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Proven Knowledge Transfer and Exchange Strategies

Research Administration and Development

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Purpose

This literature review is the first of four sections, described below, contained in the Fraser Health Knowledge Transfer and Exchange (KTE) Toolkit. Section One contains the literature review titled "*Proven KTE Strategies*" and both a one and three page summary of "*Proven KTE Strategies*" in order to provide the document in reader-friendly writing format (1:3:25) as suggested by the Canadian Health Services Research Foundation (CHSRF), a national agency formed to facilitate evidence-based decision-making in Canada's health sector since 1996. (Please note that the acronyms KTE (Knowledge Transfer and Exchange) and KT (Knowledge Transfer and Knowledge Translation) may be used interchangeably within this review which is dependent upon the terminology that reference documents used).

The Fraser Health KTE toolkit was developed with the objective of enabling the end-user to be able to "*acquire, assess, adapt and apply evidence."* It is anticipated that end-users of the Toolkit will include clinicians, decision-makers, evaluation and research teams, and anyone interested in the transfer and exchange of knowledge.

The Fraser Health KTE Toolkit includes the following four sections:

- **Section One is entitled *The Basics*** and contains a literature review entitled "Proven KTE Strategies" and a Glossary of KTE terms.

- **Section Two contains *Useful Tools for KTE***. This includes reports, worksheets, resource planning guides, literature, search tools, and presentations that aid in key areas of KTE including:

  - CHSRF KTE resources
  - Communities of Practice Resource Folder
  - Decision Making Resources
  - Dissemination and KTE Planning
  - European Guide to Good Practices in Knowledge Management
  - Gathering and Summation of Knowledge
  - Implementation
  - Knowledge: Brokering / Management / To Action / To Policy
  - Preparing: a Manuscript / an Environmental Scan / a Presentation
  - Transfer of Tacit Knowledge
  - Translating Guidelines into Practice

- **Section Three presents the three *KT Casebooks*** from the Canadian Institutes of Health Research (CIHR). Each casebook provides easy-to-read and understand applied examples of KTE with a discussion of the lessons learned.

  CIHR KT Casebooks:
  - Institute for Health Services and Policy Research
  - Institute of Public and Population Health
  - Knowledge To Action

- **Section Four provides numerous *electronic links*** (e-links) that connect the user to multiple KTE resources ranging from Epidemiology to Change Management to Health Technology assessment.

PART ONE: Literature Review: What are Proven Knowledge Transfer and Exchange (KTE) Strategies?

Introduction

There is a need to facilitate the use of research knowledge into practice and decision-making by thinking carefully about what knowledge/evidence should be transferred--to whom, by whom, how and with what effect? This suggests a move beyond the passive mail-out of a report or publication and includes the need for consideration and discussion of potential impacts and implications of this transfer.

Key KTE Questions:

Lavis (2003) recommended the following approach for an effective transfer of research results. It consists of identifying five key questions for knowledge transfer:

1) What should be transferred?
   - Messages based on evidence that can be acted upon
2) To whom should research knowledge be transferred?
   - Identify the most appropriate target audience(s)
3) By whom should research knowledge be transferred?
   - Credible spokespeople to deliver the message
4) How should research knowledge be transferred?
   - Using proven strategies to transfer the message
5) With what effect should research knowledge be transferred?
   - The impact of the message(s) will need to be evaluated

In clarification of Lavis's fourth point, it is suggested that a paragraph with numbered bullet points (as shown below) is a preferred format and considered to be an appropriate format included for transferring messages.

Modes of Knowledge Transfer

Lavis and other authors have indicated that face-to-face interaction in a small group setting has been proven to be the most effective mode of knowledge transfer:

1) Identify the issue (through the eyes of the decision/policy maker)
2) Identify what the research results reveal and develop messages using the appropriate level of language with appropriate terminology for the identified target audience(s)
3) Identify current decision-making in this context and how decision-making would change if informed by the results of the research
4) Identify who should act upon this and what should be done

Another stepwise approach for planning the movement of evidence-based research into practice settings stems from recommendations made by several international authors and includes the:

1) Identification of quality information/research findings
2) Assessment of research findings for the target system/audience
3) Program development and program /content adaptation
4) Program Implementation
5) Evaluation of utilization
6) Sustainability; capacity building

Barriers and Facilitators

Grol (2003) and Graham (2006) suggest that Knowledge Translation is more likely to be successful if the knowledge translation strategy is informed by an assessment of likely barriers and facilitators that may be encountered. They indicate that barriers often relate to *Knowledge Management* issues including:

- large volume of research evidence produced
- access to research evidence sources
- time to read and thoughtfully review the evidence
- the level of skills required to appraise and understand the evidence

Other health system barriers may include:

- structural barriers such as financial disincentives
- organizational barriers -inappropriate skill mix, lack of facilities or equipment
- peer group barriers-local standards of care are not in line with desired practice
- personal barriers including knowledge, attitudes and skills
- professional /patient interaction barriers such as communication and information processing

The KT imperative

KT providers are cautioned to "*Beware the KT Imperative"* as there is a need to bring common sense, in addition to academic rigour to bear on decisions about the degree and intensity of KT activities warranted by a single research study (Crawford, S. (2007). Presentation to the Vancouver Island Health Authority Research Community).

Other KT experts have emphasized that there are real-life examples of *KT tragedies and errors* with examples including:

1) The Challenger (1986) explosion occurred as a result of poor dissemination of information between scientists and decision-makers pertaining to the information of O-rings, temperature and their ability to make an efficient seal. (Joy, J., (August 6, 2008). Summer Institute on KSTE in Public Health).
2) "The ongoing War on Iraq was and is based on false evidence." (Hancock, T.,(August 5, 2008). Summer Institute on KSTE in Public Health).

Interests of groups

Bensing (2003) makes note of the conflicting interests and agendas of policy-makers and researchers and reminds us of the differing motivators/practices and activities for each of these groups:

Policy makers	**Researchers**
Complex problems	Simplification of the problem
Focused solutions	Interest in related but separate issues

Policy makers	Researchers
Reducing uncertainties	Finding the truth (ontology)
Speed	Time to think
Control and delay	Publish or perish
Manipulation	Explanation
Feasible and pragmatic solutions	Thoughtful deliberations

What is the Gold Standard in KTE?

This leads to some key questions:

1) What is the "Gold Standard" in KTE?
2) What are proven Knowledge Transfer and Exchange Strategies?
3) How do we know this for sure?

Many of the terms used in discussing the science of KTE are used incorrectly and interchangeably. Assumptions are then made in regard to their actual definitions. (See Glossary of Terms in Appendix One on pages 25 and 26). Recognizing that this confusion exists, understanding the use of terminology in KTE is important.

Canadian Institutes of Health Research (CIHR)- Is CIHR's definition the Gold Standard?

CIHR defines KT (Knowledge Translation) **as:** "the exchange, synthesis and ethically-sound application of knowledge-within a complex system of interactions among researchers and users- to accelerate the capture of the benefits of research for Canadians through improved health, more effective services and products and a strengthened health care system." (CIHR, 2005, para 2).

The *CIHR Act* describes KT as a broad concept encompassing all of the steps between the creation of new knowledge and its application in order to yield beneficial outcomes for society. It includes: knowledge dissemination, communications, technology transfer, ethical context, knowledge management, knowledge utilization, two-way exchange between researchers and those who apply knowledge, implementation research, technology assessment, synthesis of results within a global context, development of consensus guidelines and more.

What are definitions and activities in KTE that are used by other organizations?

No "*gold standard"* of the KT process has been identified or referenced, however, based on the definitions provided by other organizations, insight can be gained that elaborates on KTE processes and activities. Examples of this include definitions provided by:

i) The National Institute on Disability and Rehabilitation Research (NIDRR, 2005) and the National Center for the Dissemination of Disability Research (2006). They indicate that:

> "KT is a multidimensional process designed to ensure that new, research-based knowledge ultimately improves the lives of people with disabilities and furthers their participation in society. They state that *'the process is active; it accumulates information, filters it for quality, rigor and relevance, and recasts it into a language that is easily understood by and accessible for the intended audience*.' It includes the transfer of products and devices from the research and development setting to the commercial marketplace."

ii) The University of Toronto, Department of Medicine (2004) defines knowledge translation as the:

"effective and timely incorporation of evidence-based information into the practice of health professionals in such a way as to effect optimal health care outcomes and maximize the potential of the health system."

iii) The World Health Organization (2005) has adapted CIHR's definition and defines KT as the:

"synthesis, exchange and application of knowledge by relevant stakeholders to accelerate the benefits of global and local innovation in strengthening health systems and improving people's health".

The Impact of Knowledge Transfer Strategies: Effectiveness of Different Approaches

In a recent report from the Institute of Health Economics in Alberta (2008), Eccles and Grimshaw reviewed the literature in order to illustrate the impact and effectiveness of a number of KT strategies. These strategies are based on the professional behaviour change literature. The following includes a summary of the identified strategies, their definition, the impact of the strategy in terms of its effectiveness and other comments.

1) Reminders: 14.1% effectiveness

Definition: Patient or encounter-specific information, provided verbally, on paper, or on a computer screen, which is designed or intended to prompt a health professional to recall information.

Fourteen cluster randomized controlled trials of reminders were identified. They were found to be generally effective resulting in a median absolute improvement of 14.1%, however, most of the studies had occurred in computerized settings in US academic health centres, therefore, generalizability to other settings is unknown.

2) Interactive Educational meetings: 11-20% effectiveness

Definition: The participation of health care providers in conferences, lectures, workshops or traineeships. Eccles and Grimshaw noted that it is important to *discern between didactic meetings and interactive workshops* as the format of the meetings had an impact on the KT outcome.

Thirty-two randomized controlled trials of educational meetings were identified in the literature with interactive educational meetings showing an 11-20% absolute improvement in care. Didactic meetings were shown to be ineffective.

3) Local Opinion Leaders: 10.0% effectiveness

Definition: The KT involvement of providers nominated by their colleagues as opinion leaders and who are seen as being educationally influential. Opinion leadership is the degree to which an individual is able to influence other individuals' attitudes or overt behaviour informally, in a desired way, with relative frequency. Opinion leaders have a unique and influential position in their system's communication structure and are at the centre of interpersonal communication networks.

Twelve randomized controlled trials were identified that involved opinion leaders. They were considered to be generally effective for improving appropriate care resulting in a median absolute improvement of 10.0% across studies.

4) Audit and Feedback: 5.0% effectiveness

Definition: Any summary of clinical performance of health care over a specified period of time. The summary may have included recommendations for clinical action and may have been obtained from medical records, databases or observations from patients.

One hundred and eighteen randomized controlled trials of audit and feedback were identified. This included: audit and feedback alone; audit and feedback in educational meetings and audit and feedback as part of multifaceted interventions. This resulted in a 5.0% overall improvement. It was also noted that the feasibility of audit and feedback was dependent upon availability of administrative data for feedback.

5) Educational Outreach/Academic Detailing: 4.9% effectiveness

Definition: A trained person meets with providers in their practice settings to provide evidence-informed information with the intent of changing the provider's practice.

Thirteen cluster randomized controlled trials of multifaceted interventions were identified in the literature for implementing clinical practice guidelines. Educational outreach was found to have a median absolute effect of 4.9% across studies. Most of the interventions were targeted around prescribing behaviours/patterns and the impact with more complex interventions is unknown.

6) Printed Educational Materials: 4.9% effectiveness

Definition: The distribution of published or printed recommendations for clinical care (e.g. clinical practice guidelines), and may include audio visual materials and electronic presentations. Printed educational materials are used in order to target knowledge and to fill skill gaps for healthcare professionals. In the literature, the transfer of these items may include mass mailings or personal delivery of information.

Twenty-one studies were identified and of these, there were six cluster randomized controlled trials. The trials indicated that printed materials are effective with a median absolute improvement of care of 4.9% across studies. It was also noted that printed materials are relatively low cost and generally feasible.

7) Interactive Health Communication Applications: significant positive effect

These communications are usually web-based information packages for patients that combine health information with either social support, decision support or behaviour change support. The review of 24 randomized controlled trials showed that they had a significant positive effect on knowledge, social support and clinical outcomes.

8) Interventions to enhance medication: mixed effects

This includes multiple interventions such as: instruction, counselling, automated telephone monitoring and counselling, manual telephone follow-up, family intervention etc. These interventions were evaluated in 57 randomised controlled trials and showed mixed effects for increases in short-term and long-term medication adherence.

Counselling, written information and personal phone calls for short-term and simple treatments were considered to be effective and multifaceted interventions were considered to be effective long-term treatments.

9) Patient decision aids: moderate effect

A review of 34 randomized controlled trials indicated that patient decision aids were associated with better patient knowledge, improved expectations, and increased patient numbers becoming actively involved in decision-making.
Website resource: http://decisionaid.ohri.ca/index.html

10) Personalized Risk Communications: small effect

Personalized risk communications (written, spoken or visually presented) are designed to increase a patient's uptake of screening tests. Based on weak evidence from 22 studies, it was determined that there was a small effect in the uptake of screening tests.

11) Multifaceted interventions: conflicting results

Definition: Any intervention including two or more components.

Grimshaw (2004) determined that effect sizes did not increase with increasing numbers of components. The rationale for the choice of interventions was not clearly stated in the research. It is agreed, however, that multifaceted interventions built on the careful assessment of barriers and a theoretical base may be more effective than a single intervention, however they will also potentially be more expensive.

The Effectiveness Of Knowledge Translation Strategies on Policy Makers and Health Service Managers: Institute of Health Economics in Alberta (2008).

To date, no experimental studies evaluating the effects of knowledge translation focussing on policy makers and health service managers have been undertaken. The report from the Institute of Health Economics in Alberta (2008) includes a review of the literature in this area. The review was based only on the perceptions of policy makers, and related specifically to their perception of factors promoting or inhibiting their use of evidence. From this review, barriers and facilitators were identified including:

Facilitators:
- personal contact
- timely relevance
- inclusion of summaries with recommendations

Barriers:
- absence of personal contact
- lack of timeliness or relevance of research
- mutual mistrust
- power and budget struggles

A review of case studies (Fox and Oxman, 2001) provided the following insights:

- Researchers need a better and more systematic understanding of political culture.

- Policymakers need to exhibit a mutual understanding by respecting researchers' knowledge, competence and needs.
- Policymakers and researchers must learn to accommodate differences in the timeframe that they operate within.
- Collaboration must involve an understanding that the rules of engagement must include appropriate expectations and definitions of success.
- Collaboration will be enhanced if both groups continue to work together after the policymaking process for the purpose of evaluation.
- Collaboration between researchers and policy makers requires trust which is built up over several years.

Mitton et al. (2008) in Chapter 3 of the same report recognizes key KTE strategies identified in the literature as including:

- Face to face exchange (consults, regular meetings)
- Training and retreats
- Networks and Communities of Practice
- Facilitated meetings
- Interactive, multidisciplinary workshops
- Capacity building activities
- Web based information, electronic communications
- Steering Committees (for integration of local experts into design, conduct and interpretation)

The authors also provide a discussion of barriers and facilitators of KTE at individual and organizational levels pertaining to communications and timing:

Barriers at the individual level:
- Lack of experience and capacity for assessing evidence
- Mutual mistrust
- Negative attitude toward change

Barriers at the organizational level:
- Unsupportive culture
- Competing interests
- Researcher incentive system
- Frequent staff turnover

Barriers related to Communication:
- Poor choice of messenger
- Information overload
- Traditional, academic language
- No actionable messages (what needs to be done and the implications)

Barriers related to time/timing:
- Differences in decision maker and researcher timeframes
- Limited time to make decisions

Facilitators at the individual level:
- Ongoing collaboration
- Values research

- Networks
- Building of trust
- Clear roles and responsibilities

Facilitators at the organizational level:
- Provision of support and training (capacity building)
- Sufficient resources (money, technology)
- Authority to implement changes
- Readiness for change
- Collaborative research partnerships

Facilitators related to communication:
- Face to face exchanges
- Involvement of decision makers in research planning and design
- Clear summaries with policy recommendations
- Tailored to specific audience
- Relevance of results/research
- Knowledge Brokers
- Opinion leader or champion (expert, credible sources)

Facilitators related to time/timing:
- Sufficient time to make decisions
- Inclusion of short-term objectives to satisfy decision-makers

Bowen (2006) noted a number of successful KTE principles that were utilized for low awareness issues in the Winnipeg Regional Health Authority. The following principles were identified in the context of using trained health interpreters within this large Canadian regional health authority in order to transfer low awareness issues.

Successful KTE principles:
1) Collaborative research partnerships
2) Interpretation of research in the local context
3) Align with current strategic priorities
4) Use existing organizational activities
5) Address issues of concern to decision-makers
6) Work through credible champions
7) Use Conceptual Frameworks and the language of decision-makers
8) Develop a concrete and feasible strategic plan in order to interpret findings and translate into needed actions
9) Effective communication strategies (eg 1:3:25 report format (reader-friendly writing) or point form summaries or storytelling)

PART TWO: Using The CIHR-KT Casebooks To Review The Lessons Learned In KT

Reference document:

1) Canadian Institutes for Health Research (CIHR-2006). Institute for Health Services and Policy Research (IHSPR). *" KT casebook- Evidence in Action, Acting on Evidence.*
A casebook of health services and policy research knowledge translation stories."

The Health Services and Policy KT casebook has a total of twenty-four cases featuring health service portfolios including: Patient Safety, Children's Mental Health, Practice Change, Chronic Disease Management, Aboriginal Health, Women's Health and Workplace Health and Safety. A selection of these case studies are included in this review of Proven KTE Strategies as they closely align with the portfolios within Fraser Health.

A brief overview of the '*lessons learned*' from the casebooks includes the following key points:

Effective KT requires long-term sustained relationships
- Typically unsupported by funding models
- Crucial to build trust, understanding and common goals and need to establish a mutual understanding of unfamiliar contexts, needs and expectations

KT activities are enriched by face-to-face interactions
- Personal contact with those involved is the most valuable form of KT, although it can be costly and time consuming

KT is often conducted off the side of the desk
- Suggestion that an incentive of some kind would aid this problem

KT activities alone are not enough to effect change
- Supportive organizational climates are required
- Interest in the research and the capacity to understand the evidence is required on the part of decision makers and other partners
- Need an understanding of implications, and an interest in engineering evidence-based change
- For effecting program and policy changes, there must be executive level buy-in
- KT is more successful when the organizational philosophy is supportive and encouraging of individuals who use and develop research knowledge

Peer initiated change
- Especially effective with education and training
- Respected peers can promote the uptake and the use of research knowledge to influence practice change

KT can be too successful
- If organizations implement research findings too early or respond to the issue prior to the research being complete

In contrast, **the CIHR (2006) KT casebook from the Institute of Population and Public Health (IPPH) Canadian Population Health Initiative (CPHI) entitled: *"Moving Population and Public Health Knowledge into Action"*** include the following lessons learned:

Non-traditional partnership development:
Many of the cases in this casebook provide examples of communities that have not traditionally been involved in research or decision-making. The cases illustrate the challenge of carefully defining the roles of partners. Formal agreements are required that detail expectations of partners, and resources that will be provided. Building trusting relationships within partnerships means taking the time to understand each other's contexts, needs and expectations.

- These partnerships can lead to community-based leadership of initiatives that are created in order to improve programs and practices, however there must be capacity in the community for the adoption of new knowledge and in order to adapt required changes.
- Participants in discussion and consensus-building groups need to be chosen with care, as they can be a key determinant of an initiative's success.

Capacity Building:
- Capacity building includes the activities designed to enhance efforts to uptake and use research and practice innovations.
- Capacity building can make the difference between the success or failure of a KT initiative and has most success when supported at an organizational level.

Tailoring KT:
- Tailoring KT to its context and local processes of knowledge uptake and utilization must be understood and applied in order to create an effective KT strategy.
- Knowledge risks remaining unused unless it is presented in a way that aligns with its target audience eg neighbourhood-based maps, youth oriented websites, or a professional theatre production.

Benefits of KT
- Tangible benefits to all partners in the outcomes of KT need to be demonstrated. It will work best when all partners in the initiative have the possibility of making concrete gains towards their own priorities.

Effort
- Constant effort is required in maintaining relationships with community partners. It is also recognized that these activities may not be well aligned with the timing of funding cycles. The most successful KT initiatives actively evolve in parallel with the needs of their user communities.

Case Studies:
What are examples of applied proven Knowledge Translation Strategies and why? What are the '*lessons learned'* from a variety of applied settings?

Questions for consideration in case studies:

1. Goal of the KT strategy?

2. What KT strategies were used?

3. How long did it take?

4. Who did it reach? Who didn't it reach? Is this important?

5. Was it successful and why? If not, why not?

6. Impact?

1) KT and Patient Safety: The Canadian Adverse Events Study

What was the goal of the KT strategy?

To ensure that decision makers, representatives from health professions, health system managers, and, ultimately, the general public would be informed of the study and its progress on an ongoing basis.

What KT strategies were used?

- Meetings, web-based communications
- Initial activities: distribution of a medical release to over 1500 media sources after funding for the study was awarded

a) Invitational Forum held for National Stakeholders with a focus on sharing knowledge from similar studies carried out in other jurisdictions and to define issues that the study would generate for each organization.

b) Second Forum with National Stakeholders held to provide update

- Webcast to update stakeholders
- Meetings with editors of the Canadian Medical Association Journal (CMAJ) to secure an agreement for the expedited review and publication of the study
- Interactive website to update stakeholders on the progress of the research (maintained during the entire project)

How long did it take?

They utilized the strategies throughout the life of the project and the subsequent year after the study results were released.

Who did it reach?

Key stakeholders included: more than 35 ministries of health, national professional organizations, regulatory and policy authorities, non-governmental organizations.

Who didn't it reach?

The public was largely uninformed.

CMAJ had the final report embargoed until its release date, however, the results were leaked three days early by journalists which led to TV coverage. However, at the time of this release, there was an announcement of a federal election that superceded all of the media coverage including: 20 interviews, 28 newspaper stories, 47 radio items, 19 TV news items. CIHI conducted an analysis of

the perceptions of major news events and determined that very few Canadians knew much about the adverse events study and its results.

Was it successful and why? If not, why not?

- There were short and long term impacts on patient safety policy initiatives.
- The paper was downloaded from CMAJ 25,000 times in the first four days after publication.
- The study team gave more than 50 presentations at meetings of professional groups and health care organizations, to groups of researchers, managers and practitioners.

Overall Impact?

- Advancement of patient safety efforts across Canada
- Development of policy initiatives and education programs by professional organizations
- The Canadian Health Services Accreditation (CCHSA) created a Patient Safety Advisory Group and has developed a set of patient safety goals and has set organizational practices which were implemented into accreditation surveys in 2006.
- Launch of the Canadian Patient Safety Institute
- Led to a major shift in policy for many Canadian governments and health care organizations.

2) KT for Practice Change in Children's Mental Health

KT Casebook questions:

1. Goal of the KT strategy?
2. What KT strategies were used?
3. How long did it take?
4. Who did it reach? Who didn't it reach? Is this important?
5. Was it successful and why? If not, why not?
6. Impact of this?

Goal of the KT strategy?

To implement a new Child and Adolescent Functional Assessment Scale (CAFAS) Mental Health assessment tool for children across Ontario. The tool requires specialized training.

What KT strategies were used?

The team developed a formal KT infrastructure to support their training and implementation program for the new assessment tool. Their plan was based on the literature and designed according to the needs of their stakeholders and participants.

- Active collaboration with providers, stakeholders and government, face to face meetings, multiple methods of communication.

- Intensive two day training workshops for clinicians with regular web-based and telephone follow-up.

- Two strategies were developed to facilitate ongoing collaborative learning including: developing regional communities-of-practice and an in-house train-the-trainer approach.

- Development of guidelines to support the tools used with special populations.

- Communication materials for parents and families.

How long did it take?

Success of all of the initiatives (training, implementation and adoption) occurred after a six-year period.

Who did it reach? Who didn't it reach? Is this important?

A group of over 100 service provider organizations across Ontario including: 4100 child and youth workers, 600 specialists were reached.

Was it successful and why? If not, why not?

- Community of practice meetings were well attended and relevant to participants
- There was clinical utility of tools, and increasing usefulness of data for administrative and quality improvement purposes.

Issues that were faced during the process included:

- Change of practice
- Limited Resources
- Program restructuring
- Challenges in accreditation
- Amalgamation
- Staff turnover
- Increased service demands
- Training was time-consuming, resource intensive and the trainers were unable to work with all clinicians in all geographic areas

Other lessons learned:

- A key barrier to knowledge uptake of the tools was the absence of a communications plan in the early stages.
- Communities of practice were valuable in supporting the use and application of evidence-based practices.
- Pilot testing aids in building trust among those involved for knowledge and development.
- KT strategies need to be developed based on the readiness for change model- start with those who appear to be ready for change (early adopters).
- Face to face support proved to be very helpful as it was considered to be the most valued and beneficial to practitioners.

3) A Collaborative Model of KT for Sustainable Practice Change

KT Casebook questions:

1. Goal of the KT strategy?
2. What KT strategies were used?
3. How long did it take?
4. Who did it reach? Who didn't it reach? Is this important?
5. Was it successful and why? If not, why not?
6. Impact?

Goal of the KT strategy?

- To effect a cultural shift in order to facilitate the ongoing use of research knowledge underscoring how socioeconomic, historical and contextual factors intersect to influence patients' hospitalization and transition to home experiences.
- It was driven by a request from clinical leaders for timely access to research findings that could inform ethically sound decision-making.
- To produce sustainable transformations in practice towards more equitable, efficient and effective health services.

What KT strategies were used?

A collaborative model of KT with partnership between researchers and leaders in the clinical environment in a health authority.

- A model that encouraged the development of take-home messages as a starting point for interactive dialogue with clinical leaders.
- People who were seen as credible to clinical leaders initiated dialogue.
- In order to bring together researchers and clinical leaders, meetings were held at times and locations conducive to the work schedules of clinical leaders; leaders were invited from across the continuum of care to talk with researchers; gaps in knowledge were assisted by team members who were both a part of the research and the clinical team; team members listened carefully and acted on issues of interest to clinical leaders.
- The most effective dialogue occurred during informal breakfast meetings to discuss emerging findings. Specific initiatives grew out of these discussions.

How long did it take?

Three years for the initial study, and subsequently funding was received to continue the development of the tool for another 3 years.

Who did it reach? Who didn't it reach? Is this important?

Not indicated

Was it successful and why? If not, why not?

The model provides clinical leaders with an opportunity to have direct and real-time input into the research process. It also allows the process to be responsive to the changing needs of the clinical setting and leads to findings of immediate importance.

Other lessons learned:

- Long term commitment is required from both researchers and clinical leaders in order to effect sustainable transformations in health services.
- A collaborative team that works together in this context requires time to develop the relationship and the development of trust and collaboration for development of innovative initiatives.

Impact?

- The authors indicated that collaborative partnerships where clinical leaders have direct and real input into the research process should be a cornerstone of research in the health care setting.
- This enables data collection and analysis to respond immediately to changing needs of the clinical setting and leads to high priority findings and actions.
- Effective dialogue is essential to the process.

4) Developing a Model for the Shared Care of Chronic Disease

KT Casebook questions:

1. Goal of the KT strategy?
2. What KT strategies were used?
3. How long did it take?
4. Who did it reach? Who didn't it reach? Is this important?
5. Was it successful and why? If not, why not?
6. Impact?

Goal of the KT strategy?

To demonstrate the value of multidisciplinary teamwork in the care of people with chronic disease; the impact of the team on quality of work life for the team members and the impact of the model on the individual patient's chronic disease.

What KT strategies were used?

Three different models of multidisciplinary team care were used in order to fit the local environment with funding for each model over a three-year period. Three chronic disease patient groups were identified for the teams: diabetes, dyslipidemia and hypertension.

Clinical practice guidelines were adapted in order to produce a clinical care pathway. Evaluation was measured by appropriate lab reports, measures of self-care, wellness scales and patient satisfaction surveys at baseline, one year and two year time points.

- **Model One** (case management) built on a partnership between a physician and a home care nurse with overlapping practices.

- **Model Two** (focused case management) patients were assigned to a nurse and dietitian team

- **Model Three** (accessible expert) patients were seen by an expert team from the diabetes education centre (RN and RDN) on a one-off basis. Specialist physician expertise was also available.

How long did it take?

The project took two years.

Who did it reach? Who didn't it reach? Is this important?

It reached patients with diabetes, dyslipidemia and hypertension who were the target patient groups.

Was it successful and why? If not, why not?

- The three models showed positive results in most lab results.
- Self care behaviours (exercising, diet, glucose testing) showed improvement in the three models at end of year one, but not in all behaviours by the end of year two.
- There was no statistically significant improvement in *wellness* for the patients and in fact, there was a demonstrated loss of wellness perception.

Key lessons learned:

- Partnership was essential
- Clarification of the goals of the project needed to be repeated many times so that everyone truly understood.
- Flexibility was essential- some of the deliverables and reporting deadlines had to be adapted.
- Stakeholders included:
    i. those with positions in the Calgary Health Region allowed them to influence policy and budgetary positions within their portfolios.

ii. Others in health professional groups were able to develop policies and direction to support continued operation of multidisciplinary teams.

Impact?

Based on the results, the Calgary Health Region implemented Model One with support from Model Three for the regional chronic disease management model. It is being implemented in all family physician offices across the Calgary Health Region.

Other implications:

- Has led to ongoing alternative fee plans.
- A new fee for physicians participating in teamwork has been developed.
- Development of new local primary care networks of physicians.
- Development of the health professions act.
- They have now added chronic obstructive pulmonary disease and congestive heart failure to the chronic diseases in this new blended model of chronic disease management.
- This model is now being piloted in Ontario to determine if it is transferable across jurisdictions.

5) SEARCH Canada: Building Capacity in Health Organizations to create and use knowledge

SEARCH= Swift Efficient Application of Research in Community Health that is dedicated to knowledge access, creation and use by health managers, health providers and their organizations.

KT Casebook questions:

1. Goal of the KT strategy?
2. What KT strategies were used?
3. How long did it take?
4. Who did it reach? Who didn't it reach? Is this important?
5. Was it successful and why? If not, why not?
6. Impact?

Goal of the KT strategy?

To train community based health researchers over a 24-month time frame in the "how-to's" of applied health research including accessing and assessing high quality information and applying it in decision making. The program develops capacity for communities of practice-based learning and innovation and supports a network of health professionals and researchers who are dedicated to the creation of new knowledge and its translation into better quality health care decisions.

What KT strategies were used?

This program specifically trains community-based health professionals in applied health research. They develop skills in using information tools and technology, and partnering in collaborative networks.

The program activities links three overlapping areas: choosing, creating and using evidence. It is a cohort based learning program and includes residential sessions, practice based research and web- based learning supports.

How long did it take?

It is a 24-month program that has existed for 12 years (as of 2008).

Who did it reach? Who didn't it reach? Is this important?

Participants are established health professionals from many health care areas: nursing, social work, health administration, family medicine etc. They are chosen by Alberta's health authorities and range from front line clinicians to senior managers. They remain employed with guaranteed salaries and half of their time is committed to learning and research related activities.

Was it successful and why? If not, why not?

By implementing a system-wide approach to KT and its use, they have determined that evidence based decision making across a health care system requires more than skills and information, as it is dependent upon people's attitudes, values, daily interactions and confidence etc. It is also highly related to relationships as well as being dependent upon a culture of openness, exchange, respect and confidence.

Impact?

At the time of publication, there were 125 health practitioners and 60 faculty members who had participated in the program of which 70% continue to be activities in research after four years.

Research projects have addressed health service projects with a variety of objectives including: health human resources, health services, professional practice, health care management, population health.

The individuals involved in SEARCH developed:

- Increased skills in research which led to grant funds being awarded
- Career development and increased responsibilities related to evidence based practice
- Networks
- Leadership capacity
- Job satisfaction
- Research and evaluation activities
- Publications

At the organizational level:

- Increased access to information
- Ability to identify relevant information
- Leadership development
- Increased capacity for collaboration
- Culture shift
- Supportive attitudes to research and evaluation

SEARCH's approach

- Not a quick fix
- Sustained learning with ongoing connections to knowledge sources
- Linkages across research and practice
- Has executive buy-in

6) Responding from Within: Women and Self -Harm

KT Casebook questions:

1. Goal of the KT strategy?
2. What KT strategies were used?
3. How long did it take?
4. Who did it reach? Who didn't it reach? Is this important?
5. Was it successful and why? If not, why not?
6. Impact?

Goal of the KT strategy?

Increase awareness of women's self-harm through promotion of research findings to the criminal justice, public health, social service and government sectors.

What KT strategies were used?

I) Awareness Raising:
- Media release event to launch initial report
- Wide distribution of a plain language summary of the research
- Presentations
- Publications in national and international academic forums and community venues

II) Establishment of a Community Intersectoral Committee with representation from criminal justice and public health policy analysts, government decision makers, academics, front line workers and clients.

Subsequent KT activities were targeted to the following groups:

- **Government decision makers**: presentations to key offices of ministers and departments and the Canadian Human Rights Commission.
- **Policy Analysts**: meetings were held with representatives for both provincial and federal facilities.
- **Academia:** presented conference papers at meetings, guest lectured on campuses and published articles and reports in journals, newsletters.

- **Front line workers**: community workshops were held, distributed plain language summaries of the reports, collaborated with an arts program that specializes in working with women with a history of self harm.

- **Clients:** plain language summaries with short term strategies designed to help women deal with self-harm.

III) Environmental Scan: This moved the KT strategy beyond awareness raising to examining the perspectives of services providers in justice, health and social services with reference to existing resources and effectiveness of current programming and services.

How long did it take?

Phase I started in 2001; Phase II started in 2003; Phase III started in 2004; Phase IV from 2005 onward.

Who did it reach? Who didn't it reach? Is this important?

KT activities led to the uptake of their findings by audiences outside of their intended group including other health providers.

Was it successful and why? If not, why not?

The KT activities impacted anticipated target audiences and also a somewhat greater audience. A variety of issues emerged including: suspicion from some of the intended audiences, opposing viewpoints of team members around certain issues, insufficient preparation of an evaluative method for their KT strategies that would satisfy their funding agency i.e. needed to develop a qualitative component measuring the effectiveness of their KT activities.

Impact?

This led to policy action on self-harm by the Youth Solvent Addiction Committee and the Canadian Association of Elizabeth Fry Societies which passed a national resolution on self-harm after the publication of their research report.

They are expanding the research team and developing a community advisory group and intend to host a community roundtable in order to discuss their environmental scan and create an action plan. An evaluative framework for their KT strategy will also be prepared.

The authors indicated that their aim was to translate findings into awareness and action for a broader target audience. One of the key unanticipated learnings from this was that while working with the diverse group of partners, they faced uncertainty due to: people leaving their jobs, and changes in government priorities. The authors noted that their best response to this was to be flexible and open to creative and collaborative solutions.

Appendix One:

Glossary of KTE terms:

(**Please note that in much of the KT literature, the following terms are often used interchangeably without a specific and clearly focussed definition).

Knowledge Translation: the exchange, synthesis and ethically-sound application of knowledge- within a complex system of interactions among researchers and users- to accelerate the capture of the benefits of research for Canadians through improved health, more effective services and products and a strengthened health care system. (CIHR, 2005, para 2).

The *CIHR Act* describes KT as a broad concept encompassing all of the steps between the creation of new knowledge and its application in order to yield beneficial outcomes for society. It includes: knowledge dissemination, communications, technology transfer, ethical context, knowledge management, knowledge utilization, two-way exchange between researchers and those who apply knowledge, implementation research, technology assessment, synthesis of results within a global context, development of consensus guidelines and more.

Knowledge Transfer- The traditional view of Knowledge Transfer is seen as a unidirectional flow of knowledge from researchers to users, and is mostly in a didactic form. It has low success rate in knowledge uptake due to the "two communities" problem in which researchers and policy makers are viewed as living in two different worlds with different languages and cultures (Caplan, 1979; Lavis et al, 2001; Lomas, 1997). This mode of KT relied on dissemination approaches that have not been proven as effective in encouraging the adoption and implementation of new research results. Landry, Lamri and Amara (2001) emphasized that the "mere reception of knowledge by the user does not imply its actual use."

Knowledge Exchange: The current view of KT is a much more interactive process that involves the active exchange of information between the researchers who create new knowledge and those who use it. KT activities vary according to the type of research to be translated and the intended audience or user. The notion of collaborative and/or integrated KT suggests that integrating users and knowledge creators together during all stages of research is essential to successful and full course KT. This is supported in current literature and exemplified in the KT casebook example entitled," A Collaborative Model of Knowledge Translation for Sustainable Practice Change." This case study partnered researchers and clinician decision-makers in Vancouver Coastal Health and resulted in publication of the paper entitled, "Pursuing Common Agendas: A Collaborative Model for Knowledge Translation between Research and Practice in Clinical Settings" where this model was further discussed.

Knowledge Brokering: CHSRF definition
Knowledge brokering links decision makers and researchers, facilitating their interaction so that they are able to better understand each other's goals and professional cultures, influence each other's work, forge new partnerships, and promote the use of research-based evidence in decision-making. Knowledge brokering activities include finding the right players to influence research use in decision-making, bringing these players together, creating and helping to sustain relationships among them, and helping them to engage in collaborative problem-solving. Knowledge brokering in this context is ultimately about increasing evidence-based decision-making in the organization, management, and delivery of health services. Link: http://www.chsrf.ca/brokering/index_e.php

Knowledge Management: Refers to the actual body of knowledge and how it is systematically collected, archived, disseminated, accessed, synthesized and utilized.

Knowledge Utilization: High quality evidence/ knowledge is used to inform policy, practice and public opinion and includes the notion of the promotion of knowledge-based change in a health system.

Diffusion: A passive process with the main goal of raising awareness of potential knowledge users (e.g. publication in scientific journals, information put on a website, use of mass media). Traditionally, health research findings have been disseminated by publication in scientific journals. Evidence indicates that passive dissemination used alone is unlikely to lead to changes in policy or professional practice. As a result of this, a greater awareness of the importance of using active dissemination and implementation strategies has occurred.

Dissemination: An active process that involves targeting and tailoring the evidence and the message into a document or summary for a particular target audience (e.g. direct mailing/emailing of results to intended audience, workshops, conference presentations).

Implementation: An active process involving systematic efforts to encourage adoption of results by identifying and overcoming barriers (e.g. educational activities, opinion leaders, academic detail, audit and feedback, reminder systems, administrative interventions, economic interventions). Activities usually include communication strategies, social marketing, knowledge brokering or collaborative approaches to facilitate the use of evidence-based recommendations/practices in a defined context or setting.

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