RHD Australia

One21seventy
National Centre for Quality Improvement
in Indigenous Primary Health Care

ABCD National Research Partnership
Improving practice
through research

Report on
Aboriginal and Torres Strait Islander Acute Rheumatic Fever and Rheumatic Heart Disease Care in Queensland
(2012 – 2014)

Phase 1 Report: Engaging Stakeholders in Identifying Priority Evidence-Practice Gaps and Strategies for Improvement in Primary Health Care (ESP Project)

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Authorship

This report was prepared by RHDAustralia and the ABCD National Research Partnership Project. Authors of this report: Sara Noonan, Sandra Downing, Veronica Matthews, Alison Laycock, Jodie Bailie, Ross Bailie

SN and SD played lead roles in the analysis and interpretation of data and writing of the report. RB provided overall leadership of ABCD NRP (including the ESP Project), and had a major role in overseeing data analysis and interpretation, and drafting and reviewing of ESP reports. VM played a lead role in the role in the development of the ESP project process, and in management, analysis and presentation of the ESP data. JB played a lead role in the ESP Project management and ESP report preparation and assisted with writing of this report. AL contributed to development of the ESP Project process and report writing.

Acknowledgements

We sincerely thank the range of employees of stakeholder organisations and individuals who have provided generous contributions to the ESP Project. The success of this project is built on feedback, engagement and participation by a range of individuals and groups within and beyond the ABCD National Research Partnership.

We would also like to acknowledge the contributions of Cynthia Croft in her role as the Project Manager for the ABCD NRP and contributions to the ESP Project; James Bailie for contributions to ESP data management and analysis; Anna Sheahan for contributions to the collation of ESP data; and Frances Cunningham, Jenny Brands and Gill Schierhout for assistance with the conceptualisation of the ESP Project.

The ABCD National Research Partnership is led by Menzies School of Health Research and funded by the National Health and Medical Research Council (ID No.545267) and the Lowitja Institute. The Partnership includes Aboriginal Community Controlled Health Organisation peak bodies and member services, government health departments, academic institutions, and primary health care services in five states and territories: the Northern Territory, Queensland, South Australia, Western Australia and New South Wales. Ethical approval has been granted by the Human Research Ethics Committees in all jurisdictions where there are participating health services.

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Abbreviations

ABCD	Audit and Best Practice for Chronic Disease
ARF	Acute rheumatic fever
ATSIHWs	Aboriginal or Torres Strait Islander Health Workers
BPG	Benzathine penicillin G
CQI	Continuous Quality Improvement
INR	International Normalised Ratio
PHC	Primary Health Care
RHD	Rheumatic Heart Disease
RRF	Recurrent rheumatic fever
SAT	Systems Assessment Tool
WHO	World Health Organisation

1. Executive summary

The ABCD National Research Partnership and One21seventy are founded on the premise that a holistic or comprehensive approach to primary health care (PHC) is fundamental to an effective health system. The data available through the ABCD National Research Partnership represents the most comprehensive set of data on clinical performance in PHC in Australia.

This report is part of the first phase of a three-phase project that is designed to engage a range of stakeholders in identifying priority evidence-practice gaps, barriers and enablers, and strategies for achieving improvement in the priority areas. This report focuses on identifying the *current* priority evidence–practice gaps in ARF/RHD care across a range of services participating in the ABCD National Research Partnership. The report uses de-identified data from 24 health centres in Queensland (QLD) that conducted audits of care for clients with acute rheumatic fever (ARF) and rheumatic heart disease (RHD) over the period 2012-2014.

The rationale for our focus on system wide evidence-practice gaps is that where there are aspects of care that are not being done well across a range of health centres this is likely to be due to deficiencies in the broader PHC system, and indicates that system-level action is required to improve performance in these areas.

Based on the national ABCD data presented in the report, aspects of care that appear to be done less well included recording of diagnosis, providing scripts for oral antibiotics; follow-up of clients who were potentially lost to follow-up and who received inadequate secondary prophylaxis treatment, and some elements associated with client education and self-management support. There was also a low level of evidence around recommended dental services.

While this report is focussed on priority areas for improvement, it is important to note that many aspects of care are being done well in many health centres, including disease management planning, maintaining International Normalised Ratio (INR) results for clients on warfarin, recorded planned frequency of secondary prophylaxis injections, elements of recommended management (including regular doctor review and echocardiogram, and elements of risk behaviour intervention). This project aims to build on the strengths within primary health care services in order to further enhance quality of care for Aboriginal and Torres Strait Islander people in all communities.

To access the accompanying survey to this report, click on this link:

https://www.surveymonkey.com/s/RHDPhase1

Feedback is due by Friday 23 January 2015

2. Background

The ABCD National Research Partnership and One21seventy

The ABCD National Research Partnership and One21seventy are founded on the premise that a holistic or comprehensive approach to primary health care (PHC) is fundamental to an effective health system. One21seventy[1] continuous quality improvement (CQI) tools and methods have to date been used by more than 200 Aboriginal and Torres Strait Islander PHC centres across the country. Data from 170 of these health centres are available for research use as a result of agreement from those health centres to take part in the ABCD National Research Partnership[2], producing the most comprehensive and up-to-date set of data on clinical performance in PHC in Australia.

Until now, CQI data of this kind have not been widely used beyond the health centre or region level. The establishment of this growing dataset has been made possible by the active contributions of health centre staff, CQI facilitators, managers, policy makers, researchers and clinical leaders. Their ongoing contributions are vital to making most effective use of data for improving the quality of care for Aboriginal and Torres Strait Islander people across Australia. For a description of the scope and quality of data, and how data are collected, see Box 1.

One21seventy audit tools are based on clinical guidelines and reflect best practice across the scope of primary health care. They are regularly updated by an expert working group to reflect changes in guidelines and State/Territory requirements. The systems assessment tool reflects the core system components required to support delivery of best practice care. Data collected using One21seventy audit and systems assessment tools cover a range of key areas of PHC, including ARF/RHD, child health, preventive health, maternal health and chronic illness care.

Over the course of 2014 and 2015, these key areas of care will be the focus of a series of three-phase action-research cycles (Figure 1). This series of action-research cycles addresses a key area of interest for the ABCD National Research Partnership, and is referred to as the **E**ngaging **S**takeholders in Identifying **P**riority Evidence-Practice Gaps and Strategies for Improvement Project (or ESP Project). The ESP Project aims to encourage national and State/Territory level conversations about systemic barriers or enablers that could affect improvement in the delivery of PHC, and help inform system changes to direct resources and efforts where they can most improve the health of Aboriginal and Torres Strait Islander communities.

Report on acute rheumatic fever and rheumatic heart disease care and priorities for improvement

This report forms the first phase of the ARF/RHD ESP Project, and focuses on identifying priority areas for improvement. The data presented reflect indicators of quality, based on national protocols, across the scope of clinical practice and health centre systems for ARF/RHD care. The data come from participating health centres in QLD that last used the One21seventy ARF/RHD clinical audit and systems assessment tools in the period 2012-2014. About 30% (24/77) of QLD health centres participating in the ABCD National Research Partnership conducted ARF/RHD audits over this period.

The data show some health centres are doing very well in various aspects of ARF/RHD care, and it is important to acknowledge the good quality care provided by these services. However, there are a number of areas of care that are not being consistently delivered in some health centres. Preliminary priority evidence-practice gaps have been identified by the RHD Australia team in this first Phase 1 draft report.

Overview of the ESP Project

The ESP Project explores how aggregated CQI data can be used across the broader health system to identify and address priority areas for improvement, where gaps between guideline recommended services and actual practice are relatively large, more common or more important. The project aims to:

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[1] For more information about One21seventy:<http://www.one21seventy.org.au/>

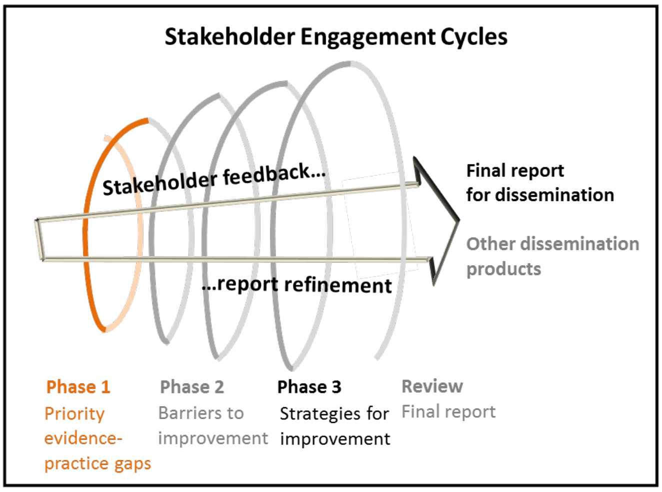
[2] For more information on the ABCD Research Partnership Project: <http://www.menzies.edu.au/abcd />

- Identify participant views on the priorities and strategies for improvement in PHC for Aboriginal and Torres Strait Islander people, in light of the CQI data presented.
- Provide opportunities for discussion and use of CQI data and evidence from research to inform improvement across all levels of the health system.
- Learn more about how CQI data can be presented and made available to leaders, managers and influencers across the health system

Large-scale improvement in the delivery of PHC requires change at multiple levels of the health system, not only at the local health centre level. Where there are aspects of care that are not being done well across a range of health centres, this is likely to be due to inadequacies in the broader PHC system. These broader systems therefore directly impact health care and health outcomes for Aboriginal and Torres Strait Islander people. Improvements to systems should be based on evidence about what is working well and what service gaps need to be addressed. Quality CQI data can contribute to this evidence.

This project aims to engage key stakeholders in the interpretation and use of aggregated CQI data; specifically, to engage them in a process for determining priorities for improvement, identifying barriers and enablers to high quality care, and using the information from this process to inform development of system-wide strategies for improvement.

Figure 1: ESP Project Phases



Phase 1 – Evidence-practice gaps

This phase focuses on the identification of priority areas for improvement (priority evidence-practice gaps) in the delivery of ARF/RHD care in Aboriginal and Torres Strait Islander PHC.

Information provided to participants

- aggregated CQI data (2012-2014) about the delivery of care presented in national and State/Territory reports
- preliminary priority areas for improvement, based on the data

Feedback/data collection

Online survey, workshop sessions and email responses.

Outputs

Draft report on preliminary priority evidence-practice gaps in best practice care. Refinements based on stakeholder feedback and survey data will be incorporated into Phase 2 report.

Phase 2 – Barriers and enablers

This phase focuses on trends in indicators relevant to the identified priority evidence-practice gaps, and on influences that may enable or hinder improvement at different points in the health system. In particular, it seeks to identify those factors that may be most important in addressing the identified priority evidence-practice gaps in best practice care identified in Phase 1.

Information provided to participants

Report on trends over time for key indicators relevant to priority evidence-practice gaps in best practice care.

Feedback/data collection

Online survey, including questions about barriers and enablers to improvement based on international, national and Aboriginal and Torres Strait Islander-specific evidence and frameworks.

Outputs

Draft report on barriers and enablers to improvement in care relevant to identified priority evidence-practice gaps, based on responses to the online questionnaire. The draft report will be returned to participants for review in Phase 3.

Phase 3 – Strategies for improvement

This phase focuses on identifying new or existing strategies that could be introduced or strengthened to enable improvement in priority evidence-practice gaps.

Information provided to participants

- draft report on barriers and enablers to improvement in care relevant to the identified priority evidence-practice gaps (report from Phase 2)
- An evidence brief synthesising findings from research about barriers, enablers and strategies for improvement in the delivery of PHC, with particular attention to research in the Australian Aboriginal and Torres Strait Islander health context.

Feedback/data collection

Online survey. Participants will be encouraged to draw on their own experience, the evidence brief and the data presented throughout the project to identify strategies to address priority evidence-practice gaps.

Outputs

Draft report on strategies to address priority evidence-practice gaps. This report will be based on the Phase 2 report on barriers and enablers and on expert input on strategies for improvement provided through Phase 3.

Review and final report

A draft report on strategies for improvement will be returned to participants for review. Comments from the review will be used to inform a final report on the ESP cycle that includes stakeholders' feedback on

A draft report on strategies for improvement will be returned to participants for review. Comments from the review will be used to inform a final report on the ESP cycle that includes stakeholders' feedback on the interpretation of priority evidence-practice gaps, barriers and enablers to addressing the identified priority evidence-practice gaps, and on suggested strategies for improvement. This final report will be provided to key stakeholders in all participating jurisdictions. Project findings will be reported in academic

Box 1: Overview of One21seventy data collection and reporting

Where do the data in this report come from? The report is based on analysis of audits of clinical records of clients with acute rheumatic fever and rheumatic heart disease who attend services that use One21seventy CQI tools AND participate in the ABCD National Research Partnership. The ARF/RHD audit tool was developed by an expert working group, with participation of RHD experts and health service staff. The tool is designed to enable services to assess their actual practice against best practice standards, and is accompanied by a protocol that includes reference to the guidelines and standards that form the basis of the tool (the reference list is included in Section 8). The audit data are supported by a summary of system performance as assessed by staff in health centres that completed a systems assessment tool (SAT) related to RHD service delivery. Copies of the One21seventy ARF/RHD Audit Tool and how the audits are conducted are available on request.

Who collects the audit and systems assessment data? The clinical audits are generally done by health centre staff, trained in the use of One21seventy tools and supported by quality improvement facilitators and One21seventy staff. In some centres where staff are not available or lack skills or confidence the audits are done by CQI facilitators. The Systems Assessment is completed by health centre staff in a process that is facilitated by a CQI facilitator.

How do health centres use the data? The data collected through One21seventy CQI tools and entered into the One21seventy web-based information system are analysed and made available to health centres in real time for use in quality improvement processes. Reports of aggregated data for clusters of health centres, by region or by state are also available through the One21seventy web-based information system in order to support regional or state/territory level CQI efforts. The ESP Project is intended to contribute to enhancing the quality of reporting and use of aggregated CQI data for the purpose of service improvement.

Restrictions and limitations on the data presented. The data in this report are not expected to be representative of all health centres in QLD because participation of health centres is either through self-selection or through regional decision making processes.

The data reflect what has been documented in electronic and paper based client records, depending on what record systems are used in each health centre. There has been a trend in recent years to increasing use of electronic records. Many health centres are still using paper-based systems, and some are using a mix of paper and electronic systems. The quality of recording of clinical care is variable in both paper and electronic systems, and the audit data may not provide a true reflection of actual care. We have no way of collecting data or reporting on services that are not recorded. Accurate and clear recording of care is an important aspect of quality of care and has important implications for continuity and coordination of care, for medico-legal purposes and for efficient use of resources.

Criteria for inclusion of records in the audit: To be eligible for inclusion in an ARF/RHD clinical audit, a client must: have a clear, documented history of definite or suspected diagnosis of either acute rheumatic fever or rheumatic heart disease; and have been a resident in the participating community for six months or more in the last twelve months. Clients classified as Priority 4, with a history of ARF (but no RHD) for whom secondary prophylaxis has been ceased, are excluded as they do not require elements of care necessary for ARF/RHD for which the audit is intended. Where the eligible population is 30 clients or less, the audit protocol recommends including all records. Where the eligible population is greater than 30, the protocol provides guidance on the ***random*** selection of a number of records, with the number depending on the precision of estimates required by health service staff.

3. Profile of health centres

Twenty-four health centres last used the ARF/RHD audit tool in 2012, 2013 or 2014 (Table 1) and the health centres had used the audit tools for varying numbers of cycles (Table 2). The data included in the analysis for this report were extracted in July 2014. A total of 339 records were audited. Seven health centres last used the ARF/RHD tool in 2012 (124 records audited), 16 health centres in 2013 (196 records audited) and one health centre in 2014 (19 records audited). To date, 16 of these health centres recorded a completed systems assessment in the One21seventy database.

Table 1: Most recent RHD audit and systems assessment completed in 2012, 2013 or 2014 (number of client records audited, number of health centres)

	2012	2013	2014	**Total**
#Records	124	196	19	**339**
#Centres	7	16	1	**24**
#SATs	3	13	0	**16**

Table 2: Most recent ARF/RHD audit completed, by audit cycle in 2012, 2013 or 2014 (number of health centres)

Last Audit Cycle Completed						
1	**2**	**3**	**4**	**5**	**6**	**Total**
6	5	9	3	1	0	**24**

The majority of health centres are in remote communities and are government managed (Table 3). Almost 90% of records audited were for Aboriginal or Torres Strait Islander clients. Fifty seven percent of all records were for clients classified as Priority 3 (Mild RHD or ARF (no RHD). Priority 1 (Severe RHD) and Priority 2 (Moderate RHD) clients made up 10% and 19% respectively. Close to 100% of audited records showed a record of attendance at the health centre either within the previous 6 or 12 months depending on RHD classification and almost half of these attendances were for benzathine penicillin injections. Three quarters of clients attending the health centres were assessed by a nurse, with Aboriginal or Torres Strait Islander Health Workers (ATSIHWs) and General Practitioners equally the next most common professionals to do the initial assessment.

Table 3: Characteristics of health centres and clients whose records were last audited during 2012-2014 (number & percent of total)

	Primary Health Care Centres	**24**	
Location	Urban	1	4%
	Regional	3	13%
	Remote	20	83%
Governance	Government	24	100%
	Community Controlled	--	--
Size of population served	≤500	11	46%
	501-999	4	17%
	≥1000	9	37%
Completed RHD audit cycles	Baseline	6	25%
	1-2 cycles	14	58%
	≥3 cycles	4	17%
	Number of audited records	**339**	
	Age (mean & range)	24	(2-75)
Gender	Males	132	39%
	Females	207	61%
Indigenous status	Indigenous	302	89%
	Non-indigenous	5	1%
	Not stated	32	9%
Reason for last attendance	BPG Injection	195	58%
	Oral antibiotic prophylaxis	1	0.3%
	Acute care	78	23%
	Well person's check	4	1%
	Specialist review	14	4%
	Other	47	14%
Profession client first seen by	ATSIHW	27	8%
	Nurse	257	76%
	GP	45	13%
	Specialist	7	2%
	Allied Health	1	0.3%
	Other	--	--
	Not stated	2	0.6%
RHD Classification	Priority 1: Severe	35	10%
	Priority 2: Moderate	64	19%
	Priority 3: Mild, ARF (no RHD)	194	57%
	Unable to determine	4	1%
	Not recorded	42	12%
Time since last attendance	Within past 6 months (priority 1 & 2)	95	96%
	Within past 12 months (priority 3)	190	98%

4. Presentation of data

The presentation of audit findings follows the structure of the RHD audit tool, with sections on recording of key client information; documented penicillin use; recurrence of acute rheumatic fever and follow-up; scheduled services; and risk factors and brief interventions.

Each section of the report includes:

- A summary of key findings from the national audit data;
- Preliminary priority evidence-practice gaps (preliminary priorities for improvement) based on the national data; and
- Box and whisker plots for each of the items in the audit tools, which show the level of adherence to best practice guidelines, and variation between health centres.

Box and whisker plots

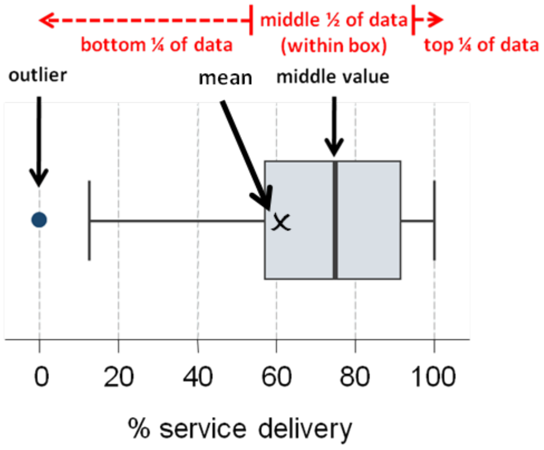
The mean percent delivery of each service item is calculated for each health centre and displayed within a 'box and whisker plot' to show the distribution (or variation) in delivery of that item across health centres.

Box and whisker plots show (Box 2):

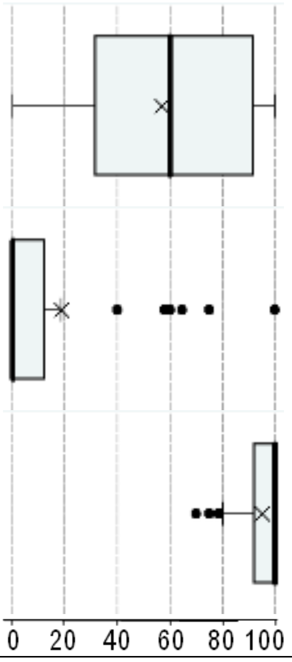
- the minimum and maximum values (ends of whiskers if no outliers);
- outliers which are values far away from most other values in the data set (or a distance that is greater than 1.5 times the length of the box);
- the range of service item delivery by dividing the dataset into quarters:
  - the box represents the middle 50% of the dataset, and the line within the box represents the median (or middle value);
  - the right hand whisker (and outliers if present) represents the top 25% of the data
  - the left hand whisker (and outliers if present) represents the bottom 25% of the data; and
- the longer the box plot, the greater the range (or variation).

Box 2: How to interpret box and whisker plots

Interpretation:



Examples:



- Wide variation in service delivery (range 0-100%).
- Health centres relatively equally dispersed across the range. 25th to 75th centile is 30-90%.

- Majority of centres at lower end of range (between 0-20%) with a few health centres at higher levels – up to 100%.

- Smaller variation in service delivery (range 70-100%).
- All centres at higher end with 75% of centres in the 90-100% range.

5. Identifying priority evidence-practice gaps

The priorities for improvement, or priority evidence-practice gaps, reported here were determined by identifying items in the national clinical audit and systems assessment data that reflected:

a. basic aspects of clinical care that were being delivered and recorded at a high level of performance by the majority of services, but that were being delivered at a much lower level by a proportion of services;
b. aspects of care where there was more general wide variation in recorded delivery of care;
c. important aspects of comprehensive PHC that were generally recorded at low levels; and,
d. components of PHC centre systems that were relatively poorly developed.

These criteria were used by the ABCD Project team to identify a preliminary set of priorities. The preliminary priorities are presented in the body of the report, and are also presented below for summary purposes.

Key information in client records/health summaries

Improve recording of key client information across the scope of indicators of best practice, with a specific focus on the following:

a. Improve levels of recording ARF and RHD diagnoses in the medical record
b. Support health centres at the lower end of the range to improve recording of RHD classification
c. Improve identification of Priority 1 clients who a) have had cardiac surgery, and b) are waiting for cardiac surgery
d. Support health centres at the lower end of the range to document current warfarin prescriptions for clients where indicated.

Penicillin use and recurrent rheumatic fever

a. Improve recording of key information related to delivery of BPG injections, with a specific focus on supporting health centres at the lower end of the range to improve recording of frequency of BPG injections on current prescription
b. Increase uptake of planned BPG injections to 80% or more for all clients who are prescribed injections
c. Strengthen activity around follow-up of clients who received less than 80% of planned BPG injections within a 12 month period, and focus these efforts specifically improving coverage of attempts to follow-up clients and recording of specific follow-up strategies
d. Strengthen efforts to provide interventions for clients who have ARF despite adequate injection delivery.

Scheduled Services

Ensure timely medical care across the scope of indicators of best practice, with a specific focus on the following:

a. Support health centres at the lower end of the range to improve doctor and specialist review and recording of echocardiogram, as indicated for clients according to level of disease.
b. Explore factors contributing to very low levels of documentation for dental services

Risk factors and interventions

Support health centres at the lower end of the range to improve the practice and documentation of risk factor identification and intervention, and standardise the practice and recording of rheumatic fever education for all clients.

6. Current status of ARF/RHD service delivery (2012-2014)

Key information in client records/health summaries

Summary of audit findings

Accurate, up-to-date and accessible documentation related to client's medical history and current levels of disease are important factors in identifying ongoing level of risk of disease progression and complications. It is important that this information is available at the client's primary care centre to support clinical decision making and to guide disease management planning.

The recording of a history of ARF (including suspected ARF) was variable across health centres. A number of factors may have contributed to absence of diagnosis data including failure of clients to present to the health service with symptoms, failure of the health service to make a timely and accurate diagnosis, or mobility of people around remote areas, indicating that diagnosis may have occurred elsewhere and prior to the client settling in the area and not communicated to the current health service. Recording of RHD diagnosis on the health summary sheet was at a remarkably high level with a narrow mid-percentile range from 80-100%. However, if RHD was not recorded on the health summary sheet there was a low chance that it was recorded elsewhere in the medical record.

There was a wide variation in pattern of recording for RHD classification, however recording of disease management planning was relatively high and consistent across health centres with the exception of 2 outliers.

Recording of tertiary services was variable. There was a wide range of recording to identify clients who have had cardiac surgery, with a very low level of recording to identify (Priority 1) clients waiting for surgery. Again, there was a relatively low level of recording for current warfarin prescription (Priority 1 or 2) and very high recording of INR results (26 records at 100% with one outlier at 50%). The low level of warfarin prescriptions and high level of INR suggests that not all Priority 1 or 2 clients may be indicated for warfarin rather than evidence of scripts not being available.

For the 6 clients who had not been seen at their health centre in the 12 months prior to audit there was a wide variation in recorded attempts to follow-up (0-100%, mean 40%).

Priority evidence-practice gaps (or priorities for improvement)

Improve recording of key client information across the scope of indicators of best practice, with a specific focus on the following:

a. Improve levels of recording ARF and RHD diagnoses in the medical record
b. Support health centres at the lower end of the range to improve recording of RHD classification
c. Improve identification of Priority 1 clients who a) have had cardiac surgery, and b) are waiting for cardiac surgery
d. Support health centres at the lower end of the range to document current warfarin prescriptions for clients where indicated.

The figures in this section show mean health centre percentages of ARF/RHD clients who have a record of key information in medical records such as diagnosis and RHD classification, current management plans, risk factor status and relevant information about surgery history and medication prescriptions.

Figure 2: Mean health centre percentages of ARF/ RHD clients with a record of diagnosis in health summaries or elsewhere in the medical record and documentation of RHD classification and current management plan.

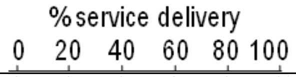
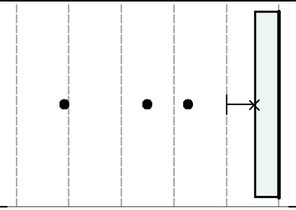
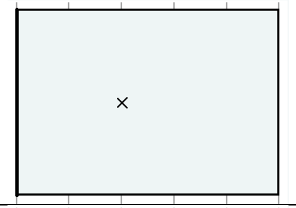
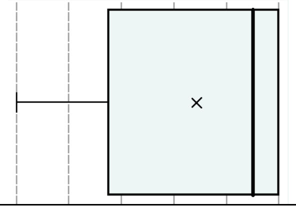
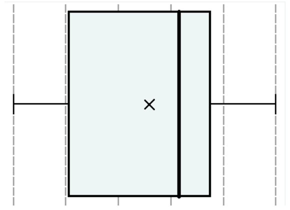
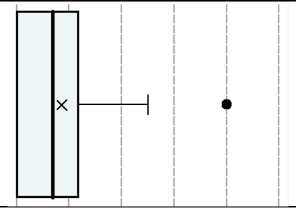
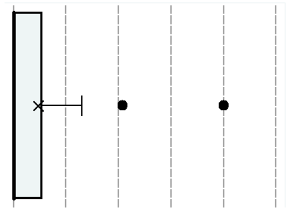
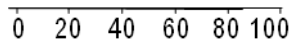
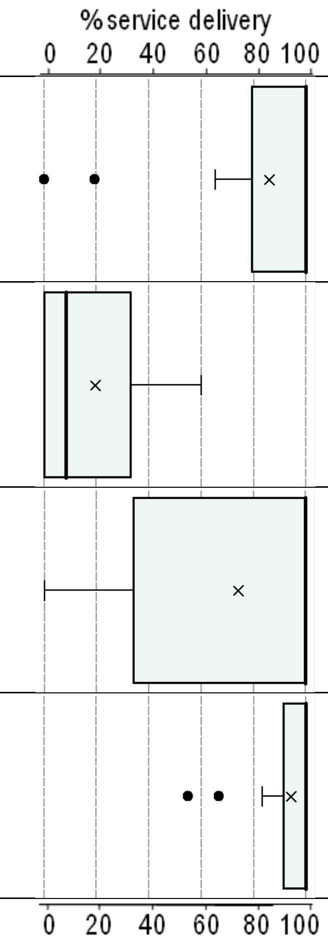
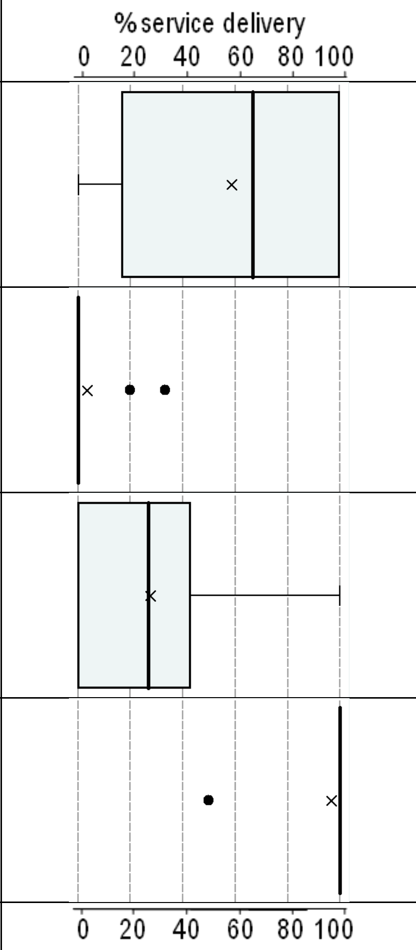
		**Number centres; audit records**
Medicare number recorded		**24; 339**
Unsuccessful follow-up attempt (if client not seen in past 12 months)		**5;6**
Recorded diagnosis of definite or suspected ARF on health summary		**24; 339**
Recorded diagnosis of definite or suspected ARF elsewhere in the medical record (if diagnosis not on health summary)		**18; 187**
Recorded diagnosis of recurrent or suspected recurrent ARF on health summary		**24; 339**
Recorded diagnosis of recurrent or suspected recurrent ARF elsewhere in the medical record (if diagnosis not on health summary)		**24; 298**
		

__Figure 2 cont: Mean health centre percentages of ARF/ RHD clients with a record of diagnosis in health summaries or elsewhere in the medical record and documentation of RHD classification and current management plan.__



	Number centres; audit records
Recorded diagnosis of RHD on health summary	**24; 339**
Recorded diagnosis of RHD elsewhere on the medical record (if diagnosis not on health summary)	**10; 71**
Record of RHD classification on health summary	**23; 293**
Record of current ARF/RHD management plan	**24; 339**

Figure 3: Mean health centre percentages of ARF/RHD clients with documentation of relevant information on surgical history and warfarin prescription in the medical record.



	% service delivery	**Number centres; audit records**
Documentation client has had cardiac surgery (if Priority 1)		**16; 35**
Documentation that client is waiting for cardiac surgery (if Priority 1)		**16; 35**
Documentation of current warfarin prescription (if Priority 1 or 2)		**22; 99**
INR result documented (if client prescribed warfarin)		**15; 26**

Penicillin use and recurrent rheumatic fever

Summary of audit findings

Regular secondary prophylaxis is the most effective method of preventing recurrent ARF. The recommended method is benzathine penicillin G (BPG) by intramuscular injection every 28 days (4 weeks). Clients who do not receive planned injections are at considerable risk of recurrent ARF, and the development or worsening of RHD. It is recommended that primary care staff monitor injection delivery and provide timely interventions for clients who receive less than 80% of planned injections within a 12 month period.

Overall, there was a high level of recording of frequency of planned BPG infections (100%) with the exception of 3 outliers, and this was most evident on the current prescription.

There was a wide variation of prescription for oral antibiotics for clients not prescribed BPG injections; either because documentation practice for oral antibiotics is poor, or because clients had ceased injections at the time of the audit and were no longer indicated for secondary prophylaxis.

Receiving 100% of prescribed injections over a 12 month period is the best defence against recurrent ARF and should be encouraged for all clients. However, a benchmark of 80% accommodates for overdue injections and the occasional missed injection within the year, which does not necessarily warrant intervention on the part of the health service. Receiving less than 80% of prescribed injections may have an underlying cause and warrants investigation and intervention as required. For clients who received less than 80% of planned injections in the 12 months prior to audit there were variable results in attempts of follow-up to engage the client and improve injection delivery. There was some strength in attempts to recall clients and attempts to arrange BPG injections at another health centre for clients who were travelling away, however there was low activity around arranging family meetings and developing action plans.

For the clients who had a documented episode of ARF in the previous 12 months despite adequate injection delivery, there were limited recorded attempts at intervention, including advice on the role of throat and skin infections and referral to support services. There was no documentation on interventions related to increasing frequency of injections, providing advice on environmental risk factors or clinical signs and symptoms of ARF and action planning.

Priority evidence-practice gaps (or priorities for improvement)

Improve recording of key information related to delivery of BPG injections, with a specific focus on supporting health centres at the lower end of the range to improve recording of frequency of BPG injections on current prescription

a. Increase uptake of planned BPG injections to 80% or more for all clients who are prescribed injections
b. Strengthen activity around follow-up of clients who received less than 80% of planned BPG injections within a 12 month period, and focus these efforts specifically improving coverage of attempts to follow-up clients and recording of specific follow-up strategies
c. Strengthen efforts to provide interventions for clients who have ARF despite adequate injection delivery.

The figures in this section show mean health centre percentages of ARF/RHD clients with a record of: prescription of benzathine penicillin (BPG) injections (or oral prophylaxis); planned frequency of injections; follow-up action if <80% of planned injections received; and follow-up action if one or more episodes of recurrent ARF were recorded within the last 12 months.

Figure 4: Mean health centre percentages of ARF/RHD clients with a record of prescription for BPG injections or oral prophylaxis and record of planned frequency of BPG injections in the medical record and/or clinic master chart.

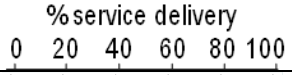
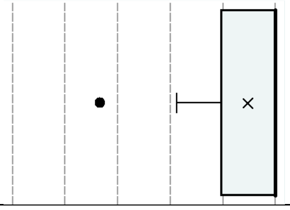
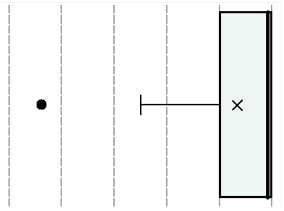
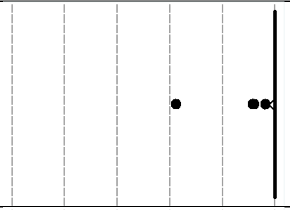
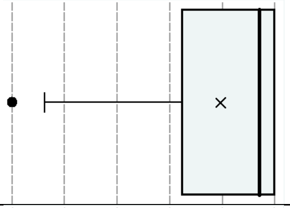
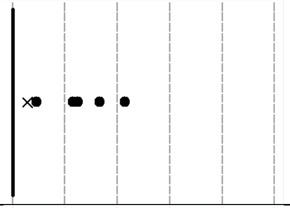
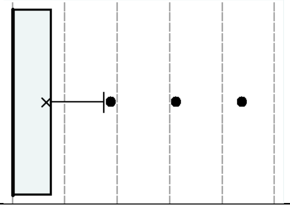
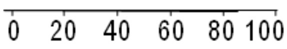
		**Number centres; audit records**
Record of prescription for regular benzathine penicillin (BPG) injections		**24; 339**
Record of current prescription for BPG injections (if client has record of prescription of regular BPG injections)		**24; 303**
Record of planned frequency of BPG injections: a) overall		**24; 303**
Record of planned frequency of BPG injections: b) on current prescription		**24; 303**
Record of planned frequency of BPG injections: c) on non-current prescription		**24; 303**
Record of planned frequency of BPG injections: d) elsewhere in medical record		**24; 303**
		

Figure 4 cont: Mean health centre percentages of ARF/RHD clients with a record of prescription for BPG injections or oral prophylaxis and record of planned frequency of BPG injections in the medical record and/or clinic master chart.

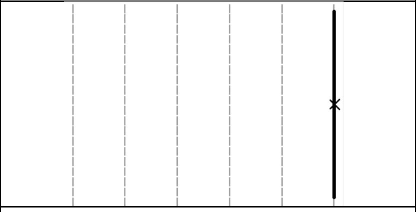
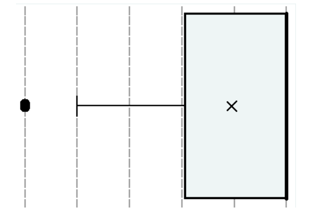
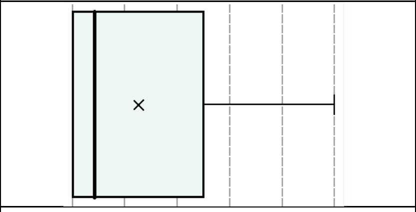
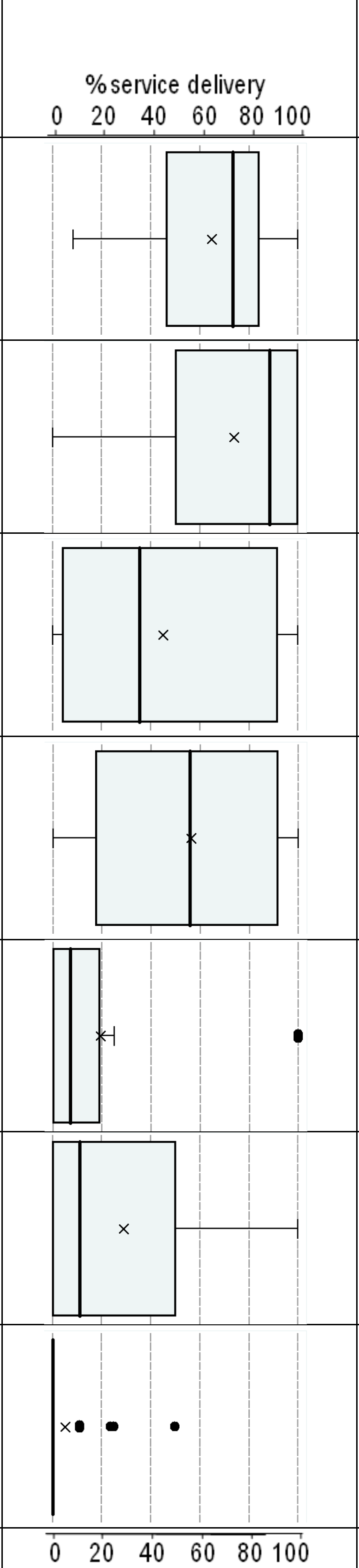
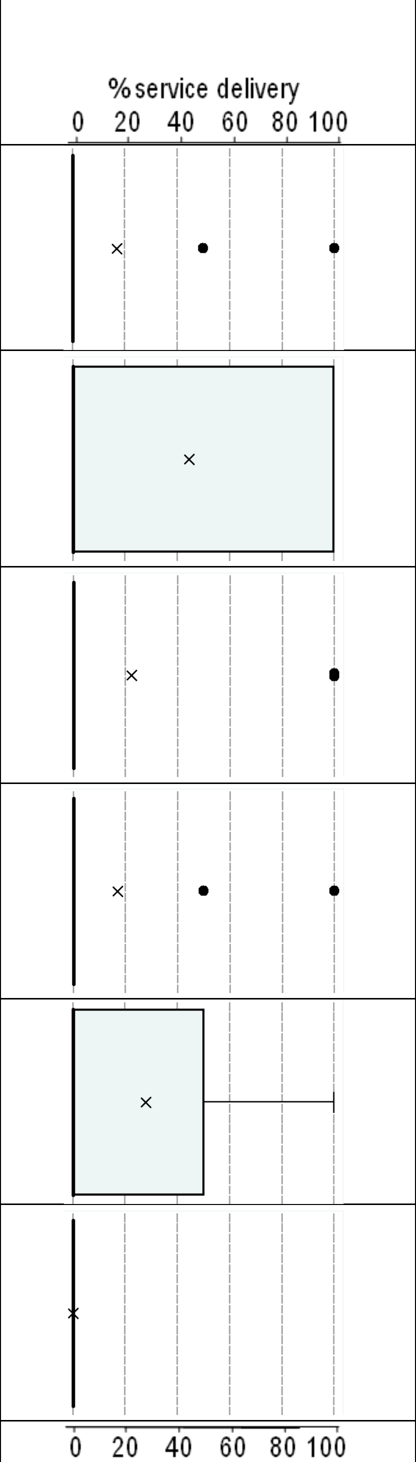
	% service delivery 0 20 40 60 80 100	**Number centres; audit records**
Record of planned frequency of BPG injections on clinic master chart (if planned frequency not recorded in medical record)		**4;** **6**
Record of planned frequency of BPG injections consistently in medical record and master chart (if recorded in both locations)		**24;** **243**
Record of prescription for oral antibiotic prophylaxis (if not prescribed BPG injections)		**10;** **36**
	0 20 40 60 80 100	

Figure 5: Mean health centre percentages of ARF/RHD clients with a record of follow-up if percent of planned BPG injections received was less than 80%.



	Number centres; audit records
'Poor' delivery of BPG injections in last 12 months (ie <80% of planned injections received, if client has prescription for regular injections)	**24; 303**
Record of recall attempt (if client received <80% of planned injections)	**24; 198**
Record of attempt to arrange BPG injections at another health centre if client away from community (if client received <80% of planned injections)	**24; 198**
Record of advice given to client/ family about importance of regular injections to prevent recurrent ARF (if client received <80% of planned injections)	**24; 198**
Record of family meeting held to encourage ARF/RHD prophylaxis (if client received <80% of planned injections)	**24; 198**
Record of action plan to improve administration of BPG injections (if client received <80% of planned injections)	**24; 198**
Record of other action undertaken to improve administration of BPG injections (if client received <80% of planned injections)	**24; 198**

Figure 6: Mean health centre percentages of ARF/RHD clients with a record of follow-up if one or more episodes of recurrent rheumatic fever (RRF) were recorded, despite good delivery of BPG Injections (≥80%) in the last 12 months.



	Number centres; audit records
Record of change to more frequent BPG injections (if client has record of RRF despite good delivery of BPG injections)	**9; 13**
Record of advice given on role of throat and skin infections in lead up to ARF (if client has record of RRF despite good delivery of BPG injections)	**9; 13**
Record of advice given on role of overcrowding in predisposing to ARF (if client has record of RRF despite good delivery of BPG injections)	**9; 13**
Record of action plan made to reduce number of ARF episodes (if client has record of RRF despite good delivery of BPG injections)	**9; 13**
Record of referral to support services (if client has record of RRF despite good delivery of BPG injections)	**9; 13**
Record of other action undertaken to reduce the number of ARF episodes (if client has record of RRF despite good delivery of BPG injections)	**9; 13**

Scheduled Services

Summary of audit findings

Frequency and timing of medical and investigational services for clients with ARF and RHD are based on the level of disease. For example, 'Priority 1' indicates clients with severe RHD for whom frequent monitoring is required, and 'Priority 3' indicates clients with ARF only or mild RHD, for whom monitoring is less usually intensive and less frequent. The results in each section are presented following calculation based on level of disease for each client.

Recording of echocardiogram review within recommended timeframes was relatively consistent and high across health centres with a mean of 60% service delivery. Doctor reviews were also relatively consistent but with a lower mean service delivery of 40%. The range for specialist review was considerably wider and at a lower level. Recording of dental review was at a very low level; 96% of the health centres had no records for this element.

Eighty-three percent of the client group lives in remote areas where medical specialist, echocardiography and dental services are not routinely available. Lower level of recording of these services may therefore be attributed to decreased availability of services or low levels of recording of services if they were provided off site. It is important that the client's primary care centre has a record of services, to help guide clinical decisions and ongoing frequency of intervention based on results.

Recording of vaccination was variable with the range of pneumococcal vaccination recording significantly lower than influenza, which had a very wide range between the 25th and 75th percentiles.

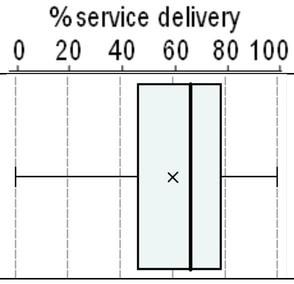
Priority evidence-practice gaps (or priorities for improvement)

Ensure timely medical care across the scope of indicators of best practice, with a specific focus on the following:

a. Support health centres at the lower end of the range to improve doctor and specialist review and recording of echocardiogram, as indicated for clients according to level of disease.
b. Explore factors contributing to very low levels of documentation for dental services

The figures in this section show mean health centre percentages of ARF/RHD clients with a record of scheduled services received (as indicated depending on priority level), documentation of risk factors and brief interventions where relevant within the last 12 months.

Figure 7: Mean health centre percentages of ARF/RHD clients with a record of scheduled service received within the timeframe recommended for the RHD classification as indicated.

		Number centres; audit records
Doctor[3] review within: 3-6 months, priority 1; 6 months, priority 2; 12 months, priority 3		**24; 339**

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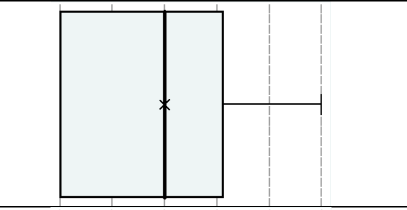
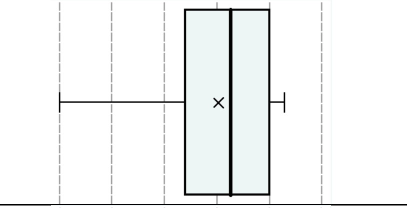
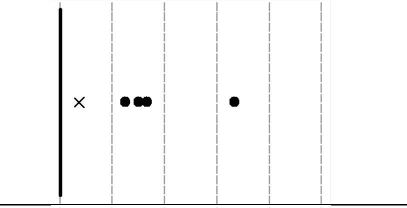
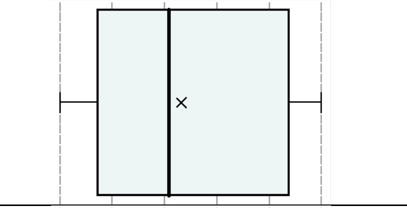
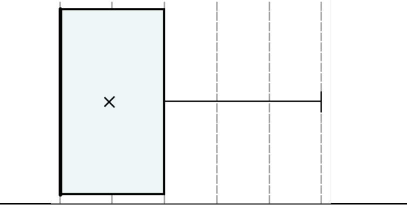
[3] Doctor may include local GP, visiting DMO, GP registrar or junior doctor

Specialist[4] review within: 3-6 months, priority 1; 12 months, priority 2; (if client is priority 1 or 2)		**22; 99**
Record of echocardiogram 3-6 months, priority 1; 12 months, priority 2; 2 years children, priority 3 2-3 years adults, priority 3		**24; 339**
Record of dental review 6 months, priority 1; 12 months, priority 2; (if client is priority 1 or 2)		**22; 99**
Record of influenza vaccination (in last 12 months, if client is priority 1 or 2)		**22; 99**
Record of pneumococcal vaccination (if client is priority 1 or 2)		**22; 99**
	0 20 40 60 80 100	

Risk factors and interventions

Summary of audit findings

Smoking, high-risk alcohol use, poor diet and low physical activity can increase the risk of medical complications of RHD. It is therefore important that clients with these risk factors are identified and provided with disease and lifestyle education and self-management support.

There was a relatively consistent result of recorded smoking and high-risk alcohol use, with similar ranges between the 25th and 75th percentiles. The ranges for intervention for these risk factors were both wide.

There were also consistent results for levels of recording of nutrition and physical education discussion, with very wide ranges between the 25th and 75th percentiles of 20-90%. The range for the specific indicator of rheumatic fever education was wide but tending towards a lower level.

These results could be attributed to the practice of risk factor analysis being part of routine medical assessment, with education and interventions either not being provided, or not routinely being documented as provided.

Priority evidence-practice gaps (or priorities for improvement)

Support health centres at the lower end of the range to improve the practice and documentation of risk factor identification and intervention, and standardise the practice and recording of rheumatic fever education for all clients.

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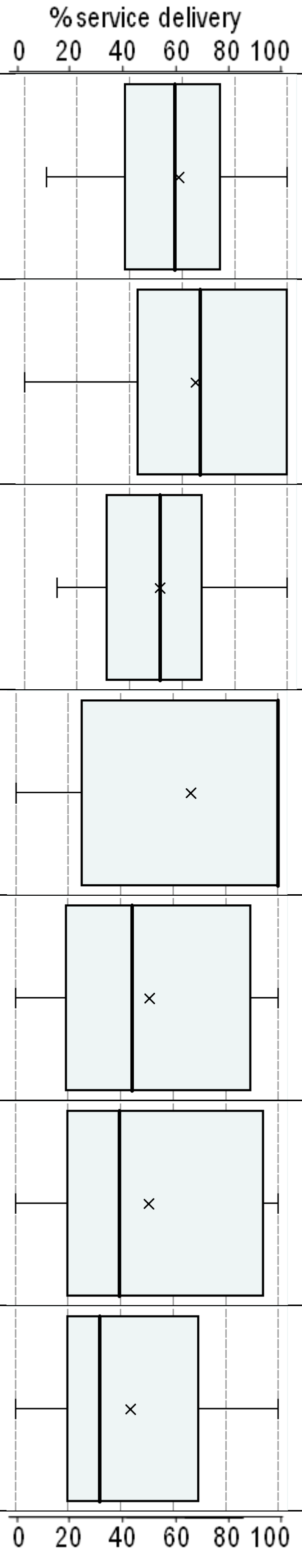
[4] Specialist may include cardiologist, physician, paediatrician or specialist registrar

Figure 8: Mean health centre percentages of ARF/RHD clients with documentation of risk factors and record of brief interventions provided where relevant.



	Number centres; audit records
Record of smoking status	**24; 339**
Record of brief intervention for smoking in last 12 months (if client is documented as a smoker)	**21; 88**
Record of alcohol use	**24; 339**
Record of brief intervention for higher risk alcohol use in last 12 months (if client is documented as high risk alcohol user)	**12; 16**
Record of nutrition discussion (within last 12 months)	**24; 339**
Record of physical activity discussion (within last 12 months)	**24; 339**
Record of provision of rheumatic fever education (either video or written format)	**24; 339**

7. Systems assessment data

The ABCD/One21seventy Systems Assessment Tool (SAT) has been developed to enable providers of Aboriginal and Torres Strait Islander primary health care services to undertake a structured assessment of the strengths and weaknesses of their systems to support best practice care. The SAT evolved from the Chronic Care Model and the associated Assessment of Chronic Illness Care tool and from the World Health Organization's (WHO) Innovative Care for Chronic Conditions Framework.

International experience has identified five key components of health systems to be effective across primary health care in improving the quality of care of clients with chronic illness (Table 4). These five components are incorporated into the SAT. Each component contains a number of items that health centre teams (managers and staff) discuss and come to a consensus about how well their systems are working.

Table 4: ABCD/One21seventy systems assessment tool components and items

Components of systems	Items for each component
Delivery system design This component refers to the extent to which the design of the health centre's infrastructure, staffing profile and allocation of roles and responsibilities, client flow and care processes maximise the potential effectiveness of the centre.	• Team structure and function • Clinical leadership • Appointments and scheduling • Care planning • Systematic approach to follow-up • Continuity of care • Client access/cultural competence • Physical infrastructure, supplies and equipment
Information systems and decision support This component refers to clinical and other information structures (including structures to support clinical decision making) and processes to support the planning, delivery and coordination of care.	• Maintenance and use of electronic client list • Evidence-based guidelines • Specialist–generalist collaborations
Self-management support This component refers to structures and processes that support clients and families to play a major role in maintaining their health, managing their health problems, and achieving safe and healthy environments.	• Assessment and documentation • Self-management education and support, behavioural risk reduction and peer support.
Links with the community, other health services and other services and resources This component refers to the extent to which the health centre uses external linkages to inform service planning, links clients to outside resources, works out in the community, and contributes to regional planning and resource development.	• Communication and cooperation on governance and operation of the health centre and other community-based organisations and programs • Linking health centre clients to outside resources • Working out in the community • Communication and cooperation on regional health planning and development of health resources.
Organisational influence and integration This component refers to the use of organisational influence to create a culture and support organisational structures and processes that promote safe, high quality care; and how well all the system components are integrated across the centre.	• Organisational commitment • Quality improvement strategies • Integration of health system components.

Each item is scored separately on a scale of 0-11. System component scores are derived from the average of the scores for each item within the system component. Higher scores reflect better function.

Scores for each system component from health centres that undertook a systems assessment in 2012, 2013 or 2014, are shown in Figure 9. Sixteen of the 24 health centres that completed an ARF/RHD audit undertook a systems assessment.

Summary of system assessment findings

The overall score for the systems assessment (SAT) was consistent between health centres, with a range in scores between the 25th and 75th centiles from 5 to 8, and a small number of health centres with scores outside this range. *Delivery system design* had the highest middle score, and there was little difference in the mean scores for this component, *Information systems and decision support* and *Self-management support*; which were all above 6.

There are a number of items within the components with relatively high mean scores (7 and above). These included:

- Team structure and function
- Clinical leadership
- Care planning
- Appointments and scheduling
- Systematic approach to follow-up
- Client access/ cultural competence
- Maintenance and use of electronic clients lists
- Use of evidence-based guidelines
- Assessment and documentation
- Quality improvement strategies

These results reflect workforce cohesion and use of available support systems to provide a quality health service. In particular, the use of evidence-based guidelines reflects the substantial effort that has gone into promoting and encouraging adherence to evidence-based guidelines for RHD over during the past decade in QLD. It suggests that the areas of poor adherence to best practice care highlighted earlier in this report, are unlikely to be due to lack of availability of evidence-based guidelines.

Links with the Community, Other Health Services and Other Services and Resources and *Organisational influence and integration* were the components with the lowest mean scores and greatest variation between health centres for specific individual items.

There were two items that had low, wide ranges*; Communication and cooperation on regional health planning and development of health resources*, and *Integration of health system components*. The first suggests that health service staff at the lower end of the range have limited opportunities or capacity to engage in regional planning in the area of RHD control. The latter suggests that for health centres at the lower end of the range there was limited integration of a range of health service systems required to coordinate care for clients with ARF and RHD (including business planning, funding, legislation, human resources, education, partnerships with other services etc.).

A number of observations can be made when comparing the audit and SAT data. The *Care planning* SAT result does not support the high level of care plans found in clients' records during the audits, and so it appears that some health centres may not be aware of their high achievement in this area. The high *Systemic approach to follow up* SAT result does not support the low level of follow-up, particularly for clients who required intervention for missed BPG injections.

There was a very wide range of clinical documentation found during the audits, with some health centres performing poorly in specific areas, however the SAT item for assessment and documentation had a relatively narrow range between 6 and 9, with a few health centres below this level.

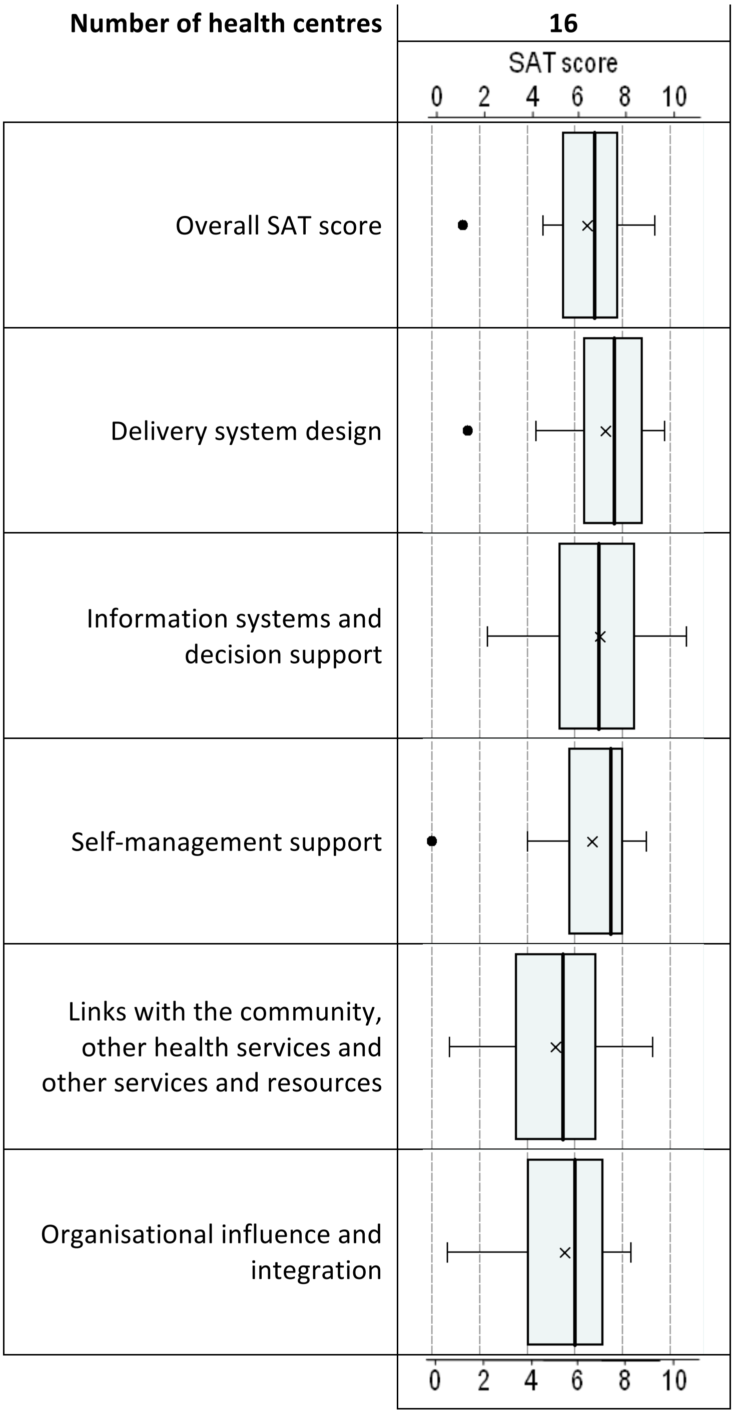
The SAT self-management support results were high and narrow with a mid-range range of 6-8. This was not reflected in the wide range of results for risk-factor intervention and rheumatic fever education, which all scored widely and low in the audit results. Self- management support may be provided without the documentation to support it.

Priorities for health centre systems improvement to enable health centres to provide high quality chronic disease care

a. Strengthen systems for more effective links between the participating health centres and communities, other health services and external resources.

b. Strengthen specific elements where scores were relatively low. Specifically, focus support for health centres that have scores less than 6 for the following items:
   - Team structure and function *(Delivery system design)*
   - Care planning *(Delivery system design)*
   - Systematic approach to follow-up *(Delivery system design)*
   - Client access/cultural competence *(Delivery system design)*
   - Use of evidence-based guidelines *(Information system and decision support)*
   - Specialist-generalist collaborations *(Information system and decision support)*
   - Assessment and documentation *(Self-management support)*
   - Self-management education and support., behavioural risk reduction and peer support (Self-management support)

Figure 9: Mean system component scores as assessed by health centres.



Scores for the individual items within each system component, aggregated for all health centres nationally, are shown in the figures below.

Figure 10: Delivery system design component scores as assessed by health centres.

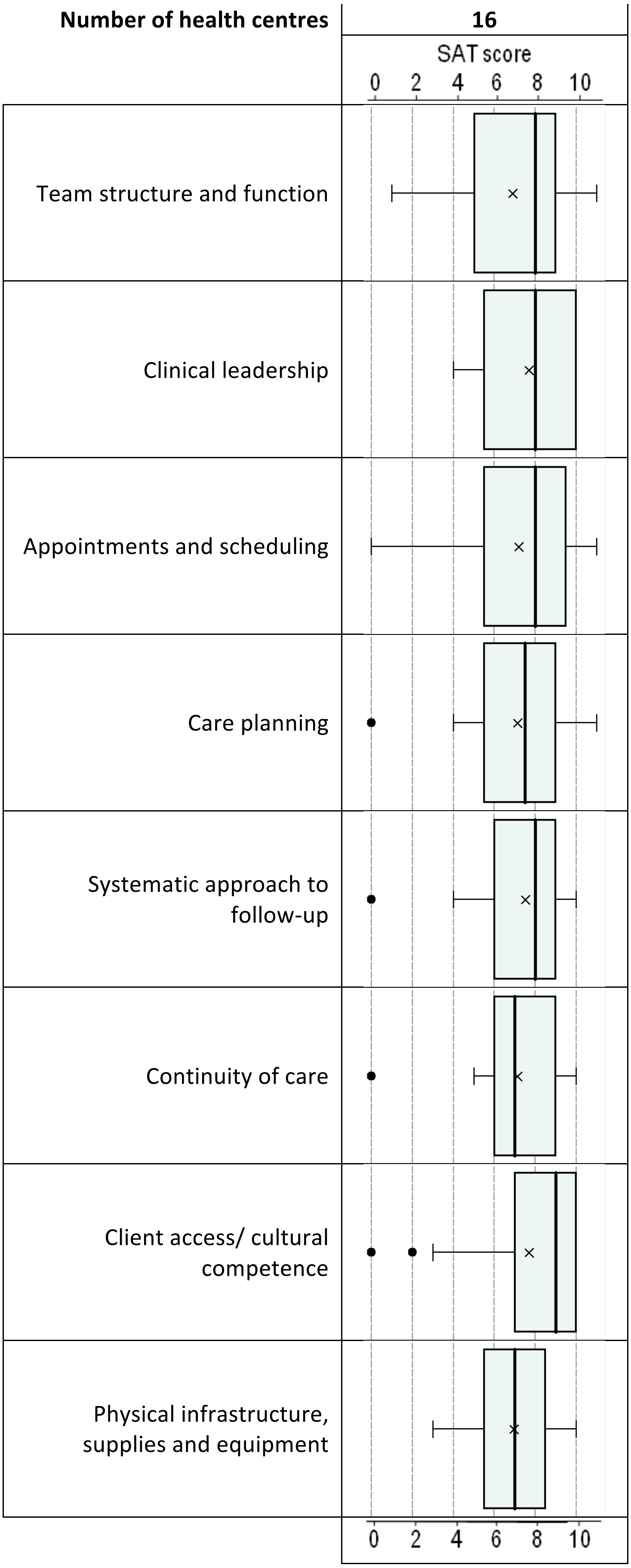


Figure 11: Information systems and decision support component scores as assessed by health centres.

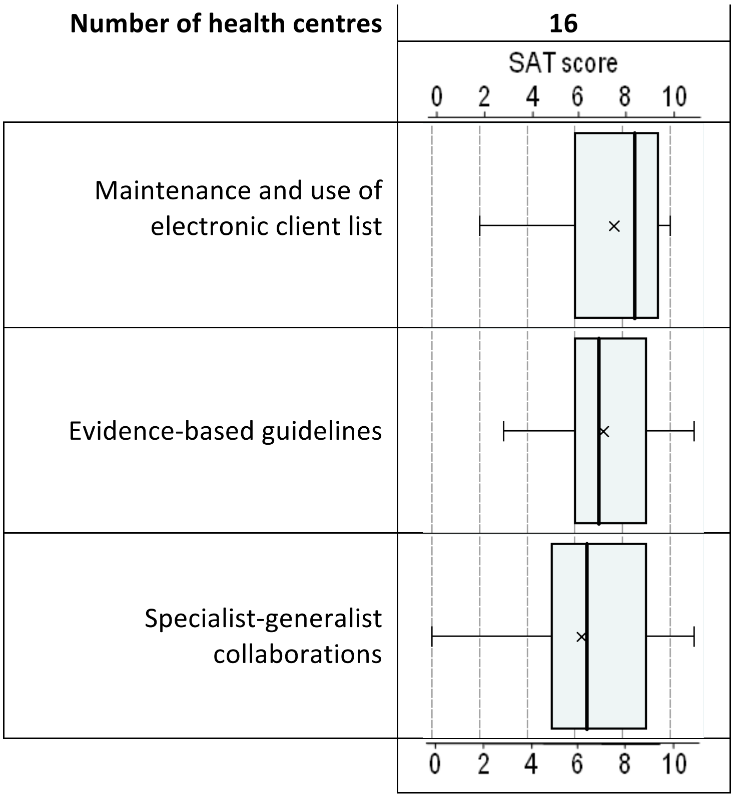


Figure 12: Self-management support component scores as assessed by health centres.

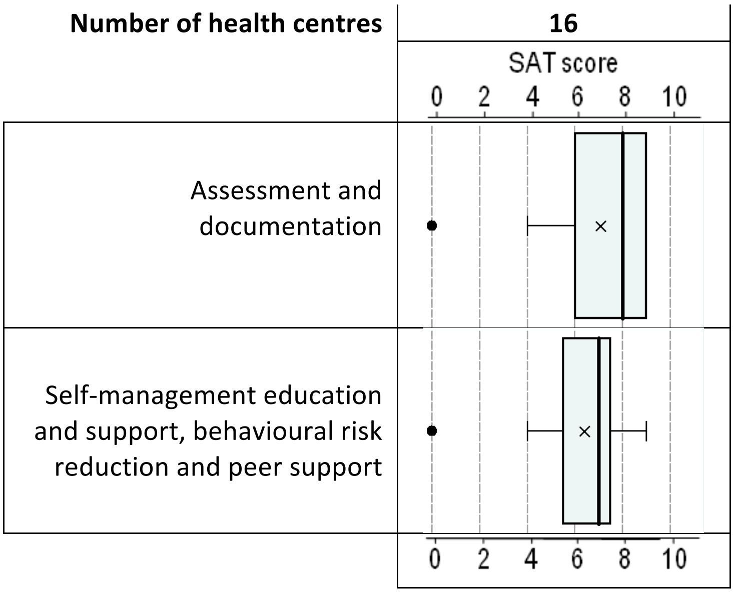


Figure 13: Links with the community, other health services and other services and resources component scores as assessed by health centres.

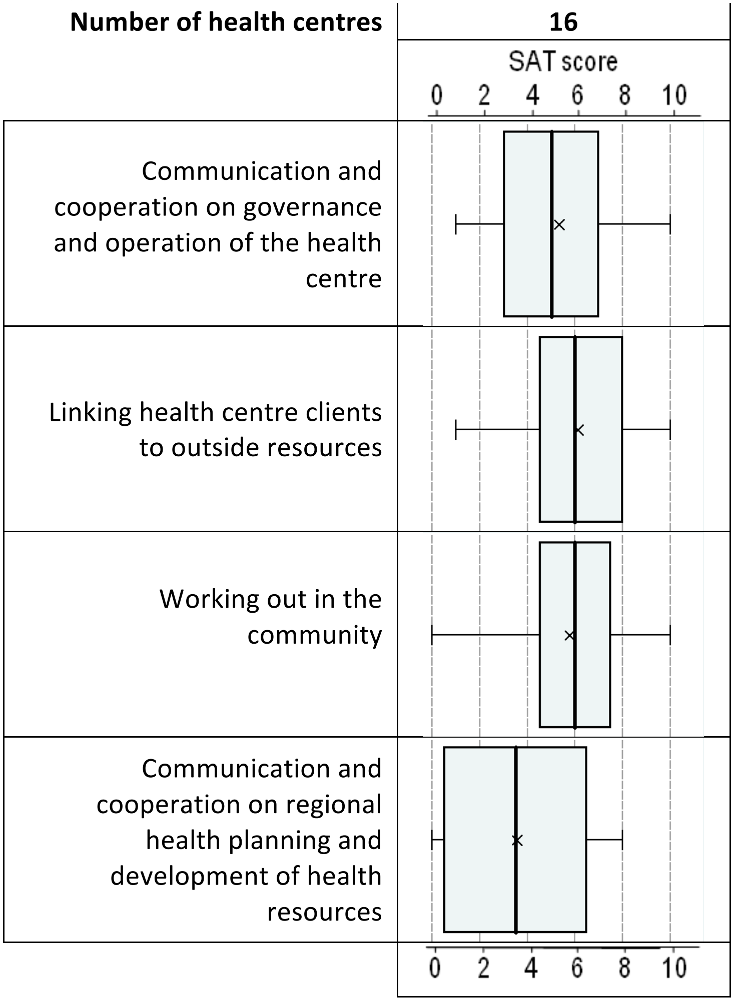
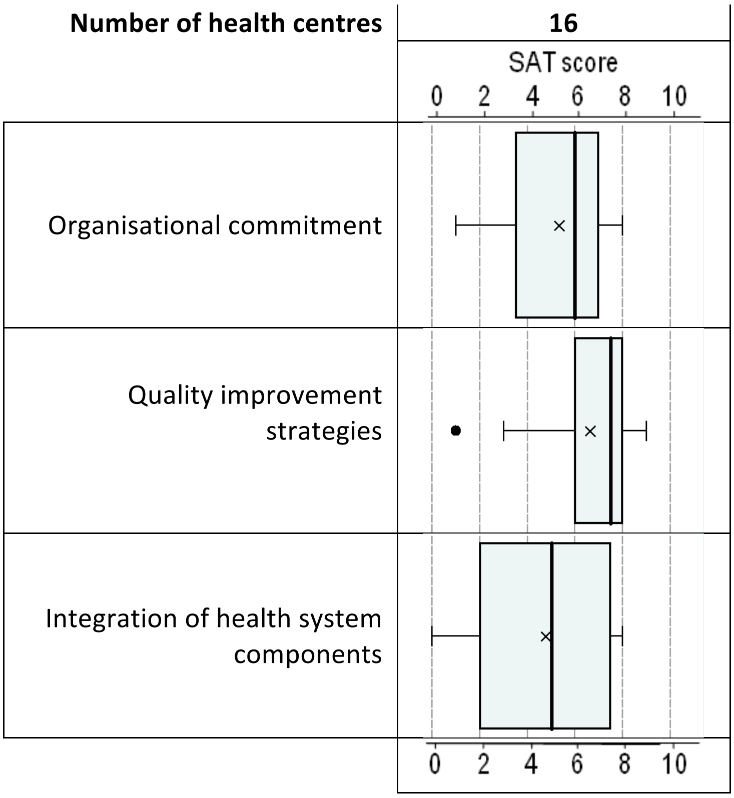


Figure 14: Organisational influence and integration component scores as assessed by health centres.



8. Sources

The ARF/RHD clinical audit protocol draws heavily on the following:

1. RHD Australia (ARF/RHD writing group), National Heart Foundation of Australia and the Cardiac Society of Australia and New Zealand (2012) ***Australian guideline for prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease*** (2nd edition).
2. Northern Territory (NT) Rheumatic Heart Disease Register (2007) ***NT Rheumatic Heart Disease Program – Priority Guidelines*** <http://www.healthdwt.nt.gov.au/rhd/forms/Priority_Guidelines.pdf>.
3. NT government, Remote Health ATLAS, ***Rheumatic Heart Disease Program*** <http://www.health.nt.gov.au/Remote_Health_Atlas/>.
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