

MSFHR Knowledge Translation Evaluation Framework

Abridged version:

Introduction

A significant gap exists between what is known from research evidence and what is done in practice and policy. MSFHR aims to reduce this gap by increasing the use of health research evidence to inform practice, policy and further research through knowledge translation (KT). While KT has always been a component to varying degrees in the Foundation's organizational activities and awards, there has been an increased focus on its active facilitation since the implementation of the KT Unit in 2010. The Unit's capacity-building work, along with MSFHR's portfolio of funding opportunities aimed at enhancing the impact of research, positions MSFHR as a KT leader among Canadian funders.

In light of MSFHR's organizational strategic plan, organizational evaluation strategy, and related reporting to government, and to inform development of the organization's KT activities, a KT evaluation framework is required.

This document is a framework for evaluating the KT activities across the organization, with a focus on the work of the KT Unit.

Program¹ profile

Published work (2012)² by the KT Unit identified five functional areas through which funders can create the conditions for effective KT: building KT capacity, funding KT, advancing KT science, advocating for KT, and managing KT projects. MSFHR is active in all five functional areas of the model.

Broadly, accountability for the overall KT program lies with the President & CEO*. Responsibility for KT is shared between the KT Unit and the Strategy team.

¹ NOTE: Throughout this document, "Program" or "KT Program" refers to all of MSFHR's KT activity, not just the KT activity for which the KT Unit is responsible. Where we are referring to the KT Unit's work specifically, this is stated.

² Holmes, B., Scarrow G., and Schellenberg, M. (2012). Translating evidence into practice: the role of health research funders. *Implementation Science*, 7(39).

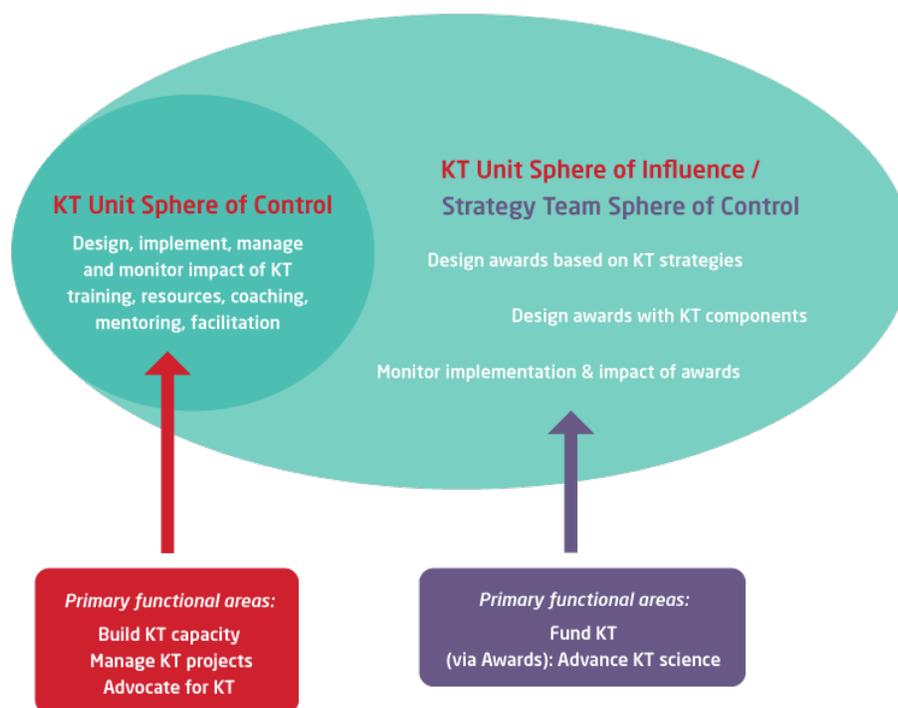
* Updated August 2018

MSFHR’s KT Unit is responsible for supporting the organization’s activity in all five functional areas of the model. Its sphere of control lies primarily within the capacity-building function. It is also responsible for managing KT projects.

The Strategy team’s sphere of control lies primarily within the funding KT area. The Strategy team is also responsible for monitoring the impact of awards. The Strategy team works closely with the Research Competitions team, which oversees award administration (i.e. implementation).

The KT Unit and Strategy teams’ spheres of control and influence are shown in Figure 1 below.

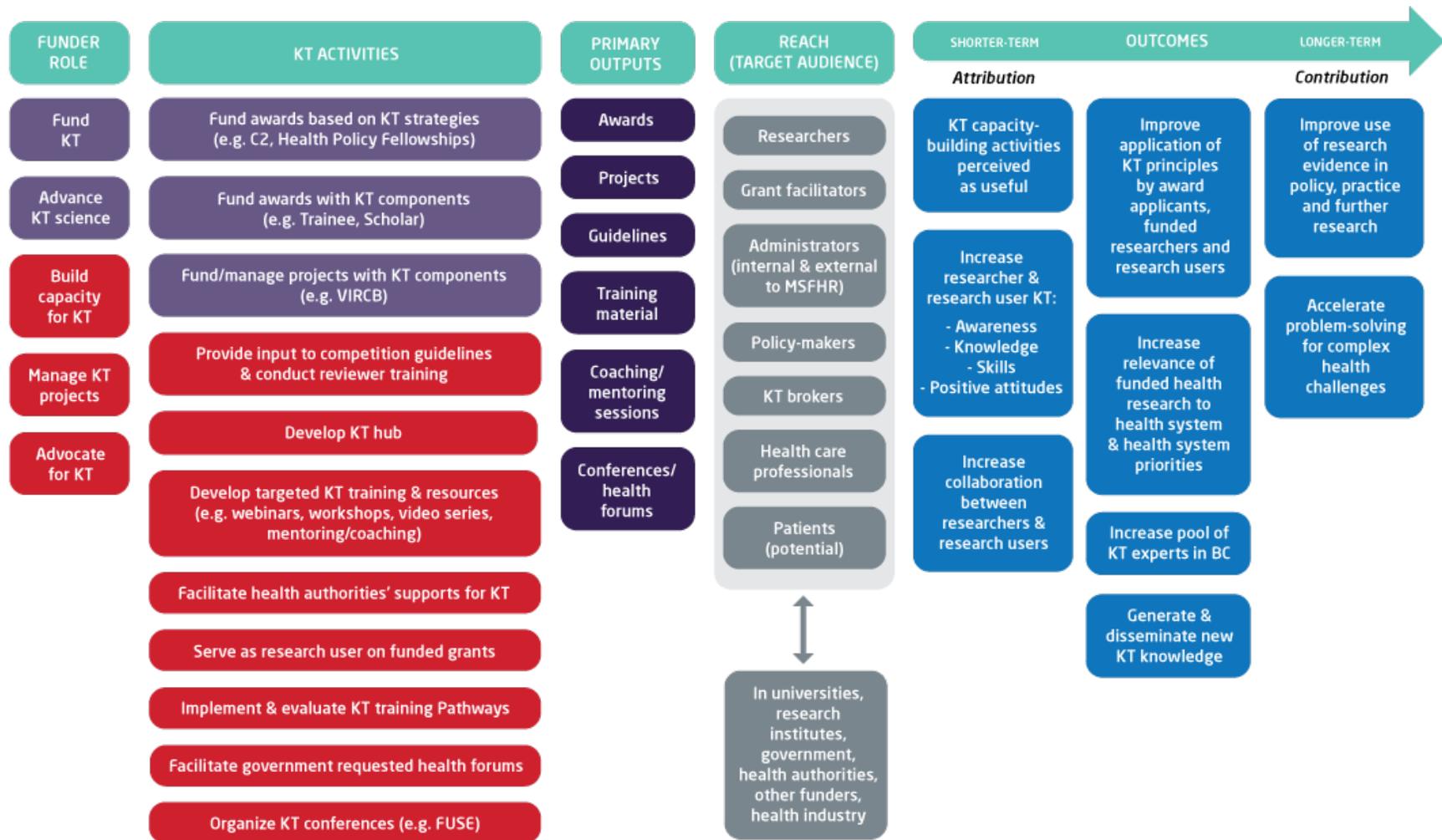
Figure 1. KT Unit and Strategy teams’ spheres of control and influence



The relationship between MSFHR’s overall KT activities, outputs and expected outcomes, is depicted in the KT program logic model (overleaf). KT activities that lie within the KT Unit’s sphere of control are shown in red, and activities that lie within the Strategy team’s sphere of control are shown in light purple.

The logic model represents, in a highly simplified form, the pathway between MSFHR’s broad portfolio of KT activities and the key short-term, medium-term and longer-term outcomes that cut across all five functional areas. The logic model is not intended to show the pathways between individual KT activities and their specific outputs and outcomes; more detailed, nested logic models for individual KT activities may be done as implementation of the evaluation unfolds.

Figure 2. MSFHR's Knowledge Translation Program Logic Model



Evaluation context and scope

MSFHR's organizational evaluation strategy highlights the need for evaluation of the KT program. The Foundation's KT Unit Work Plan (2016) also includes provision for an evaluation plan (framework) to be created to monitor the progress and impact of the KT work plan objectives and corresponding activities. Finally, there is an opportunity for the KT evaluation framework to contribute to the advancement of KT science as well as research impact measurement more broadly.

The KT evaluation framework will be situated within the broader MSFHR organizational evaluation strategy, which is undergoing revisions. The framework describes an overall approach to evaluation of MSFHR's KT program (i.e. across all five functional areas, including areas which fall under the KT Unit's sphere of control, and areas that fall under the Strategy team's sphere of control). This includes:

- Articulation of high-level outcomes that cut across all five functional areas (as shown in the logic model)
- A common purpose for evaluation of MSFHR's KT program
- A set of common evaluation questions
- An overall approach

The KT evaluation framework provides more specific guidance for evaluation of activities under the KT Unit's sphere of control (shown in red on the logic model), including:

- Methodology, including indicators and data sources (see below, and Appendix B for details)
- Recommendations for implementation

The KT evaluation framework does not provide specific guidance (i.e. indicators, data sources) for evaluation of awards based on KT strategies (e.g. C2, PWSI Knowledge Brokers), or for the KT components of the Trainee and Scholar programs. These programs will require their own detailed evaluation frameworks (see Approach, below), as they have additional desired outcomes that need to be explored evaluatively.

Evaluation purpose and users

The purpose of the organizational KT evaluation (in descending order of importance) is to:

1. Enable MSFHR to report to external stakeholders, in particular, the provincial government, about the impact of MSFHR's investment in KT, identifying immediate outcomes and, to the extent possible, longer term impacts
2. Generate data on overall organizational KT indicators, that can be rolled up to report on MSFHR's overall organizational impact
3. Generate evidence to inform the development of future KT programs and activities for MSFHR

4. In the longer-term, generate evidence about the validity and usefulness of MSFHR's KT model as a planning tool for reaching long-term impacts

The primary intended user of this evaluation is MSFHR's KT Unit. A key secondary user is the Strategy team. The evaluation of MSFHR's KT model and program will also provide evidence for other institutions that may wish to replicate the model or evaluate their own KT programs.

Evaluation questions

The evaluation questions form the foundation for the KT program evaluation. The high level evaluation questions are:

1. How effective is MSFHR's KT program in achieving short- and medium-term KT outcomes (as articulated in the KT program logic model)?
2. What factors contribute to the success of MSFHR's KT program?
3. How could the program be improved?

Second-level (i.e. more specific) evaluation questions, detailed in Figure 3, cover activities, outcomes and processes. As noted above, they are intended to cover MSFHR's full range of KT activities; however, they may not apply to every component of MSFHR's KT program. The second-level outcome questions closely mirror the outcomes articulated in the logic model.

It is also important to capture unintended outcomes (both positive and negative). The process questions are intended to capture lessons learned, in order to provide concrete guidance for the development of future KT programs and initiatives, as well as to understand the validity and usefulness of MSFHR's KT model as a planning tool.

Finally, as noted earlier, additional questions may be required for evaluation of specific components of MSFHR's KT program.

NOTE: The evaluation questions are intended to provide a framework for the whole KT program. For examples of associated indicators, refer to Appendix B.

Figure 3. Second-level evaluation questions

<p>ACTIVITIES</p> <ol style="list-style-type: none">1. What KT activities were (directly) undertaken by MSFHR? What was produced? <p>OUTCOMES</p> <ol style="list-style-type: none">2. How many people, and which target audiences, were <u>reached</u> through MSFHR's KT activities?3. To what extent did target audiences experience MSFHR's KT activities as <u>useful</u>?4. To what extent did MSFHR's KT activities increase <u>use</u> of KT concepts in practice, in terms of:<ol style="list-style-type: none">a. Increasing collaboration between researchers and research usersb. Improving application of KT principles by award applicants, funded researchers and research users5. What new KT knowledge was produced?6. To what extent did MSFHR's KT activities contribute to increased relevance of health research to the health system and health system priorities? [not applicable to capacity-building activities]7. To what extent did MSFHR's KT activities contribute to increased use of research evidence in practice, policy and further research? [not applicable to capacity-building activities]8. Which specific KT activities and projects have the most potential for impact, and in what areas of the model, and should be tracked over the medium-term?9. Were there any unanticipated outcomes of MSFHR's KT activities? <p>PROCESS</p> <ol style="list-style-type: none">10. What factors affected (a) program implementation (b) achievement of desired KT outcomes?11. How might the program be improved?
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Approach

The absence in the literature of agreed definitions of KT success, as well as corresponding indicators and methods, poses significant challenges for evaluation of any KT program. The challenges are exacerbated for a multi-faceted KT program such as MSFHR's. This has a number of implications.

Firstly, it will be critical for the methodology to allow for definitions of success to emerge from the evaluation, rather than to be overly prescriptive about what success looks like in the planning stages. In particular, although KT evaluation metrics may be appealing conceptually, the concepts that are quantitatively measurable may not be very meaningful. This points strongly to use of qualitative

approaches (both qualitative indicators and methods), at least in the early stages of MSFHR's KT evaluation. As the evaluation unfolds, data generated from qualitative approaches could be used to generate more robust, quantifiable indicators.

It will also be important to incorporate data at two levels: the individual program component level, and across multiple components. The latter could involve identifying and seeking interviews with key informants who have had exposure to multiple elements of MSFHR's KT program. This approach is proposed in the first instance for evaluation of MSFHR's KT Unit activity; over time, the sample and question set could be expanded to include other elements of MSFHR's KT program. Alternatively, if the Foundation's organizational evaluation or stakeholder relations strategy involves surveying stakeholders about MSFHR's impact more broadly, the survey could incorporate questions specific to the overall KT program.

As MSFHR's KT program matures, it may also be worthwhile to consider retrospective analyses of "success". This could be achieved by identifying one or more KT programs (representing each of the five functional areas) that stakeholders agree has had significant impacts, and effectively deconstructing that success to understand more precisely what success is and how it was achieved. The findings could be reported as case studies; these would have a primarily qualitative "story-telling" feel, supplemented by quantitative data where possible. At the front end, this would require reporting mechanisms for individual programs (e.g. awards based on KT strategies) that capture narrative data related to the evaluation questions above. Convening an expert panel to review impact reporting across KT programs would ensure that appropriate success candidates are identified, interpret the findings and consider implications for future KT programming. The case studies could also be used to generate more robust success indicators for the KT program.

There are also some immediate considerations. Firstly, the outcome-related evaluation questions above do not cover all of the outcomes for each program. This is most obvious in the case of awards with KT components (e.g. Trainee and Scholar awards), but may also apply to awards based on KT strategies (e.g. KT brokers). This suggests that a more detailed plan for each component, which incorporates but is not limited to the questions above, will be required.

However, there should be significant overlap within activity categories (e.g. awards based on KT strategies; awards with KT components; KT projects focused on capacity-building) to enable efficient planning and similar approaches to KT-related indicator development and data collection, and eventually roll-up of data into an overall reporting framework for the KT program, within the context of the organizational evaluation strategy. The KT reporting framework should be based on the evaluation questions above.

The overall approach also needs to take into consideration that not all elements of the KT program are "evaluation-ready". Some flexibility will be required to accommodate new programs as they emerge. It will also be important to create mechanisms to collect and analyze data in real-time so that it can be used to inform program development.

Finally, it will be important to consider how best to approach resourcing the KT evaluation. To meet all the purposes described above, and in particular, the fourth evaluation purpose, it is necessary to address a large number of evaluation questions across a wide spectrum of programs. This suggests that an iterative approach will be required, and it may be necessary to outsource some of the evaluation. A logical way to approach this would be to separate evaluation of work performed by the KT Unit from evaluation of the other components.

The remainder of this document lays out a more detailed approach for evaluation of the KT Unit's activities.

Methodology – KT Unit evaluation

A challenge for evaluation of the KT Unit's activity is the absence of guidance in the literature for defining and operationalizing indicators of success. In developing this evaluation framework, the team invested significant time in trying to articulate these. Furthermore, the process of developing the framework revealed that several of the KT Unit's activities are not yet "evaluation-ready", as goals, objectives and the specific form(s) of the intervention are not yet known.

In general, however, we do know that a mixed methods approach will be used to address the evaluation questions, with a focus on qualitative approaches in the early stages of the evaluation. The evaluation questions themselves will likely be used as a starting point for qualitative data collection (e.g. as the basis of an interview guide for key informants).

Data collection will occur at two levels: at the level of individual program components, and at the KT Unit level. The latter will involve seeking input from key informants who could be expected to have a knowledgeable perspective across multiple elements of the program.

In an ideal world, it would be possible to apply highly rigorous designs. This includes collecting detailed data using validated instruments, avoiding data sources that are particularly susceptible to bias, using statistically robust samples and pre- post- methods. However, prior experience suggests that such methods may not be feasible for MSFHR due to resource constraints as well as difficulty engaging target audiences and other stakeholders in evaluation activities. It will be critical to use data collection techniques that are perceived to be minimally burdensome on participants, even if the data they produce are imperfect.

The specific evaluation questions, associated outcomes, indicators and data sources are listed in Appendix B.

NOTE: At the time of writing, the following KT planned activities were assessed as not yet "evaluation-ready", and are therefore not included:

- Develop KT 'go to' place (virtual/physical)
- Facilitate health authorities' supports for KT

- Facilitate government requested health forums
- Organize KT conferences

Suggestions for guiding these activities towards “evaluation-readiness” are contained in the Implementation section.

NOTE also: the MSFHR KT Pathways (the “Pathways”) project appears to be a unique evaluand in the context of the KT Unit’s work. While it is covered in general terms within this framework, it is likely that a more detailed plan for evaluating the Pathways project will be required.

Recommendations for implementation – KT Unit evaluation

As noted above, several of the Unit’s planned activities are not yet sufficiently developed to enable implementation. However, there is an opportunity to start planning and collecting data for those aspects of the Unit’s work that are ready, and incorporate evaluation of the new elements as they emerge. Areas that appear ready for evaluation are:

- Provide targeted KT training (webinars, workshops, video series, mentoring/coaching)
- Provide input to award guidelines
- Serve as research user on funded grants

The next step towards implementation of evaluation for these programs is to develop tools for data collection (e.g. interview guides, surveys, processes for collecting administrative data, analytics – see Appendix B).

A secondary area of focus should be to support more detailed evaluation planning for the MSFHR KT Pathways. This likely needs to include external stakeholders. The evaluation questions contained in this framework, as well as methodologies for evaluation of other KT Unit activities should serve as a starting point.

A third area of focus should be to support the Strategy team to integrate the KT evaluation questions into detailed evaluation planning for the areas that fall in their sphere of control.

A final and critical area of focus is to prepare the new programs for evaluation. **Articulating clear program goals (aligned with the KT logic model), supported by specific objectives, is absolutely essential.** Setting time aside to work through the program’s theory of change with key stakeholders (in a workshop format) will go a long way towards ensuring this, as well as ensuring that the program itself hangs together. A final part of preparing for evaluation is considering what additional or specific evaluation questions need to be asked, and whether any of the over-arching evaluation questions do not apply to the specific program. Work on indicators should not be undertaken until all these steps have been addressed.

Appendix A: MSFHR KT planned activities 2016 – 2018

Organizational KT activities planned for 2016-2018 encompass the following:

Category	Activity / Status	Lead Department	KT Model Primary Functional Area	KT Model Other Functional Area	
Awards based on KT strategies	<ul style="list-style-type: none"> PDF KT science (current) KT Brokers (PWSI³ supplemental)(current) C2 (launch Fall 2016) Health Policy Fellowships (launch Fall 2016) Health Professional Investigators (launch Fall 2016) Dissemination (launch Fall 2016) Innovation & Commercialization Scholar (early planning) Implementation Science Team Award (early planning) 	Strategy team	Funding KT	Advancing KT science	ADVOCATING FOR KT
		KT Unit <ul style="list-style-type: none"> Input to guidelines Reviewer training 	Building KT capacity		
Awards with KT components	<ul style="list-style-type: none"> Scholar (current) Trainee (current) 	As above	As above	Advancing KT science	
KT Projects ⁴	Develop infrastructure for a KT 'go-to' place (virtual/physical)	KT Unit	Managing KT projects		
	KT activities, aligning with and supporting the work of the BC SUPPORT Unit and beyond to include all health research pillars: <ul style="list-style-type: none"> Targeted training programs & resources, including: <ul style="list-style-type: none"> Existing / new workshops KT video series KT webinar series Mentoring & coaching 	KT Unit	Building KT capacity	Managing KT projects	
	Facilitate health authorities' supports for KT	KT Unit	Building KT capacity	TBC	
	Facilitate government requested health forums	KT Unit	Managing KT projects		
	Serve as research user on funded grants	KT Unit	Building KT capacity		
	Develop / implement evaluation framework	KT Unit	Advancing KT science		
	Implement & evaluate MSFHR KT Pathways	KT Unit	Building KT capacity	Managing KT projects	
	Organize conferences (e.g. 2017 Fuse)	KT Unit	Advocating for KT		
Projects with KT components	VIRCB (nearing completion) Interior Health Capacity-Building (current)	Research Programs / Research Competitions	Funding KT		
	BC Support Unit (see above, KT 'go to' place [virtual/physical]) operational planning commenced Fall 016)	Shared leadership (Strategy, KT)	Funding KT Building KT capacity		

³ Peter Wall Solutions Initiative

⁴ Defined as, all projects that aim to increase the use of health research evidence in practice, policy and further research. Such projects must include a significant integrated KT component based on KT theories, mechanisms, concepts and/or methods.

Appendix B: KT Unit evaluation – detailed methodology

In the first year of evaluation, the activities to be evaluated include: (1) Provide targeted KT training (webinars, workshops, video series, mentoring/coaching), (2) Provide input to award guidelines, and (3) Serve as research user on funded grants.

Evaluation Question		Potential Indicators	Potential Data Sources	Methods Notes
1	(a) What KT activities were (directly) undertaken by MSFHR?	<p># of activity types conducted (yearly planned vs implemented)</p> <p>Description of activity, categorized by functional area</p>	Administrative documents (e.g. program planning, budgeting)	
	(b) What was produced?	<p># of incidences of training, mentoring, coaching</p> <p># & type of material produced to support guidelines, reviewer training, KT pathways</p> <p># of webinars, workshops, videos</p> <p># conferences, forums</p>	Administrative documents	<p>Data collection methods should be considered in light of new data infrastructure being considered as part of IM/IT strategy</p> <p>MSFHR may consider developing a logging spreadsheet to simplify recording</p>
2	How many people, and which target audiences, were reached through MSFHR's KT activities?	<p># & target group type reached through:</p> <ul style="list-style-type: none"> Guideline development sessions Reviewer training sessions Webinars Workshops Mentoring / training sessions KT pathways development activities Activities as research user on funded grants Conferences 	<p>Meeting records</p> <p>Registration data</p> <p>Web analytics</p>	<p>May need mechanisms or processes to capture audience #s for web-based activities where there may only be one registrant but multiple users in the room.</p> <p>Tools also needed to capture & categorize data about target group types</p>
3	To what extent did target audiences experience MSFHR's direct KT activities as useful?	<p>Target groups' perceptions of the extent to which KT activities:</p> <ul style="list-style-type: none"> Met expectations Were relevant Resulted in learning that could be applied Were of high quality 	<p>Internal (i.e. MSFHR staff):</p> <ul style="list-style-type: none"> Brief yearly survey with rating scales Debrief sessions <p>External:</p> <ul style="list-style-type: none"> Post-activity survey (immediate, brief) 	<p>We may need to choose key questions from SKTTS survey (i.e. are there a few questions that could be used as key indicators)</p>

		<p>Key informants' perceptions of the above:</p> <ul style="list-style-type: none"> By individual program component Across programs <p>Target groups' self-reported perceptions of changes in awareness, knowledge, skills, positive attitudes</p> <p>Key informants' perceptions of changes in awareness, knowledge, skills, positive attitudes:</p> <ul style="list-style-type: none"> By individual program component Across programs 	<p>Internal (i.e. MSFHR staff)</p> <ul style="list-style-type: none"> Brief yearly survey with rating scales <p>External:</p> <ul style="list-style-type: none"> SKTTS survey where applicable Pre-post activity survey where possible (brief; immediate and 6-month follow-up) Key informant interviews 	
4	<p>To what extent did MSHFR's KT activities increase use of KT concepts in practice, in terms of:</p> <p>(a) Increasing collaboration between researchers and research users</p>	<p>Target groups' self-reported perceptions of the number, type and quality of interactions with researchers or research users</p>	<ul style="list-style-type: none"> Pre-post activity survey where possible (brief; immediate & 6 month follow-up) Key informant interviews 	<p>This will need quite a bit of work to operationalize. For the KT Unit's work, it's probably appropriate to consider "interactions" rather than "collaborations". Article by Kothari et al. (2011) may be useful.</p>
	<p>(b) Improving application of KT principles by award applicants, funded researchers and research users</p>	<p>KT Unit's perceptions of changes in application of KT principles (quality) over time in:</p> <ul style="list-style-type: none"> Sample of award applications (all awards) Sample of funded researcher end-of-grant reports (all awards) <p>Changes in reviewer ratings of KT components of applications</p> <p>Changes in Trainee & Scholar level of engagement with non-researchers over time</p> <p>Key informants' perceptions of contribution of KT Unit activities towards improved application of KT principles:</p> <ul style="list-style-type: none"> By individual program component Across programs 	<p>Quality assessment tool (criteria to be developed); applied annually</p> <p>Application data</p> <p>Scholar & Trainee end-of-grant reports</p> <p>Key informant interviews</p> <p>6 month follow-up survey (TBD)</p>	<p>Ideally, quality ratings would be done by a third-party review group, rather than KT Unit</p> <p>Explore possibility of comparing KT outcomes between funded/non-funded, and applicants who completed MSFHR KT training vs those who did not</p>

		Targeted training only: Target groups' self-reported applications of KT principles		
5	What new KT knowledge was produced?	# & types of publications and presentations involving KT Unit personnel		Other, less academic indicators TBD If MSFHR does not yet have a list, SHRF impact award list of categories could be used
6	To what extent did MSFHR's KT activities contribute to increased relevance of health research to the health system and health system priorities?	THIS QUESTION IS LESS RELEVANT FOR THE KT UNIT'S WORK. Although the KT Unit's work may contribute to this (e.g. through input to guidelines for awards based on KT strategies), it may be better to explore this link from further downstream (i.e. through evaluation of those awards).		
7	To what extent did MSFHR's KT activities contribute to increased use of research evidence in practice, policy and further research?	THIS QUESTION IS LESS RELEVANT FOR THE KT UNIT'S WORK (details as above)		
8	Which specific KT activities and projects have the most potential for impact, and in what areas of the model, and should be tracked over the medium-term?	Key informant perceptions of activities and projects with most potential for impact: <ul style="list-style-type: none"> • Across the KT Unit's activities 	Key informant interviews Impact narratives	
9	Were there any unanticipated outcomes?	Key informant perceptions of unanticipated outcomes from KT Unit activities: <ul style="list-style-type: none"> • By individual program component • Across programs 	Key informant interviews	
10	What factors affected (a) program implementation (b) achievement of desired KT outcomes?	Key informant perceptions of facilitators and barriers to implementation Key informant perceptions of facilitators and barriers to achievement of KT outcomes	Implementation: Key informant interviews (internal to MSFHR) KT outcomes: Key informant interviews (internal & external)	
11	How might the program be improved?	Key informant perceptions of gaps and areas for improvement	Key informant interviews	

Appendix C: Discussion paper based on a limited environmental scan of KT evaluation literature

Introduction

The purpose of the environmental scan was to capture “state-of-the-art” thinking about evaluation of KT, with a focus on methodology. The environmental scan included academic literature, grey literature, and brief interviews with practitioners with expertise in KT evaluation.

By prior agreement with MSFHR, the environmental scan was limited to what could be achieved within a pre-determined number of hours. The body of potentially relevant literature is vast and crosses many disciplines. The synthesis that follows is based on the material that surfaced using a systematic but not comprehensive approach. More details about the environmental scan methodology are contained at the end of this Appendix.

The results and key themes from the environmental scan are presented below, along with the implications for MSFHR’s KT evaluation framework.

Results

The original search of academic literature yielded an initial list of 709 articles, primarily in the evaluation, research impact and implementation science literature. A review of the abstracts yielded 37 articles of potential interest. A full review of these articles was conducted, and 21 articles were retained. A snowball sampling technique, based on key citations and the reference list of the most relevant articles, yielded an additional seven key articles. Twenty-eight peer-reviewed articles were selected for inclusion and analysis.

The results of the grey literature review were very limited: only four documents of interest were found. However, it is likely that some relevant material is simply not publicly available.

Finally, the expert interviews yielded some insights about the “state-of-the-nation” with respect to KT evaluation. These are included in the findings presented below.

The majority of articles retrieved concerned general approaches and methodology for evaluating KT. Although several articles describing tools for evaluating KT interventions were found in the initial title search, almost all related to specific types of KT interventions that were not applicable to MSFHR’s KT program. Only two articles that contained potentially useful guidance about potential indicators for MSFHR’s KT program were found.

Finally, it is important to note that no articles were found in either the academic or grey literature that described an approach to evaluation of KT at a pan-organizational level. Furthermore, no articles were

found that related to evaluation of KT capacity-building interventions, which is central to MSFHR's KT Unit's work.

Key themes

What does the literature say about the current status of KT evaluation?

The single most consistent theme across the literature is recognition that evaluation of KT is extremely challenging, and that as a result, there is no consensus and little practical guidance as to how to do it (Graham, 2016; Nason, 2016). The lack of agreed approaches and practical guidance is particularly apparent in real-world practice settings (Blake and Ottoson, 2009).

Challenges to evaluating KT have been well-documented, and include:

- There is a lack of conceptual or operational agreement about what constitutes KT (Tetroe et al., 2008); one much-cited study found 29 terms associated with the concept of moving knowledge into action (Graham et al., 2006).
- Related to this, the range of interventions that could be classified as KT is vast, limiting the potential for any kind of standardized evaluation approach except, perhaps, within very specific and clearly defined types of intervention. There is no shortage of frameworks for KT evaluation, but these have typically been developed in isolation and for a specific purpose (Gervais, Marion, Dagenais, Chiocchio and Houlfort, 2016).
- Real-world KT interventions are implemented in complex adaptive systems (Blake and Ottoson, 2009; Hawe, Bond and Butler, 2009). The interplay between the intervention (or mechanism), the context in which it is implemented, and the outcomes achieved is difficult to predict in advance or measure retrospectively.
- Indicators for successful knowledge translation have not been clearly defined (Boyko, Dobbins, De Corby and Hanna, 2013).
- At a practical level, there is a tension between evaluation rigour and evaluation feasibility (Nason, 2016).

In summary, there is no recipe for evaluating KT strategies (Gervais et al., 2016).

Despite the lack of consensus on how to evaluate KT, the literature offers some useful guidance about what is important to consider. Key issues from the literature are presented along with their potential implications for MSFHR's KT evaluation framework.

What are the implications of contested theories of KT for MSFHR's KT evaluation?

As noted earlier, the literature points to a profusion of terms, concepts and frameworks associated with KT and its evaluation. Tetroe et al.'s (2008) observations about the fuzziness of KT as an evaluand raises the question as to whether MSFHR has sufficiently defined the boundaries of its KT program to enable evaluation. Early work on the evaluation framework has attempted to do this by differentiating between activity streams (e.g. funding awards based on KT strategies; funding awards with KT components; KT projects). However, consideration of Holmes et al.'s (2016) and Holmes, Scarrow and Schellenberg's (2012) reflections raises the question as to whether and how MSFHR partnerships, such as the Clinical Care Management (CCM) project, need to be considered as elements of the KT program for evaluation purposes. It would be worthwhile to engage the Partnerships team in a conversation about where and if partnerships would potentially be considered KT for the purposes of reporting on MSFHR's KT program performance.

Another contested area with implications for MSFHR's KT evaluation framework is the definition of "success" for KT. Trochim, Kane, Graham and Pincus (2011) argue that the success (or impact) of KT is ultimately judged by whether it reduces the time it takes to move research to practice; a key task for evaluation is therefore to assess whether the KT intervention accelerated the trajectory. This leads to an evaluation focus on "what happened" and "when".

Molas-Gallart, D'Este, Llopis and Rafols (2016) offer an alternative perspective on this. This authors argue that the success of a KT intervention should be judged by the extent to which it bridges the divide between different actors in the system, and suggests five forms of "proximity" that KT interventions can aim to improve: cognitive, social, organizational, institutional and geographical.

A central role for evaluation is therefore to shed light on how the intervention affected the proximities (Molas-Gallart et al., 2016) or interactions (Hawe et al., 2009) between actors in the system. This leads to an evaluation that is more focused on the KT process (i.e. the "how"). Both perspectives could be taken into account in building MSFHR's KT evaluation framework.

Another result of the general conceptual confusion is a tendency to conflate the impact of KT with the impact of research (Graham, 2016). The success (i.e. impact) of research is judged by what ultimately happens: who uses it and what difference it makes to the public, health care providers or policy-makers. A key task for evaluation of research impact is to determine what ultimately happened as a result of the research. In contrast (as described above), a key task for evaluation of KT is to determine whether it accelerated the trajectory of research-to-action and/or whether it improved the interactions between stakeholders. As we develop our KT evaluation framework, and especially as we work towards development of indicators, we will need to focus on impacts that are specific to KT and not research per se.

How should we deal with complexity?

Like the KT literature generally, the literature on KT evaluation is replete with references to complexity, but does not offer much practical guidance on how to address it. However, it is possible to draw some implications for MSFHR's KT evaluation framework.

Firstly, the issue of complexity suggests we must pay close attention to the context in which our KT interventions unfold (Gervais et al., 2016; Blake and Ottoson, 2009; Hawe et al., 2009). This points to the importance of evaluation questions (and associated approaches and methodologies) that allow us to get at the interplay between the intervention (or mechanism), context and outcomes (Salter and Kothari, 2014; Blake and Ottoson, 2009).

The literature clearly points to the need to pay close attention to program theory or “theories of change” (i.e. the pathway between the intervention and outcomes) as an alternative to traditional “black box” evaluation which is focused on outcomes and provides evaluative conclusions without explanation of how the outcomes might have been achieved (Salter and Kothari, 2014). Although MSFHR has done some work to articulate a program logic for its overall KT program, this suggests there is much more work to be done to articulate theories of change at the level of the individual components that make up the KT program. In particular, in the absence of relevant literature about how to measure success of KT interventions, it is clear that theories of change need to be much better fleshed out in order to help us define indicators, particularly of interim success (Dart and Roberts, 2016; Trochim et al., 2008). Luckily, Salter and Kothari (2014) give permission to the evaluation and program teams to adopt a creative approach to developing theories of change, including indicator development, that relies on practice-level experience and common sense. Processes to develop theories of change may benefit from having a wide range of stakeholders involved (Gervais et al., 2015; Scott, Rotter, Hartling, Chambers and Bannar-Martin, 2014); MSFHR may wish to consider this, particularly for articulating a theory of change for its newer KT awards and KT projects that deeply involve external stakeholders.

The literature also suggests we should be wary of attempting to pre-determine all our outcome indicators (Salter and Kothari, 2014). In a complex, adaptive environment, this may not be possible, and could lead to perverse incentives (e.g. promoting fidelity with the original model to the detriment of positive adaptation) or result in under-reporting of significant impacts. At a minimum, our KT evaluation framework must allow for emergence, providing a structure that facilitates exploration of unintended consequences (both positive and negative).

One final complexity-related issue concerns non-linearity. The logic of KT suggests that the general and most important movement is in the direction from research-to-practice. However, as Blake and Ottoson (2009) observe, the idea that knowledge travels the path of the silver bullet has been left behind. This suggests that MSFHR's KT evaluation framework must enable exploration of backwards as well as forwards impacts of our KT interventions.

What concepts should we measure?

Steinberg (2015) suggests three organizing concepts for evaluation of KT interventions: reach, usefulness, and use. Sullivan, Strachan and Timmons (2007) offer the following definitions for these concepts:

- **Reach:** The breadth and saturation of product dissemination. It describes the extent to which information is distributed, redistributed, and referred to by individuals and organizations.
- **Usefulness:** The quality of information products and services that is appropriate, applicable and practical. Usefulness may include such as aspects as user satisfaction, quality, innovation and relevance.
- **Use:** What is done with knowledge gained from an information product or service. It is the way in which information products and services are absorbed or applied to institute or implement changes.

These organizing concepts seem appropriate as a foundation for MSFHR's KT capacity-building work, such as workshops and training resources. They may also apply well to end-of-grant KT awards such as the proposed Dissemination Grant and end-of-grant KT activities conducted by Trainees and Scholars.

However, the reach-usefulness-use framework does not cover a key step between information dissemination (reach) and application (use): learning. Key concepts here include changes in knowledge, skills, attitudes and aspirations (Bennett and Rockwell, 1995 as cited in Steinberg, 2015).

The framework may also not apply very well to other components of MSFHR's KT program, such as C², Health Professional Investigator and Implementation Science Teams. In particular, the framework does not cover the interaction between stakeholders which is identified as an important concept in the broader KT evaluation literature, and which will be central for evaluation of awards based on KT strategies as well as KT projects.

Guidance on how we might break down or operationalize the concept of interaction appears to be limited. Molas-Gallart et al. (2016) identify five "proximities" (as described above) that could serve as sub-concepts of interaction.

Contrary to expectations, the concepts of "collaboration" and "engagement" do not appear in the literature specifically related to KT evaluation, although both are important in the broader KT literature. This may simply be a function of the limited nature of the environmental scan (see Environmental Scan Methodology), and does not necessarily mean that MSFHR should omit them from consideration.

Finally, if we accept Trochim et al.'s (2011) premise that the ultimate aim of KT is to reduce the time it takes to move research to practice, an important concept to attempt to measure will be "elapsed time" between defined events in the research-to-practice continuum.

What are the implications for MSFHR's KT indicators and the process of indicator development?

There is virtually no practical guidance in the literature on KT indicators, both for the indicators themselves and the process of developing them. This is not surprising, given the lack of conceptual clarity about what constitutes KT generally, and “successful KT” more specifically. As an aside, it is worth noting that there is very little guidance in the evaluation literature generally about how to develop indicators; it seems to be assumed that it is either not part of the evaluation team’s job, or that the process should be self-evident.

The exception that may prove the rule is the one KT evaluation report found within the grey literature: CIHR’s *Evaluation of CIHR’s Knowledge Translation Funding Program* (2013), and the follow-up work which led to the identification of a list of 19 “KT-relevant” indicators (Bourgon, 2014). These include, for example, new tools, techniques, instruments, procedures, practices, policies or product licences. Upon review, all these indicators relate to impacts of research, not impacts of KT per se.

The most important implication for MSFHR’s KT evaluation framework is that each category of the organization’s KT interventions, and several individual programs, will need to have indicators built from scratch, based on the theory of change for each component. In an ideal world (from a funder’s point of view), we would strive for some commonality of indicators among the programs in order to facilitate roll-up of data into a quantitatively-focused bigger picture analysis. Although MSFHR’s KT programs share the same long-term outcomes, it is unlikely that meaningful indicators for these will be possible, and the short- and medium-term outcomes for which indicators could be developed will likely need to be specific to each program and may or may not overlap. The diversity and small scale of MSFHR’s interventions (compared to, for example, CIHR’s former KT Awards program) also limits how much rolling-up of quantitative data will be possible. An alternative to a quantitative indicator-focused approach for providing an overall picture of MSFHR’s KT program success is provided in the section below.

What should we consider in designing the methodology for KT evaluation?

One of the key themes in the current literature on KT evaluation is that although experimental and quasi-experimental designs such as randomized control trials are considered in many circles the “gold standard” for evaluation of KT interventions, they do have significant limitations. This is good news for MSFHR, as the Foundation’s KT interventions typically do not involve sample sizes or the availability of control groups that would enable implementation of experimental approaches in any case. The literature supports the use of mixed methods, with a qualitative and/or narrative component providing rich understanding about how the intervention worked (or didn’t) (Molas-Gallert et al., 2016; Bhattacharyya, Esteya and Zwarenstein, 2011; Blake and Ottoson, 2009; Hawe et al., 2009). A qualitative approach may also be the only feasible alternative for measuring some outcomes.

However, one important lesson from the world of experimental design is that where possible, our KT evaluation framework should push us to consider the counterfactual (i.e. what would/might have

happened in the absence of our intervention) (Dart and Roberts, 2016), even if the methodology for doing this is as simple as asking stakeholders for their opinion and triangulating responses from different groups.

In MSFHR's case, where feasible yet meaningful quantitative indicators are likely to be in short supply and where there is likely to be little possibility of rolling up quantitative data to describe the impact of the overall KT program, qualitative methodologies will need to play a significant role. One approach for doing this would be to design and implement a systematic process for developing KT program case studies from across the five functional areas through which funders can create the conditions for effective KT (Holmes et al, 2012); the case studies would have a primarily qualitative "story-telling" feel, supplemented by quantitative data where possible.

The general evaluation literature supports the use of developmental evaluation for interventions aimed at complex system change. Interestingly, this approach does not appear to be featured in the KT evaluation literature. However, participatory evaluation, which shares some characteristics of developmental evaluation, is cited as an appropriate approach (Dart and Roberts, 2016; Donnelly, Letts, Klinger and Shulha, 2014). A central element of participatory evaluation is that the evaluation is embedded in the work that participants in the intervention are already doing. This approach could help MSFHR overcome the challenge of having limited incentives for researchers and research users to participate in the evaluation. What may be lost in objectivity may be gained in helping to drive the KT work along.

Measurement of indicators related to the concepts of "interaction", "engagement" and "collaboration" pose particular methodological challenges. Categorization of levels of collaboration, and measurement via surveys or interviews has been offered as one possible solution (Kothari, MacLean, Edwards and Hobbs, 2011; Frey, Lohmeir, Lee and Tollefson, 2006). More generally, network analysis has been suggested as a possibility (Dart and Roberts, 2016), although a rigorous network analysis approach would require significant resources that may not represent value-for-money for the Foundation.

Finally, at a more micro level, whether data are quantitatively or qualitatively derived, self-report data are likely to play a strong role in MSFHR's KT evaluation strategy. Self-report data is subject to similar forms of bias in KT research or evaluation as exist in other areas. However, Boyko et al. (2013) have observed that it is unclear what alternatives in the KT field exist. Their advice is to triangulate evidence generated from self-report data by using organizational documents such as strategy documents, evaluation plans, work plans and operational plans. MSFHR may be able to use some internal documents for this purpose (depending on the program), but our ability to access relevant documents from external sources is likely to be limited. We should, however, adhere to the principle of attempting to triangulate data from self-report sources wherever possible.

Appendix C1: Environmental scan methodology

The KT Unit had already compiled a repository of academic and grey literature relating to KT evaluation, and this formed the starting point for the environmental scan.

This was followed by a title search of peer reviewed, published material using relevant EBSCO databases (Academic Search Complete, CINAHL, Education Source, ERIC, Medline) as well as Web of Science. To manage scope, the search was limited to English language publications from 1996 to 2016, for which full-text was available. Search strings included combinations of the following key words: knowledge, translation, exchange, mobilization, transfer, “implementation science”, “translational research” and evaluat*. Articles and resources were retrieved if they described measurement, approaches, methodology or indicators related to evaluation of a KT program, or of KT more broadly.

A limited review of the grey literature was also conducted. A broad search strategy (using similar terms to the academic search) was not employed, as the experience of searching the academic literature suggested it would be extremely difficult to manage the scope. Instead, brief interviews and email consultations with four expert practitioners⁵ in KT evaluation were conducted to identify and (if possible) source relevant grey literature. A review of CIHR and NAPHRO web-sites for relevant KT evaluation material (e.g. frameworks or evaluation reports) was also conducted.

Finally, the expert practitioners (as above) were asked to share their insights about the current state-of-the-nation with respect to organizational-level KT evaluation in Canada, as well as identify where and how good practice-based KT evaluation work is happening.

⁵ Kathryn Graham, Alberta Innovates – Health Solutions; Eddy Nason, Ontario SPOR Support Unit; Patrick Odnokon, Saskatchewan Health Research Foundation; Marla Steinberg, independent consultant.

Appendix C2: Environmental scan references

1. Ashley, S. R. (2009). Innovation diffusion: Implications for evaluation. In J. M. Ottoson & P. Hawe (Eds.), Knowledge utilization, diffusion, implementation, transfer, and translation: Implications for evaluation. *New Directions for Evaluation*, 124, 35-45. doi: 0.1002/ev.312
2. Bhattacharyya, O.K., Esteya, E.A. & Zwarenstein, M. (2011). Methodologies to evaluate the effectiveness of knowledge translation interventions: a primer for researchers and health care managers. *Journal of Clinical Epidemiology*, 64, 32-40. doi: [10.1016/j.jclinepi.2010.02.022](https://doi.org/10.1016/j.jclinepi.2010.02.022)
3. Blake, S. C., & Ottoson, J. M. (2009). Knowledge utilization: Implications for evaluation. In J. M. Ottoson & P. Hawe (Eds.), Knowledge utilization, diffusion, implementation, transfer, and translation: Implications for evaluation. *New Directions for Evaluation*, 124, 21-34. doi: 10.1002/ev.311
4. Bourgon, A. (2013). CIHR Research Reporting System – KT Relevant Indicators. Personal communication obtained from MSFHR's KT Unit.
5. Boyko, J.A., Dobbins, M., De Corby, K. & Hanna, S. (2013). Comparison of the use of self-report surveys and organizational documents in knowledge translation research. *The Canadian Journal of Program Evaluation*, 28(1), 67-85.
6. Canadian Institutes of Health Research (2013). Evaluation of CIHR's Knowledge Translation Funding Program: Evaluation Report. Retrieved from www.cihr-irsc.gc.ca/e/47332.html
7. Dart, J., & Roberts, M. (2016). Invisible and unbound? The challenge and practice of evaluating embedded facilitation. In R. S. Fierro, A. Schwartz, & D. H. Smart (Eds.), *Evaluation and Facilitation*. *New Directions for Evaluation*, 149, 107–120. doi: 10.1002/ev.20183
8. Davison, C. M. (2009). Knowledge translation: Implications for evaluation. In J. M. Ottoson & P. Hawe (Eds.), Knowledge utilization, diffusion, implementation, transfer, and translation: Implications for evaluation. *New Directions for Evaluation*, 124, 75-87. doi: 10.1002/ev.315
9. Donnelly, C., Letts, L., Klinger, D., & Shulha, L. (2014). Supporting knowledge translation through evaluation: Evaluator as knowledge broker. *Canadian Journal of Program Evaluation*, 29(1), 36-61. doi: 10.3138/cjpe.29.1.36
10. Frey, B.B., Lohmeier, J.H., Lee, S.W., & Tollefson, N. (2006). Measuring collaboration among grant partners. *American Journal of Evaluation*, 27(3), 383-392. doi: 10.1177/1098214006290356
11. Gervais, M-J., Marion, C., Dagenais, C., Chiochio, F., & Houlfort, N. (2016). Dealing with the complexity of evaluating knowledge transfer strategies: Guiding principles for developing valid instruments. *Research Evaluation*, 25(1), 62-69. Advance Access Publication. doi: 10.1093/reseval/rvv034
12. Graham, K.E., Chorzempa, H.L., Valentine, P.A., & Magnan, J. (2012). Evaluating health research impact: Development and implementation of the Alberta Innovates – Health Solutions impact

- framework. *Research Evaluation*, 21, 354-367. Advance Access Publication. doi: 10.1093/reseval/rvs027
13. Graham, I.D., Logan, J., Harrison, M.B., Straus, S.E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in translation: Time for a map? *The Journal of Continuing Education in the Health Professions*, 26, 13-24. doi: 10.1002/chp.47
 14. Hanney, S.R., Gonzalez-Block, M.A., Buxton, M.J., & Kogan, M. (2003). The utilisation of health research in policy-making: concepts, examples and methods of assessment. *Health Research Policy and Systems*, 1(2). Retrieved from www.health-policy-systems.com/content/1/1/2
 15. Hawe, P., Bond, L., & Butler, H. (2009). Knowledge theories can inform evaluation practice: What can a complexity lens add? In J. M. Ottoson & P. Hawe (Eds.), *Knowledge utilization, diffusion, implementation, transfer, and translation: Implications for evaluation*. *New Directions for Evaluation*, 124, 89-100. doi: 10.1002/ev.316
 16. Holmes, B., Scarrow, G., & Schellenberg, M. (2012). Translating evidence into practice: the role of health research funders. *Implementation Science*, 7(39). doi: 10.1186/1748-5908-7-39
 17. Holmes, B., Best, A., Davies, H., Hunter, D., Kelly, M., Marshall, M. & Rycroft-Malone, J. (2016). Mobilizing knowledge in complex health systems: A call to action. Manuscript submitted for publication.
 18. Kothari, A., MacLean, L., Edwards, N., & Hobbs, A. (2011). Indicators at the interface: managing policymaker-researcher collaboration. *Knowledge Management Research & Practice*, 9, 203-214. Retrieved from www.palgrave-journals.com/kmrp
 19. Makkar, S., Brennan, S., Turner, T., Williamston, A., Redman, S., & Green, S. (2016). The development of SAGE: A tool to evaluate how policymakers engage with and use research in health policymaking. *Research Evaluation*, 25(3), 315-328. Advance Access Publication. doi: 10.1093/reseval/rvv044
 20. McLean, R.K., Graham, I.D., Bosomptra, K., Choudhry, Y., Coen, S.E., MacLeod, M., ... Tucker, J. (2012). Understanding the performance and impact of public knowledge translation funding interventions: Protocol for an evaluation of Canadian Institutes of Health Research knowledge translation funding programs. *Implementation Science*, 7(57). doi: 10.1186/1748-5908-7-57
 21. Molas-Gallart, J., D'Este, P., Llopis, O., & Rafols, I. (2016). Towards an alternative framework for the evaluation of translational research initiatives. *Research Evaluation*, 25(3), 235-243. Advance Access Publication. doi: 10.1093/reseval/rvv027
 22. Ottoson, J. M. (2009). Knowledge-for-action theories in evaluation: Knowledge utilization, diffusion, implementation, transfer, and translation. In J. M. Ottoson & P. Hawe (Eds.), *Knowledge utilization, diffusion, implementation, transfer, and translation: Implications for evaluation*. *New Directions for Evaluation*, 124, 7-20. doi: 10.1002/ev.310
 23. Salter, K.L. & Kothari, A. (2014). Using realist evaluation to open the black box of knowledge translation: a state-of-the-art review. *Implementation Science*, 9(115). doi: 10.1186/s13012-014-0115-y

24. Scott, S.S., Rotter, T., Hartling, L., Chambers, T., & Bannar-Martin, K.H. (2014). A protocol for a systematic review of the use of process evaluations in knowledge translation research. *Systematic Reviews*, 3(149). Retrieved from www.systematicreviewsjournal.com/content/3/1/149
25. Skinner, K. (2007). Developing a tool to measure knowledge exchange outcomes. *The Canadian Journal of Program Evaluation*, 22(1), 49-73.
26. Soper, B. & Hanney, S.R. (2007). Lessons from the evaluation of the UK's NHS R&D Implementation Methods Programme. *Implementation Science*, 2(7). doi: 10.1186/1748-5908-2-7
27. Steinberg, M. (2015). Evaluating KT. Webinar delivered as part of Canadian Evaluation Society Professional Development series. Retrieved from <http://evaluationcanada.ca/webinars>
28. Straus, S.E., Tetroe, J., Graham, I.D., Zwarenstein, M., Bhattacharyya, O., & Shepperd, S. (2010). Monitoring use of knowledge and evaluating outcomes. *Canadian Medical Association Journal*, 182(2), E94-E98.
29. Sullivan, T.M., Strachan, M., & Timmons, B. (2007). *Guide to Monitoring and Evaluating Health Information Products and Services*. Baltimore, Maryland: Center for Communication Programs, Johns Hopkins Bloomberg School of Public Health; Washington, D.C.: Constella Futures; Cambridge, Massachusetts: Management Sciences for Health. Retrieved from www.infoforhealth.org/hipnet/MEGuide/MEGUIDE2007.pdf
30. Tetroe, J.M., Graham, I.D., Foy, R., Robinson, N., Eccles, M.P., Wensing, M. ... Grimshaw, J.M. (2008). Health research funding agencies' support and promotion of knowledge translation: an international study. *The Milbank Quarterly*, 86(1), 125-155.
31. Trochim, W., Kane, C., Graham, M.J., & Pincus, H.A. (2011). Evaluating translational research: A process marker model. *Clinical & Translational Science*, 4(3), 153-162. doi: 0.1111/j.1752-8062.2011.00291.x

Key informant interviews and email correspondence

1. Graham, Kathryn (Interview October 6, 2016)
2. Nason, Eddy (Interview September 9, 2016)
3. Odnokon, Patrick (Interview October 5, 2016)
4. Steinberg, Marla (email correspondence, September 2016)