



**Knowledge exchange in Health Promotion:
Theoretical Models and Examples**

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Executive Summary

This report discusses key theoretical models and practical examples of relevance to knowledge exchange aimed at capacity building and effectiveness in health promotion and chronic disease prevention. It is based on a literature review conducted in February 2007, and was commissioned by the Chronic Disease Prevention Alliance of Canada (CDPAC) on behalf of the Public Health Agency of Canada (PHAC). Key findings are outlined below.

Knowledge exchange and/or translation activities are focused on bridging the gap between research evidence and practice. Various terms may be used to describe these efforts, but knowledge exchange has been recommended as particularly appropriate for public health, and is the term generally used in this paper. Knowledge exchange emphasizes collaborative, iterative and sustained processes that involve researchers and practitioners/decision makers throughout the process of knowledge production (research), knowledge synthesis and knowledge application. Diffusion of innovations; linkage and exchange; and systems theories are often drawn on in conceptualizing knowledge exchange processes.

Examples of recommended strategies and best practices in knowledge exchange include:

- Employing multifaceted, active dissemination strategies.
- Building relationships, trust and communication between those who conduct and use research.
- Involving end-users at all stages of the knowledge cycle; utilizing collaborative and participatory research models.
- Utilizing appropriately skilled knowledge brokers and facilitators.
- Making (existing and new) evidence accessible to decision makers in policy and practice, through knowledge synthesis and actionable, evidence-based messages.
- Developing the capacity of decision-makers and end-users to access, evaluate and appropriately implement evidence-based practices.
- Developing capacity and incentives for researchers to participate in knowledge exchange and research application.

While the literature on knowledge exchange (and translation) in clinical and health services contexts constitutes a significant resource in relation to health promotion and community capacity building, there are also important differences that may require alternative approaches to key elements of the knowledge exchange process. In particular, many authors and organizations suggest that the optimal criteria and methods for identifying, evaluating and applying *evidence* are different for health promotion than they are for evidence-based medicine. For example, evidence of intervention effectiveness in health promotion may

need to include more qualitative and context-focused information, to allow decision makers to assess whether the interventions can be transferred effectively into various community settings. In addition, while randomized controlled trials are the gold standard of medical evidence, these are often unavailable and even inappropriate in relation to complex, community-based health promotion interventions.

Examples of knowledge exchange initiatives in health promotion include: a prototype best practices system developed in Ontario, the Getting Evidence into Practice project in Europe; Canada's National Collaborating Centres for Public Health; and the Guide to Community Preventive Services in the United States. Examples are provided in Appendix 2.

It has been suggested that knowledge exchange activities in health promotion have focused primarily on synthesizing evidence and developing best practice guidance, but that more emphasis is needed on two other parts of the process: building capacity and learning from practice. Other suggested future directions include building information systems and infrastructure that support applied health promotion research and more rigorous participatory research; integrating relevant knowledge and theory from other disciplines (e.g., knowledge management; social sciences; information systems; organizational change theories; marketing; educational technology); and, conducting more rigorous studies on the efficacy of various knowledge exchange strategies.

1. Introduction

The Chronic Disease Prevention Alliance of Canada (CDPAC) was contracted by the Public Health Agency of Canada (PHAC) to conduct a literature review on theoretical models underlying knowledge exchange¹ and related capacity building, as well as relevant examples. This work has been undertaken to support further development of the PHAC Observatory of Best Practices in chronic disease prevention and health promotion, specifically the initial work of the Best Practices Observatory Information Exchange and Capacity-Building Working Group.

The paper begins with an overview of the methodology used. Section three discusses the concept of evidence-based health promotion practice. Section four describes key concepts and models in knowledge exchange in relation to clinical and health services. In section five, theoretical issues and models specific to knowledge exchange within health promotion are examined, along with relevant program examples. Section six summarizes conclusions and highlights key themes and potential future directions emerging from this review.

2. Methodology

Given the scope and timelines for the project, as well as the diversity and volume of potentially relevant literature, the review was not an exhaustive examination of theoretical models within health and health promotion literature. Rather, it was intended to be selective of useful and relevant conceptual frameworks and practical examples, in the context of the Working Group's objectives. Therefore, the review is an 'exploratory' examination of the literature, designed to identify and discuss:

1. Relevant theoretical models for knowledge exchange within various health contexts (i.e., clinical, health services).
2. Relevant theoretical models for knowledge exchange within health promotion literature.
3. Relevant examples of knowledge exchange initiatives in public health and health promotion.

An initial search of the published literature was conducted by an information specialist, using PubMed/MEDLINE; Cochrane Databases, Proquest

¹The term knowledge exchange is used here broadly and inclusively to refer to the flow of knowledge between researchers, practitioners, policy makers and other involved in health promotion and public health. This term is increasingly thought appropriate in public health contexts^{bh} and was recommended in a recent environmental scan conducted in preparation for the National Collaborating Centre on Public Health Methodologies and Tools^u. In section 4 of the paper, however, the term knowledge translation is used, in keeping with the predominant terminology used in the literature examined in that section.

Dissertations and Theses, the Campbell Collaboration, Collected CSA databases, BioMed Central, Sociological Abstracts and EMBASE. An Internet search, using both Google and Google Scholar, was conducted to identify and access relevant grey literature. A list of the key words and terms used in these searches is included in appendix 1. Further articles were identified by examining references in the initial intake of selected articles.

Over 300 abstracts were identified and reviewed to identify articles presenting relevant theoretical models, case studies and/or examples of knowledge exchange in health and health promotion. Of these, over 100 articles and papers were selected for initial review to identify relevant models and examples. Considerations in selecting articles for further review included a focus on articles published 2001 or later; and an effort to capture a range of concepts as opposed to examining all articles dealing with a given topic. For example, where many articles highlighted the same theoretical model (e.g., “diffusion of innovations”) or a particular health promotion context, a subset of these was selected for inclusion. The types of articles and papers selected included theoretical discussions of key concepts and frameworks, empirical studies of knowledge exchange initiatives, and reviews of/guides to knowledge exchange theories and approaches.

3. The concept of evidence-based health promotion

Key aims of the Best Practices Observatory are to build capacity for and uptake of evidence-based interventions in chronic disease prevention and health promotion. The term “evidence-based health promotion” is often used to denote the application of evidence of effectiveness in such contexts^{1,2}. Currently, there is a widely acknowledged gap between evidence of effectiveness and health promotion practice^{3,4}. In this regard, health promotion has much in common with other areas of practice in health, such as clinical medicine, nursing, and health services. In these contexts, increasing efforts are aimed at knowledge exchange (or translation) to decrease the evidence-practice gap^{5,6,7}, sometimes referred to as the “know-do” gap⁸.

Some authors state that evidence-based health promotion (and public health) has evolved out of evidence-based medicine^{9,2}. While they share common ground, a recurring theme in the health promotion and public health literature is the need for caution and adaptation in transferring concepts from evidence-based medicine into health promotion^{2;10;11;12;13}. Key reasons for this are:

- Evidence-based medicine emphasizes systematic reviews that prioritize evidence from randomized controlled trials (RCTs), a research design that is often not used to evaluate health promotion interventions^{39,13,55} and that is often an inappropriate research design

for evaluating complex community-based public health interventions^{10;2;13}

- Evaluative criteria for systematic reviews are focused on study design, without consideration to factors important to assessing the transferability of health promotion interventions into other contexts, such as information on the intervention itself and the context in which it was initially applied¹³.
- The model of disseminating highly standardized medical interventions is inappropriate for health promotion, in which interventions should be planned and implemented in a participatory and context-appropriate way^{12;11}.

Despite these important issues, the knowledge translation literature in clinical and health services is relevant to knowledge exchange and capacity building in health promotion and public health. This body of literature is a growing evidence base for knowledge translation practice, and addresses many of the issues a knowledge exchange framework for health promotion must address, such as how to make research evidence accessible for use in policy and practice^{14,15,16}; building linkages between researchers and decision makers^{17,18,19}; and developing capacity for evidence-based practice^{6,20}. Key theoretical models and issues in knowledge translation in medicine and health services are summarized in the following section.

4. Models of KT/KE in clinical medicine and health services

Many different definitions of and models for knowledge translation, or knowledge exchange have been articulated in relation to clinical medicine and health services contexts^{21,6,22,23}. While various strategies are commonly recommended, there is a lack of definitive evidence as to the efficacy and generalizability of various methods for promoting the effective use of evidence in health practice and policy^{24;25;26}. At the same time, there is evidence to support that there is a gap between research and practice, and that more passive and unidirectional earlier approaches to getting knowledge to decision makers and practitioners have not been effective in changing practice^{26,7}.

Various terms have been used to describe the translation of research into practice and the exchange between researchers and decision makers in policy and practice²². Graham et al. suggest that while the terms are often used interchangeably and/or inconsistently, there are some of the key terms in use that have a particular focus within the domain of “knowledge to action”:

- “Knowledge translation” focuses on reducing the gap between what is known from scientific research and knowledge synthesis and the implementation of this knowledge to improve health outcomes and healthcare system efficiencies.
- “Knowledge transfer” can refer to one or two-way processes aimed at getting knowledge (defined more broadly) to stakeholders.

- “Knowledge exchange” focuses on ongoing exchange and knowledge transfer between researchers and decision makers to ensure the relevance, utility and applicability of knowledge generated by research.
- Other terms include “research utilization”, “implementation”, “dissemination” and “diffusion”, all of which are focused on aspects of moving research findings and/or knowledge products into practice.

Over time, theoretical models depicting knowledge translation or knowledge exchange have evolved from a more linear model focusing on dissemination to a more iterative process between producers and users of knowledge^{24,21} as well as a shift from more passive methods of dissemination to more active methods^{21,24}. Organizations involved in health research and practice often map their knowledge exchange models visually, and selected examples are provided in appendix 3.

Best practices in knowledge translation and exchange

Examples of often recommended strategies for knowledge exchange include:

- Employing multifaceted, active dissemination strategies⁶
- Building relationships, trust and communication between those who conduct and use research^{18,19}
- Involving end-users at all stages of the knowledge cycle; utilizing collaborative and participatory research models^{27,18,19}
- Supporting knowledge sharing structures such as communities of practice and social networks^{28,29,30}
- Utilizing appropriately skilled knowledge brokers and facilitators^{17,31}
- Making (existing and new) evidence accessible through knowledge synthesis including actionable, evidence-based messages^{6,14,15,16}.
- Developing capacity of decision-makers and end-users to access, evaluate and appropriately implement evidence-based practices⁶
- Developing capacity and incentives for researchers to participate in knowledge exchange and research application^{6,20}.

Underlying theories and concepts

Diffusion of innovations theory is often drawn on in the development of knowledge translation models^{32,33,34,23}. In diffusion theory, Rogers described five stages that individuals progress through in the adoption of innovations: awareness, persuasion, decision, implementation and adoption²³. He also identified four main elements that influence the diffusion process: the innovation, communication channels, time and a social system^{23,32}. Dobbins’ Framework for the Dissemination and Utilization of Research for Health-care Policy and Practice³² is an example of a model that draws on diffusion theory to describe the steps of the innovation adoption process in health care:

- Knowledge – awareness of and interest in the innovation

- Persuasion – attitudes toward the innovation are formed, and are strongly influenced by peers, as well as:
 - Innovation characteristics
 - Organizational characteristics
 - Environmental characteristics
 - Individual characteristics
- Decision – conclusion to either adopt or reject the innovation (or something in-between)
- Implementation – for those who adopt the innovation, integrating the research evidence into clinical and/or policy decisions
- Confirmation –evaluation of the consequences of adopting

Other key concepts from diffusion theory are the influence of social factors, such as communication networks and opinion leaders, in processes of diffusion and adoption. Diffusion of innovation theory has been expanded over time to address elements such as non-linear pathways to adoption, interactions between knowledge producers and adopters, and organizational determinants of adoption^{35,36}. Further uses of diffusion theory will be discussed in section five, in relation to the diffusion of health promotion interventions.

Linkage and exchange and systems approaches

The importance of communication, relationships and facilitators or linkages is also prominent in recent direction in knowledge exchange. The Canadian Health Services Research Foundation (CHSRF) defines knowledge exchange as follows:

Knowledge exchange is collaborative problem-solving between researchers and decision makers that happens through linkage and exchange. Effective knowledge exchange involves interaction between decision makers and researchers and results in mutual learning through the process of planning, producing, disseminating, and applying existing or new research in decision-making³⁷.

CHSRF has developed a number of strategies to support linkages and interaction between researchers and decision makers, including:

- Building the capacity of decision-making and research organizations to achieve knowledge exchange in order to make decisions on the basis of research and other evidence.
- Knowledge brokering to link researchers and decision makers, and facilitate their interaction so that they are able to better understand each other's goals and professional culture, influence each other's work, forge new partnerships, and use research-based evidence.
- Supporting research collaboration between researchers and decision makers.

- Conducting syntheses of research evidence to make "best practice" recommendations for a specific area of management or policy development.

In a recent article articulating lessons learned from health services researchers from across the country, Martens and Roos state that the overriding lesson learned is the "importance of relationship building, whether in formalizing contractual relationships, building and maintaining personal trust, having a communications strategy or increasing the involvement of users in the process".¹⁹ Other lessons included the following:

- Uptake of results may not be immediate.
- Getting evidence translated into policy takes time, resources and effort.
- Communicating the 'real meaning' of research results is important.
- Policy makers pay more attention to research results if they have invested their own funds and time.

Closely related to these concepts are the ideas that systems are important in how and whether research/evidence gets translated into practice. PHAC recently described knowledge translation as the essence of the Canadian Strategy for Cancer Control (CSCC) vision. In the CSCC, knowledge exchange/translation is not seen as an add-on or a separate activity, but an integral part of a whole and integrated system. Conversely, systems can act as barriers to knowledge exchange. For example, the research funding, scientific publishing conventions, and academic systems of rewards and incentives can discourage researchers from conducting applied research or participating in knowledge exchange³⁸.

5. Knowledge exchange in health promotion and public health

Knowledge exchange related to health promotion may be focused on one or more types of activities related to evidence-based practice, and different theories may emphasize one or more of these. Speller et al.² delineate four parallel tracks of activity for developing evidence-based health promotion, specifically:

- Systematic review of research and collation of evidence.
- Developing and disseminating evidence-based guidance.
- Developing the capacity to deliver effective evidence-based guidance.
- Learning from effective practice.

They argue that the latter two activities, i.e., developing capacity and learning from practice, have been relatively underdeveloped to date. However, they provide examples of recent work in those areas. For example, the former Health Development Agency (HDA) in England created a formalized process for learning from practice through the systematic collection, review and synthesis of effective health improvement practice. The HDA also created four mechanisms for addressing capacity building, specifically, nine regional development teams,

central practice development staff in key topic areas, national coordination programs such as the National Healthy School Standard, and practice development collaborating centres.

Systematic reviews and synthesis

Systematic reviews of the evidence are increasingly used to facilitate knowledge exchange in health promotion and public health. In Canada, the model for the National Collaborating Centres for Public Health in Canada envisions combining this with facilitating researcher and decision-maker interaction and collaboration in identifying and responding to gaps in the evidence base. The NCC model was originally proposed as a model for a “successful, sustainable public and population health knowledge exchange and uptake process”²⁴, with the following components:

1. Active collection, annotation and registration of existing and in-progress research.
2. Solicitation and identification of evidence gaps.
3. Prioritization, coordination and generation of new research evidence.
- 4a. Dissemination of existing and new research.
- 4b. Evaluation and redesign of knowledge exchange and dissemination strategies.
- 4c. Capacity-building and training of users to facilitate uptake and use of research evidence.
5. Uptake and utilization of research evidence.
6. Iterative cycle of problem identification, policy/program development and/or decision-making, implementation, evaluation and redesign.

The NCCs bring together networks of stakeholders to facilitate evidence-informed decision making in public health in Canada, and each focuses on one of six specialized areas: environmental health; Aboriginal Health; infectious diseases; public health methodologies and tools (including knowledge exchange); healthy public policy; and determinants of health³⁹.

A key issue related to systematic reviews is the question of what evidence is most useful, valid and appropriate for decision makers in health promotion^{38,40,41,42,43}. Nutbeam³⁸ classifies research as falling into the following four categories, of progressively increasing relevance to health promotion practitioners:

1. Problem definition
2. Solution generation
3. Solution testing

4. Solution maintenance

In the first two stages, the causal basis of health problems, the health and population targets for intervention, and methods for achieving change are identified. In stage three, programs and interventions are tested, first under optimal conditions through controlled research and later under 'real life' conditions through demonstration research. Finally, in stage four, the implementation and maintenance of programs, including how best to create the necessary conditions for success in different settings, is studied through dissemination research and continued monitoring of programs.

Nutbeam maintains that phase four research and the latter part of phase three research are of the greatest relevance to practitioners, because they are most closely related to the task of defining what needs to be done, by whom, to what standard and at what cost. However he points out that the largest volume of published studies is found in the earlier stages. He recommends action to reduce systemic barriers that discourage researchers from engaging in the research activities of greatest relevance to practice, on the one hand, and limit access to and application of evidence by practitioners on the other.

Defining "evidence" differently in health promotion

In some knowledge exchange initiatives in health promotion and public health "evidence" has been defined quite differently than in evidence-based medicine, in order to capture the information that will be most useful to practitioners and decision makers. The European Review Protocol for Health Promotion developed by the Getting Evidence into Practice (GEP) project as well as the WHO Health Evidence Network (HEN) have defined "evidence" broadly to go beyond published scientific literature as articulated below:

- The GEP project builds on a broad consensus regarding the definition of 'evidence'. Evidence can not be restricted to the results of 'hard scientific research' but should be seen as the broader answer to the question: what works in HP/PH. Thus the project supports the logic of evidence-based practice, which identifies a cyclic relation between practice, evaluation, evidence and further evaluation.⁴³
- With advice and help from the high-level European Advisory Committee on Health Research, WHO/Europe has adopted a broad definition of evidence that includes research findings and context-related information from other types of knowledge. Evidence is therefore defined as "findings from research and other knowledge that may serve as a useful basis for decision-making in public health and health care".⁴⁴

Even where evidence is more narrowly defined, there are issues of whether evidence of public health and health promotion interventions need to be

evaluated differently than in systematic reviews of medical literature. For example, a key issue for Canada's NCCs is the development of criteria for assessing the quality of published evidence of the effectiveness of community programs and policies that often cannot be feasibly studied in randomized trials, necessitating instead the use of quasi-experimental study designs for their evaluation.³⁹

Best practices approaches

Best practices approaches to developing evidenced-based guidance may also highlight the issue of practical relevance and attention to context. One example is the prototype best practices system for chronic disease prevention developed in Ontario⁴¹, which entailed three components:

- a protocol to identify practices through key informant interviews;
- a set of criteria for assessing practices; and
- a procedure for assessing practices against criteria.

The assessment criteria included not only effectiveness, but also plausibility and practicality. In addition, the process for identifying practices through key informant interviews would seem to constitute a method for the fourth activity identified by Speller et al², i.e., "learning from practice".

Best practices are also sometimes defined as more of a process as opposed to wholly defined interventions. For example, in the Interactive Domain Model of best practice for health promotion, Kahan and Goodstadt⁴⁵ outline a conceptual framework of best practices that is consciously guided by health promotion values and goals, theories and beliefs, evidence and understanding of the environment. This framework illustrates, as others have noted, that in the context of developing and implementing best practices in health promotion and public health, scientific evidence is only one component of the decision making process^{46,47}.

A key theme in many discussions of best practices is that implementation contexts are both highly variable and can have a strong bearing on both the transferability and effectiveness of adopted interventions and practices^{12,41}. In addition, communities themselves evolve over time¹². Another key factor is variations in community capacity, which may not be sufficient to adopt certain interventions as designed¹¹. For these types of reasons, program adopters rarely adopt intervention as they were originally designed, and typically reinvent or customize programs⁴². These factors have led some authors to propose that best practices be conceived less as "packaged interventions"¹² and more as a process for planning effective health promotion^{12,47} and the "core elements" or active ideas from programs that could be applied in other contexts.

Theories relating to policy contexts

Theoretical models have been utilized to examine the barriers and facilitators to translating public health knowledge into public policy. A key principle is that scientific evidence of efficacy is not the only driver of the policy process and is generally insufficient, on its own to drive policy change^{47,48}. For example, Atwood et al.⁴⁹ use the Richmond and Kotelchuck model of health policy to explain why despite abundant scientific evidence, public health knowledge does not always translate into action. This model outlines three components that are needed to make prevention happen: the knowledge base; the political will to support change; and a social strategy to accomplish change. They argue that while all three components were present and drove the success of tobacco in the United States, the lack of a social strategy prevented comparable preventive action in relation to physical inactivity, despite abundant evidence as to its effects.

Diffusion of Innovations theory

Diffusion theory has been used extensively in health promotion to plan programs. It originally focused more on individuals and later identified organizational contexts as key facilitators and barriers to adoption.⁵⁰ In the United States, the Diffusion of Behavioral Interventions (DEBI) project, funded by the Centers for Disease Control and Prevention utilized a model derived from diffusion theory⁵⁶. The model was designed to facilitate the dissemination and uptake by community-based organizations of six evidence-based interventions for HIV prevention, selected through a CDC synthesis project. The DEBI had the following stages:

1. **Strategic planning** with researchers to map out diffusion pathways, and develop implementation (how-to) information that was generally not present in the academic publications on the interventions.
2. **Marketing** the interventions to prospective implementers using a variety of communication strategies²
3. **Training** including the underlying theory and internal logic of the interventions.
4. **Technical Assistance (TA) and Capacity Building** including “proactive TA” in which TA providers contacted implementers to catalyze the process, instead of waiting for TA requests.
5. **Evaluation** including process and outcome monitoring

Key lessons learned from the project were the need to develop implementation information (which is not present in the academic literature) and a high level of capacity building and technical assistance needs of community-based

² The CDC also provided grants to a number of organizations to implement the DEBI interventions.

organizations to enable them to adapt interventions appropriately to specific contexts.

Linking systems

A number of approaches focus on improving knowledge exchange by building and improving relationships between systems, systems components and/or participants.

The concept of linking systems is an approach to both enhancing the capacity for and uptake of best practices in health promotion and public health³⁵. Robinson et al. articulate the origins and components of the theory and discuss³⁵ its role in the dissemination phase of the Canadian Heart Health Initiative (CHHI) in three provinces. They define linking systems as “the interactions between public health resource groups and user groups in the development, transfer and use of knowledge, practices and programs”.³⁵

The model, like the CHSRF approach to knowledge exchange, emphasizes participation of users in throughout the research/development phase, facilitators or knowledge brokers, and structures to support linkage, communication and exchange. Both the enhancement of capacity and the implementation of health promotion are seen as key outcome measures of success for linking systems³⁵. Based on their examination of the CHHI experience of linking systems in Ontario, Manitoba and PEI, they delineated the following “conditions of success” for linking systems in health promotion:

- commitment and communication channels to enable two-way exchange and active involvement of resource and user groups;
- senior leader buy-in; and
- skillful facilitators (knowledge brokers).

Integrated and coordinated systems

Cameron et al.^{51,40} examine several ways in which systems issue and linkages are key to facilitating evidence-based health promotion, and research that has “both scientific and practical importance⁴⁰. They articulate a vision for a “macrolevel system” that integrates public health policy, practice, evaluation, surveillance and research, and enables communities to take evidence informed action to improve the health of citizens at the population level. Key components for the envisioned system would be:

1. tools to track existing community programs and policies
2. dissemination mechanisms enabling decision makers to quickly access resources on interventions that work as well as on implementation techniques and
3. a component supporting data collection and feedback such as SHAPES, in key community settings, such as worksites, schools,

clinics, and so on

Cameron et al. observe that key elements of such a system are beginning to emerge in Canada, such as the local data collection and feedback system created through the School Health Action Planning and Evaluation System (SHAPES)⁵¹, that is being used in intervention planning, evaluation, surveillance and research across the country.

The SHAPES system illustrates a point made by Green¹², regarding how new information and communication technologies are creating new potential for participatory research and evaluation in health promotion that is rigorous and credible. Participatory research is a key tool for integrating systems of knowledge production and use, by enabling communities to play a more active role in shaping research questions, data collection, and interpretation results in a way that is relevant for local action¹².

Best et al⁵². describe how concepts from systems theory can assist in the development of a tobacco control strategy in the United States. Key concepts are coordination and integration that can bring together the disparate approaches and disciplines within tobacco control to form a comprehensive tobacco cessation strategy.

Capacity building issues

In addition to working to reduce risk factors, health promotion workers' efforts are also aimed at changing the health promotion delivery system, building the capacity of that system to maintain health promotion programs and develop new ones⁵³. Defining and measuring both capacity and changes in capacity are therefore highly relevant to knowledge exchange efforts.

A key aspect of capacity in the context of knowledge exchange is capacity to implement evidence-based interventions (EBIs). Collins et al. define this aspect of capacity as a subset of agency capacity overall, and has created a model to facilitate measurement and benchmarking⁵⁴. The model entails six domains: organizational environment, governance and programmatic infrastructure; workforce and professional development; resources and support; motivational forces and readiness; and learning from experience. The model, still in development, is intended to facilitate articulating the capacity levels needed to implement specific EBIs as well as to measure the outcomes of capacity building efforts⁵⁴.

Integrating theories and approaches

This literature review did not identify an overarching theory of knowledge exchange for health promotion. There are many theories, issues and initiatives currently being explored, but perhaps not in a highly integrated fashion at present. In addition, there are many other disciplines that are relevant, such as knowledge management tools and approaches developed in corporate culture, information systems, educational technology, social theory, organizational change theories, and so on. This literature review did not find many examples of these threads being integrated into explorations of knowledge exchange in health promotion within the health promotion or knowledge translation (in health) literature.

6. Summary and conclusions

Significant issues for health promotion knowledge exchange, as suggested by this review include the following:

- Key theoretical concepts that appear in the context of knowledge exchange are diffusion of innovations, linkage and exchange and systems theories.
- Capacity building is often identified as both a critical area and underdeveloped area. Efforts to define and measure health promotion capacity and capacity to implement evidence-based practice are in development.
- Learning from practice is another undeveloped area. Best practices, collaborative/participatory research, and drawing on a broader range of “evidence” are three ways that have been identified as facilitating the flow of knowledge *from* practice.
- Health promotion has a history of engaging in capacity building and participatory research. As such, it has tools that may be useful in knowledge exchange aimed at developing evidence-based practice.
- Lessons from knowledge exchange research and initiatives suggest that a multifaceted, participatory/interactive, and sustained approach to knowledge exchange is optimal. Strategies developed in other areas of health may be useful for health promotion, but should be evaluated for transferability in view of some of the key differences between clinical medicine and health promotion, such as definitions of evidence, variability of implementation contexts, and complexity of health promotion interventions.
- A prominent theme in the knowledge exchange literature is the lack of definitive evidence as to the efficacy, generalizability and transferability of various knowledge exchange interventions. The Best Practices Observatory

may represent an opportunity to conduct knowledge exchange research and make an important contribution to the evidence base.

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Appendix 1: Search terms utilized

The following key words were utilized in various combinations in the search of the published literature, and Internet searches:

- Health promotion
- Public health
- Professional*
- Model*
- Knowledge exchange
- Information exchange
- Knowledge transfer
- Capacity building
- Best practice*
- Knowledge mobilization
- Evidence
- Communication
- Diffusion of innovation
- Research translation model*
- Communities of practice
- Research networks
- Information technology
- Computer communication network*
- Professional network*

Appendix 2: Examples of relevant knowledge exchange initiatives

Example of...	Initiative/Country	Description
Systematic Reviews	Guide to Community Preventive Services (US) ¹	<ul style="list-style-type: none"> Summarizes what is known about the effectiveness, economic efficiency, and feasibility of interventions to promote community health and prevent disease. Makes recommendations for the use of various interventions based on the evidence Publishes findings in peer-reviewed journals and on website.
Systematic Reviews/ networks	National Collaborating Centres for Public Health (Canada) ²	<ul style="list-style-type: none"> Analyze and synthesize scientific evidence and best practices Identify gaps in existing knowledge Identify and champion collaborative projects involving public health researchers and research users.
Synthesis	WHO/Europe Health Evidence Network (HEN) ³	<ul style="list-style-type: none"> Provides evidence-based summaries for European public health and health care decision-makers and access to relevant documents and information. Develops on-demand summaries in reply to (selected) specific requests/questions from decision-makers.
Systematic review/ synthesis; Quality Assurance Tool	Getting Evidence into Practice (GEP) (EU) ⁴	<ul style="list-style-type: none"> International Union for Health Promotion and Education (IUHPE) and EuroHealthNet project that developed a consensus-based European Review Protocol for health promotion and a tool to enhance and assess the evidence base of health promotion practice (European Quality Instrument for health promotion (EQUIHP)).

¹ www.thecommunityguide.org

² http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004_01bk2_e.html

³ <http://www.euro.who.int/HEN>

⁴ <http://subsites.nigz.nl/systeem3/site2/index.cfm?fuseaction=Pages.showPages&code=120>

Example of...	Initiative/Country	Description
Networks and coordination	EuroHealthNet ⁵	<ul style="list-style-type: none"> • Coordinates the work of 31 national and regional health promotion and public health agencies in Europe. • Monitors relevant policy developments at EU level and in member countries. • Disseminates, shares and transfers information and expertise. • Maintains dialogue with EU institutions and other international organizations.
Evidence-based practice; capacity building	Knowledge Exchange Network (KEN) of the Canadian Cancer Society Manitoba Division ⁶	<ul style="list-style-type: none"> • Creates evidence-based information packages (based on results of systematic reviews by PHRED, Cochrane Collaboration, US Guide to Community Preventive Services, and others) to support evidence-based practice in primary chronic disease prevention (and palliative care). • Builds capacity in community groups to use evidence for decision-making • Plays knowledge brokering role between producers and users of research.
Capacity Building/ networks	Ontario Health Promotion Resource System (OPHRS) ⁷	<ul style="list-style-type: none"> • Works to increase the capacity of health promoters through member organization and collective efforts. Members provide services (training, consultation, print and electronic resources, network building opportunities and referrals). • Coordinates activities and provides common service definitions, evaluation protocols and Intranet services to its members. • Improves linkage between the members and the Ministry of Health Promotion.

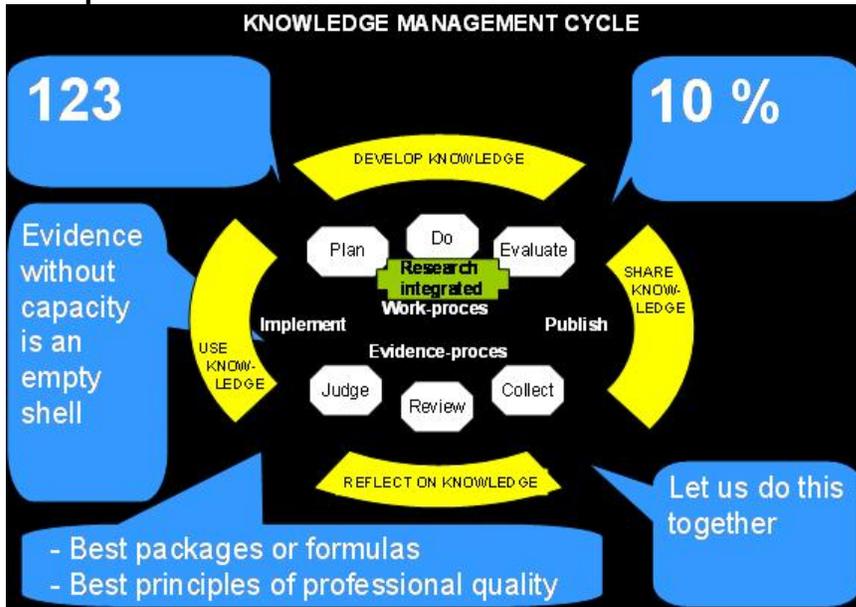
⁵ <http://www.euro.who.int/HEN>

⁶ http://www.cancer.ca/ccs/internet/standard/0,3182,3331_407538771_langId-en,00.html

⁷ <http://www.ohprs.ca/about/about.html>

Appendix 3: Examples of knowledge exchange models

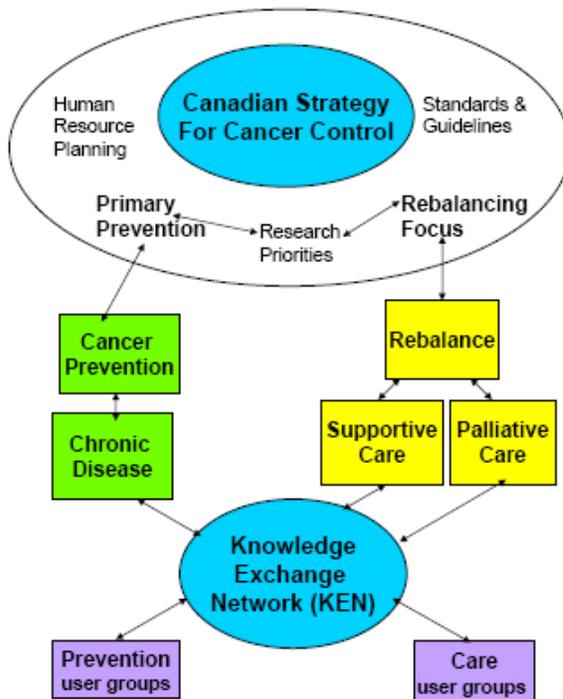
Example 1. Netherlands Institute For Health Promotion and Disease



From: http://www.fhi.se/upload/BestPractice/FR5032_haes_saan.ppt#283

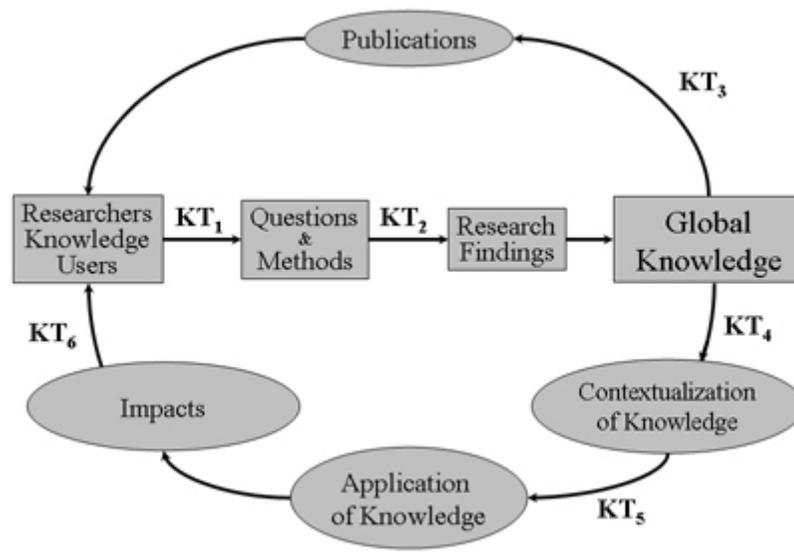
Example 2. Knowledge Exchange Network (KEN) Canadian Cancer Society, Manitoba

FRAMEWORK for KNOWLEDGE EXCHANGE NETWORK



From: http://www.cancer.ca/ccs/internet/standard/0,3182,3331_407538771_419967129_langld-en,00.html

CIHR: Depiction of Knowledge Translation (KT) within the Research Cycle



KT1: Defining research questions and methodologies;

KT2: Conducting research (as in the case of participatory research);

KT3: Publishing research findings in plain language and accessible formats;

KT4: Placing research findings into the context of other knowledge and socio-cultural norms;

KT5: Making decisions and taking action informed by research findings; and

KT6: Influencing subsequent rounds of research based on the impacts of knowledge use

From: <http://www.cihr-irsc.gc.ca/e/29418.html>