducted by CM Health

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## Hospitalisation Output to Inform Mana Kidz Evaluation

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*Counties Manukau Health (District Health Board) Population Health Team*

*May 2022*

### Background

Data describing hospital admissions in children living in Counties Manukau Health (CM Health) was identified as an important element of the Mana Kidz evaluation. The intention was to describe the pattern of hospitalisations seen in children engaged in the Mana Kidz school-based programme to identify conditions that may be amenable to further intervention through the programme and help identify priorities for future programme development. In addition, there was particular interest in reviewing the pattern of hospitalisations for skin infections, acute rheumatic fever (ARF) and Rheumatic Heart disease (RHD), to understand trends in admissions for these conditions in recent years.

Importantly, the descriptive outputs presented here cannot be used to draw conclusions about the impact of the Mana Kidz programme – this would have required a different methodological and statistical approach, such as pre and post implementation multivariate analysis, with a control group to account for confounders, and time series analysis.

Mana Kidz is a free, nurse-led, school-based programme that provides comprehensive healthcare for children in the CM Health district. The programme is led by the National Hauora Coalition (NHC) in partnership with CM Health and is supported by local providers: Kidz First, Tāmaki Health Care, Pasefika Family Health Group, Turuki Health Care, Te Hononga O Tāmaki Me Hoturoa, South Seas, Tongan Health Society and Kootuitui/Papakura Marae.

Starting in July 2012, Mana Kidz clinics were rolled out over 2012 and 2013 to primary and intermediate schools in the Ōtara, Māngere, Manurewa, Franklin and Papakura communities. 59 school clinics had a registered nurse and whaanau support worker (WSW) working in the school who provided healthcare daily, including rheumatic fever prevention services, skin infection treatment and management, and health assessments. All of these schools receive what is now referred to as a “Level 1 service” – an intensive programme with daily nurse and WSW presence, and sore throat case finding for all students twice a term.

In 2017, following a business case process, the funding for Mana Kidz was increased to enable the programme to be extended to all remaining decile 1-3 schools in the district – a total of 88 schools with approximately 34,000 children attending these schools. However, the level of service available in the additional schools is considerably less than the resource in the Level 1 schools and these schools receive what is referred to as a “Level 2 service” - a less intensive programme with eight hours of nursing time per week and no regular sore throat case finding.

In the analysis below, hospitalisations to CM Health facilities are presented for children attending Mana Kidz schools and non-Mana Kidz schools. Critically, these two cohorts are fundamentally different and cannot be compared to draw conclusions about the effectiveness or otherwise of the Mana Kidz programme. As described above, the Mana Kidz programme is delivered in selected schools, where children are at the highest risk of being impacted by rheumatic fever. Rheumatic fever is strongly associated with socio-economic deprivation which, in turn, is a significant determinant of other health, wellbeing and life course outcomes.

Children attending Mana Kidz schools are those children living in the most socio-economically deprived areas in the CM Health rohe and, as such, are at much higher risk of health events requiring hospitalisation than children living in more affluent areas. In addition, Pasifika and Maaori children are over-represented in low decile areas in CM Health and the impact of colonisation and systematic racism compound the effect of socio-economic deprivation on early childhood experiences, whaanau circumstances and lifecourse outcomes.

Therefore, we expect to see higher admission rates for children attending Mana Kidz schools than those attending non-Mana Kidz schools, as health care offered through the school-based programme is not expected to completely ameliorate the impacts of racism, inequities, and socio-economic deprivation. In addition, having health professionals in the school setting provides the opportunity to identify unmet need and may increase hospitalisations through better access to care.

Accurately identifying cases of ARF and RHD from hospitalisation data is problematic. ARF can be a challenging disease to diagnose as there is not a simple diagnostic test, with the diagnosis instead relying on the person meeting a number of diagnostic criteria, sometimes with repeated admissions required before the diagnosis is confirmed or excluded. If a person is admitted and investigated for ARF but turns out not to have ARF, the admission is still coded as ARF.

It has been recognised in Aotearoa NZ that hospital coding over-estimates ARF with one study finding 33% of cases coded in hospitalisation data as ARF were not ARF when reviewed.<sup>49</sup> In addition, ESR undertook a number of audits of ARF hospitalisation data, when ARF rates were a Better Public Service (BPS) Target, and found that hospitalisation data consistently over-estimated the numbers of ARF in CM Health when audited against Episurv notifications and clinically reviewed cases. Similarly, coding for RHD, particularly in older age groups, is unreliable with RHD diagnostic codes capturing non-RHD valve disease.

In the Auckland region, Episurv surveillance data, entered by the Auckland Regional Public Health Service (ARPHS), is considered to be the most accurate source for ARF incidence data. In this Episurv dataset, people are notified once as a result of a diagnosis of ARF. The dataset also captures recurrences of ARF but these are not reported in the incidence data. Considerable efforts have been made to ensure this surveillance data is accurate as it was recognised that accurate incidence data was critical for understanding the impact of the investment into the national Rheumatic Fever Primary Prevention Programme, which started in 2012.

Currently all notified ARF cases are reviewed by the ARPHS to ensure they meet the epidemiological definitions of possible, probable and confirmed ARF. In addition, ARF-coded hospital discharge data from Health intelligence and Informatics is reconciled with ARPHS notifications every month and ARPHS personnel attend regular CM Health case review meetings where all inpatient cases are discussed. Additional cases that have not be identified on discharge coding or through the notification process are occasionally identified.

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<sup>49</sup> Moxon TA, Reed P, Jelleyman T, Anderson P, Leversha A, Jackson C, Lennon D. Is a rheumatic fever register the best surveillance tool to evaluate rheumatic fever control in the Auckland region? *NZ Med J.* 2017 Aug 11;130(1460):48-62. PMID: 28796771

The analysis below uses coded hospitalisation data to identify admissions of ARF, despite the concerns regarding the accuracy of the coding, because of the desire to look at all causes of hospitalisations for children attending Mana Kidz and non-Mana Kidz schools. Recommendations at the end of this paper explore potential future data analysis using the NMDS, Episurv and Mōhio datasets to provide a more complete view of the incidence of hospitalisations, including ARF, for children living in CM Health.

## Methods

The following outputs are based on hospitalisation data to CM Health facilities from 01 September 2015 to 30 September 2021. For time trend analyses, outputs were limited to complete calendar years, namely 2016 to 2020. Primary diagnosis codes were used for all outputs related to diagnosis ('all-cause', (ARF) and skin infections). The ICD code sets used to define the primary diagnosis categories used in this analysis are outlined in **Appendix G-1**.

Data were extracted by the CM Health, Health Intelligence and Informatics Team. The definition of 'hospitalisation' follows the Ministry of Health convention to include any presentation lasting three or more hours. Importantly, this dataset excludes children domiciled (resident) in Counties Manukau who were admitted to non-CMDHB facilities. **An internal CM Health review of NMDS data demonstrated that an average of 33% of CM Health domiciled children aged 0-14 years were admitted to other DHBs over the years of 2014/15 to 2020/21**, in particular, Auckland District Health Board / Starship Children's Hospital (31%).

The reason to pursue this analysis, despite this limitation, was because this hospitalisation data extract was NHI-linked to the National Hauora Coalition (NHC)-held Mōhio (Mana Kidz) dataset, through Healthsafe, a secure data-linkage platform administered by CM Health. This enables us to differentiate children who have been admitted to CM Health facilities and have been engaged with Mana Kidz at any point vs those who were not. This linkage was undertaken in line with data agreement parameters specified with Healthsafe's data stewards' group.

To minimise numerator : denominator mismatch, hospitalisation outputs were restricted to Counties Manukau-domiciled children. Children admitted to CM Health facilities who usually live outside Counties Manukau were excluded from the analysis. This is based on the assumption that most children attending Mana Kidz schools will be residents of Counties Manukau. This may exclude a small number of children who reside outside Counties Manukau or have an NHI-linked address indicating they live outside Counties Manukau) who in fact attend a school in the Counties Manukau area.

## Results and Interpretation

The below results need to be interpreted in the context of the Counties Manukau child population. Counties Manukau has a young, growing and ethnically diverse population with 22% of the population aged < 15 years. **Of the estimated 132,430 children aged 0-14 years living in CM Health 24% are Maaori, 29% Pacific, 27% Asian and 21% Other/European**<sup>50</sup>. An estimated 72,000 are children aged 5-12 years. Approximately 45 per cent of these children live in areas of high socioeconomic deprivation. While there are other DHBs with a similar proportion of their child population living in areas of high deprivation, the actual numbers of children are comparatively small (for example, Northland and Tairāwhiti). Other DHBs with similar numbers of children as CM Health do not have the same cultural diversity or the same proportion of children living in low

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<sup>50</sup>2020 Statistics New Zealand Projections. 2020 Update uses Census 2018 as the base year for projections. Note due to rounding adds up to more than 100%.

socioeconomic areas (for example, Waitemataa). **A quarter (24%) of children in Aotearoa living in the most socioeconomically deprived areas, live in CM Health – more than twice the number of the next highest DHB (Waikato).**

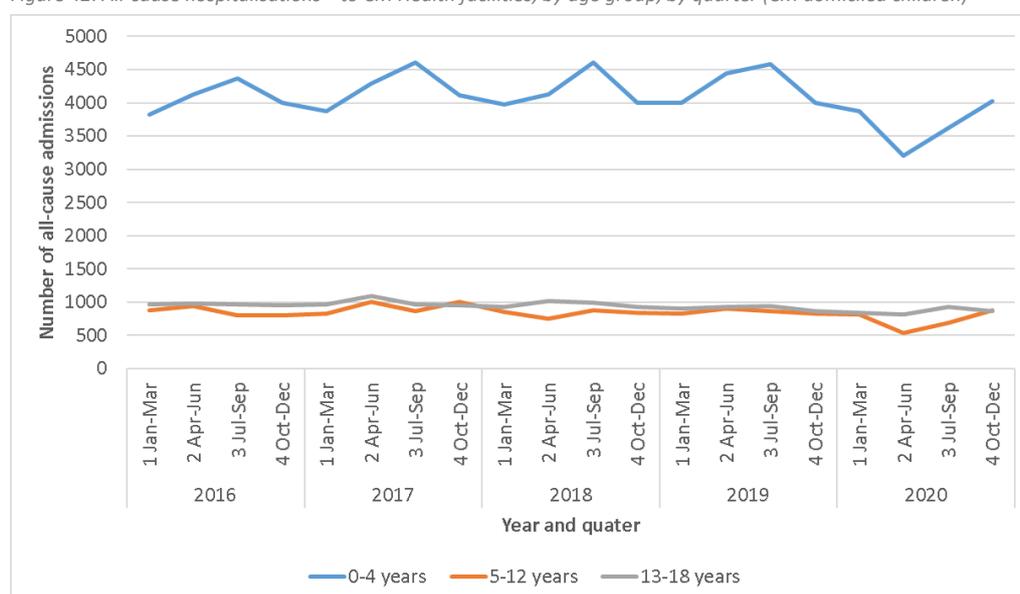
#### *All-cause hospitalisation patterns for Counties Manukau tamariki/rangatahi*

From 01 September 2015 to 30 September 2021, there were 142,627 ‘all-cause’ admissions to CM Health facilities<sup>51</sup> involving 79,100 ‘unique’ Counties Manukau (CM) children<sup>52</sup> aged 0-18 years . The majority of these admissions (70%; 99,781) were in children aged 0-4 years, with 14% (20,026) in children aged 5-12 years and 16% (22,820) in tamariki/rangatahi aged 13-18 years (Table 9 and Figure 42). The age group of ‘unique’ children was determined by age at each child’s first admission. This means that there is a skewing towards the 0-4 year age group for ‘unique’ child outputs (vs count of hospitalisations) as if these children were then admitted when they were older e.g. in the 5-12 year old cohort, they were excluded and only counted in the 0-4 year cohort event.

Table 9: ‘All cause’<sup>53</sup> admissions to CM Health facilities by age group (CM domiciled children)

Child age on admission	Frequency of admissions	Percent	No. of ‘unique’ children	Percent
<b>0-4</b>	99,781	70.0	53,245	67.3
<b>5-12</b>	20,026	14.0	13,096	16.6
<b>13-18</b>	22,820	16.0	12,759	16.1
<b>Total</b>	<b>142,627</b>	<b>100</b>	<b>79,100</b>	<b>100</b>

Figure 42: All-cause hospitalisations<sup>54</sup> to CM Health facilities, by age group, by quarter (CM domiciled children)



Numerator: CM Health facility admissions 2016-2020 calendar years for CM domiciled children.<sup>55</sup>

<sup>51</sup>This underestimates the true number of admissions for CM domiciled children as around 33% of admissions for CM domiciled children were to other DHBs, in particular Auckland DHB.

<sup>52</sup> NHI-linked home address in CM Health area

<sup>53</sup> Including ‘null’ diagnostic codes

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<sup>55</sup> This underestimates the true number of admissions for CM domiciled children as around 33% of admissions for CM domiciled children were to other DHBs, in particular Auckland DHB / Starship.

Of the 79,100 'unique' CM children aged 0-18 years, 42,519 (53.8%) had one admission to a CM Health facility between 01 September 2015 to 30 September 2021, 23,306 (29.5%) had two admissions, and 13,275 (16.9%) had three or more admissions (Table 10).

Table 10: Number of children 0-18 years with repeat admissions to CM Health facilities

No. admissions	No. Children	Percent
1	42,519	53.8
2	23,306	29.5
3	7,510	9.5
4	2,968	3.8
5	1,251	1.6
6 or more	1,546	2.0
<b>Total</b>	<b>79,100</b>	<b>100</b>

Over this same period, Pasifika children and young people had the highest rate of all-cause hospitalisation (577/1000), followed by Maaori tamariki/rangatahi (483/1000) (Table 11 and Figure 43).

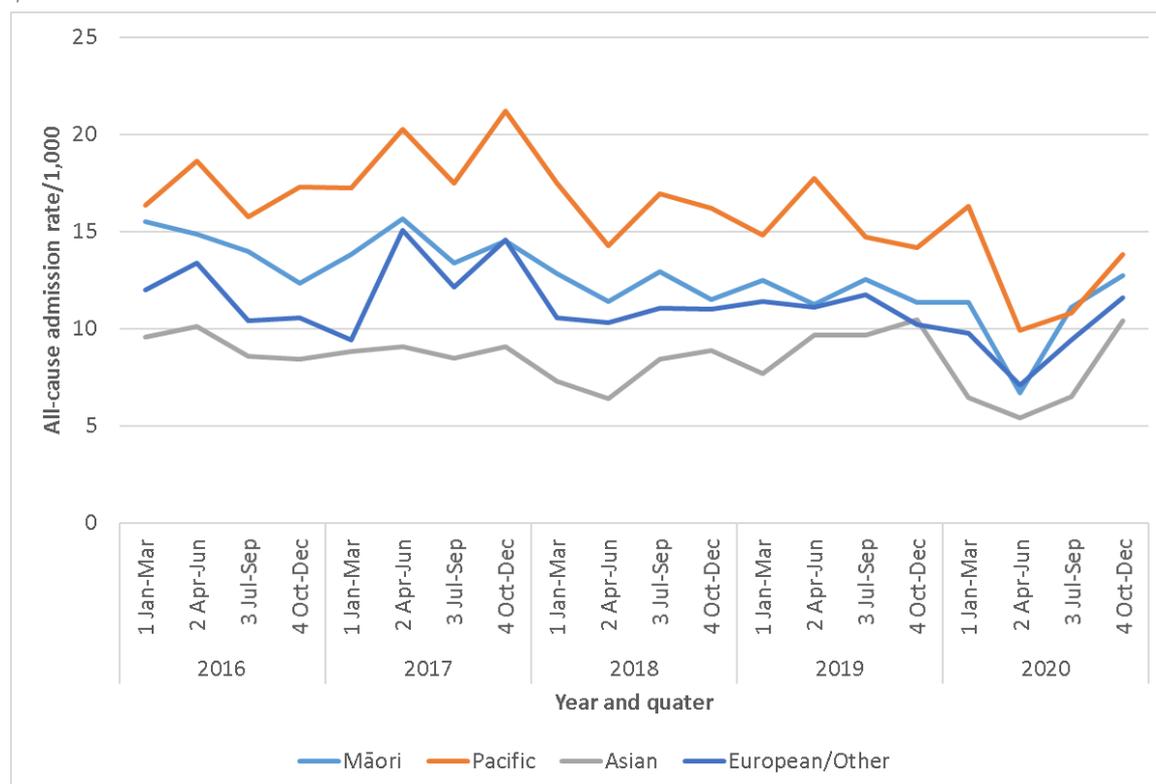
Table 11: All cause admission rate/1,000 children aged 0-18 years, by prioritised ethnicity

Prioritised ethnicity	No. Children	Percent	Rate <sup>56</sup> /1000
Maaori	18,312	23.2	483.2
Pacific	26,962	34.1	576.5
Asian	15,881	20.1	416.5
European/Other	17,945	22.7	469.8
<b>Total</b>	<b>79,100</b>	<b>100</b>	<b>491.3</b>

All-cause admission time trends for primary school aged children (aged 5-12 years) by prioritised ethnicity shows that Pasifika children consistently have the highest rates of hospitalisation across all years 2016 – 2020, with Maaori tamariki having the next highest rates across all years (Figure 43). Interestingly, in 2020, the Pasifika and Maaori all-cause hospitalisation rates briefly converged in the July-Sept quarter, which may be related to the impact of COVID-19 and closed borders on the reduction in respiratory and other illness. The COVID-19 effect also explains the downward trend over 2020 for all-cause hospitalisations for all ethnic groups.

<sup>56</sup> Denominator is Stats NZ annual population health projections for 2021, using the 2018 Census as the base for projections

Figure 43: All-cause admission rate/1,000 to CM Health facilities, children aged 5-12 years (CM domiciled), by prioritised ethnicity, by quarter



Numerator: CM Health facility admissions 2016-2020 calendar years for CM domiciled children aged 5-12 years at any point from 1 September 2015 to 30 September 2021. Admissions include 'null' diagnostic codes. Denominator: Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year).

### Hospitalisation Picture for Children Engaged with Mana Kidz Programme

Hospitalisation data for CM domiciled children were linked to data from the NHC Mōhio database to determine which children had ever been engaged in the Mana Kidz programme. Importantly, these analyses do not take into account the temporal relationship between hospitalisation and Mana Kidz engagement. Admissions may have pre-dated engagement in Mana Kidz and vice versa. The Mōhio (Mana Kidz) dataset was also used to derive denominators for Mana Kidz vs non-Mana Kidz analyses and outputs (see below).

This linkage demonstrated that of the 14,373 'unique' primary school aged children (5-12 years<sup>57</sup>) who had at least one CM Health admission between 01 September 2015 and 30 September 2021, 49.7% (7,149) appeared in the Mōhio dataset (Table 12). This confirms that children engaged in Mana Kidz school are, for the reasons described above, over-represented in the hospital admission data.

<sup>57</sup> Aged 5-12 years at any point from 1 September 2015 to 30 September 2021

Table 12: All-cause hospitalisations<sup>58</sup> for children living in CM, aged 5-12 years, by prioritised ethnicity, Mana Kidz vs non-Mana Kidz

Prioritised Ethnicity	Mana Kidz (Child in Mōhio dataset)		Non-Mana Kidz		Total
	Count	Percent	Count	Percent	Count
<b>Maaori</b>	<b>2,285</b>	<b>32.0</b>	<b>1,231</b>	<b>17.0</b>	<b>3,516</b>
<b>Pacific</b>	<b>3,934</b>	<b>55.0</b>	<b>1,319</b>	<b>18.3</b>	<b>5,253</b>
Asian	515	7.2	1,696	23.5	2,211
European	340	4.8	2,783	38.5	3,123
Other	75	1.0	195	2.7	270
<b>Total</b>	<b>7,149</b>	<b>100.0</b>	<b>7,224</b>	<b>100.0</b>	<b>14,373</b>

The majority of admissions for tamariki engaged with Mana Kidz were for Maaori (32%) and Pasifika (55%) tamariki, making up 87% of total hospitalisations for children engaged with Mana Kidz (Table 12). This is in contrast to the ethnicity distribution of hospitalisations among children residing in Counties Manukau and not engaged with Mana Kidz, with 38.5% European and 23.5% Asian children; making up a total of 62% of total hospitalisations for this 'non-Mana Kidz' group (Table 12). This reflects the ethnic distribution (population served) within the schools that meet the criteria for a school based health service and demonstrates the ongoing equity potential of continuing to provide strong school-based services in Mana Kidz schools.

Table 13 shows admissions by primary diagnosis for children ever engaged with Mana Kidz compared to those not engaged with Mana Kidz for all admissions 2016 to 2020. This shows admissions for certain conditions are strongly correlated with children attending Mana Kidz schools. In particular, Mana Kidz children are over-represented for Dermatitis & Eczema (70.9% of total admissions for this condition), Skin Infections (65.7%), Bronchitis & bronchiectasis (78.8%), Asthma (64.4%) and Rheumatic Fever (87.8% of total admissions to CM Health facilities for this condition).

Table 13: Hospitalisations<sup>59</sup> to CM Health facilities by primary diagnosis for Mana Kidz children<sup>60</sup> vs non-Mana Kidz children, 5-12 years, CM domiciled (2016 to 2020 years combined)

Primary Diagnosis	Total	Mana Kidz		Non Mana Kidz	
		Frequency	Percent	Frequency	Percent
Dermatitis and eczema	141	100	70.9	41	29.1
Skin infections	726	477	65.7	249	34.3
Asthma	957	616	64.4	341	35.6
Bronchitis and bronchiectasis	66	52	78.8	14	21.2
Lower respiratory tract infection	136	61	44.9	75	55.1

<sup>58</sup> This underestimates the true number of admissions for CM domiciled children as around 33% of admissions for CM domiciled children were to other DHBs, in particular Auckland DHB / Starship.

<sup>59</sup> This underestimates the true number of admissions for CM domiciled children as around 33% of admissions for CM domiciled children were to other DHBs, in particular Auckland DHB / Starship.

<sup>60</sup> Present in Mōhio database at any time during time period 2016 to 2020.

Pneumonia	261	136	52.1	125	47.9
Acute rheumatic fever	180	158	87.8	22	12.2
Rheumatic heart disease	23	20	87.0	3	13.0
Other/'null'	14,279	7,037	49.3	7,242	50.7
<b>Total</b>	16,769	8,657	51.6	8,112	48.4

Again, this pattern reflects the **known and enduring patterns of inequities driven by underlying socioeconomic determinants of health and wellbeing, and demonstrates the continuing need to support tamariki within these schools with a quality school-based health programme.** It also confirms that Mana Kidz schools have been appropriately selected for a rheumatic fever prevention approach and in addition highlights the opportunity for Mana Kidz, with appropriate resourcing, to provide more prevention and management particularly for skin and respiratory conditions.

To determine the denominator for Mana Kidz analyses, we outputted the total number of children aged 5-12 years recorded in each calendar year in the Mōhio dataset from 2016 (when Mōhio was first used for a full calendar year) to 2020 (last complete calendar year). This showed around 25,000 – 28,000 children aged 5-12 years per 'snapshot' calendar year i.e. all children aged 5-12 years recorded in the Mōhio database per calendar year (Table 14). We restricted to 5-12 year age group to minimise numerator : denominator mismatch since our numerator is the 5-12 year old age group. Of note, there was a lower number of children aged 5-12 years in Mōhio in 2016 (21,588), indicating that this may have been a 'lag' year as data/children were loaded into the Mōhio database. The effect of this is the potential to over-estimate Mana Kidz hospitalisation rates for 2016.

Table 14: Number of children recorded in Mōhio (based on consultation) per calendar year

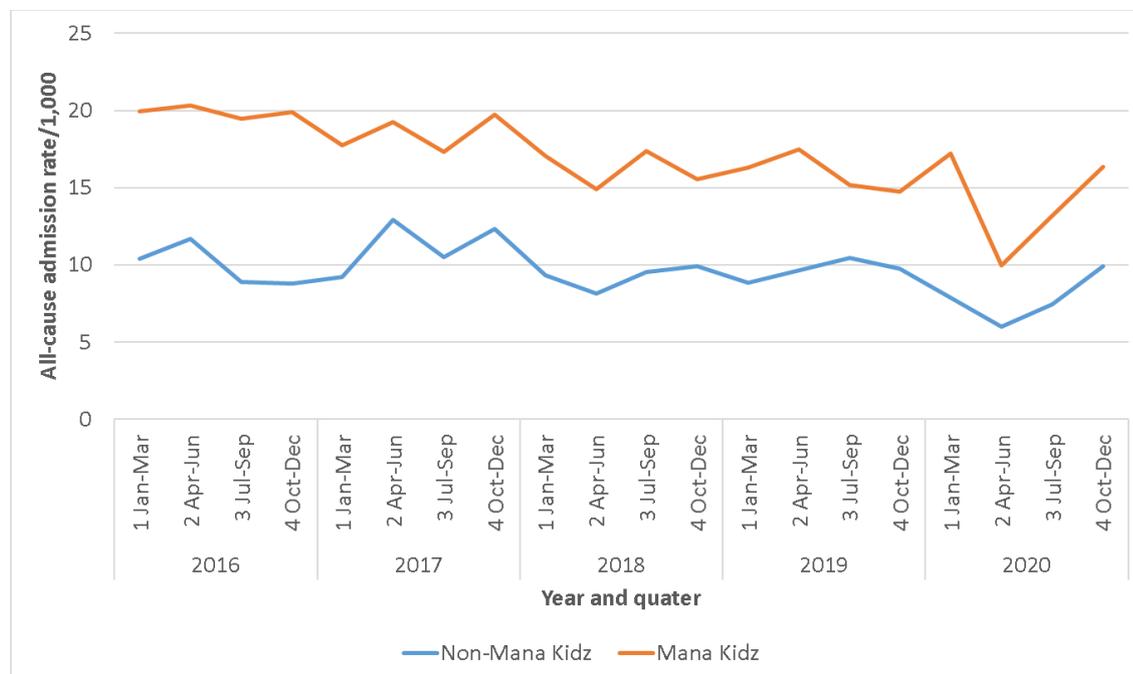
Year	Children aged 5-12 years in Mōhio database
2016	21,588
2017	25,840
2018	27,420
2019	27,770
2020	26,039

Mana Kidz Level 1 and Level 2 service has the potential to reach 34,000 children based on the school enrolment numbers. Table 14 above shows the number of children who have a consultation date in the Mōhio system by year. It is likely that this data is primarily capturing children who attend Level 1 schools. Students in Level 2 schools access care in a much more ad hoc way as the Level 2 model does not offer routine case finding activities. Census projection data for 2021 shows that there are around 72,000 children aged 5-12 years residing in Counties Manukau and since there were an estimated 26,000 tamariki engaged with Level 1 Mana Kidz schools in 2021, this represents around 36% of the 5–12-year-old CM population (Table 14).

Time trend analyses of all-cause admissions for Mana Kidz vs non-Mana Kidz suggest a downward trend in admissions over 2016 to 2020 for both non-Mana Kidz and Mana Kidz, with a more marked downward trend noted for Mana Kidz hospitalisations (Figure 44 & 45). The significant decline in child admissions in 2020 is widely recognised to be a COVID-19 effect, however, this downward

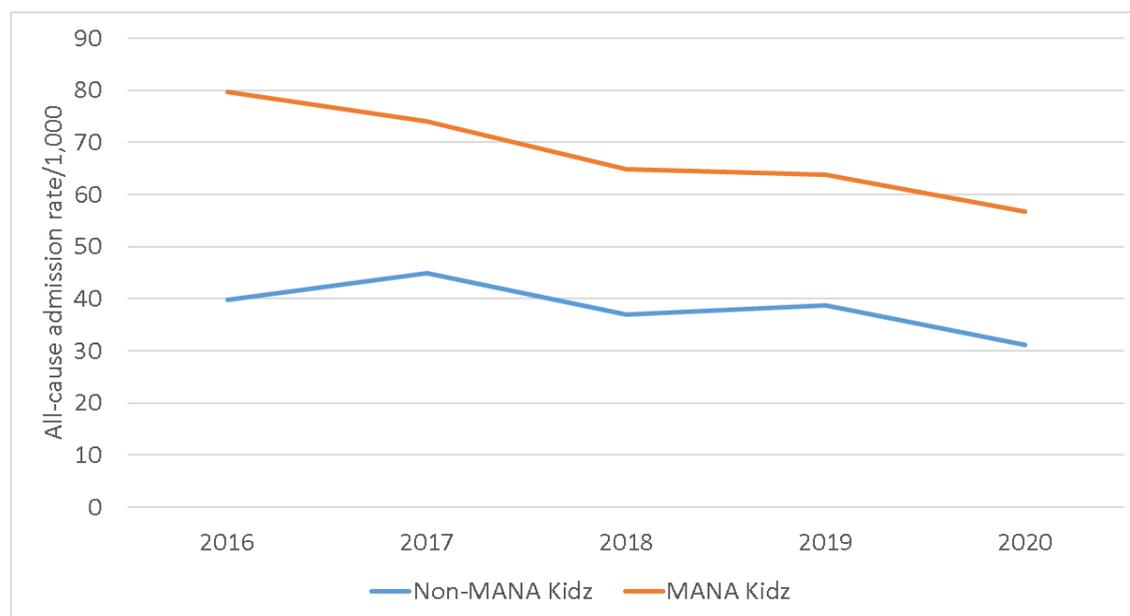
trend was evident pre-dating COVID (Figure 44 & 45). While this analysis does not allow us to draw conclusions around causality, this downward trend may reflect a downward trend in ‘burden of disease’ among children engaged with Mana Kidz. However, other possibilities need to be considered including a reduction in access to care and increased threshold of admission, changes in treatment approaches, and other societal and environmental drivers.

Figure 44: All-cause admission rate/1,000 to CM Health facilities for CM children aged 5-12 years by quarter, Mana Kidz vs Non-Mana Kidz



Numerator: Linked Mōhio CM Health facility admissions 2016-2020 calendar years for CM domiciled children present in Mōhio database at any time during period 2016-2020. Admissions include ‘null’ diagnostic codes. Denominator: Mōhio database used in combination with Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year) to generate Mana Kidz and non-Mana Kidz denominators.

Figure 45: All-cause admission rate/1,000 to CM Health facilities for CM children aged 5-12 years by calendar year, Mana Kidz vs Non-Mana Kidz



Numerator: Linked Mōhio CM Health facility admissions 2016-2020 calendar years for CM domiciled children present in Mōhio database at any time during period 2016-2020. Admissions include 'null' diagnostic codes. Denominator: Mōhio database used in combination with Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year) to generate Mana Kidz and non-Mana Kidz denominators.

### Acute Rheumatic Fever Hospitalisations, Mana Kidz vs Non-Mana Kidz

As mentioned in the background section, diagnostic coding for ARF has been shown to over-estimate admission numbers because of coding issues. Children can also have a number of admissions related to one diagnosis of ARF. However, for this analysis it was thought to be useful to compare hospitalisation rates in children attending Mana Kidz and non-Mana Kidz as inaccuracies in coding are likely to be consistent across the two cohorts.

Internal CM Health review of ARF-coded admissions and Auckland Regional Public Health Service (ARPHS) notification data indicated that from 2016 to 2020, between 63% and 83% of hospitalisations where ARF was recorded as the primary diagnosis, had an Episurv notification of ARF (data not presented here). This internal CM Health review showed a greater divergence in 2019 between ARF-coded admissions and ARPHS ARF notification data than for other years. This contributes to differences in time trend patterns when comparing ARF-coded admissions and ARF notification data – in particular, there was a distinct 2018 peak seen in ARF notified cases (data not presented here), which is not seen in the ARF hospitalisation rates presented here. As such, we recommend using ARPHS ARF notification data as the primary data source to examine time trends in ARF rates for this evaluation.

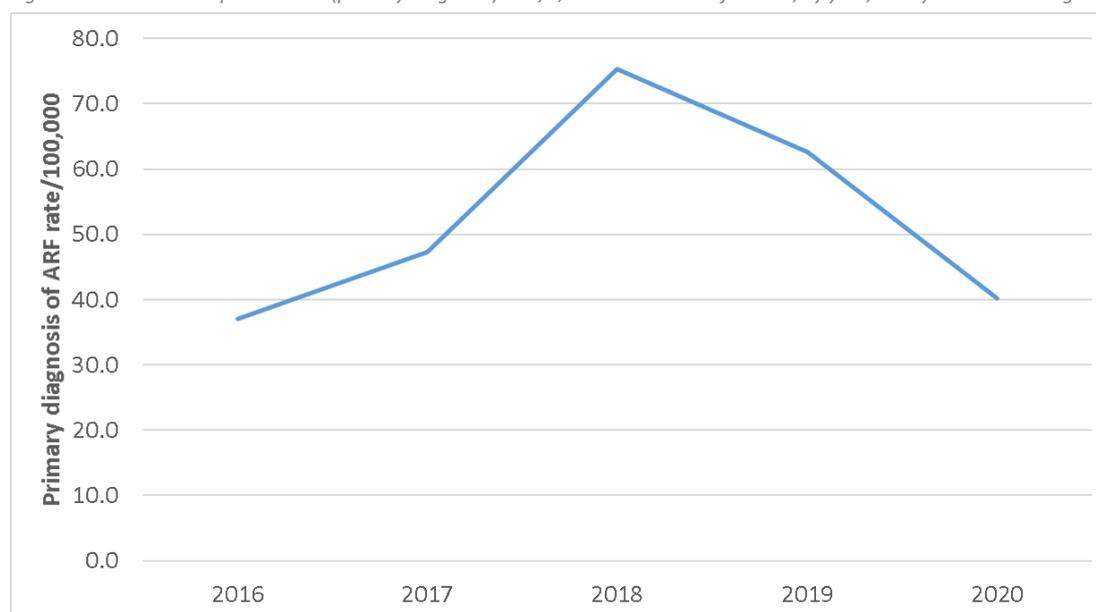
It is also important to note that the Ministry of Health applies an algorithm when outputting ARF rates to ensure each case is only counted once, as the purpose of Ministry reporting is to understand the impact of the primary prevention activity in reducing ARF, rather than the burden on the hospital system from ARF admissions (**Appendix G-2**). This algorithm hasn't been applied for this analysis and for this reason, rates presented here will differ from those reported nationally.

Table 15: Total ARF hospitalisations to CM Health facilities for 5-12 year olds, per year, by hospital events<sup>61</sup> and 'unique' children

Year	Total Count	Total Rate/100,000	# 'unique' children <sup>62</sup>	Cumulative # of 'unique' children
2016	24	37.1	19	19
2017	31	47.4	25	44
2018	52	75.3	41	85
2019	44	62.6	35	120
2020	29	40.2	24	144

Annual hospitalisation rates for ARF show variability over the period 2016 – 2020, with a peak in 2018 – 2019 and a significant decline in 2020 in the context of COVID-19 lockdowns and border closures (Figure 46). Importantly, Figure 46 shows hospital admission patterns rather than 'unique' number of children with ARF (one child may have been admitted on more than one occasion with ARF), which means that these annual trends may differ from ARF notification trends, which are based on individuals (one notification per child). Quarterly time trends show some seasonal variation in the frequency of ARF, with cases appearing to be more common in the autumn months (data not presented).

Figure 46: Total ARF hospitalisations (primary diagnosis) rate/1,000 to CM Health facilities, by year, 5-12 year olds residing in CM<sup>63</sup>



Numerator: CM Health facility admissions 2016-2020 calendar years for CM domiciled children aged 5-12 at any point from 1 September 2015 to 30 September 2021. Denominator: Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year).

ARF is seen almost exclusively in Maaori and Pacific ethnic groups in Counties Manukau with a predominance of Pacific children in the 5–12-year-old age group. The hospitalisation data presented below is consistent with this (Table 16 & Figure 47).

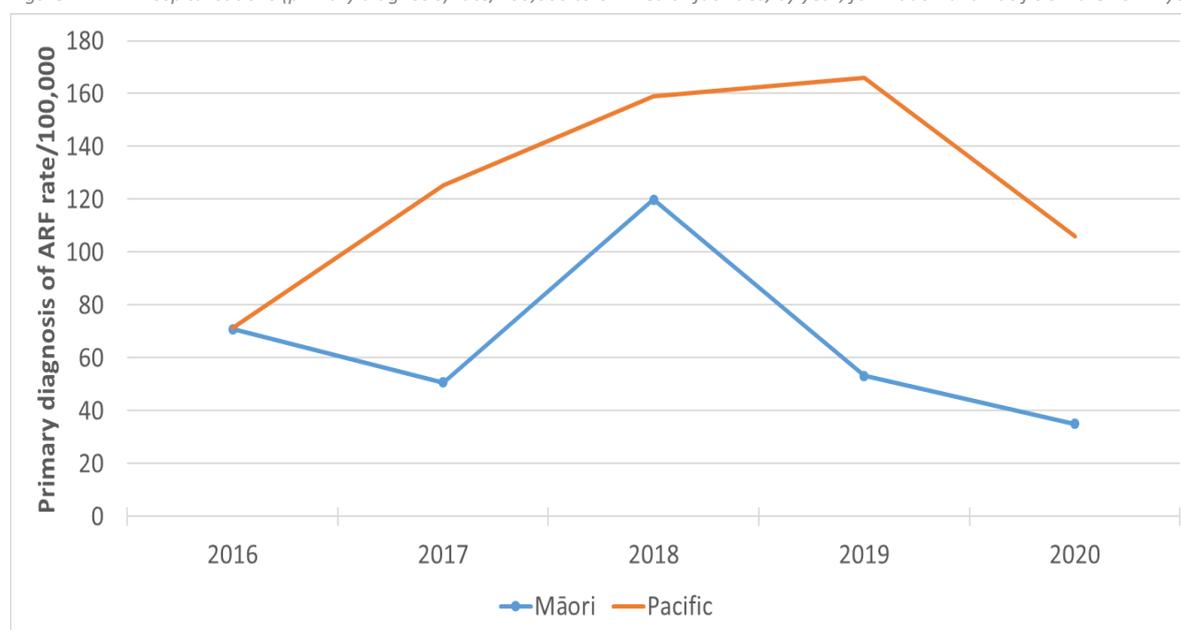
<sup>61</sup> This analysis reflects all admissions for ARF, not 'unique' children

<sup>62</sup> Where a child appeared in more than one year between 2016 – 2020 with a primary diagnosis of ARF, they were only counted to the year they first presented with ARF from 2016 – 2020. Only a very small number of children fitted into this category and this did not impact the overall trend when compared to using first admission only.

Table 16: ARF hospitalisations for children living in CM, aged 5-12 years, by prioritised ethnicity, Mana Kidz vs non-Mana Kidz, September 2015 to September 2021

Prioritised Ethnicity	Mana Kidz (Child in Mōhio dataset)		Non-Mana Kidz		Total
	Count	Percent	Count	Percent	
Māori	49	31.0	5	22.7	54
Pacific	108	68.4	16	72.7	124
Asian	0	0	1	4.5	1
NZ European/Other	1	0.6	0	0	1
<b>Total</b>	158	100.0	22	100.0	180

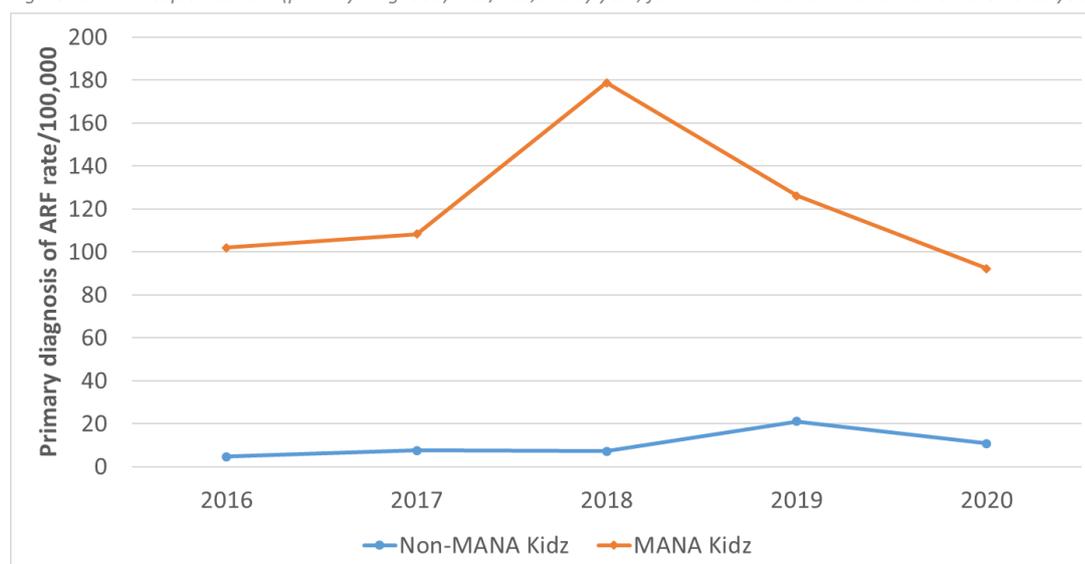
Figure 47: ARF hospitalisations (primary diagnosis) rate/100,000 to CM Health facilities, by year, for Māori and Pacific children 5-12 years



Numerator: CM Health facility admissions 2016-2020 calendar years for CM domiciled children aged 5-12 at any point from 1 September 2015 to 30 September 2021. Admissions include 'null' diagnostic codes. Denominator: Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year).

As seen in Figure 48 the rates of ARF are substantially higher in the Mana Kidz schools compared to the non-Mana Kidz schools suggesting the programme is providing health services to those children with the highest risk of poor health outcomes. The 2018 peak in ARF notifications observed in the Episurv / ARPHS data is more reflected in the Mana Kidz rates for 2018, with a peak of 186/100,000 (Figure 48). A steeper 2020 (COVID associated) decline is seen in ARF rates for the Mana Kidz cohort compared to the non-Mana Kidz cohort (Figure 48).

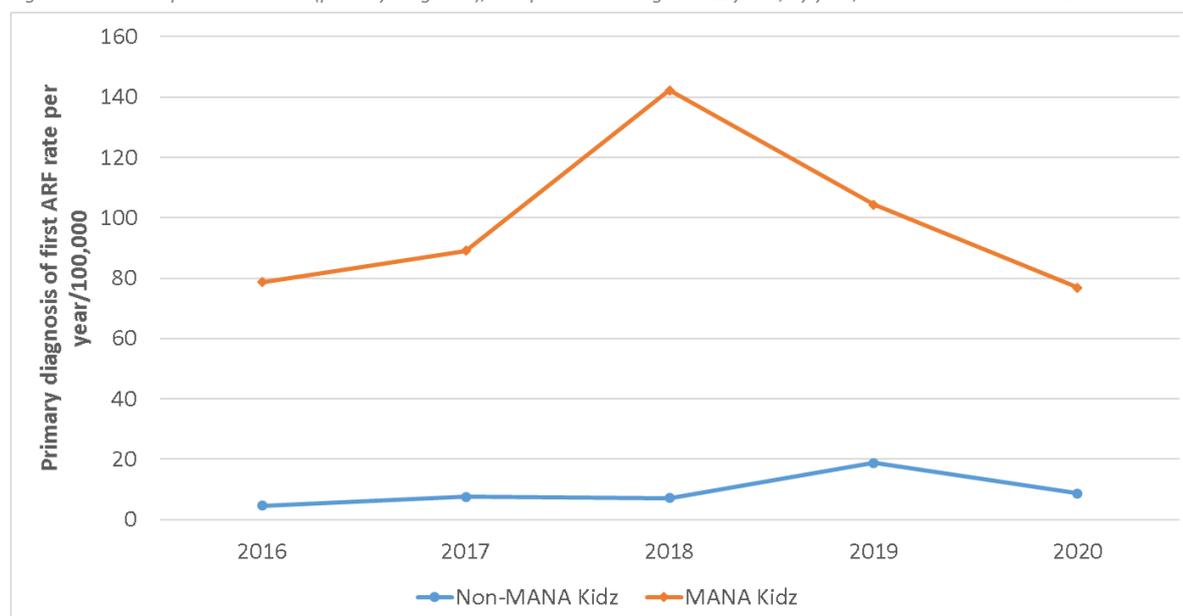
Figure 48: ARF hospitalisations (primary diagnosis) rate/100,000 by year, for Mana Kidz vs non-Mana Kidz children 5-12 years



Numerator: Linked Mōhio CM Health facility admissions 2016-2020 calendar years for CM domiciled children present in Mōhio database at any time during period 2016-2020. Admissions include 'null' diagnostic codes. Denominator: Mōhio database used in combination with Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year) to generate Mana Kidz and non-Mana Kidz denominators.

Due to the small numbers of ARF admissions overall, quarterly and annual rates can be skewed significantly by e.g. one child being admitted on multiple occasions with a primary diagnosis of ARF. As such, we have also presented annual rates by 'unique' children (Figure 49). Where a child appeared in more than one year with a primary diagnosis of ARF, they contributed once to the count for each calendar year in which they were admitted. Only a very small number of children fitted into this category and this did not impact the overall trend when compared to using first admission only.

Figure 49: ARF hospitalisation rate (primary diagnosis), 'unique' children aged 5-12 years, by year, Mana vs Non-Mana Kidz



Numerator: Linked Mōhio CM Health facility admissions 2016-2020 calendar years for CM domiciled children present in Mōhio database at any time during period 2016-2020. Admissions include 'null' diagnostic codes. Denominator: Mōhio database used in combination with Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year) to generate Mana Kidz and non-Mana Kidz denominators.

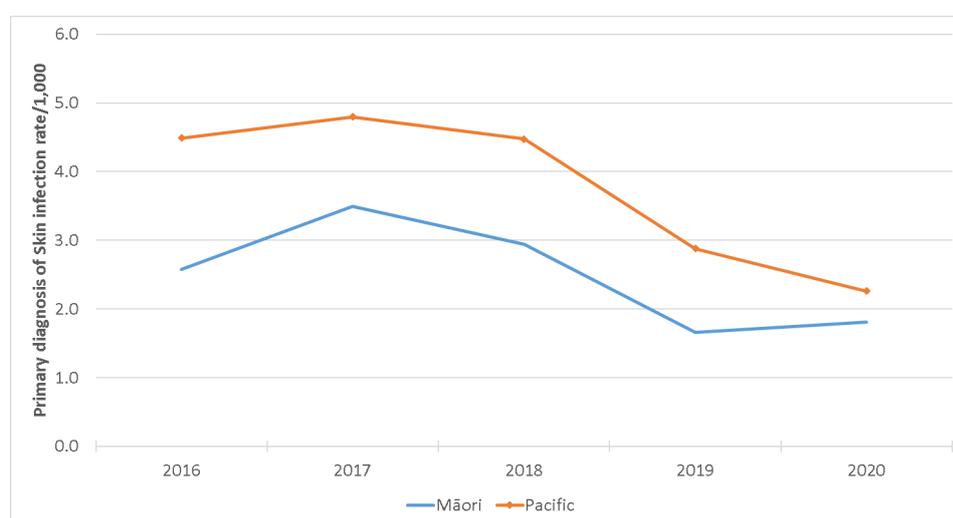
### Skin Infection Hospitalisations, Mana Kidz vs Non-Mana Kidz

Māori and Pacific children are over-represented in admissions for skin infections (Table 17). As shown in Figure 50, the highest hospitalisation rates for skin infections over the period 2016 to 2020 were for Pasifika children, with Māori tamariki rates closely mirroring Pasifika patterns for 2016 – 2018, with a marked convergence of rates in 2020. The 2020 pattern is likely due to the COVID-19 effect, with diminished circulating streptococcus in the context of lockdowns, border closures, public health measures and other drivers. We saw a steeper decline in Pasifika hospitalisation rates for skin infections compared to Māori tamariki in the context of COVID-19 (Figure 50), similar to the pattern seen with ARF rates for Pasifika children. If anything, there was a slight increase in rates for Māori tamariki in 2020.

Table 17: Skin infection hospitalisations for children living in CM, aged 5-12 years, by prioritised ethnicity, Mana Kidz vs non-Mana Kidz, September 2015 to September 2021

Prioritised Ethnicity	Mana Kidz (Child in Mōhio dataset)		Non-Mana Kidz		Total
	Count	Percent	Count	Percent	
<b>Māori</b>	<b>163</b>	<b>30.2</b>	<b>73</b>	<b>25.4</b>	<b>236</b>
<b>Pacific</b>	<b>344</b>	<b>63.7</b>	<b>74</b>	<b>25.7</b>	<b>418</b>
Asian	17	3.1	50	17.4	67
European/Other	16	3.0	91	31.6	107
<b>Total</b>	<b>540</b>	<b>100.0</b>	<b>288</b>	<b>100.0</b>	<b>828</b>

Figure 50: Skin infection hospitalisation (primary diagnosis) rate/1,000 by year for Māori and Pacific 5-12 year old CM children

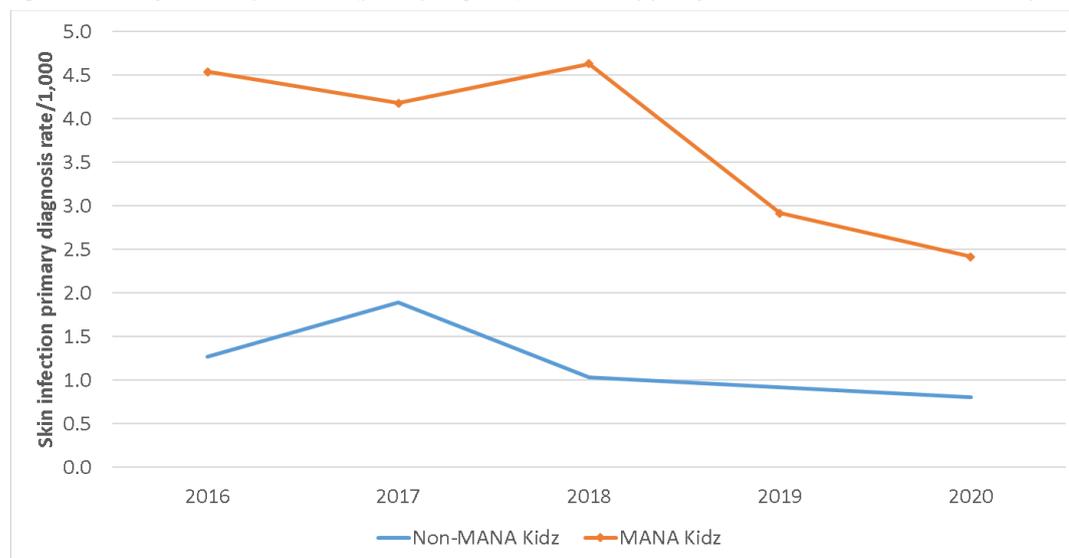


Numerator: CM Health facility admissions 2016-2020 calendar years for CM domiciled children aged 5-12 at any point from 1 September 2015 to 30 September 2021. Denominator: Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year).

As seen for all-cause and ARF hospitalisations, skin infection admission rates are higher for children engaged with Mana Kidz (Figure 51), suggesting the programme is operating in schools with children at the highest risk of poor health outcomes. A decline in skin infection-related hospitalisations was

seen in the Mana Kidz cohort over 2018 to 2020, whereas the hospitalisation rates for the non-Mana Kidz cohort was relatively stable over this same time period.

Figure 51: Skin infection hospitalisation (primary diagnosis) rate/1,000 by year, for Mana Kidz vs non-Mana Kidz 5-12 year old CM children



Numerator: Linked Mōhio CM Health facility admissions 2016-2020 calendar years for CM domiciled children present in Mōhio database at any time during period 2016-2020. Admissions include 'null' diagnostic codes. Denominator: Mōhio database used in combination with Statistics New Zealand Census Projections: 2017 Stats NZ Pop Projections (Census 2013 base year) was used for 2016/17 rates, and 2021 Stats NZ Pop Projections were used for 2018 – 2020 rates (Census 2018 as base year) to generate Mana Kidz and non-Mana Kidz denominators.

### Recommendations for additional and future analysis

1. We recommend using NMDS data for future analyses where Mōhio data is linked to hospitalisation data. This is due to the limitations of 'provider arm' data, which does not include hospitalisations for CM children to non-CM Health facilities.
2. As discussed above, we did not explore the temporal relationship between Mana Kidz engagement/consultation and hospital admissions. This could be explored in future analyses.
3. Alternative statistical methodologies would be needed if attempting to make comments around contribution/attribution e.g. multivariate analysis with a comparison cohort, and pre and post-implementation time series analysis.

### Appendix G-1 – ICD codes for diagnostic groupings

Description of diagnosis	ICD-10 codes
Dermatological conditions-- Dermatitis and eczema	L208, L209, L210, L211, L219, L22, L231, L233, L235, L236, L237, L238, L239, L244, L245, L248, L249, L251, L258, L259, L26, L270, L271, L272, L278, L280, L281, L282, L290, L292, L298, L299, L300, L301, L303, L304, L308, L309
Dermatological conditions-- Skin infections	B86, H000, H010, J340, L00, L010, L011, L020, L021, L022, L023, L024, L0241, L0242, L0243, L028, L029, L0301, L0302, L0310, L0311, L0312, L0313, L0314, L032, L033, L038, L039, L040, L041, L042, L043, L048, L050, L059, L080, L088, L089, L980
Respiratory conditions-- Asthma	J450, J459, J46, R062
Respiratory conditions-- Bronchitis bronchiolitis and bronchiectasis	J202, J204, J205, J206, J208, J209, J210, J211, J218, J219, J47
Respiratory conditions- Lower respiratory tract infection	J22
Respiratory conditions-- Pneumonia	B012, B052, J100, J110, J120, J121, J122, J123, J128, J129, J13, J14, J151, J152, J153, J154, J155, J156, J157, J158, J159, J160, J168, J180, J181, J188, J189, J690, J698, J851
Acute Rheumatic Fever	I00-I02
Rheumatic Heart Disease	I05-I09

## Appendix G-2 – Ministry of Health Acute Rheumatic Fever initial hospitalisations data definition

The following criteria are used in Ministry of Health outputs to define acute rheumatic fever initial hospitalisations. [Source: Ministry of Health]

ICD codes used:	ICD-10-AM diagnosis codes: I00, I01, I02 (Acute rheumatic fever) ICD 9 CM-A diagnosis codes: 390, 391, 392 (Acute rheumatic fever) ICD-10-AM diagnosis codes: 105-109 (Chronic rheumatic heart disease) ICD 9 CM-A diagnosis codes: 393-398 (Chronic rheumatic heart disease)
Inclusions:	Principal diagnoses (Acute rheumatic fever) only Overnight admissions Day-case admissions
Exclusions:	Previous acute rheumatic fever diagnosis (principal and additional) from 1988  Previous chronic rheumatic heart disease diagnosis (principal and additional) from 1988  New Zealand non-residents
Transfers:	Transfers with a principal diagnosis of acute rheumatic fever are counted as one acute rheumatic fever hospitalisation episode
Timeframe:	Trends from 2002 onwards

## Appendix H: Works cited

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