

Creating a framework for key performance indicator use in primary health care

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Abstract

- Indicators in population health act as monitoring, evaluation and information tools. They can be used to inform decision making, various programs, quality improvement initiatives and interventions, thus guiding efforts for continuous quality improvement.
- Currently there is a myriad of potential indicators available to primary health care centres and districts within the far North Queensland region.
- The aim of the project was to explore how selected key performance indicators (KPIs), (from three different indicator sets), are inter-related and how they could be used to inform primary health care centres. By describing the indicators and exploring their relationships (overlaps and gaps), and by conducting focus groups the role of indicator data, the preferred delivery strategies, and KPI limiting factors were identified. From this a framework has been developed for the use of KPI in primary health centres.
- The results offer insight into the nature and the differing limitations of using each indicator set both in isolation and collectively for primary health care staff.
- Appropriate use of indicators will inform monitoring, evaluation and decision making and therefore must be used collectively if feasible. Strategies that lead to an improvement in data collection and use will support sustainable improvements in data quality and potentially health outcomes.

Background

Indicators in population health act as monitoring, evaluation and information tools that may be used to inform decision making for various programs, continuous quality improvement (CQI), initiatives and interventions (1). As a result indicators should be used to identify or flag any issues or areas whereby a positive change can be made using quality improvement programs (2, 3). All indicators can also be useful in benchmarking and comparative analysis with other organisations (4, 5).

There is limited evidence on the use of indicator data for quality improvement activities, therefore, this may be the most fruitful area for further analysis (6).

As current indicators are targeted only towards assurance and performance management, this has the potential to undermine the quality improvement role and the potential that indicators possess to support change (7).

This project focuses on three sets of indicators of Aboriginal and Torres Strait Islander health used in far North Queensland (FNQ), by Queensland Health. While it is acknowledged that there may be other indicators in use by other partners or even units within the organisation, scope is limited to only these three sets.

Indicator set 1 (IS1): State-wide Aboriginal and Torres Strait Islander Indicators. These indicators are derived from the Queensland hospital separation data collection and the perinatal data collection.

Indicator set 2 (IS2): North Queensland Chronic Disease Indicators.

These indicators are derived from the patient electronic recall and information system, (currently the Ferret system).

Indicator set 3 (IS3): Audit and Best practice for Chronic Disease ABCD audit data. Reports are from audits completed on hard copy medical record and matching Ferret records against best practice guidelines.

All three sets of indicators identify and measure achievements in Aboriginal and Torres Strait Islander health and fall into the broad spectrum of indicators of progress (8).

There are multiple causes of ill-health that may not be contributed to the health sector alone, however, this project is focused on primary care or service related indicators, rather than multi-sectorial indicators (9). The literature illustrates that significant improvements in health can be achieved in relatively short time frames (9, 10). This strengthens the rationale that using all the data or indicator sets simultaneously (where possible) may lead to rapid positive changes to health status.

One study assessed the usefulness of indicator data by looking at responses to surveys from 296 hospitals, and provided key cases to assess various aspects of indicator usefulness (11). This study has informed the basis for this project and has provided key information on the potential for KPI use, as it stresses that the most important components with respect to use of KPIs are the perceptions of their value, the subsequent action taken by organisations in response to KPI measurement and the impact of interventions.

From the uptake of evidence based practice and clinical audit, staff are well motivated to practise quality improvement and self development given the opportunity and environment, (12, 13). Hence this knowledge may provide the opportunity to create a process that makes the use of KPIs more user-friendly.

The purpose of this paper is neither to determine the definitions given to KPIs nor to create new indicators, but rather to focus on outcomes achievable with the current sets of indicators that have been endorsed

Data framework

Initially a document analysis was carried out to define and describe the three indicator sets (IS1 and IS2 and IS3). For the purposes of this project the dependant variable is IS1.

With reference to the literature (14-17) and employing logic on the use and interpretation of these indicators, we then mapped a range of indicators. Indicator complimentary nature was based in terms of any existing relationships such as disease groups, burden and outcomes related to similar disease states.

Results of data framework

Data Framework

Data Framework			
Box 1			
Box 1	Indicator Set 1 (IS1) State wide indicator from perinatal data collection Proportion of women with more than 5 antenatal visits	Complimentary Indicator Set 2 (IS2) complimentary chronic disease indicator (Ferret) Proportion of women with Antenatal Visit in 1st trimester Proportion of women with Antenatal Visit in 2nd trimester	Complimentary Indicator Set 3 (IS3) complimentary ABCD indicator (Hard copy charts and Ferret) Proportion of women with of women with more than 5 antenatal visits Proportion of women with of first antenatal visit in first trimester Proportion of women with of first antenatal visit in second trimester Proportion of women with of first antenatal visit in third trimester Proportion of women with of first antenatal visit after 28 weeks
	↔		↔
Box 2			
Box 2	Indicator Set 1 (IS1) State wide indicator from perinatal data collection Proportion of live birth, singleton babies born weighing less than < 2500 grams	Complimentary Indicator Set 2 (IS2) complimentary chronic disease indicator (Ferret) Proportion of Low birth weights Proportion of High birth weights Proportion of women with Antenatal Visit in 1st trimester <i>Risk factors during 1st trimester visit</i> Proportion of women smoking during pregnancy Proportion of women smoking daily during pregnancy Proportion of women smoking weekly during pregnancy Proportion of women smoking - irregular during pregnancy Proportion of women ex-smoker (quit during pregnancy) Proportion of women ex-smoker (quit before pregnancy) Proportion of women non-smoker <i>Risk factors during 1st trimester visit</i> Proportion of women with no alcohol consumption during pregnancy Proportion of women with high risk alcohol consumption during pregnancy Proportion of women with low risk alcohol consumption during pregnancy <i>Risk factors during 1st trimester visit</i> Proportion of women with illicit drug user during pregnancy Proportion of women with no illicit drug use during pregnancy daily user during pregnancy weekly user during pregnancy irregular user during pregnancy ex-user (quit during pregnancy) ex-user (quit before pregnancy) non-user during pregnancy	Complimentary Indicator Set 3 (IS3) complimentary ABCD indicator (Hard copy charts and Ferret) Proportion birth weight of infant is < 2500 grams Proportion birth weight of infant is 2500 - 4500 grams Proportion birth weight of infant is >4500 grams Proportion birth weight of infant is unknown Proportion with at risk mothers age at birth Proportion estimated gestational age at birth is < 36 weeks Proportion estimated gestational age at birth is 36 weeks or more Proportion of Antenatal visits Proportion first antenatal visit in first trimester Proportion first antenatal visit in second trimester Proportion first antenatal visit in third trimester Proportion first antenatal visit after 28 weeks Proportion women who used cigarettes in first trimester Proportion women who used cigarettes in third trimester Proportion women identified risk factors in pregnancy - smoking Proportion women given smoking cessation advice Proportion women who used alcohol in first trimester Proportion women who used alcohol in third trimester Proportion women who used illicit drugs in first trimester Proportion women who used illicit drugs in third trimester Proportion alcohol/substance abuse/ usage discussed during any visit Proportion women identified risk factors in pregnancy - social risk factors Proportion women given referral, advice or transfer to medical staff Proportion women identified risk factors in pregnancy - medical risk factors Proportion women given referral, advice or transfer to medical staff Proportion mood or depression issues usage discussed during any visit Proportion food security issues discussed during any visit Proportion financial support issues during any visit Proportion with nutrition advice given Proportion with post natal visit recorded
	↔		↔

Box 3		
Indicator Set 1 (IS1) State wide indicator from perinatal data collection Proportion of pregnant women who smoked at any time during pregnancy Proportion of pregnant women still smoking after 20 weeks gestation	Complimentary Indicator Set 2 (IS2) complimentary chronic disease indicator (Ferret) <i>Risk factors during 1st trimester visit</i> Proportion of women smoking during pregnancy Proportion of women smoking daily during pregnancy Proportion of women smoking weekly during pregnancy Proportion of women smoking - irregular during pregnancy Proportion of women ex-smoker (quit during pregnancy) Proportion of women ex-smoker (quit before pregnancy) Proportion of women non-smoker	Complimentary Indicator Set 3 (IS3) complimentary ABCD indicator (Hard copy charts and Ferret) Proportion women who used cigarettes in first trimester Proportion women who used cigarettes in third trimester Proportion women identified risk factors in pregnancy - smoking Proportion women given smoking cessation advice Proportion women identified risk factors in pregnancy - social risk factors Proportion women given referral, advice or transfer to medical staff Proportion women identified risk factors in pregnancy - medical risk factors Proportion women given referral, advice or transfer to medical staff Proportion mood or depression issues usage discussed during any visit Proportion food security issues discussed during any visit Proportion financial support issues during any visit Proportion with post natal visit recorded

Box 4		
Indicator Set 1 (IS1) State wide indicator from hospital separation data The direct standardised rates of avoidable admissions as defined by AIHW diabetes	Complimentary Indicator Set 2 (IS2) complimentary chronic disease indicator (Ferret) Proportion with current complete MBS item 710, 704, adult health check Proportion with current complete MBS item 706 adult health check Proportion with an HbA1c test in the last six months. <i>Proportion with last HbA1c test (within the last 6 months) was</i> Proportion less than or equal to 7% Proportion greater than 7% but less than or equal to 8% Proportion greater than 8% but less than 10% Proportion greater than or equal to 10%. <i>Proportion with last BP test (within the last 6 months) was</i> Proportion BP was less than 130/80 mmHg. Proportion BP was less than 140/90 mmHg.	Complimentary Indicator Set 3 (IS3) complimentary ABCD indicator (Hard copy charts and Ferret) Proportion with current complete with MBS Item 721 Proportion with current complete MBS Item 723 Proportion with BP Done Proportion with BP <130/80 Proportion with BP <140/90 Proportion with BP Abnormal Proportion with BP Planned F/U Proportion with BP Medication adjusted Proportion with HbA1c Done Proportion less than or equal to 7% Proportion greater than 7% but less than or equal to 8% Proportion with greater than or equal to 8% Proportion greater than 8% but less than 10% Proportion greater than or equal to 10%. Proportion with HbA1c Abnormal Proportion with HbA1c Medication Adjusted Proportion with Cholesterol Done Proportion with Cholesterol <4 Proportion with Cholesterol Done 4-5.5 Proportion with Cholesterol >5.5 Proportion with Cholesterol Abnormal Proportion with Cholesterol Medication Adjusted Proportion with ACR Done Proportion with ACR <3.5 Proportion with ACR 3.5-100 Proportion with ACR Medication Proportion with Smoker Proportion with Non Smoker Proportion with Ex Smoker Proportion with Alcohol Use other level of risk Proportion with Alcohol Use - low risk Proportion with Alcohol Use - no alcohol consumption Proportion with BMI Done Proportion with BMI >18.5-25 Proportion with BMI 25-30 Proportion with BMI >30 Proportion with Vaccinations - Influenza Proportion with Vaccinations - Pneumococcal Proportion with Brief Interventions/Advice Proportion with Brief Interventions/Advice - Smoking Proportion with Brief Interventions/Advice - Nutrition Proportion with Brief Interventions/Advice - Alcohol Proportion with Brief Interventions/Advice - Physical Activity Proportion with Brief Interventions/Advice - Mood/Depression Proportion with Brief Interventions/Advice - Disease Management

Focus group

Participants' for the two focus groups (4 participants per group) were selected based on their role with health centres or with indicator data, and on having an assumed interest in KPIs. One sample group represented the staff responsible for the collation of indicator data within the health surveillance team. The second sample group represented corporate staff or staff with an advisory or support role with respect to the local primary health care centres.

The groups were purposely chosen in order to provide an understanding of the perceived function of KPIs (18) within the supportive non-clinical role at local primary health care centres.

Results from focus groups

Perceptions regarding indicators are important as they have significant impact on the perceived usefulness of data (11). Below are the responses from both focus groups, including direct excerpts from the transcripts thus providing a qualitative aspect to the project.

Q1: What is your interest in key performance indicators? (Why do you think indicators are important if not part of your role?)

The issues raised by the participants can be summarised into the following themes:

- evaluation
- monitoring
- feedback
- benchmarking.

Indicators were seen as an appropriate feedback tool to all levels of staff. Comments by focus group participants included:

"...they can allow us to compare between centres and across districts or the State." "...multiple layers or sets of indicators are important in order to tell a story about the state of health and show the whole picture"

Q2: Who do you think should be aware of key performance indicators in the organisation?

Participants identified:

- all staff
- clients
- senior management
- the community and community groups.

An interesting perspective was staff may need data for use in special projects or grant applications and in turn should be aware of and have access to this information.

"...community level groups should be just as aware of indicators as then there can be dual accountability."

"...communities need this information for their own planning too."

"... [Non-clinicians] to be able to support clinicians need to be able to look at aggregated data"

Q3: What do you think is the best mode of delivery to transfer key performance indicators data across to the people who should be aware of this information?

Modes of transfers that were highlighted included:

- Electronic distribution
 - intranet
 - newsletters
 - mass email
 - targeted email.
- Facilitated distribution
 - transfer in person
 - videoconference
 - workshops.

“...face to face transfer may be the most appropriate for community level transfer and this used to happen in the past”

The area of workshops was not agreed upon as some participants questioned the current level of effectiveness and equity associated workshop delivery.

“...there is no follow up or transfer to the workplace or work practices once they get back to the centre, we need to follow up with support after the workshop and the whole team needs the information too.”

- enhanced facilitated distribution
 - interpretation by appropriate personnel
 - education coupled with all modes.

“...when clinicians are part of the process (engaged), this has the biggest impact in change of practice.”

Q4: What do you think are limiting factors to consider when using key performance indicators?

There was acknowledgement of the current limitations in data sets and restrictions with data collection.

Key limiting factors when using KPIs were:

- lack of transparency—participants found lack of transparency as disheartening and frustrating. This was mainly regarding reports from previous years containing KPI data. One of the groups also stressed that there was a lack of clarity regarding how indicators were used to inform decisions.
- insufficient interpretation—participants highlighted that there may be confounders or variables that should be taken into account with data interpretation. There was also a concern that there are numerous assumptions regarding cause and effect when there is no interpretation delivered with indicator data reports. Indicator overload was also mentioned as a possible limiting factor especially when there is an emphasis on collections, plans and reports, rather than on feedback to staff.
- variable quality—the issue of data quality was primarily related to data collection and electronic systems
- difficult collection
 - time-consuming
 - tedious
 - manual
 - under-reporting

- limitations with coding
 - data sources differ
 - no uniform collection between sets
 - lack of a coordinated approach to collection.
- electronic systems
 - outdated electronic systems
 - lack of shared system
 - numerous data silos
 - orientation and training to systems
 - lack of sufficient funds towards systems.

The need for a centralised server was identified. This would store data that people would be able to access to request different reports. The fact that there were multiple and outdated systems running were an issue for KPI progression and improvement.

- low community engagement
 - minimal community engagement and participation
 - client involvement
 - evidence based practice vs. cultural appropriateness.

"...community knowledge needs to be incorporated into strategies that deal with key performance indicators."

A complete framework to indicator use

Using the data framework and the results from the focus groups, a complete framework would then be comprised of two components:

- Part 1: Data framework as illustrated previously in boxes 1-4 above
- Part 2: Box 5: Key Elements Questionnaire

Box 5 Key Elements from Focus Group

Key element	Elements to consider	Commentary
Management	Do you have management support to provide this information?	Yes/ No.....
	Is there recognition from management that action will be taken to improve the KPI results if necessary?	Yes/ No.....
Target group	Have you determined who you are delivering this KPI information to?	Yes/ No.....
	Have you determined the target group(s) that these people fall under?	Yes/ No.....

Delivery	Have you decided on the most appropriate data dissemination method for this target group? e.g. email/ face to face	Yes/ No.....
	Have you determined the most appropriate graphical representation of the KPI results?	Yes/ No.....
Interpretation	Is there an appropriate interpretation support person to provide interpretation of the KPI results?	Yes/ No.....
	Can they outline clearly limitations and explain the data to that particular target group?	Yes/ No.....
Follow up and support	Will you be following up post-transfer to other non attending staff members?	Yes/ No.....
	Will you be offering continuing regular support after participants have returned to the workplace?	Yes/ No.....
CQI approach	Will you be incorporating a CQI approach to actioning the data?	Yes/ No.....
	Including goal setting and action planning?	Yes/ No.....
Community	Is there a framework for community engagement and participation planned? E.g. engaging the community data liaison officer?	Yes/ No.....
Transparency	Do you know who may have access to the information and why/ why not?	Yes/ No.....

This table is a generic guide to be used in conjunction with the data sets in order to complete the entire framework. When a response is “no” without justification, this may highlight a gap in the delivery of the KPI data. The guide could be further developed to ensure it is user-friendly and assists in decision making.

Discussion

A balance between comprehensively covering all determinants and the practical side of obtaining a collective database needs to be attained(7). This supports the idea that separate indicator sets may be necessary, although a single database containing all indicators would be beneficial for collection and sharing purposes.

As highlighted in the focus groups, interpretation of KPI results is a major area limiting the use of KPIs. Misinterpretation is one of the key limitations to indicator use even when data is available and reliable (19-21).

Participants of one group stressed that more funding would be needed to have a state-wide coordinated approach to increase use and quality of all sets of KPIs. This is in line with other findings that a significant investment would be needed to provide high-quality data (22). Coordinated information systems were seen to improve data quality and usefulness and trust in indicator data (13). Communicating KPI information and gaining participation were observed as an issue by respondents and in other studies (13). "External reporting can direct attention to general areas of concern but detailed local data is needed to bring about significant quality improvement (14)". This finding again supports the notion of engaging operational health professionals in the use of KPI data sets.

Community engagement and participation was brought up in both focus group sessions as a vital element in use of KPIs. This can be interpreted into public disclosure of KPI data, which has the potential to ensure adequate engagement and accountability, promote quality improvement and empowerment (6).

"External reporting can direct attention to general areas of concern but detailed local data is needed to bring about significant quality improvement" (12, 13). This again supports the notion of engaging operational health professionals in the use of KPI data sets. Key performance indicators alone cannot encapsulate the web of complexities within a health care system(12). For that reason a combination of multiple layers of KPI data sets and additional elements as described should be explored further.

There is a willingness to engage in activities to improve quality of health care, and policy and management must create an environment and system supporting and empowering health professionals to create change (12).

Respondents who deemed indicators to be important or as having potential for quality improvement were more likely to plan or take action with respect to the data (11).

Albeit there may be several approaches to tackling indicator data and reports, continuous quality improvement concepts and techniques must be utilised in order to provide a systematic, practical and rational approach to key performance indicator results (11, 23).

There are limitations on relying on one set of indicators as a comprehensive data source and it may not be appropriate to consider only one source as the sole decision making tool. In isolation the indicator sets are important to different groups of staff, while all the sets combined are important for all staff.

Primary health care centres play an enormous role in the health of the community. There is an opportunity to use this framework to empower centres using a participatory CQI approach to see where they want to go (IS1) and how they can get there (IS2 & IS3) and to be able to see how they are going along the way (IS1,2,3).

The current collection, processing, analysis, display and dissemination of data are currently resource intensive, however, this is not yet sufficient in the optimal use of KPI information (13). There are still

questions such as the engagement of staff, education, interpretation, efficiency of collection, the role of consumers and incentives that do not promote unwanted behaviour. Organisations must also consider central coordination for increased consistency, transparency (10) in addition to resourcing.

Data availability may result in the measuring of what is available rather than items that correlate with the health systems (20, 24), and this may be the challenge with IS1 and IS2. Supporting the CQI model of actioning KPI reports indicators should also relate to aspects of the health care system that the end-users or staff can control (25). This is one of the key strengths of creating the framework, so that in turn each layer of the health care system is aware of variables relating to their own practice as a whole that may in turn positively impact on other KPIs.

Appropriate use of indicators will inform monitoring, evaluation and decision making and therefore must be used collectively if feasible. Strategies that lead to an improvement in data collection and use will support sustainable improvements in quality. This report does not intend to create additional work, rather to advocate for and complement activities within centres that are currently occurring.

Policy makers not only have to be clear regarding what is to be measured in terms of performance but also be aware of the key aims of health care policy (26) and the current limitations to indicator collection and use. The created framework offers an evidence based option to the use of currently endorsed indicator sets. We are on the path to creating a comprehensive model defining the role of primary health care centres in the use of indicators in improving primary health care and outcomes.

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Presenter

Ruyamuro Karen Kwedza started off as a scientist and thereafter she ventured into nutrition and dietetics. She has worked in Mount Isa District, working as an outreach dietitian and nutritionist across six communities from Dajarra to Karumba. This involved extensive travel and clinical work, mostly with chronic disease clients, as well as health promotion with schools and community stores. She was awarded the Des Murray Scholarship in 2007 for young adults working in rural Australia. Currently Ru is working as the Audit and Best Practice for Chronic Disease (ABCD) Hub coordinator and associate researcher for north Queensland as well as the Queensland Health project coordinator for quality improvement in primary health care.