Provincial Addiction & Mental Health

Knowledge Translation: A Synopsis of the Literature

for AMH Research

May 2022

Alberta Health Services

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Executive summary

Knowledge translation (KT) is defined as a “dynamic and iterative process that includes synthesis, dissemination, exchange, and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system” (Canadian Institutes of Health Research (CIHR), 2016, section 2). When transferring knowledge, it is important to ensure organizations and practitioners effectively receive information to implement new policy and practices. If a recipient does not receive and make use of that information, then practice change is unlikely to occur regardless of the strength of the evidence. This reports aims to help AMH researchers and those who use AMH research by highlighting best practices and describing weaknesses.

This report covers:

- Terminology used to describe the process of moving research into practice and policy.
- Theories, models, frameworks, and approaches that describe the knowledge translation process.
- Factors that can enhance or hinder knowledge translation, and factors to consider when working in healthcare settings.
- Knowledge translation strategies and products, and the effectiveness of different strategies in healthcare settings.
- Approaches to evaluating knowledge translation and the associated complexities.
- Resources for knowledge translation in Indigenous communities.
- Additional resources, readings, and newsletters about knowledge translation.

Background

Within addiction and mental health (AMH) services, and the healthcare system more broadly, there is increasing concern about a disconnect between what is known as best-practice (such as theory, science, research) and what is practiced (such as policy, service delivery), creating a “research-to-practice gap”. In one study, it was estimated that patients in the US receive 55% of the recommended care, varying from 11-79% depending on the condition (McGlynn et al., 2003). It is also estimated that 20-30% of patients receive unneeded or potentially harmful care (Schuster, McGlynn & Brook, 1998).This means patients do not receive the best possible care, and healthcare resources may be used to fund inefficient, harmful, or ineffective interventions. Therefore, it is important to identify ways to increase the use of evidence-based research by healthcare providers and policy makers.

Knowledge translation (KT) is the umbrella term for the wide range of activities involved in incorporating research into practice. KT activities include diffusion (a passive spread of new practices), dissemination (an active spread of new practices), and implementation (the process of integrating new practices) (Nilsen, 2015).

The purpose of this document is to synthesize key approaches, strategies, learnings, and resources for increasing the linkages between research and practice and closing the “research-to-practice gap”.

Definitions and terminology

A number of different terms are used independently and interchangeably to refer to the concept of increasing the flow and uptake of information between researchers and stakeholders.

Term	Definition
Diffusion	Diffusion is defined as "passive, unplanned, uncontrolled dissemination; primarily horizontal or mediated by peers (e.g. publishing in peer reviewed journals, presenting research results to peers at academic conferences); potential users need to seek out the information." Canadian Institutes of Health Research (CIHR), 2010 Retrieved May 2, 2022
Dissemination	"Dissemination goes well beyond simply making research available through the traditional vehicles of journal publication and academic conference presentations. It involves a process of extracting the main messages or key implications derived from research results and communicating them to targeted groups of decision-makers and other stakeholders in a way that encourages them to factor the research implications into their work. Face-to-face communication is encouraged whenever possible." Canadian Foundation for Healthcare Improvement (CFHI), n.d. Retrieved May 2, 2022
Implementation	Implementation is "translation and application of innovations, recommended practices, or policies. A process of interaction between the setting of goals and actions geared to achieving them." Diffusion theory and knowledge dissemination, utilization, and integration in public health Green, Ottoson, Garcıa & Hiatt, 2009
Implementation science	Implementation science is "the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services." Welcome to implementation science Eccles & Mittman, 2006

Knowledge exchange	"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-making." Canadian Foundation for Healthcare Improvement (CFHI), n.d. Retrieved May 2, 2022
Knowledge transfer	"Knowledge transfer is now part of the normal research cycle; its aim is to encourage and facilitate the adoption of evidence-informed practices and public policies." Canadian Institutes of Health Research (CIHR), 2016 Retrieved May 2, 2022
Knowledge translation	"Knowledge translation is defined as a dynamic and iterative process that includes synthesis, dissemination, exchange, and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system." Canadian Institutes of Health Research (CIHR), 2016 Retrieved May 2, 2022
Knowledge translation science	"Knowledge translation science is about identifying the factors related to knowledge use and effective methods of promoting the uptake of knowledge, including evaluating implementation outcomes." Canadian Centre for Applied Research in Cancer Control (ARCC), n.d. Retrieved May 2, 2022
Knowledge utilization	Knowledge utilization is "the process of converting or adapting knowledge such as evidence-based guidelines into practice." Diffusion theory and knowledge dissemination, utilization, and integration in public health Green, Ottoson, Garcıa & Hiatt, 2009

A summary of this information may also be found in our Knowledge Translation Dictionary.

Many other terms are used synonymously with KT in the literature (McKibbon et al., 2010). A list of these synonyms can be found in Appendix A. The number of terms used to describe KT can be confusing, and it is important for individuals to describe their understanding of the concept upfront. The specific terms used are less important than how they are operationalized (Tetroe, 2007).

Knowledge translation theories, models, frameworks, and approaches

Several theories, models, frameworks, and approaches aim to describe and illustrate KT, each with distinct concepts and practical applications.

- **A theory** is a set of principles or statements developed to describe and explain a phenomenon (Nilsen, 2015). A KT theory attempts to explain and predict how and why KT is successful, such as Rogers' Diffusion of Innovation Theory (Rogers, 2003).
- **A model** is a simplification of a theory – it attempts to describe and simplify a phenomenon but it is not explanatory (Nilsen, 2015). A KT model specifies steps, stages, and/or phases in the process of translating research into practice, such as the Knowledge-to-Action Model (Graham et al., 2006).
- **A framework** determines and describes factors believed to influence a KT outcome. A KT framework usually lists and organizes factors found to influence aspects of KT, such as the RE-AIM Framework.
- **An approach** loosely refers to a methodology and/or perspective taken. An example is the Canadian Institutes of Health Research (CIHR)'s end-of-grant KT and integrated KT approaches.

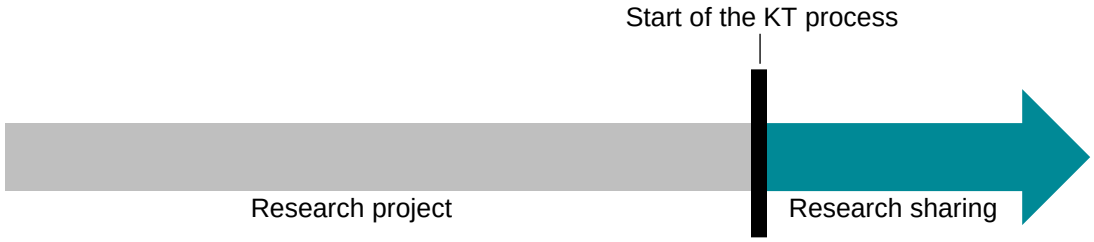
Despite separate definitions, the terms theories, models, frameworks, and approaches have been used interchangeably and inconsistently in the literature. Instead of thinking about the specific term, it can be helpful to think about its function.

To date, there is not a standard theory, model, framework, or approach. They represent different perspectives and areas of emphasis in the KT process. The following section highlights common and useful KT theories, models, frameworks, and approaches. At the end of the section, there is a list of resources for those who want to learn more.

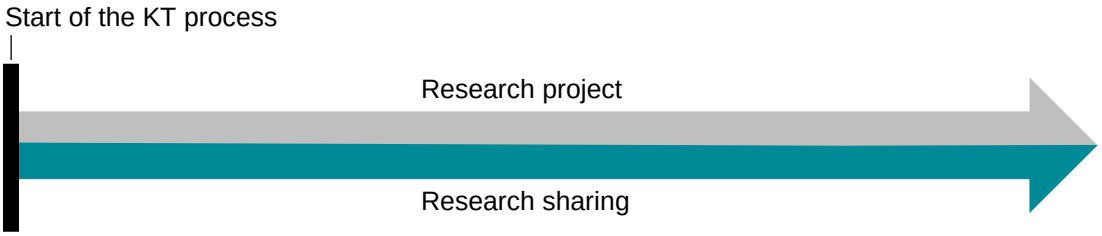
CIHR Approaches to Knowledge Translation

CIHR has identified two approaches to KT. The first approach is **end-of-grant KT**, where "the researcher develops and implements a plan for making knowledge users aware of the knowledge that was gained during a project" and this is completed at the end of the project. The second approach is **integrated KT**, where "stakeholders or potential research knowledge users are engaged in the entire research process."

End-of-Grant KT
Stakeholders are engaged and information is shared after research findings are generated



Integrated KT
Stakeholders are engaged throughout the research process, alongside the research team

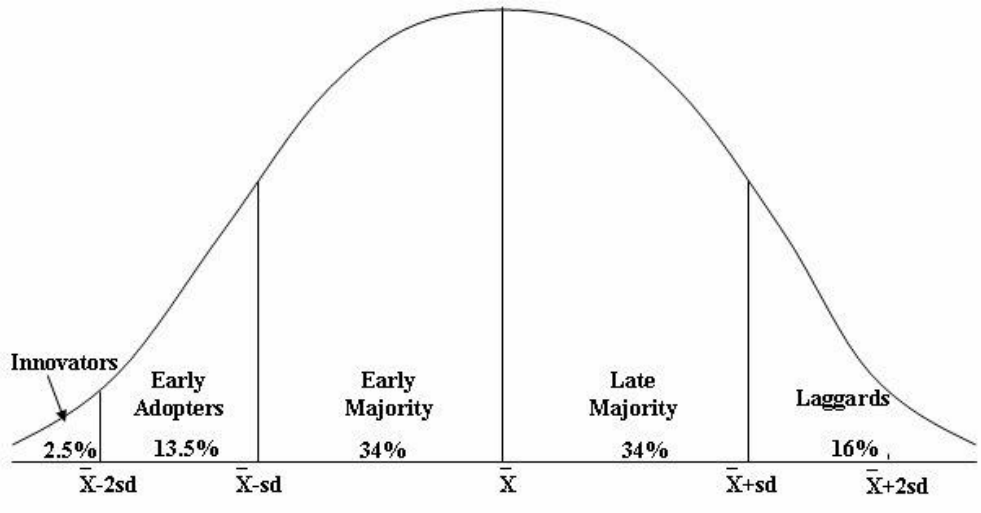


Canadian Institutes of Health Research (CIHR), 2016, http://www.cihr-irsc.gc.ca/e/29418.html
Figure adapted from Child-Bright, https://www.child-bright.ca/knowledge-translation/

Diffusion of Innovation Theory

The Diffusion of Innovation Theory is considered to be one of the most influential theories in knowledge utilization (Nilsen, 2015). It attempts to explain how innovations such as ideas, behaviours, or products diffuse (or spread) through the wider society. The theory describes the **innovation-decision process**, whereby some people are more prone to adopt an innovation than others. Those who adopt an innovation early have different characteristics and attributes than those who adopt an innovation later. The innovation-decision process consists of five stages that people pass through as they adopt an innovation: knowledge, persuasion, decision, implementation, and confirmation. Innovations are more quickly adopted when they are: consistent with current values, beliefs, and ways of doing things (compatibility); are seen to be more advantageous than the current practice (relative advantage); are easy to use (low complexity); are used by others (observability); and can be tested before a decision is made to adopt (trialability).

Adopter categories and their normal frequency distribution:



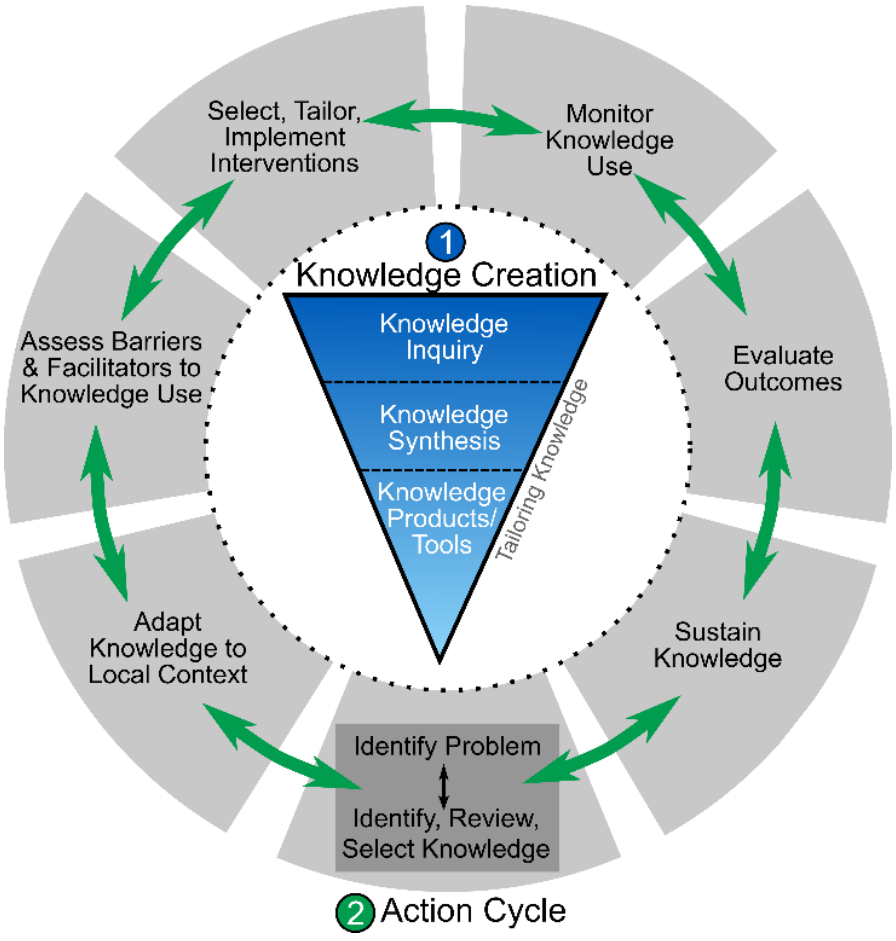
Stages of the innovation-decision process**:**

1. **Knowledge** – Awareness of the need for the innovation
2. **Persuasion** – Development of positive or negative attitudes towards the innovation
3. **Decision** – Decision to adopt or reject the innovation
4. **Implementation** – Initial use of the innovation
5. **Confirmation** – Continual use of the innovation or abandonment

Rogers, E.M. (2003). *Diffusion of innovations* (5th ed.). New York, NY: Free Press.

Knowledge-to-Action Model

The Knowledge-to-Action (KTA) Model was developed by Graham et al. (2006) and has been adopted by CIHR. The model has two components: (1) the **knowledge creation** funnel and (2) the **action cycle**. The knowledge creation phase involves: (A) knowledge inquiry (the production of knowledge, such as primary studies), (B) knowledge synthesis (the aggregation of existing knowledge, such as systematic reviews), and (C) knowledge products/tools (the presentation of knowledge in user-friendly ways, such as practice guidelines). The action cycle around the funnel facilitates moving knowledge into practice. Although depicted as a cycle, these actions may occur sequentially or simultaneously, may be iterative, and may be influenced by the phases of knowledge creation. It is vital that stakeholders, such as practitioners, policymakers, patients, and the public, are included throughout the KTA process to ensure their needs are being met.



Graham, I. D., Logan, J., Harrison, M. B., Straus, S. E., Tetroe, J., … Robinson, N. (2006). Lost in knowledge translation: Time for a map? *The Journal of Continuing Education in the Health Professions, 26*(1), 13-24.

Model for Knowledge Translation and Exchange with Northern Aboriginal Communities

The Model for Knowledge Translation and Exchange with Northern Aboriginal Communities focuses on KT with Indigenous communities in the Canadian north. The model is built using a participatory research approach and consists of five components that are fundamental to the KT process.

Components of the Model for Knowledge Translation and Exchange with Northern Aboriginal Communities:

1) Establishing partnerships and trust with the communities
2) Using trained community field workers/researchers for all stages of research planning, data collection, analysis, interpretation, and dissemination
3) Holding regular workshops for all members of the research team
4) Committing to return the research results to the participants and communities first, for verification and validation
5) Translating the research results for government decision makers so that they might be used to inform policy and practice

Jardine, C. & Furgal, C. (2010). Knowledge translation with northern Aboriginal communities: A case study. *Canadian Journal of Nursing Research, 42*(1), 119-27.

Pathman-PRECEED Model for Knowledge Translation

The Pathman-PRECEED Model for Knowledge Translation is a multistage model developed by Davies et al. (2003). According to the model, interventions can work in three ways:

1) To predispose change by increasing knowledge or skills
2) To enable change by promoting conducive conditions in the practice and elsewhere
3) To reinforce change, once it is made

To carry out an intervention, the perspective of the effector arm (the healthcare or educational system) must align with the perspective of the target audience (clinician, patient, policy maker, general public, etc.). As evidence moves into practice, the target audience progresses from awareness of the evidence, to agreement with the evidence, to adoption of practice change, and then adherence to the evidence. KT strategies will differ depending on whether the target audience is in the awareness, agreement, adoption, or adherence stage.

	Perspective of target (policy maker, consumer, or clinician)			
Intervention*	**Awareness**	**Agreement**	**Adoption**	**Adherence**
Predisposing	Distribution of printed information; journals; media campaigns; lectures, rounds; academic detailing			
Enabling		Opinion leaders; small group sessions for clinicians	Small group sessions for clinicians; patient education methods; clinical flowcharts or algorithms; academic detailing	
Reinforcing			Small group sessions for audit and feedback	Reminders (professional and patient), multiple interventions

*Perspective of healthcare or educational system.

Davis, D., Evans, M., Jadad, A., Perrier, L., Rath, D., … Zwarenstein, M. (2003). The case for knowledge translation: shortening the journey from evidence to effect. *British Medical Journal, 327*(7405), 33-35.

Reach, Effectiveness/Efficacy, Adoption, Implementation, Maintenance (RE-AIM) Framework

"The RE-AIM framework is designed to enhance the quality, speed, equity and public health/population impact of efforts to translate research into practice" (Glasgow, et al., 2010, paragraph 1). The framework consists of five dimensions that should be considered to improve the translation of research into practice.

Dimensions of the RE-AIM Framework:

1) **Reach** – The proportion of individuals who are willing to participate in a given initiative, intervention, or program
2) **Effectiveness/efficacy** – The impact of the initiative, intervention or program on important outcomes, including potential negative effects, quality of life, and economic outcomes
3) **Adoption** – The proportion of settings and staff who are willing to deliver the initiative, intervention, or program
4) **Implementation** – The extent to which the initiative, intervention, or program is implemented as intended in the real world
5) **Maintenance** – The extent to which the initiative, intervention, or program is sustained over time

Glasgow, R. E., Dzewaltowski, D. A., Estabrooks, P. A., Gaglio, B. A., King, D., & Klesges, L. (2010). RE-AIM. Retrieved from http://www.re-aim.org.

Understanding User Context Framework

The Understanding User Context Framework allows "researchers and others to engage in the knowledge translation process by increasing their familiarity with and understanding of the intended user groups. Specifically, this framework can be used as a guide for establishing interactions required by the [KT] process illustrated in the CIHR's model" (Sudsawad, 2007, p. 5). The framework consists of five domains that should be considered when interacting with knowledge users.

Domains of the Understanding User Context Framework:

1. **The user group** – Focuses on understanding aspects of the user group (such as decision-making practices, prior experiences with KT) and the context in which the group operates
2. **The issue** – Focuses on the characteristics of the issue to be translated
3. **The research** – Focuses on the characteristics of the research (such as what research already exists?) and how relevant and compatible the research topic is to the user group
4. **The researcher-user relationship** – Focuses on the relationship between the researcher and the user group
5. **The dissemination strategies** – Focuses on strategies for disseminating research findings

Jacobson, N., Butterill D., & Goering, P. (2003). Development of a framework for knowledge translation: Understanding user context. *Journal of Health Services Research and Policy*, *8*(2), 94-99.

The Knowledge translation resources section provides an overview of additional KT theories, models, frameworks, and approaches.

Facilitators and barriers to knowledge translation

Several factors can support or hinder the uptake of research. These are known as facilitators and barriers, respectively. Knowledge of these factors supports effective KT activities and strategies for different audiences and contexts.

Facilitators

There is no all-encompassing approach for effective KT, but there are a number of factors that contribute to research uptake, many of which are interrelated (Barwick et al., 2005; Provincial Centre of Excellence for Child and Youth Mental Health, 2006; Pyra, 2003; Tsui et al., 2006).

Early and ongoing involvement
Engaging knowledge users at the start of and throughout a research project is key to increasing research uptake. Early and consistent involvement is important for:

- Increasing understanding and respect for each other's roles/perspectives
- Building trust, commitment, and sustainability
- Increasing likelihood that research is relevant, timely, and credible
- Building relationships

Frequent face-to-face interactions
Face-to-face exchanges between key stakeholders and researchers allow for nuance and dialogue, the building of trusting relationships, and the sharing of knowledge.

Incentives for effective KT
"[KT] is most successful when there are tangible benefits for all partners and works best when it is likely to result in concrete gains for everyone" (Bisby & Stirling, 2006, p. 20). Incentives should involve funding to support researchers in KT, and may include change reward and recognition. Organizations may provide opportunities, time, and rewards to staff who take part in KT activities.

Adequate time
It takes time to develop relationships, trust, and understanding between stakeholders. Further, when diverse groups are at the table, a research plan may take longer to formulate. This can be a difficult task within the constraints of research funding cycles; particularly, in early stages when existing funding models and mechanisms rarely support the constant tending that new relationships need. Without such vigilance, misunderstandings can arise, commitment can be doubted, and research and KT activities can be seriously undermined.

Build capacity
It is important to build capacity and tools to enhance the use of up-to-date research and practice innovations. Researchers should develop skills to engage with the various stakeholders involved in the KT process. It is important for policy makers and users to understand the research process and how to use research findings. Knowledge brokers have been suggested as an integral resource for building this capacity (see below).

Clarify roles and expectations
All stakeholders bring different backgrounds, understanding, assumptions, and experiences to the table, which need to be articulated, acknowledged, and respected from the start. Formal agreements, which detail expectations and resources to be provided, may be useful and must be supported by trusting and open relationships.

Use active, effective, and multifaceted dissemination strategies
Passive strategies such as journal publications, print materials, conferences, and are not effective when targeting audiences in healthcare (Grimshaw, 2012). It is important to use more active and interactive strategies to implement research-based recommendations and encourage uptake. Strategies include: educational outreach visits, interactive continuing education, social marketing, personal involvement, or use of local opinion leaders. The messaging approach should be tailored to the needs of the target audience using accessible language, and delivered by a trusted source.

Knowledge brokers
Knowledge brokers are of growing interest in the KT literature. This role is responsible for acting as an interface or link between researchers, research users, and policy/decision makers. They build and facilitate the relationships and processes that are critical to KT.

Barriers

Several explanations for why research does not become policy and practice have been discussed in the literature. Many are based on Caplan's (1979) "two-community theory", which postulates that researchers and knowledge users occupy separate communities, with "conflicting values, different reward systems and different languages" (p. 459). Differences in perspectives can create a gap between researchers and knowledge users that can make it difficult to relate to each other. Below is a list of some of the challenges identified in the literature (Canadian Health Services Research Foundation, 1999; Tsui et al., 2006).

For Researchers

- There are few incentives built into in the academic promotion and tenure system for researchers to engage in broad KT activities.
- Conducting research takes time, and policy makers often need to make decisions quickly.

- Creating effective research-to-practice connections takes time, and can be difficult to accomplish in the timeframe encouraged by academic institutions and supported by grant funders.
- Researchers do not always have training in or exposure to the processes used by decision makers.
- Decision maker/government areas of interest are not always clearly defined or identified.
- Concerns about how research findings will be used and/or interpreted by decision makers

For Decision Makers

- Decision makers may have low research literacy, which makes it difficult for them to interpret, scrutinize, and assemble research. This may lead to a lack of confidence for decision makers in using research in their work.
- Organizations often have changing visions, priorities, expertise, and personnel.
- Organizations may have trouble finding researchers to help with specific issues.
- Decision makers face pressure to create policy quickly, and look for readily accessible information.

For Healthcare Organizations and Service Providers

- Lack of infrastructure to conduct or use research.
- Limited understanding of what is involved in the research process.
- Limited access to research evidence.
- Limited training in information seeking and critical appraisal.
- Lack of incentive to link with researchers (financial or otherwise).
- Research language is often complex and difficult to understand.
- Lack of support within organizations to modify practices.
- Organizations have a limited capacity to participate in the research process.
- Limited funding and competing priorities make it difficult to collaborate with other organizations or to identify healthcare research priorities for the research community to address.
- The instability of funding and programming has made it difficult for organizations to build long-term relationships with researchers.
- Issues and topics of importance may differ between researchers and healthcare organizations.

Healthcare-specific barriers and facilitators

In healthcare, a variety of system, staff, and intervention-related domains can impact the integration of evidence into practice. Table 1 below provides a summary of factors to consider in KT activities that target healthcare professionals.

Table 1. Barriers and Facilitators to KT in Healthcare

Domains	Facilitators	Barriers
System-related		
Policy	• Supportive policy • Audits or accreditation	• Restrictive regulations
Organizational Culture	• Effective leadership • Receptive to change & innovation • Readiness • Implementation taskforce • Sharing intervention success stories	• Ineffective leadership • Lack of strategic planning or staff preparation • Feelings of forced changes
Organizational Support & Resources	• Adequate time, funding, staff, & technical support	• Limited funding, lack of planning & training time, insufficient equipment, insufficient administrative support
IT Compatibility & Support	• Compatibility with current IT systems	• Inability to accommodate new systems • Poor IT functionality & accessibility • Lack of IT training
Staff-related		
Relationships	• Positive & trusting inter-professional relationships • Bidirectional communication with opportunities for discussion or input	• Conflict with patient expectations
Team Dynamic	• Support from peers & leadership • Shared vision, collective agreement on goals • Trust between clinicians	• Lack of collaboration • Miscommunication • Fragmentation
Staff Attitudes	• Popularity of intervention • Commitment & motivation	• Negative feelings or beliefs about implementation • Negative feelings from previous failed implementation efforts
Roles & Skills	• Flexible & diverse team for interdisciplinary interventions • Confidence in skills & ability to carry out tasks	• Lack of clarity on who is responsible to implement changes • Lack of required skills
Training	• Regular training & monitoring. Repeated training • Engagement with end users	• Lack of allocated time or resources • Feelings of inadequate training
Workload	• Hiring additional staff to handle increased workloads • Providing staff with sufficient time for implementation	• High workload. Competing priorities • Lack of time or perceived lack of time for implementation • Staff shortages. High staff turnover

Intervention-related		
Intervention Complexity	• Customizability of intervention • User-friendly with simplified forms & tools	• Complex • Large number of sites • Number & diversity of health professionals
Intervention Evidence	• Clear & consistent evidence of intervention benefit • Evidence available to staff • Staff knowledgeable about intervention	• Skepticism. Questions of intervention validity • Disagreement with evidence Misinterpretation of intervention
Ease of Integration	• Interventions that fit within existing systems & workflows • Flexible & iterative implementation	• Interventions with changes to standard processes
Safety & Ethics	• Protect staff & patients by addressing issues of safety or legality	• Concerns about implementation safety & ethics • Perception of liability

Fixsen et al., 2005; Geerligs et al., 2018; Grol et al., 2003; Innis et al., 2015; Lau et al., 2016.

Ultimately, there are many factors that affect the KT process. KT strategies should include multiple components to ensure that the barriers and facilitators that might have an impact on the integration of evidence into practice are addressed (Colquhoun et al., 2013).

Knowledge translation strategies

KT strategies are an approach to increase the uptake and use of research by potential users. These include but are not limited to (Alamantariotou & Nicolopoulou, 2015):

- Virtual libraries, encyclopedias
- Electronic newsletters, bulletins, Listserv
- Discussion forums, networks
- Social media, communities of practice, social marketing, opinion leaders
- Tailored messaging/products
- Knowledge brokers
- Briefs, reports, summaries
- Media advisories
- Conferences, workshops, presentations, symposiums
- Training sessions
- Meetings/roundtables
- Websites
- Publications

Research has not demonstrated that any one approach is more effective than the others. However, research has shown that passive dissemination of information is generally ineffective if the goal is to change practice, and multifaceted/combined strategies are more effective than single strategies (Sudsawad, 2007).

Ultimately, the effectiveness of KT strategies will vary according to the type of research to be translated and the target audience. Table 2 below lists some KT strategies that may be used in healthcare, and their effectiveness.

Table 2. KT Strategies in Healthcare

Strategy	Effectiveness	Description
Audit & feedback	Effective	• An individual's performance is compared to targets and the results are shared with the individual • Larger effects when baseline performance is low or intervention decreased current behaviors. Feedback is more effective when from a senior position, written, and provided more than once
Distribution or dissemination	Ineffective	• Passive dissemination of educational materials • Examples: posting guidelines on a website, distributing guidelines or peer-reviewed publications to clinicians
Education (interactive)	Effective	• Examples: meetings, workshops, practical sessions • More effective for changing simple behaviours and serious outcomes
Education (outreach)	Effective	• Academic detailing • Trained educators meet with healthcare professionals at the place of practice to provide training, feedback, materials, reminders, follow-ups
Education (traditional)	Ineffective	• Lacking active participation • Examples: conferences and lectures
Educational materials	Effective, variable	• Printed educational materials with recommendations for clinical care • Examples: clinical practice guidelines, audio-visual materials
Incentivization	Ineffective, variable	• Financial incentives to encourage implementation • May negatively affect person-centeredness of clinician-patient interactions • Improvements may be short term
Local opinion leaders	Ineffective, variable	• Individuals in an organization who have substantial influence on the community use this influence to persuade healthcare providers to adopt a new intervention • Effect of the educational method or frequency of involvement is unknown
Mass Media	Lack of evidence	• Organized and purposive activities using a variety of media channels • Examples: television, radio, newspapers, billboards, posters, etc.
Multifaceted	Effective, variable	• More than one implementation strategy used together
Reminder system	Effective, variable	• Examples: checklists, notices, electronic reminders • Known to improve care, but effect on patient outcomes is inconclusive
Social Media	Variable	• Examples: wikis, blogs, podcasts, social media networks, vlogging
Toolkits	Effective	• Packaged groupings of multiple KT tools and strategies, where users select the KT strategies to use

W. V. Chan et al., 2017; W. S. Y. Chan et al., 2018; Chauhan et al., 2017; Flodgren et al., 2011; Forsetlund et al., 2012; Gillam et al., 2012; Goldner et al., 2014; Grilli et al., 2009; Grimshaw et al., 2012; Grol et al., 2003; Ivers et al., 2012; Ndumbe-Eyoh et al., 2016; O'Brien et al., 2007; Pantoja et al., 2017; Powell et al., 2012; Prior et al., 2008; Rolls et al., 2016; Scott et al., 2011; Sinclair et al., 2015; Squires et al., 2014a; Vaona et al., 2018; Yamada et al., 2015.

For more information, view our summary on Knowledge Translation Strategies for Different Target Audiences.

Much of the research on effectiveness has focused on changing healthcare professionals' practices, with particular emphasis on physicians. Recognizing that no KT method will be effective in all situations, several authors have proposed guidelines or questions for researchers or knowledge generators to enhance KT/dissemination strategies. The two frameworks generally referenced:

I. Lavis' Framework for Knowledge Transfer consists of five questions (Lavis et al., 2003):

1. **What do you want to transfer (the message)?** – The message should be clear, compelling, evidence-based, perceived as relevant to your target group, and action-oriented.
2. **To whom should the message be transferred (the target audience)?** – The target audience should be precisely specified and the message should be made specific to them and the context within which they work. It is important to learn about their needs, beliefs, current practices, and readiness for change. When selecting a target audience, one should consider who will be able to act on the basis of the research, who can influence those who act, and with which audience can the most success be expected.
3. **By whom should the message be transferred (the messenger)?** – The messenger should be credible, both to the target audience and to researchers. Depending on the target group, different messengers will be perceived as credible. For example, academic detailers and opinion leaders can meet this criterion for many clinical audiences.
4. **How should the message be transferred (the knowledge transfer process)?** – The strategy used to transfer the message should be interactive when possible. Face-to-face meetings can work well for clinicians. Briefings or workshops can work well for managers and public policy makers. Consider format, level of information, and accessibility. Ensure that the KT strategies you select are feasible within your budget, time, and personnel constraints.
5. **With what effect should the message be transferred (evaluation)?** – Determine what you expect to change as a result of your KT activities. Depending on what change you are looking for, different evaluation strategies will be needed. For example, are you aiming to:
    - Increase awareness of your research findings?
    - Increase awareness of current issues on a topic?
    - Increase knowledge in a particular area?
    - Change service providers' beliefs or behaviours?
    - Influence a program or policy?

II. The Understanding User Context Framework developed by Jacobson et al. (2003) consists of five domains that should be taken into consideration when interacting with knowledge users:

1. **The user group** – The characteristics of the user group (such as decision-making patterns, use of information, prior experiences with KT) and the context in which the group operates affects how open the user group is to research.
2. **The issue** – The characteristics of the message or issue that is to be translated influences how likely the user group is to accept the research.
3. **The research** – Different user groups have different orientations towards research. They may look for different things in research, judge it using different parameters, and seek to use it in different ways. KT may be facilitated to the extent that the researcher can understand the user group's orientation and frame the research in appealing ways.
4. **The researcher-user relationship** – Early engagement between the researcher and user group has been shown to facilitate KT.
5. **The dissemination strategies** – KT involves awareness, communication, and interaction. Researchers need to consider what strategies will be most effective for the target group in light of the other four domains. Researchers should consider user group needs and preferences while planning, conducting, interpreting, and disseminating research.

Evaluating knowledge translation

The goal of KT is to increase the uptake of research into practice. It is essential to determine whether a KT strategy was successful, why it was successful, and in what context. However, few methods have been developed to evaluate and measure the impact of KT activities (Searles, 2016; Van Eerd et al., 2011).

In order to measure KT processes, it is important to recognize that knowledge is used in different ways by different knowledge users. At least three types of knowledge use are described in the literature (Beyer, 1997):

1. Instrumental use – Applying research results in specific and direct ways
2. Conceptual use – Using research results for general enlightenment
3. Symbolic use – Using research results to legitimatize and sustain predetermined positions.

In addition to the different uses of knowledge, knowledge can be implemented to differing degrees or take on different forms to suit the realities of the setting or context (Larsen, 1980). This has led Lavis et al. (2003) to suggest moving from just examining whether research was used to examining how it was used.

In a systematic review of tools used to measure research utilization in nursing, Estabrooks et al. (2003) identified the following measures:

- Champion and Leach's research utilization questionnaire (1989)
- Funk et al.'s barriers to research utilization scale (1991)
- Kiresuk's nonspecific knowledge transfer and utilization intervention scale (1993)
- Lavis et al.'s assessment tool for measuring the impact of health research (2003b)

However, the most common approach to measuring research utilization is to develop one's own measure. This has mostly been in the form of a questionnaire/survey with Likert scale responses.

In recent years, steps have been taken to improve the tools used to evaluate KT and a number of models and frameworks have been proposed (Squires et al. 2011; Squires et al., 2014b). One notable tool is the RE-AIM Framework, which was originally developed by Glasgow and colleagues (1999) as a framework for consistent reporting of research results. The RE-AIM Framework is now used by practitioners to evaluate how well research translates into practice (Glasglow et al., 2010):

A systematic review by Van Eerd and colleagues (2011) identified instruments used to assess knowledge transfer, implementation, and impact. This review found that few well-developed instruments exist, although some instruments showed promise as potentially effective tools for evaluating KT practices.

Van Eerd et al. (2011) observed that only three articles, by Bahtsevani et al. (2008), Grad et al. (2008), and Shiffman et al. (2005), sought to develop instruments to measure the KT process and report on their measurement properties (such as reliability and validity). A review by Bhawra and Skinner (2020) found 72 articles using tools to evaluate knowledge uptake and utilization. The most common domain identified across tools was the "usability" of a knowledge product or process, though most measures of "usability" varied between tools. Several KT evaluation tools and instruments, as well as the domains measured, are summarized in Table 3.

Many challenges evaluating KT have been identified (Bhawra & Skinner, 2020; Estabrooks et al., 2003), including:

- Lack of appropriate frameworks for evaluating KT
- Lack of standardization in the evaluation of KT
- Whether one is measuring the use of knowledge versus the impact of use of knowledge
- Frameworks are specific to certain disciplines and cannot be easily generalized, which can make it challenging to select a framework
- Use of theoretical principles to inform KT evaluation, but subsequent survey tools are not theory-based
- Lack of longitudinal KT studies (such as repeated measurement)
- Using constructs or domains that are not clearly defined, or have significant variations between frameworks
- Assumptions that the change process is linear, which ignores the iterative nature of research and complexity of the implementation process

Table 3. KT evaluation tools

Tool name	Items and domains measured
Research Utilization Questionnaire (Champion and Leach, 1989)	• Attitude – influence on behavioural intent • Availability – access to research findings, dissemination of research • Support – leadership support, workload, funding, etc. • Research utilization – application of research to practice
Barriers to research utilization scale (Funk et al., 1991)	• Characteristics of the adopter – adopter's research values, skills, and awareness • Characteristics of the organization – setting, barriers, and limitations • Characteristics of the innovation – qualities of the research • Characteristics of the communication – presentation and accessibility of the research

Tool name	Items and domains measured
Nonspecific knowledge transfer and utilization intervention scale (Kiresuk, 1993)	• Factors related to the recipient of the knowledge or technology transfer • Factors related to the characteristics of the knowledge or technology transfer • Factors related to the process by which the knowledge or technology transfer was implemented
Unnamed (Lavis, 2003b)	• Producer-push process – capture researcher efforts to make information available to decision makers • User-pull process – capture decision makers efforts to identify research • Exchange process – capture joint measures to ask and answer more decision-relevant questions
PARiHS (Promoting Action on Research Implementation in Health Services) (Kitson et al., 1998)	• Evidence – research, clinical experience, and patient preferences • Context – environment or setting for implementation, which includes culture and leadership • Facilitation – techniques and support used during implementation, which includes individual characteristics, role, and style
Unnamed - Based on the PARIHS model Bahtsevani et al., 2008;	• Background characteristics of the respondents • Use questions – probe clinician and patient experiences • Implementation • Evaluation of material itself
Information Assessment Method (Grad et al., 2008; (Information Technology Primary Care Research Group, n.d.; Pluye 2005)	• Pull – assess searches for information • Push – assess sharing of information • Different versions to target clinicians, parents, consumers, etc.
GuideLine Implementability Appraisal (GLIA) (Shiffman et al., 2005)	• Global • Decidability • Executability • Presentation and formatting • Measurable outcomes • Apparent validity • Flexibility • Effect on process of care • Novelty/innovation • Computability

Tool name	Items and domains measured
RE-AIM Framework (Glasgow et al, 2010)	• Reach – did the target population receive the intervention? • Effectiveness – did the intervention have its intended effect? • Adoption – was the intervention adopted by its intended users? • Implementation – was the intervention implemented with high fidelity to its essential features? • Maintenance – was the intervention maintained in practice over long-term follow-up?

In summary, evaluating and measuring the impact of KT activities remains an emerging field and more work is needed in this area. Ultimately, the effectiveness of KT is highly dependent on many factors and there is no “one size fits all” approach to measuring its impact. “The challenge is that the knowledge translation interventions and the health settings where the research occurs are complex, context laden, and difficult, if not impossible to standardize” (Scott et al., 2014, p. 2).

For more information on evaluating knowledge translation activities, see our Knowledge Translation Evaluation Planning Guide.

Indigenous knowledge translation resources

There is a growing need to develop KT processes that are culturally appropriate and effectively address health disparities among Indigenous populations. CIHR's definition of KT acknowledges the need for ethically sound application of knowledge, but "dominant [KT] models in health science do not typically recognize Indigenous knowledge conceptualizations, sharing systems, or protocols and will likely fall short in Indigenous contexts" (Smylie, Olding, & Ziegler, 2014, p. 1). Thus, it is critical that Indigenous worldviews are applied to KT theories, models, and frameworks when performing KT activities in Indigenous communities.

The Indigenous Peoples' Health Research Centre (IPHRC) has played an integral role in exploring the need to develop KT processes that align with Indigenous community contexts and has published several key documents on this topic:

- Knowledge Translation and Indigenous Knowledge Symposium and Consultation Sessions (2005). This report is the response of the IPHRC to the CIHR – Institute of Aboriginal Peoples' Health call for IPHRC statements on enhancing research efforts in the area of KT. The IPHRC initiated a series of dialogues in the spring and summer of 2005 aimed at addressing the shortcomings in mainstream KT approaches by bringing together health practitioners, health researchers, community members, and Elders to determine what KT means from an Indigenous standpoint in Saskatchewan.
- Sharing What We Know About Living a Good Life: Indigenous Knowledge Translation Summit Report. Led by Aboriginal people, this summit brought together community Elders, primary health care providers, academic and community-based health researchers, health policy makers, and others to explore the concept of KT. This is a report on the outcomes of this summit meeting.
- Knowledge Translation (KT) for Indigenous Communities: Policy Making Toolkit. The development of a policy toolkit was identified as a next step from the summit meeting.

The following resources may also be useful for individuals who want to learn more about Indigenous KT or KT in Indigenous communities:

- Fostering the Conduct of Ethical and Equitable Research Practices: The Imperative for Integrated Knowledge Translation in Research Conducted By and With Indigenous Community Members
  Jull, J., Morton-Ninomiya, M., Compton, I. & Picard, A. (2018). *Research Involvement and Engagement*, 4, 45.

- Effective Knowledge Translation Approaches and Practices in Indigenous Health Research: A Systematic Review Protocol.
  Morton Ninomiya, M. E., Atkinson, D., Brascoupé, S., Firestone, M., Robinson, N., Reading, J., … Smylie, J. K. (2017). *Systematic Reviews, 6*(1), 34.
- Indigenous Knowledge and Knowledge Synthesis, Translation and Exchange (KSTE).
  Ellison, C. (2014). Prince George, BC: National Collaborating Centre for Aboriginal Health.
- Sharing What We Know about Living a Good Life: Indigenous Approaches to Knowledge Translation.
  Smylie, J., Olding, M., & Ziegler, C. (2014). *Journal of the Canadian Health Libraries Association, 35*, 16–23.
- Knowledge Translation With Northern Aboriginal Communities: A Case Study.
  Jardine, C. & Furgal, C. (2010). *Canadian Journal of Nursing Research, 42*(1), 119-27.
- Aboriginal Knowledge Translation: Understanding and Respecting the Distinct Needs of Aboriginal Communities in Research.
  Estey, E., Smylie, J., & Macaulay, A. (2009). Ottawa, ON: Canadian Institutes of Health Research – Institute of Aboriginal Peoples' Health.

Knowledge translation resources

Given the recognized importance of closing the research to practice gap, several organizations have explored the topic of KT. The section serves as a repository of resources for individuals who want to learn more about KT and access tools to facilitate KT.

Canadian Institutes of Health Research (CIHR)
Canadian Institutes of Health Research (CIHR) is the major federal agency responsible for funding health research in Canada. It aims to excel in the creation of new health knowledge, and to translate that knowledge from the research setting into real world applications. The results are improved health for Canadians, more effective health services and products, and a strengthened Canadian health care system.
Link to CIHR website: http://www.cihr-irsc.gc.ca/e/193.html **KT Resources:** • Knowledge Translation at CIHR (2018) – This page provides background information about KT at CIHR, as well as a suite of resources including learning modules, examples of KT in Canada, and links to relevant sources. • Aboriginal Knowledge Translation (2009) – Summary published by the CIHR Institute of Aboriginal Peoples' Health on the importance of developing KT approaches that align with Aboriginal contexts.

Alberta SPOR SUPPORT UNIT – Learning Health System and Knowledge Translation
The goal of the Alberta SPOR SUPPORT Unit (AbSPORU) Learning Health System is to promote practices for iteratively implementing and evaluating health improvement projects. They offer KT consultations, workshops, and a KT Community of Practice.
Link to AbSPORU Learning Health System: https://absporu.ca/learning-health-system/

Center on Knowledge Translation for Disability and Rehabilitation Research (KTDRR)

The purpose of the Center on Knowledge Translation for Disability and Rehabilitation Research (KTDRR) is to make it easier to find, understand, and use the results of research that can make a positive impact on the lives of people with disabilities. The Center offers resources, training, and KT supports.

Link to KTDRR website: https://ktdrr.org

KT Resources:

- Databases and Resources – The KTDRR has several databases and resources designed to share information on both KT and disability and rehabilitation research topics.
- Knowledge Translation: Introduction to Models, Strategies, and Measures – This literature review brings together several aspects of KT from selected literature to raise awareness, connect thoughts and perspectives, and stimulate ideas and questions about KT for future research in rehabilitation.

Children's Mental Health Ontario

Children's Mental Health Ontario (CMHO) is the association representing Ontario's publicly-funded Children's Mental Health Centres. Their primary goal is to ensure all kids and young people get the mental health treatment they need within a high-performing system.

Link to CMHO: https://cmho.org/

KT Resources:

- Knowledge Transfer and Implementation of Evidence-Based Practices in Children's Mental Health (2005) – This report includes a review of published and grey literature on the implementation of evidence-based practices in knowledge transfer. Results of a survey of CMHO member organizations' executive directors and clinical staff highlight their research use practices, characteristics related to readiness for organizational change, and the extent to which specific evidence-based treatments are used across the province.

Community-University Partnership (CUP) for the Study of Children, Youth, and Families

The Community-University Partnership (CUP) for the Study of Children, Youth, and Families is committed to improving the development of children, youth, families, and communities by creating or mobilizing evidence-based knowledge that impacts programs and policies.

Link to CUP website: https://www.ualberta.ca/faculties/centresinstitutes/community-university-partnership

KT Resources:

- Handbook on Knowledge Sharing: Strategies and Recommendations for Researchers, Policymakers, and Service Providers (2006) – This handbook was created as a resource for those interested in knowledge sharing among researchers, policymakers, service providers, and the public.

Dementia Centre for Research and Collaboration (DCRC)
The Dementia Centre for Research and Collaboration (DCRC) of the Australian Government functions as a unitary network of projects addressing a single set of national research priorities emphasising KT.
Link to DCRC'S website: http://www.dementiaresearch.org.au/ **KT Resources:** • KT Tools and Resources – This page provides a list of resources that may be useful for understanding and planning KT • KT Glossary – This page provide a summary of KT-related terms

Health Canada
Health Canada is the federal department responsible for helping Canadians maintain and improve their health.
Link to Health Canada website: https://www.canada.ca/en/health-canada.html **KT Resources:** • Knowledge Translation Planner (2017) – This planner can be used to help users take an evidence-informed approach to disseminating and implementing knowledge.

Institut national de santé publique du Québec (INSPQ)
The Institut national de santé publique du Québec (INSPQ) is an expertise and reference centre in public health. Their goal is to advance knowledge and propose cross-sectoral strategies and endeavours that will improve the state of health and well-being of Quebecers.
Link to INSPQ website: https://www.inspq.qc.ca/ **KT Resources** • Facilitating a Knowledge Translations Process: Knowledge Review and Facilitation Tool (2013) – This document presents an overview of the translation of knowledge in the health field. The document's annex includes a tool for facilitating the knowledge transfer process.

Institute for Work & Health (IWH)
The Institute for Work & Health (IWH) is an independent, not-for-profit research with a goal to protect and improve the health and safety of working people by providing useful, relevant research in two key areas: (1) preventing work-related injury and illness, and (2) promoting recovery and work functioning following injury and illness. The IWH was an early adopter of, and is now considered an expert in, integrated knowledge transfer and exchange (KTE) practices to increase the relevance, reach, and use of research.
Link to IWH's KTE section: https://www.iwh.on.ca/knowledge-transfer-and-exchange **KT Resources:** • KTE Resources at IWH – This page provides a list of KTE guides, journal articles, newsletter articles and presentations. • Building the Knowledge Base (2005) – This report synthesizes the key messages from the Ontario Regional Knowledge Transfer and Exchange Workshop. • From Research to Practice: A Knowledge Transfer Planning Guide (2006) – This document provides an overview of knowledge transfer using practical thinking exercises.

Knowledge Translation Alberta
Knowledge Translation Alberta is a community of practice for people working in health-related KT: researchers, practitioners, administrators, and policy-makers. The KT Alberta website is a collection of events, information, and resources useful to KT research and practice in the health sector.
Link to KT Alberta website: https://ktalberta.ca

Knowledge Translation Canada
Knowledge Translation Canada is a Canadian research network that supports the development, implementation, and sustainability of a transformative research program in KT. The KT Canada website offers resources and various learning opportunities for trainees, researchers, policy makers, and stakeholders.
Link to KT Canada website: https://ktcanada.org

Knowledge Translation Program (KTP) – St. Michael's Hospital
The Knowledge Translation Program (KTP) at St. Michael's Hospital works with researchers to develop a strategy to put knowledge into practice at both the clinical and policy level. The KTP website provides a number of practice-based KT tools to aid in the synthesis, dissemination, and implementation of research.
Link to KTP website: https://knowledgetranslation.net/

Michael Smith Foundation for Health Research (MSFHR)
The Michael Smith Foundation for Health Research (MSFHR) is British Columbia's health research funding agency. Their team of KT specialists work to advance the science and practice of KT, and give BC health researchers, health care providers, policy-makers, and other research users the tools they need to increase the use of research evidence in practice, policy, and further research.
Link to MSFHR's KT section: https://www.msfhr.org/our-work/activities/knowledge-translation/kt-at-a-glance

National Collaborating Centre for Methods and Tools (NCCMT)
The National Collaborating Centre for Methods and Tools (NCCMT) provides leadership and expertise in evidence-informed decision making to Canadian public health organizations. The NCCMT supports public health organizations in using innovative, high quality, up-to-date methods and tools to put what works into practice and policy across all domains of public health.
Link to NCCMT website: https://www.nccmt.ca/ **KT Resources:** • Innovation to Implementation: A Practical Guide to Knowledge Translation in Healthcare – This page provides a practical, action-oriented guide shows users how to drive change using knowledge translation (KT) activities. It outlines seven steps to move from innovation to implementation

National Implementation Research Network (NIRN)
The National Implementation Research Network (NIRN) is a multidisciplinary team with the mission to contribute to the best practices and science of implementation, organization change, and system reinvention to improve outcomes across the spectrum of human services.
Link to NIRN website: https://nirn.fpg.unc.edu/ **KT Resources** • Implementation Research: A Synthesis of the Literature (2005) – This report summarizes findings from the review of research literature on implementation. • A Review of Implementation Science Theories, Models and Frameworks through an Equity Lens – A discussion of how implementation theories, models and frameworks can be used to ensure equity in implementation

Ontario Centre of Excellence for Child and Youth Mental Health
The Ontario Centre of Excellence for Child and Youth Mental Health at the Children's Hospital of Eastern Ontario (CHEO) drives high-quality child and youth mental health services by setting the bar for excellence and collaborating with others to pursue continuous quality improvement.
Link to the Centre's website: http://www.excellenceforchildandyouth.ca/ **KT Resources:** • Mobilizing Knowledge – This page discusses how to make sure knowledge is accessible, understandable and useful for everyone

The following resources provide an overview of additional KT theories, models, frameworks, and approaches.

Critical Examination of Knowledge to Action Models and Implications for Promoting Health Equity (2013)
National Collaborating Centre for the Determinants of Health provides a review and critical examination of the usefulness of existing knowledge to action models for promoting health equity
https://nccdh.ca/images/uploads/KT_Model_EN.pdf

Knowledge-for-Action Theories in Evaluation: Knowledge Utilization, Diffusion, Implementation, Transfer, and Translation (2009)
Ottoson describes five knowledge-for-action theories are summarized and compared for their evaluation implications.
https://onlinelibrary.wiley.com/doi/abs/10.1002/ev.310

Scoping Review Identifies Significant Number of Knowledge Translation Theories, Models, and Frameworks with Limited Use (2018)
Strifler et al. summarize existing KT theories, models, and frameworks and the evidence describing their use.
https://doi.org/10.1016/j.jclinepi.2018.04.008

The following resources provide essential KT reads:

Defining Knowledge Translation (2009)
Strauss et al. overviews key KT principles with a particular focus on the knowledge-to-action framework.
http://www.cmaj.ca/content/181/3-4/165

Knowledge Translation in Health Care: Moving from Evidence to Practice (2nd edition, 2013)
Straus et al provide an introduction to KT that is relevant to policy makers, health professionals, and researchers working in healthcare. It covers a wide range of topics including knowledge creation, the knowledge-to-action cycle, barriers and facilitators to KT, and successful implementation strategies.
https://www.wiley.com/en-us/Knowledge+Translation+in+Health+Care%3A+Moving+from+Evidence+to+Practice%2C+2nd+Edition-p-9781118413548

Knowledge Translation Learning (2017)
CIHR offers a suite of resources about KT in healthcare including learning modules, examples of KT in Canada, and links to relevant sources.
http://www.cihr-irsc.gc.ca/e/49443.html

Knowledge Translation in Mental Health: A Scoping Review (2011)
This review from Goldner et al. examines literature regarding KT in mental health and discusses the evolving landscape of the topic.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3287951/

A Narrative Review of Recent Developments in Knowledge Translation and Implications for Mental Health Care Providers (2014)
This article from Goldner et al. provides an overview of current KT literature and the impact KT can have on mental health professionals. Relevant findings are grouped into five core themes: 1) defining KT; 2) effective KT strategies; 3) factors influencing effectiveness; 4) KT frameworks; and 5) relevance to health care providers.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4079124/

Keeping current with knowledge translation

Stay up to date with the latest KT news, events, and opportunities with blogs and newsletters:

Evidence Connection Blog – KT Alberta
Evidence Connection is a KT Alberta blog that is updated monthly and focuses on what's new with KT in Alberta and across the nation.
Link to Evidence Connection blog: https://ktalberta.ca/blog-version-2

Knowledge Nudge Blog
Knowledge Nudge is a Canadian blog that focuses on all things KT from a health perspective. It is updated weekly with emphasis on the science of KT, patient engagement, and media and dissemination.
Link to Knowledge Nudge blog: https://medium.com/knowledgenudge

KT Alberta Newsletter
The KT Alberta newsletter is sent out every two weeks, and keeps subscribers updated with KT-related happenings and opportunities in Alberta, across the country, and internationally.
Link to KT Alberta newsletter: https://ktalberta.ca/archived-newsletters

KT Canada Newsletter
The KT Canada newsletter is sent out on a regular basis with information about KT conferences, webinars, training and career opportunities.
Link to KT Canada newsletter: https://ktcanada.org/#seeMore

National Collaborating Centre for Methods and Tools (NCCMT) Newsletter
The National Collaborating Centre for Methods and Tools (NCCMT) newsletter is sent out monthly with the latest publications, resources, research, and learning opportunities related to KT in public health.
Link to NCCMT newsletter: https://www.nccmt.ca/about/round-up-archive

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Appendix A: KT synonyms

A list of related KT terms (Van Eerd et al. 2011):

- Action research
- Applied dissemination
- Applied health research
- Capacity building
- Collaborative research
- Commercialization
- Community-based participatory research
- Complex intervention
- Complexity studies
- Continuing education
- Co-optation
- Co-production of knowledge
- Diffusion of innovation (s)
- Diffusion(s)
- Dissemination
- Dissemination and implementation
- End-of-grant knowledge translation
- Engaged Scholarship
- Evidence uptake
- Evidence-based decision making
- Evidence-based medicine
- Evidence-based practice
- Evidence-informed health systems
- Evidence-informed policy
- Evidence-informed practice
- Evidence-to-use
- Extension
- Getting knowledge into practice
- Implementation
- Implementation research
- Implementation science
- Information diffusion
- Information dissemination and utilization
- Information exchange
- Innovation adaptation
- Knowledge cycle
- Knowledge diffusion
- Knowledge dissemination
- Knowledge exchange
- Knowledge exchange and uptake
- Knowledge flow
- Knowledge implementation
- Knowledge innovation
- Knowledge integration
- Knowledge internalization
- Knowledge management
- Knowledge mobilization
- Knowledge sharing
- Knowledge synthesis
- Knowledge transfer
- Knowledge transfer and exchange
- Knowledge transfer and uptake
- Knowledge transformation
- Knowledge translation and exchange
- Knowledge uptake
- Knowledge use
- Knowledge utilization
- Knowledge-to-action
- Link research to action
- Linkage and exchange
- Mode 2 research
- Participatory action research
- Practice based evidence
- Quality assurance
- Quality improvement
- Research dissemination
- Research dissemination and utilization
- Research impact
- Research implementation
- Research into practice

- Innovation adoption
- Innovation diffusion
- Integrated knowledge transfer
- Integrated knowledge translation
- Knowledge absorption
- Knowledge adoption systems
- Knowledge brokering
- Knowledge communication
- Research translation
- Research uptake
- Research use
- Research utilization
- Synthesis
- Technology transfer
- Transfer