The development of community health indicators: a district-wide approach

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Abstract

Introduction: In response to high rates of chronic disease, the Capital District Health Authority in Nova Scotia recognized a need to move from a focus on acute care in decision making to one that also values a population health approach guided by community health indicators.

Methods: Stakeholders were surveyed on the choice, knowledge and utility of selected indicators.

Results: Respondents reported high scores for changes in their knowledge and attitude regarding community health indicators, and identified priority indicators for action. Decision makers' use of community health indicators was increased by stakeholder involvement, supporting evidence in plain language, and wide dissemination.

Keywords: *community health indicators, district hospitals, community health planning, population health, Nova Scotia*

Introduction

Compared to other Canadians, Nova Scotians have poor health status and high rates of chronic disease and obesity, as well as an aging population.[1,2] Interventions to improve health status require multi-level, multi-sectoral action.[3] For the health system this means moving the focus from acute care to a population health approach, which involves developing partnerships beyond the traditional health care sector and systematically measuring the progress of population health initiatives. Such a strategy may require district health authorities to reassess skill mix, decision support systems, budget allocations, and advocacy priorities as well as to shift to an organizational culture that values a population approach to health.

The Capital District Health Authority (Capital Health) is Nova Scotia's largest provider of health services, providing care to an immediate catchment area of 400 000 (approximately 40% of the population of Nova Scotia). Capital Health operates hospitals, health centres and community-based programs throughout Halifax Regional Municipality and the western part of Hants County, which includes some of the highest population density areas in the province as well as rural areas, small villages, and towns.

Capital Health has a budget of approximately $800 million and a staff of about 11 000 employees and physicians, and is affiliated with Dalhousie University. It serves as a provincial and Maritime referral centre for tertiary and quaternary care. Capital Health has embarked on the implementation of a new strategic plan (QUEST, the planning initiative leading to Our Promise, the new strategic plan). One of the goals of this process is to ensure that its strategic directions are population based and evidence informed. Specifically, achieving the strategic direction of sustainability requires the monitoring of the health of the community by means of locally relevant evidence-informed community health indicators that provide the evidence necessary to support decision making (whether strategic, business, or program). That these core indictors are locally relevant is more important than their being nationally comparable.[4]

Currently, Capital Health reports and takes action to improve acute care based on clinical indicators such as wait times for hip and knee surgery, length of time spent in the emergency department, infection rates and medication errors. However, Capital Health does not have, as yet, a similar systematic review process for improving population health; nor does it systematically use evidence-informed community health indicators to guide decision making. It also has lower than desired rates in preventive health areas such as mammography screening and physical activity.[5,6]

Methods

The Population Health Committee, set up by Capital Health's Board of Directors, established a working group to recommend community health indicators for Capital Health to monitor. Members of this working group included the Medical Officer of Health, the Director of Planning and Quality (now Performance Excellence), the Head of Community Health and Epidemiology, an epidemiologist from the Health Outcomes Research Unit, a decision support analyst and the Director of Community Health (chair). The group built upon previous organizational work in the area, since utilizing change management evidence that indicates use of existing resources and systems increases the likelihood of acceptance of the change.[7]

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Because of the district's limited resources and the length of time necessary to change population health, the working group took a pragmatic approach to identifying a manageable number of indicators for Capital Health to monitor on an ongoing basis and a subset of indicators for priority action. In doing so, the working group adopted a four-step process to develop the community health indicators, based in part on the Canadian Institute for Health Information (CIHI) framework for indicator identification.[8] The steps consisted of gathering information to develop an initial set of indicators for monitoring purposes; consulting with stakeholders to identify priority indicators for immediate action; validating the priority indicators; and using the selected indicators (Figure 1). A logic model (Figure 2) shows the interrelating process steps (the activities) and the inputs, outputs and outcomes.

In the first—information gathering—step, the working group considered emerging health issues and priorities using key age groups (general, infants/children, youth, adults, and seniors) to guide thinking in order to select an initial set of indicators. Indicators were organized by age group for three main reasons: community health and health promotion interventions are implemented differently by age group; children's services are delivered mainly by the IWK Health Centre, and such a breakdown assisted in identifying their role in taking action to improve population health; and practitioners working with specific populations would more readily see the application of the indicators to their work.

The group developed criteria to guide selection of the indicators based on a literature review and environmental scan. Critical to selection was local relevance, since the purpose of the chosen indicators was to help guide Capital Health's future business decisions. Further, they had to be consistent with the definition of a good indicator as provided by Accreditation Canada (meaningful and relevant to those using the indicator; collected consistently and accurately without significant additional burden; follows standard definition; rate-based; and aligns with organizational goals and objectives).[9] The committee adapted the screening criteria for indicator selection developed by Saskatchewan Health[10] because this framework is closely aligned with the values and objectives of our working group. The committee also considered the ability to compare Capital Health rates with provincial and national rates over time, in keeping with the strategy recommended by the National Consensus Conference on Population Health Indicators convened by the CIHI.[8]

The working group used the following criteria for indicator selection: linked to one or more of the strategic priorities of Capital Health, actionable by Capital Health, feasible to measure and report, evidence based, easily understood and easy to use, reliable and valid, sensitive and specific, and comparable across jurisdictions and over time (Table 1). The working group also considered it important to identify both positive and negative indicators that would measure the activity and progress of community health strategies within the district, provide a balanced view of the health of the population across program areas and objectives, have minimal duplication, and be ethically and legally measurable.[8,10]

During the second step—consultation—the list of indicators was refined through consultation with district health authority and community stakeholders using a modified Delphi method. This is a structured process for collecting and distilling knowledge from informants through a series of questionnaires interspersed with feedback.[11,12] It has the advantage of gathering opinion without the need for face-to-face meetings. The working group developed an information package for stakeholders consisting of a list of indicators, a brief memorandum outlining the process and goals of the selection process, and a short questionnaire soliciting the stakeholders' knowledge of and the utility of community health indicators using 5-point Likert scales (not aware to very aware, and not helpful to very helpful, respectively). The indicators were organized by age group and presented along with the definition, a brief rationale providing the link between the indicator and health in lay language, comparisons of district-level data to provincial and national figures using the most current available rates, the data sources, and a brief demographic profile of Capital Health.

Stakeholders were asked to identify two priority indicators for each age group. They were also asked if the working group had identified the most relevant indicators, what indicators were missing and should any indicators be deleted. Respondents could choose to reply anonymously.

In addition to distributing the package, the chair of the working group presented the information to small group sessions of stakeholders. The goal of this multi-faceted approach (information package, supporting data, presentation and discussion) was to improve both the response rates and utilization of the indicators.

FIGURE 1
Process methodology

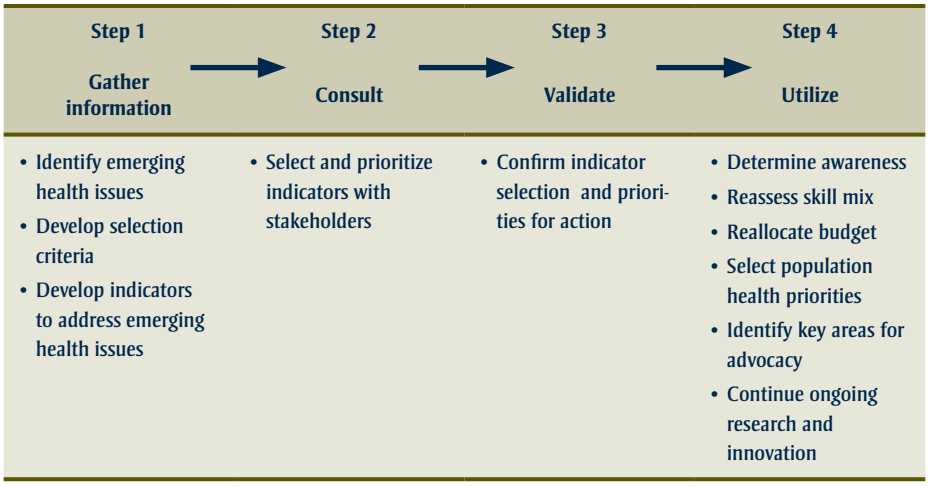

FIGURE 2
Community health indicator logic model

The following logic model links steps 1-4 from the process methodology logic model (Figure 1) with the inputs, outputs and measures to achieve the outcomes.

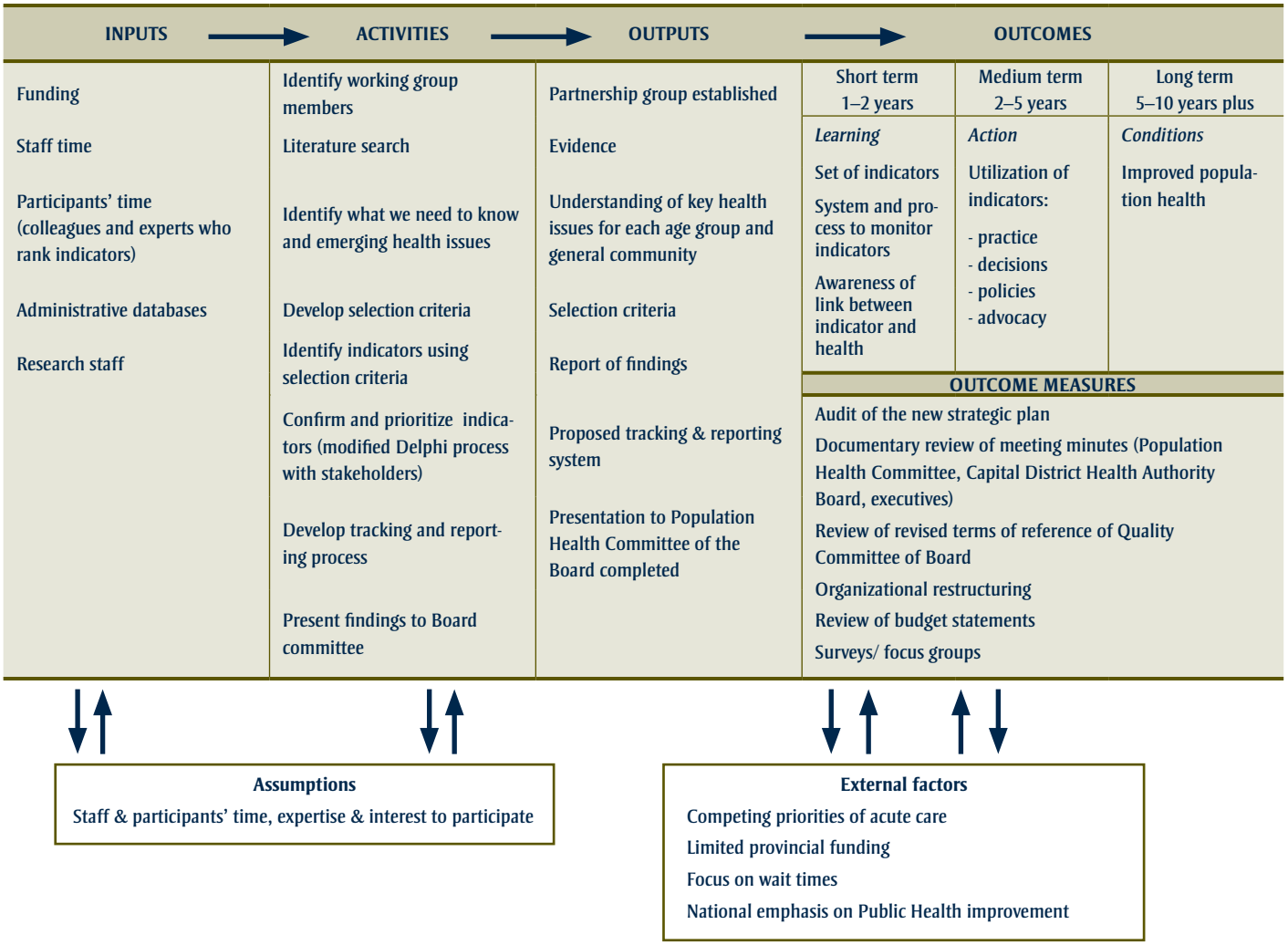

TABLE 1
Health indicator selection criteria

Criteria	Definition
Linked to one or more of the strategic priorities of Capital Health	What is measured may influence or play a role in the refinement of the district's strategic priorities
Actionable by Capital Health	Capital Health can influence a change (via advocacy, partnership, or direct intervention)
Feasible to measure and report	Measurable in a practical, cost-efficient way, and derived from available/accessible management information systems
Evidence based	Evidence linking a change in indicator to improved health outcomes
Easily understood/used	Easy to understand by intended users (the Board, senior leadership team, staff)
Reliable and valid	Scientifically sound, measured consistently (reliability) and accurately (validity)
Sensitive and specific	Responsive to action; readily responds to external stimuli and has a distinct effect
Comparable	Comparable across jurisdictions (e.g. other District Health Authorities, provinces, nationally) and over time

Adapted from: Saskatchewan Health Regional Health Services (2007)[10]

TABLE 2
Priority indicators per category and identification response rates

Category	Indicator	Responses (%)
General	Poverty	31.6
	Food insecurity	21.1
	Housing affordability	15.8
	Environment/regular physician/ unemployment	10.5
Infant/Children (0–11 years)	Breastfeeding initiation	25.0
	Early childhood development	23.5
	Exposure to second hand smoke	20.6
	MMR immunization	10.3
Youth (12–19 years)	Overweight/obesity[a]	32.8
	Physical inactivity	23.4
	Smoking	17.2
	Sexually transmitted infections	10.9
Adults (20–64 years)	Overweight/obesity[a]	31.7
	Literacy	19.0
	Physical inactivity	12.7
	Colorectal screening	9.5
Older Adults (65+ years)	Home care wait times	36.8
	Physical inactivity	31.6
	Falls	19.3
	Influenza immunization	12.3

Abbreviations: MMR, Measles, mumps and rubella vaccine.
Notes: Table includes the top four priority indicators in each area due to space limitations.
[a] Overweight and obesity were initially separate, but were combined for practical purposes.

The third step in the process was the validation step. Upon receipt of initial stakeholder feedback, the indicators and priorities for action chosen by stakeholders was confirmed and planned for, by means of further consultation sessions with stakeholders if necessary.

The final step, currently underway, involves the utilization of the indicators to measure population health including reassessment of skill mix and reallocation of the budget. It also permits the identification of key areas for advocacy, as well as innovation in health care practice across service delivery and research.

Results

Selection of indicators

The working group selected 53 initial indicators and sent this list to key stakeholders. Of the 59 stakeholders surveyed, 38 responded (64% response rate). The top priorities for action identified for each group were as follows: the population in general—the percentage of low-income families (32%); infants and children—the percentage of mothers breastfeeding on leaving hospital (25%); youth—the percentage who are overweight or obese (with body mass index [BMI] greater than or equal to 25 kg/m^2) (33%); adult—the percentage who are overweight or obese (32%); adults over 65 years old—home care wait times (37%). There was reasonably good agreement for priority indicators for each of the age groups (Table 2). Generally, indicators chosen for priority action were those for which there was good evidence of need as indicated by the additional data and information provided to the respondents.

Respondents showed high scores for knowledge and attitudes on the Likert scales (medians of 4) in response to the questions, "On a scale of 1 to 5, has the information provided and discussions through QUEST increased your awareness of the health status of our community and the link between the indicator and health?" and "On a scale of 1 to 5, do you think monitoring and reporting these indicators would help guide the Board and organization in its strategic and business decision-making?" Unfortunately, there were no baseline data with which to compare these self-report scores. With respect to increasing awareness of the health status of the community and the link between the indicator and health, 73% of the respondents indicated that the information provided improved their awareness and 94% reported that they thought monitoring and reporting these indicators would help guide the Board and the organization in its strategic and business decision-making.

Further prioritization/validation sessions with stakeholders had been planned as the third step in the process in the event of lack of consensus in the consultation step. However, the results indicated consensus regarding priorities for initial action. Therefore, wider dissemination was planned following presentation to the Population Health Committee of the Board.

Survey results regarding priority indicators for district action were presented to the Population Health Committee of the Board for their consideration and utilization. Due to limited resources, the Committee supported one priority indicator (physical inactivity), which was the second most important issue for the youth and older adult age groups and the third most important for the adult age group. As a result, a strategy with specific targets to increase physical activity levels was developed to demonstrate how a partnership approach can be used to improve community health,

as measured by indicators. However, recognizing the importance of the relationship between poverty, health and access to services, the Population Health Committee suggested further exploration of the role of the district in addressing poverty following a review of the provincial Poverty Reduction Strategy.[13]

Monitoring of indicators

The working group recommended a process for ongoing monitoring and reporting of the full set of community health indicators that involved the integration of the tracking and reporting process at both strategic and operational levels, with monitoring of the indicators and annual reporting on progress completed by a single group that includes an epidemiologist, health economist, data analyst and others as necessary.

The working group also recommended development of a concise, easy-to-read "dashboard" report that contains key indicators to support decision making at Board level. Supporting material would be made available upon request. The Population Health Committee would receive and discuss the dashboard reports, and make recommendations for health improvement strategies to the Board in response to these. The Quality Committee of the Board should also receive the indicator reports for its information. This Committee currently monitors mainly acute care indicators but has recognized the need to consider the impact of broad community health indicators on their work. Importantly, it was also recommended that the annual dashboard report be made available to the broader community. It is recognized that these indicators reflect highly complex issues that will require time and effort to change. The Population Health Committee noted that it would be helpful to monitor and report changes to predisposing factors that would be expected to impact the selected indicators as part of the monitoring strategy.

Discussion

District health authorities are legislated to "improve the health of their communities." The boards of district health authorities make decisions based on information provided to them. Providing boards with evidence of the link between community health indicators and health outcomes, and the need for "upstream," multi-level, multisectoral action, as demonstrated through this intervention project, has implications for a range of actions. These include the selection of actionable population health priorities, reallocation of budget from acute care to population health, reassessing skill mix needed to take action to improve the indicators (e.g. epidemiologists, health economists, analysts, public health personnel), identification of key areas for advocacy, determining areas for innovation and research related to population health (evaluation of effective interventions to increase physical activity in the district), and shifting organizational culture to include valuing a population approach to health.

Change management theory indicates that the first step in changing behaviour is to increase awareness of the issue. It was hoped that the evidence provided through the presentations and discussions, along with the information package material, would lead to an increased stakeholder awareness of the need to develop and subsequently use community health indicators in decision making and of the need to move from a system focused on acute care to one that also values a broad population health approach. The stakeholders were influential, directly or indirectly, in identifying the need to include community health indicators in our business and strategic plans.[14]

At the board and executive level, building capacity for evidence-informed decision making related to population health has implications for business and strategic planning. It can assist an organization to better determine where and how to allocate resources. The evidence helps identify the areas of greatest need and where interventions are likely to succeed, and hence quality information is required in order to set priorities. The identification of community health priorities for action allows for focused action by the organization, enabling greater impact.

The working group's method of indicator identification provided evidence-informed information to assist Capital Health in selecting indicators for action. It combined both empirical and contextual evidence through consensus. The utilization of research evidence in decision-making is facilitated if decision makers are aware that it exists (wide dissemination) and is summarized concisely with implications for practice.[15,16] A set of community health indicators is the first step towards this goal. We concluded that the use of population health indicators by decision makers is increased by: (1) involving those who will use the indicators during indicator development; (2) presenting evidence clearly linking indicators to health in an easy-to-manage and useful format and in plain language; and (3) wide dissemination.

Such a process is not without challenges. Selection of too many indicators dilutes the available information and makes the task of monitoring and reporting unmanageable. However, if too few indicators are identified, the overall picture of the health of the population is inaccurate. In addition, our information is derived from a sample with a 64% response rate. Organization of indicators by age group meant that some indicators received greater representation in the selection process. However, the reality of policy development and service delivery by age group outweighed this concern. Finally, some of the indicators chosen in this project, such as the percentage of low-income families in the general population, may not be readily amenable to direct action by Capital Health, though they are important areas for advocacy.

Understanding the community's health status is essential in the development of population-wide strategies for health improvement. This project has provided community health indicators to monitor planning and performance for population health improvement. As local health data are important for local health planning, Capital Health is completing a district health assessment adapted from the Canadian Community Health Survey to obtain health data at the community health board level. Local data assist in mobilizing communities to action. The process for determining these indicators, as described here, may help other district health authorities meet their legislative mandate of improving the health of their communities.

This project has implications beyond the district level by providing evidence for the districts and community health boards to advocate for further provincial investment in policies and practices that reduce social, economic and health inequalities. Ultimately, a scorecard or dashboard on community health indicators will be available to the community, permitting transparency and accountability. It will assist the community in gaining a better understanding of the health of their community.

Identifying what contributes to a healthy community is still not well understood by district health authorities. Researchers may be interested in implementing and evaluating population health initiatives for which there are no current data or evidence of effective interventions. This will add to the body of knowledge in this area. It would be particularly interesting in future endeavours to implement these indicators across district health authorities in Nova Scotia and compare their effectiveness in supporting community and stakeholder action to address chronic diseases.

Acknowledgements

Mary Russell held a fellowship with the Executive Training for Research Application (EXTRA) Program, 2006–2008. This project was completed under the supervision of mentors Dr. Stephen Kisely, Dr. David Persaud and Patrick Lee in partial fulfillment of the fellowship requirements. Support for the project was provided by the Decision Support and Health Outcomes Research Units, Capital Health. The authors wish to acknowledge the contributions of Dr. Ed Kinley, Chair of the Population Health Committee, and the members of the original community health working group: Mr. Mike Kivell, Ms. Kathleen Martin, and Dr. Gaynor Watson-Creed.

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