University of Alberta

BUILDING MANAGEMENT CAPACITY FOR EVIDENCE USE IN HEALTH CARE ORGANIZATIONS

by

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DEDICATION

For

Delainey Sybil

and

Mom and Dad

ABSTRACT

Health care organizations face challenges using evidence to inform program management decisions. A number of factors influence the use of evidence by program managers, including: individual skills, organizational context, organizational culture and decision-making processes. While it is recognized that health care organizations require strategies to promote the use of evidence in program planning, implementation and evaluation, there is a paucity of research on ways to achieve this. The purpose of this thesis is to critically examine the use of evidence in planning, implementing and evaluating programs within health care organizations. It contains a series of four papers that collectively explore the use of evidence to inform program management decisions.

The first paper is a review synthesizing the literature on barriers and facilitators to evidence-informed decision-making experienced by decision-makers at the program level within health care organizations. The second paper provides an overview of a collaborative initiative between two Canadian health care organizations and a University partner to build organizational capacity for evidence-use in program planning, implementation and evaluation. The third paper explores the use of evidence to inform decisions in two programs in two different health care organizations through a participatory action research project. Research methods include: documentation review, key informant interviews and

focus groups. The opportunity to examine the use of evidence in health care organizations through this partnership initiative provide insight into strategies to build organizational capacity to use evidence to inform management decision-making. The fourth paper presents the development of a model to support evidence use in program management within health care organizations. Through a review of theoretical and empirical research on evidence-use by decision-makers at the program level in health care organizations a model illustrating the organizational resources, tools and supports needed to support the use of evidence in program development, implementation and evaluation is developed. The model builds on and enhances the knowledge to action process by overlaying the organizational tools, resources and supports that are required to operationalize the knowledge to action process at the program management level within health care organizations.

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INTRODUCTION

As health system leaders and practitioners work towards creating a more efficient and effective health care system, it is essential that management decisions be informed by strong evidence on which strategies are the most successful at achieving the desired goals and how those strategies can be transferred to other jurisdictions for implementation. The use of evidence to inform decisions in health care is a priority for health care organizations[1]. The adoption of evidence-use in management decision-making – the planning, implementation and evaluation of health care programs – lags behind evidence-informed clinical decision-making[2,3]. Barriers to evidence use experienced by health care managers differ from those experienced by clinicians, as health care organizations are complex, uncertain environments with shifting goals and objectives[2]. There is a need to understand how evidence-informed decision-making can be supported within health care organizations. Currently, gaps exist in the understanding of the process health care program managers use to apply evidence and how that process can be enhanced[1,4].

The purpose of this thesis is to critically examine the use of evidence in planning, implementing and evaluating programs within health care organizations. It contains a series of four papers that collectively explore the use of evidence to inform program management decisions.

The first chapter studies the state of the science addressing potential barriers and facilitators to evidence-informed program planning, implementation and evaluation experienced by decision-makers within health care organizations. Through a critical review of the literature, the barriers and facilitators to evidence use experienced by health care decision-makers at the program level are explored. Understanding these will enable the development of strategies to promote evidence-informed decision-making in the planning, implementation and evaluation of health care programs.

The second chapter provides an overview of an innovative collaboration between two Canadian health care organizations and their university partner to build organizational capacity for evidence-use in program planning, implementation and evaluation. This partnership initiative was collaboratively designed to explore strategies for building that organizational capacity. The chapter presents those capacity building strategies, which were developed and implemented to support program staff in finding, interpreting and using evidence. The chapter also presents the organization and structure of the partnership initiative as well as a comprehensive summary of activities completed at each site.

The third chapter presents the findings from a participatory action research project designed to explore perceived barriers and facilitators to

evidence-informed decision-making within health care organizations and to identify strategies to promote evidence use in program planning, implementation and evaluation. The use of evidence to inform decisions in two programs in two different health care organizations is examined using a multiple-case study design. Research methods employed include: documentation review, key informant interviews and focus groups.

The fourth and final chapter presents a model developed to help health care organizations implement the knowledge to action process[5]. The paper discusses the methods used to develop the model and explores in detail the resources, tools and organizational supports required to promote evidence-informed program planning, implementation and evaluation within health care organizations.

Together, the papers in this thesis seek to examine the state of the science on the use of evidence in program planning, implementation and evaluation; explore strategies to build capacity for evidence-informed management decision-making within health care organizations; and propose a model for organizations to move knowledge into action at the program level.

References

1. Best A, Terpstra JL, Moor G, Riley B, Norman CD, Glasgow RE. Building knowledge integration systems for evidence-informed decisions. *Journal of Organization and Management*. 2009; 23(6): 627-641.

2. Baker GR, Ginsberg L, Langley A. An Organizational Science Perspective on Information, Knowledge, Evidence, and Organizational Decision-Making. In F. Champagne (Ed), *Using Knowledge and Evidence in Health Care: Multidisciplinary Approaches* (pp. 95-123): University of Toronto Press, Toronto, ON; 2004.

3. Walshe K, Rundall TG. Evidence-based management: From theory to practice in health care. *Milbank Quarterly. 2001; 79*(3): 429-457.

4. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly. 2004; 82*(4): 581-629.

5. Graham ID, Logan J, Harrison MB, Straus SE, Tetroe J, Caswell W et al. Lost in knowledge translation: Time for a map? *Journal of Continuing Education in the Health Professions. 2006; 26*(1): 13-24.

CHAPTER 1: BARRIERS AND FACILITATORS TO EVIDENCE USE IN PROGRAM PLANNING, IMPLEMENTATION AND EVALUATION: A REVIEW OF THE LITERATURE

BACKGROUND

Instituting evidence-informed processes for making decisions has become a priority for most health care organizations[1]. Although the place of evidence in clinical decision-making has a long history in health care, interest in and demand for its use in management decisions is more recent[2,3]. In fact, to date, published studies have demonstrated a lack of evidence-informed decision-making at this level, as well as limited research aimed at developing best practice approaches to achieving this within organizations [4-6].

Both clinicians and managers face barriers to the use of evidence in their decision-making roles, but the barriers are different. Those in clinical decision-making typically relate to care options for patients who fall outside of practice guidelines, while those faced by health system managers often relate to complex organizational issues involving multiple stakeholder communities with competing interests. There is a widely held view that evidence-informed decision-making may serve to improve the acceptability of decisions to such stakeholder communities. In the reality of decision-making at the program level, the concept of evidence needs to move beyond the narrow constraints of published research and include contextual evidence suitable to the administrative setting. Evidence-informed decision-making requires two sets of skills: 1) those for identifying and critically assessing the evidence and 2) those for

applying it to their local context in a way that reflects an awareness and understanding of factors potentially affecting uptake, implementation or sustainability of the evidence[1]. In doing so, the users of that evidence must recognize the varying degrees of rigour and quality of evidence applied. Whether such skill sets exist within organizations and reasons for their presence or absence have yet to be fully explored.

Objective

The purpose of this study was to determine the state of the science around what is known about potential barriers and facilitators to the use of evidence in planning, implementing and evaluating programs within health care organizations.

METHODS

A comprehensive review of relevant published literature was performed following best practice guidelines for conducting systematic reviews in health services research[7].

Search Strategy

The following bibliographic databases were searched for English language peer-reviewed and grey literature published between October 2000 and December 2011: PubMed (MEDLINE and non-MEDLINE references), the Cochrane Library, the Centre for Reviews and

Dissemination (DARE, NHS EED and HTA), EMBASE, ProQuest Dissertations & Theses, CINAHL, Web of Science, and ABI Inform. The search strategy applied to these databases comprised controlled vocabulary terms, such as the Medical Subject Headings (MeSH) terms: 'decision-making' and 'program development', as well as additional keywords such as 'evidence-informed', 'knowledge utilization', 'barriers' and 'facilitators'. MEDLINE was also searched for papers by key authors in the field. Grey literature was identified through the following sources: NYAM Grey literature collection, The Campbell Collaboration Library of Systematic Reviews, Quebec Population Health Research Network's KU-UC database, and McMaster University Health Information Research Unit's KT+ database. For comprehensiveness, references in relevant papers were scanned to identify additional citations. Full details of the search terms and sources used are included in Appendix 1-1.

Study Eligibility Criteria

Study selection was completed by two reviewers, who independently scanned the titles and abstracts of citations identified through the search for inclusion in the review. Empirical studies exploring the use of evidence in program design, management or implementation were included. Studies limited to clinical or health policy decision-making at levels other than that of a program were excluded. In order to compare countries with similar economies and socio-demographics, only studies

examining evidence-use in OECD countries were included. Finally, studies discussing non-medical services were excluded.

Data Collection and Analysis

For each selected study, information on study design, decision-making context, location, sector, type of decision-maker, and findings was extracted using a standard data abstraction form. For the purposes of this review, the Canadian Health Services Research Foundation's decision-maker classification was used: Policy Makers defined as politicians and advisors, civil servants, board members, special interest groups and the public; Managers defined as institutional or regional Chief Executive Officers, program managers, clinical managers and management consultants; Service professionals defined as physicians, nurses, social workers, councilors and their associations[8]. One reviewer extracted data from all of the studies. However, for a random sample (10%), data were extracted by a second reviewer to assess reliability.

The data collected were entered into tables to facilitate qualitative analyses. Specifically, thematic analysis was used. This involves systematic identification of recurring themes. An initial list of codes for barriers and facilitators of evidence-use was prepared a priori by the research team based on expert opinion and a preliminary review of the relevant literature and then applied to a sample of eight of the included

studies and revised as needed. The codes for the barriers and facilitators were reviewed by the study team to identify any gaps and were then categorized by theme. The findings from all of the included studies were coded based on the identified themes and analyzed quantitatively. The results were then summarized through narrative review[9].

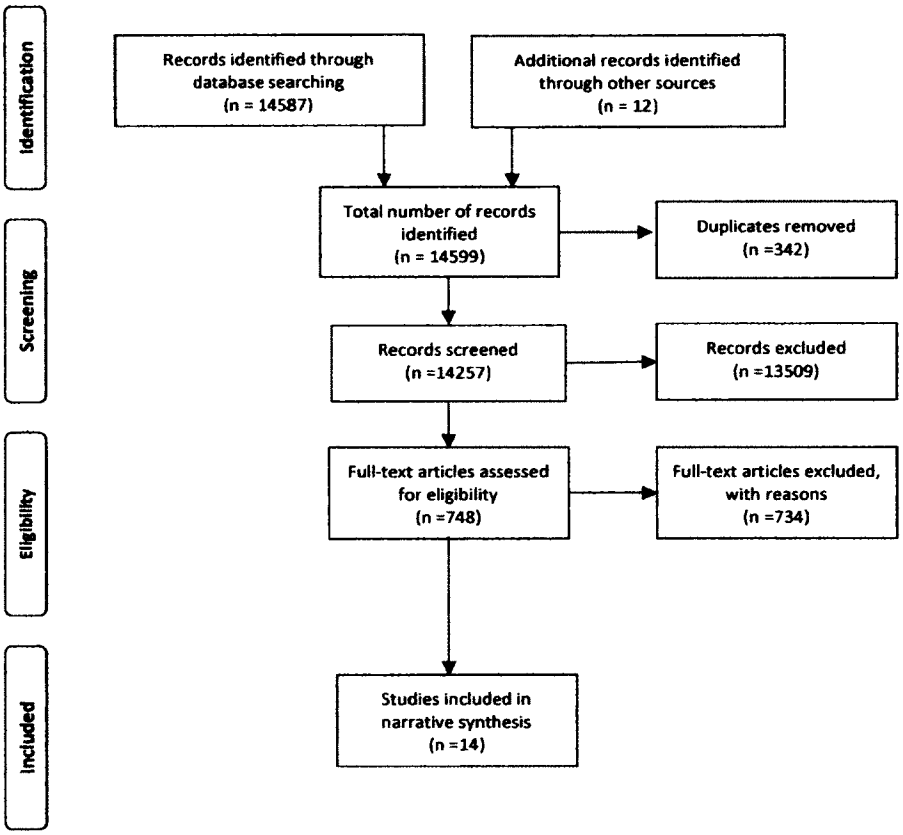
The quality of studies was assessed using published criteria for critically appraising qualitative, quantitative and mixed methods research[10]. The critical appraisal tool assessed the methodological quality of the studies with defined criteria for each study design. For qualitative studies, the criteria examined data sources, data analysis, research context and researcher influence, while the quantitative criteria first categorized the studies as randomized, non-randomized or descriptive and then applied appropriate methodological criteria such as sampling strategy, measurement and response rate. Mixed method studies were assessed based on relevance of mixed method design, integration of methods and limitations of methods.

RESULTS

The literature search identified a total of 14,587 studies. Once duplicates were removed, 14,257 remained. The titles and abstracts of these references were reviewed and 748 references were selected for full text

review. Ultimately, 14 papers met the inclusion criteria, at which point saturation, where no new themes were emerging, was achieved and further searching was concluded[11,12]. Figure 1-1 is a PRISMA flow diagram illustrating the search results (adapted[13]):

Figure 1-1: PRISMA Flow Diagram - Search Summary



Overall characteristics of included studies

Study design

Five of the included studies were qualitative in their design, five studies were quantitative, and four studies were mixed methods. The methods used in the studies included interviews (9), focus groups (3), documentation review (2), telephone surveys (3), surveys (4) and case studies (1). Six employed multiple methods to address the research question, so the total number of methods used in the studies is greater than the number of included studies. Table 1-1 summarizes the methods and designs of the included studies.

Location and decision-making setting

The majority of the included studies were conducted in Canada (10). Studies were also from the United Kingdom (2), Scotland (1), and Poland (1). The decision-making settings were health authorities (8), public health units (2), hospitals (4), community-based health organizations (2), and other health care organizations or jurisdictions (3).

Type of decision-makers

A total of 3584 decision-makers participated in these studies, which included senior managers, directors, Chief Operating Officers, clinicians and other front-line staff. Table 1-1 summarizes the characteristics of the studies.

Table 1-1: Included Studies – Characteristics

	Primary Author	Publication Year	Study Methods	Study Design	Country	Setting	Participants
1	Belkhodja	2007	Telephone Survey	Quantitative	Canada	Ministries, Health Authorities, Hospitals	928 decision-makers (managers and professionals)
2	Bowen	2009	Interviews and Focus Groups	Qualitative	Canada	Health Authorities	205 decision-makers (senior managers, middle managers and board members)
3	Dobbins	2007(a)	Interviews	Qualitative	Canada	Public Health Units	16 decision-makers (6 program mangers, 6 directors, 1 Medical Officer of Health)
4	Dobbins	2001	Telephone Survey and Questionnaire	Quantitative	Canada	Public Health Units	141 decision-makers (medical and associate medical officers of health, program directors, program managers)
5	Dobbins	2007(b)	Telephone Survey	Quantitative	Canada	Community-based health organizations	92 decision-makers (from any level from CEO to front-line clinicians, senior planners)
6	Farmer	2001	Interviews	Qualitative	Scotland	Health Authorities	15 decision-makers (7 Directors and 8 physician advisors)
7	Ham	2003	Interviews, Questionnaires, Case Studies	Qualitative and Quantitative	United Kingdom	Health Authorities	257 decision-makers (152 managers, 44 medical specialists, 21 nurses, 12 administrative and clerical staff, 12 GPs, 16 other) 4 case studies
8	Higgins	2011	Interviews	Qualitative	Canada	Health Authorities	21 decision-makers (16 front-line staff 5 managers)
9	Jbilou	2007	Survey	Quantitative	Canada	Health Organizations (Hospitals, Health Authorities, Ministries, Agencies)	942 decision-makers (managers, professionals, in ministries, hospitals, boards and councils)
10	McDiarmid	2007	Telephone Interview	Qualitative and Quantitative	Canada	Hospitals	27 decision-makers (hospital CEOs)
11	Mitton	2004	Interviews and Focus Groups	Qualitative	Canada	Health Authority	25 decision-makers (senior managers, clinicians)
12	Niedzwiedzka	2003	Survey, Interviews, Focus Groups, Document Review	Qualitative and Quantitative	Poland	Hospitals and Departments of Health	815 decision-makers (hospital CEOs, medical directors, head nurses, directors) (#s for interviews and focus groups unknown)
13	Weatherly	2002	Survey, Interviews, Document Review	Qualitative and Quantitative	United Kingdom	Health Authorities	102 Health Authorities (78 decision makers - 68 coordinators, 10 leaders)
14	Wilson	2011	Online Survey	Quantitative	Canada	Community-based health organizations	25 decision-makers (Executive Directors)

Quality of included studies

Based on responses to questions comprising the critical appraisal criteria[10] the overall quality of the studies was fair. For the qualitative studies, few triangulated findings through the use of multiple methods for addressing the same question, performed member checking to ensure accuracy in the responses collected from participants, or mentioned sampling until saturation was reached. For the quantitative studies, response rates were generally acceptable, but the representativeness of the sample populations was unclear, and validity of the measurement instruments was not adequately addressed in all of the studies. For the mixed method studies, half of the studies did not provide a rationale for a mixed method design or discuss how the qualitative and quantitative data were meaningfully brought together to explore the research questions. Table 1-2 summarizes the quality assessment of the included studies.

Table 1-2: Included Studies - Quality Assessment

		Qualitative					Quantitative					Mixed Method			
Type of Study	**Methodological quality criteria**	**Bowen 2009**	**Dobbins 2007(a)**	**Farmer 2001**	**Higgins 2011**	**Mitton 2004**	**Bekhuis 2007**	**Dobbins 2001**	**Dobbins 2007(b)**	**Jbilou 2007**	**Wilson 2011**	**Hom 2008**	**Niedzwiedzka 2008**	**Weatherly 2002**	**McDiarmid 2007**
Screening Questions	Are there clear qualitative and quantitative research questions (or objectives*), or a clear mixed methods question (or objective*)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Do the collected data allow the research question (objective) to be appropriately addressed?	Yes	Yes	Yes	Unclear	Unclear	Unclear	Unclear	Yes	Unclear	Unclear	Yes	Yes	Unclear	Unclear
1. Qualitative	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?	Yes	Yes	Yes	Unclear	Unclear	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Unclear	Yes	Unclear	Yes
	1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?	Yes	Yes	Yes	Unclear	Unclear	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Unclear	Unclear	Unclear	Unclear
	1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected?	Unclear	Unclear	Unclear	Unclear	Unclear	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Unclear	Unclear	Unclear	Unclear
	1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants?	No	No	No	No	No	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Unclear	Unclear	Unclear	Unclear
4. Quantitative Descriptive	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes
	4.2. Is the sample representative of the population understudy?	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Yes	Unclear
	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Unclear	Yes	Yes	Unclear	Yes	Unclear	Yes	Unclear	Yes
	4.4. Is there an acceptable response rate (60% or above)?	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Yes	Yes	Yes	Yes	No	Unclear	Unclear	Yes	No
5. Mixed Methods	5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Yes	Unclear	Yes	Unclear
	5.2. Is the integration of qualitative and quantitative data (or results*) relevant to address the research question (objective)?	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Yes	Unclear	Yes	Unclear
	5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results*) in a triangulation design?	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Unclear	Unclear	Yes	Unclear

The barriers and facilitators to evidence use in program planning, implementation and evaluation in health care organizations identified in the literature were categorized into five themes: (1) Information, (2) Organization – Structure and Process, (3) Organization – Culture, (4) Individual, and (5) Interaction. Barriers and facilitators relating to the production or use of information were classified as informational, such as dissemination strategies or perceived relevance of available research. Organizational barriers and facilitators including organizational systems, supports or procedures were classified as organizational structure and process. Barriers and facilitators related to the values, principles or beliefs of the organization, such as visibility of evidence use within the organization, were classified as organizational culture. Individual barriers and facilitators such as research knowledge or formal training were classified as individual skills. Those relating to contact or relationships between researchers and decision-makers were classified as interaction. Each of the themes is discussed in the following sections, first for barriers and then for facilitators of evidence use.

Barriers to Evidence Use

The majority (12) of studies identified barriers. In general, barriers experienced by managers were informational (10), including "availability of relevant research"[14(p.6)] and organizational structure and process-related (10), including "problems linked to the complex nature of

organizational decision-making and the challenges of integrating evidence therein"[15(p.267)]. Seven studies reported individual barriers to evidence use and seven studies reported organizational culture as a barrier. Interaction between researchers and decision-makers was also mentioned in one of the studies. Table 1-3 provides a summary of the barriers identified in each theme for the included studies:

Within each theme, different specific types of barriers to evidence use were identified. Table 1-4 describes the types of barriers experienced by decision-makers for each of the barrier themes, which are subsequently explored in detail in the following section:

Table 1-3: Barriers to Evidence Use: Summary of Themes

	Primary Author	Publication Year	Information	Organization (Structure & Process)	Organization (Culture)	Individual	Interaction
1	Belkhodja	2007	X				
2	Bowen	2009	X	X	X	X	
3	Dobbins	2007(a)					
4	Dobbins	2001	X				
5	Dobbins	2007(b)	X	X		X	
6	Farmer	2001	X	X	X	X	
7	Ham	2003		X	X		
8	Higgins	2011	X	X	X		
9	Jbilou	2007					
10	McDiarmid	2007	X	X			
11	Mitton	2004	X	X	X	X	
12	Niedzwiedzka	2003	X	X		X	
13	Weatherly	2002	X	X	X	X	
14	Wilson	2003		X	X	X	X

(X indicates that the article was a source of evidence for the theme)

Table 1-4: Barriers to Evidence Use: Summary of Types by Theme

Barrier Theme	Types of Barrier
Information	• Irrelevance of research • Unclear definition of evidence • Negative perceptions of research • Limited access to information • Mismatch of research to complex reality • Time consumed by research • Excess quantity of information
Organization (Structure and Process)	• Time limitations • Lack of internal research resources • Human resource constraints • Financial constraints • Lack of data and systems • Deficient planning processes • Absence of processes • Poor support from senior management • Rigid program silos • Competing priorities • Poor communication
Organization (Culture)	• Decision-making • Crisis management • Resistance to change • Politically influenced decisions • Challenging the promotion of evidence use
Individual Skills	• Research literacy • Research utilization • Management
Interaction	• Decision-maker/researcher gap • Mutual mistrust

Barriers: Information

Decision-makers at the program level in health care organizations require a variety of information to inform decisions. This can include research findings, local evaluation results, expert opinion or professional experience[16-19]. The most frequently cited barrier to evidence-use that emerged from our analysis was **information**. The most frequently cited barriers to evidence-use among health care organization decision-makers relate to perceptions of the information generated through academic research. Decision-makers perceived a lack of relevant research, particularly research that could be used to make decisions at the local level[14,16-20]. Mitton and Patten report that a "barrier to the application of evidence in priority-setting was the difficulty in applying evidence in the local context"[17(p.148)]. Overall, negative perceptions of research by decision-makers were also identified as a barrier to the use of evidence[15,16,18,21]. In Niedzwiedzka's study of health care decision makers, for example, "Only 15% of respondents thought that research results had significant influence on practice in health care, and only 3.2% perceived developments in scientific knowledge as having an input in their area of decision making"[18(p.108)]. Two studies also found that research that does not reflect the complex reality of the health care decision-making environment was a barrier to evidence-use[17,19]. Confusion regarding what constitutes evidence contributed to a lack of evidence-use by decision-makers [16-19]. Too much information[16,19] and

difficulty accessing relevant information[14,18,19,22] were also identified as barriers. The amount of time it takes for research to be completed in order to inform a decision was also perceived as a barrier to evidence-use[22,23].

Barriers: Organization – Structure and Process

An organization's **structure and processes** emerged as an important barrier to the uptake of evidence in program planning, implementation and evaluation. The most frequently cited organizational barriers to evidence-use were time (6) and internal resource constraints (6). Evidence use in program planning, implementation and evaluation is challenged by a lack of time[14,17-21] and internal resources for research[18-22]. Bowen et al report:

> *"Lack of time and resources emerged as key barriers. Under-resourcing was described as resulting in poor decisions, ...an inability to allocate resources to research or evidence-related positions and (perhaps most importantly) workload pressures that were described as actively working against the thoughtful reflection essential for [evidence-informed decision making]"*[21(p.93)].

Internal resource constraints included human resource constraints[19-21,24], financial constraints[14,18,22], workload issues such as competing priorities[21], and a lack of organizational data and systems[18,21,22].

Organizational leadership, especially a lack of senior management support for evidence-informed decision-making[16,21], a paucity of processes within organizations to incorporate evidence into program management decisions[15,17], and a lack of formal planning processes[15,21] were also identified as barriers to evidence use. Poor communication within an organization, between and across levels, as well as programs operating in isolation from other programs within the same organization further inhibited the use of evidence[21].

Barriers: Organization – Culture

Organizational culture was identified as a barrier in program planning, implementation and evaluation within health care organizations, particularly the decision-making culture of organizations[15-17,20] and crisis management culture of health care[15,17,21]. One study suggested that a "cultural shift [was] thought to be required to begin to use evidence"[17(p.148)]. The highly politicized environment within which health care organizations undertake program planning, implementation and evaluation also contributed to challenges experienced by decision-makers in using evidence to inform decisions[19,21]. An overall resistance to change[21,24] and challenges in implementing change within health care organizations[21] were also barriers to evidence-use identified by decision-makers.

Barriers: Individual

Decision-makers in health care organizations also experienced barriers to evidence use at the **individual** level. A deficit in the skills and experience of decision-makers in research literacy and research utilization, and a lack of formal management training were expressed as barriers to evidence-use in program planning, implementation and evaluation[14,15,17-21]. According to Wilson et al, referring to a survey of executive directors in community-based organizations:

> *"Capacity was lowest for the domains related to: acquiring research (subsection I); assessing the reliability, quality, relevance, and applicability of research evidence (subsections III and IV); and summarizing results in a user-friendly way"*[20(p.3)].

Barriers: Interaction

One of the included studies also identified issues related to the **interaction** between researchers and decision-makers as barriers to the use of evidence in health care organizations. The gap between researchers and decision-makers, in terms of a lack of contact and mutual understanding was identified as a barrier to evidence use[20].

Facilitators of Evidence Use

The majority (10) of the included studies identified facilitators of evidence use for program planning, implementation and evaluation. The majority

of facilitators of evidence-use experienced by managers were informational (10), for example,

> *"Public health decision-makers value the use of systematic reviews to facilitate the decision-making process. They indicated that systematic reviews were particularly useful because they integrate the results of many studies into one, which allows them to bypass the stage of looking at individual studies. This saves them time and gives them more confidence knowing their decisions are based on the culmination of many studies instead of just a few"* [25(p.159)].

Organizational structure and process or organizational culture were identified as facilitators of evidence use in eight of the studies. One study concluded that evidence use "in health service organizations was more complex and much more sensitive to organizational factors and processes than previous studies seemed to affirm"[26(p.407)]. Interaction between researchers and decision-makers was found to be a facilitator of evidence use in five of the studies. Four studies reported individual skills as facilitators of evidence use. Table 1-5 provides a summary of the facilitators identified by theme for the included studies.

Within each theme, different specific types of facilitators of evidence use were detailed. The following Table 1-6 describes the types of facilitators identified by decision-makers for each of the facilitator themes:

Table 1-5: Facilitators of Evidence Use: Summary of Themes

	Primary Author	Publication Year	Information	Organization (Structure & Process)	Organization (Culture)	Individual	Interaction
1	Belkhodja	2007	X	X	X	X	X
2	Bowen	2009					
3	Dobbins	2007(a)	X				X
4	Dobbins	2001	X		X	X	
5	Dobbins	2007(b)	X				X
6	Farmer	2001	X	X	X		
7	Ham	2003		X	X	X	
8	Higgins	2011					
9	Jbilou	2007	X	X	X		X
10	McDiarmid	2007					
11	Mitton	2004	X	X			
12	Niedzwiedzka	2003	X				X
13	Weatherly	2002	X	X	X		
14	Wilson	2011	X	X	X	X	

(X indicates that the article was a source of evidence for the theme)

Table 1-6: Facilitators of Evidence Use: Summary of Types by Theme

Facilitator Theme	Types of Facilitator
Information	• Access to information • Complex intervention evaluation methods • Targeted dissemination
Organization (Structure and Process)	• Intra-organizational linkages • Expertise in research utilization • Processes for integration of evidence • Administrative support • Operational data availability
Organization (Culture)	• Supporting evidence use • Human resources training and rewards • Inter-organizational collaboration • Visible research utilization
Individual Skills	• Researcher and decision-maker focus on application
Interaction	• Contact between researchers and decision-makers • Mutual respect

Facilitators: Information

The studies included in this review identified facilitators of evidence-use experienced by decision-makers in health care organizations, which can be categorized as **informational**. Access to information[14,15,18-20,23,27] as well as targeted dissemination of research findings to decision-makers[14,17,19,25,26] were identified as important facilitators of evidence use. Decision maker's access to information was highlighted by one study which concluded that it was important for:

> *"research-producing organizations knowing not only who their target audience(s) are and what their needs are concerning research evidence, but also what questions require answers, and what kind of answers are optimal for different types of decisions"* [14(p.9)].

The advancement of research methods to meet the needs for evaluating complex interventions[15] was also identified as a facilitator of evidence-informed decision-making.

Facilitator: Organizational – Structure and Process

Organizational structure and processes also emerged as facilitators of evidence use for program planning, implementation and evaluation. Facilitators of evidence-use that relate to the structure and processes of health care organizations included administrative support [15,24,27] and

intra-organizational linkages that promote knowledge sharing across the organization[15,17,20,26,27]. Developing internal expertise on research utilization [15,19,20,26] and formalizing the integration of evidence into decision-making processes[17,19,20], were also facilitators of evidence-use. The importance of organizational structure and process to evidence use is highlighted in one study which reports that "developing formal and informal linkage mechanisms, and creating policies that foster user's experience in research are key factors to increase research utilization"[26(p.406)]. An additional facilitator to evidence-use at the organizational level included the availability of operational data to support decision-making[15,19].

Facilitator: Organizational - Culture

The studies included in this review also reported that evidence-informed decision-making is influenced by an **organization's culture**. An organizational culture that is supportive of evidence use, providing required supports and demonstrating through action that evidence-use is valued[15,20,23,26,27] and through providing necessary human resources, training and rewards for evidence-use[19,20,24] were seen as facilitators of evidence-use in health care organizations. As one study's authors concluded, "making research one of the main pillars of the organizational culture of health service organizations" is a critical success factor to increasing evidence use in decision-making[26(p.406)]. Ensuring the visibility

of research utilization[26,27] within the organization was also identified as a facilitator. In addition, evidence-use within health care organizations was facilitated through inter-organizational collaboration and the sharing of information, expertise and experiences between organizations[26,27].

Facilitator: Individual

Facilitators to evidence-informed decision-making were also identified at the **individual** level. Individual skill building for decision-makers in research literacy, research utilization and research application was identified as a facilitator of evidence use within health care organizations. The use of evidence for decision-making was also facilitated through the building of individual researcher's skills, to produce evidence that is useful to decision-makers and disseminate evidence to decision-makers more effectively[20,23,24,26]. For example, in one study, a decision-maker's "experience in research strongly explained research result use among health managers"[26(p.406)].

Facilitator: Interaction

Interaction between researchers and decision-makers was identified as a facilitator of evidence use. Opportunities for direct contact and communication between researchers and decision-makers were found to facilitate evidence-informed decision-making[18,25]. Sustained dialogue[14,25,26] and developing partnerships[27] between researchers and

decision-makers were also identified as facilitators of evidence use. Participants in one study suggested, "one-to-one interaction with the researcher to discuss findings, their potential implications for practice, and the opportunity to brainstorm implementation strategies would greatly influence their use of research evidence"[25(p.159)].

Discussion

The findings from this review fill a gap in the literature by synthesizing recent evidence on barriers and facilitators of evidence use at the program level. There has been considerable focus in the literature on decision-making at the clinical level[28], some at the policy level[29,30], but only paucity on decision-making at the level of program planning, implementation and evaluation. Earlier reviews on decision-makers in public health[30] and health policy[29] included decision-makers at the policy and management levels[8], precluding examination of barriers and facilitators specifically experienced at the program management level. A thematic analysis of the recent Orton et al[30] review of public health decision makers revealed similarities in the types of barriers and facilitators identified. A greater emphasis, however, was found on the 'Interaction' theme, which could be due to the inclusion of policy-makers, since more weight was given to the influence of researcher-policy-maker interaction as a strategy to promote evidence use at the policy level[31]. An earlier review of health policy decision-making, which reviewed the

evidence from 1966 to 2000 reported barriers and facilitators to evidence use in the themes of Information, Organization (Structure and Process), and Interaction[29]. A recent review of barriers and facilitators of evidence use at the clinical level found that clinicians experience some of the same barriers and facilitators of evidence use, including the themes of Information, Organization (Structure and Process), Organization (Culture), and Individual Skills[28]. However, a key difference between program managers and clinicians as well as policy makers in terms of barriers to evidence use was organizational, with organizational processes for planning and integrating evidence into decision-making being uniquely identified as a key facilitator of evidence use at the program management level.

The findings suggest that strategies to promote evidence use by program managers need to be directed not only at decision-makers, but also at researchers. Decision-makers value research on complex interventions but experienced challenges in the use of evidence to inform decisions due to the definition of evidence. Strategies directed at improving dissemination and communication of research could increase evidence-use. Both the relevance and timeliness of research could be improved through the exploration of participatory research methods with integrated feedback mechanisms.

Findings from the included studies suggest that decision-makers in health care organizations experience barriers to using evidence at both the organizational and individual level and that efficient ways of integrating evidence-informed decision-making into organizational processes is required. Managers not only need organizational leaders to support them in using evidence, but also to address human resource challenges that inhibit evidence-use. Evidence use could also be increased through the development and implementation of formal organizational processes for decision-making and organizational investment in systems to support evidence-use. Improvements could also be made to internal communication mechanisms and processes within organizations and a demonstrated commitment to evidence development and sharing across the organization.

While addressing barriers to evidence-use associated with organizational culture requires executive leadership, those at the individual level require strategies directed at individual skill building. Opportunities for increased interaction between researchers and decision-makers would also serve to promote evidence use.

Conclusions

The findings from this review suggest that barriers and facilitators to evidence use in management decision-making within health care

organizations can be categorized into four distinct groups: (1) Informational, (2) Organizational, (3) Individual, and (4) Interactional. Understanding the barriers and facilitators to evidence-use experienced by managers is an essential first step in developing strategies to promote evidence-informed decision-making at the program level within health care organizations. The findings from this review confirm that evidence-informed management requires more than encouraging research utilization within organizations. To address informational barriers to evidence-use experienced by managers, various sources of evidence need to be considered at different times throughout the decision-making process[32]. Research to determine effective strategies to address organizational barriers to evidence-informed decision-making has yet to be undertaken. Currently, gaps in the understanding of the process managers use to apply evidence in health care organizations and how that process can be enhanced to promote evidence-informed decision-making exist[1,33]. The findings of the review also suggest that strategies to promote evidence use need to be directed individually towards both researchers and decision-makers to enhance the ability of individuals to participate in and promote evidence-informed decision-making. Strategies to foster interaction between researchers and decision-makers should also be explored. The barriers and facilitators of evidence use in decision-making at the management level within health care organizations identified through this review can be used to develop the

required multidimensional solutions for promoting evidence-informed program planning, implementation and evaluation within health care organizations.

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References

1. Best A, Terpstra JL, Moor G, Riley B, Norman CD, Glasgow RE. Building knowledge integration systems for evidence-informed decisions. *Journal of Organization and Management.* 2009; 23: 627-641.

2. Baker GR, Ginsberg L, Langley A. An Organizational Science Perspective on Information, Knowledge, Evidence, and Organizational Decision-Making. In *Using Knowledge and Evidence in Health Care: Multidisciplinary Approaches.* Edited by Champagne F. University of Toronto Press, Toronto, ON; 2004: 95-123.

3. Walshe K, Rundall TG. Evidence-based management: From theory to practice in health care. *Milbank Q.* 2001; 79: 429-457.

4. Canadian Health Services Research Foundation. What counts? Interpreting evidence-based decision-making for management and policy. Report of the 6th CHSRF Annual Invitational Workshop, Vancouver, British Columbia: March 11 . 2004.

5. Straus SE, Tetroe JM, Graham ID. Knowledge translation is the use of knowledge in health care decision-making. *Journal of Clinical Epidemiology.* 2011; 64: 6-10.

6. Kitson A, Straus SE. The knowledge-to-action cycle: Identifying the gaps. *Canadian Medical Association Journal.* 2010; 182: E73-E-77.

7. *Cochrane Handbook for Systematic Reviews of Interventions*, Version 5.1.0 [updated March 2011] edn. The Cochrane Collaboration; 2011.

8. Canadian Health Services Research Foundation: *Health services research and...evidence-based decision-making.* Ottawa. ON: Canadian Health Services Research Foundation; 2000.

9. Popay J, Roberts H, Sowden A, Petticrew M, Arai L, Rodgers M *et al.*. Guidance on the conduct of narrative synthesis in systematic reviews: A product from the ESRC methods programme. Lancaster University. 2006.

10. Pluye P, Robert E, Cargo M, Bartlett G, O'Cathain A, Griffiths F *et al.*. Proposal: A mixed methods appraisal tool for systematic mixed studies reviews. 2011.

11. Dixon-Woods M, Bonas S, Booth A, Jones DR, Miller T, Sutton AJ *et al.* How can systematic reviews incorporate qualitative research? A critical perspective. *Qualitative Research.* 2006; 6: 27-44.

12. *Synthesizing Qualitative Research.* Oxford: John Wiley & Sons, Ltd.; 2012.

13. Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group. *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. *PLoS Med.* 2009; 6: e1000097.

14. Dobbins M, Rosenbaum P, Plews N, Law M, Fysh A. Information transfer: what do decision makers want and need from researchers? *Implementation Science.* 2007; 2.

15. Farmer J, Chesson R. Health care management: models for evidence-based practice. *J Manag Med.* 2001; 15: 266-282.

16. Higgins JW, Strange K, Scarr J, Pennock M, Barr V, Yew A *et al.* "It's a Feel. That's What a Lot of Our Evidence Would Consist of": Public Health Practitioners' Perspectives on Evidence. *Evaluation & the Health Professions.* 2011, 34: 278-296.

17. Mitton C, Patten S. Evidence-based priority-setting: what do the decision-makers think? *J Health Serv Res Policy.* 2004; 9: 146-152.

18. Niedzwiedzka BM. Barriers to evidence-based decision making among Polish health care managers. *Health Serv Manage Res.* 2003; 16: 106-115.

19. Weatherly H, Drummond M, Smith D. Using evidence in the development of local health policies. Some evidence from the United Kingdom. *Int J Technol Assess Health Care.* 2002; 18: 771-781.

20. Wilson MG, Rourke SB, Lavis JN, Bacon J, Travers R. Community capacity to acquire, assess, adapt, and apply research evidence: a survey of Ontario's HIV/AIDS sector. *Implementation Science.* 2011; 6.

21. Bowen S, Erickson T, Martens PJ, Crockett S. More than "using research": the real challenges in promoting evidence-informed decision-making. *Healthc Policy.* 2009; 4: 87-102.

22. McDiarmid M, Kendall S, Binns M. Evidence-based administrative decision making and the Ontario hospital CEO: information needs, seeking behaviour, and access to sources. *Journal of the Canadian Health Libraries Association.* 2007; 28: 63-72.

23. Dobbins M, Cockerill R, Barnsley J, Ciliska D. Factors of the innovation, organization, environment, and individual that predict the influence five systematic reviews had on public health decisions. *Int J Technol Assess Health Care.* 2001; 17: 467-478.

24. Ham C, Kipping R, McLeod H. Redesigning work processes in health care: lessons from the National Health Service. *Milbank Q.* 2003; 81: 415-439.

25. Dobbins M, Jack S, Thomas H, Kothari A. Public health decision-makers' informational needs and preferences for receiving research evidence. *Worldviews Evid Based Nurs.* 2007; 4: 156-163.

26. Belkhodja O, Amara N, Landry R, Ouimet M. The extent and organizational determinants of research utilization in Canadian health services organizations. *Science Communication.* 2007; 28: 377-417.

27. Jbilou J, Amara N, Landry R. Research-based-decision-making in Canadian health organizations: A behavioural approach. *Journal of Medical Systems.* 2007; 31: 185-196.

28. Solomons NM, Spross JA. Evidence-based practice barriers and facilitators from a continuous quality improvement perspective: an integrative review. *Journal of Nursing Management.* 2011; 19: 109-120.

29. Innvaer S, Vist G, Trommald M, Oxman A. Health policy-makers' perceptions of their use of evidence: a systematic review. *J Health Serv Res Policy.* 2002; 7: 239-244.

30. Orton L, Lloyd-Williams F, Taylor-Robinson D, O'Flaherty M, Capewell S. The use of research evidence in public health decision making processes: systematic review. *PLoS One*. 2011; 6: e21704.

31. Mitton C, Adair CE, McKenzie E, Patten S, Perry BW. Knowledge transfer and exchange: Review and synthesis of the literature. *Milbank Q*. 2007; 85: 729-768.

32. Scott C, Seidel J, Bowen S, Gall N. Integrated health systems and integrated knowledge: Creating space for putting knowledge into action. *Health care Quarterly*. 2009; 13: 30-36.

33. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Q*. 2004; 82: 239-244h.

APPENDIX 1-1 – LITERATURE SEARCH STRATEGY

Literature Search Strategy

Dates Conducted: October 2011 – February 2012

Limits: English language only, human studies, 2000 to date

Topic: Strategies within health organizations for capacity building for the use of evidence in program planning. For example, what's effective in promoting evidence use within organizations, use of evidence in context & for program evaluation. Not clinical evidence, policy or program planning evidence. Three concepts within this topic:

- KT within health care organizations
- organizational development
- program evaluation

Concept 1	Concept 2	Concept 3	Concept 4 NOT
MeSH terms	MeSH terms	Title words	
Decision making[majr]	Evidence-based medicine[mh]	Implement*[ti]	Patient[ti]
Decision making, organizational[mh]	Evidence-based practice[mh]	Integrat*[ti]	Physician*[ti]
Policy making [mh]	Knowledge[majr]	Barrier*[ti]	Clinical[ti]

Program development [mh]	Information dissemination[mh]	Uptake[ti]	Nurs*[ti]
Health policy [mh]	Communication barriers[mh]	Facilitat*[ti]	Clinician*[ti]
		Capacity[ti]	Surgical[ti]
Program evaluation[mh]	Interdisciplinary communication[mh]	"evidence use"[ti]	Care[ti]
Health plan implementation[mh]	Persuasive communication[mh]	"research utilisation"[ti]	Community[ti]
Delivery of health Care/methods	Health services research/utilization	"research utilization"[ti]	Therap*[ti]
Models, ' organizational[mh]	Health services research/organization & administration	"research use"[ti]	Midwife*[ti]
Quality assurance, Health care[mh]	Diffusion of innovation[majr]	"research evidence"[ti]	Child*[ti]
Organizational	Group	"evidence-	Immigrant*[ti]

policy[majr]	processes[mh]	based"[ti]	
Systems integration[majr]	Translational research[mh]	"evidence informed"[ti]	Physical[ti]
	Organizational case studies[mh]	Gap[ti]	Family[ti]
Organization and administration/standards	Organizational culture[mh]	Influenc*[ti]	Women*[ti]
		Partnership*[ti]	Adolescent*[ti]
		Improv*[ti]	Medicine[ti]
Additional keywords	**Additional keywords**		**Health promotion[mh]**
"program plan*"[ti]	evidence[TI]	"knowledge"[ti]	Emergenc*[ti]
"programme plan*"[ti]	"evidence-based management"[tiab] OR "evidence-informed"[tiab]	**"knowledge management"[ti]**	Population[ti]
Policy[ti] OR	"learning	**"knowledge**	

policies[ti] OR policymak*[ti]	organization"[tiab] OR "learning organisation"[tiab]	**utilization"[ti] OR "knowledge utilisation[ti]**	
"decision mak*"[ti] OR decisionmak*[ti]	Manag*[ti]	**"knowledge use"[ti]**	
		"knowledge translation"[ti]	
	Research Support as Topic[mh]	"knowledge broker*"[ti]	
	Health knowledge, attitudes, practice[mh]	Informed[ti]	
	"research to practice"[ti]	Culture[ti]	
	"best practice*"[ti]	"evidence utilisation"[ti]	
		"utilisation of evidence"[ti]	
		"utilization of	

		evidence"[ti]	

Final search strategy

1. PubMed (www.pubmed.gov, searched 20 Oct 2011) =9783 references

* search term Policy making[mh] added 21 Oct 2011 = 391 additional references

#47 Search #45 OR #46	9783
#46 Search #44 Limits: Humans, English, Publication Date from 2000	9647
#45 Search #44 AND (publisher[sb] OR in process[sb] OR pubmednotmedline[sb]) Limits: Publication Date from 2000	136
#44 Search #35 NOT #43 Limits: Publication Date from 2000	11892
#43 Search #38 OR #40 OR #41 OR #42 Limits: Publication Date from 2000	1506058
#42 Search surgical[ti] OR community[ti] OR therap*[ti] OR midwif*[ti] Limits: Publication Date from 2000	294867
#41 Search immigrant*[ti] OR migrant*[ti] OR physical[ti] OR family[ti] OR women*[ti] OR medicine[ti] OR medical[ti] OR health promotion[mh] OR emergenc*[ti] OR population[ti] Limits: Publication	375649

	Date from 2000	
#40	Search child[ti] OR childhood[ti] OR children[ti] OR adolescent*[ti] OR adolescence[ti] Limits: Publication Date from 2000	212574
#38	Search patient*[ti] OR physician*[ti] OR clinical[ti] OR nurs*[ti] OR clinician*[ti] Limits: Publication Date from 2000	763903
#37	Search #36 Limits: Publication Date from 2000	28767
#36	Search #17 AND (#33 OR #34)	37122
#35	Search #17 AND #34	23895
#34	Search #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32	249445
#32	Search "learning organization"[tiab] OR "learning organisation"[tiab]	139
#31	Search "evidence-informed"[tiab]	305
#30	Search "evidence-based management"[tiab]	516
#29	Search evidence[ti]	146188
#28	Search translational research[mh]	1318
#27	Search diffusion of innovation[mh]	12903
#26	Search health services research/organization &	8748

administration	
#25 Search health services research/utilization	209
#24 Search persuasive communication[mh]	2501
#23 Search interdisciplinary communication[mh]	6785
#22 Search communication barriers[mh]	3988
#21 Search information dissemination[mh]	7376
#20 Search knowledge[mh] OR knowledge[ti]	35410
#19 Search evidence-based practice[mh]	46870
#18 Search evidence-based medicine[mh]	43280
#17 Search #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16	355173
#16 Search "decision making"[ti] OR "decision maker*"[ti] OR decisionmak*[ti]	11913
#15 Search policy[ti] OR policymak*[ti]	25016
#14 Search organization and administration/standards	53010
#13 Search organizational culture[mh]	10759
#12 Search organizational case studies[mh]	7958
#11 Search systems integration[majr]	2205
#10 Search organizational policy[majr]	3030
#9 Search quality assurance, health care[majr]	100604

#8	Search models, organizational[mh]	12729
#7	Search delivery of health care/methods	9179
#6	Search health plan implementation[mh]	2831
#5	Search program evaluation[mh]	46786
#4	Search health policy[mh]	69711
#3	Search program development[mh]	18929
#2	Search decision making, organizational[mh]	9953
#1	Search decision making[majr]	41845

2. The Cochrane Library (John Wiley, issue of 12 2011)

Cochrane Reviews [35] | Other Reviews [3] | Clinical Trials [339] | Methods Studies [191] | Technology Assessments [3] | Economic Evaluations [0] | Cochrane Groups [0]

#1	(decision making):ti,ab,kw or (decision*):ti	4471
#2	(inform OR informed):ti,ab,kw or "evidence based practice":ti,ab,kw or "evidence based management":ti,ab,kw or (research):ti,ab,kw	44386
#3	"learning organization":ti,ab,kw or (information dissemination):ti,ab,kw or (knowledge):ti,ab,kw or (communication):ti,ab,kw or (barriers):ti,ab,kw	17260
#4	(uptake):ti,ab,kw or (diffusion):ti,ab,kw or	32478

(integrat*):ti,ab,kw or (implement*):ti,ab,kw or (capacity):ti,ab,kw

#5	(#1 AND #2 AND (#3 OR #4))	571

3. Centre for Reviews and Dissemination (CRD) databases (DARE, HTA, NHS EED)

(http://www.crd.york.ac.uk/crdweb/; searched 3 Nov 2011)

1	MeSH DESCRIPTOR Decision Making, Organizational EXPLODE ALL TREES	15
2	MeSH DESCRIPTOR Decision Making EXPLODE ALL TREES	223
3	"capacity building"	8
4	("learning organization")	1
5	MeSH DESCRIPTOR Information Dissemination EXPLODE ALL TREES	19
6	(knowledge):TI OR (communication):TI OR (barriers):TI OR (uptake):TI OR (integrat*):TI	322
7	#1 OR #2	238
8	#5 OR #6	339

9	#7 AND #8	5
10	#3 OR #4 OR #9	14
11	("evidence informed") OR ("research evidence") OR ("knowledge transfer")	215
12	#10 OR #11	228
13	* FROM 2000 TO 2011	38837
14	#12 AND #13	171

4. EMBASE (Ovid, 1980 to 2011 Week 43)

1	exp decision making/	110862
2	policy making.mp. or exp management/	552172
3	learning organization.mp.	128
4	1 or 2	651705
5	exp information dissemination/	9961
6	exp knowledge management/	418
7	barrier*.ti.	29033
8	uptake.ti.	53613
9	evidence informed.mp.	327

10	research evidence.mp.	2888
11	evidence based management.mp.	617
12	knowledge transfer.mp.	648
13	5 or 6 or 7 or 8 or 9 or 10 or 11 or 12	96954
14	4 and 13	3848
15	3 or 14	3974
16	limit 15 to (english language and yr="2000 - Current")	3290
17	(child or childhood or children or adolescent* or adolescence).ti.	598693
18	(immigrant* or migrant* or physical or family or women* or medicine or medical or health promotion or emergenc* or population).ti.	885129
19	(surgical or community or therap* or midwif*).ti.	851196
20	(patient* or physician* or clinical or nurs* or clinician*).ti.	2060046
21	17 or 18 or 19 or 20	4049085
22	16 not 21	2181
23	limit 22 to (human and english language and yr="2000 -Current")	1511

5. ProQuest Dissertations & Theses (searched 4 Nov 2011)

128 documents found for: ("decision making" OR decisionmaker* OR "evidence informed" OR "evidence based manage*" OR "evidence based practice" OR "learning organization" OR "learning organisation") AND ("knowledge trans*" OR "research use" OR "research utilization" OR "research utilisation" OR "research uptake" OR "evidence uptake") AND PDN(>1/1/2000) AND PDN(<12/31/2011)

6. Web of Science (Thomson Reuters; Science Citation Index Expanded (SCI-EXPANDED); Social Sciences Citation Index (SSCI); Arts & Humanities Citation Index (A&HCI); Conference Proceedings Citation Index- Science (CPCI-S); Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH); Book Citation Index– Science (BKCI-S); Book Citation Index– Social Sciences & Humanities (BKCI-SSH); searched 4 Nov 2011)

# 4 521 (#3) AND Language=(English)
Databases=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH Timespan=2000-2011
Lemmatization=On

–

# 3 551 #2 AND #1
Databases=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-

SSH, BKCI-S, BKCI-SSH Timespan=All Years

Lemmatization=On

–

2 5,537 Topic=("knowledge trans*") OR Topic=("research use") OR Topic=("research utilization") OR Topic=("research utilisation") OR Topic=("research uptake") OR Topic=("evidence uptake")

Databases=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH Timespan=All Years

Lemmatization=On

–

1 153,278 Topic=("decision making" OR decisionmaker* OR "decision maker*" OR decisionmaking) OR Topic=("evidence informed" OR "evidence based manage*" OR "evidence based practice") OR Topic=("learning organization" OR "learning organisation")

Databases=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH Timespan=All Years

Lemmatization=On

7. CINAHL (Nursing & Allied Health) (EBSCOHost; searched 8 Dec 2011)

S5	S1 and S2 and S3 Limiters - English Language; Published Date from: 20000101-20111231; Exclude MEDLINE records Search modes - Find all my search terms	513
S4	S1 and S2 and S3	1875
S3	TI implement* OR TI integrat* OR TI barrier* OR TI uptake OR TI facilitat* OR TI utiliz* OR TI research use OR TI using OR TI partner* OR TI gap* OR TI informed	106677
S2	evidence OR knowledge OR information dissemination OR learning organization	210511
S1	decision making OR policy making OR program development OR organizational policy OR (organization and administration)	98552

8. ABI Inform (ProQuest; searched 13 Dec 2011)

33 documents found for: (evidence-based practice) AND (decision making OR organizational behavior) AND PDN(>1/1/2000) AND PDN(<12/31/2011)

9. Library and Information Science Abstracts (LISA; searched 13 Dec 2011)

Search Query #4 TI=(evidence* or knowledge or information) and TI=(decision* or organization* or practice*) and health* 123 Published Works results found in LISA: Library and Information Science Abstracts (limit 2000-2012)

Additional sources (searched 8 Dec 2011 – 28 Feb 2012)

The Campbell Collaboration Library of Systematic Reviews http://www.campbellcollaboration.org/library.php – scanned list of titles of all reviews = 0 relevant references

KU-UC database http://kuuc.chair.ulaval.ca/english/index.php - scanned titles in category for Evidence-based decision making OR knowledge utilization = 469 references; 7 relevant non-duplicate references added to database

KT+ database http://plus.mcmaster.ca/kt/Default.aspx - searched keywords "decision*" and "evidence"; scanned results, references too clinical; nothing relevant identified:

Search Results	
Quality-Filtered	View 50 matches

Articles*:	
Original Studies Included in Quality Filtered Reviews†:	View 152 matches
Quality Improvement Studies from Pubmed‡:	**View 100 matches**

NYAM Grey literature collection http://www.nyam.org/library/online-resources/grey-literature-report/ - searched "decision making" = 150 hits, 4 possibly relevant; "decision" AND "evidence" = 59 hits, 1 possibly relevant

MEDLINE Author Search

"Lavis JN" [Author] 98

15 lavis j 124

14 "Lomas J" [Author] 124

13 Lomas J 167

12 "Oxman AD" [Author] 193

11 oxman ad 193

10 "Kovner AR" [Author 42

9 Kovner ar 42

8 "Rundall TG" [Author] 56

7 rundall tg 56

6 “Grimshaw JM” [Author]	132	
5 grimshaw jm		378
4 “Dobbins M” [Author]	40	
3 dobbins m	75	
2 “Ham C” [Author]	181	
1 ham c	202	

CHAPTER 2: BUILDING ORGANIZATIONAL CAPACITY FOR EVIDENCE USE: THE EXPERIENCE OF TWO CANADIAN HEALTH CARE ORGANIZATIONS

Introduction

All health systems face major challenges with decision-making within limited financial and human resources. One response has been a move towards using best available evidence to inform decision-making at various levels within health care organizations[1], in particular, to adopt evidence-informed program planning. Although this requires appropriate strategies for these organizations to move knowledge into action, there is little in the literature about the best ways to achieve this.[1,2,3] This paper describes the collective effort of two Canadian health care organizations and their university partner to support evidence-informed decision-making, and introduces readers to the innovative strategies developed and implemented through this collaboration to promote evidence-informed program planning, implementation and evaluation.

Background

The VALUE initiative was conceived in 2006 under the SEARCH Western Canada Strategy in partnership with the Regina Qu'Appelle Health Region (RQHR) and Northern Health (NH) to build organizational capacity for evidence-informed decision-making. VALUE is an acronym for Value Add through Learning and Use of Evidence. Executives from RQHR and NH came forward with both interest and funding to develop a formal initiative. The overarching goals of the initiative were to: add value through cross jurisdiction collaboration; bring research closer to practice

in health care; build relationships across academic and practice sectors; and facilitate development of and access to relevant research.

Purpose

The purpose of the VALUE initiative was to explore strategies for building organizational capacity to use evidence to inform program management decision-making.

Strategies

The initiative was developed collaboratively and designed to support regional staff in finding, interpreting and using evidence. This aligns with the concept of integrated knowledge translation which "involves engaging and integrating those who will need to act on the findings, the knowledge users, into the research process."[4] The VALUE team (regional executives, research and evaluation leaders, liaisons, academics and program staff) worked together at the pilot sites on projects of strategic priority for the regions to build capacity for evidence-informed decision making through collaboration, skill building and support.

The components of the initiative were designed as capacity building strategies to address common individual and organizational barriers to evidence use, including lack of: contact between researchers and decision-makers; relevant research; individual skills; and inter- and intra-

organizational sharing.[5, 6] These strategies were identified and developed jointly by the VALUE team based on research evidence,[1,7-13] and are described in Table 2-1.

Table 2-1: Strategies Developed and Implemented to Promote Evidence Use

Strategy to Promote Evidence Use	Description	Barriers to Evidence Use Addressed
Inter-regional collaboration	• Ongoing collaboration developing inter-regional partnerships to learn from each other;	• Lack of access to relevant evidence/information • Lack of time • Heavy workload • Program silos • Lack of formal inter-regional networks

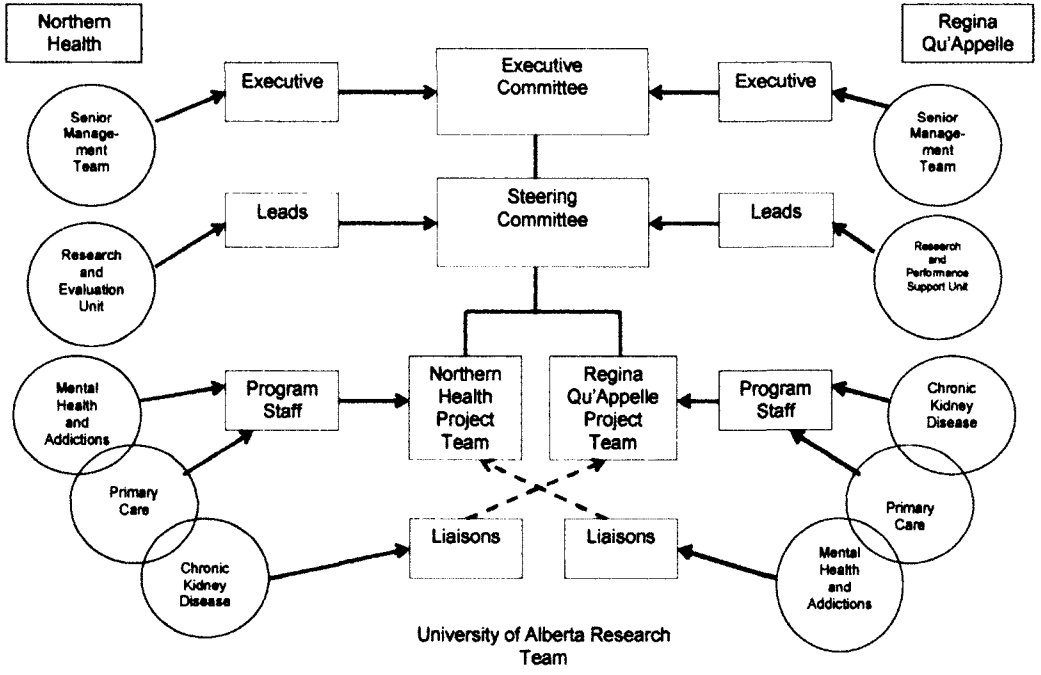
Strategy to Promote Evidence Use	Description	Barriers to Evidence Use Addressed
Learning projects	• Projects of strategic priority used as teaching cases to increase relevance of evidence, and promote generalizable skills; • Criteria for the learning projects collaboratively identified to ensure the projects would address strategic priorities for both health regions: 1. Rural health service delivery; 2. Access to care; and 3. Health services in a community setting. • Projects selected: 1. RQHR - Rural Early Chronic Kidney Disease Detection and Intervention Program (Rural CKD Program) and 2. NH- Mackenzie Mental Health and Addictions Collaborative Program (Mackenzie Program);	• Lack of access to relevant evidence/information • Lack of research literacy • Lack of research utilization skills • Lack of program planning skills • Lack of senior management support • Heavy workload • Lack of resources

Strategy to Promote Evidence Use	Description	Barriers to Evidence Use Addressed
Liaison roles	• Selection of program staff in each health region to make purposeful connections with program staff from the other health region to create trust, develop networks and share learnings between health regions;	• Lack of access to relevant evidence/information • Program silos • Lack of formal inter-regional networks
Research support	• Access to research expertise from an academic institution, creating training and coaching opportunities while involving decision-makers in the research process;	• Lack of research literacy • Lack of research utilization skills • Lack of program planning skills • Limited contact between researchers and decision-makers • Lack of research resources
Protected time for activities	• Creating space for organizational participants to explore and create evidence in context.	• Lack of senior management support • Heavy workload • Lack of resources • Lack of time

Project Organization and Structure

An **executive committee** consisting of executives (CEO (RQHR), Vice-Presidents (RQHR & NH)) from each region and the research lead was established to provide strategic guidance for the initiative. A **steering committee**, consisting of the leads from the research and evaluation units from each region along with the University of Alberta research team (UofA team), was established to collaboratively plan and manage the initiative. The sharing of progress and plans, as well as critical reflection at the steering committee level ensured that the regions could learn from each other's experiences throughout the initiative. Project teams, consisting of program staff (including program managers, project coordinators and front-line staff) representing each of the site-specific learning projects were formed in each region. Each of the participating regions also identified an individual to participate in a **liaison role** within the initiative. These liaisons were selected so as to match the learning project program area of the partner region. The liaison from the RQHR was from Mental Health and Addictions and the NH liaison was from Chronic Kidney Disease. Figure 2-1 provides an illustration of the program structure.

Figure 2-1. VALUE Initiative Project Organization and Structure



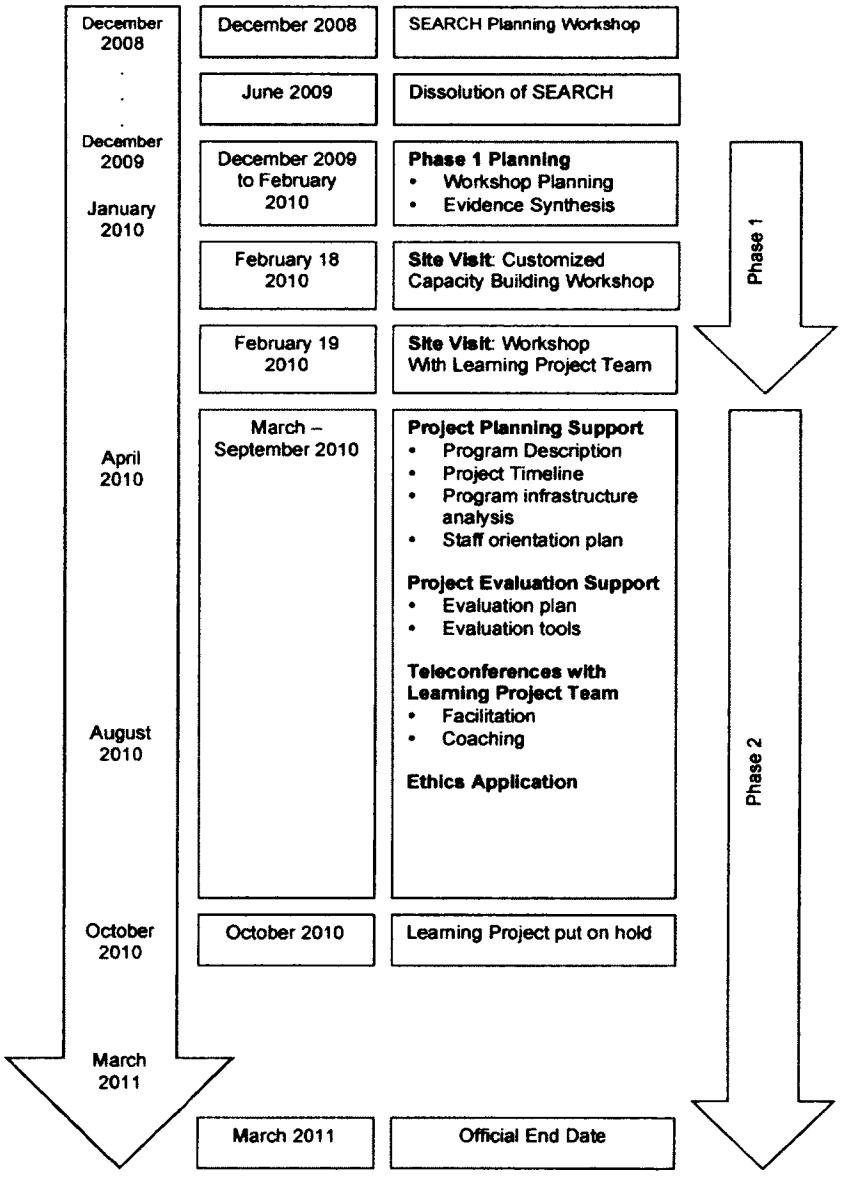
The initiative was divided into two distinct Phases. **Phase 1** involved the planning and delivery of customized capacity building workshops with program and other staff (program directors, managers and coordinators from other primary care program areas) at each site. **Phase 2** focused on support for planning and implementation of the regional learning projects. Throughout the initiative, the steering committee worked collaboratively with program staff to identify their learning and support needs and modified the strategies based on experience and feedback throughout the initiative. Despite the inherent differences between the two regions and their respective learning projects, similar needs were identified, which promoted the sharing of learning across the regions. The following summaries of the activities in each region highlight the similar capacity building needs identified in each region, which included skill building in evidence synthesis and program evaluation, as well as similar support and coaching requirements to apply concepts to the learning projects. For a complete stand alone case study summary of the activities in RQHR see Appendix 2-1. For a complete stand alone case study summary of the activities in NH see Appendix 2-2. A summary case study comparison of RQHR and NH can be found in Appendix 2-3.

ACTIVITY SUMMARY

Regina Qu'Appelle Health Region

The learning project selected in RQHR, the Rural CKD Program, was located an hour and a half east of Regina in the small rural town of Grenfell, Saskatchewan. The agricultural town has a population of 1000 people and is adjacent to the Sakimay First Nation. Chronic disease was a health services priority area in the rural Regina Qu'Appelle area, and the purpose of the Rural CKD Program was to address the need for improved screening, management and referral of patients with Chronic Kidney Disease. Implementation of the Program was planned for Fall 2010, so program staff required planning, implementation and evaluation support. Figure 2-2 provides a summary of the activities completed in RQHR.

Figure 2-2. Regina Qu'Appelle Learning Project Activity Summary



Phase 1

Activities in Phase 1 of the for the RQHR learning project included an evidence synthesis and a site visit, which included customized workshops on evidence use and program evaluation.

The evidence synthesis for the Rural CKD Program focused on kidney disease prevention within the broader context of chronic disease management. The evidence synthesis and site visit were intended as a first step in the VALUE initiative, and to provide an opportunity for staff to learn about using evidence in program planning, implementation and evaluation, using the learning project as a practical teaching case.

Phase 2

Phase 2 involved provision of ongoing support to the development and evaluation of the Rural CKD learning project by the UofA team. Teleconferences were held with the UofA team and the learning project team, which provided structured opportunities for coaching on program development and evaluation, as well as issue identification and management for the learning project.

Program Development Support

The UofA team helped the program staff identify opportunities to use evidence in planning the Rural CKD Program; and provided project-planning support to the learning project team to put into practice skills in

applying evidence in program planning. The program development activities provided staff with an opportunity to think critically and evaluatively about the components of the proposed program.

Evaluation Support

The UofA team also provided the learning project team with evaluation planning support which included developing evaluation plans and tools. The RQHR Research and Performance Support unit also provided expertise and resources which included assisting the learning project team in developing an ethics application for the evaluation of the learning project.

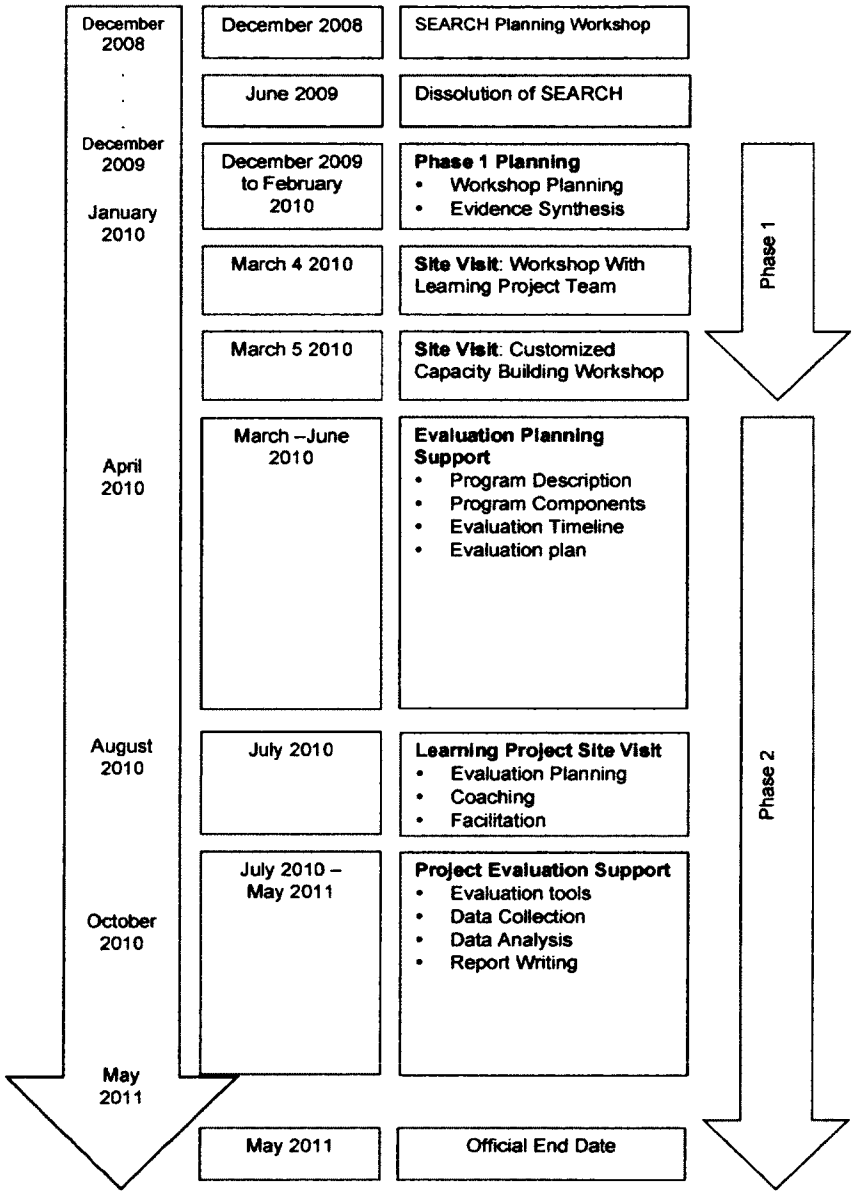
Unfortunately the RQHR learning project experienced delays in implementation as a result of staff changes. The project was put on hold in the fall of 2010, with the result that neither the learning project implementation nor evaluation activities were completed. Despite this, most of the learning objectives were accomplished.

Northern Health

The learning project selected in NH, the Mackenzie Program, was an initiative to integrate mental health and addictions services with primary care located two hours north of Prince George in the small northern town of Mackenzie, British Columbia. The forestry based economy town has a

population of approximately 4500 people and is adjacent to the McLeod Lake First Nation. The town experienced an economic downturn in 2008, when the pulp mills began to shut down, resulting in high unemployment, creating a mental health and addictions crisis in the community. The Mackenzie Program was implemented in July 2008 to improve mental health and addictions services through collaboration with primary care physicians. The focus of the learning project in NH was to identify the benefits and challenges experienced by the Mackenzie Program to inform program development in other rural areas of the health region. Figure 2-3 provides a summary of the activities completed in NH.

Figure 2-3. Northern Health Learning Project Activity Summary



Phase 1

Activities included in Phase 1 for the NH learning project were an evidence synthesis and a site visit, which included customized workshops on evidence use and program evaluation.

The evidence synthesis for the Mackenzie Program focused on the integration of mental health and primary care and identified a lack of evidence on impacts of particular models of mental health and primary care integration, highlighting the importance of local evaluation efforts for programs like the Mackenzie Program.

The steering committee worked collaboratively with program staff to plan customized workshops in NH. The workshops were opportunities for staff to learn to use evidence in program planning and evaluation, using the Mackenzie Program as an applied teaching case.

Phase 2

Phase 2 involved the ongoing support for the Mackenzie Program learning project by the UofA team. The UofA team made a second site visit to Mackenzie to meet with the learning project team. The objectives of the second site visit included building capacity for program evaluation through practical on-site support.

Ongoing support provided by the UofA team focused on evaluation planning for the Mackenzie Program, including crafting evaluation plans and tools. Resources from both the UofA team and the NH Research and Evaluation unit supported the Mackenzie Program in the evaluation development and implementation through data collection and analysis.

The Mackenzie Program experienced some delays in completing the learning project, but all learning project activities were completed by May 2011.

Lessons Learned

Through the VALUE initiative barriers to evidence use for program planning, implementation and evaluation were identified that were consistent with those well documented in the literature[5,6]; health care organizations would benefit from partnering to undertake future research on strategies to address known barriers to evidence use. The delays and staff turnover experienced during this initiative are reflective of the reality of working in health care and provided the opportunity to explore how strategies to promote evidence use in program planning can be applied in real-world settings. The impact of staff turnover could be mitigated through formal staff orientation to the initiative with clarity of roles. Through senior level organizational commitment and a focus on learning and development, the intended objectives were accomplished. While the

lessons learned from this initiative may not be directly generalizable to other health care organizations, the similar needs and experiences of the participating health regions suggests that other health care organizations would find the lessons learned useful. The initiative found that strategies intended to promote evidence use need to be directed at multiple levels within the organization, to enhance existing supports and address known barriers to evidence use. The strategies to promote evidence use trialed were valued by participants and would be recommended to organizations looking to promote evidence–informed program planning, implementation and evaluation. In particular, strategies that provide ongoing real time research expertise and support to program staff and create opportunities for program staff to apply learning through practical projects of strategic priority were highly valued.

Directions for Future Initiatives

Future research aimed at improving the success of such initiatives should include:

- A formal orientation for *all* staff involved in the initiative. The initiative had several restarts and delays that meant that there was staff turnover. There was an initial meeting in December 2008, but not all program staff were in attendance. A formal orientation for all

stakeholders as they are brought into the initiative would potentially increase the success of the initiative.

- Role clarity for all participants: Clearly defined roles and responsibilities, as well as the time commitment required for all participants would maximize learning opportunities.
- Meaningful involvement of program staff in the initial and overall planning of the initiative: The initial planning did not involve the program staff in the learning projects, which resulted in a lack of ownership at the program level.
- Involvement and communication across the organization: Participants requested more active involvement from participants at all organizational levels and in all roles.
- Active involvement of senior management with the learning projects, including regular reporting, assistance in trouble shooting and managing change.

LIMITATIONS

The VALUE initiative reflects the unique experience of two Canadian health care organizations, and as such, the learnings may not be generalizable to other settings. Working within the complex environment of health care organizations challenges were expected. Changes in priorities and staff turn over are two limitations this initiative experienced.

Next Steps

The VALUE initiative was an inter-regional collaborative effort to promote evidence use at the program level. The strategies developed by the partners included real time, in context, applied learning opportunities for organizational decision-makers. In order to maximize learning about strategies to build capacity for evidence use in health care organizations, the initiative partners collaborated to design and implement a research project to learn from the overall initiative. The research was designed to explore how program management decisions are made and translated into actions in health care organizations; and to explore the extent to which the initiative has been helpful to the regions. The research project was completed in January 2012. Dissemination planning, to share the learnings, is underway. Lessons learned from the VALUE initiative will contribute to the understanding of how health care organizations can promote evidence-informed decision-making at the program level.

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References

1. Best A., Terpstra JL, Moor G, Riley B, Norman CD, Glasgow RE. Building knowledge integration systems for evidence-informed decisions. *Journal of Organization and Management.* 2009; 23(6): 627-641.

1. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation Science.* 2009; 4:50.

3. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Q.* 2004; *82*(4): 581-629.

4. Parry D, Salsberg J, Macaulay AC. CIHR: A Guide to Researcher and Knowledge-User Collaboration in Health Research. Available at http://www.learning.cihr-irsc.gc.ca/course/view.php?id=3_. Accessed November 2009.

5. Innvaer S, Vist G, Trommald M, Oxman A. Health policy-makers' perceptions of their use of evidence: a systematic review. *J Health Serv Res Policy.* 2002; 7(4): 239-244h.

6. Orton L, Lloyd-Williams F, Taylor-Robinson D, O'Flaherty M, Capewell S. The use of research evidence in public health decision making processes: systematic review. *PLoS One*. 2011; 6(7): e21704.

1. Bhattacharyya OK, Estey EA, Zwarenstein M. Methodologies to evaluate the effectiveness of knowledge translation interventions: A primer for researchers and health care managers. *J Clin Epidemiol.* 2011; *64*(1): 32-40.

2. Bowen S, Erickson T, Martens PJ, Crockett S. More than "using research": The real challenges in promoting evidence-informed decision-making. *Healthcare Policy.* 2009; 4(3): 87-102.

3. Graham ID, Logan J, Harrison MB, Straus SE, Tetroe J, Caswell W, et al. Lost in knowledge translation: Time for a map? *J Contin Educ Health Prof.* 2006; *26*(1): 13-24.

10. Mitton C, Adair CE, McKenzie E, Patten SB, Waye Perry B. Knowledge transfer and exchange: Review and synthesis of the literature. *Milbank Q.* 2007; *85*(4): 729-768.

11. Preskill H, Torres RT. Building capacity for organizational learning through evaluative inquiry. *Evaluation.* 1999; 5:42-60.

12. Scott C, Seidel J, Bowen S, Gall N. Integrated health systems and integrated knowledge: Creating space for putting knowledge into action. *Healthc Q.* 2009; *13*(Spec No): 30-36.

13. Straus SE, Tetroe J, Graham I. Defining knowledge translation. *CMAJ.* 2009; *181*(3-4): 165-168.

APPENDIX 2-1: REGINA QU'APPELLE HEALTH REGION CASE STUDY SUMMARY

Case Study Context

The VALUE initiative was conceived in 2006 under the SEARCH Western Canada Strategy in partnership with the Regina Qu'Appelle Health Region (RQHR) and Northern Health (NH) to build organizational capacity for evidence-informed decision-making. VALUE is an acronym for Value Add through Learning and Use of Evidence. Executives from RQHR and NH came forward with both interest and funding to develop a formal initiative. The overarching goals of the initiative were to: add value through cross jurisdiction collaboration; bring research closer to practice in health care; build relationships across academic and practice sectors; and facilitate development of and access to relevant research. The purpose of the VALUE initiative was to explore strategies for building organizational capacity to use evidence to inform program management decision-making. The initiative was divided into two distinct Phases. Phase 1 involved the planning, delivery and evaluation of customized capacity building workshops with program and other staff (program directors, managers and coordinators from other primary care program areas) at each site. Phase 2 focused on support for planning and implementation of the regional learning projects. Throughout the initiative, the VALUE initiative steering committee worked collaboratively with program staff to identify their learning and support needs.

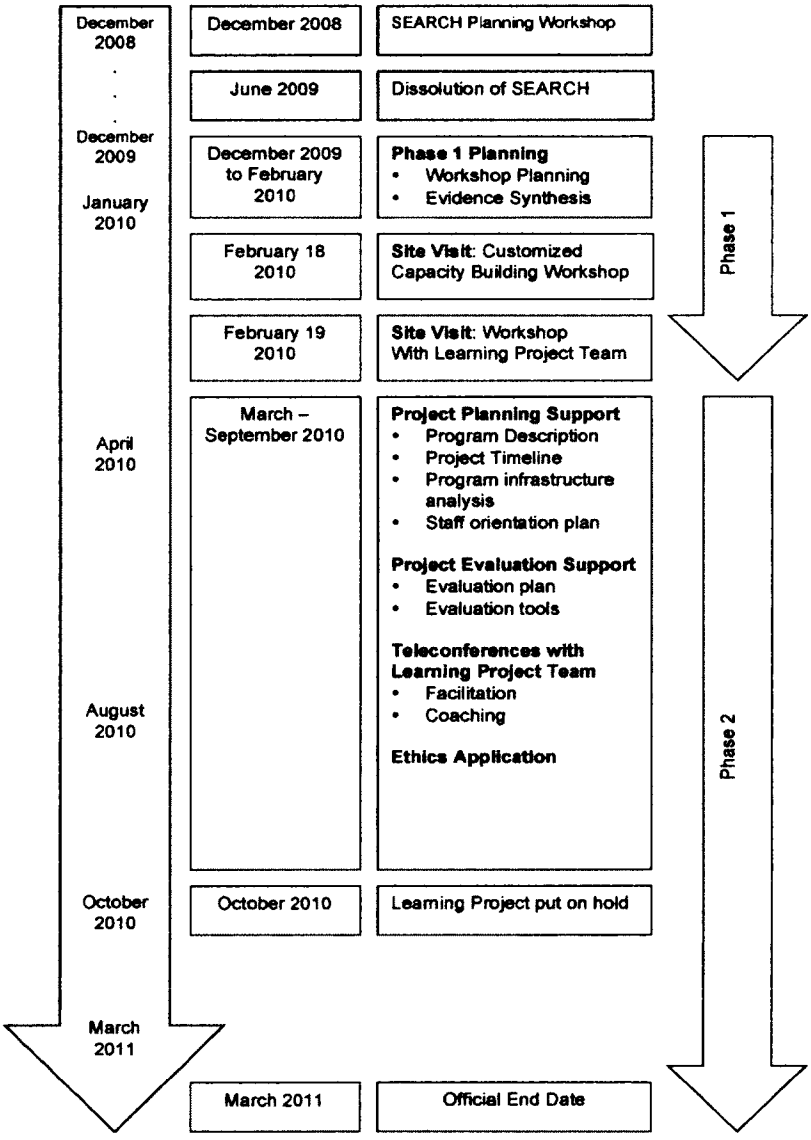
Learning project teams, consisting of program staff (including program managers, project coordinators and front-line staff) representing the site-specific learning project were formed in each region. Each of the participating regions also identified an individual to participate in a liaison role within the initiative. These liaisons were selected so as to match the learning project program area of the partner region. The liaison from the RQHR was from Mental Health and Addictions and the NH liaison was from Chronic Kidney Disease.

Activity Summary

The learning project selected in RQHR, a Rural Early Chronic Kidney Disease Detection and Intervention Program (Rural CKD Program), was located an hour and a half east of Regina in the small rural town of Grenfell, Saskatchewan. The agricultural town has a population of 1000 people and is adjacent to the Sakimay First Nation. Chronic disease was a health services priority area in the rural Regina Qu'Appelle area, and the purpose of the Rural CKD Program was to address the need for improved screening, management and referral of patients with Chronic Kidney Disease. Implementation of the Program was planned for Fall 2010, so program staff required planning, implementation and evaluation support.

The following diagram summarizes visually the activities completed in Regina Qu'Appelle:

Figure 2-4. Regina Qu'Appelle Learning Project Activity Summary



Phase 1

Activities included in Phase 1 of the VALUE initiative for the RQHR learning project were an evidence synthesis and a site visit in February of 2010, which included customized workshops on evidence use and program evaluation.

The workshops were intended as a first step in the VALUE initiative, and to provide an opportunity for staff to learn about using evidence in program planning, implementation and evaluation. To help ensure that the workshops would have the most value for participants, staff of the learning project collaborated with steering committee members in developing workshop objectives and agendas. Potential workshop participants were identified and invited by the region. A pre-workshop survey was sent to each of the workshop participants to help the workshop facilitators best meet the needs and expectations of the participants (See Appendix 2-1-1). A full-day workshop was held in Grenfell (February 18, 2010) with broad participation, along with a half-day workshop in Regina with the learning project team, focusing specifically on the learning project with the following objectives:

1. To illustrate appropriate use of evidence throughout the cycle of planning, implementation and evaluation of primary care services;

2. To synthesize the research and other evidence related to chronic disease prevention and management in general, and kidney disease prevention/early intervention in particular, within the context of planning, implementing and evaluating kidney disease prevention/intervention initiatives in RQHR;
3. To identify principles of effective interventions in kidney disease prevention/early intervention applicable in this context;
4. To explore evaluation approaches, principles, concepts and practice; and
5. To apply these concepts to a strategy for evaluating the early Chronic Kidney Disease intervention.

The full-day workshop included 20 attendees from both rural and urban programs in primary care, renal, community care, home care, health promotion, and emergency medical services. The two VALUE liaisons and the Regina Qu'Appelle VALUE lead also attended, in addition to a representative from another health region on Saskatchewan. The workshop was facilitated by the research lead from the University of Alberta.

Presented at the workshop were results of an evidence synthesis undertaken by the research team for the Rural CKD Program. This included a review of the literature on chronic kidney disease as well as

chronic disease management in general. This synthesis activity explored other model programs for early chronic kidney disease interventions as well as evidence supporting the proposed program model for the Grenfell Rural CKD Program. The workshop agenda can be found in Appendix 2-1-2.

The following objectives were identified for the half-day workshop (February 19, 2010), which took place in Regina, Saskatchewan with the learning project team:

1. To identify any areas where the proposed Rural CKD Program plan would need to be revised or elaborated based on previous day's discussion;
2. To draft an initial evaluation plan for the Rural CKD Program;
3. To finalize an action plan for moving the Rural CKD Program forward; and
4. To confirm follow up capacity-building activities useful to the region.

The workshop included 7 attendees from rural and urban programs in primary care, renal, and community care. The two VALUE liaisons and the Regina Qu'Appelle VALUE lead also attended in addition to a representative from another health region (Sun Country) in Saskatchewan. The workshop was facilitated by the research lead from

the University of Alberta. The workshop agenda can be found in Appendix 2-1-3.

Phase 2

Phase 2 involved provision of ongoing support to the development and evaluation of the Rural CKD learning project by the University of Alberta research team. Between June and September 2010, teleconferences were held with the University of Alberta research team and the Rural CKD learning project team. The teleconferences provided structured opportunities for coaching on program development and evaluation, as well as issue identification and management for the learning project.

Program Development Support

The University of Alberta research team helped the program staff identify opportunities to use evidence in planning the Rural CKD Program; and provided project planning support by assisting in the development of a program description for the proposed Rural CKD Program. This process of developing a formal program description also provided an opportunity to put into practice skills in applying evidence in program planning. The research team also (1) facilitated development of a timeline for Rural CKD Program planning, implementation and ongoing evaluation; (2) worked with the learning project team to critically appraise the proposed information system being implemented for the program; and (3) facilitated the development of a staff orientation plan for the proposed Rural CKD

Program. These activities provided the learning project team with an opportunity to think critically and evaluatively about the components of the proposed program.

Evaluation Support

The University of Alberta research team also provided the learning project team with evaluation planning support: (1) providing a template for evaluation plan development; (2) facilitating the development of an implementation evaluation plan for the Rural CKD Program; and (3) assisting in developing evaluation questions, evaluation approaches, evaluation methods, tools and an evaluation timeline to accompany their program plan.

Tools developed included: (1) a draft patient assessment guide; (2) a pre-implementation staff interview guide; (3) a patient chart data collection sheet; and (4) an interview guide to explore the experience of the Weyburn Rural CKD Program implementation (the program upon which the Grenfell Rural CKD Program was based).

The RQHR Research and Performance Support unit also provided expertise and resources; assisting the learning project team in developing an ethics application for the evaluation of the Rural CKD Program, and providing resources to conduct the interview with the Weyburn Rural CKD program staff.

The RQHR learning project experienced delays in implementation as a result of staff changes. The project was put on hold in the fall of 2010, with the result that neither implementation nor evaluation activities were completed.

APPENDIX 2-1-1: REGINA QU'APPELLE HEALTH REGION PRE-WORKSHOP SURVEY

Please use your mouse to click on the square shaded boxes to select your response. Use your mouse to click on the rectangular shaded boxes to type text. The shaded area will expand to accommodate as much text as you need to answer the questions.

1. Which of the following best describes your role(s) within the Region? (Please check all that apply)

- ☐ Direct Patient Care
- ☐ Program Manager
- ☐ Research
- ☐ Executive
- ☐ Other (Please Describe)

2. Which of the following best describes your Program Area(s)? (Please check all that apply)

- ☐ Renal
- ☐ Primary Care
- ☐ Other (Please Describe)
- ☐ Other (Please Describe)

3. What are you hoping to learn by participating in the workshop...

...about evaluating programs?

...about using evidence in program planning?

...about anything else?

4. How often do you make the following types of decisions?

	Daily	Weekly	Monthly	Yearly	Never
I make patient care decisions...	☐	☐	☐	☐	☐
I make program planning decisions...	☐	☐	☐	☐	☐
I set program or service priorities...	☐	☐	☐	☐	☐
I participate in policy development...	☐	☐	☐	☐	☐

5. What are the most common sources of evidence you use...(Please answer only those that apply)

...when making clinical patient care decisions?

...when making program planning decisions?

...when setting program or service priorities?

...when developing policy?

6. What factors make it difficult for you to use evidence...(Please answer only those that apply)

...when making clinical patient care decisions?

...when making program planning decisions?

.....when setting program or service priorities?

...when developing policy?

7. What experience have you had in evaluation (Please check all that apply)

- ☐ None
- ☐ I have participated in evaluations
- ☐ I have been on a committee supervising an evaluation
- ☐ I have planned, designed and/or conducted an evaluation
- ☐ Other (Please Describe)

8. Please indicate your level of agreement with the following statements describing views on research, evidence and evaluation:

(5=Strongly Agree, 4=Agree, 3=Neither Agree nor Disagree, 1=Strongly Disagree)

	5	4	3	2	1	Don't Know
8.1 Research is the only evidence that should be used in planning	☐	☐	☐	☐	☐	☐
8.2 Clinical Trials are always the best form of research	☐	☐	☐	☐	☐	☐
8.3Research findings are difficult to apply to actual program or practice decisions	☐	☐	☐	☐	☐	☐
8.4 It is easy to identify sources of evidence for program planning	☐	☐	☐	☐	☐	☐
8.5 The purpose of evaluation is to determine if a program should continue	☐	☐	☐	☐	☐	☐
8.6 Evaluation should be used in the Health Region to improve a program	☐	☐	☐	☐	☐	☐
8.7 Evaluations only measure outcomes	☐	☐	☐	☐	☐	☐
8.8 Evaluations should be planned once a program is running well	☐	☐	☐	☐	☐	☐

Thank you for completing this survey

APPENDIX 2-1-2: REGINA QU'APPELLE HEALTH REGION WORKSHOP AGENDA

RQHR Workshop
Thursday February 18, 2010 - 9:00 am to 4:00 pm
Multipurpose Room, Grenfell Health Center

Objectives:

1. To illustrate appropriate use of evidence throughout the cycle of planning, implementation and evaluation of primary care services
2. To synthesize the research and other evidence related to chronic disease prevention and management in general, and kidney disease prevention/early intervention in particular, within the context of planning and evaluating kidney disease prevention/intervention initiatives in RQHR
3. To identify principles of effective intervention in kidney disease prevention/early intervention applicable in this context
4. To explore evaluation approaches, principles and concepts and practice
5. To apply these concepts in to a strategy for evaluating the early Chronic Kidney Disease interventions

A.M. Focus – Evidence for Program Development and Implementation

Item	Time
1. Welcome and Introductions a. Background ; Objectives and outline for day b. Introduction of individuals	9:00 am
2. Overview: Evidence informed planning, implementation and evaluation a. What is evidence, what evidence is appropriate for planning?	9:20 am
3. What do we know works – summary of evidence on CD prevention and management a. Research evidence presentation b. Applying these principles to CKD c. Questions/discussion	9:35 am

BREAK	10:35 am
4. How do we apply this evidence in developing a early CKD interventions? a. Brief history of CKD planning in Rural Regina Qu'Appelle b. Overview of Sun Country Initiative c. Facilitated discussion: i. What principles highlighted in the research evidence are reflected in this initiative? ii. What changes and additions might be suggested? iii. What contextual factors might need to be considered for the Rural Regina/Qu'Appelle region? d. What other evidence do we need to move forward?	10:50 am 11:10 am 11:50 am
LUNCH BREAK	12:00 pm

P.M Focus: Using Evaluation to Support Planning and Development

Item	Time
5. Summary and overview of afternoon	12:45 pm
6. Overview – What is evaluation? Facilitated Presentation a. Purposes of evaluation, approaches to evaluation, focusing an evaluation b. Benefits of a 'utilization-focused approach' c. Matching evaluation to situation	12:55 pm
BREAK	2:05 pm
7. From principles to action: the example of CKD a. Determining our purpose, approach and current focus b. What are the overall questions we want answered? c. Introduction of a planning template	2:20 pm
8. Summary and Next Steps a. Suggestions for Action Plan for continuing the work developed today b. Resources needed to proceed	3:20 pm
9. Workshop Evaluation	3:40 pm

APPENDIX 2-1-3: REGINA QU'APPELLE HEALTH REGION WORKSHOP AGENDA

RQHR Workshop
Friday February 19, 2010 - 9:00 am to 12:00 pm
Kidney Health Clinic-Conference Room - 235 Albert St N., Regina

Objectives:

1. To identify any areas where the proposed early CKD intervention plan would need to be revised or elaborated based on previous day's discussion
2. To draft an initial evaluation plan for the initiative
3. To finalize an action plan for moving the initiative forward
4. To confirm follow up capacity building activities useful to the region.

Item	Time
1. Debrief on previous day a. Share evaluation results b. Discussion about strengths, weaknesses, insights **2. Review of Suggestions for CKD planning** a. Review of suggestions of changes/enhancements from previous day b. Implications for planning **3. Developing a plan for going forward** **a.** Taking stock: Confirmation of task for day **i.** CKD plan	9:00 am
BREAK	10:15 am

4. Developing a plan for going forward: Continued a. CKD plan b. Evaluation needs and planning	10:30 am
5. Next Steps a. Additional resources needed b. Potential of additional capacity building activities	11:30 am
6. Evaluation	

APPENDIX 2-2: NORTHERN HEALTH CASE STUDY SUMMARY

Case Study Context

The VALUE initiative was conceived in 2006 under the SEARCH Western Canada Strategy in partnership with the Regina Qu'Appelle Health Region (RQHR) and Northern Health (NH) to build organizational capacity for evidence-informed decision-making. VALUE is an acronym for Value Add through Learning and Use of Evidence. Executives from RQHR and NH came forward with both interest and funding to develop a formal initiative. The overarching goals of the initiative were to: add value through cross jurisdiction collaboration; bring research closer to practice in health care; build relationships across academic and practice sectors; and facilitate development of and access to relevant research. The purpose of the VALUE initiative was to explore strategies for building organizational capacity to use evidence to inform program management decision-making. The initiative was divided into two distinct Phases. Phase 1 involved the planning, delivery and evaluation of customized capacity building workshops with program and other staff (program directors, managers and coordinators from other primary care program areas) at each site. Phase 2 focused on support for planning and implementation of the regional learning projects. Throughout the initiative, the VALUE initiative steering committee worked collaboratively with program staff to identify their learning and support needs.

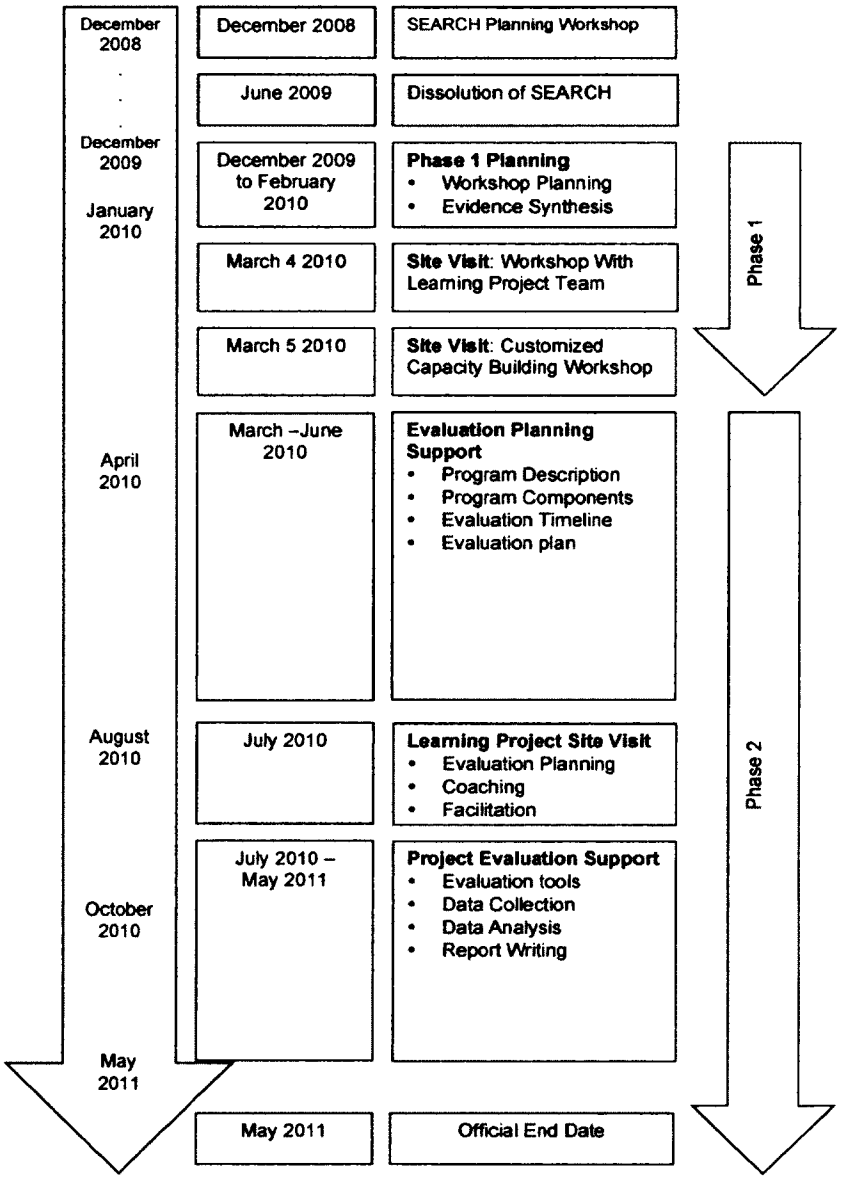
Learning project teams, consisting of program staff (including program managers, project coordinators and front-line staff) representing the site-specific learning project were formed in each region. Each of the participating regions also identified an individual to participate in a liaison role within the initiative. These liaisons were selected so as to match the learning project program area of the partner region. The liaison from the RQHR was from Mental Health and Addictions and the NH liaison was from Chronic Kidney Disease.

Activity Summary

The learning project selected in NH, the Mackenzie Mental Health and Addictions Collaborative Program (Mackenzie Program), was an initiative to integrate mental health and addictions services with primary care located two hours north of Prince George in the small northern town of Mackenzie, British Columbia. The forestry based economy town has a population of approximately 4500 people and is adjacent to the McLeod Lake First Nation. The town experienced an economic downturn in 2008, when the pulp mills began to shut down, resulting in high unemployment, creating a mental health and addictions crisis in the community. The Mackenzie Program was implemented in July 2008 to improve mental health and addictions services through collaboration with primary care physicians. The focus of the learning project in NH was to identify the successes and challenges experienced by the Mackenzie Program to inform program development in other rural areas of the health region.

The following diagram summarizes visually the activities completed in Northern Health:

Figure 2-5. Northern Health Learning Project Activity Summary



Phase 1

Activities included in Phase 1 for the Northern Health learning project were an evidence synthesis and a site visit in March of 2010, which included customized workshops on evidence use and program evaluation.

The evidence synthesis for the Mackenzie Program focused on the integration of mental health and primary care and identified a lack of evidence on impacts of particular models of mental health and primary care integration, highlighting the importance of local evaluation efforts for programs like the Mackenzie Program.

The steering committee worked collaboratively to plan customized workshops for program staff in Northern Health. The workshops were intended to be an opportunity for staff to learn about using evidence in program planning and evaluation. To help ensure that the workshops would have the most value for participants, learning project staff collaborated with the steering committee members in developing workshop objectives and agendas. Potential workshop participants were identified and invited by the region. A pre-workshop survey was also sent to each of the workshop participants to help the workshop facilitators best meet the needs and expectations of the participants (See Appendix 2-2-1). A half-day workshop with the identified learning project team,

focusing specifically on the learning project was planned, along with a full-day workshop with broader regional participation.

The overarching objective of the half-day workshop (March 4, 2010), which took place in Prince George, British Columbia with the Mackenzie Program team, was to begin to build a VALUE/Northern Health facilitation team that could jointly facilitate the full-day workshop. The half-day workshop, which included participants from primary care, mental health and addictions and the Mackenzie clinical team, focused on building consensus on the objectives and content of the materials for the full-day workshop.

The session was organized to ensure participants had an understanding of the VALUE initiative and its objectives; to orient participants to work completed to date; and to integrate contextual information and provider expertise into the evidence summary prepared for the full-day workshop. The working session promoted shared ownership of the final agenda while identifying key issues for future planning. The workshop agenda can be found in Appendix 2-2-2.

The primary care physicians and the site administrator from Mackenzie were not able to attend as originally planned due to a health service provider shortage in the community at the time of the workshop. The two

liaisons, the Northern Health VALUE lead and executive sponsor also attended. The workshop was facilitated by the research lead from the University of Alberta.

A full-day workshop followed (March 5, 2010) and included 19 attendees from programs in primary care, mental health, home and community care, planning quality and information management, research and evaluation, and executive. The liaison from Regina Qu'Appelle, the VALUE lead from Northern Health and the executive sponsor also attended. The workshop agenda can be found in Appendix 2-2-3.

The following objectives were identified for the full-day workshop:

1. To illustrate appropriate use of evidence throughout the cycle of planning, implementation and evaluation of primary care services;
2. To synthesize current research on integration of mental health/addictions with primary care, within the context of Northern Health;
3. To support and build regional capacity around:
    i. evaluation approaches and potential, and
    ii. principles of effective knowledge translation; and

4. To collaboratively develop an evaluation strategy to facilitate appropriate transfer of learning from the Mackenzie Program across the region.

Phase 2

Phase 2 involved the ongoing support for the evaluation of the Mackenzie Program learning project by the University of Alberta research team. The research team made a second site visit to Mackenzie in July 2010 to meet with the learning project team. The site visit agenda can be found in Appendix 2-2-4. The objectives of the second site visit were to:

1. Update the team on planned regional changes and discuss implications for programming and evaluation;
2. Ensure local staff and community input into the evaluation plan;
3. Draft an evaluation plan including: focus, evaluation questions, methods, responsibility areas and resources;
4. Identify tools and resources needed to complete the evaluation;
5. Establish the evaluation timeline and responsibilities for next steps; and
6. Begin data collection for the evaluation of the Mackenzie Program.

Ongoing support provided by the University of Alberta research team focused on providing evaluation planning support for the Mackenzie Program including:

- Provision of coaching to the learning project team on developing a program description and detailed model of the Mackenzie Program components.
- Facilitation of the development of evaluation questions, evaluation approach and methods, as well as an evaluation plan for the Mackenzie Program.
- Development of an evaluation timeline and a detailed evaluation activity plan, which included documenting the evaluation purpose, participants, methods, timelines, tools, responsibilities, and resource requirements for the evaluation.
- Development of evaluation tools for the evaluation of the Mackenzie Program (an executive pre-evaluation interview guide, a key stakeholder interview guide, a health centre focus group guide, a health centre staff survey, a community services consultation guide, a patient and family focus group guide and a database query request).

Resources from both the University of Alberta research team and the Northern Health Research and Evaluation unit supported the Mackenzie Program in the evaluation development and implementation.

The University of Alberta research team: (1) drafted an executive pre-evaluation interview guide; (2) drafted a key stakeholder interview guide; (3) conducted key stakeholder interviews; (4) facilitated the development of the community services consultation guide; (5) drafted the patient and family focus group guides; (6) drafted the health centre staff survey; (7) drafted database query requests; and (8) collaborated on the data analysis and evaluation report writing.

The Northern Health Research and Evaluation unit took responsibility for the regional coordination of activities and communication related to the Mackenzie Program learning project, as well as: (1) conducted the executive pre-evaluation interviews; (2) conducted the community services consultation; (3) conducted the patient and family focus group; (4) managed the staff survey; (5) provided advice on ethics approval requirements; (6) facilitated access to the regional database for statistical analysis of the Mackenzie Program data; and (7) collaborated on the data analysis and evaluation report writing.

The Mackenzie Program experienced some delays in completing the learning project, but all learning project activities were completed by May 2011.

APPENDIX 2-2-1: NORTHERN HEALTH PRE-WORKSHOP SURVEY

Please use your mouse to click on the square shaded boxes to select your response. Use your mouse to click on the rectangular shaded boxes to type text. The shaded area will expand to accommodate as much text as you need to answer the questions.

1. Which of the following best describes your role(s) within the Region? (Please check all that apply)
   - ☐ Direct Patient Care
   - ☐ Program Manager
   - ☐ Research
   - ☐ Executive
   - ☐ Other (Please Describe)

2. Which of the following best describes your Program Area(s)? (Please check all that apply)
   - ☐ Mental Health and/or Addictions
   - ☐ Primary Care
   - ☐ Other (Please Describe)
   - ☐ Other (Please Describe)

3. What are you hoping to learn by participating in the workshop...
    a. ...about evaluating programs?

    b. ...about using evidence in program planning?

    c. ...about anything else?

4. How often do you make the following types of decisions?

	Daily	Weekly	Monthly	Yearly	Never
a. I make patient care decisions...	☐	☐	☐	☐	☐
b. I make program planning decisions...	☐	☐	☐	☐	☐
c. I set program or service priorities...	☐	☐	☐	☐	☐
d. I participate in policy development...	☐	☐	☐	☐	☐

5. What are the most common sources of evidence you use...(Please answer only those that apply)
    a. ...when making clinical patient care decisions?

    b. ...when making program planning decisions?

    c. ...when setting program or service priorities?

    d. ...when developing policy?

6. only those that apply)
    a. ...when making clinical patient care decisions?

    b. ...when making program planning decisions?

    c. .....when setting program or service priorities?

    d. ...when developing policy?

7. What experience have you had in evaluation (Please check all that apply)

    ☐ None

    ☐ I have participated in evaluations

    ☐ I have been on a committee supervising an evaluation

    ☐ I have planned, designed and/or conducted an evaluation

    ☐ Other (Please Describe)

8. Please indicate your level of agreement with the following statements describing views on research, evidence and evaluation:
(5=Strongly Agree, 4=Agree, 3=Neither Agree nor Disagree, 1=Strongly Disagree)

	5	4	3	2	1	Don't Know
a. Research is the only evidence that should be used in planning	☐	☐	☐	☐	☐	☐
b. Clinical Trials are always the best form of research	☐	☐	☐	☐	☐	☐
c. Research findings are difficult to apply to actual program or practice decisions	☐	☐	☐	☐	☐	☐
d. It is easy to identify sources of evidence for program planning	☐	☐	☐	☐	☐	☐
e. The purpose of evaluation is to determine if a program should continue	☐	☐	☐	☐	☐	☐
f. Evaluation should be used in the Health Region to improve a program	☐	☐	☐	☐	☐	☐
g. Evaluations only measure outcomes	☐	☐	☐	☐	☐	☐
h. Evaluations should be planned once a program is running well	☐	☐	☐	☐	☐	☐

Thank you for completing this survey

APPENDIX 2-2-2: NORTHERN HEALTH WORKSHOP AGENDA

Northern Health Workshop Agenda
Thursday March 4, 2010 1:00 pm – 4:30 pm
Fraser Room, Suite 700-299 Victoria Street

Item	Time
1. Introductions, Expectations Exercise a. E.g. Hopes and Fears b. Agenda review ***Purpose:*** *To begin to build a VALUE/NH facilitation team* *To develop consensus on objectives for the working session and workshop* *To identify key contextual issues/sensitivities that may affect workshop success*	1:00 pm
2. Overview of Proposed Workshop d. Walkthrough of Evidence Summary e. RQHR summary and reflection ***Purpose:*** *To ensure participants have an understanding of the VALUE project and its objectives* *To orient participants to work completed to date.*	1:30 pm
3. Expanding the Evidence Summary a. Facilitated discussion of evidence related to MH/PC Integration in NH context b. Adaptation of Evidence Presentation c. Other implications for workshop ***Purpose:*** *To integrate contextual information and provider expertise into the evidence summary* *To ensure Evidence Summary appropriate for audience*	2:00 pm

	Break at **2:30**
4. Finalizing the Workshop a. Identification of suggested changes b. Development of consensus on final agenda c. Clarifying roles for Workshop ***Purpose:*** *To review and revise agenda in light of NH input* *To promote shared ownership of the final agenda*	3:15 pm
5. Wrap up a. Assessment of planning session b. Thinking ahead – next steps ***Purpose:*** *To assess participant satisfaction with the planning* *session and confidence going forward* *To identify key issues for future planning.*	4:00 pm

APPENDIX 2-2-3: NORTHERN HEALTH WORKSHOP AGENDA

Northern Health Workshop Agenda
Friday March 5, 2010 9:00 am – 3:30 pm
Prince George Civic Centre, Room 204-5

Objectives:

1. To illustrate appropriate use of evidence throughout the cycle of planning, implementation and evaluation of primary care services
2. To synthesize current research on integration of mental health/addictions with primary care, within the context of Northern Health
3. To support and build regional capacity around:
   a. evaluation approaches and potential, and
   b. principles of effective knowledge translation
4. To collaboratively develop an evaluation strategy that will facilitate appropriate transfer of learning from the Mackenzie project across the region

Morning Focus – Evidence for Program Development and Implementation

Item	Time
1. Welcome and Introduction	9:00 am
2. Overview: Evidence informed planning, implementation and evaluation	9:30 am
3. What do we know works – summary of research evidence on Mental Health/Primary Care integration	9:50 am
BREAK	10:30 am

4. Group discussion activity – what are implications of these findings for Northern Health? a. Purpose: integration of research within Northern Health context, using Mackenzie as an example	10:45 am
5. **Evaluation overview - presentation**	11:30 am
LUNCH BREAK	12:15 pm

Afternoon Focus – Evaluation and Knowledge Translation

Item	Time
6. Applying Principles to Northern Health a. The Mackenzie example	1:00 pm
7. **From principles to action: Developing a (collaborative) utilization focused evaluation**	
BREAK	2:30 pm
8. From Utilization Focused Evaluation to Knowledge Translation	2:45 pm
9. **Summary, Next Steps and Evaluation**	3:15 pm

APPENDIX 2-2-4: NORTHERN HEALTH SITE VISIT AGENDA

Mackenzie Site Visit – Evaluation Planning Meeting
Monday July 19, 2010
12:30pm - 4:30pm

Objectives of Site Visit:

1. Update team on planned regional changes and discuss implications for programming and evaluation
2. Ensure local staff and community input into evaluation plan
3. Draft evaluation plan including: Focus, Evaluation Questions, Methods, Responsibility Areas and Resources
4. Identify tools and resources needed to complete the evaluation
5. Establish evaluation timeline and responsibilities for next steps
6. Begin data collection

Item	Time
1. Welcome and Introduction 2. Purpose of the Day 3. Summary of Journey to Date 4. Review of Evaluation Questions – High Level 5. Discussion of Regional Changes a. Summary of changes to date b. Reflections on changes and implications c. Identify affected and interested parties	12:30 pm
BREAK	2:00 pm
6. Review Evaluation Questions - Detailed a. Identify sub-questions 7. Plan Evaluation Methods	
BREAK	3:30 pm
8. Identify Data Sources and Required Tools 9. Assign Resources and Responsibilities 10. Next Steps – Planning for Priority Activities for Tuesday Morning	

APPENDIX 2-3: CASE STUDY COMPARISON

Table 2-2 Case Study Comparison

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
A	Organization Type	Regional Health Authority	Regional Health Authority
B	Location	Saskatchewan, Canada	British Columbia, Canada
C	Service Area	Southern Saskatchewan (26,663 square kilometers)	Northern British Columbia (600,000 square kilometers)
D	Population Served	260,000 residents	300,000 residents
E	Employees	9,200	7,000
F	Liaison Role	Mental Health and Addictions	Chronic Kidney Disease

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
G	**Learning Project**		
G.1	Learning Project	Rural Early Chronic Kidney Disease Detection and Intervention Program	Mackenzie Mental Health and Addictions Collaborative Program
G.2	Learning Project Location	Grenfell, Saskatchewan	Mackenzie, British Columbia
G.3	Learning Project Town Population	Population: 1,000	Population: 4,500
G.4	Learning Project First Nations Served	Sakimay First Nation	McLeod Lake First Nation
G.5	Learning Project Town Economy	Agriculture	Forestry
G.6	Learning Project Priority	• Chronic Disease • Primary Care	• Mental Health • Primary Care

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
G.7	Learning Project Objectives	1. To improve screening of patients at risk for CKD; 2. To provide access to appropriate clinical care and services for patients in early stages of CKD closer to their homes; and 3. To improve the referral experience for patients with more advanced CKD.	1. To improve access to mental health and addictions services for patients; 2. To provide mental health expertise for physicians; 3. To improve coordination of mental health care; and 4. To improve community outreach for mental health.
G.8	Learning Project Program Implementation Date	Fall 2010 (Proposed)	July 2008 (Actual)
H	**Phase 1 Activities**		
H.1	Planning	• Workshop Planning • Evidence Synthesis	• Workshop Planning • Evidence Synthesis

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
H.2	First Site Visit Date	February 18-19, 2010	March 4-5, 2010
H.3	First Site Visit Activities	• Customized Capacity Building Workshop • Workshop with Learning Project Team	• Customized Capacity Building Workshop • Workshop with Learning Project Team
H.4	**Customized Capacity Building Workshop**		
H.4.1	Objectives	1. To illustrate appropriate use of evidence throughout the cycle of planning, implementation and evaluation of primary care services; 2. To synthesize the research and other evidence related to chronic disease prevention and management in general, and kidney disease prevention/early intervention in particular, within the context of planning, implementing and evaluating kidney disease prevention/intervention initiatives in RQHR;	1. To illustrate appropriate use of evidence throughout the cycle of planning, implementation and evaluation of primary care services; 2. To synthesize current research on integration of mental health/addictions with primary care, within the context of Northern Health;

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
	Objectives (continued)	3. To identify principles of effective interventions in kidney disease prevention/early intervention applicable in this context; 4. To explore evaluation approaches, principles, concepts and practice; and 5. To apply these concepts in to a strategy for evaluating the early Chronic Kidney Disease intervention.	3. To support and build regional capacity around: a. evaluation approaches and potential, and b. principles of effective knowledge translation; and 4. To collaboratively develop an evaluation strategy to facilitate appropriate transfer of learning from the Mackenzie Program across the region.
H.4.2	Attendees	• 20 attendees • RQHR VALUE Lead • RQHR VALUE Liaison • NH VALUE Liaison	• 19 attendees • NH VALUE Executive Sponsor • NH VALUE Lead • NH VALUE Liaison

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
	Attendees (continued)	• RQHR Program Staff o rural and urban programs o primary care o renal o community care o home care o health promotion o emergency medical services • A representative from another health region on Saskatchewan	• RQHR VALUE Liaison • NH Executive • NH Program Staff o primary care o mental health o home care o community care o planning quality and information management o research and evaluation
H.5	**Workshop with Learning Project Team**		
H.5.1	Objectives	1. To identify any areas where the proposed Rural CKD Program plan would need to be revised or elaborated based on previous day's discussion; 2. To draft an initial evaluation plan for the Rural CKD Program; 3. To finalize an action plan for moving the Rural CKD Program forward; and	1. To begin to build a VALUE/Northern Health facilitation team that could jointly facilitate the full-day workshop; 2. Building consensus on the objectives and content of the materials for the full-day workshop;

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
	Objectives (continued)	4. To confirm follow up capacity-building activities useful to the region.	
H.5.2	Attendees	• 7 attendees • RQHR VALUE Lead • RQHR VALUE Liaison • NH VALUE Liaison • RQHR Program Staff o rural and urban programs o primary care o renal o community care • A representative from another health region in Saskatchewan.	• 8 attendees • NH VALUE Executive Sponsor • NH VALUE Lead • NH VALUE Liaison • RQHR VALUE Liaison • NH Program Staff o primary care o mental health
I	**Phase 2 Activities**		
I.1	Phase 2 Dates	March-September 2010	March 2010 – May 2011

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health

I.2	Planning Support	• Project Planning
		  o Program Description
		  o Program Timeline
		  o Program Infrastructure Analysis
		  o Staff Orientation Plan
			• Evaluation Planning
			  o Program Description
			  o Program Components
			  o Evaluation Timeline
			  o Evaluation Plan

I.3	Project Evaluation Support	• Evaluation Plan • Evaluation Tools • Ethics Application	• Evaluation Tools • Data Collection • Data Analysis • Report Writing

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health

I.4	Teleconferences with Learning Project Team	• Facilitation
		  o Issue Identification
		  o Project Management
		• Coaching
		  o Program Development
			• Facilitation
			  o Evaluation Questions
			  o Evaluation Approach
			  o Evaluation Methods
			  o Evaluation Plan
			• Coaching
			  o Program Description Development
			  o Program Model Development

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
I.5	**Second Site Visit**		
I.5.1	Second Site Visit Date	Not Applicable:	July 2010
I.5.2	Second Site Visit Activities	Learning Project Put on Hold October 2010	• Evaluation Planning • Coaching • Facilitation

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
I.5.3	Second Site Visit Objectives	Not Applicable: Learning Project Put on Hold October 2010	1. Update the team on planned regional changes and discuss implications for programming and evaluation; 2. Ensure local staff and community input into the evaluation plan; 3. Draft an evaluation plan including: focus, evaluation questions, methods, responsibility areas and resources; 4. Identify tools and resources needed to complete the evaluation; 5. Establish the evaluation timeline and responsibilities for next steps; and 6. Begin data collection for the evaluation of the Mackenzie Program.

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
J	Research Support Team Deliverables	1. Timeline for Rural CKD Program planning, implementation and ongoing evaluation; 2. Critical appraisal of the proposed information system being implemented for the program; 3. Staff orientation plan for the proposed Rural CKD Program. 4. Evaluation plan template; 5. Implementation evaluation plan for the Rural CKD Program; 6. Evaluation questions, evaluation approaches, evaluation methods, tools and an evaluation timeline to accompany program plan. 7. Draft patient assessment guide; 8. a pre-implementation staff interview guide; 9. Patient chart data collection sheet; 10. Interview guide to explore the experience	1. Executive pre-evaluation interview guide; 2. Key stakeholder interview guide; 3. Conducted key stakeholder interviews; 4. Community services consultation guide; 5. Patient and family focus group guides; 6. Health centre staff survey; 7. Database query request; 8. Collaborated on the data analysis and evaluation report writing.

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
		of the Weyburn Rural CKD Program implementation (the program upon which the Grenfell Rural CKD Program was based).	
K	Regional Research and Evaluation Unit Deliverables	1. Ethics application for the evaluation of the Rural CKD Program 2. Providing resources to conduct the interview with the Weyburn Rural CKD program staff.	1. Conducted the executive pre-evaluation interviews; 2. Conducted the community services consultation; 3. Conducted the patient and family focus group; 4. Managed the staff survey; 5. Provided advice on ethics approval requirements; 6. Facilitated access to the regional database for statistical analysis of the Mackenzie Program data; 7. Collaborated on the data analysis and evaluation report writing.

	Case Study Element	Regina Qu'Appelle Health Region	Northern Health
L	Learning Project Completion Date	Not Applicable: Learning Project Put on Hold October 2010	May 2011

CHAPTER 3: EXPLORING EVIDENCE USE IN PROGRAM MANAGEMENT DECISIONS WITHIN HEALTH CARE ORGANIZATIONS

Introduction

Health care systems worldwide face major challenges as public expectations continue to grow, demographics change, and demands for technological innovations increase while the financial resources to meet such demands remain constrained. The need for financially sustainable, accessible health care systems has resulted in pressures to demonstrate evidence-informed decision-making in the planning, implementation and management of health service programs. Although it has become recognized that organizations in health care need strategies to help move evidence and knowledge into action, the literature to date indicates that little is known about ways in which this can be achieved[1, 2, 3].

Research Objectives

The objectives of this research were to explore perceived barriers and facilitators to the use of evidence in program management decisions and to identify strategies to promote evidence informed program planning, implementation and evaluation through a case-based approach. Specific research questions can be found in Appendix 3-1.

Background

Unlike evidence-based clinical decision-making where a considerable body of literature to guide practitioners exists, research on "evidence-

informed management" is limited[4(p.89)]. This may be due, in part, to the fact that barriers related to the uptake of research faced by health system managers are different from those faced by clinicians. Decisions on programs often have organization-wide implications, whereas clinical decision-making typically focuses on an individual patient. Further, because health care organizations function within uncertain environments in which goals and objectives are less clear and subject to change, decision-making becomes highly complex[5].

Previous research has identified a number of factors that influence the use of evidence to inform management decisions. One of these is the manager, him/herself. While the need for expertise in identifying, appraising and applying evidence is well recognized by managers, there is a lack of formal management training opportunities that would help them develop these competencies[4,6]. As a result, the use of evidence in decision-making by managers is not commonplace[6].

A second factor is the organizational context. Evidence to inform a managerial decision often originates from different settings, and managers must determine how it may be used within their organizations. It has been shown that in order for evidence to be successfully applied, it must first be adapted to the local context[7]. Thus, managers require

expertise in critical thinking around the extent to which contextual factors may influence uptake and use of evidence [3,4,7].

A third factor relates to existing organizational culture and decision-making processes. Currently, gaps in the understanding of the processes managers use to apply evidence in health care organizations and how that process can be enhanced to promote evidence-informed decision-making exist[2,3].

METHODS

Using a participatory action research approach, how evidence was used to inform decisions around two programs in two different health care organizations that comprised the VALUE (Value Add through Learning and Use of Evidence) initiative was examined. The setting for the research was a partnership initiative between two Canadian health care organizations and a university partner to build organizational capacity to use evidence in informing management decision-making, program planning and implementation within health care organizations. It was collaboratively designed, developed and implemented. This approach was selected based on the complexity of the environment in which such decisions are made and the need to actively engage stakeholders from the outset in order to optimize the likelihood of uptake of findings[4,8,9]. In addition, participatory action research has been shown to promote co-

learning, capacity building, continuous improvement, as the research findings inform ongoing project planning[8,9]; and also promotes knowledge translation, since such activities are built into the process[10]. One researcher (SH) acted as a participant observer throughout the initiative, actively participating while documenting activities, interactions and reflections.

The VALUE Initiative

Selection of participating health care organizations

Two health care regions responded to a call for expressions of interest in building capacity for evidence-informed decision-making and program evaluation issued by SEARCH Western Canada Strategy: the Regina Qu'Appelle Health Region (RQHR) (Saskatchewan) and Northern Health (NH) (British Columbia). Both health regions serve populations that include small urban and rural areas with large aboriginal populations and shared a common strategic interest in primary care integration projects. Each organization identified the program decision they sought to evaluate.

Structure of the Initiative

A detailed description of the partnership organizations and structure is published elsewhere[11]. An executive committee, which met quarterly throughout the initiative, was comprised of senior executives from both

regions and academic researchers who provided financial and strategic oversight to the project. In addition, a steering committee, which met monthly, consisted of leads from each region and academic researchers, who oversaw collaborations related to the planning and implementation of the initiative and modified the strategies based on experience and feedback throughout the initiative. Within each organization, a project team was established to work directly on the activities related to the program decision of interest in the region. A figure depicting the organizational structure and participants can be found in Appendix 3-2. A table defining the organizational roles can be found in Appendix 3-3.

Initiative Processes

Consistent with participatory action research and the Canadian Institutes of Health Research "Guide to Research and Knowledge-User Collaboration in Health Research", regions were actively engaged throughout the initiative, which was structured as four distinct phases. Phase 0 was the partnership development phase during which the initiative objectives were defined, initial discussions about the potential collaboration were discussed, and the capacity building strategies were outlined. The initiative was designed as an integrated strategy, intended to support regional project staff in finding, interpreting and using evidence in program planning, implementation and evaluation. Through

collaboration, skill building and support, the team worked together at the pilot sites on projects of strategic priority for the regions.

The initiative was designed with capacity building strategies chosen based on research evidence[3, 4, 7, 12-16], adapted to meet the needs of the participating organizations and included:

1. **Inter-regional collaboration**: ongoing collaboration developing inter-regional partnerships;
2. **Learning projects**: projects of strategic priority used as teaching cases to increase relevance of evidence, and promote generalizable skills. The learning projects were: (1) Rural Early Chronic Kidney Disease Detection and Intervention Program (RQHR) and (2) Mackenzie Mental Health and Addictions Collaborative Program (NH);
3. **Liaison roles**: selection of program staff in each health region to make purposeful connections with program staff from the other health region to create trust, develop networks and bring back learnings from the other health region to their home health region;
4. **Research support**: access to research expertise, creating training and coaching opportunities while involving decision-makers in the research process; and

5. **Protected time for skill building**: creating space for organizational participants to explore and create evidence in context.

Phase 1 focused on the planning and delivery of capacity building strategies at each site. Phase 2 focused on providing support to the Learning Project teams to create and apply evidence in context. Phase 3 was the collaborative research on the initiative, which involved active observation, reflection and planning to learn from and modify the activities to better meet the needs of the participants. This active process of observation, reflection, planning and acting is consistent with O'Leary's cycles of research, "where the goal is to continually refine the methods, data and interpretation in light of the understanding developed in each earlier cycle"[9(p. 6)]. A figure depicting the phases and timeline for the initiative can be found in Appendix 3-4.

Research Methods

A multiple-case study design[17] was employed, with each region representing a case[18], to explore health care organizations' capacity for evidence use in program development, implementation and evaluation. A documentation review, which included minutes of meetings, along with any documents describing organizational and program planning was conducted to identify strategies, processes and tools used in the initiative

and explore supports and barriers to evidence use within the regions. The documentation review was the primary source for documenting the activities undertaken through the initiative and contributed to the themes explored during the interviews and focus groups. A complete list of documents included in the review can be found in Appendix 3-5.

Data were collected through 23 key informant interviews and three focus group discussions. The key informants were purposively selected and included the executive, leads, liaisons and program staff involved in the site-specific projects[19]. Using a semi-structured guideline, the interviews explored individual perspectives and experiences with evidence use in program planning, implementation and evaluation within their organization, as well as the usefulness of the initiative components. One focus group discussion was held with program staff, liaisons and leads that participated in the site-specific activities to explore the usefulness of capacity-building strategies for evidence-informed planning within health care organizations and the strategies, tools and resources needed by health care organizations to support appropriate and effective use of evidence in program planning, implementation and evaluation. The second focus group discussion was conducted with key stakeholders including executive members from each region (n=13). This provided an opportunity for regional partners to jointly consider the implications of the initial findings from the documentation review and key stakeholder

interviews from an organizational perspective and identify principles of effective strategies to promote evidence-informed program planning, implementation and evaluation within health care organizations. The third focus group was conducted as part of a dissemination event with broader representation from health care organizations across Western Canada to explore how the findings from the research could be applied to other settings, testing the transferability of the findings. The focus groups provided participants with an opportunity to bring together ideas for how health care organizations can effectively support evidence use and reflect on their own views in the context of the views of others[20]. All sessions were digitally recorded. A researcher observed all sessions and took detailed notes.

Data Analyses

Data collection and analysis were concurrent beginning in the early stages of data collection and continuing throughout the initiative[9,21]. Using NVivo 9 for data management, data from all sources were coded using an integrated approach employing both deductive and inductive code development[21]. Initial coding was deductive, based on the broad categories of interest identified by the research objectives. Additional review, comparative analysis and constant case comparison allowed for new themes to emerge and codes to be generated inductively. One researcher analyzed all the data, and a second researcher independently

reviewed a sample. Themes that emerged in the interviews informed the discussion guide for the focus groups. Rigour was strengthened through member checking in the form of the built-in, multiple opportunities for feedback and verification of findings with the collaborating regions and broader knowledge users (including regular steering committee review of emerging themes; inter-regional events where emerging themes were presented and discussed with participants and broader knowledge user communities). The collaborative nature of the initiative and prolonged engagement in the field were used to ensure validity of the findings.

Ethics

Ethics approval was obtained from the Health Research Ethics Board at the University of Alberta, the Northern Health Research Review Committee and the Regina Qu'Appelle Health Region Research Ethics Board.

The following table summarizes the research methods, including the roles of the collaborators in each research method:

Table 3-1: Research Methods

	Research Methods				
	Documentation Review	**Interviews**	**Focus Group: Program Level**	**Focus Group: Combined**	**Focus Group: Inter-provincial**
Objectives	• Identify the strategies, process and tools used in the initiative • Explore supports and barriers to evidence use within organizations	• Explore individual experiences and understanding of evidence and evidence use; • Explore individual experiences of barriers to evidence use at different levels: o Organizational; o Program; o Individual and • Explore individual experiences of the capacity-building strategies	• Provide an opportunity for the regional partners to jointly interpret the initial findings from the Documentation Review and Key Stakeholder Interviews from the perspective of those actively involved in the initiative; • Explore the usefulness of the capacity-building strategies for evidence-informed planning within health care organizations and • Explore the strategies, tools and resources health care organizations need to support appropriate use of evidence in program planning;	• Provide an opportunity for the regional partners to jointly consider the implications of the initial findings from the Documentation Review and Key Stakeholder Interviews from an organizational perspective; • Explore the benefits and challenges of using capacity-building strategies to promote evidence-informed planning within health care organizations; • Explore the strategies, tools and resources health care organizations need to support appropriate use of evidence in program planning and • Identify strategies to promote evidence-informed program planning within health care organizations.	• Test transferability of findings on the benefits and challenges of using capacity-building strategies to promote evidence-informed planning within health care organizations; • Test transferability of findings on the strategies, tools and resources health care organizations need to support appropriate use of evidence in program planning and • Test transferability of strategies to promote evidence-informed program planning within health care organizations

	Research Methods				
	Documentation Review	**Interviews**	**Focus Group: Program Level**	**Focus Group: Combined**	**Focus Group: Inter-provincial**
Justification	• provide insight into the existing supports and barriers for evidence use within the organizations • provide insight on the priority given to evidence use through an examination of the decision-making process. • detailed field notes and process documentation will provide essential information about the initiative and the strategies, resources and tools used.	• provide an opportunity for individuals to provide in-depth confidential exploration of individual accounts of experiences and judgments about those experiences • explore individual attitudes, views and experiences with evidence use, program planning and evaluation as well as the usefulness of the initiative components • identify, from the participant's perspectives, barriers experienced or anticipated and supports needed as well as their interpretation of events including benefits/challenges encountered in the project	• provide participants with an opportunity to bring together ideas for how the organizations can support evidence use within health care organizations. • provide an opportunity for participants to reflect on their own views in the context of the views of others	• provide participants with an opportunity to bring together ideas for how the organizations can support evidence use within health care organizations. • provide an opportunity for participants to reflect on their own views in the context of the views of others	• explore how the findings from the research can be applied in other settings • testing the transferability of the findings
Who/What	• organizational planning documents • program planning documents • initiative correspondence • initiative reports • initiative meeting notes • participant observation field notes	• semi-structured telephone interviews • purposive sample • 23 interviews • 20 key stakeholders	• semi-structured focus group • Program Staff, liaisons and leads • 9 participants	• semi-structured • Program Staff, liaisons, leads, executive • 13 participants	• semi-structured • Decision-makers from 6 Western Canadian Health Authorities • 14 participants

	Research Methods				
	Documentation Review	**Interviews**	**Focus Group: Program Level**	**Focus Group: Combined**	**Focus Group: Inter-provincial**
Timeline	• Documents included from December 2008 -March 2011	• Interviews conducted between May-October 2011	• Focus group conducted at inter-regional wrap-up event in June 2011	• Focus group conducted at inter-regional wrap-up event in June 2011	• Focus group conducted during inter-provincial dissemination event in January 2012
Roles in Research Methods					
Research Team	• Draft initial list of documents for inclusion • Initial review and analysis of documents •	• Draft interview guide • Conduct interviews • Initial analysis of interviews	• Draft focus group guide • Facilitate focus group • Initial analysis of focus group	• Draft focus group guide • Facilitate focus group • Initial analysis of focus group	• Draft focus group guide • Facilitate focus group • Initial analysis of focus group
Executive Committee	• Review and revise list of documents for inclusion • Review and contribute to analysis and interpretation of findings	• Review interview guide • Recruit participants for interviews • Participate in interviews • Review and contribute to analysis of interviews	• Review focus group guide • Recruit participants for focus group • Review and contribute to analysis and interpretation of findings	• Review focus group guide • Recruit participants for focus group • Participate in focus group • Review and contribute to analysis and interpretation of findings	• Review focus group guide • Participate in focus group • Review and contribute to analysis and interpretation of findings
Steering Committee	• Review and revise list of documents for inclusion • Review and contribute to analysis and interpretation of findings	• Review interview guide • Participate in interviews • Review and contribute to analysis and interpretation of findings	• Review focus group guide • Participate in focus group • Review and contribute to analysis and interpretation of findings	• Review focus group guide • Participate in focus group • Review and contribute to analysis and interpretation of findings	• Review focus group guide • Recruit participants for focus group • Participate in focus group • Review and contribute to analysis and interpretation of findings
Project Teams	• Review and contribute to analysis and interpretation of findings	• Participate in interviews • Review and contribute to analysis and interpretation of findings	• Participate in focus group	• Participate in focus group	N/A

RESULTS

Organizational Culture

A key theme that emerged from the data was the role of organizational culture in promoting or impeding the use of evidence in program planning. Organizational culture, while largely intangible and difficult to describe, was understood as the values, principles and standards espoused by the organization. An organizational culture that values and promotes the use of evidence in program planning was believed to be created largely by the senior management, specifically in the form of senior management support for program managers in their use of evidence. In the words of one participant:

> *"I believe there needs to be ongoing discussion regarding how evaluations/evidence informed [planning] impacts our work and how this should remain a topic at management level". (Program Staff)*

Characteristics of a supportive organizational culture include an environment that understands and appreciates the role and importance of evidence, promotes and values evidence-informed decision-making, provides protected time for research skill building, and engages in organization-wide activities that promote evidence use. Reflecting on the culture of their organization, one participant suggested that:

"In the organization we are really headed in that way, in our strategic plan we have high quality services, we want to foster the learning environment and engage in research, so the stars are aligning." (Manager)

The importance of organizational culture was highlighted by the usefulness of inter-regional collaboration in the promotion of evidence-informed program planning. This collaboration was viewed as a reflection of an organizational culture; it demonstrated the organizations' commitment to evidence-use. The openness to learning from others and encouraging collaborative thinking that resulted from the collaboration further contributed to this organizational culture. In the words of one participant:

"Our organization generally very much values collaboration and partnership so it is a win for us. It is a win to be able to say we are doing this inter-regional collaborative project. It looks good and they have committed resources to it, so it was in line with the values and philosophy and plan of the organization." (Manager)

Characteristics of an organizational culture that impede evidence use include but are not limited to: not engaging staff in decision-making and priority setting; not providing the time and resources to seek evidence or to incorporate evidence into program planning; poor communication between senior management and staff; poor communication across different departments within the organization; and lack of formal processes for program development. Through the initiative, a lack of project ownership at the local level was observed as a reflection of an organizational culture lacking staff engagement and impeding evidence-informed decision-making at the program level. As one participant recalled:

> *"I wasn't comfortable with how the projects were just picked. It never sat right with me, the bottom up and top down, everyone was super keen, but it didn't come from the right place." (Manager)*

It was observed that the absence of structured and purposeful communication across the organization to share experiences, priorities and strategic direction was a barrier to evidence use. Neither region had instituted formal processes to guide program planning and development, which impacted evidence use at the program planning level. The participants in the initiative also felt that having the organization expect

staff to use to evidence together with common formal planning processes would have promoted their use of evidence. They expressed frustration with what had been provided to incorporate evidence into their program planning:

> *"We don't have anything specific to guide us in our planning... I would like to see some sort of formalized process." (Manager)*

Organizational Infrastructure

A second theme that emerged from the data was the way in which an organization's infrastructure, or lack thereof, influences the use of evidence. Organizational infrastructure, for the purposes of promoting evidence use, includes tools, such as library services and clinical databases, human resources such as skilled researchers, and access to specifically designated internal research units and expertise. A lack of such organizational infrastructure to support evidence use was identified as an impediment to evidence-informed program planning. A lack of formal processes to incorporate evidence into program planning was also identified as a factor that negatively impacted evidence use. It is worth noting that despite the existence of the initiative, neither region had instituted formal processes to guide program planning and development.

"Having [the skills, tools and resources] in one portfolio helps to make sure evidence is cross linked and those people are deployed across the organization to help." (Program Staff)

The data also provided some examples of possible strategies to improve organizational infrastructure to support evidence use. One was the support that was provided by the inter-regional workshops conducted with the two regions. The workshops brought together staff with internal and external experts to collaborate on evidence syntheses and program planning. The workshops also helped staff by providing program planning and evaluation templates to apply in program development. Another strategy was the in-person interactions between the liaisons. The liaison roles provided an opportunity for the exchange of experiences between regional programs, and created purposeful networking opportunities for staff. A third strategy was the partnership with the University, which provided access for staff to knowledge and expertise not available in the organization and gave an external perspective on program development. These strategies, in particular the relationships built during these networking opportunities, especially across provinces were felt by the respondents to promote evidence use.

"The opportunity for the liaisons to meet in person or to meet the project people in person was a big facilitator." (Manager)

"The questions [the University research team] asked made us think differently...they made us stop and reflect, which is good." (Program Staff)

However, the data also showed that the development of networks and, in particular nurturing these relationships, was a challenge. Facilitating ongoing collaboration, ensuring enough facilitated contact between participants and involving external experts in internal projects were challenges experienced by participants in the initiative.

Individual Skills

A third theme that emerged from the data was the importance of individual skills in promoting evidence use in program planning. The lack of skills in finding, appraising and synthesizing evidence was identified as key limitations. Program managers lacked skills in conducting literature reviews, interpreting findings and applying evidence to their specific context. Additional skills identified as lacking were program evaluation and program planning skills. There was recognition of the importance of these skills for program managers, but most had never had any formal

training. Even those managers who had post graduate degrees tended to have training in their clinical specialties, which did not prepare them for planning and management

Participants identified the need for greater training in both these areas. The training could be done as part of on-going professional development. However, a more effective method identified was the creation of opportunities to apply theoretical learning through practical application. A learning project approach was considered a more valuable learning methodology as it aligns with adult-learning theories. In such methods, program staff members learn skills and immediately apply them in a supported way.

> *"It is a lot easier for people like me who are pretty task oriented and not sort of used to working in an academic environment to learn things that are readily and quickly applied. It makes sense to me, I can use it right away; a marriage of really smart research people and smart application people that works really well." (Program Staff)*

A third strategy for developing individual skills was the process of mentoring program staff by external research experts. The external research support provided by the University partner was appreciated as it

filled a perceived gap in access to research expertise within the health care organizations. This access was felt to create opportunities for open dialogue with experts, as well as coaching and mentoring opportunities further promoting evidence use. The specific skills of the research team, which included health system experience, were also identified as important to managers in promoting evidence use by having access to experts who understand the complex reality of program development within health care organizations. Researchers providing support to program staff created opportunities for open dialogue with experts and facilitated action on learning projects.

> *"I think the university expertise in evidence informed practice, it is critical, it seeded the discussion that continues and needs to continue in the health authority on how to do that, having the expertise in that field is really helpful." (Manager)*

> *"A researcher is not a researcher is not a researcher, [the research team] had the skills in evaluation and implementation; I relied heavily on [on the research team] to coach me and teach me how to do it." (Manager)*

However, a key theme underlying staff concerns was a lack of protected staff time for all above-mentioned activities. Protecting time for skill building among program staff means that learning is a priority and relieves staff from competing priorities. A challenge experienced by participants was that there was not a commitment to ensuring that staff had protected time to follow-up on their learning, or dedicate the needed time to the learning projects. Staff participating in skill building activities had to juggle competing priorities.

Discussion

This study revealed three key themes that influence the use of evidence in program planning within health care organizations: (1) organizational culture; (2) organizational infrastructure; and (3) individual skills. Through the initiative, the importance of organizational culture in promoting and supporting evidence use in program planning was highlighted. Organizational infrastructure, including tools, resources and supports available to support evidence-informed decision-making was also found to promote evidence use at the program planning level. The importance of individual skills in promoting evidence use in program planning also emerged as a theme in this study. Specifically, program managers require skills in finding, appraising and synthesizing evidence, as well as skills in program evaluation and program planning.

The VALUE initiative also allowed the partner regions to critically examine the processes and challenges of moving evidence into action. Although this research is based on specific projects in only two regions, its findings are consistent with the literature[22,23] suggesting that they may be applicable to other health regions.

Organizational culture was an important theme that emerged in the data influencing the use of evidence in program planning within health care organizations. The decision-making culture of organizations has been identified in other studies as a barrier to evidence-informed decision-making at the program planning level[24-27]. Similarly, an organizational culture that supports evidence use through the provision of needed supports and demonstrates through action the value placed on evidence use within the organization has been found to promote evidence informed decision-making among program managers[24,27-30].

The theme of organizational infrastructure and its influence on evidence-informed program planning is also consistent with other research findings. Internal resource constraints[4,27,31,32] and a lack of formal processes to incorporate evidence into program planning and management [24,26] have been identified in the literature as barriers to evidence use. Evidence also suggests that the development of internal expertise in research promotes evidence use among program

managers[24,27,29,31]. The lack of formal processes within organizations for integrating evidence into program planning and implementation observed in this study suggests that organizations would benefit from the development of a model that would provide them with structured direction on how to support moving evidence into practice.

The finding that the building of the individual skills of program managers was an important factor influencing the use of evidence was also consistent with the literature. A lack of skills in research synthesis and research utilization as well as a deficit of formal management training have been identified as barriers to evidence use in the literature [24,26,27,31,33,34]. Evidence also suggests that the individual skills and research experience of program managers promotes evidence-informed program planning[29]. The observation from this initiative that a deficit in research skills among program managers with postgraduate education exists suggests that postgraduate clinical training programs could benefit from increased focus on research use and application.

Challenges to evidence use identified through the initiative were consistent with those well documented in the literature[22,23], confirming the need for future research to focus on strategies to address known barriers to evidence use. The findings suggest that the promotion of evidence use must be directed at multiple levels within organizations including: (1)

an organizational culture that encourages and rewards evidence use, including senior management support of evidence use at the program and individual level; (2) an organizational infrastructure that provides the tools, resources, structure and processes to use evidence; and (3) investing in the training and skill development of staff.

Initiatives intended to promote evidence use must enhance existing supports and address known barriers. Initiatives must be designed around, and include, features to address identified barriers, while building on the organizations' existing strengths.

Lessons learned from this initiative may inform future research on strategies to promote evidence-informed decision-making within health care organizations. Research exploring the implementation and effectiveness of these capacity building strategies is still needed.

LIMITATIONS

There were several potential limitations to this study resulting from the use of a case study approach. They included complexities inherent in health care organizations and reliance upon qualitative, more subjective information. Changes in priorities of staff over time were experienced throughout research project. However, we attempted to address this through the collaborative, engaged approach that involved meaningful

roles for the stakeholders to ensure that everyone had a clear understanding of what they could contribute to the research and what personal and organizational benefits they could expect by participating in the research to ensure long-term support. Despite staff turnover, the prolonged exposure of the researchers to the staff helped develop team relationships, which appeared to increase participation even after staff moved into different roles. Although the findings from this research were based on only two case studies, a focus group with other health care organizations in Western Canada was held to assess their transferability. Participants felt that the findings also provided an accurate reflection of their experiences within their own organizations. Analyses were largely based on responses collected during focus groups and interviews. To ensure their reliability, methods and data sources were triangulated, and more than one researcher analyzed transcripts.

Conclusion

Within health care organizations, evidence-informed program planning, implementation and evaluation are essential components of program management. This participatory action research project exploring how program management decisions are made and translated into actions in health care organizations identified factors that influence evidence use in management decision-making. The partnership initiative to develop and implement strategies to build organizational capacity to use evidence to

inform management decision-making provided an opportunity to examine the use of evidence in health care organizations in Canada, and to increase the understanding of what strategies are useful. However, further research aimed at exploring the effectiveness of these strategies is required in order to operationalize these approaches.

References

1. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation Science*. 2009; 4:50.

2. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly. 2004; 82*(4): 581-629.

3. Best A, Terpstra JL, Moor G, Riley B, Norman CD, Glasgow RE. Building knowledge integration systems for evidence-informed decisions. *Journal of Organization and Management.* 2009; 23(6): 627-641.

4. Bowen S, Erickson T, Martens PJ, Crockett S. More than "using research": The real challenges in promoting evidence-informed decision-making. *Healthcare Policy*. 2009; 4(3): 87-102.

5. Baker GR, Ginsberg L, Langley A. An Organizational Science Perspective on Information, Knowledge, Evidence, and Organizational Decision-Making. In F. Champagne (Ed), *Using Knowledge and Evidence in Health Care: Multidisciplinary Approaches* (pp. 95-123). University of Toronto Press, Toronto, ON; 2004.

6. Walshe K, Rundall TG. Evidence-based management: From theory to practice in health care. *Milbank Quarterly. 2001; 79*(3): 429-457.

7. Graham ID, Logan J, Harrison MB, Straus SE, Tetroe J, Caswell W, et al. Lost in knowledge translation: Time for a map? *Journal of Continuing Education in the Health Professions. 2006; 26*(1): 13-24.

8. Minkler M, Wallerstein N. (2003). *Community-Based Participatory Research for Health.* San Francisco CA: Jossey-Bass.

9. Koshy, E., Koshy, A., & Waterman, H. *Action research in healthcare.* SAGE Publications, Los Angeles, CA; 2011.

10. Parry D, Salsberg J, Macaulay AC. CIHR: A Guide to Researcher and Knowledge-User Collaboration in Health Research. Online at http://www.learning.cihr-irsc.gc.ca/course/view.php?id=3_ (Retrieved November 2009).

11. Humphries S, Hampe T, Larsen D, Bowen S. Building organizational capacity for evidence use: the experience of two Canadian health care organizations. *Healthcare Management Forum.* (In Press)

12. Mitton C, Adair CE, McKenzie E, Patten SB, Waye Perry B. Knowledge transfer and exchange: Review and synthesis of the literature. *Milbank Quarterly. 2007; 85*(4): 729-768.

13. Straus SE, Tetroe J, Graham I. Defining knowledge translation. *CMAJ 2009; 181*(3-4): 165-168.

14. Bhattacharyya OK, Estey EA, Zwarenstein M. Methodologies to evaluate the effectiveness of knowledge translation interventions: A primer for researchers and health care managers. *Journal of Clinical Epidemiology.* 2011; *64*(1): 32-40.

15. Scott C, Seidel J, Bowen S, Gall N. Integrated health systems and integrated knowledge: Creating space for putting knowledge into action. *Healthcare Quarterl.* 2009; 13(Spec No): 30-36.

16. Preskill H, Torres RT. Building capacity for organizational learning through evaluative inquiry. *Evaluation.* 1999; 5: 42-60.

17. Cassell C, Symon G. *Essential Guide to Qualitative Methods in Organizational Research.* SAGE Publications Ltd., London; 2004.

18. Sofaer S. Qualitative Methods: What are they and why use them? *Health Services Research.* 1999; 34(5-Part II): 1101-1118.

19. Mason J. *Qualitative Researching.* SAGE Publications Ltd., London; 1996.

20. Patton MQ. *Qualitative Research & Evaluation Methods. 3rd Ed.* SAGE Publications Ltd., Thousand Oaks, CA; 2002.

21. Bradley EH, Curry LA, Devers KJ. Qualitative data analysis for health services research: developing taxonomy, themes, and theory. *Health Research and Educational Trust.* 2007; 42(4): 1758-1772.

22. Innvaer S, Vist G, Trommald M, Oxman A. Health policy-makers' perceptions of their use of evidence: a systematic review. *Journal of Health Services Research Policy*. 2002; 7(4): 239-244h.

23. Orton L, Llyod-Williams F, Taylor-Robinson D, O'Flaherty M, Capewell S. The use of research evidence in public health decision making processes: systematic review. *PLoS One*. 2011; 6(7): e21704.

24. Farmer J, Chesson R. Health care management: models for evidence-based practice. *J Manag Med*. 2001; 15: 266-282.

25. Higgins JW, Strange K, Scarr J, Pennock M, Barr V, Yew A. *et al*. "It's a Feel. That's What a Lot of Our Evidence Would Consist of": Public Health Practitioners' Perspectives on Evidence. *Evaluation & the Health Professions*. 2011; 34: 278-296.

26. Mitton C, Patten S. Evidence-based priority-setting: what do the decision-makers think? *J Health Serv Res Policy*. 2004; 9: 146-152.

27. Wilson MG, Rourke SB, Lavis JN, Bacon J, Travers R. Community capacity to acquire, assess, adapt, and apply research evidence: a survey of Ontario's HIV/AIDS sector. *Implementation Science*. 2011; 6.

28. Dobbins M, Cockerill R, Barnsley J, Ciliska D. Factors of the innovation, organization, environment, and individual that predict the influence five systematic reviews had on public health decisions. *Int J Technol Assess Health Care*. 2001; 17: 467-478.

29. Belkhodja O, Amara N, Landry R, Ouimet M. The extent and organizational determinants of research utilization in Canadian health services organizations. *Science Communication*. 2007; 28: 377-417.

30. Jbilou J, Amara N, Landry R. Research-based-decision-making in Canadian health organizations: A behavioural approach. *Journal of Medical Systems*. 2007; 31: 185-196.

31. Weatherly H, Drummond M, Smith D. Using evidence in the development of local health policies. Some evidence from the United Kingdom. *Int J Technol Assess Health Care*. 2002; 18: 771-781.

32. Ham C, Kipping R, McLeod H. Redesigning work processes in health care: lessons from the National Health Service. *Milbank Q*. 2003; 81: 415-439.

33. Dobbins M, Rosenbaum P, Plews N, Law M, Fysh A. Information transfer: what do decision makers want and need from researchers? *Implementation Science*. 2007; 2.

34. Niedzwiedzka BM. Barriers to evidence-based decision making among Polish health care managers. *Health Serv Manage Res*. 2003; 16: 106-115.

APPENDIX 3-1: DETAILED RESEARCH QUESTIONS

Research Questions

The specific research questions were collaboratively developed with the stakeholders at each site. The participatory action research approach to defining the research questions ensures that the questions will be perceived as relevant by both the researchers and the stakeholders and the questions are developed within the context of application. The research questions include:

1. What supports for evidence-informed planning, implementation and evaluation are experienced within health care organizations at the organizational, program and individual levels?

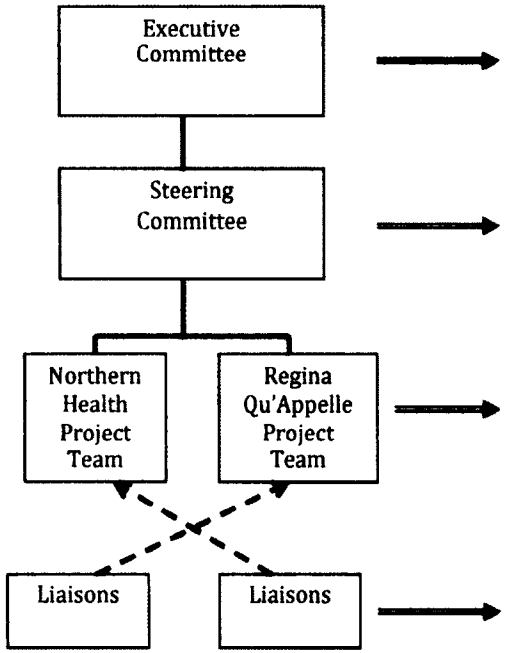
2. What barriers to evidence-informed planning, implementation and evaluation are experienced within health care organizations at the organizational, program and individual levels?

3. What aspects of capacity building strategies to facilitate evidence-informed planning, implementation and evaluation within health care organizations are experienced as more or less useful?
    a. What are the benefits and challenges of inter-regional collaboration as a strategy to build organizational capacity for evidence-informed decision-making?

b. What are the benefits and challenges of learning projects as a strategy to build organizational capacity for evidence-informed decision-making?
c. What are the benefits and challenges of liaison roles as a strategy to build organizational capacity for evidence-informed decision-making?
d. What are the benefits and challenges of research support as a strategy to build organizational capacity for evidence-informed decision-making?
e. What are the benefits and challenges of protected time as a strategy to build organizational capacity for evidence-informed decision-making?

APPENDIX 3-2: ORGANIZATIONAL STRUCTURE OF PARTICIPATORY ACTION RESEARCH PROJECT

Figure 3-1: Organizational Structure of Participatory Action Research Project



Decision-Makers/Collaborators		Researchers/Collaborators
Northern Health	**Regina Qu'Appelle Health Region**	**University of Alberta**
• Vice-President, Academic Affairs and Chief Nursing Officer • Vice-President, Planning, Quality and Information Management	• President & Chief Executive Officer • Vice-President, Rural, Restorative and Continuing Care	• Associate Professor, School of Public Health and Academic Co-Director, SEARCH Canada
• Executive Director, Research and Performance Support	• Regional Manager, Research and Evaluation	• Associate Professor, School of Public Health and Academic Co-Director, SEARCH Canada • Research Coordinator, School of Public Health
• Area Director, Northern Interior, Mental Health & Addictions Services, Community Programs • Collaborative Coordinator, Mental Health and Addiction Services • Care North Coordinator • Primary Care Mental Health Clinician	• Manager, Rural Primary Health Care • Manager, Rural RQHR Community Services	• Associate Professor, School of Public Health and Academic Co-Director, SEARCH Canada • Research Coordinator, School of Public Health
• Project Manager, Strategic Planning, Northern Health Renal Program	• Clinical Supervisor, Rural Mental Health and Addictions	

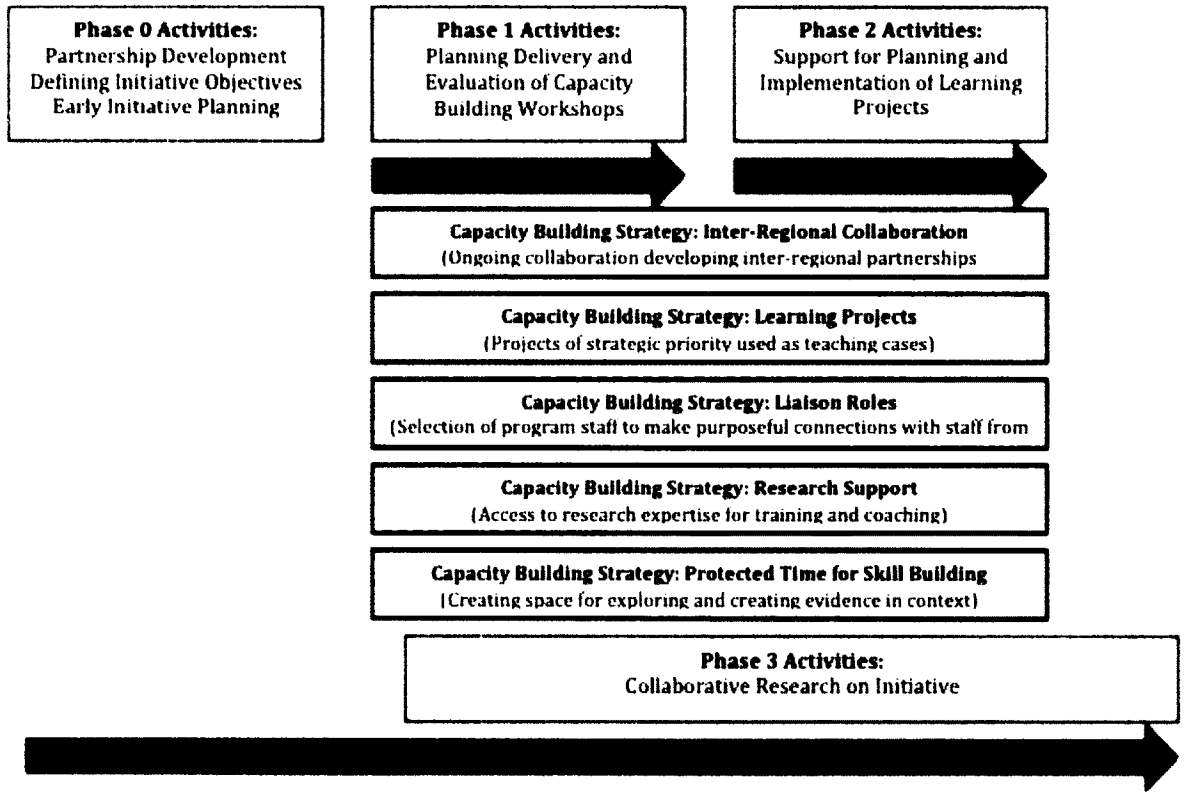
APPENDIX 3-3: ORGANIZATIONAL ROLES

Figure 3-2: Organizational Roles

	Roles/Responsibilities
Executive Committee	• Strategic Guidance • Budget Management
Steering Committee	• Initiative Planning • Initiative Management • Critical Reflection
Project Team	• Learning Project Planning • Participate in Initiative Activities • Create Evidence in Context
Liaisons	• Participate in Initiative Activities • Make Purposeful Connections with Program Staff from Other Health Region • Share Learnings Between Health Regions

APPENDIX 3-4: PARTICIPATORY ACTION RESEARCH PROJECT PROCESS AND ACTIVITIES

Figure 3-3: Participatory Action Research Project Process and Activities



APPENDIX 3-5: DOCUMENTATION REVIEW

Documents Included in Documentation Review

Regional Documents that Reference VALUE Initiative

- Regional Organizational Planning Documents that Reference VALUE Initiative
- Regional Program Planning Documents for Learning Projects
- Regional Program Evaluation Documents for Learning Projects
- Regional Correspondence about VALUE Initiative

VALUE Initiative Documents

- VALUE Initiative Planning Documents
- VALUE Initiative Timelines
- VALUE Initiative Correspondence
- VALUE Initiative Process Documentation
- VALUE Initiative Field Notes

VALUE Initiative Meeting Materials

- Executive Committee Meeting Agendas
- Executive Committee Progress Reports
- Executive Committee Meeting Notes
- Steering Committee Agendas
- Steering Committee Meeting Notes
- VALUE Initiative Reports

Learning Project Documents

- Program Description Documents
- Evaluation Templates
- Evaluation Timelines
- Evaluation Summaries
- Evaluation Reports
- Site Visit/Workshop Planning Documents
- Site Visit/Workshop Agendas
- Site Visit/Workshop Presentation Materials
- Site Visit/Workshop Notes
- Site Visit/Workshop Evaluations
- Workshop Summary
- Project Planning Meeting Agendas
- Project Planning Meeting Notes
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CHAPTER 4: A MODEL FOR SUPPORTING EVIDENCE USE IN PROGRAM MANAGEMENT WITHIN HEALTH CARE ORGANIZATIONS

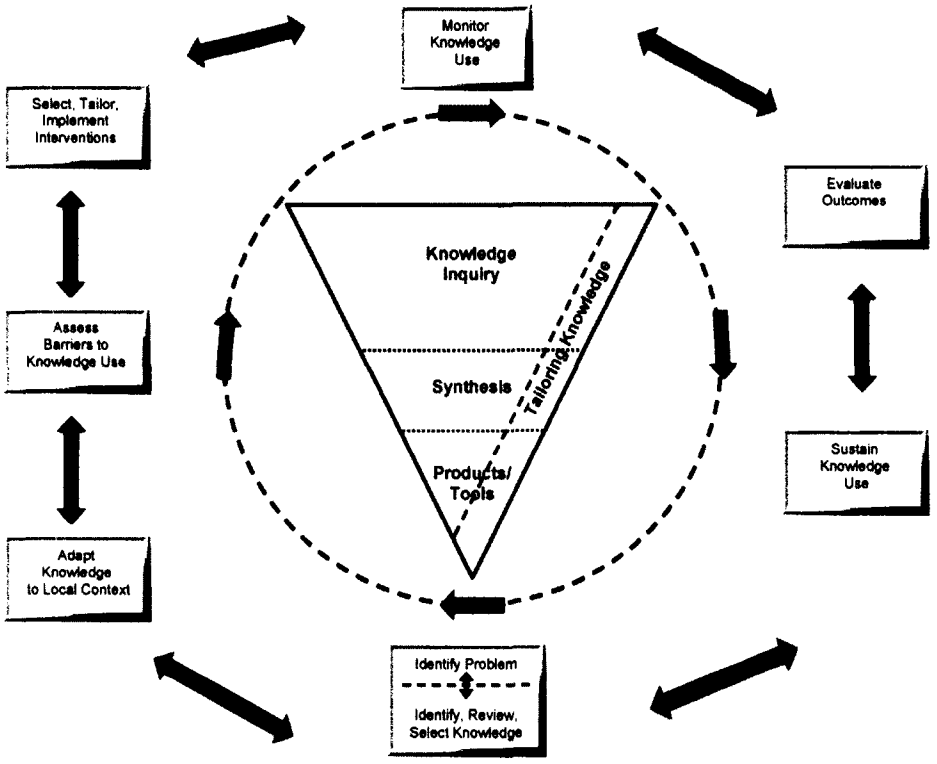
INTRODUCTION

Evidence-informed decision-making has become a priority for many health care organizations[1]. However, promoting and supporting the use of evidence to inform program management decisions remains a challenge[2,3]. Health care organizations are complex, uncertain environments in which goals and objectives are often undefined or subject to change[1]. Health care managers find appraising evidence difficult[4] and often lack formal management training[3,5]; however, they do value research evidence[6], and there is a clear need to understand how evidence-informed decision-making can be supported within health care organizations. A lack of demonstrated use and application of knowledge at multiple levels within the health system, including practice, policy and program level decisions is evidence of a "knowledge-to-action gap"[7(p14)]. The process of moving knowledge into action through the interaction of research, policy and practice[8] requires health care organizations critically examine the resources, tools and supports required to promote evidence-informed decision-making by its program managers.

There are a number of different theories, models and frameworks offering different perspectives on knowledge translation[9]. Early theories of knowledge translation, such as the Diffusion of Innovation Theory, have informed other frameworks, including the research development dissemination utilization conceptual framework, which focuses largely on

knowledge dissemination and not knowledge translation[10]. Kitson et al's Promoting Action on Research in Health Services Model of knowledge translation focuses on research implementation highlighting the importance of scientific evidence, context of application and facilitation, which can be applied most readily in the clinical decision-making context[11]. Graham et al developed and proposed a conceptual framework for the knowledge to action process that models the creation and application of knowledge using a "planned-action approach"[7(p20)]. It presents a knowledge creation and action cycle that identifies the activities and processes required to move knowledge into action across health care decision-making settings (Figure 4-1)[7].

Figure 4-1: Knowledge to Action Process



From Graham et al 2006

The knowledge creation component is represented by a funnel at the centre of the framework and includes knowledge inquiry, knowledge synthesis and knowledge tools and products. The application of knowledge is illustrated through the action cycle, which surrounds the knowledge creation process and includes the activities and processes required for the application of knowledge: identifying the problem; adapting knowledge to the local context; assessing barriers to knowledge use; selecting, tailoring and implementing interventions; monitoring knowledge use; evaluating outcomes; and sustaining knowledge use. Each phase of the action cycle influences the other phases. The knowledge to action process is a widely used and accepted model for moving knowledge into action in health care, being applied to decision-making at policy, program and practice levels in diverse settings including public health[12,13], health policy development[14,15], health technology assessment[16], clinical practice guideline implementation[17,18], primary care[19,20], asthma care[20,21], cancer care[22], diabetes care[23], nutrition[24], and genetic testing[25].

As a conceptual framework, the knowledge to action process takes a systems approach to the theory of the knowledge to action process[8]. Health care organizations have been described as "complex adaptive systems", which create unique challenges for making evidence-informed decisions by program managers[26]. Systems theory aligns with decision-

making in health care organizations, as they are dynamic and influenced by unexpected changes in other interdependent systems[8,26-28]. While the framework is a preferred model for moving knowledge into action in health care settings, there is little information to guide organizations in implementing the framework at the program level, and as such, health care organizations seeking to promote the knowledge to action process at the program management level need to understand the organizational tools, resources and supports required to operationalize the knowledge to action process[1,29].

The objective of this research was to develop a model for supporting evidence use in program management within health care organizations. The model builds upon the knowledge to action process developed by Graham et al[7] by adding the organizational building blocks upon which health care organizations can support program mangers in developing, applying and using evidence to inform program planning, implementation and evaluation.

METHODS

Based on existing evidence and primary data collected through an initiative to build organizational capacity for evidence use, a model for supporting evidence-informed program management within health care organizations was developed. The model draws from the best available

theoretical, empirical and experiential evidence. Its development builds upon research undertaken to explore the barriers and facilitators to the use of evidence in program planning, implementation and evaluation within health care organizations and to identify strategies to promote evidence informed program planning, implementation and evaluation through a case-based approach, informed by findings of a comprehensive literature review of relevant existing published work[30,31].

Theoretical and Empirical Evidence - Literature Review

A review of existing theoretical and empirical research on evidence-use by decision-makers at the program level in health care organizations was undertaken[30]. Fourteen studies identifying barriers and facilitators to the use of evidence in program planning, implementation and evaluation within health care organizations were found. For each study, information on study design, decision-making context, location, sector, type of decision-maker, and findings was extracted using a standard data abstraction form. One reviewer extracted data from all of the studies. However, for a random sample (10%), data were extracted by a second reviewer to assess reliability. The data collected were entered into tables to facilitate qualitative analyses. The quality of the studies was assessed using published criteria for critically appraising qualitative, quantitative and mixed methods research[32]. Two reviewers summarized

the data from the studies through narrative review[33]. The detailed methods and findings from the review are published elsewhere[30].

Experiential Evidence - A Capacity Building Initiative

Through a participatory action research approach, the use of evidence to inform decisions in two programs in two different health care organizations was examined using a multiple-case study design[34]. The setting for the participatory action research project was a partnership initiative between two Canadian health care organizations, Regina Qu'Appelle Health Region in Saskatchewan and Northern Health in British Columbia, and the University of Alberta. The two health care organizations were small urban health regions that serve urban, rural and First Nations populations in Western Canada. The initiative was designed to explore capacity building strategies for supporting the use of evidence in program planning, implementation and evaluation. The overarching goals of the initiative were to add value through cross jurisdiction collaboration to bring research closer to practice in health care, build relationships across academic and practice sectors and facilitate development of and access to relevant research.

To meet the objectives identified by the partnership organizations, the initiative team developed a flexible process and tools that could be used at any point in the planning and evaluation cycle and that would build

organizational capacity to use evidence in program development, implementation and evaluation. Each site identified an area of focus for the initiative and identified a project of strategic priority within which the process could be piloted as a learning project. In Regina Qu'Appelle Health Region the project was a Rural Early Chronic Kidney Disease Detection and Intervention Program and in Northern Health the project was a Mental Health and Addiction Collaborative Program. A detailed description of the partnership organizations and initiative structure is published elsewhere[35].

The participatory action research project involved a collaborative approach using multiple methods including participant observation (with one researcher actively participating while documenting activities, interactions and reflections), documentation review, interviews and focus groups. The findings from the original research, as well as further subsequent analysis of reports, interview transcripts and focus group transcripts formed the foundation of the methods for the experiential component of the model development undertaken here.

Key informant interviews and focus groups were held throughout the initiative, which provided multiple opportunities for feedback from participants. Specifically, interviews with key stakeholders explored individual perspectives and experiences with evidence use in program

planning, implementation and evaluation within their organization, as well as the usefulness of the initiative components. Key stakeholders were selected through purposive sampling[36] and included the executive, leads, liaisons and program staff involved in the site-specific projects. In total, 23 individual semi-structured interviews were completed.

Three focus groups were held. The first was conducted with program staff, liaisons and leads that participated in the site-specific activities (n=9). Semi-structured and open-ended questions developed in collaboration with the leads were used to explore the usefulness of capacity-building strategies for evidence-informed planning within health care organizations and the strategies, tools and resources needed to support appropriate use of evidence in program planning, implementation and evaluation. The second focus group included key stakeholders, including executive members from each region (n=13). This provided an opportunity for regional partners to jointly consider the implications of the initial findings from the documentation review and key stakeholder interviews from an organizational perspective and identify principles of strategies with perceived benefits to promote evidence-informed program planning, implementation and evaluation within health care organizations. In addition, one inter-provincial focus group was conducted as part of a dissemination event with broader representation from health care organizations across Western Canada. Its purpose was to explore how

the findings from the research could be applied to other settings, testing transferability of the findings (n=14). The focus groups provided participants with an opportunity to bring together ideas for how health care organizations can support evidence use and reflect on their own views in the context of the views of others[37]. All sessions were digitally recorded. In addition, one researcher with expertise in qualitative methods observed all sessions, taking detailed notes. Data from all sources were coded using an integrated approach employing both deductive and inductive code development[38]. Additional review and comparative analysis allowed for new themes to emerge and codes to be generated. Rigour was strengthened through member checking in the form of built-in multiple opportunities for feedback and through verification of findings with the collaborating health care organizations and broader knowledge users. The detailed methods and findings from the participatory action research project are published elsewhere[31].

Data Analyses

To develop the model, the authors undertook thematic and constant comparative analysis to identify themes from the findings of the literature review and of the participatory action research project, as well as from the original interview and focus group transcripts. Two researchers independently analyzed all reports and transcripts. Data from all sources were coded using an integrated approach employing both deductive and

inductive code development[38]. Initial coding was deductive, based on the main themes emerging from the initial review of the literature. Additional review and comparative analysis allowed for new themes to emerge and codes to be generated. An understanding of the barriers and facilitators to evidence use experienced by program managers in health care organizations through a comprehensive review of the literature was then expanded upon through the examination of the experiences of the program managers in the participatory action research project. The project enabled the practical exploration of the tools, resources and supports that program managers require to support evidence-informed decision-making in response to known barriers to evidence use. The themes emerging from both the literature review and the participatory action research project were combined to develop the model.

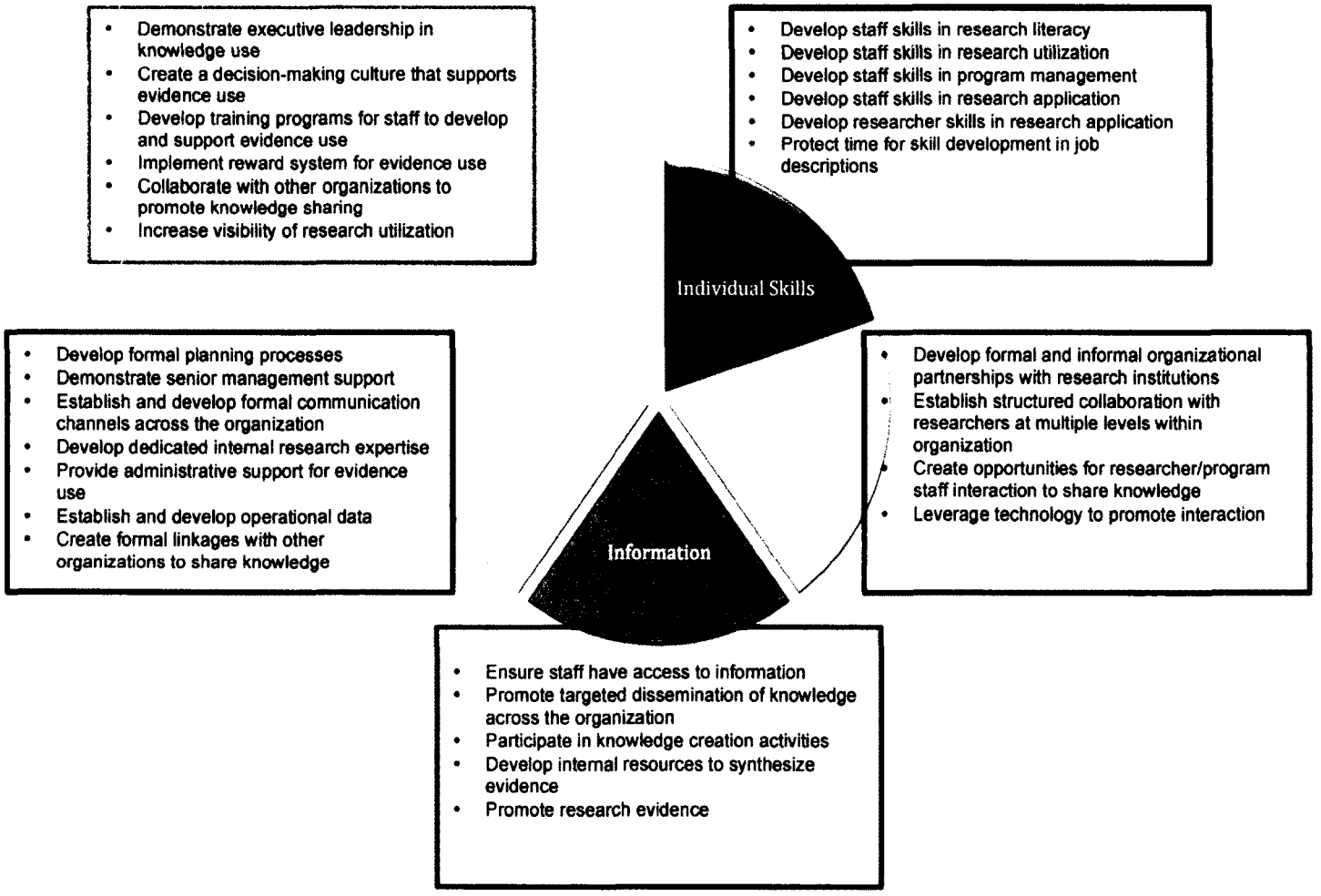
Results

The knowledge to action process[7], which is the "iterative process by which knowledge is put into practice"[39(p46)], can be used as a foundation for evidence-informed management in health care organizations. The challenge for health care organizations then becomes how to support the knowledge to action process in the program management decision-making context. The model developed to potentially accomplish this is presented in Figure 4-2. It illustrates the organizational resources, tools and supports needed to support the use of evidence in program

development, implementation and evaluation. Emerging themes suggested that there are five core areas upon which organizations need to focus to build a strong foundation for evidence-informed program management: 1) Organizational Culture; 2) Organizational Structure and Process; 3) Information; 4) Interaction; and 5) Individual Skills.

As depicted in Figure 4-2, the overall structure for the model is a five piece circular pie. The pieces of the pie are equal in size, as equal weight is given to each of the components. It also includes boxes that intersect each of the pie pieces. The boxes describe specific tools, resources and supports which emerged from the analysis. Organizations may utilize these tools in evidence-informed decision-making at the program management level.

Figure 4-2: Organizational Resources, Tools and Supports for Evidence Use



Organizational Culture

An emerging theme in the analysis suggested that the use of evidence in program planning, implementation and evaluation is promoted by an organizational culture that supports evidence use[40-46]. In the participatory action research project, when executive level leadership demonstrated knowledge use in their actions and decisions, a culture that supported evidence use was created. It was further developed through formal skill building programs for staff designed to foster skills in creating and applying evidence in context. Another theme that emerged was that a formal reward system to recognize and promote evidence use by program managers was shown to contribute to an organizational culture that supported evidence use[43,45-47]. Organizational commitment to collaboration with other organizations to share knowledge was another way health care organizations developed a culture that promoted evidence-informed management, as was observed both in the regions and in the literature as it provided visible and tangible opportunities to share knowledge across organizations[40,44]. This theme of highly visible research utilization within organizations was found to contribute to the development of a culture of evidence use[40,44].

Organizational Structure and Process

Findings from both the literature review and the participatory action research project showed that evidence-informed program management

required organizational structures and processes to support managers in the use of evidence in program planning, implementation and evaluation[40,42-46,48]. Formal program planning processes that provided managers with a road map for integrating evidence were identified by program managers in the participatory action research project as an essential support. This was echoed by Mitton & Patten[48],Weatherly et al[45] and Wilson et al[46] in the review of the literature. The support of senior management through a demonstrated understanding of the time and resources required for evidence-informed management also emerged as a theme within the participatory action research project and as a barrier to evidence-informed decision-making in the evidence synthesis[5,47,49]. In the regions, intra-organizational communication was a prominent theme in supporting evidence use. The establishment and development of formal internal communication channels to share knowledge and promote evidence use was another theme that emerged from the analysis[40,42,44,46,48]. Confirming the findings from the evidence synthesis, the participatory action research project identified that organizations needed to develop dedicated internal research expertise and provide managers with administrative support for evidence-informed program management[40,42,45,46]. Another theme was the requirement for operational data at the program level. Organizational investment in the establishment and development of systems to collect and report data for program areas was identified as a required resource to support evidence-

informed program management[42,45]. Also, formal linkages with other organizations to promote knowledge sharing was a way organizations supported evidence use at this level. This was demonstrated through the inter-regional collaboration component of the participatory action research project and the perceived usefulness of inter-regional collaboration as a capacity building strategy by participants.

Information

In the literature it has been widely recognized that a strong organizational foundation for evidence use was built on information[40-42,44-46,48,50-52]. A theme emerging from the analysis was that organizations seeking to promote evidence use needed to ensure staff had access to information[42,44-46,50-52]. This included an organizational library, or partnership with an academic library, and the library staff to support searching for research findings, local evaluation results, and expert opinion [45,4849,52]. It was also found that organizations could promote evidence use through the targeted dissemination of knowledge across the organization[40,41,45,48,51]. Opportunities for staff to participate in knowledge creation activities, such as the development and implementation of program evaluations at each of the sites in the participatory action research project, was perceived by participants as promoting evidence use. Internal organizational resources for knowledge synthesis also need to be developed, as it was noted that the program managers were not expected to possess this specialized skill in the case

studies. Overall, the analysis found that organizational promotion of research evidence supported evidence-informed program management by mitigating negative perceptions of research in both the literature and by the demonstrated change in attitude towards research by participants in both regions[5,42,47,49,52,53].

Interaction

Findings from the analysis showed that that interaction between researchers and decision-makers promoted evidence use [40,44,50-52]. Both the literature review and the experience of participants in the regions suggested that organizations could develop and encourage both formal and informal organizational partnerships with research institutions to promote such interaction[44,53]. Structured collaboration with researchers at multiple levels within the organization was observed in the participatory action research project as supporting evidence use. Organizations promoted it by creating opportunities for researchers and program staff to interact to share knowledge, and, as the case studies demonstrated, technology could be leveraged to promote this interaction[40,41,47,51].

Individual Skills

The findings from the literature review and the participatory action research project both suggested that supporting the use of evidence in program planning, implementation and evaluation required organizational investment in the development of the skills of individual program

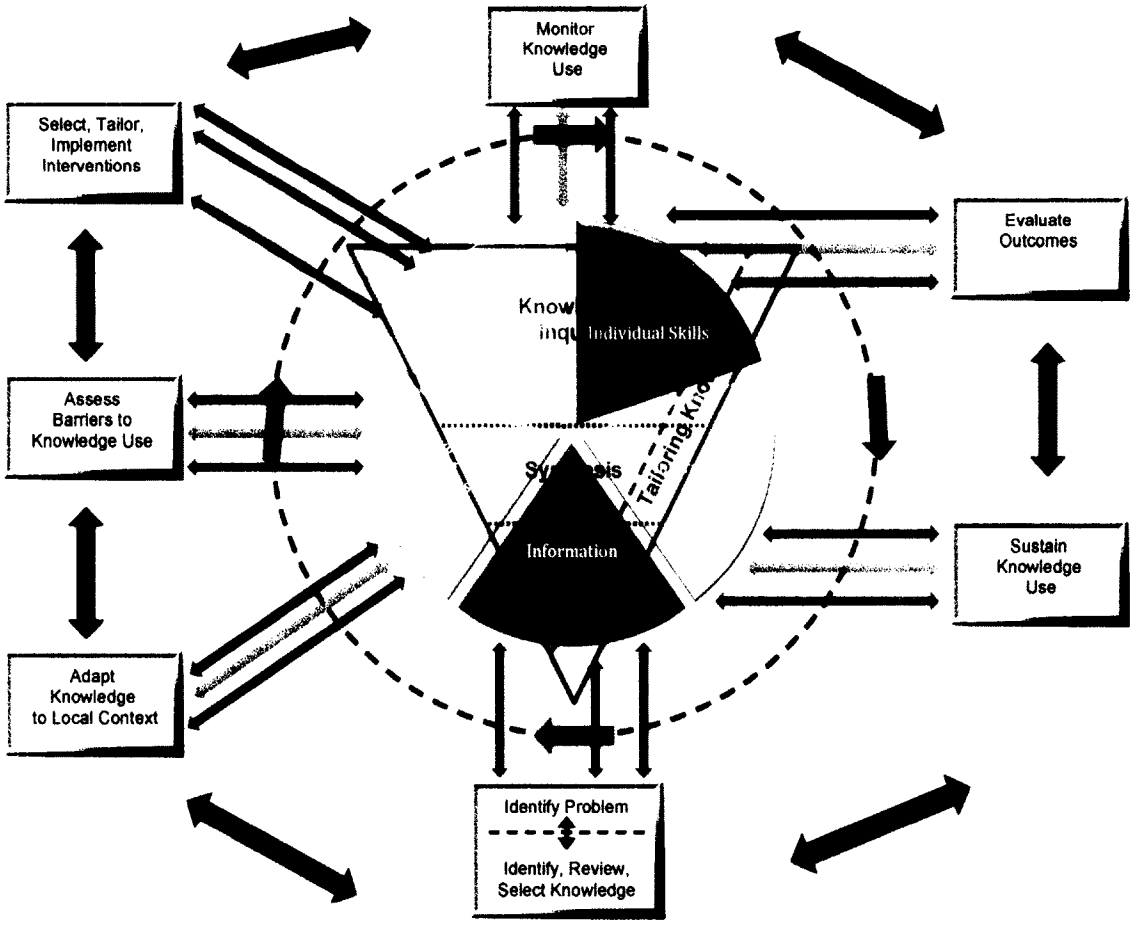
managers and staff[40,41,43,46]. Through the participatory action research project, a lack of research literacy among program managers was observed that was consistent with the literature[5,42,45-48,51,52]. Organizations seeking to promote evidence-informed management needed to develop staff skills in research literacy, utilization and application[40,43,46,47,50]. Two related emerging themes from the participatory action research project were that program managers required management skills development, and that time for this skill development needed to be protected in job descriptions. Organizational collaboration with academic institutions to promote the development of researcher skills in the application of evidence to improve the knowledge translation process was also shown to be useful for promoting evidence-informed program management[47].

MODEL FOR SUPPORTING EVIDENCE USE IN PROGRAM MANAGEMENT WITHIN HEALTH CARE ORGANIZATIONS

Figure 4-3 expands upon Figure 4-2. It presents a model for supporting evidence use in program management within health care organizations by overlaying the knowledge to action process with the organizational resources, tools and supports required to promote evidence-informed program management. The organizational resources, tools and supports for evidence use are central to the application of the knowledge to action process in program planning, implementation and evaluation. The coloured arrows from each of the elements in the knowledge to action

process illustrate the essential organizational components required to support that specific process. This was demonstrated through findings from the literature review and participatory action research project. For example, "Evaluating Outcomes" required individual skills (purple arrow), organizational culture (orange arrow), and organizational structure and process (green arrow) to support the evaluation of program outcomes. Similarly, "Selecting, Tailoring and Implementing Interventions" required individual skills (purple arrow), organizational structure and process (green arrow), interaction between researchers and decision-makers (pink arrow) and information (blue arrow).

Figure 4-3: Model for Supporting Evidence Use in Program Management within Health Care Organizations



Discussion

Managers in health care organizations are responsible for implementing innovative programs to meet the health service needs of their communities, highlighting the importance of promoting evidence-informed program management[54]. With evidence-informed decision-making a priority for most, understanding how to bridge the knowledge to action gap[7] in management decision making requires an increased understanding of the tools, resources and supports organizations need in order to promote evidence-informed program planning, implementation and evaluation. The development of a model for supporting evidence use in program management within health care organizations that builds on a systems approach[8] to the theory of the knowledge to action process developed by Graham et al[7] provides organizations with a clear model for building a solid organizational foundation to support evidence-informed decision making. The complex nature of health care organizations presents unique challenges to implementing the knowledge to action process at the program level[26]. The model developed to support evidence use in program management within health care organizations expands upon the knowledge to action process by identifying the organizational building blocks of organizational culture, organizational structure and process, information, interaction and individual skills that are required to promote evidence use at the program management level.

Conclusion

The model for supporting evidence use in program management within heath care organizations draws from the best available theoretical, empirical and experiential evidence. The model builds on the work of Graham et al[7], and enhances the knowledge to action process by overlaying the organizational tools, resources and supports that are required to operationalize the knowledge to action process at the program management level within health care organizations. Future research should seek to verify the model and explore the impact of the application of the model on decision making within health care organizations.

References

1. Best A, Terpstra JL, Moor G, Riley B, Norman CD, Glasgow RE. Building knowledge integration systems for evidence-informed decisions. *Journal of Organization and Management*. 2009; 23(6): 627-641.

2. Baker GR, Ginsberg L, Langley A. An Organizational Science Perspective on Information, Knowledge, Evidence, and Organizational Decision-Making. In F. Champagne (Ed), *Using Knowledge and Evidence in Health Care: Multidisciplinary Approaches* (pp. 95-123). University of Toronto Press, Toronto, ON; 2004.

3. Walshe K, Rundall TG. Evidence-based management: From theory to practice in health care. *Milbank Quarterly. 2001; 79*(3), 429-457.

4. Straus SE, Tetroe JM, Graham ID. Knowledge translation is the use of knowledge in health care decision making. *Journal of Clinical Epidemiology*. 2011; *64*(1), 6-10.

5. Bowen S, Erickson T, Martens PJ, Crockett S. More than "using research": the real challenges in promoting evidence-informed decision-making. *Healthc Policy*. 2009; 4: 87-102.

6. Mitton C, Adair CE, McKenzie E, Patten S, Perry BW. Knowledge transfer and exchange: Review and synthesis of the literature. *Milbank Quarterly*. 2007; 85: 729-768.

7. Graham I, Logan J, Harrison M, Straus S, Tetroe J, Caswell W, Robinson N. Lost in translation: time for a map? *The Journal of Continuing Education in the Health Professions*. 2006; 26(1): 13-24.

8. Best A, Holmes B. Systems thinking, knowledge and action: towards better models and methods. *Evidence and Policy*. 2010; 6(2): 145-59.

9. Estabrooks CA, Thompson DS, Lovely JE, Hofmeyer A. A guide to knowledge translation theory. *The Journal of Continuing Education in the Health Professions*. 2006; 26: 25-36.

10. Havelock RG. *Planning for innovation through dissemination and utilization of knowledge.* Center for Research on Utilization of Scientific Knowledge, Ann Arbor, MI; 1969.

11. Rycroft-Malone J. The PARIHS framework – a framework for guiding the implementation of evidence-based practice. *Journal of Nursing Care Quality*. 2004; 19(4): 297-304.

12. Jacobs JA, Clayton PF, Dove C, Funchess T, Jones E, Perveen G, Skidmore B, Sutton V, Worthington S, Baker EA, Deshpande AD, Brownson RC. A survery tool for measuring evidence-based decision making capacity in public health agencies. *BMC Health Services Research*. 2012; 12: 57.

13. Peirson L, Ciliska D, Dobbins, M, Mowat D. Building capacity for evidence informed decision making in public health: a case study of organizational change. *BMC Public Health*. 2012; 12: 137.

14. Mavoa H, Waqa G, Moodie M, Kremer P, McCabe M, Snowdon W, Swinburn B. Knowledge exchange in the Pacific: The TROPIC (translational research into obesity prevention policies for communities) project. *BMC Public Health*. 2012; 12: 552.

15. El-Jardali F, Lavis JN, Ataya N, Jamal D, Ammar W, Raouf S. Use of health systems evidence by policymakers in eastern mediterranean countries: views, practices, and contextual influences. *BMC Health Services Research*. 2012; 12: 200.

16. Gagnon M, Gangnon J, St-Pierre M, Gauvin F, Piron F, Rhainds M, Coulombe M, Lepage-Savary D, Desmartis M, Dipankui MT, Legare F. Involving patients in HTA activities at local level: a study protocol

based on the collaboration between researchers and knowledge users. *BMC Health Services Research*. 2012; 12:14.

17. Dogherty EJ, Harrison M, Baker C, Graham ID. Following a natural experiement of guideline adaptation and early implementation: a mixed-methods study of facilitation. *Implementation Science*. 2012; 7:9.

18. Brosseau L, Wells GA, Kenny GP, Reid R, Maetzel A, Tugwell P, Huijbregts M, McCullough C, De Angelis G, Chen L. The implementation of a community-based aerobic walking program for mild to moderate knee osteoarthritis (OA): a knowledge translation (KT) randomized controlled trial (RCT): Part 1: The uptake of the Ottawa panel clinical practice guidelines (CPGs). *BMC Public Health*. 2012; 12: 871.

19. Menear M, Grindrod K, Clouston K, Norton P, Legare F. Advancing knowledge translation in primary care. *Canadian Family Physician*. 2012; 58(6): 623-627.

20. Licskai C, Sands T, Ong M, Paolatto L, Nicoletti I. Using a knowledge translation framework to implement asthma clinical practice

guidelines in primary care. *International Journal for Quality in Health Care*. 2012; 24(5): 538-546.

21. Wahabi HA, Alziedan RA. Easons behind non-adherence of healthcare practitioners to pediatric asthma guidleline in an emergency department in Saudi Arabia. *BMC Health Services Research*. 2012; 12: 226.

22. Browman GP. Challenges in knowledge translation: the early years of Cancer are Ontario's program in evidence-based care. *Current Oncology*. 2012; 19(1): 27-35.

23. Yu CH, Parsons J, Mamdani M, Lebovic G, Shah BR, Bhattacharyya O, Laupacis A, Straus SE. Designing and evaluating a web-based self-management site for patients with type 2 diabetes – systematic website development protocol. *BMC Medical Informatics and Decision Making*. 2012; 12: 57.

24. Westergren A. Action-oriented study circles facilitate efforts in nursing homes to 'go from feeding to serving': conceptual perspectives on knowledge translation and workplace learning. *Journal of Aging Research*. 2012; 627371.

25. Rhebergen MDF, Visser MJ, Verbeck MM, Lenderink AF, van Dijk FJH, Kezic S, Hulshof CT. Revealing barriers and facilitators to use a new genetic test: comparison of three user involvement methods. *Implementation Science*. 2012; 7:9.

26. Swanson RC, Cattaneo A, Bradley E, Chunharas S, Atun R, Abbas K, Katsaliaki K, Mustafee N, Meier B, Best A. Rethinking health systems strengthening: key systems thinking tools and strategies for transformational change. *Health Policy and Planning*. 2012; 27: 1v54-iv61.

27. Best A, Trochim WK, Haggerty J, Moor G, Norman CD. Systems thinking for knowledge integration: new models for policy-research collaboration. In Ferlie EH, McKee LP. (Eds), *Organizing and reorganizing: power and change in health care orgnizations*. Palgrave Macmillan, Basingstoke, Hampshire: 2008.

28. Ellis B, Hebert SI. Complex adaptive systems (CAS): an overview of key elements, characteristics and applciation to management theory. *Informatics in Primary Care*. 2011; 19: 33-7.

29. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly. 2004; 82*(4): 581-629.

30. Humphries S. Barriers and facilitators to evidence use in program planning, implementation and evaluation: A review of the literature. *Chapter 1 in Serena Humphries' PhD Thesis. 2013.*

31. Humphries S. Exploring evidence use in program management decision within health care organizations. *Chapter 3 in Serena Humphries' PhD Thesis. 2013.*

32. Pluye P, Robert E, Cargo M, Bartlett G, O'Cathain A, Griffiths F *et al.* Proposal: A mixed methods appraisal tool for systematic mixed studies reviews; 2011.

33. Popay J, Roberts H, Sowden A, Petticrew M, Arai L, Rodgers M *et al.* Guidance on the conduct of narrative synthesis in systematic reviews: A product from the ESRC methods programme. Lancaster University; 2006.

34. Cassell C, Symon G. *Essential Guide to Qualitative Methods in Organizational Research*. SAGE Publications Ltd., London; 2004.

35. Humphries S, Hampe T, Larsen D, Bowen S. Building organizational capacity for evidence use: the experience of two Canadian health care organizations. *Healthcare Management Forum*. In Press

36. Mason J. *Qualitative Researching*. SAGE Publications Ltd., London; 1996.

37. Patton MQ. *Qualitative Research & Evaluation Methods (3rd Ed.)*. SAGE Publications Ltd., Thousand Oaks, CA; 2002.

38. Bradley EH, Curry LA, Devers KJ. Qualitative data analysis for health services research: developing taxonomy, themes, and theory. *Health Research and Educational Trust.* 2007; 42(4): 1758-1772.

39. Graham I, Tetroe JM. Getting evidence into policy and practiec: perspective of a health research funder. *Journal of the Canadian Academy of Child and Adolescent Psychiatry.* 2009; 18:8: 46-50.

40. Belkhodja O, Amara N, Landry R, Ouimet M. The extent and organizational determinants of research utilization in Canadian health services organizations. *Science Communication.* 2007; 28: 377-417.

41. Dobbins M, Cockerill R, Barnsley J, Ciliska D. Factors of the innovation, organization, environment, and individual that predict the influence five systematic reviews had on public health decisions.

International Journal of Technology Assessment Health Care. 2001; 17: 467-478.

42. Farmer J, Chesson R. Health care management: models for evidence-based practice. *Journal of Management in Medicine*. 2001; 15: 266-282.

43. Ham C, Kipping R, McLeod H. Redesigning work processes in health care: lessons from the National Health Service. *Milbank Quarterly*. 2003; 81: 415-439.

44. Jbilou J, Amara N, Landry R. Research-based-decision-making in Canadian health organizations: A behavioural approach. *Journal of Medical Systems*. 2007; 31: 185-196.

45. Weatherly H, Drummond M, Smith D. Using evidence in the development of local health policies. Some evidence from the United Kingdom. *Int J Technol Assess Health Care*. 2002; 18: 771-781.

46. Wilson MG, Rourke SB, Lavis JN, Bacon J, Travers R. Community capacity to acquire, assess, adapt, and apply research evidence: a survey of Ontario's HIV/AIDS sector. *Implementation Science*. 2011; 6.

47. Orton L, Lloyd-Williams F, Taylor-Robinson D, O'Flaherty M, Capewell S. The use of research evidence in public health decision making processes: systematic review. *PLoS One*. 2011; 6: e21704.

48. Mitton C, Patten S. Evidence-based priority-setting: what do the decision-makers think? *Journal of Health Services Research & Policy*. 2004; 9: 146-152.

49. Higgins JW, Strange K, Scarr J, Pennock M, Barr V, Yew A *et al*. "It's a Feel. That's What a Lot of Our Evidence Would Consist of": Public Health Practitioners' Perspectives on Evidence. *Evaluation & the Health Professions*. 2011; 34: 278-296.

50. Dobbins M, Jack S, Thomas H, Kothari A. Public health decision-makers' informational needs and preferences for receiving research evidence. *Worldviews on Evidence-Based Nursing*. 2007; 4: 156-163.

51. Dobbins M, Rosenbaum P, Plews N, Law M, Fysh A. Information transfer: what do decision makers want and need from researchers? *Implementation Science*. 2007; 2.

52. Niedzwiedzka BM. Barriers to evidence-based decision making among Polish health care managers. *Health Services Management Research*. 2003; 16: 106-115.

53. Innvaer S, Vist G, Trommald M, Oxman A. Health policy-makers' perceptions of their use of evidence: a systematic review. *Journal of Health Services Research & Policy*. 2002; 7: 239-244.

54. Birken S, Lee S, Weiner B. Uncovering middle managers' role in healthcare innovation implementation. *Implementation Science*. 2012; 7(28): 1-12.

CONCLUSION

The purpose of this thesis was to critically examine the use of evidence in planning, implementing and evaluating programs within health care organizations. It contained a series of four papers that collectively explored the use of evidence to inform program management decisions.

A comprehensive review of the literature exploring the barriers and facilitators to evidence use experienced by health care decision-makers at the program level identified four distinct categories of barriers and facilitators to evidence use experiences by health care managers: (1) Informational, (2) Organizational, (3) Individual, and (4) Interactional. Understanding the barriers and facilitators to evidence-use experienced by managers is an essential first step in developing strategies to promote evidence-informed decision-making at the program level within health care organizations. The findings from this review confirm that evidence-informed management requires more than encouraging research utilization within organizations. The barriers and facilitators of evidence use in decision-making at the management level within health care organizations identified through this review can be used to develop the required multidimensional solutions for promoting evidence-informed program planning, implementation and evaluation within health care organizations.

The second chapter provided an overview of an innovative collaboration between two Canadian health care organizations and their university partner to build organizational capacity for evidence-use in program planning, implementation and evaluation. The capacity building strategies included: (1) Inter-regional collaboration, (2) Learning projects, (3) Liaison roles, (4) Research support, and (5) Protected time for skill building. While the lessons learned from this initiative may not be directly generalizable to other health care organizations, the similar needs and experiences of the participating health regions suggests that other health care organizations would find the lessons learned useful. The initiative found that strategies intended to promote evidence use need to be directed at multiple levels within the organization, to enhance existing supports and address known barriers to evidence use. The strategies to promote evidence use trialed were valued by participants and would be recommended to organizations looking to promote evidence–informed program planning, implementation and evaluation. In particular, strategies that provide ongoing real time research expertise and support to program staff and create opportunities for program staff to apply learning through practical projects of strategic priority were highly valued.

The third chapter presented the findings from a participatory action research project designed to explore perceived barriers and facilitators to

evidence-informed decision-making within health care organizations and to identify strategies to promote evidence use in program planning, implementation and evaluation. The findings suggest that the promotion of evidence use must be directed at multiple levels within organizations including: (1) an organizational culture that encourages and rewards evidence use, including senior management support of evidence use at the program and individual level; (2) an organizational infrastructure that provides the tools, resources, structure and processes to use evidence; (3) access to networks of experts; and (4) investing in the training and skill development of staff. The partnership initiative to develop and implement strategies to build organizational capacity to use evidence to inform management decision-making provided a unique opportunity to examine the use of evidence in health care organizations in Canada, and to increase the understanding of what strategies are useful.

The fourth and final chapter presented a model developed to help health care organizations implement the knowledge to action process. The model for supporting evidence use in program management within heath care organizations was drawn from the best available theoretical, empirical and experiential evidence. The model enhanced the knowledge to action process by overlaying the organizational tools, resources and supports that are required to operationalize the knowledge

to action process at the program management level within health care organizations

Together, the papers in this thesis sought to examine the state of the science on the use of evidence in program planning, implementation and evaluation; explore strategies to build capacity for evidence-informed management decision-making within health care organizations; and propose a model for organizations to move knowledge into action at the program level.

The findings from this thesis suggest future research in the area of evidence use in program management is still needed.

Potential topics for future research include:

- What strategies are effective in overcoming organizational barriers to evidence-informed decision-making?

- How can the process managers use to apply evidence in health care organizations be enhanced to promote evidence-informed decision-making?

- What strategies are effective in promoting the use of evidence in program planning, implementation and evaluation?

- What strategies are most effective in promoting interaction between researchers and decision makers?

- Is the model for supporting evidence use in program management within health care organizations valid?

- What is the impact of the application of the model on decision making within health care organizations?