Prevention and management of chronic disease in Indigenous primary health care services in Queensland: performance on selected measures

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Abstract

Objective: To evaluate clinical performance in Aboriginal Community Controlled Health Services (AICCHS) in Queensland and to consider future directions in supporting ongoing improvement through measurement, target setting and standards development.

Design: Longitudinal study assessing baseline performance and improvements in service delivery, clinical care and selected outcomes against key performance indicators in AICCHS(2009-2010).

Setting: 27 AICCHS who are members of the Queensland Aboriginal and Islander Health Council (QAIHC).

Participants: 22 AICCHS with medical clinics.

Intervention: Implementation and use of an electronic clinical information system that integrates with electronic health records supported by the QAIHC quality improvement program - the Close the Gap (CTG) Collaborative.

Main Outcome Measures: Proportion of patients with current recording of key health care activities and the prevalence of risk factors and chronic disease.

Results: Aggregated performance was excellent on key risk factors and health care activities (tobacco use, management of hypertension and some aspects of diabetes care) but poor for others (waist measurement). Some measures showed improvement over time. Performance between services showed greatest variation for care planning and health check activity.

Conclusion: Data highlights the risk factor workload facing AICCHS; variable performance demonstrates the need for ongoing support and further workforce planning. Development of standards and weighing models is necessary to enable robust between-service comparisons of performance, which has implications for health reform initiatives in Australia.

Implications: The Community Controlled sector can play a role in closing the gap in Aboriginal and Torres Strait Islander health by leading the use of clinical data to record tangible gains in the quality of health services and health outcome.

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Key words, Quality improvement, collaborative, Aboriginal health, community control

Appendix 1. Recording of key risk and clinical care data$^{\#}$ in regular* Aboriginal and Torres Strait Islander adult patients attending participating health services in Qld in between February 2010 and February 2012.

Domain	Why and Evidence	What - Indicator
Workload and access	Planning and monitoring service capacity (overall)(12)	➢ Numbers patients seen in clinic: adults and children ➢ Proportion Indigenous patients ➢ Episodes of care: by staff categories
Health determinants, risk loads, prevention	Planning and monitoring service capacity (health promotion/allied health/BI capacity) Monitor progress in risk load reduction(1, 10, 20)	➢ Smoking prevalence ➢ Prevalence of at risk alcohol consumption ➢ Prevalence of overweight/obesity ➢ Level of physical activity ➢ Health checks: adults and kids – 4 categories
Chronic disease care	Monitor workloads Monitor quality of care delivered(10, 21-24)	➢ Number of Diabetics and prevalence in service population ➢ Diabetic clients on GP management plan ➢ Glycaemic control: HbA1c completion and values ➢ CHD clients on GP management plan ➢ BP: Checking BPs all adults, prevalence hypertension ➢ BP: Management of hypertension – checking BP and medication use ➢ Risk of renal disease: eGFR, ACR – completion and renal function status
MCH	Monitor workloads Monitor quality of care delivered (25, 26)	➢ Antenatal care access: number pregnant women gave birth ➢ Timing of antenatal care ➢ Adequate Antenatal Care ➢ Proportion of low and high birth weight babies ➢ Proportion of preterm/term births ➢ Under and over weight children
Workforce	Planning and monitoring service capacity (overall)(27)	➢ Accreditation ➢ % Aboriginal and Islander Staff ➢ Student placements ➢ FTE Vacant Positions

Appendix 2. Data for Figure 2

Prevalence of key health status determinants by recorded diagnosis in 13,630 regular Aboriginal and Torres Strait Islander adults attending 18 participating health services in Queensland, April -September 2011.

Clinical Variable	Prevalence	IQR
Tobacco Use	0.51	0.40, 0.50
Alcohol	0.45	0.40, 0.50
BMI > 25	0.69	0.66, 0.73
BMI > 35 – Females only	0.45	0.43, 0.51
Diabetes Mellitus Type 2	0.20	0.15, 0.23
Hypertension	0.24	0.21, 0.27
eGFR < 60ml/min	0.11	0.09, 0.15

Appendix 3. Data for Figure 3

Performance of health assessments and care planning for regular Aboriginal and Torres Strait Islander patients, across 17 participating health services in Queensland, April - September 2011.

Care Activity - EPC items	Median	IQR
Type 2 Diabetes on GPMP	0.34	0.15, 0.51
CHD patients on GPMP	0.25	0.11, 0.45
Child Health Check (0-5)	0.38	0.26, 0.53
Child Health Check (6-14)	0.46	0.30, 0.61
Adult Health Check (15-54)	0.43	0.29, 0.50
Adult Health Check (55+)	0.60	0.23, 0.68

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Design: Longitudinal study assessing baseline performance and improvements in service delivery, clinical care and selected outcomes against key performance indicators in Queensland Aboriginal Community Controlled Health Services 2010-2012.

Setting: The 27 Queensland Aboriginal and Islander Community Controlled Health Services (AICCHS) in Queensland, who are members of the Queensland Aboriginal and Islander Health Council (QAIHC).

Participants: The 22 AICCHS with medical clinics in Queensland

Intervention: Implementation and use of an electronic clinical information system that integrates with electronic health records supported by the QAIHC quality improvement program - the *Close the Gap (CTG) Collaborative*.

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Results: Aggregated performance was excellent on key risk factors and health care activities (tobacco use, management of hypertension and some aspects of diabetes care) but poor for others (waist measurement). Some measures showed improvement over time. Performance between services showed greatest variation for care planning and health check activity.

Conclusion: Data highlights the risk factor workload facing AICCHS; variable performance demonstrates the need for ongoing support and further workforce planning. Development of standards and weighing models is necessary to enable robust between-service comparisons of performance, which has implications for health reform initiatives in Australia.

Implications: The work demonstrates the role that the Community Controlled sector can play in closing the gap in Aboriginal and Torres Strait Islander health by leading the use of clinical data to record tangible gains in both the quality of health services delivered and health outcome

Key words: Indigenous, health care performance, indicators, quality improvement, community control

Article Focus:

- To evaluate clinical health care performance and improvements in service delivery (2010-2012) in Aboriginal Medical Services in Queensland and to consider future directions in supporting ongoing improvement through measurement, target setting and standards development.
- Participants include 22 of the 27 Queensland Aboriginal and Islander Community Controlled Health Services (AICCHS) in Queensland, who are members of the Queensland Aboriginal and Islander Health Council (QAIHC).

Key messages:

- Aggregated performance of participating services was excellent on a number of key risk factors and health care activities (assessment of tobacco use, management of hypertension and some aspects of diabetes care) but was poor for others (assessment of waist circumference). Performance between services showed greatest variation for care planning and health check activity.
- The data collected by the QAIHC health information system, highlights the risk factor workload facing AICCHS in Queensland, demonstrating the need for ongoing support and further workforce planning.
- Development of standards and weighting models is necessary to enable robust between-service comparisons of performance**.**

Strengths and Limitations:

- This work demonstrates the role that the Community Controlled sector can play in closing the gap in Aboriginal and Torres Strait Islander health by leading the use of clinical data to record tangible gains in both the quality of health services delivered and health outcome

Introduction

The burden of morbidity, chronic disease and injury remains high in Aboriginal and Torres Strait Islander people in Australia. The Australian Government has made a significant commitment to reducing this disadvantage with its ‘Closing the Gap’ reform, setting targets for closing the life expectancy gap within a generation and halving mortality rates for children under 5 years of age within a decade(1, 2). While education, housing and employment are significant contributors to this health disparity, the role of primary health care services, whether Aboriginal and Islander Community Controlled Health Services (AICCHSs), community health services or general practices, is also important and a significant component of the effort to close the gap.

The Queensland Aboriginal and Islander Health Council (QAIHC) has been leading the development of the first Indigenous community controlled Heath Information System (HIS) designed to build capacity in AICCHS for the ongoing analysis, monitoring and reporting of clinical health data in Queensland(3). QAIHC supports Queensland’s 27 member AICCHSs to deliver comprehensive, primary health care to their communities. The HIS comprises a set of performance indicators, seemless integration with service

Electronic Medical Records (EMR), other web based portals and forms the measurement platform for the QAIHC quality improvement program, the Close the Gap (CtG) Collaborative that drives organisational change(3).

This work has been progressing in an environment that is moving toward a national key performance indicator (nKPI) reporting process, auspiced by the Council of Australian Governments' COAG(2). A subset of AICCHs began reporting nKPI data to the Australian Institute of Health and Welfare (AIHW) in Feb 2012, with a plan to mandate reporting biannually from June 2013 for all AICCHSs (over 150). The advent of the National Health Performance Authority (NPHA) in the context of the ongoing health reform agenda and release of the NPHA Performance and Accountability Framework suggests that efforts to capture and measure national health performance data are gathering pace and may soon involve the broader primary health care sector in Australia through the Medicare Locals(4).

In this paper we present data from the first 2 years of the QAIHC program (2010-2012) to examine improvements in service delivery, clinical care and selected outcomes against key performance indicators. We reflect on what the data means, successes to date, provide a broad comparison with other programs and raise questions in relation to the interpretation of this data and its use in the context of the drive to measure performance in primary health care nationally.

Methods

Study design, data collection and analysis:

Twenty two AICCHS regularly submit data to the QAIHC repository on the 25 'QAIHC Core Indicators'. These indicators provide an overview of the quality of care and the health status of clinic patient populations and include measures of workload and access; health determinants; risk loads; prevention; chronic disease care; maternal and child health; and workforce[3] . Participating services send aggregated whole of service data on the first Wednesday of every month to the data repository via automated extraction from the service clinical IT systems using the PEN CAT tool. As well as providing data on patients with chronic disease, the tool provides a snapshot of overall performance for all patients, recently seen patients and regular patients, stratified by ethnicity. No assessment of individual patient data is undertaken. The data is fed back to services through the Australian Primary Care Collaborative (APCC) webportal, via the QAIHC 'pages' and a copy is left on the services' servers.

This study presents longitudinal and time point data for selected indicators for 18 participating AICCHS. The data include process measures (indicators for recording of key clinical care activities and risk factors) and the health status of the AICCHS patient population. The study data have been collated from data extracted by the QAIHC Core Indicator report in the PEN CAT tool. This data is for all Aboriginal and Torres Strait Islander regular patients seen in the 6 months prior to the running of the report.

Data for this study were collated using simple descriptive statistics – proportions and 95 % Confidence Intervals (95% CIs) or medians and interquartile ranges (IQR) using SPSS Version 19.

Definitions: A recent patient is a patient with 1 recorded clinical visit in the 6 months prior to the date of data extraction. A regular patient is a patient who has made 3 visits to the service in the 2 years (1 within 6 months) prior to the date of data extraction. An adult is a person aged 15 years or older. A current health check or assessment is defined as a billed Medical Benefits Schedule (MBS) Item number 715 in the 24 months prior to the date of the data extraction. A current General Practitioner Management Plan (GPMP) is defined as an eligible patient having a billed MBS Item number 721 in the 12 months prior to the date of the data extraction.

Ethics process:

The quality improvement program and implementation of the health information system has been fully supported by the member elected QAIHC Board and member services. Participation is voluntary. All participating services have Australian General Practice Accreditation and patients are advised of ongoing quality assurance activity in the services. The work has been supported by funding from the Office of Aboriginal and Torres Strait Islander Health, Department of Health and Ageing.

QAIHC has data management agreements in place with all participating member services and its partners. All participating services have standard agreements with the Improvement Foundation. All data are held securely at QAIHC in a password protected data repository. A copy of the data extraction is retained by the AICCHS. The services are coded and de-identified. All presentation of data outside of a service is de-identified.

Results

Characteristics of patients

From October 2009 to February 2012, the number of participating AICCHSs with medical clinics sending monthly data for the *QAIHC Core Indicators* increased from 6 to 18. The total number of patients seen by these clinics for a documented visit in the 2 years prior to the date of data extraction, increased from 38,167 to 75,309 (June 2010 to February 2012), Table 1.

By October 2011, a total of 32,942 recent patients, with a median 1628 (IQR 1106,2226) per service, had been seen by the 18 clinics for medical care in the 6 months prior – from April to September 2011. Of these patients, 23,980 (72.78%) identified as Aboriginal or Torres Strait Islander and of these 19,727 (82.3%, median 0.64 IQR 0.49-0.77 per clinic) were regular Aboriginal or Torres Strait Islander patients.

Total number of Aboriginal or Torres Strait Islander patients seen by the participating clinics is detailed in Table 1.

Risk factor management

The aggregated performance of participating services was consistent and excellent on the recording of a number of key risk factors and health care activities (for example tobacco use, blood pressure) and poor for others (waist measurement), with some improvement over time (Figure 1).

In October 2011, the recording of key risk factor data in the electronic medical record, as a proportion (95% CIs) of aggregated adults patients who had attended the services in the previous 6 months, was as follows: for tobacco use 92.1% (79.5, 95.5), alcohol use 66.2% (55.3, 83.7), BMI 73.9% (60.6, 79.9), HBA1C 73.8% (62.8, 85.8), waist circumference 19.8% (6.8, 30.1), blood pressure 86.0% (79.8, 88.3), eGFR 26.8% (23.3, 40.9), demonstrating consistent performance across the 18 participant services.

Setting a standard of 80% completion as acceptable for recording of key clinical data, for tobacco use, 14/18 services met this target; for Body Mass Index (BMI) recording only 4/18 services met the target but if the standard was lowered to 70%, 12/18 services would then have met the target. For checking of blood pressure 14/18 services met the 80% standard with the lowest completion for this care activity being 66%. Other indicators where performance is consistently poor includes the recording of physical activity levels and waist circumference.

The prevalence of key risk factors or chronic diseases varies across services with the variation being greatest for at risk alcohol use across the 18 participating clinics in October 2011, (Figure 2). Variation in clinical team performance between services was greatest for care planning and health check activity (Figure 3).

Hypertension management

Management of hypertension and performance for coronary heart disease care plans is shown in Figure 4 using aggregated data between June 2010 and February 2012. In October 2011 hypertension was identified in a total of 3097 (25.1%) regular Indigenous patients, with a range in prevalence of 16-35% across the 18 services. The care delivered for hypertension was universally good. For patients with diagnosed hypertension, 86% (79.8, 88.3) of these patients had their BP checked within 12 months of the report date and 81.2% (72.4, 85.3) had been prescribed an Angiotensin Converting Enzyme (ACE) inhibitors or Angiotensin II receptor blockers. Of 1079 patients with Chronic Heart Disease, 24.8% (10.9, 45.1) had a current GP management plan (GPMP, Medicare Item 721) in place.

Discussion

An encouraging aspect of this work is the increasing engagement of the AICCHSs in Queensland and the excellent performance in some aspects of care. Participating health services in Queensland are now able to systematically collect data which enables them to monitor performance, access and workloads. This is a significant advance. Although it is not possible in an uncontrolled study such as this one to attribute observed changes to the intervention, or to tease out the relative impact of the multitude of factors in the service environment that may influence change, measurement and data collection inevitably leads to comparison and interpretation. Unlike pay for performance systems in which participation is mandated and gaming of results is not uncommon (5), this system has evolved in a safe environment where questions about what the data means and comparison of organizations can be given due consideration in a complex context both at the service and state levels.

The data indicate that performance on clinical best practice aspects of care is remarkably consistent across the services despite their differing characteristics and is excellent for a number of indicators, but poor for others. Blood pressure was recorded for over 85% of all adult patients seen, similarly recording of tobacco use, and alcohol use were recorded in at least 70% of patients over the 2 year period. Conversely waist circumference is recorded in 1 in 6 women only despite the data showing 1 in 2 women have a BMI of over 30 and recording of renal function is low. These differences in performance are not likely to reflect improvements in data entry alone and may reflect the nature of the clinical activities themselves. Although each can be conducted by individual clinicians which might be expected to increase the likelihood of change, impacting factors vary widely and may reflect confronting clinical tasks, knowledge of best practice guidelines and limitations of electronic medical records. Consequently appropriate interventions to improve performance will vary for each indicator and may include the need to educate patients about the value of such interventions, so increase demand and clinician confidence in delivery.

In contrast, the performance on the care planning and health assessment activity, the capture of which is dependent on billing, and the delivery on teamwork, shows a lot more variation. Many factors are known to influence the provision of preventative care in primary health care settings including practice size, competing time pressures for both staff and patients, limited referral options, lack of supportive organizational infrastructure, lack of incentives and training(6-8). Many of these factors are relevant to AICCHSs, difficult to quantify and are likely to partly explain variation between practices in performance data. Thus at the service level, interventions to improve performance here may require strategies for strengthening administration, reviewing workflows, supporting teamwork through articulation of roles and scope of practice to promote the delivery of collaborative team care.

Since initial work in 2007(9), these data suggest some improvement over the past 4 years. The screening and prescribing gaps for risk factors and hypertension, are also consistent with published data from research projects in both the Aboriginal setting and mainstream general practice (10, 11). It is difficult to compare across sectors, states and with recent data - however the delivery of health checks by these AICCHS compares favorably with that of services participating in the Healthy for Life (HFL) program (12) as well as with those in mainstream general practice (13). In 2007, 19 services participating in the HFL program reported on care planning - 419 of 3,415 (12 %) regular Indigenous adult clients with Type II diabetes had a current GP management plan (GPMP), similarly, 165 of 1,546 (10.7%) Indigenous adults with coronary heart disease had a current GPMP compared with 34% and 24.8% respectively in this study.

Those living in regional areas were most likely to have a current GPMPs (20% and 22%, respectively), followed by those living in remote areas (17% and 14%, respectively), with those in urban areas the least likely (both 3%)(14). Work in the Australian Capital Territory, found 156 adult Health Assessments were conducted between 2004–2008, a coverage of 7% of the eligible population (13) compared with 42% in this study . So the data presented suggest that the more complex, well coordinated teamwork required for care planning is perhaps becoming embedded in these AICCHS systems and may further improve with ongoing support. The ability of the sector to act on such data is predicated on appropriate time and resources to continue to respond at service level.

Without well considered standards for performance and models for weighting, how do we interpret this data for these 18 AICCHS? While the screening gap of about 15% for recording of tobacco use, blood pressure and use of best practice medicines shown in this study may be good or acceptable, is a screening gap of 30% for BMI and alcohol use? Supporting robust comparison of services cannot be done without consideration of the variety of factors that impact on performance data at the service level. In addition, any efforts to publish or reward performance must be accompanied by the development of appropriate measures that prevent unfair comparisons between services which operate in very different contexts. Measures need to encompass factors that could be expected to drive significant variation between these primary health care services - size, location, funding base, staffing composition, demographic and socioeconomic base. There are a number of additional factors that might also be considered particularly in interpreting performance for care planning and heath checks (Table 2).

These observations are important in the context of the evolving National Health Performance Authority which has recently released some potential indicators for the primary health care sector. A number are similar to those presented here – for example those related to care planning(15). Experience from the UK suggests the need for caution to avoid a number of adverse consequences when payment is linked to performance. Particularly relevant to a scaled up national system, similar to the system QAIHC has implemented, are concerns about the use of the data collected. These were clearly outlined recently including measurement fixation, tunnel vision, quantification privileging, increasing inequity and politicization of performance(5). Sensitive, careful interpretation of the variation in performance at the individual service level and comparison of performance between services over time is essential for both planning health service delivery and action to support improvement at local, regional and state levels.

Finally, what the data does demonstrate is the depth of workforce needed by all services to assist in major lifestyle change. The high prevalence of smoking, obesity diabetes and hypertension are consistent across services; for tobacco and at risk alcohol use, much higher than the workloads faced by mainstream general practice in Australia (16). This is vital information for prevention and planning of future service delivery by the sector. Recent work on models of care(17, 18) may enable better modeling of the workforce required to manage both risk factors and chronic diseases. To date, workforce provision has relied on inconsistent program funding, that does not account for risk factor load.

An additional strength of the data is its immediacy and robustness - it is ‘live’, ‘real world’ data for nearly 1 in 6 Aboriginal and Torres Strait Islanders in Queensland who use these AICCHSs,. There will be some patients using more than one service, however this duplication is likely to have had a small impact given the data collected is for whole service populations, not smaller manually audited samples. For QAIHC monitoring this real time data can alert to emerging or early trends in risk factors and chronic diseases. This is important in the context of the recent Close the Gap investments and should in time, enable QAIHC to better support its workforce, including for example the new Indigenous tobacco workforce(19).

Conclusion

Participating AMSs in Queensland are now able to systematically collect performance data which demonstrates what they do in terms of patient access and delivery on key care activity. The performance on some clinical best practice aspects of care is remarkably consistent across the services despite their differing characteristics, and appears to have improved significantly in recent years. Performance is currently excellent for a number of indicators, but poor for others. The work demonstrates the role the Community Control sector can play in using data to close the gap in Aboriginal and Torres Strait Islander health - there is real value in further investing in CQI programs with these services. However it may be that greater gains could be made with efforts to increase voluntary rather than mandated participation, as demonstrated by this work amongst Aboriginal and Islander Community Controlled Health Services in Queensland.

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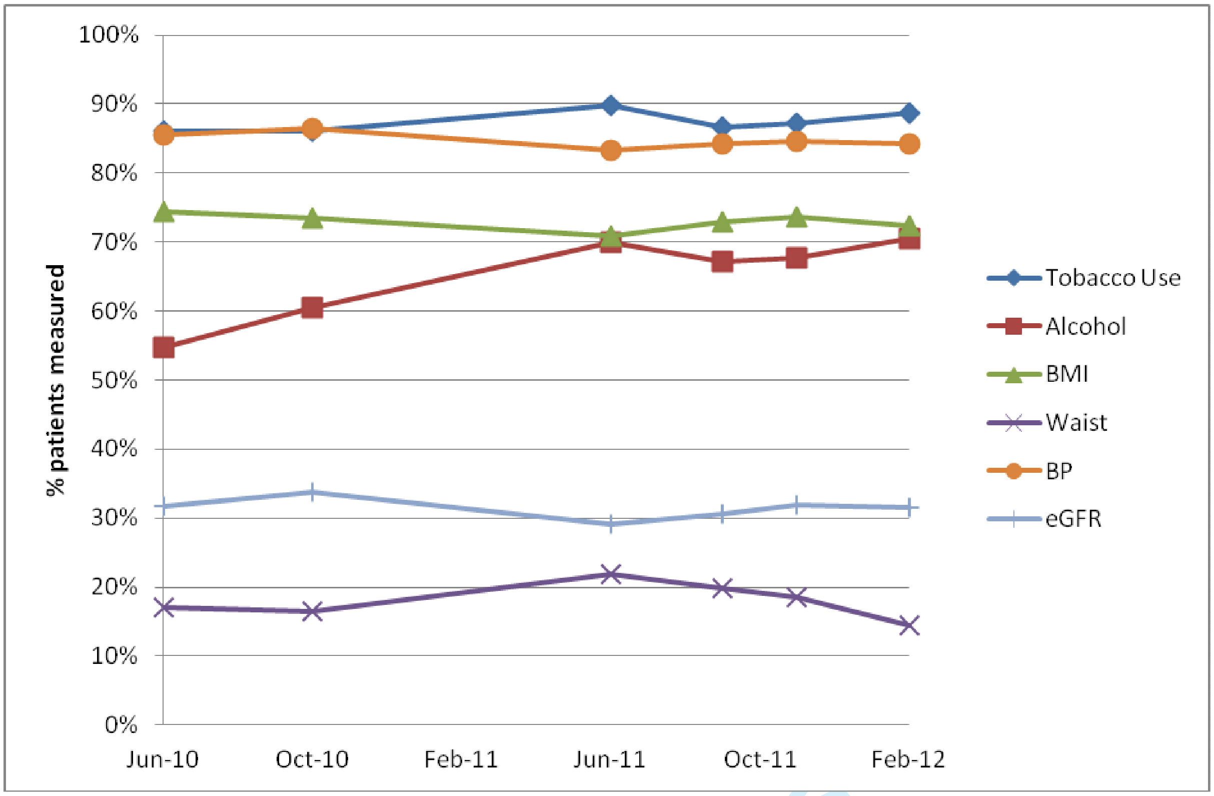
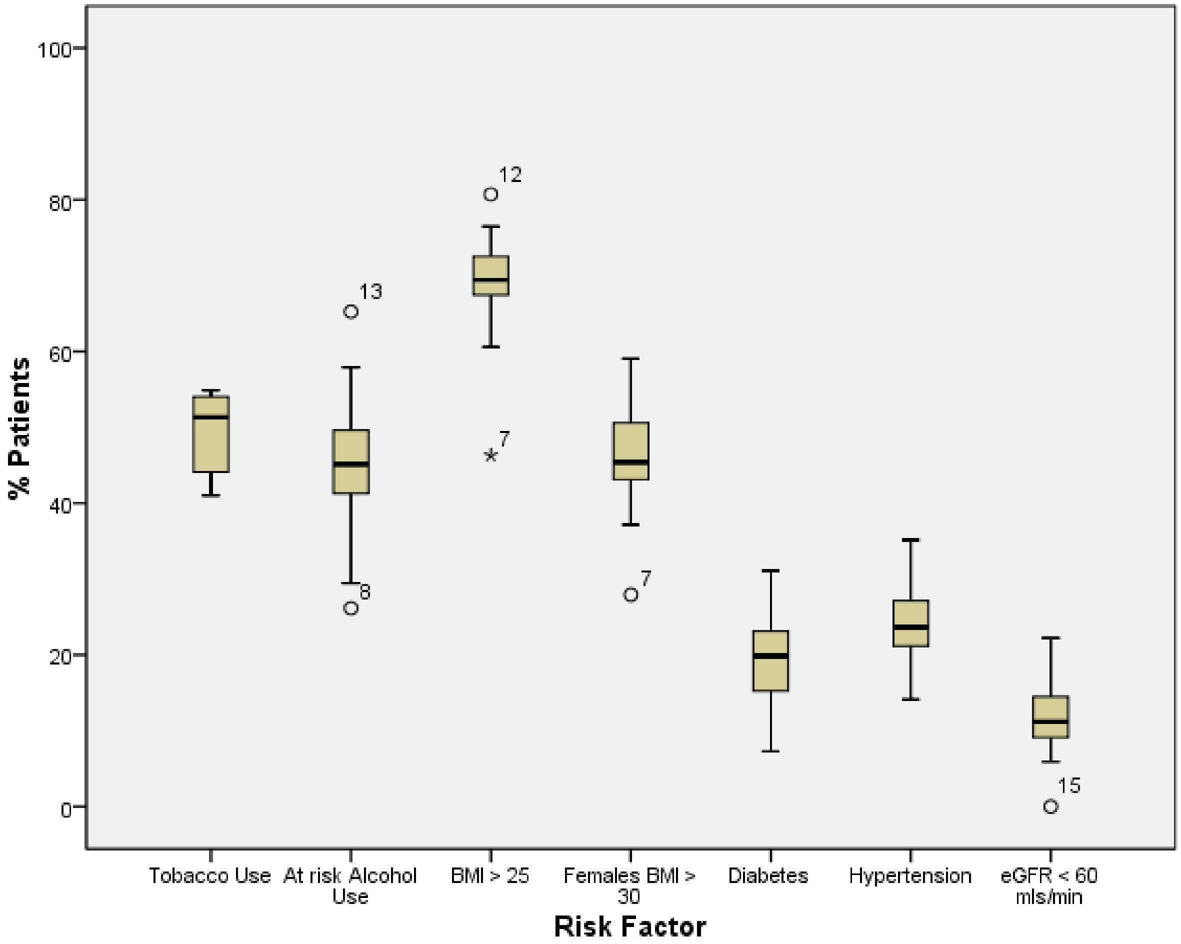
Figure 1. Recording of key risk and clinical care data# in regular Aboriginal and Torres Strait Islander adult patients attending participating health services in Qld in between February 2010 and February 2012.



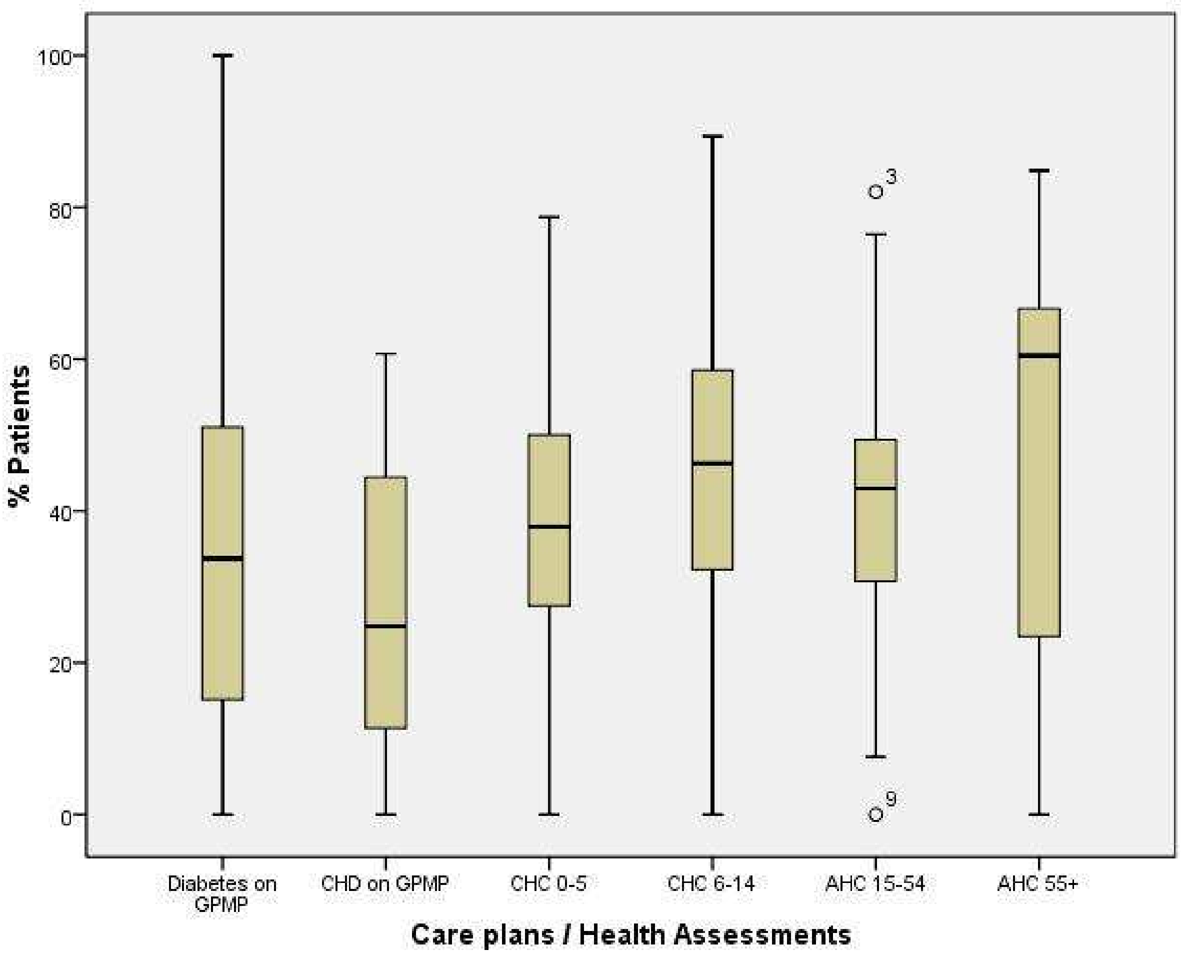
#Note recording for clinical status and activities is ever for tobacco and alcohol use, having been checked within 12 months of the report date for all adult patients for Waist, BMI, BP, eGFR and within 6 months of the report date for HBA1C in patients with Type 2 Diabetes.

Figure 2. Prevalence of key health status determinants by recorded diagnosis in 13,630 regular Aboriginal and Torres Strait Islander adults attending 18 participating health services in Queensland, April -September 2011.



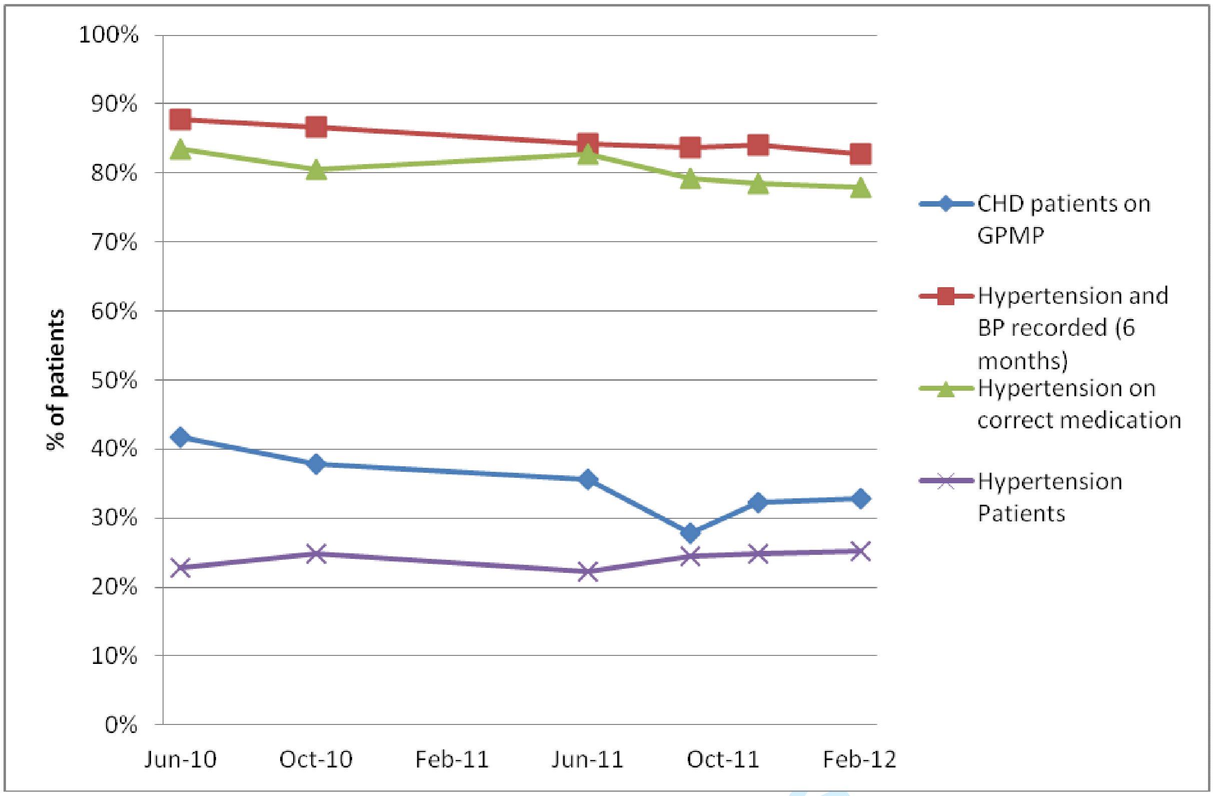
Note – Tobacco use is self reported daily smoking; at risk alcohol use is self reported ever daily alcohol intake of greater than 2 drinks; BMI – Body Mass Index; eGFR – Glomerular Filtration Rate is extracted from pathology results.

Figure 3: Performance of health assessments and care planning for regular Aboriginal and Torres Strait Islander patients, across 17 participating health services in Queensland, April -September 2011.



Note - GPMP: General Practitioner Management Plan (Medicare Item721, performed within 1 year of the date of data extraction); Chronic Heart Disease, CHC - Child Health Check, AHC – Adult Health Check (Medicare Item 715 performed within 2 years of the date of data extraction)

Figure 4. Management of regular Aboriginal and Torres Strait Islander adults with diagnosed hypertension attending participating health services in Qld between February 2010 and February 2012.



[#] Hypertension patients with blood pressure checked within the 6 months prior to the date of data extraction

[*] Hypertension patients prescribed ACE inhibitors or A2s checked within the 12 months prior to the date of data extraction

[+] Patients with Coronary Heart Disease with a current GP Management Plan performed within the 12 months prior to the date of data extraction

Table 1: Patient numbers for each time point with recorded visits at Participating queenland AICCHS with medical clinics

	June 2010	October 2010	June 2011	September 2011	February 2012
Aggregated data (95%CIs)					
No services	9	13	13	18	14
All Patients#	38167	27783	42923	78043	75309
All Aboriginal and Islander patients	27369	19793	28270	53241	55441
Recent patients#	21217	22253	25687	32942	31310
Recent Aboriginal and Islander Patients	15257	15241	17851	23980	24317
Regular Aboriginal and Islander patients	12938	13136	15433	19727	19948
Regular Adult Aboriginal and Islander Patients only					
All Adults	5444	9021	9371	13630	12325
Current tobacco users	2315	3936	4090	5818	5296
Type 2 Diabetes Mellitus	830	1548	1475	2489	2255
Hypertension	1237	2241	2084	3336	3097
N (alcohol)*	9	13	12	15	11

Includes Non-Indigenous patients with Aboriginal, Torres Strait Islander Patients
*N (alcohol) – number of services that submitted alcohol related data, relevant to Figures 1,2.

Table 2:

Possible explanatory factors for inter-service variation

1. Clinical activities vs EPC items:
    - 1 person activity vs coordinated team activity

2. Inter-service variation
    - SEIFA, Community size and % Indigenous people in catchment
    - ICAC or SAT scores ? available
    - Staffing/workforce
        - SMO
        - turnover
        - No docs/patients – workload per doc
    - Use data platforms
        - CAT usage
        - APCC portal usage
        - PDSAs
    - CQI program/collaborative

    - Incentives:
        - Staff – doc flat salaries or incentives
        - Patients
        - Staff and patients

Prevention and management of chronic disease: analysis of performance on selected clinical indicators in Aboriginal and Islander Community Controlled Health Services in Queensland

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Prevention and management of chronic disease: analysis of performance on selected clinical indicators in Aboriginal and Islander Community Controlled Health Services in Queensland

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Abstract

Objective: To evaluate clinical health care performance in Aboriginal Medical Services in Queensland and to consider future directions in supporting improvement through measurement, target setting and standards development.

Design: Longitudinal study assessing baseline performance and improvements in service delivery, clinical care and selected outcomes against key performance indicators 2009-2010.

Setting: 27 Aboriginal and Islander Community Controlled Health Services (AICCHS) in Queensland, who are members of the Queensland Aboriginal and Islander Health Council (QAIHC).

Participants: The 22 AICCHS with medical clinics.

Intervention: Implementation and use of an electronic clinical information system that integrates with electronic health records supported by the QAIHC quality improvement program - the Close the Gap (CTG) Collaborative.

Main Outcome Measures: Proportion of patients with current recording of key health care activities and the prevalence of risk factors and chronic disease.

Results: Aggregated performance was high on a number of key risk factors and health care activities including assessment of tobacco use and management of hypertension but low for others. Performance between services showed greatest variation for care planning and health check activity.

Conclusion: Data collected by the QAIHC health information system highlights the risk factor workload facing AICCHS in Queensland, demonstrating the need for ongoing support and workforce planning. Development of targets and weighting models is necessary to enable robust between-service comparisons of performance, which has implications for health reform initiatives in Australia. The limited information available suggests that although performance on key activities in the AICCHS sector, has potential for improvement in some areas, it is nonetheless at a higher level than for mainstream providers.

Implications: The work demonstrates the role that the Community Controlled sector can play in closing the gap in Aboriginal and Torres Strait Islander health by leading the use of clinical data to record and assess quality of services and health outcome.

Key words: Indigenous, health care performance, indicators, quality improvement, community control

Introduction

The burden of morbidity, chronic disease and injury remains high in Aboriginal and Torres Strait Islander people in Australia, with Indigenous males and females having shorter lives than their non-Indigenous peers, by 11.5 and 9.7 years respectively (1). Chronic diseases, particularly diabetes, cardiovascular and renal disease, contribute significantly to this increased morbidity, beginning some 10 years earlier and at 2-5 times the rate of that experienced by other Australians. The Australian Government has made a significant commitment to reducing this disadvantage with its ‘Closing the Gap’ reform, investing in programs to incentivize better identification, increase access to primary health care, reduce the cost of medicines and establish a workforce to tackle tobacco use and obesity. Central to the reforms are targets for closing the life expectancy gap within a generation and halving mortality rates for children under 5 years of age within a decade (2, 3). While education, housing and employment are significant contributors to this health disparity, the role of primary health care services, whether Aboriginal and Islander Community Controlled Health Services (AICCHSs), community health services or general practices, is also important and a significant component of the effort to close the gap.

The Queensland Aboriginal and Islander Health Council (QAIHC) has been leading the development of the first Indigenous community controlled Heath Information System (HIS) designed to build capacity in AICCHSs for the ongoing analysis, monitoring and reporting of clinical health data in Queensland (4). The HIS comprises a set of performance indicators, seamless integration with service Electronic Medical Records (EMR), and a web based portal which together forms the measurement platform for the QAIHC quality improvement program, the Close the Gap (CtG) Collaborative that drives organisational change.

This work has been progressing in an environment that is moving toward a national key performance indicator (nKPI) reporting process, auspiced by the Council of Australian Governments’ COAG (3). A subset of AICCHs began reporting nKPI data to the Australian Institute of Health and Welfare (AIHW) in Feb 2012, with a plan to mandate reporting biannually from June 2013 for all AICCHSs (over 150). The advent of the National Health Performance Authority (NPHA) in the context of the ongoing health reform agenda and release of the NPHA Performance and Accountability Framework suggests that efforts to capture and measure national health performance data are gathering pace and may soon involve the broader primary health care sector in Australia (5).

These new reforms need careful evaluation. The change in policy direction has occurred in a historical context in which the collection of data and information at the Aboriginal and Torres Strait Islander primary health care service level has been in place for many years and driven by accountability requirements based primarily in service activity reporting (6). Currently Aboriginal and Islander Community Controlled Health Services (AICCHSs) contend with multiple program specific reporting frameworks, each with their attendant indicator sets. As well as being overly burdensome (7), data collection for these reporting processes has not been seamless, and does not support the appropriate aggregation or timeliness of feedback required for quality improvement and planning purposes at the service level. As a consequence, this reporting has not adequately supported individual AICCHSs to assess the clinical care their health teams deliver, engage in useful quality improvement, plan for the future or demonstrate the effectiveness of AICCHSs individually or as a sector.

In this paper we present data from the first 2 years of the QAIHC CtG collaborative program (2009-2010) to examine improvements in the delivery of clinical care against key performance indicators. Consideration is given to target setting for clinical care activities for Aboriginal primary health care clinics based on the findings.

Methods

Setting

Queensland (Qld) has a large Indigenous population of 146,000 Aboriginal and Torres Strait Islander persons. This represents 3.6% of total Qld population and 28.3% of the national Aboriginal and Torres Strait Islander population(8).

QAIHC supports 27 member AICCHSs across Queensland to deliver comprehensive, primary health care to their communities. These organisations receive a mix of funding from the commonwealth and state governments and additionally bill Medicare, Australia's national health insurance scheme, for services delivered by their clinical care teams. The services have community elected boards, leading the delivery of multidisciplinary comprehensive primary health care.

Indicator set development and implementation

QAIHC has a small Data Management Unit, within its Preventative Health Unit, which has led the implementation of the health information strategy, manages the data and leads the attendant quality improvement program for the 22 services with medical clinics. In 2007-08, an expert panel, working with the QAIHC Centre of Research Excellence (CRE) in Cardiovascular Disease, developed a set of indicators, the '*QAIHC Core Indicators'*, which provide an overview of quality of care delivered by the medical clinics, the health status of the service patient populations in our sector, workload, patient access and workforce(9) (Table 1). The AICCHSs have been integrally involved in the work from the start in both advisory, testing and participatory capacities and provide members to a continuing, advisory lead clinician (LCG) group. Data definitions were established in the CRE work. The indicators are reviewed annually by the LCG.

Study design, data collection and analysis:

Eighteen of twenty two AICCHS regularly submit data to the QAIHC repository on the 25 'QAIHC Core Indicators'; 4 services have newly established medical clinics who will begin submitting data in 2013. Participating services send aggregated whole of service data on the first Wednesday of every month to the data repository via automated extraction from the service clinical EMRs using the Pen Computer Systems Clinical Audit tool (Pen CAT). No assessment of individual patient data is undertaken. The data is fed back to services through the Australian Primary Care Collaborative (APCC) webportal, via the QAIHC 'pages' and a copy is left on the services' servers.

This study presents longitudinal and time point data for selected indicators for 18 participating AICCHS. The study data have been collated from data extracted by the QAIHC Core Indicator report in the Pen CAT tool. The data collection thus represents a 'live' whole of service patient snapshot. That is the data is extracted for all patients on the EMR and the indicators are reported for 3 user groups: all patients, recent patients and regular patients stratified by ethnicity. The patient group numbers vary from month to month, as does the number of services submitting data. The data is derived from daily delivery of clinical care – there are no patient sub groups defined by having a completed health check for example, inclusion is defined by attendance for care at the clinic. Table 2 presents a snapshot of the denominators for the various sub groups of a service's users at each time point. In the aggregated data section of Table 2 each row, so each patient group, is a subset of the previous. In the EMR disease register section the numbers represent a subset of the regular adult Aboriginal and Islander Patients. The data in all the figures is for the regular Aboriginal and Torres Strait Islander patients.

Data for this study were collated using simple descriptive statistics – proportions and 95 % Confidence Intervals (95% CIs) or medians and interquartile ranges (IQR) using SPSS Version 19.

Definitions: Patients are asked about ethnicity, self identification and are recorded as Aboriginal, Torres Strait Islander or both in health service EMRs. A recent patient is a patient with 1 recorded clinical visit in the 6 months prior to the date of data extraction. A regular patient is a patient who has made 3 visits to the service in the 2 years AND at least 1 visit in the 6 months prior to the date of data extraction. An adult is a person aged 15 years or older. A current health check or assessment is defined as a billed Medical Benefits Schedule (MBS) Item number 715 in the 24 months prior to the date of the data extraction. A current General Practitioner Management Plan (GPMP) is defined as an eligible patient having a billed MBS Item number 721 in the 12 months prior to the date of the data extraction.

Privacy, confidentiality and community processes:

The quality improvement program and implementation of the health information system has been fully supported by the member elected QAIHC Board and member services. Participation is voluntary. All participating services have Australian General Practice Accreditation and patients are advised of ongoing quality assurance activity in the services. The work has been supported by funding from the Office of Aboriginal and Torres Strait Islander Health, Department of Health and Ageing.

QAIHC has data management agreements in place with all participating member services and its partners. All participating services have standard agreements with the Improvement Foundation. All data are held securely at QAIHC in a password protected data repository. A copy of the data extraction is retained by the AICCHS. The services are coded and de-identified. All presentation of data outside of a service is de-identified.

Results

Characteristics of patients

From October 2009 to February 2012, the number of participating AICCHSs with medical clinics sending monthly data for the *QAIHC Core Indicators* increased from 6 to 18. The total number of patients seen by these clinics for a documented visit in the 2 years prior to the date of data extraction, increased from 38,167 to 75,309 (June 2010 to February 2012), Table 2.

By September 2011, a total of 32,942 recent patients, with a median of 1628 (IQR 1106, 2226) per service, had been seen by the 18 clinics for medical care in the 6 months prior – from April 1 to September 30, 2011. Of these patients, 23,980 (72.8%) identified as Aboriginal or Torres Strait Islander and of these 19,727 (82.3%, median 0.64 IQR 0.49-0.77 per clinic) were regular Aboriginal or Torres Strait Islander patients.

Risk factor management

The aggregated performance of participating services was consistent on the recording of a number of key risk factors and health care activities (for example tobacco use, blood pressure) but poor for others (waist measurement), with some improvement over time (Figure 1).

In October 2011, the recording of key risk factor data in the electronic medical record, as a proportion (95% CIs) of aggregated regular adults patients who had attended the services in the previous 6 months, was as follows: for tobacco use 92.1% (79.5, 95.5), alcohol use 66.2% (55.3, 83.7), BMI 73.9% (60.6, 79.9), HBA1C 73.8% (62.8, 85.8), waist circumference 19.8% (6.8, 30.1), blood pressure 86.0% (79.8, 88.3), eGFR 26.8% (23.3, 40.9), demonstrating consistent performance across the 18 participant services.

Setting a standard of 80% completion as acceptable for recording of key clinical data, for tobacco use, 14/18 services met this target; for Body Mass Index (BMI) recording only 4/18 services met the target but if the standard was lowered to 70%, 12/18 services would then have met the target. For checking of blood pressure 14/18 services met the 80% standard with the lowest completion for this care activity being 66%. Other indicators where performance is consistently low includes the recording of physical activity levels and waist circumference.

Health assessments

The aggregated performance of participating services for health assessment increased over time (Figure 3). In October 2011, 8697 (44.1% - 43.4, 44.8) of regular patients had a current health assessment.

Hypertension management

Management of hypertension and performance for coronary heart disease care plans is shown in Figure 3 using aggregated data between June 2010 and February 2012. In October 2011, hypertension was identified in a total of 3097 (25.1%) regular Indigenous patients, with a range in prevalence of 16-35% across the 18 services. The care delivered for hypertension was universally good. For patients with diagnosed hypertension, 86% (79.8, 88.3) of these patients had their BP checked within 12 months of the report date and 81.2% (72.4, 85.3) had been prescribed an Angiotensin Converting Enzyme (ACE) inhibitors or Angiotensin II receptor blockers. Of 1079 patients with Chronic Heart Disease, 24.8% (10.9, 45.1) had a current GP management plan (GPMP, Medicare Item 721) in place.

Diabetes management

Figure 4 shows aggregated data for the care of patients with Diabetes Mellitus type 2. The completion of HBA1C testing in all diagnosed diabetics across the sites decreased across time, as did care planning and the proportion of well controlled patients - those with a HBA1C <7%. The number of regular adult Aboriginal and Torres Strait Islander patients diagnosed with this disease rose across time to 2489/13,630 (18.3% - 17.7, 19) in October 2011. For these patients, 1791 (72.0% – 70.2,73.8) had their HBA1C checked within the past 6 months, 523 (29.2% – 27.1, 31.3) had a HBA1C of less than 7% and 808 (32.5% - 30.7,31.3) had a current GP management plan in place.

Variation between services

The prevalence of key risk factors or chronic diseases varies across services with the variation being greatest for at risk alcohol use across the 18 participating clinics in October 2011, (Figure 5). Variation in clinical team performance between services was greatest for care planning and health check activity (Figure 6).

Discussion

Participating health services in Queensland are now able to systematically collect data which enables them to monitor performance, access and workloads. This is a significant advance. These AICCHSs are completing a number of key clinical care activities in more than 80% of their regular patients. Completion of comprehensive health checks or assessments has increased over the past 2 years, in part driving increased identification of patients with diabetes and hypertension. This suggests health system performance in these services has improved which should translate to improved health outcome.

The data indicate that performance on clinical best practice aspects of care is remarkably consistent across the services despite their differing characteristics, with screening gaps of 15-30%. Blood pressure was recorded for over 85% of all adult patients seen, similarly recording of tobacco use, with alcohol use recorded in at least 70% of patients over the 2 year period. Conversely waist circumference is recorded in 1 in 6 women only despite the data showing 1 in 2 women have a BMI of over 30 and recording of renal function is low. These differences in performance are not likely to reflect improvements in data entry alone and may reflect the nature of the clinical activities themselves. Although each can be conducted by individual clinicians which might be expected to increase the likelihood of change, impacting factors vary reflecting confronting clinical tasks, knowledge of best practice guidelines and limitations of electronic medical records. Consequently interventions to improve performance will vary for each indicator and may include the need to educate patients about the value of such interventions, to increase demand and clinician confidence in delivery. These data may be useful in setting targets in future, however it could be argued mandated monitoring of performance should not be introduced until all levers in care delivery systems are harnessed.

In contrast, the performance on the care planning and biannual health assessment activity, the capture of which is dependent on billing, and the delivery on well coordinated teamwork, shows more variation. While the completion of comprehensive health assessments rose over the 2 years to 50% or better in all age groups, care planning may not have kept pace with the increased identification of people with hypertension and diabetes. Many factors are known to influence the provision of preventative care in primary health care settings including practice size, available workforce, competing time pressures for both staff and patients, limited referral options, lack of supportive organizational infrastructure, lack of incentives and training (10-12). Many of these factors are relevant to AICCHSs, difficult to quantify and are likely to partly explain variation between practices in performance data. Thus interventions to improve performance here may require service level strategies for strengthening administration and reviewing workflows together with policy changes to support teamwork through articulation of roles and changed scope of practice to facilitate the delivery of collaborative team care.

Since initial work in 2007(13), these data suggest some improvement over the past 4 years. The screening and prescribing gaps for risk factors and hypertension, are also consistent with published data from research projects in both the Aboriginal setting and mainstream general practice (14, 15). It is difficult to compare across sectors, states and with recent data - however the delivery of health checks by these AICCHS compares favorably with that of services participating in the Healthy for Life (HFL) program (16) as well as with those in mainstream general practice (17). In 2007, 19 services participating in the HFL program reported on care planning - 419 of 3,415 (12 %) regular Indigenous adult clients with Type II diabetes had a current GP management plan (GPMP), compared with 34% for these QAIHC services; similarly, 165 of 1,546 (10.7%) Indigenous adults with coronary heart disease had a current GPMP compared with 24.8% in this study. Work in the Australian Capital Territory, found 156 adult Health

Assessments were conducted between 2004–2008 by all primary health care services, a coverage of 7% of the eligible population (17) compared with 42% in this study, suggesting the AICCHs sector may be outperforming mainstream general practice in the care of Aboriginal and Torres Strait Islander patients. The challenge is to now sustain this system, to continue to act on such data, which is predicated on having the appropriate time and resources in our peak bodies to support the Aboriginal and Islander health services.

Currently there are no well considered standards for performance or weighting models to enable comparison between services and sectors, in Australian primary health care. Measurement and data collection inevitably leads to comparison and interpretation despite the impact of the multitude of factors in the service environment that may influence change, the ever changing data denominators and lack of controlled rigor in the data collection. Unlike pay for performance systems in which participation is mandated and gaming of results is not uncommon (18), this system has evolved in a safe environment where questions about what the data means and comparison of organizations can be given due consideration in a complex context both at the service and state levels. However, supporting robust comparison of services cannot be done without consideration of the variety of factors that impact on performance data at the service level. Any efforts to publish or reward performance must be accompanied by the development of appropriate measures that prevent unfair comparisons between services which operate in very different contexts. Models need to encompass factors that could be expected to drive significant variation between these primary health care services - size, location, funding base, staffing composition, demographic and socioeconomic base. There are a number of additional factors that might also be considered particularly in interpreting performance for care planning and heath checks (Table 3). Given this context a pay for performance system may be a blunt, inequitable instrument for driving improvement in Aboriginal primary health care, where state affiliates such as QAIHC are better placed to support services in their efforts to improve planning and quality of the health care they deliver.

These observations are important in the context of the evolving National Health Performance Authority which has recently released some potential indicators for the primary health care sector. A number are similar to those presented here – for example those related to care planning(19). Experience from the UK suggests the need for caution to avoid a number of adverse consequences when payment is linked to performance. Particularly relevant to a scaled up national system, similar to the system QAIHC has implemented, are concerns that were clearly outlined in a recent paper, and which include measurement fixation, tunnel vision, quantification privileging, increasing inequity and politicization of performance(18). Sensitive, careful interpretation of the variation in performance at the individual service level and comparison of performance between services over time is essential for both planning health service delivery and action to support improvement at local, regional and state levels.

Finally, what the data also demonstrates is the depth of workforce needed by all services to assist in major lifestyle change. The high prevalence of smoking, obesity diabetes and hypertension are consistent across services; for tobacco and at risk alcohol use, much higher than the workloads faced by mainstream general practice in Australia (20). This is vital information for prevention and planning of future service delivery by the sector.

An additional strength of the data is its immediacy and robustness - it is 'live', 'real world' data for nearly 1 in 6 Aboriginal and Torres Strait Islanders in Queensland who use these AICCHSs. There will be some patients using more than one service, however this duplication is likely to have had a small impact given the data collected is for whole service populations, not smaller manually audited samples. For QAIHC monitoring this real time data can alert to emerging or early trends in risk factors and chronic diseases. This is important in the context of the recent Close the Gap investments and should in time, enable QAIHC to better support its workforce, including the new Indigenous tobacco workforce(21).

Conclusion

Participating AMSs in Queensland are now able to systematically collect performance data which demonstrates what they do in terms of patient access and delivery on key care activity. The performance on some clinical best practice aspects of care is remarkably consistent across the services despite their differing characteristics, and appears to have improved in recent years. The limited information available, suggest that performance in the AICCHS sector on some key care activities is at a higher level than for mainstream general practice providers. Performance is consistently higher for single clinician care activities such as blood pressure measurement across all services than for team based activities, where there is much greater variation in the completion of health checks and care plans.

Setting targets to support improvement needs careful consideration of the factors underlying different clinical activities and it is conceivable that many of these will be related to circumstances beyond the immediate control of the health service such as remoteness and disadvantage. The work demonstrates the role the Community Control sector can play in using data to close the gap in Aboriginal and Torres Strait Islander health - there is real value in further investing in CQI programs with these services.

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Figure legends:

Figure 1. Recording of key risk and clinical care data[#] - The proportion of regular Aboriginal and Torres Strait Islander adult patients[+], with care activity recorded, attending participating health services in Qld in between February 2010 and February 2012.

Figure 2. Proportion of regular Aboriginal and Torres Strait Islander adults with a current health assessments* by age group attending participating health services in Qld between February 2010 and February 2012.

Figure 3. Management of regular Aboriginal and Torres Strait Islander adults with diagnosed hypertension[#]attending participating health services in Qld between February 2010 and February 2012 – proportion of patients with recorded care activity.

Figure 4. Management of regular Aboriginal and Torres Strait Islander adults with diagnosed Diabetes Mellitus Type 2* attending participating health services in Qld between February 2010 and February 2012 - – proportion of patients with recorded care activity..

Figure 5. Prevalence of key health status determinants by recorded diagnosis in 13,630 regular Aboriginal and Torres Strait Islander adults attending 18 participating health services in Queensland, April -September 2011.

Figure 6: Performance of health assessments and care planning for regular Aboriginal and Torres Strait Islander patients, across 17 participating health services in Queensland, April -September 2011.

Table1. The 25 QAIHC Core Indicators developed by expert review and consensus in 2007-8 for implementation in the Aboriginal and Islander Community Control Health Services in Queensland

Domain	Why and Evidence	What - Indicator
Workload and access	Planning and monitoring service capacity (overall)(16)	➢ Numbers patients seen in clinic: adults and children ➢ Proportion Indigenous patients ➢ Episodes of care: by staff categories
Health determinants, risk loads, prevention	Planning and monitoring service capacity (health promotion/allied health/BI capacity) Monitor progress in risk load reduction(2, 14, 22)	➢ Smoking prevalence ➢ Prevalence of at risk alcohol consumption ➢ Prevalence of overweight/obesity ➢ Level of physical activity ➢ Health checks: adults and kids – 4 categories
Chronic disease care	Monitor workloads Monitor quality of care delivered(14, 23-26)	➢ Number of Diabetics and prevalence in service population ➢ Diabetic clients on GP management plan ➢ Glycaemic control: HbA1c completion and values ➢ CHD clients on GP management plan ➢ BP: Checking BPs all adults, prevalence hypertension ➢ BP: Management of hypertension – checking BP and medication use ➢ Risk of renal disease: eGFR, ACR – completion and renal function status
MCH	Monitor workloads Monitor quality of care delivered (27, 28)	➢ Antenatal care access: number pregnant women gave birth ➢ Timing of antenatal care ➢ Adequate Antenatal Care ➢ Proportion of low and high birth weight babies ➢ Proportion of preterm/term births ➢ Under and over weight children
Workforce	Planning and monitoring service capacity (overall)(29)	➢ Accreditation ➢ % Aboriginal and Islander Staff ➢ Student placements ➢ FTE Vacant Positions

Table 2: Aggragated patient numbers for each time point with recorded visits at participating Queenland AICCHS with medical clinics

	June 2010	October 2010	June 2011	September 2011	February 2012
Aggregated data (95%CIs)	n	n	n	n	n
All Patients[#]	38167	27783	42923	78043	75309
All Aboriginal and Islander patients	27369	19793	28270	53241	55441
Recent patients[#]	21217	22253	25687	32942	31310
Recent Aboriginal and Islander Patients	15257	15241	17851	23980	24317
Regular Aboriginal and Islander patients	12938	13136	15433	19727	19948
Regular Aboriginal and Islander adults	5444	9021	9371	13630	12325
EMR disease registers: Regular Aboriginal and Islander Adults	n (%)	n (%)	n (%)	n (%)	n (%)
Current tobacco users[+]	2315 (49..4)	3936 (51.6)	4090 (48.6)	5818 (49.3)	5296 (48.4)
Type 2 Diabetes Mellitus	830 (15.2)	1548 (17.2)	1475 (15.7)	2489 (18.2)	2255 (18.2)
Hypertension	1237 (22.7)	2241 (24.8)	2084 (22.2)	3336 (24.4)	3097 (25.1)
Coronary Heart Disease	347 (6.4)	663 (7.3)	673 (7.2)	1037 (7.6)	916 (7.4)
No services	9	13	13	18	14

EMR – Electronic Medical Record; disease registers are those adults with that coded recorded diagnosis in the medical history section of the EMR.

[#] All: Includes Non-Indigenous, Aboriginal, Torres Strait Islander or both Aboriginal and Torres Strait Islander Patients

Disease registers: These numbers (numerators) represent a subset of the Regular Adult Aboriginal and Islander Patients (denominator)[+] Proportion of tobacco users is a proportion of those adults for whom tobacco use status was recorded

Table 3:

Possible explanatory factors for inter-service variation

1. Clinical activities vs EPC items:
   - 1 person activity vs team activity

2. Inter-service variation
   - SEIFA, Community size and % Indigenous people in catchment
   - ICAC or SAT scores ? available
   - Staffing/workforce
     - Senior Medical Officer
     - turnover
     - Ratio of doctors to patients – workload per clinician
   - Use data platforms
     - Pen CAT usage or similar
     - APCC portal usage
     - Use of Plan Do Study Act cycles
   - CQI program/collaborative

   - Incentives:
     - Staff – flat salaries or incentives
     - Patients
     - Staff and patients

~~Prevention and management of chronic disease in Indigenous primary health care services in Queensland: performance on selected measures~~

Prevention and management of chronic disease: analysis of performance on selected clinical indicators in Aboriginal and Islander Community Controlled Health Services in Queensland

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Abstract

Objective: To evaluate clinical health care performance in Aboriginal Medical Services in Queensland and to consider future directions in supporting ongoing improvement through measurement, target setting and standards development.

Design: Longitudinal study assessing baseline performance and improvements in service delivery, clinical care and selected outcomes against key performance indicators in Queensland Aboriginal Community Controlled Health Services 2009-2010.

Setting: The 27 Queensland Aboriginal and Islander Community Controlled Health Services (AICCHS) in Queensland, who are members of the Queensland Aboriginal and Islander Health Council (QAIHC).

Participants: The 22 AICCHS with medical clinics in Queensland

Intervention: Implementation and use of an electronic clinical information system that integrates with electronic health records supported by the QAIHC quality improvement program - the *Close the Gap (CTG) Collaborative*.

Main Outcome Measures: Proportion of patients with current recording of key health care activities and the prevalence of risk factors and chronic disease.

Results: Aggregated performance ~~of participating services~~ was high ~~excellent~~ on a number of key risk factors and health care activities ~~such as~~ including ~~-~~assessment of tobacco use~~,~~ and management of hypertension ~~and some~~but ~~aspects of diabetes care. However it was poor~~ low for others ~~some, while others showed measurable improvement over time~~. Performance between services showed greatest variation for care planning and health check activity.

Conclusion: ~~The~~ D~~d~~ata collected by the QAIHC health information system highlights the risk factor workload facing AICCHS in Queensland,~~; performance is good against some key clinical care performance indicators, poor on some and showing improvement across time for others,~~ demonstrating the need for ongoing support and workforce planning. Development of ~~standards~~ targets and weighting models is necessary to enable robust between-service comparisons of performance, which has implications for health reform initiatives in Australia. The limited information available suggests that although performance on key care activities in the AICCHS sector has potential for improvement in some areas, it is nonetheless at a higher level than for mainstream providers.

Implications: The work demonstrates the role that the Community Controlled sector can play in closing the gap in Aboriginal and Torres Strait Islander health by leading the use of clinical data to record tangible gains in both the quality of health services delivered and health outcome

Key words: Indigenous, health care performance, indicators, quality improvement, community control

Introduction

The burden of morbidity, chronic disease and injury remains high in Aboriginal and Torres Strait Islander people in Australia, with Indigenous males and females having shorter lives than their non-Indigenous peers, by 11.5 and 9.7 years respectively (1). Chronic diseases, particularly diabetes, cardiovascular and renal disease, contribute significantly to this increased morbidity, beginning some 10 years earlier and at 2-5 times the rate of that experienced by other Australians. The Australian Government has made a significant commitment to reducing this disadvantage with its ‘Closing the Gap’ reform, investing in programs to incentivize better identification, increase access to primary health care, reduce the cost of medicines and establish a workforce to tackle tobacco use and obesity. Central to the reforms are ~~setting~~ targets for closing the life expectancy gap within a generation and halving mortality rates for children under 5 years of age within a decade(2, 3). While education, housing and employment are significant contributors to this health disparity, the role of primary health care services, whether Aboriginal and Islander Community Controlled Health Services (AICCHSs), community health services or general practices, is also important and a significant component of the effort to close the gap.

The Queensland Aboriginal and Islander Health Council (QAIHC) has been leading the development of the first Indigenous community controlled Heath Information System (HIS) designed to build capacity in AICCHS for the ongoing analysis, monitoring and reporting of clinical health data in Queensland(4). ~~QAIHC supports Queensland’s 27 member AICCHSs to deliver comprehensive, primary health care to their communities.~~ The HIS comprises a set of performance indicators, seamless integration with service Electronic Medical Records (EMR), and a web based portal~~s~~ which together forms the measurement platform for the QAIHC quality improvement program, the Close the Gap (CtG) Collaborative that drives organisational change.

This work has been progressing in an environment that is moving toward a national key performance indicator (nKPI) reporting process, auspiced by the Council of Australian Governments’ COAG(3). A subset of AICCHs began reporting nKPI data to the Australian Institute of Health and Welfare (AIHW) in Feb 2012, with a plan to mandate reporting biannually from June 2013 for all AICCHSs (over 150). The advent of the National Health Performance Authority (NPHA) in the context of the ongoing health reform agenda and release of the NPHA Performance and Accountability Framework suggests that efforts to capture and measure national health performance data are gathering pace and may soon involve the broader primary health care sector in Australia ~~through the Medicare Locals~~(5).

These new reforms need careful evaluation. The change in policy direction has occurred in a historical context in which the collection of data and information at the Aboriginal and Torres Strait Islander primary health care service level has been in place for many years driven by accountability requirements, based primarily in service activity reporting(6). Currently Aboriginal and Islander Community Controlled Health Services (AICCHSs) contend with multiple program specific reporting frameworks, each

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with their attendant indicator sets. As well as being overly burdensome (7), data collection for these reporting processes has not been seamless, and does not support the appropriate aggregation or timeliness of feedback required for quality improvement and planning purposes at the service level. As a consequence, this reporting has not adequately supported individual AICCHSs to assess the clinical care their health teams deliver, engage in useful quality improvement, plan for the future or demonstrate the effectiveness of AICCHSs individually or as a sector.

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In this paper we present data from the first 2 years of the QAIHC CtG collaborative program (2009-2010) to examine improvements in ~~service~~ the delivery of~~,~~ clinical care ~~and selected outcomes~~ against key performance indicators~~.~~ ~~We reflect on what the data means, successes to date, provide a broad comparison with other programs and raise questions in relation to the interpretation of this data and its use in the context of the drive to measure performance in primary health care nationally.~~ Consideration is given to target setting for clinical care activities for Aboriginal primary health care clinics based on the findings.

Methods

Setting

Queensland (Qld) has a large Indigenous population of 146,000 Aboriginal and Torres Strait Islander persons. This represents 3.6% of total Qld population and 28.3% of the national Aboriginal and Torres Strait Islander population(8).

QAIHC supports 27 member AICCHSs across Queensland to deliver comprehensive, primary health care to their communities. These organisations receive a mix of funding from the commonwealth and state governments and additionally bill Medicare, Australia's national health insurance scheme, for services delivered by their clinical care teams. The services have community elected boards, leading the delivery of multidisciplinary comprehensive primary health care.

Indicator set development and implementation

QAIHC has a small Data Management Unit, within its Preventative Health Unit, which has led the implementation of the health information strategy, manages the data and leads the attendant quality improvement program. In 2007-08, an expert panel, working with the QAIHC Centre of Research Excellence (CRE) in Cardiovascular Disease, developed a set of indicators, the '*QAIHC Core Indicators*', which provide an overview of quality of care delivered by the medical clinics, the health status of the service patient populations in our sector, workload, patient access and workforce (9) (~~-~~Table 1). The AICHSs have been integrally involved in the work from the start in both advisory, testing and participatory capacities and provide members to a continuing, advisory lead clinician (LCG) group. Data definitions were established in the CRE work. The indicators are reviewed annually by the LCG.

Study design, data collection and analysis:

Eighteen of twenty two AICCHS regularly submit data to the QAIHC repository on the 25 ‘QAIHC Core Indicators’; 4 services have newly established medical clinics who will begin submitting data in 2013.~~ These indicators provide an overview of the quality of care and the health status of clinic patient populations and include measures of workload and access; health determinants; risk loads; prevention; chronic disease careand maternal and child health; and workforce[3] .~~ Participating services send aggregated whole of service data on the first Wednesday of every month to the data repository via automated extraction from the service clinical ~~IT systems~~ EMRs using the Pen Computer Systems Clinical Audit tool (Pen CAT). ~~As well as providing data on patients with chronic disease, the tool provides a snapshot of overall performance for all patients, recently seen patients and regular patients, stratified by ethnicity.~~ No assessment of individual patient data is undertaken. The data is fed back to services through the Australian Primary Care Collaborative (APCC) webportal, via the QAIHC ‘pages’ and a copy is left on the services’ servers.

This study presents longitudinal and time point data for selected indicators for 18 participating AICCHS. ~~The data include process measures (indicators for recording of key clinical care activities and risk factors) and the health status of the AICCHS patient population.~~ The study data have been collated from data extracted by the QAIHC Core Indicator report in the Pen CAT tool. The data collection thus represents a ‘live’ whole of service patient snapshot. That is the data is extracted for all patients on the EMR and the indicators are reported for 3 user groups: all patients, recent patients and regular patients stratified by ethnicity. The patient group ~~-~~numbers vary from month to month, as does the number of services submitting data. The data is derived from daily delivery of clinical care – there are no patient sub groups defined by having a completed health check for example, inclusion is defined by attendance for care at the clinic. Table 2 presents a snapshot of the denominators for the various sub groups of a service’s users at each time point. In the aggregated data section of Table 2 each row, so each patient group, is a subset of the previous. In the EMR disease register section the numbers represent a subset of the regular adult Aboriginal and Islander Patients. The~~is~~ data in all the figures is for ~~all~~ the regular Aboriginal and Torres Strait Islander ~~regular~~ patients. ~~seen in the 6 months prior to the running of the report.~~

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Data for this study were collated using simple descriptive statistics – proportions and 95 % Confidence Intervals (95% CIs) or medians and interquartile ranges (IQR) using SPSS Version 19.

Definitions: Patients are asked about ethnicity, self identification and are recorded as Aboriginal, Torres Strait Islander or both in health service EMRs. A recent patient is a patient with 1 recorded clinical visit in the 6 months prior to the date of data extraction. A regular patient is a patient who has made 3 visits to the service in the 2 years AND at least 1 visit in the 6 months ~~(1 within 6 months)~~ prior to the date of data extraction. An adult is a person aged 15 years or older. A current health check or assessment is defined as a billed Medical Benefits Schedule (MBS) Item number 715 in the 24 months prior to the date of the data extraction. A current General Practitioner Management Plan

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(GPMP) is defined as an eligible patient having a billed MBS Item number 721 in the 12 months prior to the date of the data extraction.

~~Ethics~~ Privacy, confidentiality and community processes:

The quality improvement program and implementation of the health information system has been fully supported by the member elected QAIHC Board and member services. Participation is voluntary. All participating services have Australian General Practice Accreditation and patients are advised of ongoing quality assurance activity in the services. The work has been supported by funding from the Office of Aboriginal and Torres Strait Islander Health, Department of Health and Ageing.

QAIHC has data management agreements in place with all participating member services and its partners. All participating services have standard agreements with the Improvement Foundation. All data are held securely at QAIHC in a password protected data repository. A copy of the data extraction is retained by the AICCHS. The services are coded and de-identified. All presentation of data outside of a service is de-identified.

Results

Characteristics of patients

From October 2009 to February 2012, the number of participating AICCHSs with medical clinics sending monthly data for the *QAIHC Core Indicators* increased from 6 to 18. The total number of patients seen by these clinics for a documented visit in the 2 years prior to the date of data extraction, increased from 38,167 to 75,309 (June 2010 to February 2012), Table 2~~1~~.

By ~~October~~ September 2011, a total of 32,942 recent patients, with a median of 1628 (IQR 1106, 2226) per service, had been seen by the 18 clinics for medical care in the 6 months prior – from April 1 to September 30, 2011. Of these patients, 23,980 (72.~~7~~8%) identified as Aboriginal or Torres Strait Islander and of these 19,727 (82.3%, median 0.64 IQR 0.49-0.77 per clinic) were regular Aboriginal or Torres Strait Islander patients.

~~A breakdown of the median Aboriginal or Torres Strait Islander patient numbers seen by the participating clinics is detailed in Table 1.~~

Risk factor management

The aggregated performance of participating services was consistent and excellent on the recording of a number of key risk factors and health care activities (for example tobacco use, blood pressure) and poor for others (waist measurement), with some improvement over time (Figure 1).

In October 2011, the recording of key risk factor data in the electronic medical record, as a proportion (95% CIs) of aggregated regular adults patients who had attended the services in the previous 6 months, was as follows: for tobacco use 92.1% (79.5, 95.5), alcohol use 66.2% (55.3, 83.7), BMI 73.9% (60.6, 79.9), HBA1C 73.8% (62.8, 85.8), waist circumference 19.8% (6.8, 30.1), blood pressure 86.0% (79.8, 88.3), eGFR 26.8% (23.3, 40.9), demonstrating consistent performance across the 18 participant services.

Setting a standard of 80% completion as acceptable for recording of key clinical data, for tobacco use, 14/18 services met this target; for Body Mass Index (BMI) recording only 4/18 services met the target but if the standard was lowered to 70%, 12/18 services would then have met the target. For checking of blood pressure 14/18 services met the 80% standard with the lowest completion for this care activity being 66%. Other indicators where performance is consistently low ~~poor~~ includes the recording of physical activity levels and waist circumference.

~~The prevalence of key risk factors or chronic diseases varies across services with the variation being greatest for at risk alcohol use across the 18 participating clinics in October 2011, (Figure 2). Variation in clinical team performance between services was greatest for care planning and health check activity (Figure 3).~~

Health assessments

The aggregated performance of participating services for health assessment increased over time (Figure 3). In October 2011, 8697 (44.1% - 43.4, 44.8) of regular patients had a current health assessment.

Hypertension management

Management of hypertension and performance for coronary heart disease care plans is shown in Figure 3 using aggregated data between June 2010 and February 2012. In October 2011 hypertension was identified in a total of 3097 (25.1%) regular Indigenous patients, with a range in prevalence of 16-35% across the 18 services. The care delivered for hypertension was universally good. For patients with diagnosed hypertension, 86% (79.8, 88.3) of these patients had their BP checked within 12 months of the report date and 81.2% (72.4, 85.3) had been prescribed an Angiotensin Converting Enzyme (ACE) inhibitors or Angiotensin II receptor blockers. Of 1079 patients with Chronic Heart Disease, 24.8% (10.9, 45.1) had a current GP management plan (GPMP, Medicare Item 721) in place.

Diabetes management

Figure 4 shows aggregated data for the care of patients with Diabetes Mellitus type 2. The completion of HBA1C testing in all diagnosed diabetics across the sites decreased across time, as did care planning and the proportion of well controlled patients - those with a HBA1C <7%. The number of regular adult Aboriginal and Torres Strait Islander patients diagnosed with this disease rose across time to 2489/13,630 (18.3% - 17.7, 19) in October 2011. For these patients, 1791 (72.0% – 70.2,73.8) had their HBA1C checked within the past 6 months, 523 (29.2% – 27.1, 31.3) had a HBA1C of less than 7% and 808 (32.5% - 30.7,31.3) had had a current GP management plan in place.

Variation between services

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The prevalence of key risk factors or chronic diseases varies across services with the variation being greatest for at risk alcohol use across the 18 participating clinics in October 2011, (Figure 5). Variation in clinical team performance between services was greatest for care planning and health check activity (Figure 6).

Discussion

~~An encouraging aspect of this work is the increasing engagement of the AICCHSs in Queensland and the excellent performance in some aspects of care.~~ Participating health services in Queensland are now able to systematically collect data which enables them to monitor performance, access and workloads. This is a significant advance. These AICCHSs are completing a number of key clinical care activities in more than 80% of their regular patients. Completion of comprehensive health checks or assessments has increased over the past 2 years, in part driving increased identification of patients with diabetes and hypertension. This suggests health system performance in these services has improved which should translate to improved health outcome.

The data indicate that performance on clinical best practice aspects of care is remarkably consistent across the services despite their differing characteristics, with screening gaps of 15-30%. ~~and is excellent for a number of indicators, but poor for others.~~ Blood pressure was recorded for over 85% of all adult patients seen, similarly recording of tobacco use, ~~and~~with alcohol use ~~were~~ recorded in at least 70% of patients over the 2 year period. Conversely waist circumference is recorded in 1 in 6 women only despite the data showing 1 in 2 women have a BMI of over 30 and recording of renal function is low. These differences in performance are not likely to reflect improvements in data entry alone and may reflect the nature of the clinical activities themselves. Although each can be conducted by individual clinicians which might be expected to increase the likelihood of change, impacting factors vary ~~widely and may~~ reflecting confronting clinical tasks, knowledge of best practice guidelines and limitations of electronic medical records. Consequently ~~appropriate~~ interventions to improve performance will vary for each indicator and may include the need to educate patients about the value of such interventions, ~~s~~to increase demand and clinician confidence in delivery. These data may be useful in setting targets in future, however it could be argued mandated monitoring of performance should not be introduced until all levers in care delivery systems are harnessed.

Comment [I1]: Would still need a definition

In contrast, the performance on the care planning and biannual health assessment activity, the capture of which is dependent on billing, and the delivery on well coordinated teamwork, shows ~~a lot~~ more variation. While the completion of comprehensive health assessments rose over the 2 years to 50% or better in all age groups, care planning may not have kept apace with the increased identification of people with hypertension and diabetes. Many factors are known to influence the provision of preventative care in primary health care settings including practice size, available workforce, competing time pressures for both staff and patients, limited referral options, lack of supportive organizational infrastructure, lack of incentives and training(10-12). Many of these factors are relevant to AICCHSs, difficult to quantify and are likely to partly explain variation between practices in performance data. Thus ~~at the service level,~~ interventions to improve performance here may require service level strategies for strengthening administration~~,~~ and reviewing workflows~~,~~ together with policy changes to support~~ing~~ teamwork through articulation of roles and changed scope of practice to ~~promote~~ facilitate the delivery of collaborative team care.

Since initial work in 2007(13), these data suggest some improvement over the past 4 years. The screening and prescribing gaps for risk factors and hypertension, are also consistent with published data from research projects in both the Aboriginal setting and mainstream general practice (14, 15). It is difficult to compare across sectors, states and with recent data - however the delivery of health checks by these AICCHS compares favorably with that of services participating in the Healthy for Life (HFL) program (16) as well as with those in mainstream general practice (17). In 2007, 19 services participating in the HFL program reported on care planning - 419 of 3,415 (12 %) regular Indigenous adult clients with Type II diabetes had a current GP management plan (GPMP) compared with 34% for these QAIHC services;~~,~~ similarly, 165 of 1,546 (10.7%) Indigenous adults with coronary heart disease had a current GPMP compared with 24.8% in this study. ~~Those living in regional areas were most likely to have a current GPMPs (20% and 22%, respectively), followed by those living in remote areas (17% and 14%, respectively), with those in urban areas the least likely (both 3%)(14).~~ Work in the Australian Capital Territory, found 156 adult Health Assessments were conducted between 2004–2008 by all primary health care services, a coverage of 7% of the eligible population (17) compared with 42% in this study, suggesting the AICCHs sector may be outperforming mainstream general practice in the care of Aboriginal and Torres Strait Islander patients. ~~So the data presented suggest that the more complex, well coordinated teamwork required for care planning is perhaps becoming embedded in these AICCHS systems and may further improve with ongoing support.~~ The ~~ability of the sector to~~challenge is to now sustain this system, to continue to act on such data, which is predicated on having the appropriate time and resources in our peak bodies to support the Aboriginal and Islander health services. ~~respond at service level.~~

Currently there are no well considered standards for performance or weighting models to enable comparison between services and sectors, in Australian primary health care. ~~how do we interpret this data for these 18 AICCHS~~ in Australian primary health care.~~?~~ ~~While the screening gap of about 15% for recording of tobacco use, blood pressure and use of best practice medicines shown in this study may be good or acceptable, is a screening gap of 30% for BMI and alcohol use?~~ Measurement and data collection inevitably leads to comparison and interpretation despite the impact of the multitude of factors impacting in the service environment that may influence change, the ever changing data denominators and lack of controlled rigour in the data collection. ~~Although it is not possible in an uncontrolled study such as this one to attribute observed changes to the intervention, or to tease out the relative impact of the multitude of factors in the service environment that may influence change, measurement and data collection inevitably leads to comparison and interpretation.~~ Unlike pay for performance systems in which participation is mandated and gaming of results is not uncommon (18), this system has evolved in a safe environment where questions about what the data means and comparison of organizations can be given due consideration in a complex context both at the service and state levels.~~-~~ However, s~~S~~upporting robust comparison of services cannot be done without consideration of the variety of factors that impact on performance data at the service level. ~~In addition, any~~ Any efforts to publish or reward performance must be accompanied by the development of appropriate measures that prevent unfair comparisons between services which operate in very different contexts. Models need to encompass factors that could be expected to drive significant variation between these primary health care services - size, location, funding base, staffing composition, demographic and socioeconomic base. There are a number of additional factors that might also be considered particularly in interpreting performance for care planning and heath checks (Table 3). Given this context a pay for performance system may be a blunt, inequitable instrument for driving improvement in Aboriginal primary health care, where state affiliates such as QAIHC are better placed to support services in their efforts to improve planning and quality of the health care they deliver.~~Measures need to encompass factors that could be expected to drive significant variation between these primary health care services - size, location, funding base, staffing composition, demographic and socioeconomic base. There are a number of additional factors that might also be considered particularly in interpreting performance for care planning and heath checks (Table 32).~~

These observations are important in the context of the evolving National Health Performance Authority which has recently released some potential indicators for the primary health care sector. A number are similar to those presented here – for example those related to care planning(19). Experience from the UK suggests the need for caution to avoid a number of adverse consequences when payment is linked to performance. Particularly relevant to a scaled up national system, similar to the system QAIHC has implemented, are concerns ~~about the use of the data collected. These~~that were clearly outlined recently including measurement fixation, tunnel vision, quantification privileging, increasing inequity and politicization of performance(18). Sensitive, careful interpretation of the variation in performance at the individual service level and comparison of performance between services over time is essential for both planning health service delivery and action to support improvement at local, regional and state levels.

Finally, what the data ~~does~~ also demonstrates ~~is~~ the depth of workforce needed by all services to assist in major lifestyle change. The high prevalence of smoking, obesity diabetes and hypertension are consistent across services; for tobacco and at risk alcohol use, much higher than the workloads faced by mainstream general practice in Australia (20). This is vital information for prevention and planning of future service delivery by the sector. ~~Recent work on models of care(17, 18) may enable better modeling of the workforce required to manage both risk factors and chronic diseases. To date, workforce provision has relied on inconsistent program funding, that does not account for risk factor load.~~

An additional strength of the data is its immediacy and robustness - it is ‘live’, ‘real world’ data for nearly 1 in 6 Aboriginal and Torres Strait Islanders in Queensland who use these AICCHSs~~,~~. There will be some patients using more than one service, however this duplication is likely to have had a small impact given the data collected is for whole service populations, not smaller manually audited samples. For QAIHC monitoring this real time data can alert to emerging or early trends in risk factors and chronic diseases. This is important in the context of the recent Close the Gap investments and should in time, enable QAIHC to better support its workforce, including ~~for example~~ the new Indigenous tobacco workforce(21).

Conclusion

Participating AMSs in Queensland are now able to systematically collect performance data which demonstrates what they do in terms of patient access and delivery on key care activity. The performance on some clinical best practice aspects of care is remarkably consistent across the services despite their differing characteristics, and appears to have improved ~~significantly~~ in recent years. The limited information available, suggest that performance in the AICCHS sector on some key care activities is at a higher level than for mainstream general practice providers. Performance is consistently higher for single clinician care activities such as blood pressure measurement across all services ~~and~~ than for team based activities, where there is much greater variation in ~~such as~~ the completion of health checks and care plans. ~~This suggests that results are unlikely to be attributable to improvements in recording alone.~~

Setting targets to support improvement ~~will need to include~~needs careful consideration of the factors underlying different clinical activities and it is conceivable that many of these will be related to circumstances beyond the immediate control of the health service such as remoteness and disadvantage. The work demonstrates the role the Community Control sector can play in using data to close the gap in Aboriginal and Torres Strait Islander health - there is real value in further investing in CQI programs with these services. ~~However it may be that greater gains could be made with efforts to increase voluntary rather than mandated participation, as demonstrated by this work amongst Aboriginal and Islander Community Controlled Health Services in Queensland.~~

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Figure 1. Recording of key risk and clinical care data[#] - The proportion of ~~in~~ regular Aboriginal and Torres Strait Islander adult patients[+], with care activity recorded, attending participating health services in Qld in between February 2010 and February 2012.

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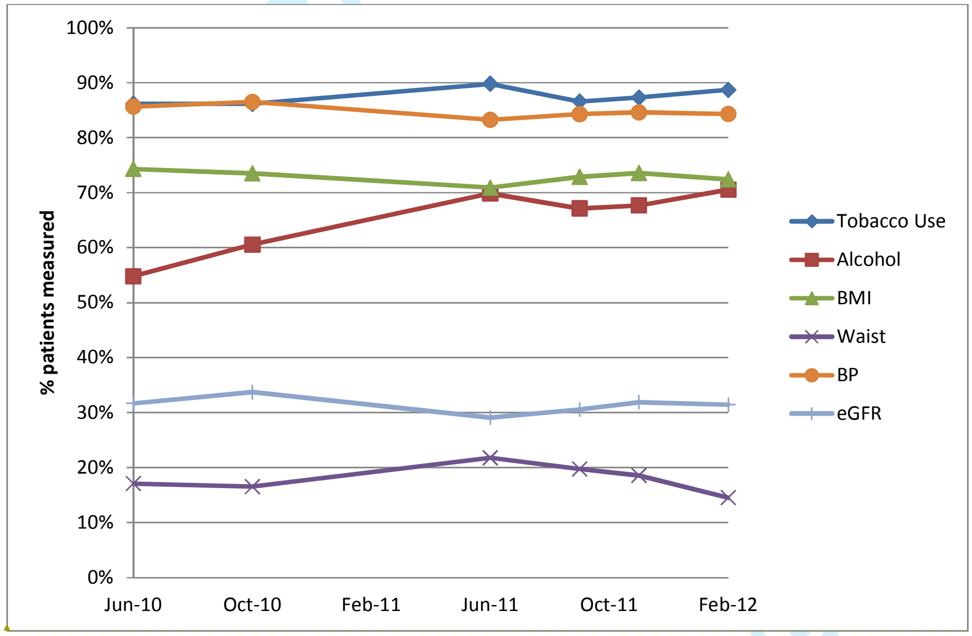

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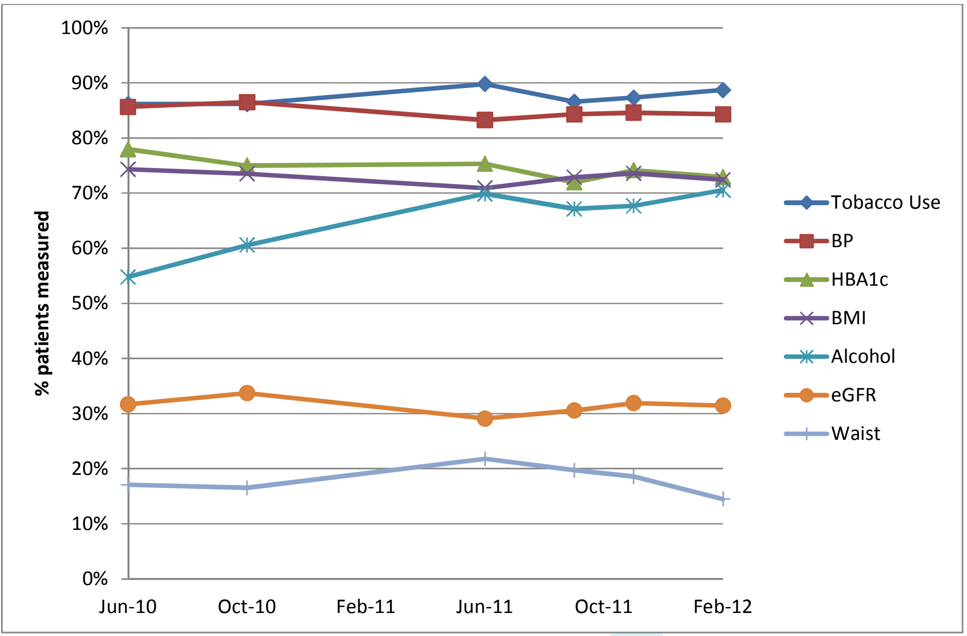

[#]~~Note r~~Recording for clinical status and activities is ever for tobacco and alcohol use, having been checked within 12 months of the report date for all adult patients for Waist, BMI, BP, eGFR and within 6 months of the report date for HBA1C in patients with Type 2 Diabetes.

[+] The denominator for each time point corresponds to the total number of regular Aboriginal and Torres Strait Islander Adults seen by all the services who submitted data at the timepoint, Table 2.

Alcohol data: submission was omitted from 1 service in June 2011, 3 services in September 2011 and February 2012.

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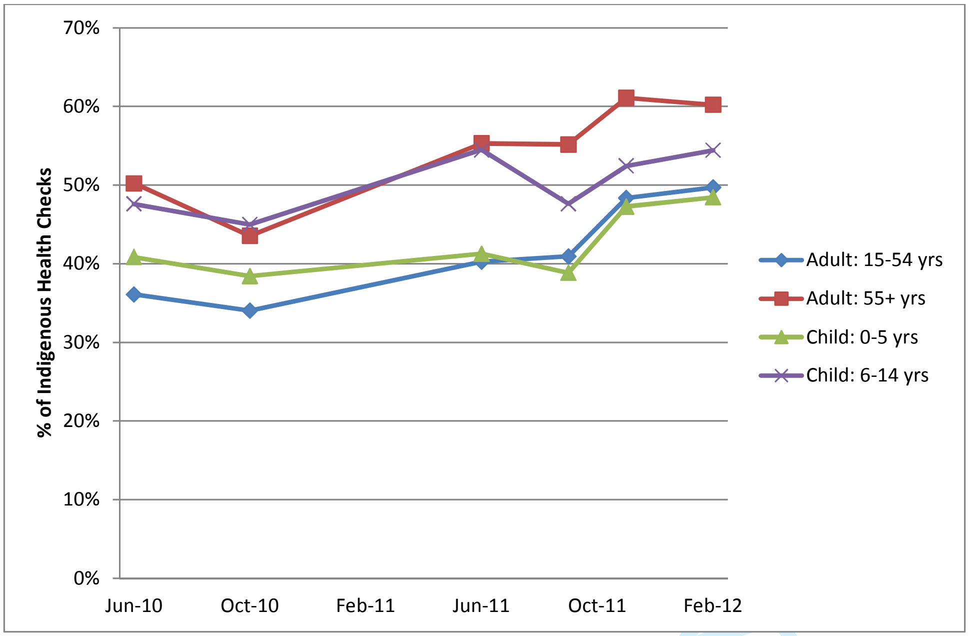
Figure 2. Proportion of regular Aboriginal and Torres Strait Islander adults with a current health assessments* by age group attending participating health services in Qld between February 2010 and February 2012.



* Health assessment: Comprehensive review of patients health'- a billed Medicare Item 715 within the past 2 years (formerly an 'Aboriginal and Torres Strait Islander health check'). Lipid and renal tests are optional for adults.

Figure 3~~2~~. Management of regular Aboriginal and Torres Strait Islander adults with diagnosed hypertension[#] ~~-~~attending participating health services in Qld between February 2010 and February 2012 – proportion of patients with recorded care activity.

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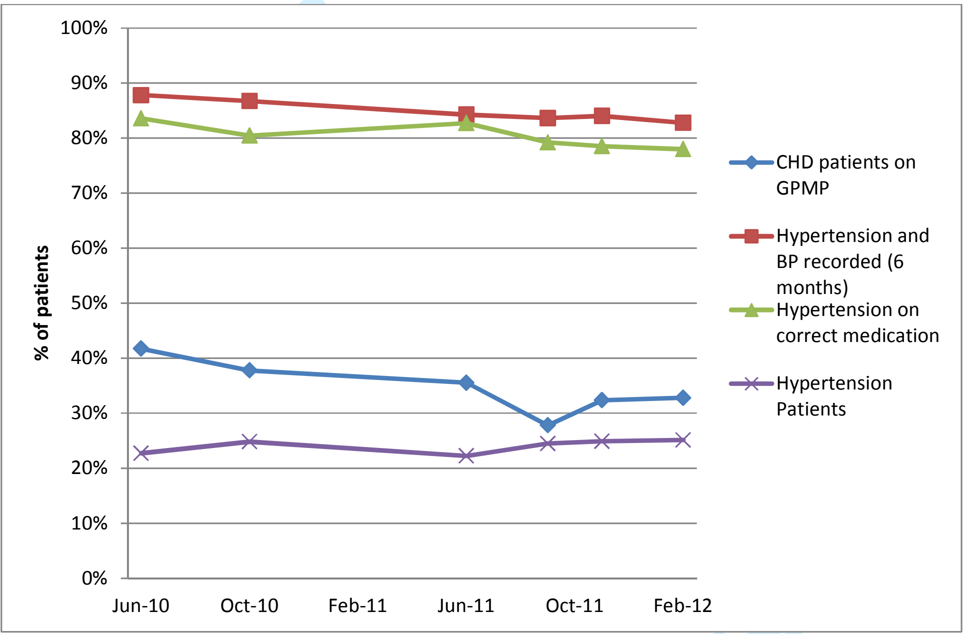

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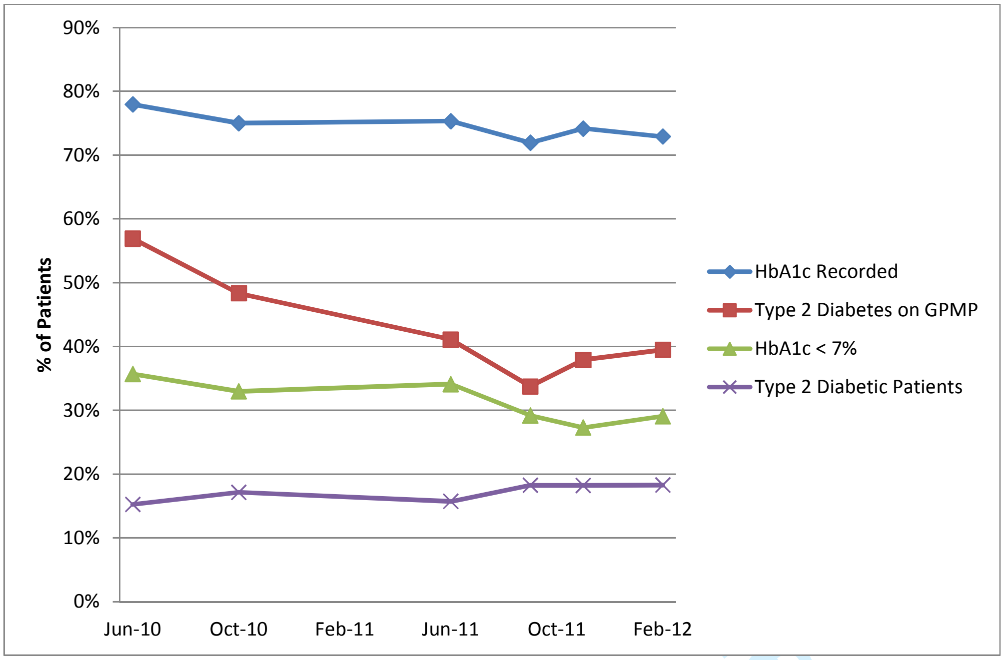
[#] Hypertension patients: The number of patients with hypertension at each timepoint is in the disease registers section of Table 2.

[*] Hypertension patients prescribed ACE inhibitors or A2s checked within the 12 months prior to the date of data extraction. Denominator at each timepoint is the number of patients with hypertension

[+] Patients with Coronary Heart Disease with a current GP Management Plan performed within the 12 months prior to the date of data extraction. Denominator for each time point corresponds to the number for Coronary heart Disease in the disease registers section of Table 2.

Figure 4. Management of regular Aboriginal and Torres Strait Islander adults with diagnosed Diabetes Mellitus Type 2* attending participating health services in Qld between February 2010 and February 2012 - – proportion of patients with recorded care activity..



* Diabetes Mellitus Type 2 patients: The number of patients with hypertension at each timepoint is in the disease registers section of Table 2.

HBA1C recorded: Proportion of Diabetes Mellitus Type 2 patients with a HBA1C recorded in past 12 months -data extracted from pathology results.

HBA1C <7%: Denominator is patients with a recorded HBA1C.

GPMP: Proportion of Diabetes Mellitus Type 2 patients with a General Practitioner Management Plan (Medicare Item721), performed within 1 year of the date of data extraction)

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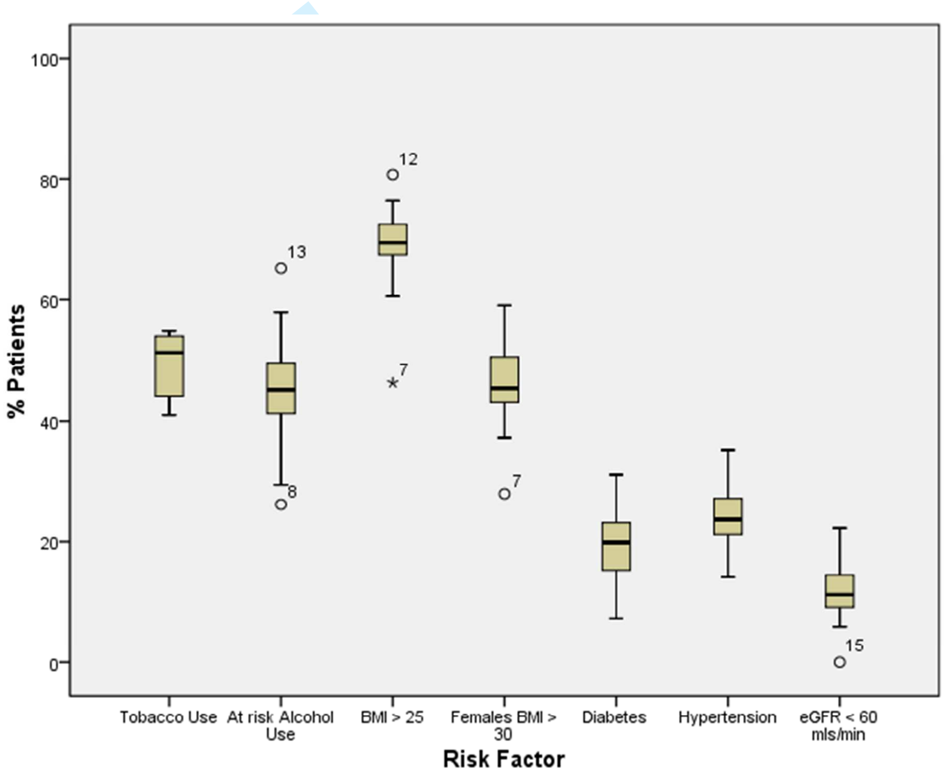
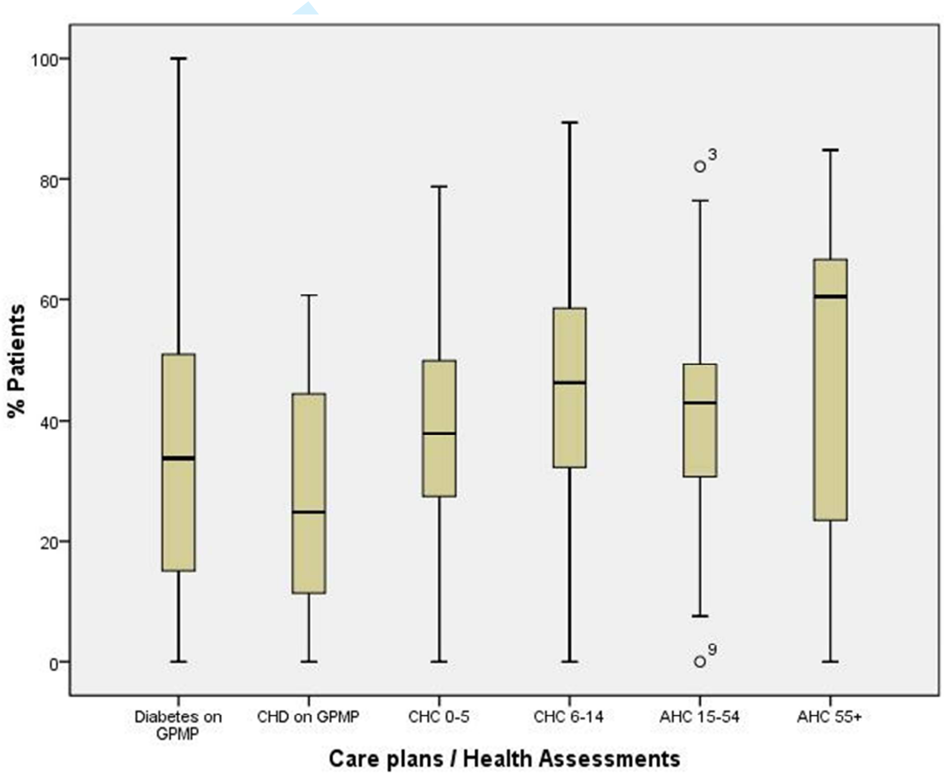
Figure 5~~2~~. Prevalence of key health status determinants by recorded diagnosis in 13,630 regular Aboriginal and Torres Strait Islander adults attending 18 participating health services in Queensland, April -September 2011.



Note – Tobacco use is self reported daily smoking; at risk alcohol use is self reported ever daily alcohol intake of greater than 2 drinks; BMI – Body Mass Index; eGFR – Glomerular Filtration Rate is extracted from pathology results.

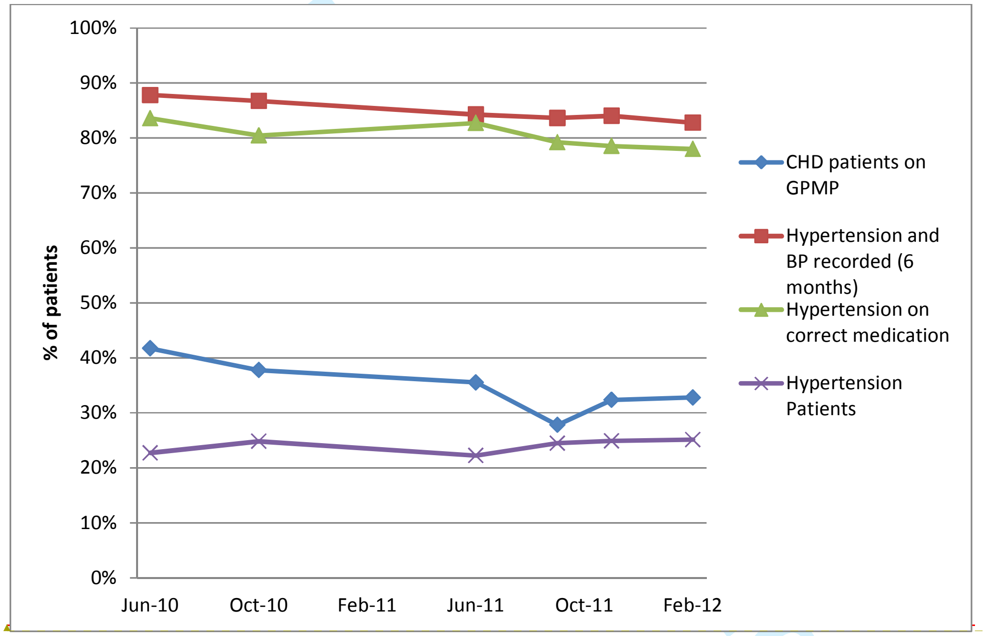
Alcohol data: submission from 15 services in September 2011

Figure 6~~3~~: Performance of health assessments and care planning for regular Aboriginal and Torres Strait Islander patients, across 17 participating health services in Queensland, April -September 2011.



Note - GPMP: General Practitioner Management Plan (Medicare Item721, performed within 1 year of the date of data extraction); Chronic Heart Disease, CHC - Child Health Check, AHC – Adult Health Check (Medicare Item 715 performed within 2 years of the date of data extraction)

~~**Figure 4.** Management of regular Aboriginal and Torres Strait Islander adults with diagnosed hypertension attending participating health services in Qld between February 2010 and February 2012.~~



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~~[#] Hypertension patients with blood pressure checked within the 6 months prior to the date of data extraction~~

~~[*] Hypertension patients prescribed ACE inhibitors or A2s checked within the 12 months prior to the date of data extraction~~

~~[+] Patients with Coronary Heart Disease with a current GP Management Plan performed within the 12 months prior to the date of data extraction~~

Table1. The 25 QAIHC Core Indicators developed by expert review and consensus in 2007-8 for implementation in the Aboriginal and Islander Community Control Health Services in Queensland

Domain	**Why and Evidence**	**What - Indicator**
Workload and access	Planning and monitoring service capacity (overall)(16)	➢ Numbers patients seen in clinic: adults and children ➢ Proportion Indigenous patients ➢ Episodes of care: by staff categories
Health determinants, risk loads, prevention	Planning and monitoring service capacity (health promotion/allied health/BI capacity) Monitor progress in risk load reduction(2, 14, 22)	➢ Smoking prevalence ➢ Prevalence of at risk alcohol consumption ➢ Prevalence of overweight/obesity ➢ Level of physical activity ➢ Health checks: adults and kids – 4 categories
Chronic disease care	Monitor workloads Monitor quality of care delivered(14, 23-26)	➢ Number of Diabetics and prevalence in service population ➢ Diabetic clients on GP management plan ➢ Glycaemic control: HbA1c completion and values ➢ CHD clients on GP management plan ➢ BP: Checking BPs all adults, prevalence hypertension ➢ BP: Management of hypertension – checking BP and medication use ➢ Risk of renal disease: eGFR, ACR – completion and renal function status
MCH	Monitor workloads Monitor quality of care delivered (27, 28)	➢ Antenatal care access: number pregnant women gave birth ➢ Timing of antenatal care ➢ Adequate Antenatal Care ➢ Proportion of low and high birth weight babies ➢ Proportion of preterm/term births ➢ Under and over weight children
Workforce	Planning and monitoring service capacity (overall)(29)	➢ Accreditation ➢ % Aboriginal and Islander Staff ➢ Student placements ➢ FTE Vacant Positions

Table 2~~1~~: Aggragated ~~P~~patient numbers for each time point with recorded visits at ~~P~~participating ~~q~~Queenland AICCHS with medical clinics

	June 2010	October 2010	June 2011	September 2011	February 2012
Aggregated data (95%CIs)	n	n	n	n	n
~~No services~~	~~9~~	~~13~~	~~13~~	~~18~~	~~14~~
All Patients#	38167	27783	42923	78043	75309
All Aboriginal and Islander patients	27369	19793	28270	53241	55441
Recent patients#	21217	22253	25687	32942	31310
Recent Aboriginal and Islander Patients	15257	15241	17851	23980	24317
Regular Aboriginal and Islander patients	12938	13136	15433	19727	19948
Regular Aboriginal and Islander adults	5444	9021	9371	13630	12325
EMR disease registers: Regular ~~Adult~~ Aboriginal and Islander Adults	n (%)	n (%)	n (%)	n (%)	n (%)
~~All Adults~~	~~5444~~	~~9021~~	~~9371~~	~~13630~~	~~12325~~
Current tobacco users±	2315 (49..4)	3936 (51.6)	4090 (48.6)	5818 (49.3)	5296 (48.4)
Type 2 Diabetes Mellitus	830 (15.2)	1548 (17.2)	1475 (15.7)	2489 (18.2)	2255 (18.2)
Hypertension	1237 (22.7)	2241 (24.8)	2084 (22.2)	3336 (24.4)	3097 (25.1)
Coronary Heart Disease	347 (6.4)	663 (7.3)	673 (7.2)	1037 (7.6)	916 (7.4)
No services	9	13	13	18	14
~~N (alcohol)*~~	~~9~~	~~13~~	~~12~~	~~15~~	~~11~~

EMR – Electronic Medical Record; disease registers are those adults with that coded recorded diagnosis in the medical history section of the EMR.

All: Includes Non-Indigenous, ~~patients with~~ Aboriginal, Torres Strait Islander or both Aboriginal and Torres Strait Islander Patients

Disease registers: These numbers (numerators) represent a subset of the Regular Adult Aboriginal and Islander Patients (denominator)

± Proportion of tobacco users is a proportion of those adults for whom tobacco use status was recorded

~~*N (alcohol) – number of services that submitted alcohol related data, relevant to Figures 1,2.~~

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Table 3~~2~~:

Possible explanatory factors for inter-service variation

1. Clinical activities vs EPC items:
    - 1 person activity vs ~~coordinated~~ team activity

2. Inter-service variation
    - SEIFA, Community size and % Indigenous people in catchment
    - ICAC or SAT scores ? available
    - Staffing/workforce
        - Senior Medical Officer
        - turnover
        - Ratio of ~~No~~ doctors~~/~~ to patients – workload per clinician ~~doc~~
    - Use data platforms
        - Pen CAT usage or similar
        - APCC portal usage
        - Use of Plan Do Study Act cycles
    - CQI program/collaborative

    - Incentives:
        - Staff – ~~doc~~ flat salaries or incentives
        - Patients
        - Staff and patients

~~**Appendix 1.** The 25 QAIHC Core Indicators developed by expert review and consensus in 2007-8 for implementation in the Aboriginal and Islander Community Control Health Services in Queensland~~

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~~Recording of key risk and clinical care data$^{\#}$ in regular* Aboriginal and Torres Strait Islander adult patients attending participating health services in Qld in between February 2010 and February 2012.~~

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~~**Domain**~~	~~**Why and Evidence**~~	~~**What - Indicator**~~
~~Workload and access~~	~~Planning and monitoring service capacity (overall)(12)~~	➢ ~~Numbers patients seen in clinic: adults and children~~ ➢ ~~Proportion Indigenous patients~~ ➢ ~~Episodes of care: by staff categories~~
~~Health determinants, risk loads, prevention~~	~~Planning and monitoring service capacity (health promotion/allied health/BI capacity)~~ ~~Monitor progress in risk load reduction(1, 10, 20)~~	➢ ~~Smoking prevalence~~ ➢ ~~Prevalence of at risk alcohol consumption~~ ➢ ~~Prevalence of overweight/obesity~~ ➢ ~~Level of physical activity~~ ➢ ~~Health checks: adults and kids – 4 categories~~
~~Chronic disease care~~	~~Monitor workloads~~ ~~Monitor quality of care delivered(10, 21-24)~~	➢ ~~Number of Diabetics and prevalence in service population~~ ➢ ~~Diabetic clients on GP management plan~~ ➢ ~~Glycaemic control: HbA1c completion and values~~ ➢ ~~CHD clients on GP management plan~~ ➢ ~~BP: Checking BPs all adults, prevalence hypertension~~ ➢ ~~BP: Management of hypertension – checking BP and medication use~~ ➢ ~~Risk of renal disease: eGFR, ACR – completion and renal function status~~
~~MCH~~	~~Monitor workloads~~ ~~Monitor quality of care delivered (25, 26)~~	➢ ~~Antenatal care access: number pregnant women gave birth~~ ➢ ~~Timing of antenatal care~~ ➢ ~~Adequate Antenatal Care~~ ➢ ~~Proportion of low and high birth weight babies~~ ➢ ~~Proportion of preterm/term births~~ ➢ ~~Under and over weight children~~
~~Workforce~~	~~Planning and monitoring service capacity (overall)(27)~~	➢ ~~Accreditation~~ ➢ ~~% Aboriginal and Islander Staff~~ ➢ ~~Student placements~~ ➢ ~~FTE Vacant Positions~~

Appendix 2. Data for Figure 2

Prevalence of key health status determinants by recorded diagnosis in 13,630 regular Aboriginal and Torres Strait Islander adults attending 18 participating health services in Queensland, April -September 2011.

Clinical Variable	Prevalence	IQR
Tobacco Use	0.51	0.40, 0.50
Alcohol	0.45	0.40, 0.50
BMI > 25	0.69	0.66, 0.73
BMI > 35 – Females only	0.45	0.43, 0.51
Diabetes Mellitus Type 2	0.20	0.15, 0.23
Hypertension	0.24	0.21, 0.27
eGFR < 60ml/min	0.11	0.09, 0.15

Appendix 3. Data for Figure 3

Performance of health assessments and care planning for regular Aboriginal and Torres Strait Islander patients, across 17 participating health services in Queensland, April - September 2011.

Care Activity - EPC items	Median	IQR
Type 2 Diabetes on GPMP	0.34	0.15, 0.51
CHD patients on GPMP	0.25	0.11, 0.45
Child Health Check (0-5)	0.38	0.26, 0.53
Child Health Check (6-14)	0.46	0.30, 0.61
Adult Health Check (15-54)	0.43	0.29, 0.50
Adult Health Check (55+)	0.60	0.23, 0.68