Counties Manukau Health

Rheumatic Fever Prevention Plan

2013- 2017

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1. Introduction

Acute rheumatic fever (ARF) develops as a result of an auto-immune response to infection with group A streptococcus (GAS) in some people. ARF causes an acute, generalised inflammatory response that can affect the joints, central nervous system and subcutaneous tissues. It is however the potential damage to the heart that is of most concern as this can lead to permanent disability and in severe cases, death. The reason why some people appear susceptible to developing ARF and others are not is not well understood.

ARF and Rheumatic Heart Disease (RHD) are potentially preventable conditions if Group A streptococcal throat infections are identified and treated appropriately although a third of cases have no history of a preceding sore throat illness.[1] ARF occurs most commonly in children and young people aged 5-14 years. The long term sequele of RHD also results in a considerable burden of disease in the adult population.

ARF and RHD disproportionally affect Maori and Pacific children and young people in New Zealand. Rates of Acute Rheumatic Fever (ARF) are high in New Zealand compared to other developed countries with the highest rates of the disease seen in Maaori and Pacific aged 5-14 years (60% of all cases).[2]

Reducing the rate of ARF has been identified as a Better Public Sector (BPS) target.[3] Addressing ARF is complex because of incomplete understanding of the disease itself, the influence of upstream determinants of health (such as housing), inequitable access to primary care and limitations of health literacy in the at risk population. In addition knowledge of the current best practice for sore throat management is variable in the primary care workforce.

The Ministry of Health has developed a Rheumatic fever work programme which identifies a number of work streams that will be funded in DHBs with high rates of ARF including the Counties Manukau District. Counties Manukau has the highest number of cases of ARF annually nationally[4] and thus it is critical that a reduction in ARF cases is seen in Counties Manukau if the national BPS target is to be achieved.

In order to achieve this target, the Ministry of Health has invested over $45 million nationally in initiatives aimed at reducing the incidence of rheumatic fever. There is an expectation that District Health Boards (DHBs) will actively engage and invest in the key results area (letter from Minister of Health to DHB chief executives, January 2013).
The Ministry of Health initially focused on the delivery of school based throat swabbing services. There was also funding allocated for research, surveillance and primary care development. This focus was broadened with the announcement of targeted government investment in May 2013.

Areas for additional investment include;

- Identification and referral for housing issues ($3.75 million over 4 years)[5]

[1] Gordis, l. Effectiveness of comprehensive care programs in reducing rheumatic fever. NEJM. 289(7) .1973 Aug.
[2] Janine R, Baker M, Venugopal . Epidemiology of acute rheumatic fever in New Zealand 1996-2005. Journal of Paediatrics & Child Health. 44(10):564-71, 2008 Oct.
[3] Better Public Service target is to reduce the incidence of ARF by two thirds to 1.4/100,000 by 2017 (all ages)
[4] 37% of incident cases ARF according to three year average cases provided my MoH in Appendix 2 of guidance document.
[5] Auckland only

- Rapid response nurse led sore throat clinics ($11.35 million over 4 years)[6]
- Community Awareness raising (4.72 million over 4 years)[7]
- Vaccine development ($1.6 million over 4 years)

[6] Metro Auckland and Porirua
[7] Metro Auckland and Porirua

2. Overview of Rheumatic Fever in Counties Manukau

Counties Manukau Health (CM Health) is committed to reducing Acute Rheumatic fever rates in the district and acknowledges the complexity of preventing this disease as well as the wide range of activities and investment which will be needed if a significant reduction in cases is to be achieved.

CM Health understands the Ministry of Health's expectation, which has been articulated in the CM Health Annual Plan (AP), that the rates of hospitalisations[8] for ARF /100,000 for all ages will decrease in the CM district by 10% annually compared to a three year rolling average in the 2013/14 year with an expectation of larger reductions in the out years (Table 1). An overall reduction in ARF incidence of two thirds is needed in order to achieve the Better Public Service target by 2016/17. These are ambitious targets given the complex aetiology of this disease and limited evidence for effective interventions.

Table 1. Acute rheumatic fever initial hospitalisation target rates/numbers per year for CM Health (per 100,000 total population), 2012/13 to 2016/17.

2009/10–2011/12	2012/13	2013/14	2014/15	2015 /16	2016/17
Baseline (3-year average rate)	**Target:** Remain at baseline level	**Target:** 10% reduction from baseline level	**Target:** 40% reduction from baseline level	**Target:** 55% reduction from baseline level	**Target:** 2/3 reduction from baseline level
Number of cases					
66	66*	62	42	32	24
Rate/100,000					
13.2	13.2	11.9	7.9	5.9	4.4

Source: Rheumatic fever prevention plans: Guiding information for District Health Boards with a high incidence of acute rheumatic fever hospitalisations. MoH 2013. * Provisional numbers of 12/13 are 72 for CM Health.

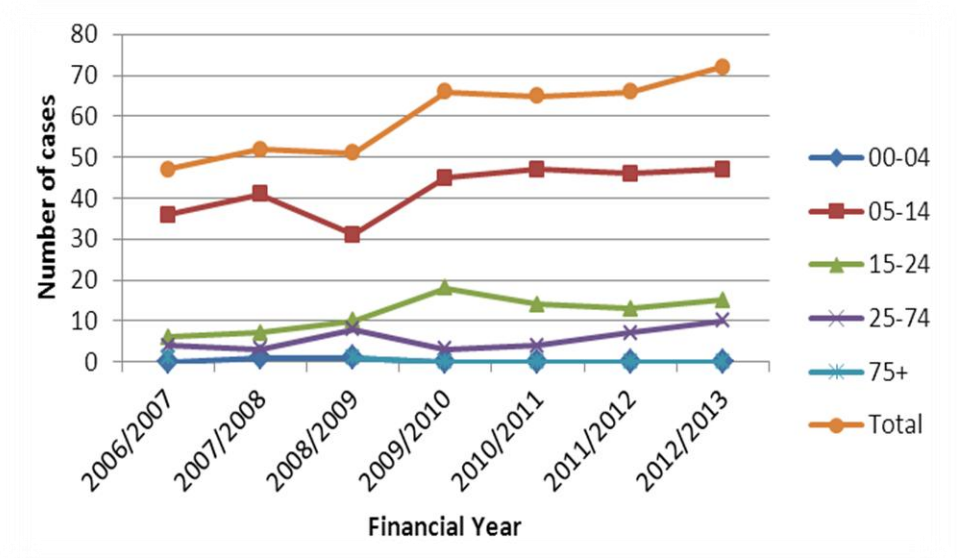
Current situation

The targets outlined above are an overall population target. However, as outlined in the introduction, the incidence of ARF varies by age and ethnicity. Figure 1 shows the number of cases of by age group of residents of CMDHB. The highest number of cases is seen in the 5-14 year age group followed by the 15- 24 year age group. The numbers of cases in the 5-14 year age group appears flat while the cases in the 25-74 age group has increased although given the small numbers this could be a result of chance alone.[9]

[8] This is being calculated by the Ministry as an incidence figure on the basis of IC 10 discharge data8. Despite recognition by the MoH that ICD discharge data over estimates ARF it has been determined to use this data source for national and historical consistency. MoH have developed a methodology to estimate incidence of ARF which only counts admissions when an individual has not been admitted previously with a diagnosis ARF or RHD in the previous 20 years.

[9] Note all cases in this age group were <40 years

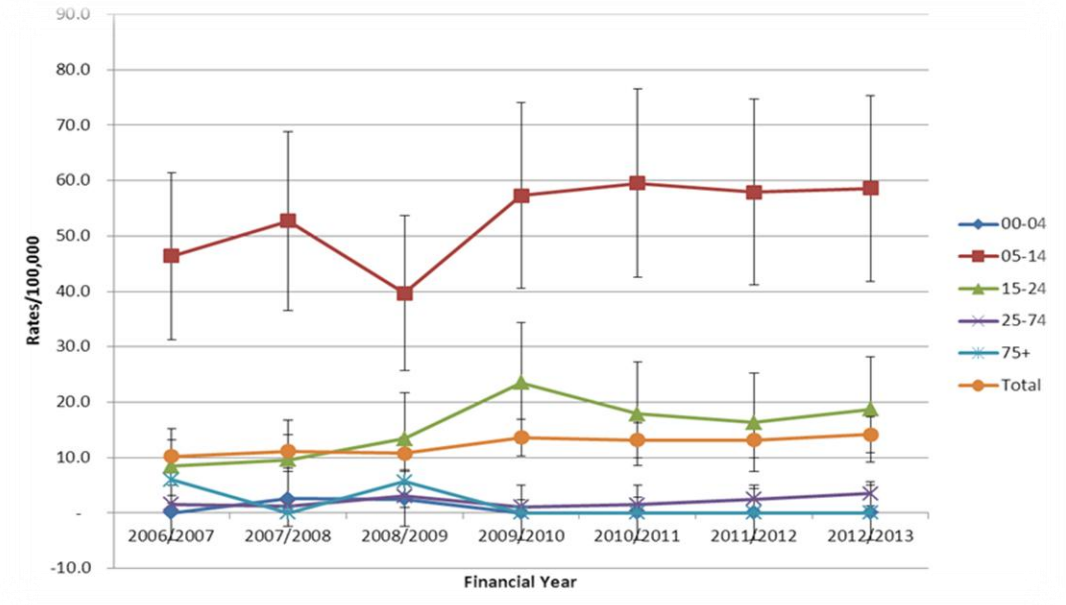
Figure 1. Number of cases in CMDHB residents, all ages, by financial year 2006/7-2012/13



Source: NMDS extracted MoH 2013. ARF ICD code I00-I02. Primary diagnosis only. Excludes any admissions where that person has been admitted with any ARF or chronic RHD diagnosis from 1988.

Figure 2 shows the same data as above but as age adjusted rates. The highest rate is in the 5-14 year olds with rates ranging from 40/100,000 to 60/100,000 over the 7 year period shown. It appears that since 2010/11 rates in this age group have been flat. The total rate of ARF/ 100,000 also appears to have been essentially static over the last four years. Confidence intervals are shown and it can be seen that there are not statistically significant changes in the rates over the time period shown.

Figure 2. Acute rheumatic fever rates/100,000 by age group 2006/7- 2012/13



Source: Numerator: NMDS extracted MoH August 2013. ARF ICD code I00-I02. Primary diagnosis only. Excludes any admissions where that person has been admitted with any ARF diagnosis from 1988. Denominators: Statistics

New Zealand projected population CMDHB updated 2012. Calendar year used- 2006 for 2006/07, 2007 for 2007/08 etc.

It is well recognised that Pacific peoples have the highest rates of ARF in New Zealand followed by Maaori.[10],[11] The following table shows that the vast majority of ARF cases in Counties residents have occurred in Pacific and Maori people, with 93% of cases being in Maori and Pacific in 2012/13.

Table 2. Cases of ARF in CMDHB residents, 2005/06-2012/13, by ethnicity.

Ethnicity	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Non Maaori/Non Pacific	0	2	5	2	4	3	5
Maaori	16	20	18	23	28	17	20
Pacific people	31	30	28	41	33	46	47
Total	47	52	51	66	65	66	72
% Maaori/Pacific	100%	96%	90%	97%	94%	95%	93%

Source: NMDS extracted MoH August 2013. ARF ICD code I00-I02. Primary diagnosis of ARF. Excludes any admissions where that person has been admitted with any ARF diagnosis from 1990-2005.

From the information presented above it is clear that if CM Health is to achieve the targets there has to be a focus on rheumatic fever prevention in Maaori and Pacific communities particularly in the 5- 14 year age group with attention also needed in the slightly older 15-24 year age group as they have the next highest incidence of ARF.

Stakeholder engagement

CM Health has engaged widely in developing our approach to reducing ARF. Counties Manukau established the Child Health Alliance Forum-Counties Manukau (CHAF-CM) in 2011 to respond to the Ministry RFT for the development of a comprehensive throat swabbing services, promoting awareness of RF and service coordination. National Hauora Coalition (NHC) is the lead organisation for the CHAF-CM which has representation from Primary Care, NGOs and the DHB. [12] In addition an Alliance leadership group (ALG) has been established to provide governance for the school based primary care programme (Mana Kidz) and rheumatic fever prevention initiatives more broadly.

[10] Janine R, Baker M, Venugopal K . Epidemiology of acute rheumatic fever in New Zealand 1996-2005. Journal of Paediatrics & Child Health. 44(10):564-71, 2008 Oct.

[11] Milne R, Lennon D, Stewart J et al. Incidence of acute rheumatic fever in New Zealand children and youth. Journal of Paediatrics and Child Health 48 (2012) 685–691

[12] Representation of the CHAF-CM includes; The Auckland business cases; GAIHN, National Hauora Coalition, Alliance Health+), PHOs; East Health, ETHC, ProCare, National Hauora Coalition NGOs; Papakura Marae, Mangere Community Health Trust, Health Star Pacifica DHB; Provider arm, Planning and Funding, Population Health,University of Auckland, Professor of Paediatrics

The DHB has both a Maaori and a Pacific team which have both been involved in the development of this plan. In addition elements of the ARF prevention programme have been reflected in their respective operational plans.

CM Health has a Child, Youth and Maternity Strategic Forum which has representation from the senior management teams across the organisation, Primary Care and a number of clinical leaders in the child, youth and maternity areas. The Chair of this forum sits on the Executive Leadership Team (ELT) for CM Health. Rheumatic fever prevention is discussed regularly at this meeting.

In addition key Clinical Leaders and Operational Managers from CM Health have been engaged in the development of this plan and will be implementing the required system changes within CM Health hospital services.

Regionally Rheumatic Fever prevention has been discussed at the Primary Care Clinical Advisory group[13] and a number of aspects included in this plan endorsed eg. Primary care commitment to reviewing the clinical journey of patients who present with ARF, support of the implementation of the clinical guidelines and ongoing quality improvement activities through PHOs to improve treatment of sore throats in primary care.

Rheumatic Fever Champion

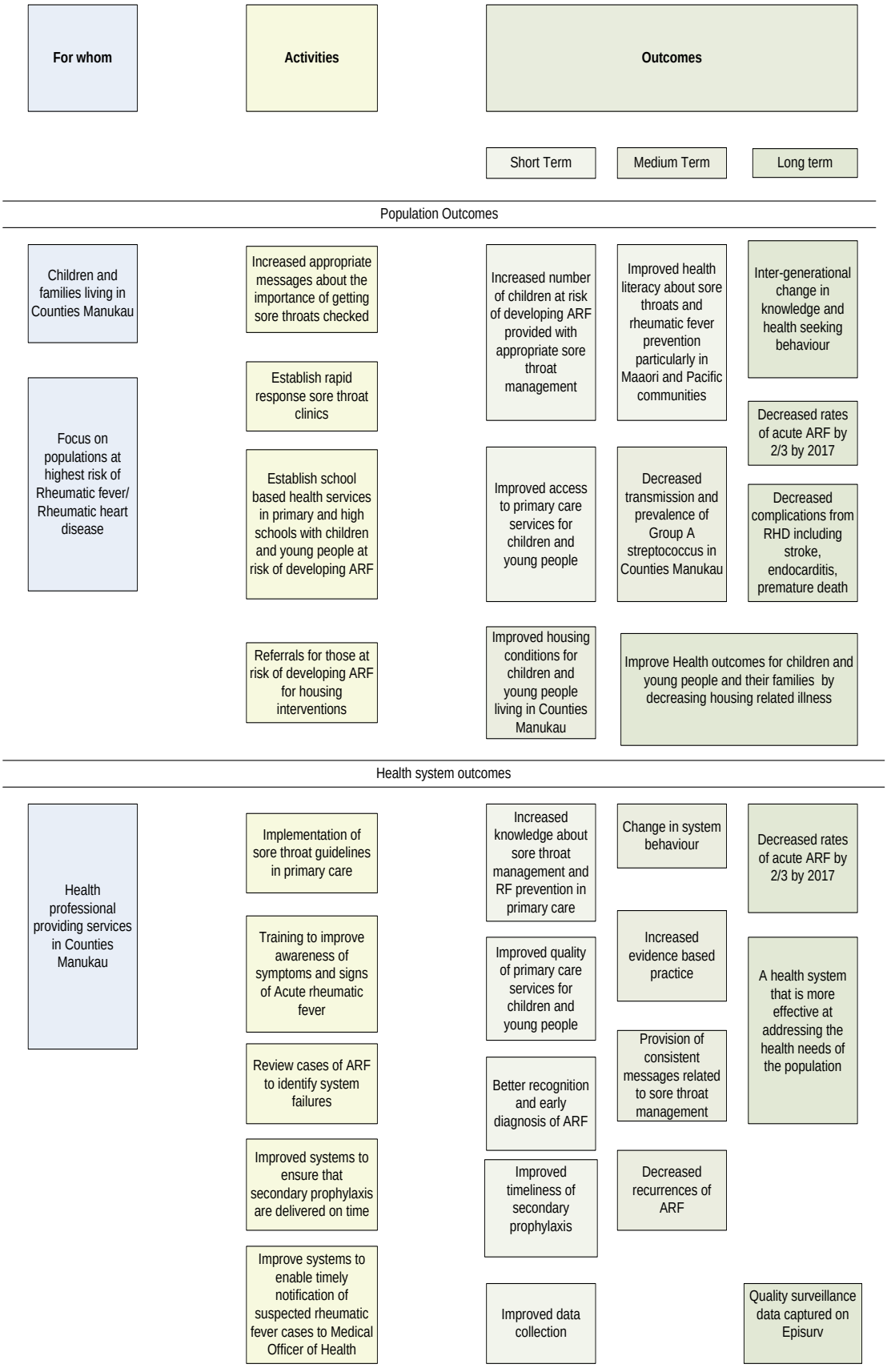
The Senior Executive identified as the Rheumatic Fever Champion in CM Health is Benedict Hefford in his capacity as the Director of Primary Health and Primary Care Community Services. The Senior Portfolio Manager Child, Youth and Maternity, who has operational responsibility for the Rheumatic Fever Prevention Programme, reports to this role. The Director of Primary Care and Community Services sits on ELT and reports to the CEO.

The role of the Rheumatic Fever Champion is to act as single point of contact to ensure information about the programme is shared with all relevant organisations in the DHB area. He will liaise closely with the ALG and be up to date with the planning and implementation the Rheumatic Fever prevention programme in CM Health.

The Director of Primary Health and Primary Care Community Services will attend regional meetings at least annually to discuss progress on the implementation of the plan of the rheumatic fever programme. Investment by the DHB is required for the implementation of this work and the Rheumatic Fever Champion is pivotal in ensuring that appropriate resource is secured for the programme implementation.

[13] A Metro Auckland Primary Care group attended by Clinical Directors of the Primary health Care Organisations

Programme Logic for Rheumatic Fever Prevention Programme in Counties Manukau



3. Investment in Reducing Acute Rheumatic Fever

CM Health is committed to improving the health and wellbeing of children and young people living in the district. The Rheumatic Fever Prevention Programme is seen as an opportunity to re-orientate health service delivery to better meet the needs of children and young people therefore achieving not only a reduction in ARF but also an improvement in health outcomes more broadly.

There will be consistent action and messaging across the three key areas of engagement; the existing school-based Rheumatic Fever prevention (Mana Kidz) clinics, secondary school based health services, and the primary care drop-in clinics.

School Based Rheumatic Fever Prevention Clinics

The focus for AFR prevention thus far has been mainly on primary prevention i.e. addressing specific causal factors in this case the treatment of streptococcal A throat infections.[14]

Sore throat swabbing services have been established in 52 schools in Counties Manukau as part of a broader primary health care initiative known as Mana Kidz which aims to improve access to primary care services by delivering a primary care package of care to children in primary/intermediate school setting. [15,16]

The programme includes providing sore throat swabbing services 5 days a week, household sore throat identification and treatment, identification and treatment of skin infections as well as delivering the traditional Public Health Nurse functions previously delivered by the Public Health Nursing Service, Kidz First. In addition the MoH has recently confirmed funding for throat swabbing services in a further 8 schools in Papakura.[17]

Table 3. Number of school, by locality, with Mana Kidz programme

Locality	Number of schools	Number of children	Commencement
Otara	15	5,046	July-Oct 2012
Mangere	19	9,190	Feb-Apr 2013
Manurewa	19	8,805	May-Jun 2013
Papakura	8	1,973	Oct 2013
Total	**61**	**25,013**	

The Mana Kidz programme is partially funded by Ministry of Health (specifically for the sore throat component) but the DHB is topping up this funding to pay the laboratory costs for throat swabs, as well as additional resource to allow throat swabbing to occur 5 days a week. In addition, the DHB has already reallocated 20.5 FTE Public Health Nurses and provided additional funding, to allow the delivery of a broader primary care package into schools.

[14] Beaglehole, R, Bonita, R, Kjellstrom T. Basic Epidemiology. WHO 1993.

[15] 53rd school Mountain View to start in February 2013 at request of the school

[16] All schools in the district were scored on the basis of four criteria to assess their risk of students getting ARF and those schools with students at highest risk have been offered a school based service.

[17] There has not been further funding allocated by the DHB to support the full implementation of the Mana Kidz programme in these schools but a proposal (Papakura Kidz) is currently being reviewed by the Middlemore Foundation which, if successful, would allow a broader programme to be developed in Papakura.

The DHB has also invested $50,000 in collecting some baseline information prior to the roll out to inform the evaluation of the school based programme.

Table 4. Current investment Mana Kidz programme

	Contribution	Investment
Counties	20.5 Public Health Nurse FTE*	$2.46 Million
Manukau Health	Other funding**	$1.172 Million
	Evaluation	$50,000
Ministry of Health	Funding $135/student	$2.9 Million
Total		**$6.582 Million**

*Approximately equivalent to 20.5x 120,000 (fully absorbed) = $2.46Million
** Includes top up funding for throat swabbing programme, PHN functions and skin infection identification and treatment

While Mana Kidz has been successfully implemented, through a number of providers, there are ongoing significant concerns from providers that the current funding model is not sustainable and further resource will need to be found if the programme is to remain viable.

Currently $6.582 million is spent annually to deliver this programme. Currently the MoH contribute $2.9 million to this programme. There has been no commitment from the MoH to continue this funding beyond 2015.

In order to make the programme viable further investment will be required. There is currently work underway to identify where this additional funding could be reallocated from within existing budgets.

The DHB intends to review interim progress in 2014 and determine the long term viability of the schools based programme beyond 2015 based on the effectiveness of the programme at reducing Group A streptococcal burden / ARF rates as well as taking into account the opportunity cost of delivering the programme e.g. impact on significantly reducing the Public Health nursing service available to other schools in the district. There is HRC funded research underway to review the impact of the programme of Group A streptococcal prevalence. The DHB is currently considering funding options to strengthen the evaluation process so the impacts of the broader aspects of the programme are captured.

Rapid response sore throat swabbing services

The Ministry of Health is funding CM Health approximately $1.3million to ensure that sore throat swabbing services are available and easily accessible in the community. There is an expectation that throat swabbing services will be targeted to those at high risk of developing ARF defined as 4-19 year olds, Maaori, Pacific or Quintile 5 and will be free at point of contact.

The governance for developing the appropriate model to achieve the Ministry of Health's objectives sits with the ALG. ALG has determined that this money will be used to strengthen the delivery of sore throat swabbing services in decile 1-4 Secondary Schools as well as making access for throat swabbing services free through a number (~35) primary care practices. NHC, as the lead for CHAF, will be responsible for the implementation of both strengthening the secondary school service and implementing free sore throat clinics in primary care.

Strengthening of sore throat swabbing in secondary schools

Currently there are 15 school Secondary schools (decile 1-4) in Counties Manukau which have a school based nursing service funded through health. There are an additional two decile 1 schools, Kia Aroha College and Te Kura Kaupapa Maori O Manurewa which do not have health funded school nurses but do have some nursing resource. There are two further schools which do not have a registered nurse in the school, Al-Madinah School (decile 2) and Zayed College for Girls (decile 3).

We have begun initial engagement with secondary school nurses about what resource will be required to allow throat swabbing to be undertaken systematically within these schools. The initial focus will be on strengthening the services within the schools we are already funding although we will be engaging with Kia Aroha College, Te Kura Kaupapapa Maori O Manurewa and the schools with Maori language immersion units early in the programme development and aim to work with them to establish appropriate throat swabbing services..

The likely delivery model consists of school nurses and trained Whaanau Support Workers (WSW) running drop-in rheumatic fever prevention clinics at the identified school every day of the school term. Positive GAS results will be followed up by the school nurse (working under standing orders) with the administration of free antibiotics using a Practitioner Supply Order (PSO) system. The WSW will be employed by primary care partners to enhance the engagement with local primary care practices. An additional funding contribution for nursing resource has been allowed for Kia Aroha College and Te Kura Kaupapa Maori O Manurewa as these two schools do not currently have the capacity to ensure timely follow up of GAS+ results

Because Year 9 and 10 students are at highest risk of developing ARF the focus will be on this age group and we anticipate a more aggressive case finding may be targeted to this age group whereas for the older age groups there may be a different model. The model has yet to be finalised. Targeted resources and opportunities for promoting the key sore throat messages will be undertaken.

Training on standing orders will be supported by Mana Kidz clinical team.

Table 5. Decile 1-4 Secondary Schools with Health funded School Based Nursing Service

	Name	Decile	Current RN FTE	School roll	WSW FTE
1	De La Salle College	1	1.34	1003	0.35
2	Mangere College	1	1.19	890	0.35
3	Sir Edmund Hillary Collegiate	1	1.67	1249	0.35
4	Tangaroa College	1	1.44	1081	0.35
	Tangaroa College TPU	1	0.6	30	
5	Southern Cross Campus	1	2.01	1509	0.35
6	Aorere College	2	2.01	1506	0.35
7	Auckland 7-Day Adventist H S	2	0.6	251	0.35
8	Wesley College	2	0.6	264	0.35
9	James Cook High School	2	1.94	1452	0.35
10	Papakura High School	2	1.37	1028	0.35
11	Manurewa High School	2	2.55	1915	0.35
12	Tuakau College	3	1.01	760	0.35
13	Alfriston College	3	1.84	1381	0.35
14	Papatoetoe High School	3	2.38	1782	0.35
15	Edgewater College	4	1.23	923	0.35
16	Kia Aroha College	1	0.5	339	0.35
17	Te Kura Kaupapapa Maori O Manurewa	1			0.35
					5.95
			Average sized school	1021	
			Number of schools	17	
			Total WSW FTE	5.95	

Table 6.Indicative Budget for implementing throat swabbing in Secondary Schools

	FTE	Rate	Total ($)	Per school ($)
WSW	5.95	60,000	357,000	21,000
RN (holidays)	*	80,000	36,960	2,464
Printed resources			8,000	533
Additional RN resource**	0.3	80,000	24,000	
		Total	425,960	

*2 days of RN time per school holidays (4) to cover positive results.
$308 per day. $2464 per school.
** An additional funding contribution for nursing resource has been allowed for Kia Aroha College and Te Kura Kaupapa Maori O Manurewa of 0.15FTE per school

Strengthened Primary care response

ALG is working with primary care to develop a model that maximises free access to sore throat swabbing services to those identified as high risk of developing ARF (4-19 year old, Maori, Pacific and all Quintile 5). The estimated number of child and young people that meet this definition of high risk who are resident in Counties Manukau is 81, 846. [18]

[18] based on Statistics New Zealand Population projections

Based on the PHO Quarter 3 2013 register there are 65,424 high risk children and young people enrolled with practices located in Counties Manukau. There are an additional 9573 of these "high risk" children and young people domiciled in Counties Manukau but enrolled with practices outside Counties (total 74,997).[19]

There are a number of practices which currently offer free primary care to their enrolled patients < 18 years (~ 30,000 high risks 4-19 year olds). ALG is working with a number of Primary care practices to develop a model whereby children and young people can present to a practice to be assessed if they have a sore throat. This includes practices which charge and those which do not. The funding model will be equitable across these practices and will vary depending on the number of 'high risk' children and young people enrolled in the practice.

Currently, only practices with more than 600 enrolled clients in the high risk group (children aged 4-19 years old who are Māori, pacific and/or quintile 5) are eligible. For practices with up to 1000 high risk patients, an annual payment of $10,000 will be made. For each additional 1,000 high risk patients enrolled, the payment increases by an additional $1,000 (refer Table 8).

There are a number of conditions that practices must agree to in order to be eligible for funding. These include;

- Follow the most recent national sore throat best practice guidelines
- Provide free throat swabbing, antibiotics and any follow up required
- Provide the service free to anyone who presents (ie both enrolled and non enrolled patients)
- GAS+ will be treated within 24 hours of a positive result
- The Provider will not claim any General Medical Services (GMS) for any patient seen under the Service

Table 7. Potential roll out of free sore throat clinics in Primary care Practices

Phase	Commencement	No. of practices
1	October 2013	4
2	November 2013	10
3	December 2013	21

[19] It is unclear whether the difference between enrolled and domiciled population is due to a number of children and young people not being enrolled in primary care; differences in how decile is calculated (meshblock vs Census area unit) or an issue with the reliability of the modelling so far out from a census.

Budget Implications

Table 8. Indicative Budget for implementing strengthened Primary Care Response

Locality	No. of 'high risk' in enrolled pop	No of clinics	$ per clinic	Total
Manukau	600-1000	11	$ 10,000	$ 110,000
	1000-2000	6	$ 11,000	$ 66,000
	3000-6000	0		$ -
Total enrolled	**17,505**	**17**		
Mangere Otara	600-1000	2	$ 10,000	$ 20,000
	1000-2000	5	$ 11,000	$ 55,000
	2000-3000	2	$ 12,000	$ 24,000
	3000-4000	2	$ 13,000	$ 26,000
	4000-5000	0		$ -
	5000-6000	0		$ -
	6000-7000	2	$ 16,000	$ 32,000
Total enrolled	**33,092**	**13**		
Franklin	600-1000	3	$ 10,000	$ 30,000
	1000-2000	1	$ 11,000	$ 11,000
	2000-3000	0		$ -
	3000-4000	0		$ -
	4000-5000	0		$ -
	5000-6000	0		$ -
Total enrolled	3,569	**4**		
Eastern	600-1000	0		$ -
	1000-2000	0		$ -
	2000-3000	0		$ -
	3000-4000	0		$ -
	4000-5000	0		$ -
	5000-6000	0		$ -
Total enrolled	266	**1**	$ 10,000	$ 10,000
Total coverage	**54,432**			**$ 384,000 /annum**

"High risk" defined as children/young people aged 4-19 years old who are Māori, pacific and/or quintile 5
For practices with up to 1000 high risk patients, an annual payment of $10,000 will be made. For each additional 1,000 high risk patients enrolled, the payment increases by an additional $1,000

Primary Care Outreach

In addition to the work in secondary schools and the development of the rapid response clinics in primary care the ALG is keen to strengthen primary care outreach services to ensure that family members are swabbed when appropriate. This involves increasing the whaanau support worker capacity to ensure that appropriate follow up and treatment can occur in the community.

Table 9. Consolidated budget for rapid response services

Activity	Investment
Secondary School based Clinics	$425,960
Primary Care based clinics	$384,000
Primary Care Outreach Services	$190,040
Laboratory Costs	$150,000
Programme Management Costs	$150,000
Total	**$1.3 million**

Note: All funding from Ministry from Health

Table 10. Actions to reduce Acute Rheumatic Fever

Actions to reduce Acute Rheumatic Fever			
Ref	**Action**	**Due date**	**Lead**
1	Increase the resourcing of current Mana Kidz clinics to ensure maximum coverage for high risk groups	1 November 2013	Carmel Ellis
2	Commence drop-in clinics in 17 identified secondary schools	10 February 2014	Tracy McKee (NHC Mana Kidz Clinical Leader)
3	Primary care drop-in clinics commence in 35 primary care clinics across DHB	1 October 2013 (staggered rollout commences)	Phil Light (NHC Mana Kidz Project Manager)
4	Primary care outreach services	January 2014	Carmel Ellis

4. Actions preventing the transmission of Group A streptococcal throat infections

Why is preventing Group A streptococcal infection important?

Group A streptococcal disease is a highly infectious bacterium and is recognised as a necessary precursor to the development of ARF. There is a strong association between those living in crowded situations and spread of infectious diseases. [20] Jaine et al found ARF rates were significantly and positively related to household crowding after controlling for age, ethnicity, household income, and the density of children in the neighbourhood. [21]

Initiatives to prevent transmission of Group A streptococcal throat infections

Auckland Wide Healthy Homes Initiative

The Ministry of Health is funding the establishment of the Auckland Wide Healthy Homes Initiative (AWHHI). This is a referral and advocacy service which will be contracted to a provider to deliver to the metro Auckland region. The details of how AWHHI will be operationalized are currently being finalised.

CM Health will work closely with the AWHHI provider/s[22] to ensure that all eligible families are referred to the service in a timely way. Specifically, CM Health will liaise with the AWHHI to ensure that eligible families from three key areas are referred appropriately;

1. School-based throat swabbing programme (from November 2013)
2. Middlemore Hospital and Kidz First (from January 2013)
3. Prophylactic bicillin service (from November 2013)

CM Health intends to work closely with the AWHHI, as well as Auckland and Waitemata DHBs, to ensure that the number of referrals to AWHHI are maximised. This will include ensuring that that the criteria for referral into the programme are well understood by clinicians and that Kidz First establish appropriate systems to ensure that the crowding status of children is established and appropriate referrals to AWHHI are made. There is also a need to co-ordinate this activity with Warm Up Counties Manukau (a housing insulation programme currently provided in Counties Manukau).

CM Health has strong working relationships with Alliance Health + and the National Hauora Coalition. Both of these organisations are currently leading key components of the rheumatic fever prevention response in the Auckland region. CM Health and Mana Kidz will work with AWHHI to ensure that feedback is provided to the clinicians about the outcomes of referral to the programme.

[20] Baker M, McNicholas A, Garrett N, Jones N, Stewart J, Koberstein V, Lennon D. Household crowding a major risk factor for epidemic meningococcal disease in Auckland children. Pediatr Infect Dis J, 2000;19:983–90

[21] Jaine, R, Baker, M & Venugopal K. Acute Rheumatic Fever Associated With Household Crowding in a Developed Country. Paed Infect disease Journal.Vol 30(4). April 2011.

[22] National Hauroa Coalition and Alliance Health plus

Table 11. Actions preventing the transmission of Group A streptococcal throat infections

Actions preventing the transmission of Group A streptococcal throat infections			
Ref	**Actions**	**Due date**	**Lead**
5	Establish processes to ensure that all eligible families are referred to AWHHI within agreed timeframes	1 November 2013	AWHHI project team
6	All families eligible for AWHHI are identified by Kidz First and referred within agreed timeframes	Process established by 1 February 2014	Pat Mead/ Nettie Knetsch/Ross Nicholson
7	Review Warm Up Counties eligibility criteria to align/complement AWHHI	18 November 2013	Jude Woolston/Pat Mead/AWHHI Project team
8	Develop clear referral pathway for Warm Up Counties to maximise uptake for eligible families	1 November 2013	Jude Woolston/Pat Mead

Other Activity to prevent Group A Streptococcal infection transmission

- Scope, with Auckland Regional Public Health, the possibility of excluding Group A streptococcal throat infections from school until 24 hours after starting antibiotics.
- Work with providers to ensure that family members of children with Group A streptococcal throat infections are consistently asked about sore throats and swabbed if symptomatic.
- Continue education by the school nurses about the importance of hand hygiene

Budget Implications

Table 12. Indicative Budget for reducing Group A Streptococcal load*

Role	FTE
Kidz First Rheumatic Fever Resource Role	0.5 FTE combined with adult role (see page 29)

*In addition there is some funding available from Ministry of Health (TBC) to support provider arm activity to develop referral systems of children admitted to AWHII.

5. Actions to treat Group A streptococcal throat infections quickly and effectively

CM Health will work with primary care partners to ensure that Group A Streptococcal throat infections are treated promptly and appropriately according to current best practice recommendations.

The focus of this work is to ensure that;

- The current sore throat guidelines in implemented in primary care
- Full course of antibiotics is taken
- An audit tool is developed and used by practices to audit sore throat management
- Education sessions are provided to primary care through CME/CNE

CM Health primary care team are engaging with Primary care to support sore throat guideline implementation and the CM Health GP liaison is providing support for education sessions. The Mana Kidz GP liaison roles are also engaging with primary care practices in Otara, Mangere and Manurewa to promote the use of the sore throat guidelines.

The Northern Regional Child Health Network (NRCHN) has identified Rheumatic Fever as a priority area for regional co-ordination and action. The are two clear action points identified in the implementation plan which include 1)developing a specific communications campaign for health professionals to identify and treat GAS and RF and 2)support the implementation of sore throat and diagnosis of RF guidelines in primary care.

The Greater Auckland Integrated Health Network (GAIHN) child health project lead is working closely with the NRCHN and is developing an audit tool of sore throat management that can be used by primary care practices. It has been identified that the development of an advanced form that could be used consistently across primary care would be advantageous as well as agreeing to a defined list of READ codes for consistent coding of pharyngitis.

As part of the school based programme there are currently systems in place to encourage compliance with 10 days of antibiotics. These include sticker charts for the children and nurse review at 5 days and 10 days. The intention is to work with Primary Care to develop systems to support families with compliance of medication. As part of developing the rapid response clinics options for ways in which this could be done will be explored eg. Reminders such as text messaging will be investigated.

Table 13. Summary of Actions to treat Group A throat Infections quickly and effectively

Actions to treat Group A streptococcal throat infections quickly and effectively			
Ref	**Actions**	**Due date**	**Lead**
9	Sore throat management guidelines available on Health point	Completed September 2013	GAIHN child project manager
10	Develop a communication strategy mapping out key messages to be included in the e-update including promotion of sore throat guidelines	From October 2013 (ongoing)	Karyn Sangster, Acting Nursing Director of Primary and Community Services CM Health Phil Light Mana Kidz project Manager
11	Face to Face visits to practices in Mangere, Otara, Manurewa and Papakura to promote the sore throat guidelines	From 1 September (ongoing)	Mana Kidz GP liaisons; Dr Primla Khar, Dr Ben Soe, Dr David Jansen
12	Regular practice visits in Otara, Mangere and Manurewa 3 monthly	From 1 September (ongoing)	Mana Kidz GP liaisons; Dr Primla Khar, Dr Ben Soe, Dr David Jansen
13	ARF Prevention resource for primary care education sessions developed, reviewed and implemented	31 September 2013	GAIHN child project manager
14	CME/CNE sessions in key localities	30 November 2013	Jennifer Njenga, CM health GP liaison Nicola Young, Procare Mana Kidz GP liaisons; Dr Primla Khar, Dr Ben Soe, Dr David Jansen
15	CME/CNE ARF prevention programme established for 2014	31 January 2014	Karyn Sangster, Acting Nursing Director of Primary and Community Services CM Health
16	Antibiotic compliance: Develop systems within primary care to increase treatment compliance	31 October 2013	Nicola Young, Procare Jennifer Njenga, CM Health GP liaison
17	Develop an advanced form, agree	May 2014	Nicola Young, Procare

	to consistent coding of pharyngitis and scope the development of an electronic audit tool such as Doctor Info

Budget Implications

Table 14. Indicative Budget for Actions to treat Group A throat Infections quickly and effectively

	Total ($)
Development of an Advanced form	$3000
Scope development of an electronic audit tool such as Doctor Info	TBC

6. Actions facilitating the effective follow-up of identified rheumatic fever cases

Ensure secondary prophylaxis is delivered on time

The rationale for secondary prevention is that prevention of GAS colonisation or re-infection will prevent recurrent episodes of rheumatic fever, therefore reducing the risk of developing or worsening RHD.[23] Secondary prevention has been proven to be of benefit in rheumatic fever management.[24] Prophylaxis with Penicillin for those that have previously had ARF reduces the risk of recurrent ARF; developing or exacerbating RHD; surgical intervention for RHD; and death.[25,26,27,28] The effectiveness of secondary prevention is associated with compliance, with the best outcomes observed in patients who receive 12 benzathine penicillin injections each year.[29]

Several factors have been associated with suboptimal adherence including lack of patient/parent awareness of the implications of ARF/RHD; symptoms of illness; access to medical care; long-term continuity of care; and lack of active follow-up by health professional exacerbated in mobile populations.[30],[31],[32],[33],[34] Compliance with secondary prevention is enhanced by an active surveillance and reminder system and dedicated staff administering penicillin.[35] While the Ministry of Health has allowed up to five days for the delivery of penicillin after the due date, the evidence is compelling this should be delivered on time (21-28 days) in order to prevent recurrence and therefore this is the standard of care as a DHB we will aim to achieve.[36]

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[23] Guasch L, Vignau A, Mortimer E, Rammelkamp C. Studies of the Role of Continuing or Recurrent Streptococcal Infection in Rheumatic Valvular Heart Disease. The American Journal of the Medical Sciences. 1962 244(3):290-7.
[24] Lennon DR, Wilson NJ, Atatoa-Carr P, Arroll B, Farrell E, Jarman J, et al. New Zealand Guidelines for Rheumatic Fever 1. Diagnosis, Management and Secondary Prevention. Auckland: National Heart Foundation; 2006.
[25] Manyemba J, Mayosi B. Penicillin for secondary prevention of rheumatic fever. Cochrane Database of Systematic Reviews. 2002;3(CD002227).
[26] Strasser T, Dondog N, El Kholy A, Gharagozloo R, Kalbian V, Ogunbi O, et al. The community control of rheumatic fever and rheumatic heart disease: report of a WHO international cooperative project. Bull World Health Organ. 1981;59(2):285-94.
[27] Sanyal S, Berry A, Duggal S, Hooja V, Ghosh S. Sequelae of the initial attack of acute rheumatic fever in children from north India. A prospective 5-year follow-up study. Circulation. 1982 65(2):375-9.
[28] Lue H, Tseng W, Lin G, Hsieh K, Hsieh R, Chiou J. Clinical and epidemiological features of rheumatic fever and rheumatic heart disease in Taiwan and the Far East. Indian Heart Journal. 1983 35(3):139-46.
[29] Strasser T, Dondog N, El Kholy A, Gharagozloo R, Kalbian V, Ogunbi O, et al. The community control of rheumatic fever and rheumatic heart disease: report of a WHO international cooperative project. Bull World Health Organ. 1981;59(2):285-94.
[30] Frankish JD. Rheumatic fever prophylaxis: Gisborne experience. N Z Med J. 1984 Oct 10;97(765):674-5.
[31] Lue H, Chen C, Wei H. Some problems in long-term prevention of streptococcal infection among children with rheumatic heart disease in Taiwan. Japanese Heart Journal. 1976;17(5):550-9.
[32] Bassili A, Zaher S, Zaki A, Abdel-Fattah M, Tognoni G. Profile of secondary prophylaxis among children with rheumatic heart disease in Alexandria, Egypt. East Mediterr Health J. 2000 6(2-3):437-46.
[33] Spinetto H, Lennon D, Horsburgh M. Control of Rheumatic Fever Recurrences in Auckland, New Zealand: Questions Answered. Journal of Paediatric and Child Health . 2011: 47(4) 228-34.
[34] Gavrin J, Tursky E, Albam B, Feinstein A. Rheumatic Fever in Children and Adolescents. A long term epidemiological study of subsequent prophylaxis, streptococcal infections, and clinical sequelae. II. Maintenance and preservation of the population. Annals of Internal Medicine. 1964;60(Suppl 5):18-30.
[35] Carapetis JR, Brown A, Wilson NJ, Edwards KN, Rheumatic Fever Guidelines Writing G, Carapetis JR, et al. An Australian guideline for rheumatic fever and rheumatic heart disease: an abridged outline. Med J Aust. [Practice Guideline]. 2007 Jun 4;186(11):581-6.
[36] Spinetto H, Lennon D, Horsburgh M. Control of Rheumatic Fever Recurrences in Auckland, New Zealand: Questions Answered. Journal of Paediatric and Child Health . 2011: 47(4) 228-34.

CM Health is committed to ensuring that patients on with a history of rheumatic fever who should be receiving monthly antibiotics do, in a timely fashion. In order to ensure this occurs there are a number of actions outlined in the table below which will enable better engagement between the District Nurses and patients and facilitate the delivery of prophylaxis on time.

Table 15. Summary Table of Actions to facilitate effective follow up of identified rheumatic fever cases

Actions facilitating the effective follow-up of identified rheumatic fever cases			
Ref	**Actions**	**Due date**	**Lead**
18	Nurse educator continues to support District Nursing service	October 2013 ongoing	Carol Slade
19	Scope options to ensure that prophylaxis can be delivered to patients at outpatient clinics patients. Options to be explored include identifying patients in advance who are likely to need prophylaxis and ensuring that A DN is available to administer, up skilling the clinic nurse, recalling patients to outpatients on a Friday afternoon for injection.	December 2013	Carol Slade/ Karyn Sangster/Donna Neal
20	Process of reporting delayed administration as a medication error/incident reporting implemented. Intention over 5 years to report if > 1 day delayed – staged implementation.	December 2013	Carol Slade
21	Improve medication safety and accuracy of scripts	February 2014	Carol Slade/Karyn Sangster
22	Appoint senior manager responsible for responding to delays in secondary prophylaxis delivery	1 October 2013	Carol Slade
23	Undertake an audit of the timeliness of secondary prophylaxis audit quarterly	Ongoing	Karyn Sangster/ Mareta Ferguson
24	Move to a system of a named lead nurse for each patient receiving IM penicillin	February 2013	Carol Slade/Karyn Sangster
25	Scope the potential of providing a monthly visit to children allergic to	March 2014	Mareta Ferguson/ Carol Slade/RF

	penicillin and thus taking oral erythromycin. This would enable ongoing engagement and education with the family and delivery of erythromycin at no cost under a Practitioner supply order (PSO).		resource nurse
26	Establish a data manager role across the district nursing localities who is responsible to collect data systematically	March 2014	Carol Slade
27	Develop a process to identify patients who are hard to reach so additional measures can be instigated early to ensure they received their prophylaxis on time	March 2014	Carol Slade/Karyn Sangster/ Mareta Ferguson
28	Continue to advocate with PHARMAC to ensure that there is an alternative supplier of Bicillin available	Ongoing	Diana Lennon/ Pharmacy programme manager Primary an community Health

Budget implications

Table 16. Indicative Budget for ensuring secondary prophylaxis is delivered on time

	FTE	Rate	Total ($)
DN Nurse Educator Role	0.8 FTE 0.4 FTE ongoing	$78,000	$62,400 (6 months) $31, 200 (ongoing)
Data Manager Role across the DN localities	0.1	$70,000	$7000
Total			$53,800 1st year $38, 200 ongoing per annum

Ensure that all cases of Rheumatic Fever are notified to the Medical Officer of Health within 7 days

Acute Rheumatic Fever is a notifiable disease under the Health Act 1956 and medical practitioners are required, by law, to notify the local Medical Officer of Health on suspicion of a diagnosis of ARF. Up until 2009, ARF was not being routinely notified to Auckland Regional Public Health Service (ARPHS) by Counties Manukau staff. Instead on discharge from hospital a patient's details were forwarded to the Auckland Rheumatic Fever Register

which, at some later date, forwarded the information to ARPHS. Notifications were being entered into the national surveillance system (Episurv) on the basis of the date ARPHS was notified, which was often months or years after the patient was diagnosed. This has limited the usefulness of Episurv data.

In 2009 a new process was introduced to the paediatric wards whereby once a consultant had reviewed the case, and the diagnosis of ARF seemed likely, a one page notification document was faxed through to ARPHS. It is acknowledged that there has been some variability with the consistency with which this has been done. Approximately a third of cases of ARF occur in young people > 15 years of age who are admitted to the adult medical wards. It is acknowledged that the number of General Medical teams at Middlemore (15) mean it is essential to have standardised, well understood processes in place to ensure that notification to the Medical Officer of Health occurs in a timely way.

CM Health is committed to establishing processes that ensure a person diagnosed with ARF is reliably notified to the Medical Officer of Health in a timely fashion.

Table 17. Summary of actions to ensure that the Medical Officer of health is notified within 7 days

Actions to ensure that all cases of Rheumatic Fever are notified to the Medical Officer of Health within 7 days			
Ref	**Actions**	**Milestone**	**Lead**
29	Work with Senior Clinical Staff to increase awareness about the importance of timely notification of ARF cases to ARPHS	1 September 2013 (Ongoing)	Briar Peat/Ross Nicholson/ Pip Anderson
30	Ensure that there are clear expectations within teams about whose responsibility it is to notify ARPHS of an ARF case	Ongoing	Briar Peat/ Ross Nicholson
31	Webpage with ARF clinical pathway and link to notification form is developed	1 October 2013	Chris Luey/Briar Peat
32	Update RMO handbook to ensure notification of ARF is detailed	January 2014	Pat Mead
33	Regularly audit notifications to ARPHS against ICD 10 discharge data with feedback to responsible clinician to notify or clarify diagnosis	Ongoing	Pip Anderson (population health)/ Rheumatic fever resource nurse

Budget Implications

Table 18. Indicative Budget for ensuring all cases are notified to the Medical Officer of Health

	FTE	Rate
Rheumatic Fever role- combined paediatric and adult role (see page 20)	0.5	(see pg 29)

Identify and follow-up known risk factors and system failure points in cases of rheumatic fever

It is recognized that if Group A streptococcal throat infections are identified and treated then potentially two thirds of ARF could be prevented.[37]There are a number of factors that need to be reviewed when considering how a case of ARF could have been prevented. Issues to be explored include whether the patient had a sore throat, the patient and their family's understanding of the significance of a sore throat, whether care was sought and if it was whether appropriate treatment was given. Compliance with medication also needs to be reviewed.

Collecting and reviewing this information allows an opportunity to review the patient's experience of symptoms and interaction with the health system to better understand how to intervene (e.g improved community awareness, strengthening health services to ensure appropriate treatment) in order to prevent the development of ARF.

Currently the collection of this information is variable. There is no standardized and agreed process to review the systems in primary care or the school based programme to identify if systematic issues are leading to inappropriate care.

The Ministry expectation is that a minimum of 20 cases of ARF will be reviewed annually to identify any system failures leading to the development of ARF and the development of appropriate mitigation strategies.

CM Health will establish a monthly meeting to review cases of ARF admitted to Middlemore in the preceding month. This meeting will include clinicians from both Paediatric and Adult Services. There will need to be consistent information collected from all cases prior to this meeting. There will need to be support to collate this information and co-ordinate the meetings and as well as provide specific feedback to primary care. It is envisaged this would be done via the PHO contact that would feedback any identified issues to the practice.

There has been support from primary care to participate in a review process with the Metro Auckland Primary Care Clinical Advisory Group endorsing the establishment of a process to review all admissions of ARF to identify any system failures which may have contributed to the patient developing ARF.

There is willingness across the Northern DHBs to develop a consistent process whereby cases are reviewed.CHM is committed to reviewing cases and working across the health sector to implement changes to improve care if issues are identified.

[37] Gordis, l. Effectiveness of comprehensive care programs in reducing rheumatic fever. NEJM. 289(7) .1973 Aug.

Table 19. Summary Table of the actions to identified risk factors and system failures in cases of ARF

Identify and follow-up known risk factors and system failure points in cases of acute rheumatic fever			
Ref	**Actions**	**Milestone**	**Lead**
34	Develop a standardised form to aid the collection of pertinent information to inform the case review process	October 2013	Pat Mead/Ross Nicholson
35	Work with Northern DHBs to establish consistent process across the DHBs	November 2013	Pip Anderson/Carmel Ellis
36	Implement a process whereby at least 20 cases of ARF are reviewed annually	January 2014	Ross Nicholson/Briar Peat
37	Engage with primary Care about the appropriate mechanism to follow up on any concerns identified	January 2014	Rachael Haggerty/ Nicola Young
38	Engage with School based services to develop the appropriate mechanisms to follow up and concerns identified	November 2013	Tracy McKee

In order to implement this, as well as some of the other work, described in the plan it is proposed that a rheumatic fever resource nurse is required. It is envisaged this role would work across Paediatric and adult services and across inpatient and community services. The role would ensure that the information required for the review process was collected, would coordinate and run the monthly review meeting, would liaise with primary care about the outcomes of these meetings, and would audit the notifications on a monthly basis to ARPHS and feedback to the responsible clinicians.

Clinicians have also expressed a desire to move to an electronic data entry form for all cases of ARF admitted to hospital. It is envisaged that such an electronic system would enable the collection of details related to the case itself, provide prompts to endure the care pathway is followed, generate referrals to the ARF register, dentist and outpatient clinic. This would need to be linked to the current Rheumatic fever register. There is some work underway regionally which is looking at upgrading the Auckland RF register and this could be linked to this work moving forward.

Table 20. Additional Resource required to implement initiatives

Additional Activity			
Ref	**Actions**	**Milestone**	**Lead**
39	Establish Rheumatic Fever Resource role	January 2014	Pat Mead /Ross Nicholson
40	Scope the feasibility of establishing as electronic data entry form for cases of ARF and RHD.	TBC	TBC

Table 21. Indicative Budget for ensuring follow-up on known risk factors and system failures

	FTE	Rate	Total ($)
RF resource nurse	0.5 FTE	$72, 208 (Grade 2 Clinical Specialty role)	$34, 104 salary $1,500 overheads (WRE, CME, ACC)
SMO time for monthly meeting	4 hrs per month= 0.025 FTE	$200,000	$5,000 salary $1,000 overheads (WRE, CME, ACC, superannuation)
Quality and Safety co ordinator expertise in set up phase	Absorbed		
Total			$41, 604.00

7. Summary of the Rheumatic Fever Prevention Plan

Table 22. Summary of Actions

Actions to reduce Acute Rheumatic Fever			
Ref	**Action**	**Due date**	**Lead**
1	Increase the resourcing of current Mana Kidz clinics to ensure maximum coverage for high risk groups	1 November 2013	Carmel Ellis
2	Commence drop-in clinics in 17 identified secondary schools	10 February 2013	Tracy McKee (NHC Mana Kidz Clinical Leader)
3	Primary care drop-in clinics commence in 35 primary care clinics across DHB	1 October 2013 (staggered rollout commences)	Phil Light (NHC Mana Kidz Project Manager)
4	Primary care outreach services	January 2014	Carmel Ellis
Actions preventing the transmission of Group A streptococcal throat infections			
Ref	**Actions**	**Due date**	**Lead**
5	Establish processes to ensure that all eligible families are referred to AWHHI within agreed timeframes	1 November 2013	AWHHI project team
6	All families eligible for AWHHI are identified by Kidz First and referred within agreed timeframes	Process established by 1 February 2014	Pat Mead/ Nettie Knetsch/Ross Nicholson
7	Review Warm Up Counties eligibility criteria to align/complement AWHHI	18 November 2013	Jude Woolston/Pat Mead/AWHHI Project team
8	Develop clear referral pathway for Warm Up Counties to maximise uptake for eligible families	1 November 2013	Jude Woolston/Pat Mead
Actions to treat Group A streptococcal throat infections quickly and effectively			
Ref	**Actions**	**Due date**	**Lead**
9	Sore throat management guidelines available on Health point	Completed September 2013	GAIHN child project manager
10	Develop a communication strategy mapping out key messages to be included in the e-update including promotion of sore throat guidelines	From October 2013 (ongoing)	Karyn Sangster, Acting Nursing Director of Primary and Community Services CM Health Phil Light Mana Kidz project Manager
11	Face to Face visits to practices in Mangere, Otara, Manurewa and Papakura to promote the sore throat guidelines	From 1 September (ongoing)	Mana Kidz GP liaisons; Dr Primla Khar, Dr Ben Soe, Dr David Jansen

12	Regular practice visits in Otara, Mangere and Manurewa 3 monthly	From 1 September (ongoing)	Mana Kidz GP liaisons; Dr Primla Khar, Dr Ben Soe, Dr David Jansen
13	ARF Prevention resource for primary care education sessions developed, reviewed and implemented	31 September 2013	GAIHN child project manager
14	CME/CNE sessions in key localities	30 November 2013	Jennifer Njenga, CM Health GP liaison Nicola Young, Procare Mana Kidz GP liaisons; Dr Primla Khar, Dr Ben Soe, Dr David Jansen
15	CME/CNE ARF prevention programme established for 2014	31 January 2014	Karyn Sangster, Acting Nursing Director of Primary and Community Services CM Health
16	Antibiotic compliance: Develop systems within primary care to increase treatment compliance	31 October 2013	Nicola Young, Procare Jennifer Njenga, CM Health GP liaison
17	Develop an advanced form, agree to consistent coding of pharyngitis and scope the development of an electronic audit tool such as Doctor Info	May 2014	Nicola Young, Procare
Actions facilitating the effective follow-up of identified rheumatic fever cases			
Ref	**Actions**	**Due date**	**Lead**
18	Nurse educator continues to support District Nursing service	October 2013 ongoing	Carol Slade
19	Scope options to ensure that prophylaxis can be delivered to patients at outpatient clinics patients. Options to be explored include identifying patients in advance who are likely to need prophylaxis and ensuring that A DN is available to administer, up skilling the clinic nurse, recalling patients to outpatients on a Friday afternoon for injection.	December 2013	Carol Slade/ Karyn Sangster/Donna Neal
20	Process of reporting delayed administration as a medication error/incident reporting implemented. Intention over 5 years to report if > 1 day	December 2013	Carol Slade

	delayed – staged implementation.		
21	Improve medication safety and accuracy of scripts	February 2014	Carol Slade/Karyn Sangster
22	Appoint senior manager responsible for responding to delays in secondary prophylaxis delivery	1 October 2013	Carol Slade
23	Undertake an audit of the timeliness of secondary prophylaxis audit quarterly	Ongoing	Karyn Sangster/ Mareta Ferguson
24	Move to a system of a named lead nurse for each patient receiving IM penicillin	February 2013	Carol Slade/Karyn Sangster
25	Scope the potential of providing a monthly visit to children allergic to penicillin and thus taking oral erythromycin. This would enable ongoing engagement and education with the family and delivery of erythromycin at no cost under a Practitioner supply order (PSO).	March 2014	Mareta Ferguson/ Carol Slade/RF resource nurse
26	Establish a data manager role across the district nursing localities who is responsible to collect data systematically	March 2014	Carol Slade
27	Develop a process to identify patients who are hard to reach so additional measures can be instigated early to ensure they received their prophylaxis on time	March 2014	Carol Slade/Karyn Sangster/ Mareta Ferguson
28	Continue to advocate with PHARMAC to ensure that there is an alternative supplier of Bicillin available	Ongoing	Diana Lennon/ Pharmacy programme manager Primary an community Health
Actions to ensure that all cases of Rheumatic Fever are notified to the Medical Officer of Health within 7 days			
Ref	**Actions**	**Milestone**	**Lead**
29	Work with Senior Clinical Staff to increase awareness about the importance of timely notification of ARF cases to ARPHS	1 September 2013 (Ongoing)	Briar Peat/Ross Nicholson/ Pip Anderson
30	Ensure that there are clear expectations within teams about whose responsibility it is to notify ARPHS of an ARF case	Ongoing	Briar Peat/ Ross Nicholson
31	Webpage with ARF clinical pathway and link to notification form is developed	1 October 2013	Chris Luey/Briar Peat
32	Update RMO handbook to ensure notification of ARF is detailed	January 2014	Pat Mead
33	Regularly audit notifications to ARPHS against ICD 10 discharge data with feedback to responsible clinician to notify or clarify diagnosis	Ongoing	Pip Anderson (population health)/ Rheumatic fever resource

			nurse
Identify and follow-up known risk factors and system failure points in cases of acute rheumatic fever			
Ref	**Actions**	**Milestone**	**Lead**
34	Develop a standardised form to aid the collection of pertinent information to inform the case review process	October 2013	Pat Mead/Ross Nicholson
35	Work with Northern DHBs to establish consistent process across the DHBs	November 2013	Pip Anderson/Carmel Ellis
36	Implement a process whereby at least 20 cases of ARF are reviewed annually	January 2014	Ross Nicholson/Briar Peat
37	Engage with primary Care about the appropriate mechanism to follow up on any concerns identified	January 2014	Rachael Haggerty/ Nicola Young
38	Engage with School based services to develop the appropriate mechanisms to follow up and concerns identified	November 2013	Tracy McKee
Additional Activity			
Ref	**Actions**	**Milestone**	**Lead**
39	Establish Rheumatic Fever Resource role	January 2014	Pat Mead /Ross Nicholson
40	Scope the feasibility of establishing as electronic data entry form for cases of ARF and RHD.	TBC	TBC

8. Summary of Investment in Rheumatic Fever Prevention Programme

Table 23. Summary of current investment- MOH and CM Health

Ministry of Health Investment			CM Health Investment	
Area	**Investment/annum**	**Investment/ one off costs**	**Investment**	**Investment/ one off costs**
School based programme	$2.9 million		$3.682 million	
Evaluation of school based throat swabbing services	-			$50,000
Community response activity	$1.3 million		-	
Lab costs (cover the cost of labs from school based programme and rapid response activity)	-		$600,000	
AWHHI initiative (approx. 2/3 of total funding)		$2.5 million	-	
Communication strategy (approx. ½ of the total funding)		$2.3 million	-	
Programme leadership Senior Portfolio Manager Child, Youth and Maternity Public Health Physician, GM Kidz First			$200,000	
Additional resource required to implement RF prevention plan				

• ***DN nurse educator role*** • ***Rheumatic Fever resource Nurse*** • ***Data manager DN service*** • ***SMO time (case review)***			$31, 200 $35,604 $7,000 $6,000	$15,600 (additional resource needed for first 6 months on top of annual amount)
Development of advance form				$3000
Total	$4.2 million	$4.8 million	$4.562 million	$68,600