Knowledge Translation Curriculum

Module 1: An Introduction to Knowledge Translation

October 19, 2012

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Foreword

On behalf of the Canadian Coalition for Global Health Research (CCGHR or the "Coalition"), it is my pleasure to write a foreword for this remarkable contribution to the growing and evolving field of knowledge translation (KT). We believe KT to be a cornerstone of health systems in Canada and across the globe, and see this *Curriculum* as further proof of the Coalition's strategic commitment to innovation in KT.

Why is KT so important? Despite the recognition that knowledge has led to significant improvements in health outcomes around the world, major challenges remain. These include health outcome inequalities among and within countries, and the continued rift – the "know-do gap" – between the research and policy communities. The World Health Organization has estimated that half of all premature deaths could be prevented by the implementation of known interventions – that is, by using *available* knowledge. And this is the complex challenge that KT addresses: making knowledge available, contextualized, and realistically implementatable.

What is the added value of this *Curriculum*? I suggest several unique features:

- It is comprehensive, including a thorough exploration of both theory and practice. Each *Module* begins with a discussion of the relevant theory and then moves into an array of tools and diagrams to illustrate the "practice" component. Each opens with some key suggested readings, and provides a list of readily available and relevant readings.
- After an extensive introduction to knowledge translation (*Module 1*), there are two additional modules not commonly highlighted in the KT field. They emphasize the critical importance of understanding the context (situation analysis) and of developing a consensus around a focus (priority setting).
- The document is called a "curriculum" as the primary intent of this document is educational. To facilitate this learning goal, each *Module* is divided into lessons, but stops short of including specific questions, problems (challenges, scenarios) or case studies. As this is intended for a wide global audience of adult learners, the assumption here is that instructors (or self-learners) are best able to adapt the tools and approaches to suit their own particular contexts. Discussing and learning this content is optimally done in a group, and it is our hope that each individual group will develop their own exercises to practice or modify these tools and approaches for a context–specific challenge.

As the author indicates, in some ways these three *Modules* represent a beginning, steps along a journey. In the spirit of on-going learning, we welcome your comments about how you used this curriculum, what worked well for you, and what could be improved and added. We wish you a productive and stimulating learning experience.

Vic Neufeld MD FRCPC
National Coordinator, Canadian Coalition for Global Health Research
May 14 2012.

Overview of the Knowledge Translation Curriculum

The three *Modules* within this KT Curriculum serve as an in-depth introduction to knowledge translation (KT). Since its star turn at the 2004 Ministerial Summit in Mexico City, KT has emerged as a leading approach in narrowing the gaps between health research, health practice and health policy. However, it is still a young concept that often means different things to different people. For some it is roughly synonymous with *communications* and/or *dissemination*, where "KT" is a peer-reviewed paper or a conference presentation. For others, it is rooted in the idea of *co-production*, where KT opens up the research, practice and policy processes, with policy- and practice-informed evidence leading directly to evidence-informed policy and practice.

This *Curriculum* provides a comprehensive – if unavoidably incomplete – overview of the key concepts, conflicts and methods in KT. It is grounded in philosophy and political science as much as it is in health, exploring the ideas and the theories behind the great complexity that shape the intersections among research, practice and policy processes.

We define KT in very broad and simple terms as: *an ethos connecting contextualized knowledge with its application to improve health and well-being*. While the literature is replete with KT definitions,[1] our choice here is deliberate in its simplicity and reach. Above all else, KT describes the intersections among research, policy, and (clinical) practice processes. Whereas in the past these processes have evolved separately, the complex, multi-sectoral nature of health in the twenty-first century demands they now develop together, intertwined. And thus the more that each of these processes can influence the others – so that, for instance, the needs of policy and practice might influence the types of knowledge we create – the better our abilities to respond to our current and future health challenges.

This is by no means a straightforward task.

"Unless ye believe,
ye shall not understand."
– St. Augustine [2] –

The *Curriculum* is intended for a global audience of students and instructors. While it draws in many instances on evidence and experience in low- and middle-income settings, its focus is not restricted to this context. KT is a universal concept and phenomenon.

Each *Module* within this *Curriculum* is broken into a number of lessons that can be taught individually, as a whole, or combined with other material. Each lesson aspires to be a complete "lesson out of a box" that can be taught as-is. Each begins with a suggested reading list (with links to *pdfs* for all articles), which leads into a lecture of prominent ideas, a review of the major

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[1] See *Lesson 1.2* of *Module 1* for the major definitions, types and frameworks.

[2] cited in Tsoukas (2002)

literature, diagrams and graphics, and quotations of particular relevance. There are, however, very few real-world examples illustrating a particular tool or approach. These can be found in the literature – this *Curriculum* is intended to discuss relatively generic and theoretical approaches that can be adapted to particular issues or problems; we have left the case studies or real-world examples to the available literature.[3] Each lesson does, however, include suggestions for instructors in guiding group work or leading discussion. All *Modules* feature modifiable presentations that may be customized according to need and audience.

In terms of bias, there are definitely some strategic content choices throughout. The field of knowledge translation is crowded with actors, ideas, scientists and theorists, and to navigate this one must invariably be selective. First, this *Curriculum* focuses primarily on integrated KT (i.e. KT that explores the co-production of knowledge and the co-creation of responses, be they policies or practice guidelines etc). Second, it focuses largely on the intersection between research and policy development as this is the connection that predominates in the literature and most closely aligns with author experience. This omits significant fields of interest. There is a *Module* to be written on KT for practitioners (e.g. nurses, clinicians), and one on KT for policy implementation, but unfortunately these are *Modules* for another day.

Each *Module* should help students identify, analyze and comprehend KT principles, approaches and tools, understanding why they are important, when they might be used, and how. Above all, it is hoped that each *Module* will allow students to understand and interact with some of the major ideas emerging in KT, and further, to apply this learning to the development of KT strategies and to the many other KT-related challenges they might face throughout their careers.

Module One: An Introduction to Knowledge Translation details, as the title suggests, the central currents in KT. *Lesson One* includes particular attention to the traditional research and policy processes to see the potential for reforming each; the four major domains KT seeks to open and influence; and concludes with an overview of the major approaches in KT, including end-of-grant KT, integrated KT and KT research. *Lesson Two* goes back to first principles: what is the knowledge that KT hopes to translate? This includes a look at the types and layers of knowledge, how knowledge changes as it moves among stakeholders, and the hierarchy of evidence. *Lesson Three* examines the barriers and facilitators to creating evidence-informed policy and policy-informed research, while also discussing scenarios where the research conflicts with political values (issue polarization). *Lesson Four* focuses on the three major sets of activities within KT: brokering, synthesis and dissemination. We discuss in particular: the KT Platform, the Rapid Response Service, the policy brief/dialogue model, and then provide an overview of the major dissemination tools available to researchers, asking of each: *how might this tool be improved to actually influence key research stakeholders?*

Module Two: Situation Analysis examines the arts of understanding the context surrounding research, policy and social change. This is a critical act for any research project, policy or KT

[3] Previous drafts of this *Curriculum* saw each Lesson conclude with "Questions, Challenges, Scenarios" to operationalize some of the learning. However, reviewers felt that these were either too broadly generic or too context dependent to be of consistent value. Instructors are encouraged to devise their own means to reinforce the key Module principles.

strategy, yet one that is ill-explained in the peer-reviewed literature. *Lesson One* outlines a process issue fundamental to situation analyses and to KT more broadly: deliberation. Only an open, balanced and representative group of stakeholders can arrive at an open, balanced and representative analysis of the prevailing situation. This *Lesson* details how such groups can be organized, and how they might choose to deliberate among themselves. *Lesson Two* discusses stakeholder analysis and offers a range of different practical tools groups might use to identify and analyze stakeholders, their power and interests, and the dynamics that exist among them. *Lesson Three* compliments this by focusing on political context analysis, which looks at how previous related policies have been formulated, implemented and evaluated, what opportunities exist to influence policy, the foundational factors shaping policies and interventions, and the external factors that play a role in everything from policy development to evaluation.

Module Three: Priority Setting frames priority setting as where KT ultimately begins. In bringing together different stakeholders to identify, weigh and rank a society's knowledge needs, priority setting guides investments in health research. *Lesson One* discusses the broad theory of priority setting and details the two major types of priority-setting processes – priority setting for service delivery (used by institutions to choose among interventions) and priority setting for research (used by research and policy communities to weigh and rank a society's knowledge needs to choose among health research options). *Lesson Two* focuses on the latter type of priority setting, discussing tools for performing various different priority setting process.

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There are many other worthy topics within KT that deserve their own *Modules*. It is hoped that future *Modules* of this *Curriculum* will address additional topics such as: Designing KT Strategies, Monitoring and Evaluation of KT, Methods in KT Research, and KT for Practitioners and Planners. Moreover, given technological advances, it is also hoped that future *Modules* will embrace multi-media, with embedded video interviews or narrated animations explaining key concepts. Ultimately, these three are a beginning – an incomplete yet rigorous beginning – to teaching core KT principles. As KT methods continue to emerge and evolve, equal parts art and science, so too will its instruction: just as we have a great deal to learn in KT, so too must we understand how best to teach it.

Sandy Campbell
October 18, 2012
for the Canadian Coalition for Global Health Research

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Module 1: An Introduction to Knowledge Translation

Overview of the Module

In theory, researchers and policy-makers both work to the same end of addressing societal ills and solving collective problems. In practice, researchers and policy-makers are often pitted on opposite sides of a great rift – the "know-do" gap, where what a society knows and what it does misalign.[4] Despite knowing A, we do B, as no reliable, routine connection exists between the two. Working towards verifiable and replicable scientific truth, researchers believe policy-makers unable to prioritize research evidence as a policy input. Working towards consensus, and subject to a host of competing pressures, policy-makers see researchers as just another group trying to influence their decisions (Choi et al 2005).

Since its star turn at the 2004 Ministerial Summit in Mexico, the concept of knowledge translation (KT) has emerged as a leading approach in narrowing this rift between research and policy. Visualizing both research and policy as rich and complex processes, KT offers tools and approaches – first to understand each process, and then to see the places where they overlap the other. Only then can we gauge how each process might inform and influence the other.[5]

This *Module* provides a comprehensive overview of KT, which is itself sprawling, emerging and ever evolving. We discuss different definitions, types and frameworks of KT; the layers and types of knowledge; the barriers and facilitators to both evidence-informed policy and policy-informed research, including a discussion of issue polarization; and conclude with an analysis of brokering, synthesis and dissemination.

Module Goals

Upon completing this *Module*, students should understand:

- the theoretical concepts, approaches and underpinnings of KT, along with some of the major differences among these
- the nature of the knowledge of KT, from individual to institutional, and from explicit to tacit
- how evidence typically interacts with the policy process
- how researchers and policy-makers interact, and how and where the research and policy processes overlap
- practical mechanisms, strategies and frameworks designed to bring together researchers and research-users in the generation, synthesis and application of knowledge.

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[4] See WHO's (2004) World Report on Knowledge for Better Health for a description of the phenomenon; also see the special issue of the *Bulletin of the World Health Organization* (2004), "Bridging the Know–Do Gap in Global Health" for various articles on the subject.

[5] As suggested in the Overview of this *Curriculum*, there are other significant actors and processes beyond those of research and policy (including, for instance, practitioners (e.g. nurses) and industry). The focus on research and policy here has been chosen as it aligns with much of the KT literature and with author experience.

Key Principles

1. There is no single KT definition, no formula, no framework. KT is above all a process – in fact, a series of overlapping social processes – of creating contextualized knowledge that can be applied to particular problems. As a result, it is a *mélange* of philosophy, anthropology, sociology, social science, biomedicine and political science.

2. The "knowledge" that underpins the KT process depends on the context in which it is used and on user perspective. Knowledge means much more than simply research evidence (which in itself has many layers and differences). The more we understand tacit knowledge, experience, and organizational culture (to name a few), the better we come to understand the many different dynamics of knowledge, and the ways in which knowledge might inform policy development.

3. To understand how research can influence policy and how policy can influence research, we need to have a clearer understanding of both the research process and the policy process, and where and how these overlap. Strategies that focus on brokering, synthesis and/or dissemination must have a clear picture of this overlap, along with an understanding of the wider context.

Note to Instructors

As much of this Module is theoretical in nature, both instructors and students are highly encouraged to read much or all of the available literature. The Lectures here provide a flavour of the field, but the readings provide a much more comprehensive overview of KT and some valuable case studies. At the end of every *Lesson* there are some suggestions for how group work or discussion might serve to explore some of the key concepts and ideas – but as so much of this depends on the students, their area of study, etc., instructors will need to think through and customize these suggestions for use.

Instructors are encouraged to assess the abilities and needs of students before beginning any instruction. This could be done, for instance, via an online survey or through some of the techniques outlined in *Module 2's* discussion of Situation Analysis. The more the students know about KT, the more precise the Instructors can be. If the students are all researchers, what type of researchers are they? Are they researchers within a particular discipline? Do they have experience in policy or practice processes? Have they ever developed a KT strategy before or participated in developing a KT tool or approach? Have they published articles or other synthesis material before? What is their native language?

If time is an issue, instructors are urged to focus on *Lesson 1* (KT: The Basics). While *Lesson 4* (approaches and tools) contains many of the elements students will already be familiar with (e.g. a peer-reviewed paper, dissemination platforms), instruction in these techniques requires familiarity with the broader theory discussed in *Lesson 1*.

If the students are researchers, the Instructors may wish to ask them to bring a peer-reviewed paper they have authored, contributed to, or find interesting/relevant. This article can be used in various different ways by the Instructors in teaching some of core KT concepts.

Module 1 Lessons

Lesson 1	*KT: The Basics*. In this *Lesson*, we examine the traditional research and policy processes to see the opportunities for reforming each. We analyze the four major domains KT seeks to influence, and conclude by looking at the major approaches in KT, including end-of-grant KT, integrated KT and KT science.	*page 14*
Lesson 2	*The knowledge of knowledge translation*. Here we examine the many meanings and layers of "knowledge," and how knowledge can change as it moves from its production to its utilization. We examine the different types of evidence and briefly illustrate the hierarchy of evidence.	*page 31*
Lesson 3	*At the interface of research and policy*. Here we take a deeper look at the barriers and facilitators to creating evidence-informed policy and policy-informed research – believing that a better diagnosis of the problem will lead to more sophisticated KT strategies. Issue polarization is another core issue that surrounds highly complex or system-level problems, or when research evidence differs from or counters prevailing political values.	*page 40*
Lesson 4	*KT approaches and tools*. This *Lesson* focuses on the three major sets of activities within KT: brokering, synthesis and dissemination. Brokering is where we build relationships, cultivate trust, and convene dialogues, and synthesis is where we add value to research evidence by assessing, weighing, tailoring and targeting the information. We discuss the Knowledge Translation Platform, the Rapid Response Service, the policy brief and dialogue model, and then some major dissemination tools.	*page 51*

Note that all papers cited in this Module can be found (along with other online resources) here.

Lesson 1: Knowledge Translation: The Basics

This *Lesson* is presented in three separate yet connected parts:

1.1	*Overlaps in the research and policy processes*. In this section, we look at the traditional research process and discuss how KT seeks to change it. We then look at the traditional policy process to see the ways in which ideal research and policy processes might overlap and ultimately create social change.	*page 14*
1.2	*KT types, definitions, frameworks*. In this section we analyze the differences between KT for clinical change and KT for social change. We then present and analyze some of the major definitions and frameworks before arriving at our own simplified definition: KT is a *dynamic, context-shaped process creating cycles of evidence-informed policy and policy-informed evidence to create social change*.	*page 21*
1.3	*Major approaches in KT*. Here we look at the major sets of activities within KT as represented by end-of-grant KT (focusing on dissemination), integrated KT (re-imagining knowledge production and utilization processes), and KT research (studying KT in terms of what works for whom and under what circumstances).	*page 28*

Lesson 1 Presentation:
A presentation highlighting the major aspects of *Lesson One* is available in three different formats:

- as a <pdf> for printing. Can be used as a handout, but cannot be modified. Can also be used as a presentation in full-screen mode.
- as a <key> for presentations. This uses Apple's proprietary Keynote software; users of this may modify the presentation as desired.
- as a <ppt> for presentations. This uses Microsoft's proprietary PowerPoint software; users of this may modify the presentation as desired. Please note that the presentation was not created using ppt software; it looks best in pdf or key formats.

Lesson 1.1: Overlaps in the Research and Policy Processes

Suggested Readings

- Brownson RC et al. Researchers and policymakers: travelers in parallel universes. *American Journal of Preventive Medicine*. 30:2. 2006. <pdf>
- Choi B et al. "Can scientists and policy makers work together?". *Journal of Epidemiology and Community Health*. 59. 2005. <pdf>
- Lomas J. Improving research dissemination and uptake in the health sector: beyond the sound of one hand clapping. *McMaster University Centre for Health Economics and Policy Analysis*. Policy Commentary C97-1, November 1997. <pdf> *Note: this is a shortened version of the original piece*.
- Graham I et al. Lost in Knowledge Translation: Time for a Map? *The Journal of Continuing Education in the Health Professions*. 26. 2006. <pdf>
- Bowen S and Zwi AB. Pathways to 'evidence-informed' policy and practice: a framework for action. *PLoS Medicine*. 2:7. 2005. <pdf>
- Sutton R. The policy process: an overview. Overseas Development Institute. 1999. <pdf>

Research is a world unto itself, guided by its own vernacular, its own principles, its own rules and regulations. Researchers are highly specialized individuals producing findings with scientifically-approved methods that are transparent, replicable and verifiable.

Across the "know-do" gap, policy-makers arrive at decisions by weighing a number of different factors and pressures, operating in a world with its own tightly defined rules. While some authors have called for the mandatory use of research evidence in health policy-making (see Daniels 2006, Oxman et al 2010), policy-making must, by default, incorporate elements beyond the scientific. Except under unusual circumstances, research evidence is almost never translated directly into policy, as one might translate text from one language to another. Instead, research evidence is almost always one policy input among many. A central thrust of KT thus lies in transforming research evidence into a contextualized input that recognizes its particular place within the overarching policy process.

KT techniques can lead researchers to the overlap between research and policy, as seen in *Diagram 1.1* below. KT techniques can help them understand the prevailing policy context and to then develop realistic and viable strategies for how research evidence might influence policy *against a set of many other competing policy inputs*. For policy-makers, KT techniques offer roads into the research process, allowing them to become, for instance, a participant in setting the research agenda, a partner in a research project, or as a consumer of evidence – demanding the knowledge that might inform a complex policy decision.

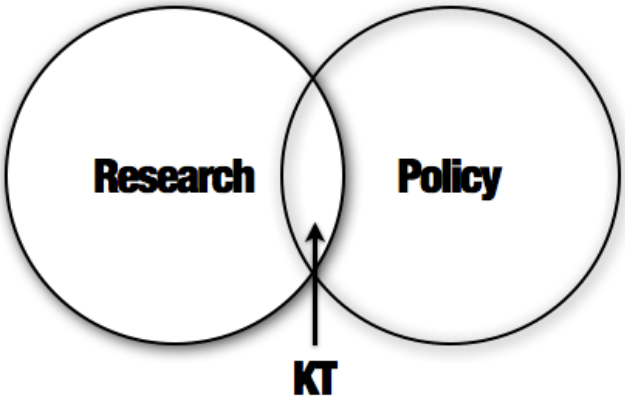

Diagram 1.1: KT at the overlap of the Research and Policy Processes

As in the above diagram, research and policy are separate worlds with their own rules, their own functions; yet where they overlap (for instance in the development of new policies to which research evidence might contribute), KT techniques allow each to influence the other. The greater the degree of mutual understanding – of researchers understanding policy and of policy-makers understanding research – the better the chances of research informing policy and of policy informing research. Above all else, KT is a constantly spinning cycle of policy-informed research leading to evidence-informed policy which, in turn, creates more policy-informed research. And it does this through strong relationships and open dialogue, through trust, respect and the achievement of shared goals (Ginsburg et al 2007, Innvaer et al 2002, Dobbins et al 2007, Golden-Biddle et al 2003).

KT is a fundamentally *social* process. It is part philosophy (how do we know what we know? what is it that we know? how does what we know influence what we do?), part anthropology (why are the worlds of science and policy so separate?), part sociology (how do we make the decisions we make? how can we better deliberate and achieve consensus?), part social science (what are the major issues and topics we require more knowledge on?), part political science (what mechanisms can we develop to better fuse science and policy? what is the prevailing policy context?), part luck and part chance. As such, KT is inherently multi-disciplinary. It encourages creativity, resistant to any ready formula or framework. For any policy topic or any research question, KT demands we ask some of these big questions, demands we know and appreciate the context for our work, demands we go beyond our own perspective or discipline.

There is nothing easy about KT. It may be reduced to attractive, intuitive and linear models, but this should not imply that KT in practice is merely an exercise in filling in the blanks. As KT is rooted in a particular and ever-shifting context – a time, a place, a unique polity – it defies assumptions. It requires constant updating and constant customizing.

In *Diagram 1.2* below, we show the traditional knowledge production process. Here we see the central, if not exclusive role, played by researchers. They identify the researchable problem and formulate this as a research question. They develop a proposal and pitch it to funders. They produce the knowledge. They get this knowledge published. Considered complete on publication, this work informs new research proposals, which starts the production process all over again.

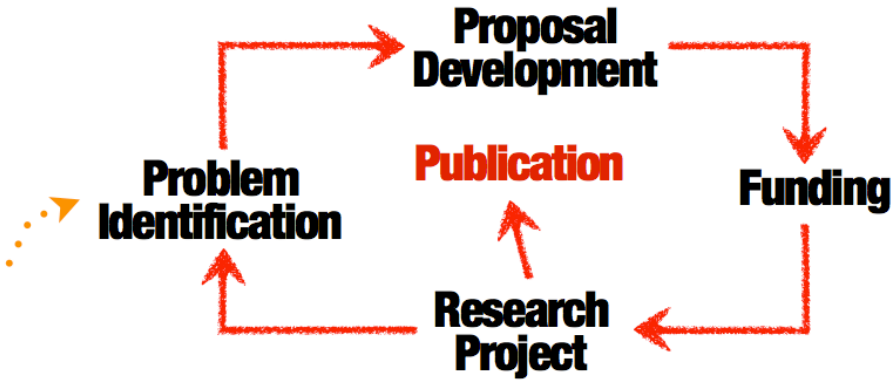

Diagram 1.2: The traditional knowledge production process

This model is clearly insular, with only the voice of the researcher and funder heard. Of course, there are many strong reasons for this. Researchers themselves are subject to great institutional pressure to win research funding (in some countries covering part of their salary), and to publish in prestigious journals. There are great incentives and rewards for publishing, including career advancement and increased funding. In fact, there are often very real *disincentives* for researchers to open up this process to other stakeholders. Collaboration with others might mean sharing a small funding pie and may lead to intellectual property issues; may dilute the research question or approach to the findings more palatable; may create unwieldy research teams; and may, after all of this time-intensive work to create a multi-disciplinary, collaborative team, lead to no change whatsoever.

There are fundamental flaws in the traditional knowledge production process. In many ways it is like a factory producing beautiful, intricate goods with no conception of how to ship them to the consumer, or even if the consumer wants them in the first place. Simply put, the traditional knowledge production process provides the wrong incentives. Determines the wrong priorities. Asks the wrong questions. Launches the wrong projects. And creates the wrong knowledge. Can we really blame policy-makers for not actually using this knowledge? The separation between researchers and policy-makers all begins with these flaws in the knowledge production process – flaws that are then further exacerbated by the many flaws within the traditional policy development process (Van de Ven and Johnson 2006).

In its perfect form (as in *Diagram 1.3* below) KT techniques reform the entire knowledge production process – one now constructed around a very different set of incentives. In this re-imagined process, from the outset researchers routinely interact with the users of knowledge, who, through their well-expressed demands and needs – not to mention their experience of implementing evidence-informed policy – push and shape the knowledge production process.

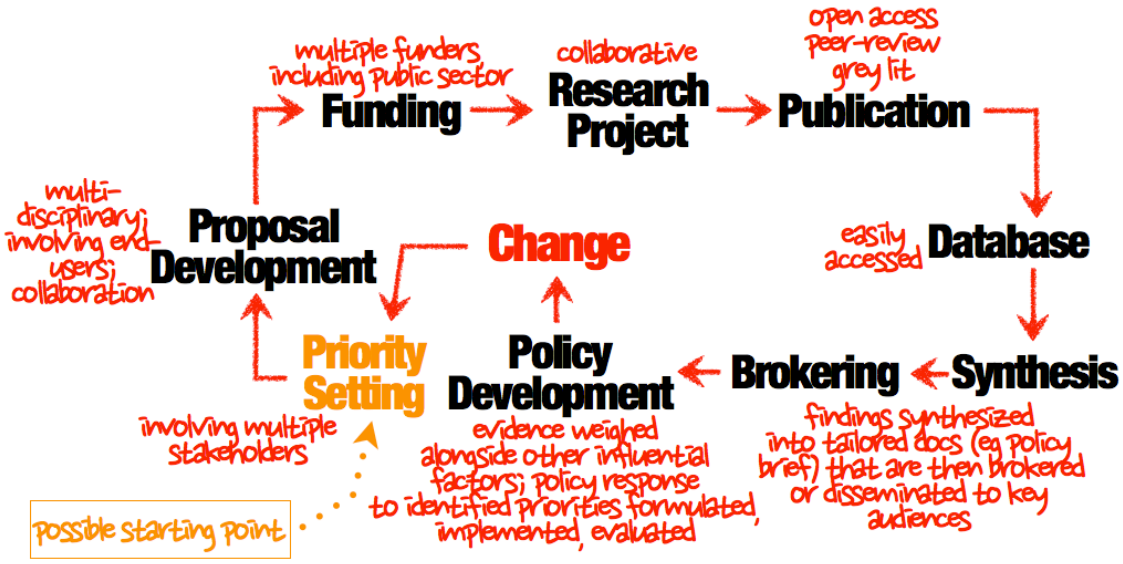

Diagram 1.3: The KT-infused Knowledge Production Cycle

In this KT-infused knowledge production cycle, previous policies and collective problems inform the identification of research priorities. These priorities form the basis for any research project, which is designed with end use in mind, and involves multiple disciplines, stakeholders and even sectors. On execution, the research project collaborates with other like-minded projects (within the municipality, province/state, country, regionally or even globally) to exchange best practice and sharpen the focus. Findings are published in open-access journals and housed in easily accessed databases; findings contribute to synthesis pieces that are tailored for different audiences (e.g. a systematic review for the research community, an evidence-informed policy brief for the policy community). These syntheses are then directly brokered or disseminated to their intended audience, which informs their response. Evidence-informed policies are developed, implemented, evaluated (by the researchers themselves?); this experience is then used to identify new priorities for scientific study, which then …

The typical policy process, by turn, has attracted a great deal of attention in the literature (see, for instance, Kingdon 1995, Orton et al 2011, Sutton 1999). Many different models have described the typical policy process, with the *Stages* model one of the more familiar and cited. Typically, the process begins with policy-makers and/or their advisors identifying a problem (as shown in *Diagram 1.4* below, which follows the *Stages* model). They then generate a response using many different inputs – including expert opinion, experience, organizational culture ("the way things are done around here"), the media, possibly research evidence – which then blend together into an adopted, implemented and (sometimes) evaluated policy. Again, the opening moment in the cycle – when problems are identified – mirrors the primary problem with the knowledge production process: its insularity. When only a handful of stakeholders discuss the means of solving a common problem, the solution will likely fail to take into account a wide range of needs and concerns. And, as with the knowledge production process, this kind of insular process may indeed prioritize the wrong problems and generate solutions misaligned with collective needs.

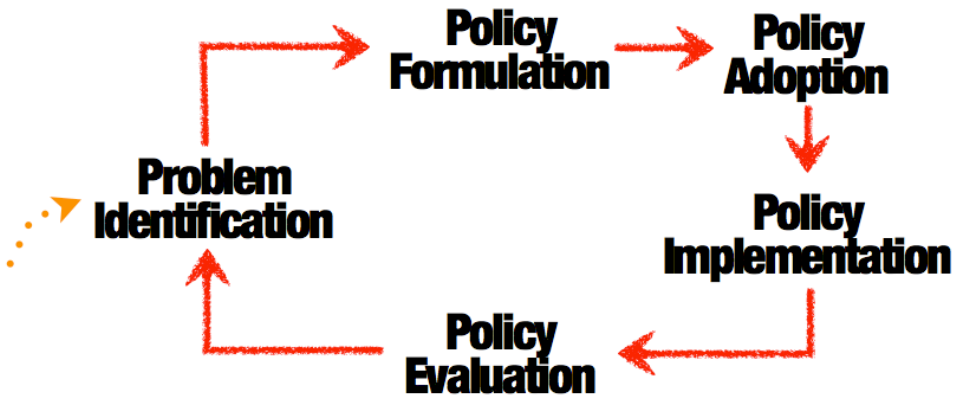

Diagram 1.4: The Typical Policy Process

Box 1.1: Models of Policy-making

Sutton (1999) identifies six different models of policymaking:

- *the stages model* (or the linear model). Here policy-making is a problem-solving process – "rational, balanced, objective and analytical. Decisions are made in a series of sequential phases, starting with the identification of a problem or issue, and ending with a set of activities to solve or deal with it".
- *the incrementalist model*. "Policy-makers look at a small number of alternatives for dealing with a problem and tend to choose options that differ only marginally from existing policy. For each alternative, only the most important consequences are considered. There is no optimal policy decision – a good policy is one that all participants agree on rather than what is best to solve the problem. This is essentially remedial…"
- *the mixed-scanning model*. This model "divides decisions into a macro (fundamental) and micro (small) classification and involves the policy-maker taking a broad view of the field of policy… looking further into those which require a more in-depth examination".
- *the policy as arguments model*. Here, "policy reforms are presented as reasoned arguments. Policy is developed through debate between state and societal actors. Participants present claims and justifications which others review critically… [it] serves to reflect certain political stances, moulding social reality according to outlook and ideology."

- *the policy as social experiment model*. This is "a process of trial and error, which involves successive hypotheses being tested against reality in an experimental manner".
- *the policy as interactive learning model*. This "argues for an actor perspective, emphasizing the need to take into account the opinions of individuals, agencies and social groups that have a stake in how a system evolves. The approach promotes an interaction and sharing of ideas between those who make policy and those who are influenced most directly by the outcome."

For an ideal policy development process (as in *Diagram 1.5* below), we see similar changes as with the knowledge production process – and many of the changes (e.g. priority setting) are mirrored. Most prominently, we see the inclusion of more stakeholders at key moments in the policy development process, with the elements able to influence policy notably increased.

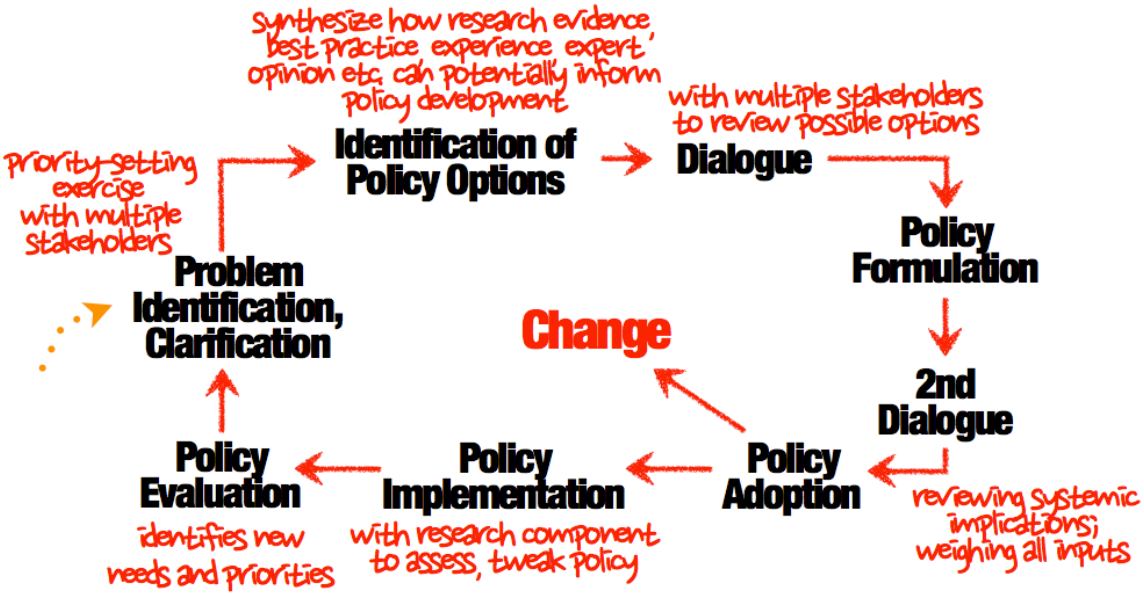

Diagram 1.5: The KT-Infused Policy Process

Where the typical research and policy processes offer few genuine areas of overlap, we can quite easily see how the ideal processes offer several strong opportunities for both processes to inform the other:

- at the problem identification stage. *Module 3* of this *Curriculum* features Priority Setting and discusses how this tool can be used by researchers, policy-makers and other stakeholders to arrive at comprehensive, ranked and weighted lists of priorities – whether for researchable topics or for policy concerns.
- at the synthesis stage. The act of synthesis occurs near the end of the research production process but features very early on in the policy process; it's where research evidence is combined, tailored for and targeted to particular audiences (e.g. a policy brief summarizing the best-available evidence for policy-makers). Synthesis presents particular challenges – for instance in matching the very different time horizons of researchers and policy-makers – but also provides some strong KT opportunities (see, for instance, the discussion in *Lesson 4.2* on Rapid Response Services).

- at the dialogue stage. As described in *Lesson 4.3*, deliberative dialogues can be a powerful tool combining explicit and tacit knowledge (e.g. scientific with organizational culture), and incorporating the needs and realities of policy-making with other perspectives.
- at the policy implementation stage. Here we can see how research can serve policy ends, primarily to track the implementation of the policy, provide some snapshots of its effects (from an individual to a systemic level), and suggest some evidence-informed means for tweaking it.

Box 1.2: Policy-making models and research evidence

Bowen and Zwi (2005; emphasis added) present a useful list of how research evidence might inform different policy-making models:

- "*the knowledge-driven model:* this model suggests that emergent research about a social problem will lead to direct application to policy; it relies on effective strategies for the transfer of research evidence into practice.
- *the problem-solving model:* this model expects research to provide empirical evidence and conclusions that help solve a policy problem; it assumes that research is systematically gathered and applied in the policy process.
- *the interactive model:* this model suggests that the search for knowledge moves beyond research to include a variety of sources such as politics and interests; it aims to reflect the complexity of the policy-making process.
- *the political model:* in this model, decision-makers are not receptive to research unless it serves political gain, that is, demonstrates proof for a predetermined decision; evidence is sought to justify the problem
- *the enlightenment model:* this model suggests that cumulative research shapes concepts and perspectives that permeate the policy process over time, influencing how people think about social issues
- *the tactical model:* this model sees evidence used to support and justify government inaction, or rejection of and delay in commitment to a policy issue."

Note to Instructors

This *Lesson* has covered significant theoretical ground. At this point, the Instructor may wish to divide the students into small groups (no matter than 5 students per group). Each group should answer the following questions:

- What are the principles of knowledge translation? What are the key elements KT seeks to address and why is this important?
- What are the flaws within the knowledge production process and how does that align with your own experience?
- What are the flaws in the policy development process?
- How does KT work to address and correct these flaws?
- Given the principles of KT, in what ways might this change the research we produce? The policies we develop?

Following a report back to the class, the Instructor can then move on to the more academic definitions of KT as in *Lesson 1.1* below.

Lesson 1.2: Knowledge Translation: Types, Definitions, Frameworks

Suggested Readings

- Estabrooks C et al. The intellectual structure and substance of the knowledge utilization field: A longitudinal author co-citation analysis, 1945 to 2004. *Implementation Science*. 3:49. 2008. <pdf>
- Orton L et al. The use of research evidence in public health decision-making processes: systematic review. *PLoS ONE*. 6:7. 2011. <pdf>
- Van de Ven AH and Johnson PE. Knowledge for Theory and Practice. *Academy of Management Review*. 31:4. 2006. <pdf>
- Straus SE, Tetroe J, Graham I. Defining knowledge translation. *Canadian Medical Association Journal*. 181. 2009. <pdf>
- McWilliam CL. Continuing education at the cutting edge: promoting transformative knowledge translation. *Journal of Continuing Education in the Health Professions*. 27:2. 2007. <pdf>
- Kothari A et al. Is research working for you? validating a tool to examine the capacity of health organizations to use research. *Implementation Science*. 4:46. 2009. <pdf>
- Lavis J et al. Assessing country-level efforts to link research to action. *Bulletin of the World Health Organization*. 84. 2006. <pdf>

From its inception, KT has been dominated by clinical approaches. With roots in the evidence-based practice movement (for more see Estabrooks et al 2008), KT techniques have historically focused on "from bench to bedside" moments – using research, in other words, to directly improve patient outcomes. This sees the movement of research findings to, for instance, new drug treatments, clinical guidelines, improved provider practice, and so on. While the linkage between research and practice is critical and something we will routinely draw upon, it is not the primary focus of this *Curriculum*.

"transference of the concept of 'evidence based' from clinical practice to public health has not been straightforward. Public health decisions are taken with communities or even entire countries rather than individuals as the unit of intervention. Existing evidence suggests that different parts of the population respond very differently to identical interventions and an intervention that improves the health of a population may also increase inequalities in health. Thus, focusing on the average effects of interventions may miss important differences. Some authors argue that an evidence-based approach to public health may actually increase health inequalities, as it is likely to reflect the same biases as the production of research evidence, for example favouring younger age groups, acute diseases, and drug therapy."

– Orton et al (2011) –

Staying at a theoretical level, in this particular *Lesson* we will look at the four major domains KT seeks to to open up, influence and ultimately change: knowledge production (as discussed in *Lesson 1.1*), knowledge management, knowledge synthesis and knowledge utilization (including policy development). These are shown in *Diagram 1.7* below.

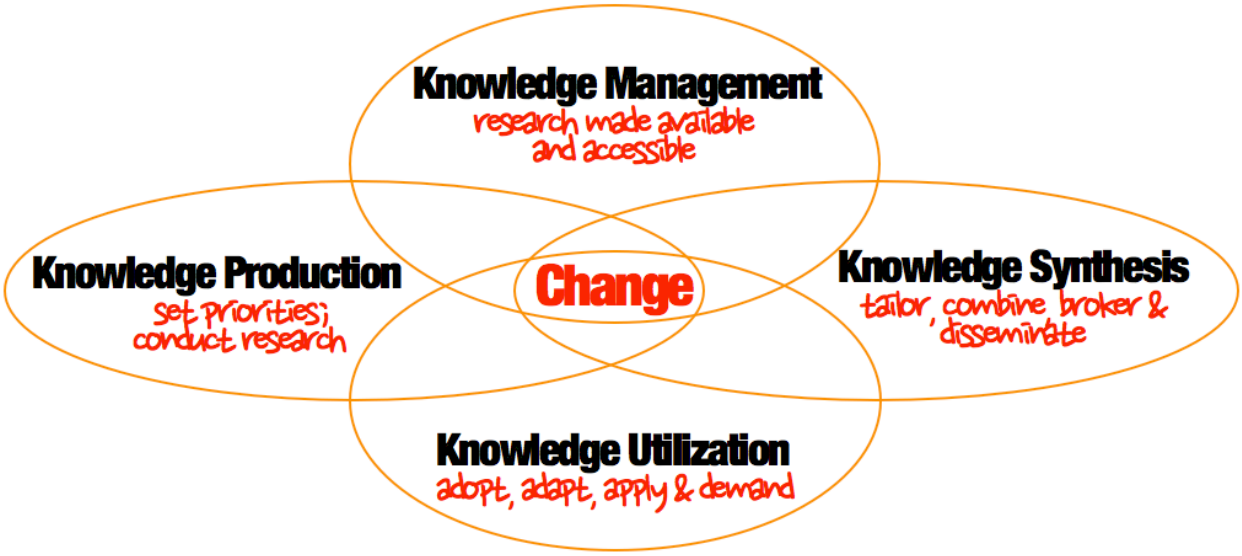

Diagram 1.7: The Four Spheres of KT

Each of these spheres represents a complex, interactive system of many actors and inputs:

- **knowledge production:** as discussed in *Lesson 1.1*, this describes the process by which knowledge is created, including variables like priority setting, proposal development, interaction with funders, execution of a research project, and publication in a peer-review journal. While this *Curriculum* discusses the other spheres in turn, the major emphasis is on how KT approaches and techniques can influence the production of knowledge.
- **knowledge management:** this describes the ways and means for making research findings available and accessible, including publication (with open-access journals representing the height of accessibility), databases (e.g. abstracts in Medline, papers in locally-maintained databases, etc), networking and other physical and online sources.
- **knowledge synthesis and brokering:** this describes various different strategies for harvesting, harmonizing and connecting knowledge, from scientific endeavours such as a systematic review to more issue-specific tailor-and-target dissemination approaches that craft a particular message for a particular audience (e.g. a policy brief, a fact sheet, a press release). Examples of knowledge synthesis (the policy brief and dialogue model, the Rapid Response Service, the peer-reviewed paper etc.) are discussed in *Lesson 4*. This sphere also describes the ways and means for making active connections between major stakeholders, and within particular knowledge dynamics.
- **knowledge utilization:** as discussed in *Lesson 1.1*, this describes the network of individuals and institutions responsible for creating, developing or influencing policy (recognizing of course that the actual utilizers of knowledge extend well past the policy community). They may take any of the synthesized knowledge products and adapt and apply them to their needs (i.e. as a policy input, as the basis for a strategic document or newspaper article). In a best-case scenario, this use of evidence contributes to their identification of other areas in which research evidence could play a role, leading to their active demand for knowledge, which kick-starts the knowledge production process.

These spheres are not an attempt at a KT framework. Rather, they are a useful mnemonic for conceptualizing the major KT moments, their interconnectivity, and then the specific activities we can take to influence, change and connect each. The more robust each is, the better the chances of achieving sustained, evidence-informed change.

Rigorous, theory-based frameworks and definitions of KT can be found in the discussion below. While all have their advantages and drawbacks, reviewing the more influential models will help to isolate important areas for further focus, and allow us to arrive at our own definition of KT. Again, an important distinction to be seen here is whether the authors are aiming for an all-encompassing definition of KT, or one that defines KT for specific dynamics or audiences (e.g. clinical practice.

An oft-cited definition of KT comes from the Canadian Institutes for Health Research (CIHR). For CIHR, KT is the "synthesis, dissemination, exchange and ethically-sound application of knowledge – within a complex system of interactions among researchers and users – to accelerate the capture of the benefits of research for Canadians through improved health, more effective services and products, and a strengthened health care system" (Strauss, Tetroe and Graham 2009; Graham et al 2006).

While this serves as a good starting point, particularly in highlighting the elements of exchange, synthesis and application, the definition appears fairly unidirectional (emphasizing the application of research evidence, and leaving undiscussed the movement from policy to research). It also does not explain what it means by "knowledge". Is this research evidence? Is it tacit knowledge? It is best practice? A combination? As Kothari et al (2011) observe – and we will explore further in *Lesson 2* – there is an urgent need to broaden the concept of the "knowledge" within knowledge translation. If, for instance, we know from studying the policy process that other types of "knowledge" are just as important in influencing policy, we must ask how KT strategies work to incorporate these other types of knowledge. Given the scientific biases of many researchers working on KT issues, there can be an over-emphasis on research evidence as *the* knowledge input – i.e. the only one that really counts – in influencing policy.

"both research utilization and knowledge translation are highly social processes that are more successful in the presence of positive social interactions between communities. In fact, it is often suggested that relationships and face-to-face contact are more important to effective research utilization than the quality, methods, content of a research study, or its 'fit' with a decision-makers' expressed need for the research. This has to do with the fact that the determinants of research utilization are often organizational or political, and only rarely rational."

– Ginsburg et al (2007) –

Ward et al (2010) offer five key elements to the process of KT:

- identifying the **problem** knowledge should address
- understanding the **context** around the problem, the knowledge producers and users
- selecting and creating the **knowledge** to address the problem
- applying specific knowledge **interventions** to improve the likelihood of its use; and
- giving due consideration to how this knowledge will be actually used in **solving** the problem.

They continue by suggesting that these elements can variously combine in either: a linear fashion, a "stepwise progression between an identifiable start and end-point"; a cyclical fashion where elements flow together and repeat; or in a "dynamic multidirectional process where individual elements are not linked in a linear fashion, but can occur simultaneously or in different sequences". This latter set of combinations can be seen in *Diagram 1.8* below (adapted from Ward et al 2010), modified here to illustrate the complexity of both the process *and* of models aiming to illustrate the process.

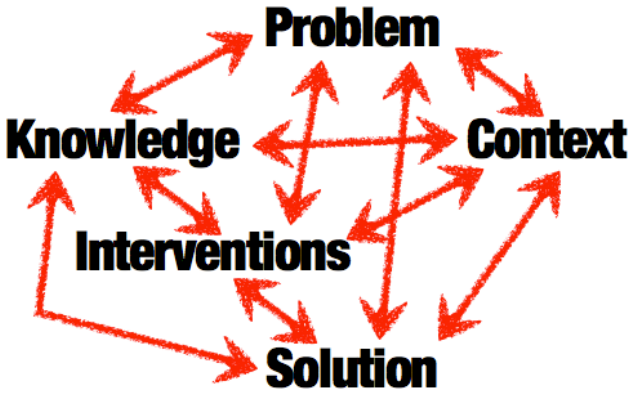

Diagram 1.8: Dynamic, multi-directional KT

Modelling KT is a difficult business. Of the five elements above, not all are equal (for instance, context may well be a much larger element framing the interplay of the other four), and capturing in graphic form how each influences and changes the other – with corresponding and cyclical ripple-on changes in the rest – becomes a process almost impossible to depict. Aside from being an intensely social process (or set of processes), KT is hugely complex. Its practitioners must become adept in appreciating and anticipating this complexity. They must think in systems.[6]

"Imagine the universe as having a definite structure, but exceedingly complex, so complex that no models humans can devise could ever capture more than limited aspects of the total complexity."
– Giere (1999)[7] –

An oft-cited KT framework is Graham et al's (2006) knowledge-to-action framework (KTA). Again depicting a relatively one-way process, where research energizes action, the KTA process is divided into two – knowledge creation (the inner part of *Diagram 1.9* below, shaped like a funnel) and action (the outer frame in *Diagram 1.9*), with each of these processes built from ideal categories. "In reality, the process is complex and dynamic, and the boundaries between these two concepts and their ideal phases are fluid and permeable. The action phases may occur sequentially or simultaneously, and the knowledge phases may influence the action phases… The funnel symbolizes knowledge creation, and the cycle represents the activities and processes related to use or application of knowledge (action). With our conceptualization, knowledge is

[6] The systems thinking literature is required reading for those wanting a fuller appreciation of KT. Two prominent sources for those new to systems thinking include de Savigny and Adam (2009) and Best et al (2008).

[7] Cited in Van de Ven and Johnson (2006)

empirically derived (i.e. research based) but also encompasses other forms of knowing such as experiential knowledge" (Graham et al 2006).

In the knowledge creation phase pictured here, knowledge sinks through the funnel, becoming "more distilled and refined and presumably more useful to stakeholders" resulting ultimately in systematic reviews, meta-analyses and other knowledge tools or products that "provide explicit recommendations with the intent of influencing what stakeholders do, and to meet the stakeholders' knowledge or informational needs, thereby facilitating the uptake and application of knowledge" (Graham et al 2006). In the action phase of this process, we see "a cycle leading to implementation or application of knowledge. In contrast to the knowledge funnel, the action cycle represents the activities that may be needed for knowledge application. These phases are dynamic, can influence each other, and can be influenced by the knowledge creation phases" (Graham et al 2006).

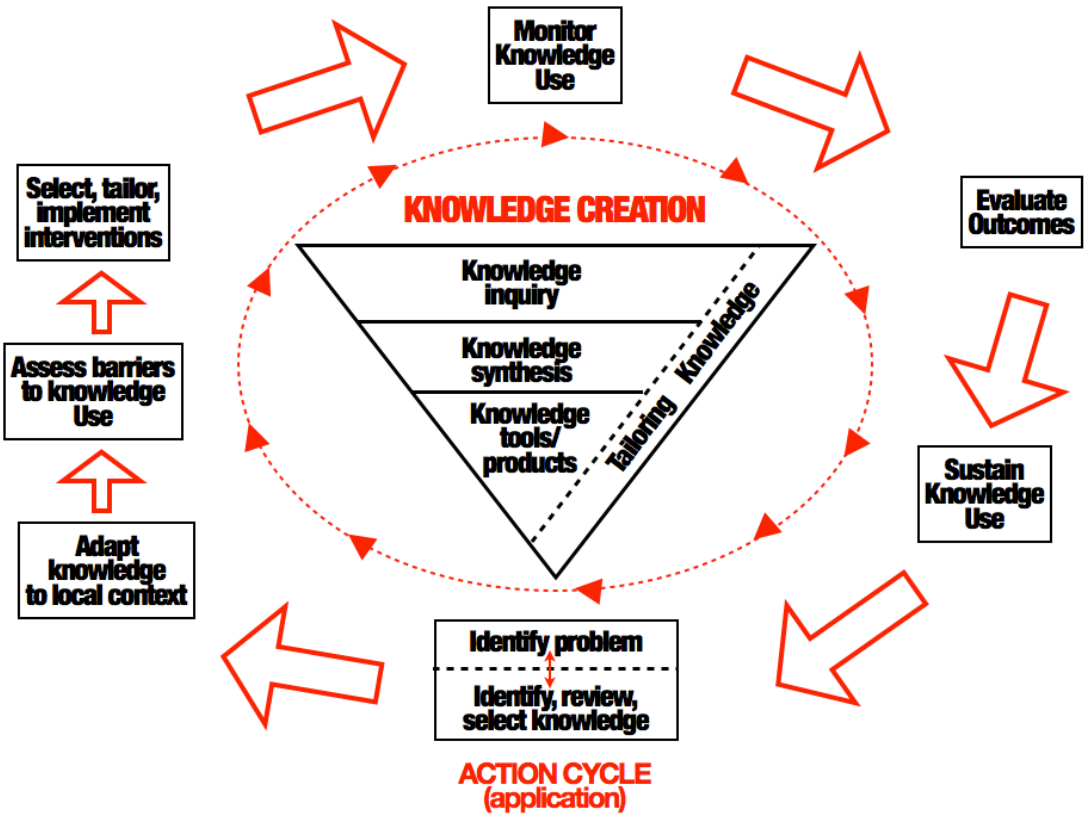

Diagram 1.9: The Knowledge-to-Action Framework

The KTA is also discussed in Straus, Tetroe and Graham (2009), Sudsawad (2009), and notably in Goldie, Malchy and Johnson (2010), where the authors add two evaluative-thinking tools to the KTA process, providing "much-needed direction for engagement with the psychiatric community. Appreciative inquiry (AI) was adopted as an alternative to traditional deficit-based approaches, and motivational interviewing (MI) was chosen to provide specific direction to the KTA process" (Goldie, Malchy, and Johnson, 2010). Such adaptation likely shows the real value of the KTA and other frameworks – as an intellectual beginning that, for any real-world application, must undergo adaptation and modification.

Box 1.3: The Characteristics of KT

Usefully, Sudsawad (2007) isolates a series of "characteristics" inherent to KT. Among these are:

- KT includes all steps between the creation of new knowledge and its application
- KT is an interactive process
- KT requires ongoing collaborations among relevant parties
- KT is a non-linear process
- KT emphasizes the use of research-generated knowledge (that may be used in conjunction with other types of knowledge)
- KT is user– and context-specific.

Lavis et al (2006) outline a KT framework to assess national efforts connecting research and policy. This moves from assessing the overall situation on efforts linking research and policy to addressing flaws in the knowledge production process (e.g. ensuring priority topics are researched, and that systematic reviews become the preferred unit of KT) to advancing four clusters of activities designed to enhance the research-policy link. These clusters, as shown in *Diagram 1.10* below (modified from Lavis et al 2006), show different ways of approaching this link. "Push efforts" see researchers or knowledge brokers (See *Lesson 4* for a discussion of brokering) tailoring and targeting research evidence to policy-makers. "User pull efforts" concentrate on policy-makers and other research stakeholders demanding knowledge from the research community – having, for instance, identified a knowledge gap that they would like to see filled. "Exchange efforts" see researchers and policy-makers developing partnerships or shared understandings. "Integrated efforts" bring together various different components of push, pull and exchange, and are best seen in the Knowledge Translation Platform (discussed in *Lesson 4.2* below).

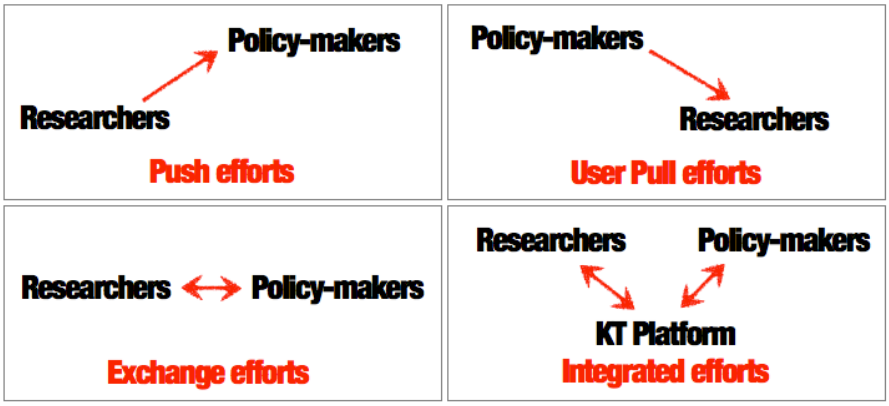

Diagram 1.10: Models for linking research and policy

McWilliam (2007) offers perhaps the most concise, most exact definition in the literature. She states that "KT is an ongoing interactive human process of critically considering relevant, quality research results and findings, whether factual or tacit knowledge or humanistic understanding, blending this broader researcher-based knowledge with experiential knowledge and contextual appreciation, and constructing a shared understanding and knowledge application to advance the quality of health care". This doesn't quite capture the two-way street – of policy-informed research leading to evidence-informed policy – but her definition does a nice job of broadening knowledge, while also bringing in the essential idea of contextual appreciation.

Lastly, Van de Ven and Johnson (2006), writing about management research, contribute the important concept of **engaged scholarship**. Here, collaborative research teams of researchers and practitioners "have the potential to ground and understand complex problems in ways that are more penetrating and insightful than they would be were either scholars or practitioners to study them alone" (Van de Ven and Johnson 2006). While we will pick up this concept further in *Lesson Two* of this Module, their main argument gets to the nature of the riddle within knowledge translation: *first, knowledge itself is inherently a matter of perspective; and second, all actors in this knowledge cycle interact in an ever-shifting context of great complexity*.

In summary, there are many different definitions, models and frameworks of KT. For simplicity's sake, we define KT here as *an ethos connecting contextualized knowledge with its application to improve health and well-being*. To break this down even further:

- KT is an *ethos*, a philosophy. KT is theoretical, it is abstract, but at the same time it is an organizing principle underpinning our actions.
- KT involves *contextualized knowledge*. While we will discuss what we mean by "knowledge" in *Lesson 2*, and discuss the concept of context further in *Module 2*, this term captures the idea that the unit of KT is knowledge – much more than research findings – and that this knowledge must be highly relevant and even tailored for a particular situation or dynamic.
- one of KT's central goals is *application*. This should not be mistaken for the idea that KT's entire focus is on the utilization of research results; rather it is a statement that we are producing knowledge for a *reason*: we want to change or influence something, and we do this by producing knowledge that is relevant to a context, and has strong application considerations built in from the outset.
- we practice KT for many reasons, but the overarching reason is *to improve health and well-being*. Why do we bother with KT techniques and strategies? Because we believe they add tremendous value on an individual level: creating and applying better knowledge ultimately leads to better health outcomes. KT is not an academic exercise. It is an organizing principle designed to strengthen health systems.

Note to Instructors

At this point, instructors may wish to pause and review some of these "major moments" within KT. As a class or within small groups, students can:

- consider each of the four major domains in turn, and the ways in which we might increasingly connect the production of knowledge with its management, with synthesis and brokering, and with utilization.
- consider in turn each of the definitions and frameworks cited here. What elements do they capture effectively? Which speaks most directly to your understanding of KT? How could they be improved or updated?
- The definition in this *Curriculum* is deliberately simple and broad, yet tries to capture the "two-way street" that changes knowledge as much as it changes how it is applied. Does this definition miss anything valuable? How would you improve it?

Lesson 1.3: Major KT Approaches

Suggested Readings:

- Tetroe J. Knowledge Translation at the Canadian Institutes of Health Research: A Primer. *Focus Technical Brief No 18*. National Center for the Dissemination of Disability Research. <pdf>.
- Jacobson N, Butterill D, and Goering P. "Development of a framework for knowledge translation: understanding user context". *Journal of Health Services Research & Policy*. 8:2. 2003. <pdf>
- Lapaige V. 'Integrated knowledge translation' for globally oriented public health practitioners and scientists: framing together a sustainable transfrontier knowledge translation vision. *Journal of Multidisciplinary Healthcare*. 3. 2010. <pdf>
- Dobbins M et al. A randomized controlled trial evaluating the impact of knowledge translation and exchange strategies. *Implementation Science*. 4:61. 2009. <pdf>
- McGrath PJ et al. Integrated knowledge translation in mental health: family help as an example. *Journal of Canadian Academy of Child Adolescent Psychiatry*. 18:1. 2009. <pdf>
- Graham ID, Tetroe JM. Getting evidence into policy and practice: perspective of a health research funder. *Journal of Canadian Academy of Child Adolescent Psychiatry*. 18:1. 2009. <pdf>

Now that we have discussed some major theories and definitions of KT, we shift to describe three practical KT approaches. Importantly, we can distinguish among these approaches by the types of stakeholders they involve, and by where they occur within the research cycle (discussed further in *Lesson 3*).

1. In **end-of grant (or end-of-project) KT**, the researcher designs and implements a strategy for disseminating research findings to key research users. As the term clearly suggests, this activity is done upon completion of the research. This type of dissemination could take the form of meetings with research users, the development of communications products (e.g. a press release, a briefing note, a video), and community outreach. In many ways, end-of-grant KT is what many people mean when they talk about KT, as it can be neatly tagged on to the traditional knowledge production process, right around the time that researchers are looking to boost the visibility of completed work. In this model, a researcher need not even think about KT until the project is finished and findings are prepared. While this approach is better than no approach, a single study or set of research findings very, very rarely influences policy, and thus any approach grounded in dissemination, no matter how tailored or produced, is likely to have a negligible impact (Bero 1998; McGrath et al 2009). At the same time, however, dissemination does have a valuable role to play in the knowledge production process. Dissemination may not lead to the actual application of the project's findings, but it does have value in keeping the scientific community apprised, which in turn can lead to its inclusion in larger synthesis pieces – which do play a strong role in knowledge utilization processes.

2. In **integrated KT**, we can see many of the core tenets from our overarching discussion of KT. The integrated KT (iKT) approach pursues the KT-infused knowledge production process as pictured in *Diagram 1.3* above – where knowledge users are involved in the design, implementation and findings of research projects. Together, researchers and knowledge users identify research questions, decide on methodology, produce the research, interpret findings, and disseminate, synthesize and apply findings. Integrated KT upends the traditional hegemony of researchers by incorporating the voice of other stakeholders, by forming multi-disciplinary teams, and by exhibiting a spirit of collaboration throughout the research process – all with the

aim of generating research findings relevant to policy needs. As LaPaige (2010) states, in iKT, "all partners are experts with various experiences; power differentials among partners are acknowledged and sensitively addressed; all stakeholders discuss potential benefits and harms of research; [the] process is capacity building for everyone".

"iKT requires a commitment of both the scientists and the decision-makers to a process that neither alone controls."
– McGrath et al (2009) –

Integrated KT sees all aspects of the knowledge production-utilization chain as interconnected, with no beginning or end, accounting much more for how knowledge actually interacts with other elements. Knowledge cannot simply be generated, synthesized and then applied (as sometimes envisioned in end-of-grant KT); the actual processes are much more difficult to predict. iKT moves us away "from purely researcher-driven processes, which summarize research, to co-production processes, which allow managers and policy-makers to join with researchers" (Lomas 2005).

"iKT is a dynamic (non-static), interactive (collaborative), and nonlinear phenomenon that goes beyond a reductionist vision of KT to attain inter–, multi–, and even trans-disciplinary status. The process of iKT is based upon: (i) the collaboration of individual and institutional actors and the integration of their respective knowledge bases, (ii) the development of a sustained synergy among knowledge users and knowledge producers, and (iii) the emancipation of post-positivist biomedical paradigms, removal of interdisciplinary barriers, and the development of sectors favouring a collective approach to shared problems and questions concerning health."
– LaPaige (2010) –

Finally, as McGrath et al (2009) usefully observe, iKT helps researchers become much more policy savvy. Beyond merely improving the research through the inclusion of more stakeholder perspectives, it also exposes the researcher to the political currents surrounding their research: "this collaboration enables the researcher to become aware of the realities and limitations of the political system, and to gain insight that research evidence is only one of many competing sources of information and influence within the political sphere" (McGrath et al 2009). This last point on competing information sources is critical, and will be picked up again in *Lessons Two* and *Four* below.

"Once different perspectives and kinds of knowledge are recognized as partial, incomplete, and involving inherent bias with respect to any complex problem, then it is easy to see the need for a pluralistic approach to knowledge co-production among scholars and practitioners."
– Van de Ven and Johnson (2006) –

3. In **KT science**, or **KT research**, researchers strive to understand what works in KT, for whom, and under what circumstances – the "scientific study of the determinants, processes and outcomes of KT" (LePaige 2010). Its goal is to fine-tune KT, develop new theories, activities and interventions; it is inherently multi-disciplinary. It is an essential arm of KT, yet thus far has received much less attention. In one notable instance, Dobbins and colleagues (2009) launched a randomized controlled trial to test the efficacy of three different KT interventions aiming to advance evidence-informed policy-making. These interventions included: "freely accessible web-based resources that summarize research evidence; tailored and targeted messages that

connect relevant research evidence to specific decision-makers; and knowledge brokers, who work one-on-one with decision-makers to facilitate evidence-informed decision-making". Among the important findings, the authors concluded that "the evidence (e.g. evidence that is relevant, high quality and synthesized) must be actively delivered directly to decision-makers, rather than requiring decision-makers to access it themselves, even if it is in one place" (Dobbins et al 2009). These issues will be addressed in subsequent *Lessons* within this *Module*.

"The KT research field encompasses nine areas of interest: knowledge synthesis; research into the evolution of and critical discourse around research evidence; research into knowledge retrieval, evaluation and knowledge management infrastructure; identification of knowledge to action gaps; development of methods to assess barriers and facilitators to KT; development of the methods for optimizing KT strategies; evaluations of the effectiveness and efficiency of KT strategies; development of KT theory; development of KT research methods."

– LaPaige (2010) –

***Box 1.4: The role of context: looking ahead to* Module 2**

To foreshadow the contents of *Module 2*, one of the great missing pieces in the existing KT literature centres around the role of context. Many authors arrive at the conclusion that we must understand the wider context of a particular policy issue or policy environment, and must have a sense of the research culture within an organization (see, for instance, Dobbins et al 2009, Scott et al 2003, Lane and Rogers 2011). On understanding this context, we work towards involving the "right" stakeholders in designing, implementing or disseminating research, from the right policy-makers to the right community members, and so on (Campbell 2010). But how do we actually do this? Unfortunately, few commentators outline concrete and practical steps that researchers or other stakeholders can use to:

- understand the major stakeholders affected by or affecting the research project. Who should be involved in a particular research project – when and how? Who should be considered, and whose needs addressed, at various different stages of the research?
- document the positions, interest, power and dynamics among those stakeholders – nationally, regionally and globally
- understand the prevailing political and policy context (history, actors, agenda, ideology, windows of opportunity) around a particular research topic
- understand the organizational research culture of major institutions involved in policy-making.

Sometimes understanding context, however, is to understand the inadequacy of our knowledge base, or the often lowly position research evidence plays in a wider context. Nonetheless, research that unfolds without an adequate appreciation of its wider context operates without a full knowledge of its surroundings, is impaired by the absence of importance stakeholders – or worse, risks outright irrelevance.

Module 2 covers practical tools researchers and other stakeholders can use to comprehensively understand the context in which their research – or their policy – takes place.

Lesson 2: The "knowledge" of knowledge translation

Lesson 2 Presentation:
A presentation highlighting the major aspects of *Lesson Two* is available in three different formats:

- as a <pdf> for printing. Can be used as a handout, but cannot be modified. Can also be used as a presentation in full-screen mode.
- as a <key> for presentations. This uses Apple's proprietary Keynote software; users of this may modify the presentation as desired.
- as a <ppt> for presentations. This uses Microsoft's proprietary PowerPoint software; users of this may modify the presentation as desired. Please note that the presentation was not created using ppt software; it looks best in pdf or key formats.

Lesson 2.1: Knowledge: An Overview

Suggested Readings

- Van de Ven AH and Johnson PE. Knowledge for Theory and Practice. *Academy of Management Review*. 31:4. 2006. <pdf>
- Tsoukas H and Vladimirou E. What is organizational knowledge? *Journal of Management Studies*. 38:7. 2001. <pdf>
- Contandriopoulos D et al. Knowledge exchange processes in organizations and policy arenas: a narrative systematic review of the literature. *The Milbank Quarterly*. 88:4. 2010. <pdf>
- Greenhalgh T. What is this knowledge that we seek to exchange? *The Milbank Quarterly*. 2010. 88:4. <pdf>
- Kothari AR et al. Uncovering tacit knowledge: a pilot study to broaden the concept of knowledge in knowledge translation. *BMC Health Services Research*. 11:198. 2011. <pdf>

What is this "thing" we're working so hard to translate? What do we mean when we use the term "knowledge"? This is not intentionally philosophic or a needless journey into epistemology but rather a key recognition that everyone has a different definition or idea of the term. For some, knowledge is the evidence created by research; to others knowledge is derived from experience or expertise; to others still, knowledge is habitual, arising from tradition. For some, knowledge is a careful combination of each.

Whatever knowledge is, however, there are two core truths about knowledge that we must grasp as we develop KT strategies:[8]

- *knowledge depends upon personal perspective*. A way of seeing, says Poggi (1965), is also a way of *not* seeing (cited in Van de Ven and Johnson 2006). As argued convincingly by the chemist-turned-philosopher Michael Polanyi (1966, 1975) "all knowing is personal knowing – participation through indwelling" (Polanyi, 1975). In other words, we come to know through our personal capacities "to draw distinctions, within a domain of action, based on an appreciation of context or theory, or both" (Tsoukas and Vladimirou 2001). Experience – or "indwelling" – builds these personal capacities to create, appreciate and refine knowledge. Even in the most exact of sciences we must "rely on our personal confidence that we possess some degree of personal skill and personal judgement for establishing a valid correspondence with – or a real deviation from – the facts of experience" (Polanyi, 1975).
- *knowledge depends upon personal context*. Knowledge changes as it moves among stakeholders. In other words, knowledge depends upon *who you are*. "Users selectively interpret and use knowledge as it serves their own purposes, fits their unique situations, and reflects their relations with their practicing community" (Van de Ven and Johnson 2006). There is very rarely one way to interpret knowledge, and almost never only one way of using knowledge. As study after study has shown, humans overwhelmingly "believe in" the knowledge that accords best to their own values and often reject that which does not align with their values, no matter its strengths or relevance (Ginsburg et al 2007; Jacobson et al 2003; Davies 2004; Lavis 2009c; Graham 1996). Though the KT literature has much to say about the knowledge base, this idea of a *belief base* is less studied, a gap with great relevance particularly when we come to how stakeholders select the knowledge they will adapt and apply.

"The act of knowing includes an appraisal; and this personal coefficient, which shapes all factual knowledge, bridges in doing so the disjunction between subjectivity and objectivity."
– Polanyi (1966) –

While admittedly abstract, investigating the meaning of knowledge has clear ramifications for KT processes. The more we recognize how perspective and context shapes individual definitions of knowledge, the better we understand the different or even competing perceptions of "knowledge" and "evidence" among, for instance, researchers and policy-makers. Could there be two very different – yet equally valid – ideas of evidence-informed policy? As Kothari et al (2011) writes, this underlines the urgent need to broaden the "knowledge" within knowledge translation. To date, the KT literature has prioritized the voice of the researcher, to whom "knowledge" has a relatively tight definition – research evidence. However, if we know that various types of knowledge actually inform the policy process, then focusing entirely on research evidence as the "knowledge" of KT may doom our KT efforts. The better we understand how research evidence slots into the much larger puzzle of knowledge, the greater the chances any KT strategy has of success.

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[8] After all, this *Curriculum* is not just to illustrate some of the core aspects of KT but to prepare the student to create and launch a KT strategy. Most of this *Module* orients around the goal of creating a successful KT strategy.

The truth is, knowledge *always* informs policy. Every single policy is knowledge-informed. In developing a response to any priority issue, knowledge always informs the decision. This knowledge may not include research evidence, but it may feature many different and, to the user at least, "sound" types of knowledge (as in *Diagram 1.11* below). For KT practitioners, the challenge is not to wedge research evidence into this larger puzzle, elbowing into the discussion; the real challenge is to see all the puzzle pieces – the context – and to arrive at a much deeper understanding of how research evidence relates to the other pieces, and how and where it might be added in.

"policy-making is not a series of decision nodes into which evidence, however robust, can be 'fed,' but the messy unfolding of collective action, achieved mostly through dialogue, argument, influence and conflict"
– Greenhalgh and Russell (2005) –

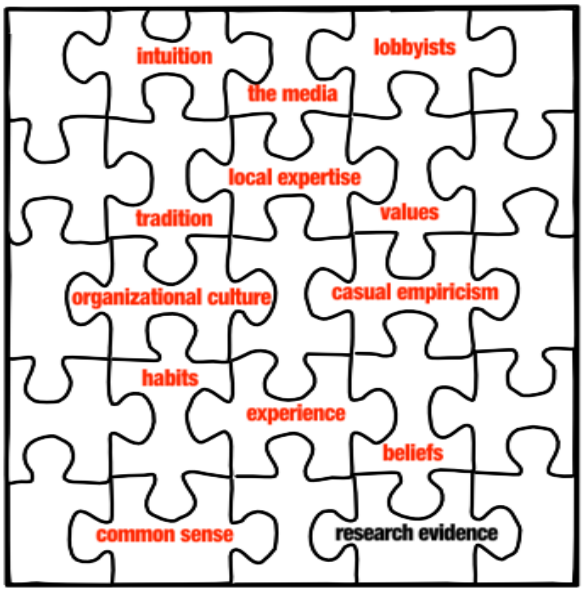

Diagram 1.11: Research evidence and the puzzle of knowledge

"While research can provide evidence about the consequences of various policies, on its own it cannot tell us what is the best thing to do, either in general terms or in particular cases."
– Hammersley (2005) –

Note to Instructors

Students should be encouraged to reflect on some of these core knowledge issues. Of particular relevance may be a discussion where they offer personal experience or thoughts related to how knowledge changes as it moves among stakeholders. Why does this happen? How to anticipate this type of change? What is the relationship between a belief base and an evidence base? What are the implications of personal context and perspective for researchers?

Instructors may also wish to refer at this point to the peer-reviewed papers the students have brought to class. Some of these papers may offer particular insights into the nature of knowledge. for instance, do any of the papers reflect a wider definition of knowledge?

Lesson 2.2: The Layers of Knowledge

Suggested Readings

- McAdam R, Mason B, McCrory J. Exploring the dichotomies within the tacit knowledge literature: towards a process of tacit knowing in organizations. *Journal of Knowledge Management*. 11:2. 2007. <pdf>
- Ginsburg L et al. Revisiting interaction in knowledge translation. *Implementation Science*. 2:34. 2007. <pdf>
- Tsoukas H. "Do we really understand tacit knowledge?" In Easterby-Smith M and Lyles MA, Eds. *Handbook of Organizational Knowledge*. Blackwell. 2002. <pdf>

There are valuable distinctions to be made between data, information and knowledge. Data is often defined as "an ordered sequence of given items or events, such as the alphabetical index of a book"; with information defined as "a context-based arrangement of items whereby relations between them are shown, such as the chapter headings and sub-headings in a book"; with knowledge then being "the judgement of the significant of events and items, which comes from a particular context and/or theory, such as a student's own themed list of key sections of the book, oriented to a forthcoming exam" (Greenhalgh 2010; Nonaka and Takeuchi 1995). Critical here in defining knowledge is the use of the word "judgement". This acknowledges the role of human agency in determining what is and isn't knowledge, thus opening a can of worms into the personalized, subjective nature of knowledge. No matter how objective we may wish knowledge to be – no matter how much a researcher may wish to keep non-scientific elements at bay – values, experiences and contexts are *fundamental ingredients* of knowledge.

"Knowledge is a flux mix of framed experiences, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices and norms"
– Davenport and Prusak (1998) –

"Organizational knowledge is the capability members of an organization have developed to draw distinctions in the process of carrying out their work, in particular concrete contexts, by enacting sets of generalizations (propositional statements) whose application depends on historically evolved collective understandings and experiences"
– Tsoukas and Vladimirou (2001) –

Tsoukas (2001; 2002) describes two dynamics that provide further insights into the nature of knowledge. The first is the dynamic between individual and organizational knowledge. He asserts that knowledge begins with an "individual capability to draw distinctions," which aligns well with the researcher's mindset and framework and even *being* – their training is individualistic, each is imbued with the tools required to assess and judge as individual scientists. However, when knowledge moves to the organizational level – such as, for instance, a policy-making entity like a government ministry – Tsoukas argues that it becomes codified, generalized, judged against the organization's collective understandings, histories and experiences, and possibly operationalized. In other words, knowledge acquires new layers at the organizational level, where instead of it being subject to individual judgements, it must now face – and compete with – collective needs, priorities, histories and judgements.

For KT, the implications of this separation of knowledge into individual knowledge and organizational knowledge are strong. If KT were simply a process of one individual passing his or her knowledge to an individual who had the necessary power to operationalize it, then KT would require little study or support. But as policy is largely set by organizations – and not by any one individual – understanding the way in which organizations absorb knowledge, and the means by which organizations might change or tailor or contextualize that knowledge, is crucial. This has long been a missing component within the KT literature, and within various KT strategies – part of the context that is discussed vaguely but rarely in sufficient detail. Some recent work (Dobbins et al 2009, Kitson et al 2008, Scott et al 2003) has focused on the variable of organizational culture to understand how organizations respond to research, and their existing capacity to undertake, adapt, apply and use research. This further underscores our need to arrive at more dynamic understandings of how knowledge shifts from producer to user *and* from the individual to the organization. Accounting for and anticipating this is a compelling but missing link in KT.

"The bulk of KT research has focused on acquiring, assessing and applying research evidence in practice and policies. This lack of attention to a broader conceptualization of knowledge that goes beyond research findings has consequently led to the development of KT strategies targeting only the use of research evidence. The role of other types of knowledge in the KT process has been downplayed..."
– Kothari et al (2011) –

The second dynamic that Tsoukas and several other commentators focus on is the critical relationship between *explicit knowledge* – structured, verifiable, replicable evidence – and *tacit knowledge* – what we know from experience; unarticulated, personal, context-specific knowledge and know-how (Kothari et al 2011). While Nonaka and Takeuchi (1995) have been instrumental in advancing an awareness of tacit knowledge, their opinion that tacit knowledge can be converted to explicit runs contrary to Tsoukas' definition of knowledge, which includes personal judgements (including those forged by experience). "Tacit and explicit knowledge are not the two ends of a continuum but the two sides of the same coin: even the most explicit kind of knowledge is underlain by tacit knowledge" (Tsoukas 2002).

Box 1.5: Tacit Knowledge

In their useful review of the tacit knowledge literature, McAdam et al (2007) present a number of different definitions, observe the conflicts within the literature, and cite the following characteristics of tacit knowledge. It is part:

- *intuition* – deciding without formal inquiry or analysis; direct knowing
- *insight* – a sudden understanding or clarity
- *know-how* – ability to make things work, derived from experience
- *belief* – reflecting a given perspective
- *pragmatism* – applying logical aspects to a solution.

There are few, if any, authors writing on the policy process who would minimize the role of tacit knowledge in policy development. It is a critical, core component. However, acknowledging this doesn't make the task of developing a KT strategy any easier. As the "knowledge" we must consider in KT moves considerably beyond the explicit (i.e. the peer-reviewed scientific) towards the murky and ill-defined tacit, we find ourselves in very different waters, far from the warm currents of research. Indeed, the complexity discussed in *Lesson 1* applies to every single aspect

of KT: knowledge is itself a highly complex system, and the more nuanced, the more depth KT practitioners give to knowledge – this thing at the very core of KT – the more sophisticated their strategies will become in bridging the worlds of research and policy.

"… we do not so much need to operationalize tacit knowledge (as explained earlier, we could not do this, even if we wanted) as to find new ways of talking, fresh forms of interacting, and novel ways of distinguishing and connecting. Tacit knowledge cannot be 'captured,' 'translated,' or 'converted' but only displayed, manifested, in what we do. New knowledge comes about not when the tacit becomes explicit, but when our skilled performance – our praxis – is punctuated in new ways through social interaction."
– Tsoukas (2002) –

Kothari et al (2011) echo the Tsoukas quotation above by emphasizing that KT practitioners might better understand and operationalize the tacit side of knowledge, particularly through networking. Personal interaction among key research stakeholders leads to more detailed and much more *collective* understandings of any particular piece of knowledge, moving the KT field beyond its prioritization on explicit knowledge and towards a model of knowledge that has actual policy utility, relevance and *meaning*.

Note to Instructors

As in the previous lesson, students should be given ample time to reflect on these concepts as they are central to a fuller understanding of KT. Questions the class could discuss include:

- What is the difference between data, information and knowledge and why are such distinctions important?
- What is the different between individual and organizational knowledge? What are the implications of this difference for any KT strategy?
- What role does organizational culture play in the movement of knowledge?
- Are explicit and tacit knowledge the opposed ends of a spectrum or the opposite sides of the same coin? What is the difference?

Lesson 2.3: The Types of Evidence

Suggested Readings

- Lomas J et al. "Conceptualizing and Combining Evidence for Health System Guidance". Final Report. 2005. <pdf>
- Davies P. "Is Evidence-Based Government Possible?". Paper presented at the 4th Annual Campbell Collaboration Colloquium, Washington D.C. 19 February 2004. <pdf>
- Orton L et al. The use of research evidence in public health decision-making processes: systematic review. *PLoS ONE*. 6:7. 2011. <pdf>
- CHSRF. 2006. "Weighing up the Evidence: making evidence-informed guidance accurate, achievable, and acceptable". A summary of the workshop held on September 29, 2005. <pdf>

"If we enlarge the meaning of evidence, there is indeed scope for bringing more intellectual edge to the analysis of what we can learn from the past. But, equally important, if we remember that evidence speaks with many voices, and that our values drive facts and shape the conclusions we draw from them, we will also conclude that any such exercise will be no more, and should be no more, than one contribution to the process of policy-making."
– Klein (2003) –

Evidence, like beauty, may well lie in the eye of the beholder (Kerner 2006). Much as the wider concept of knowledge depends so crucially on one's perspective and context, the specific concept of evidence itself has considerable layers we must identify and understand.

Lomas et al (2005) distill "evidence" into three different types. The first is **context-free evidence**, which is what works in general, or knowledge about the overall "potential" of something. This is typically medical-effectiveness or biomedical research (e.g. male circumcision can be a strong preventative measure to HIV-acquisition in men living in high-incidence populations). The second is **context-sensitive evidence**, which puts evidence into a context that makes it operational or relevant to a particular setting (e.g. male circumcision in LMICs may fail as an intervention due to health system weaknesses and underlying poverty issues). In ways, context-sensitive evidence is where biomedicine meets social science. Both of these types of "evidence" are captured in systematic reviews, in other syntheses, in single studies, and in pilot or case studies.

The third category of evidence is **colloquial evidence**. Roughly defined as any kind of evidence "that establishes a fact or gives reason for believing in something," it is typically comprised of expertise, opinions, and first-hand experience and realities (e.g. most experts agree that implementing a universal male-circumcision policy is impossible because of the current cultural, political and socioeconomic environment). Lomas et al (2005) suggest that colloquial evidence is useful for plugging the holes that the other types of evidence do not address; it may indeed be critical where the evidence is inconclusive, lacking, or non-existent.

"evidence is more likely to be used in the policy-making process if there is agreement between policy-makers and researchers, and within the research community, as to what constitutes evidence. The disputes between researchers about the superiority or inferiority of quantitative versus qualitative studies, or experimental versus experiential research designs, can lead to no useful evidence being produced, or to evidence that is technically very good but of little use to policy-makers or anyone else. In the meantime, there are plenty of other sources of evidence – from lobbyists, pressure groups, consultants, the media etc – that are less thorough but more readily available to policy-makers. It is not surprising that such evidence is often more successful in finding its way into policy-making."

– Davies (2004) –

Box 1.6: Evidence: three core truths

1. Individuals and organizations define the meaning and relevance of "evidence".
2. Evidence depends upon context to become operational. It requires interpretation and acquires meaning before it can be used.
3. Evidence is continually evolving. What is true today is not necessarily true tomorrow: the context around the evidence is constantly shifting and the scientific basis for the evidence is always updating.[9] As research evidence must be contextualized to become operational, it becomes subject to interpretation and as such cannot be free from possible error. Nothing, we come to realize, is ever completely 100% true.

"...evidence for public health policy is much more complex. The policy process involves a series of steps: problem delineation, option development and then implementation. The evidence required at each step is dramatically different. Thus, public health evidence must cover not just the question of effectiveness of

[9] See for instance Smith (2006) on the flaws of the peer-review process.

interventions; but also organization, implementation and feasibility, which are less commonly covered by research evidence. In this regard, public health evidence is neither perfect, complete nor unequivocal. Research findings are so rarely definitive or robust that they rule out alternative emphases. They always require interpretation in order to be implemented effectively."
– Orton et al (2011) –

If these three types of evidence typically inform the policy process, how might a policy-maker in turn weigh each piece of evidence? Are all pieces equal, or some more equal than others? The CHSRF (2006) has suggested that weighing up the evidence – assigning a value to each "piece" of evidence – is likely impossible. After all, where is the scale that will allow us to weigh and assess the relative worth of experience (apples), expert opinion (oranges) and a systematic review (bananas)? While each "piece" in this evidentiary spectrum deserves careful consideration, even in the absence of a scale we clearly need some sort of mechanism that can weigh the various pieces.

Deliberative processes are one emerging method by which groups can develop criteria to weigh and assess evidence (or research priorities or policy needs). They increasingly feature at many different points throughout the research and policy processes. For more on the essential arts of deliberation, see *Module 2's* discussion on the topic.

Note to Instructors

Questions to guide discussion around this content could include:

- what is the difference between the three different types of evidence? Why is it valuable to dissect evidence along these lines?
- what are some of the limitations of evidence? Are there any specific examples showing how "evidence" has shifted or completely changed?
- what are the consequences for evidence-informed policy when evidence is subject to revision?

Lesson 2.4: The Hierarchy of Evidence

Suggested Readings

- Greenhalgh, T. How to read a paper: getting your bearings (deciding what the paper is about). *BMJ*. 315:243. 1997. <pdf>
- Daly J et al. A hierarchy of evidence for assessing qualitative health research. *Journal of Clinical Epidemiology*. 60:1. 2007. <pdf>
- Lavis JN et al. "Towards systematic reviews that inform health care management and policy-making". *Journal of Health Services Research & Policy*. 10:Suppl1. 2005. <pdf>
- Lavis JN et al. "Working Within and Beyond the Cochrane Collaboration to Make Systematic Reviews More Useful to Healthcare Managers and Policy Makers". *Healthcare Policy*. 1: 2. 2006b. <pdf>
- Lavis JN. How Can We Support the Use of Systematic Reviews in Policymaking? *PLoS Medicine*. 6:11 2009c. <pdf>

The hierarchy of evidence on questions of effectiveness is a cornerstone of evidence-based healthcare; we briefly discuss it here to provide further clarity and depth to the concept of "evidence". This hierarchy treats all types of evidence differently, with randomized controlled trials (RCTs) occupying the top of the chain – "the pinnacle of scientific evidence" or the "gold standard" (Lyons 2010) – with case studies occupying the bottom rung (as shown in *Diagram*

1.12 below). In other words, "the least likely studies to provide good evidence-for-practice are single case studies, followed by descriptive studies that may provide helpful lists of quotations but do not offer detailed analysis" (Daly et al, 2007). Importantly, this treatment of evidence restricts itself only to the scientific, with no discussion of other types of evidence.

"Evidence hierarchies reflect the relative authority of various types of biomedical research. Although there is no single, universally-accepted hierarchy of evidence, there is broad agreement on the relative strength of the principal types of research. Randomized controlled trials (RCTs) rank above observational studies, while expert opinion and anecdotal experience are ranked at the bottom. Some evidence hierarchies place systematic review and meta analysis above RCTs, since these often combine data from multiple RCTs, and possibly from other study types as well… [however] the use of evidence hierarchies has been criticized as allowing RCTs too much authority. Not all research questions can be answered through RCTs, either because of practical issues or because of ethical issues. Moreover, even when evidence is available from high-quality RCTs, evidence from other study types may still be relevant."

– Greenhalgh (1997) -

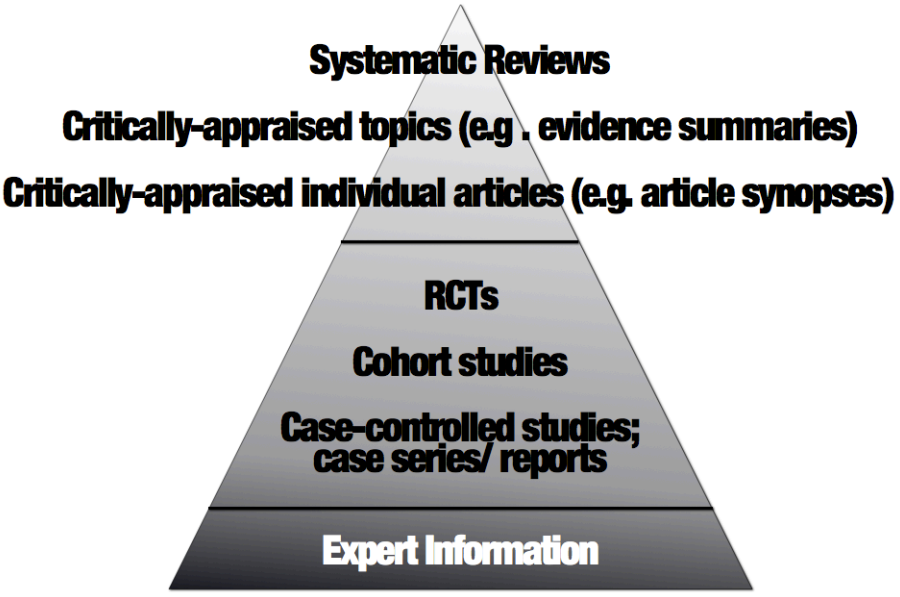

Diagram 1.12: The hierarchy of evidence

While this hierarchy is particularly useful for influencing clinical practice, it is also of importance for the types of research evidence that could become prime inputs into policy. Noting that all kinds of "evidence" and "knowledge" are influential in setting and implementing policy, if researchers want to add their particular piece to the puzzle, what is the "best" type of evidence they should advance? While we will return to this issue in greater depth in *Lesson 4*, a great deal of recent experience (see, for instance, Lavis et al 2006b, Lavis 2009c, Lavis et al 2010) shows how researchers have used systematic reviews as the basis for their knowledge-based interactions with policy-makers.

"First, the likelihood of being misled by research is lower with a systematic review than with an individual study (that is, bias is reduced). Second, confidence in what can be expected from an intervention is higher with a systematic review than with an individual study (that is, precision is increased). Third, drawing on an existing systematic review constitutes a more efficient use of time because the research literature has already been identified, selected, appraised and synthesized in a systematic and transparent way; potential

research users can thus focus on assessing the local applicability of a review and on collecting and synthesizing other types of information, such as routine health information. Fourth, a systematic review can be more constructively contested than an individual study because debate will focus on appraisal and synthesis rather than on why one study was identified and selected over others"
– Lavis et al (2006b) –

Lesson 3: At the Interface of Research and Policy

Lesson 3 Presentation:
A presentation highlighting the major aspects of *Lesson Three* is available in three different formats:

- as a <pdf> for printing. Can be used as a handout, but cannot be modified. Can also be used as a presentation in full-screen mode.
- as a <key> for presentations. This uses Apple's proprietary Keynote software; users of this may modify the presentation as desired.
- as a <ppt> for presentations. This uses Microsoft's proprietary PowerPoint software; users of this may modify the presentation as desired. Please note that the presentation was not created using ppt software; it looks best in pdf or key formats.

Lesson 3.1: Barriers and Facilitators at the Interface

Suggested Readings:

- Jewell CJ and Bero LA. 'Developing good taste in evidence': facilitators of and hindrances to evidence-informed health policy-making in state government. *The Milbank Quarterly*. 86:2. 2008. <pdf>
- Brownson RC et al. Researchers and policymakers: travelers in parallel universes. *American Journal of Preventive Medicine*. 30:2. 2006. <pdf>
- Dobbins M, DeCorby K, Twiddy T. "A Knowledge Transfer Strategy for Public Health Decision Makers". *Worldviews on Evidence-Based Nursing*. 1:2. 2004. <pdf>
- Innvaer S et al. Health policy-makers' perceptions of their use of evidence: a systematic review. *Journal of Health Services Research & Policy*. 7:4. 2002. <pdf>
- Bowen S and Zwi AB. Pathways to 'evidence-informed' policy and practice: a framework for action. *PLoS Medicine*. 2:7. 2005. <pdf>

In *Lesson 1* we discussed how KT strategies need to recognize and then position themselves at the different overlaps between the research and policy processes. Among the ways these processes overlap include: when the research agenda is set or policy priorities are identified; when collaborative research projects are designed; when knowledge is synthesized and tailored

for use; and when policies are implemented and accompanied by monitoring research. Recognizing that the research and policy processes are unique systems unto themselves, a number of authors have identified barriers and facilitators to these moments of overlap, systemic conditions that either favour or hinder moments of integration.

Much of the literature concludes researchers and policy-makers simply don't understand each other: they are travellers in parallel universes (Brownson et al 2006), "tectonic plates" gradually sliding together (Martens and Roos 2005). Lomas (2000) offers that they are simply unable to grasp each other's processes – what's involved in doing research or setting policy, what unique pressures each works under, what incentives motivates each, and so on. As he memorably phrases it in another publication (Lomas 1997), decision-makers tend to see research as a retail store – "as if researchers are busy filling shelves of a shopfront with a comprehensive set of all possibly relevant studies that a decision-maker might some day drop by to purchase" – while researchers tend to see decision-making as an event – "as if policy were made by a defined small group of actors clustered in a room at a specified time, perhaps until a puff of white smoke is emitted".

The more we understand these perceptions, the better we might overcome the barriers. The more we accept that our world is shaped by many competing interests, incentives and understandings, the better our chances of achieving any meaningful degree of collaboration and integration. To these ends, below is a review of the major barriers and facilitators in bringing together these processes.

Major barriers include:
1. *problems with the existing supply of evidence*. As discussed in *Lesson 2*, there is a vast sea of research evidence. Each piece of evidence has many different interpretations, and thus many different policy applications; pieces of evidence can be in conflict with each other, may not be ready for policy action, may run counter to prevailing ideologies or values, and must compete for attention against all kinds of other information (Brownson et al 2006). Policy-makers are often unable or, due to time constraints, unwilling to interpret research evidence, or to determine their precise policy applications. Even given an availability and willingness, policy-makers may not know where to access research evidence; and again, even if they are able to access it, they may find that a synthesis piece like a systematic review does not "necessarily frame the existing evidence in terms of their policy applications"(Jewell and Bero 2008). The quality of the existing research (particularly in developing countries with few research institutions or a small research community) may be deemed low; what's more, it may simply take too long for the existing research – whatever its quality – to reach policy-makers. They operate in compressed time horizons (needing to arrive at a decision in hours, days or weeks), whereas research is typically designed, executed and finalized in years. "By the time that research findings are adequate to support policy changes, the political and social climates may not be receptive or the issues/ problems may have subsided or disappeared from the venues of where public concerns are aired" (Brownson et al 2006).

Box 1.7: Common misunderstandings

According to Lomas (1997), there are four misunderstandings common to both researchers and policy-makers:

- they think of each others' activity "as generating products instead of as engaging in processes
- "researchers fail to make the decision-makers' distinction between a rational decision (research-driven and largely context free) and a sensible decision (pragmatically-driven and dependent on institutional and political context)
- "decision-makers are largely ignorant of (or refuse to accept) the incentives, rewards and organization of the university researcher's environment; more specifically, they struggle with the researchers' distinctions between biomedical and social scientists, or between discovery and application-oriented research
- "researchers rarely discriminate between, and address uniquely, the different needs of the potential non-academic audiences for their research (legislative, administrative, clinical, industrial)".

2. *the many variables competing to influence policy*. Where the scientist typically relies on logic and rationality to solve a problem, policy-makers are more inclined to trust personal experience or a particularly powerful anecdote. These offer an immediacy, an emotive argument, and a specificity that evidence (particularly given the problems with the evidence supply) often cannot match. These also tap into some shortcomings of perception common to all humanity: "people generally have difficulty understanding numerical characterizations, including percentages and very small and very large numbers… in contrast, though, personal stories are a comparatively accessible form of information that is easy for laypeople to understand" (Jewell and Bero 2008). These stories may resolve, in some way, the uncertainty of the evidence, and may introduce the emotional "rights" that constituents affected by any policy concern may have.

Particularly in high-income countries, one of the most persistent sources of competition for research evidence is the professional lobbyist or interest group. These are sophisticated, evidence-savvy, and often well-funded groups able to frame the perceived policy problem with ease and emotion, able to effectively summarize the research evidence related to solving the problem (without any qualms about creatively editing or even manufacturing the evidence to suit their case), and are generally able to anticipate all the needs any policy-maker may have in addressing a particular policy concern (Contandriopoulos et al 2010; Jewell and Bero 2008). Lobbyists may themselves be former policy-makers and have close relationships with current policy-makers; they know exactly the right buttons to push to achieve their ends. Researchers, unfortunately, have a great deal to learn from lobbyists, and perhaps the more that researchers see themselves as just another interest group – as part of a scientific lobby – the more realistic and grounded their strategies for policy influence may become.

3. *the institutional barriers hindering the appreciation of research evidence*. A key set of variables affecting how research evidence can influence policy arise from an institution's governance structures. This includes, for instance, the potentially cumbersome way new rules, policies, laws, regulations etc. are formulated, subject to legal review, passed through an electoral body (e.g. a parliament), and verified/rejected by any number of other bureaucracies (Brownson et al 2006). At each step in this process, a new element may be introduced, watering down or even rejecting some or all of the evidence informing the policy.

Of critical importance is gauging the organizational culture of research use for any institution – this is a major element affecting KT strategies (Hyder et al 2010). Every organization has its own culture – a pre-disposition, a history, a typical way of responding to research evidence. Some

organizations have a dedicated research unit, enroll their staff in capacity strengthening courses related to research, and regularly second their staff to research institutions. Others have much less developed structures and processes related to research evidence. They may lack a cadre of individuals able to interact with researchers or research evidence. A high research culture in organizations may create a routine openness towards syntheses of tailored, targeted research evidence to inform policy (Dobbins et al 2009). A low research culture may see policy-makers unable to distinguish between different types of data or information, balance research evidence with other sources of influence, and even display "a general lack of interest in or even aversion to evidence as 'too complicated' or 'too boring' so that, instead, what resonates with 'common sense' and 'gut feeling' is most convincing" (Jewell and Bero 2008). See *Diagram 1.13* below (adapted from Brownson et al 2006) for some of the factors affecting the receptivity of policy-makers to researchers.

Box 1.8: Is research working for you? A self-assessment tool

The Canadian Health Services Research Foundation (CHSRF) has developed a highly useful tool to assess an organization's research culture. It is a short, self-administered survey that provides a telling snapshot of the role research plays within the organization, with results suggesting, for instance, general means the organization might take to enhance research skills among managers, steps to becoming a partner (or a more-engaged partner) in research projects, and how the CHSRF might assist the organization in achieving those ends. Specifically, the tool allows organizations to assess:

- in what ways research is currently being used;
- where research evidence is located within the organization;
- the organizational capacity to access, assess, adapt and apply evidence. Can the organization find and obtain the research evidence it needs? Can the organization assess that evidence to ensure it is reliable, relevant and applicable? Can it adapt that evidence to its own needs? And can it apply that evidence with the requisite skills, structures, processes, and research culture?
- organizational ideas for enhancing its use of research; and
- ways to improve research use.

To receive a copy of the self-assessment tool, visit www.chsrf.ca.

"organizational culture is the pattern of basic shared assumptions – invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration – that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."

– Schein (1985)[10] –

Box 1.9: Who are the decision-makers?

Lomas (1997) divides decision-makers into three types:

- *legislative decision-makers*: "politicians, bureaucrats, various interest groups engaged in the highly visible process of public policy… The needs of this audience are mostly related to problem identification, policy ideas, the validity of previous or potential policy assumptions, explication of causal models and broad syntheses rather than specific studies – what might be termed health policy analysis.
- *administrative decision-makers*: "program managers, regional administrators, executives and board members of institutions, and other more locality-based decision-makers. For this audience the more

[10] cited in in Scott et al (2003).

applied health services research and sometimes clinical research is of use to make their less publicly scrutinized allocational and organizational decisions

- *clinical decision-makers*: "officials and panel members of specialty societies, third-party insurers, and other groups developing clinical guidelines and other 'directives' that have become the fledgling legislative framework for clinical practice… [they require] data on safety, clinical effectiveness, cost-effectiveness, and patient acceptance".

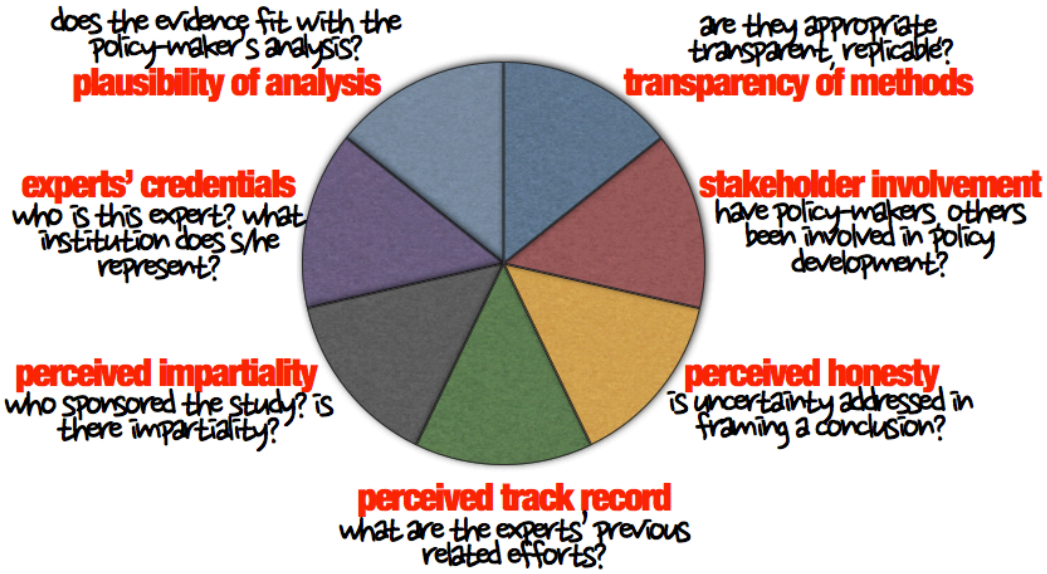

Diagram 1.13: Factors affecting the receptivity of policy-makers to health researchers

Fortunately, there are a host of facilitators to help balance out these barriers. In many ways, these represent the windows of opportunity for any KT strategy, and, as we'll see in *Lesson 4*, have prompted the development of innovative KT tools. The literature identifies the following major set of facilitators:

1. *strong personal relationships between researchers and policy-makers*. This is by far the most important facilitator – much more than, for instance, the quality of the evidence or the sophistication of a particular communications or synthesis tool (Innvaer et al 2002; Dobbins et al 2004). Relationships cultivate trust, and with trust comes credibility (e.g. policy-makers accepting as valid or important a researcher's opinion or advice), reliability (e.g. policy-makers contacting researchers for assistance in accessing or understanding the evidence) and partnering (e.g. in recognizing the value of the relationship, policy-makers wanting to deepen it by participating in a research project or creating new collaborations).

2. *aligning research evidence with the typical policy concerns of impact, effects on specific groups, and costs and benefits*. Where science has the (relative) luxury of seeking objective truth, policy-making must be far more pragmatic, a balancing act of compromise. It is highly visible, responsive to an election cycle, is built on history, must be quickly responsive to problems or opportunities, and must be able to justify its choices using variable (and sometimes hidden) criteria. In a world of great scarcity, these choices must, for better or worse, reflect some sort of cost-benefit analysis; in a world of great need, these choices must also reflect the anticipated

impact and effects on particular populations (e.g. nurses) and on vulnerable groups (e.g. children). "Concise statements about lives or money can infuse the political discussion with a tone of rationality, framing the trade-offs as technical and straightforward" (Jewell and Bero 2008). See *Diagram 1.14* below (adapted from Brownson et al 2006) for a visualization of this process.

"The use of knowledge is influenced by its relevance, legitimacy, and accessibility. Relevance refers to timeliness, salience, and actionability, all heavily context-dependent characteristics. Legitimacy refers to the credibility of the information. Accessibility refers to dimensions such as formatting and availability. The causal link between knowledge characteristics and use, however, is mediated by users' perceptions. Linking utilization to users' perceptions, rather than to the characteristics of knowledge per se, in turn allows us to understand how politics and ideology influence knowledge exchange."

– Contandriopoulos et al (2010) –

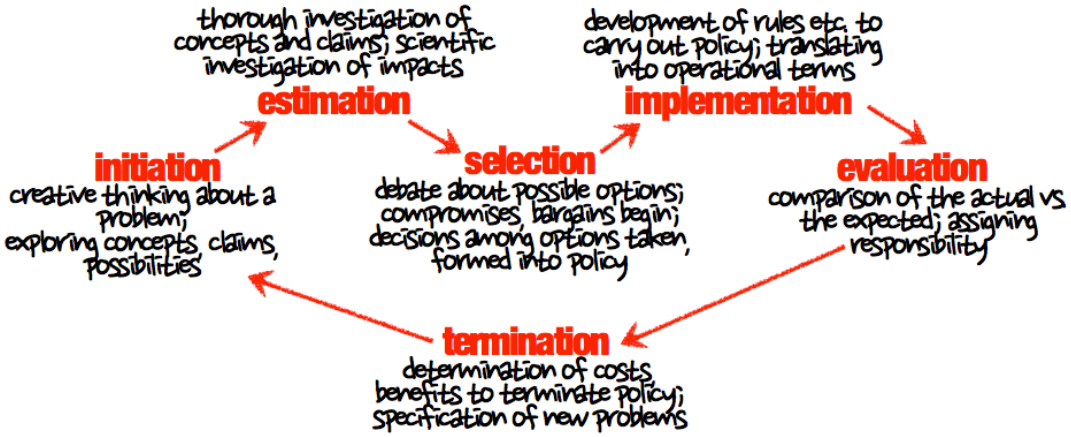

Diagram 1.14: The Decisions within the Policy Analysis Process

Connected to this is the idea of (re)framing policy issues to resonate with existing evidence. Noting the many problems with the evidence supply – including misalignment with policy needs – reframing the policy issue is one way to make the existing evidence appear more relevant and responsive (Jewell and Bero 2008). If the personal anecdote is something that resonates with policy-makers and their constituents, then evidence needs to be related anecdotally. What is the compelling *story* suggested by the science? (Brownson et al 2006).

Box 1.10: Direct, Selective, Enlightening Use of Evidence

According to a systematic review (Innvaer et al 2002), "the question of what is meant by the concept of the 'use' of evidence is the most commonly discussed theoretical issue in the literature on knowledge utilization. The most frequent categorization of different types of use in this review is direct ('instrumental' or 'engineering'), selective ('symbolic' or 'legitimating') and enlightening ('conceptual') use of evidence. Direct use of evidence refers to specific use of research results. It indicates that, if research results are relevant for a solution, the results should directly affect the solution without much adjustment. Enlightening use of evidence refers to research that helps to 'establish new goals and benchmarks of the attainable' and helps to 'enrich and deepen understanding of the complexity of problems and the unintended consequences of action'. Selective use is strategic, involving use 'to legitimate and sustain predetermined positions'."

3. *creating and presenting information that responds to policy-maker need, abilities, and timelines*. As we will discuss in *Lesson 4* below, there are an emerging set of KT tools that work to identify policy-maker need, and then respond in comprehensive, evidence-informed, yet highly usable ways. In a sense these tools ask policy-makers: how might evidence make your job easier? While recognizing the validity of other inputs, how might research help to clarify a problem or devise a solution? Given the well-known time and capacity restraints policy-makers operate under, how might research evidence be optimally packaged?

Thus far, putting tailored evidence at a policy-maker's service is proving a remarkably successful facilitator. Three approaches of particular note, and which we will discuss further in *Lesson 4*, include: creation of a knowledge translation platform (a national- or local-level entity dedicated to strengthening relationships among researchers and policy-makers, and leading the creation of KT strategies and tools); the policy brief and dialogue model (where researchers collaborate with policy-makers in identifying problems, options to solve the problems, and then convene dialogues to consider tacit knowledge, implementation arrangements, how research will serve the eventual policy, etc); and the Rapid Response Service (where researchers respond within hours or days to a specific policy-maker request with a concise review of the best-available evidence).

"targeted messaging is not sufficient for public health departments with low research culture. It may be that in organizations with low research culture, there are other barriers to using research evidence in decision-making, and that facilitating access to the research evidence does not overcome these challenges. It implies that other strategies may need to be employed to overcome barriers to evidence-informed decision-making, prior to implementing a targeted messaging strategy."

– Dobbins et al (2009) –

4. *capacity strengthening courses aimed at policy-makers*. This is another emerging area of great promise, and one that is attracting increased attention from funders. The CHSRF's Executive Training for Research Application (EXTRA) program is one example of a comprehensive course that aims to build skills among senior managers to routinely access, assess, adapt, and apply research evidence. This could also "help policy-makers and their aides not only identify relevant research but also distinguish research of high and low methodological quality" – acquiring, in essence, "good taste in evidence" (Jewell and Bero 2008).

Note to Instructors

Students should review and discuss the barriers and facilitators in turn. Some classes may have direct experience with these barriers and facilitators. Questions to spur discussion include:

- why might evidence be an insufficient input to any given policy process?
- in what ways do researchers and policy-makers misunderstand each other? What are the ramifications of these (mis)understandings?
- why is issue framing so important? Are there particular examples of lobbyists (e.g. representing private industry) who have successfully framed issues in a way that resonates with their own agendas?
- what is the difference among the three types of decision-makers? Why is it important to distinguish among them?
- which of the factors affecting the receptivity of policy-makers to health research resonates most strongly with you?

- how does an understanding of the facilitators improve KT strategies? For any particular issue, which "facilitator" should be actively pursued?

Lesson 3.2: Polarization: from evidence to advocacy

Suggested Readings:

- Fafard P and Murphy K. Knowledge Translation and Social Epidemiology: taking power, politics and values seriously. In O'Campo P and Dunn J, Eds. *Rethinking Social Epidemiology: Towards a Science of Change*. Springer: Dordrecht, Netherlands. 2012. <pdf>
- Atkins D, Siegel J and Slutsky J. Making policy when the evidence is in dispute. *Health Affairs*. 24:1. 2005. <pdf>
- Contandriopoulos D et al. Knowledge exchange processes in organizations and policy arenas: a narrative systematic review of the literature. *The Milbank Quarterly*. 88:4. 2010. <pdf>

Though only mentioned briefly in the above *Lesson*, a particularly tall barrier between research and policy arises when research evidence runs in opposition to the values of the political process. This is a significant phenomenon, and one that has not yet received sufficient attention in the KT literature. After all, given the complexity of most societal problems, there are dozens of possible policy responses. And, if the research community runs on science – reason, replicability – and the political community runs on values – ideologies, positions – then the scope for conflict between these two is high. When researchers advance evidence or scientific techniques that run counter to political ideologies or positions, we have entered a whole new world of KT.

There are "simple" problems that research evidence can address. For instance, when RCTs revealed in 2006 that male circumcision could be an effective tool against HIV acquisition among African men, the science seemed relatively straightforward. Yet the policy implications were not, with ensuing discussion centering around difficult issues such as the intervention's impact on vulnerable groups (e.g. women), the cost of delivering the intervention, the systemic abilities to deliver the intervention, etc.[11] Though the conclusion of the evidence was clear, its implications tapped into layers of great complexity. Many of the lingering social problems reflect this type of complexity, often reaching across disciplines and sectors (see, for instance, the social determinants of health), leaving ownership of the problem uncertain or partial.

The research evidence on these complex problems may be inconclusive, may be characterized by discrepancies, or may pose a fundamental challenge to certain interest groups or prevailing ideologies. In tobacco control research, for example, the research evidence is fairly conclusive: tobacco exacts an individual toll (on a smoker's health), an environmental toll (with its cultivation leading to deforestation, water contamination and desertification), a societal toll (via second-hand smoking or the child labour required in its cultivation), and a systemic toll (with the rising incidence of tobacco-related cancers, the cyclical poverty trap its farmers live in, etc.).[12] Yet the policy responses to this evidence base have been slow, contradictory, or mixed – reflecting above all the multi-sectoral nature of the issue (being a health issue as much as an economic and agricultural one) and the role of well-funded and highly persuasive interest groups

[11] For a good summary of this issue, see Wikipedia.

[12] For an overview of these issues in tobacco control in Africa, see Drope 2011.

(i.e. multi-national tobacco companies). Tobacco control is clearly an area of high polarization. The same can be said for obesity (reflecting similar schisms in terms of the multiple sectors involved and the role of powerful entities pursuing their own agenda) and, at least in the USA, stem-cell research. While researchers see endless possibilities in using stem cells to treat or even cure diseases like Parkinson's or Alzheimer's, policy-makers (particularly on the right end of the spectrum) see this as a direct threat to conservative (read: anti-abortion) values.[13]

As Fafard and Murphy (2011) observe, at the heart of issue polarization lie the ways in which any particular problem is framed. They cite the multiple ways of "framing illicit substance use, including addiction/pathology, criminality, mental illness and self-medication, and cultural deprivation etc. These different meaning frames will lead participants to different accounts of what matters in relation to substance use, what needs to be done, and who is responsible for doing it" (Fafard and Murphy 2011). They conclude that naming and framing a problem is one of the hallmarks of power; the game of politics arises through different stakeholders jockeying "to challenge, refute, and redefine" that original act of problem framing.

"We propose that many of the debates that appear to be intractable disputes over the evidence arise from conflicts in the other spheres that influence decisions, such as the values, preferences, and circumstances of individuals and the communities they represent... Differing values and resource constraints can produce conflict even when there is good evidence and the policy outcomes are clear. Conflict is most common, however, when evidence is weaker, outcomes are less certain, and parties disagree about the risks of acting in the face of uncertainty. Being explicit about these elements of decision-making is as important as an 'evidence-based' approach in ensuring that decisions are transparent and consistent with both the science and the values of individuals and society."

– Atkins, Siegel and Slutsky (2005) –

Issue polarization presents new and different challenges to the research community. As above, it tends to occur when values or other types of knowledge lie in opposition to the evidence, often revealing the power structure that lies behind all political systems. While this *Module* has focused thus far on the scientific side of KT, polarization reveals its political side – the murky, shifting, sometimes inscrutable series of forces that determine how a society responds to its needs. When opinions and preferences are shared, issue polarization is low; when the levels of consensus recede, issue polarization builds. As Contandriopoulos et al (2010) observe, "low issue polarization is a *sine qua non* condition for technically-focused debates, in which participants try to resolve differences through dialogue and 'rational' arguments based on shared world views. Conversely, high issue polarization leads to political debates and strategic-type processes in which dialogue is unlikely to bring consensus and participants try to impose their views on others". The authors conclude that "a polarized context is intrinsically incompatible with success in knowledge exchange interventions". In *Box 1.11* below we see some of the major determinants of issue polarization.

Box 1.11: Determinants of Issue Polarization

As Contandriopoulos et al (2010) explain, there are three main areas in which stakeholders may hold starkly different opinions, which, taken together, can indicate relative levels of polarization. These include:

[13] For more, see Nisbet, Brossard and Kroepsch 2003.

- *the problematization of the issue*. Is the given situation actually a problem? Is it more of a problem for Stakeholder X than Stakeholder Y?
- *the prioritization or relevance of the issue*. How does this problem compare to other problems? Is it more or less of a priority?
- *the criteria to assess possible solutions*. How do stakeholders distinguish among the competing solutions or interventions? Is one approach more favored than another?

For KT practitioners, an issue of high polarization requires a great deal of caution, attention and even delicacy, for several reasons. The first is simply that the issue may be so politically sensitive that research evidence simply has no realistic spot in the debate. An argument that rotates around values or preferences – around philosophy, ultimately – may not see research evidence as an equal or welcome contributor. The second begins with Fafard and Murphy's (2011) truth that "in conventional KT, when the value commitments in the research are aligned with those of the decision-maker we call it knowledge translation; when they do not so align we call it advocacy". Brownson et al (2006) flag that researchers may ultimately do themselves – and their evidence – a great disservice by participating in policy debates: "some argue that researchers who take a public stance on a given health policy issue may face real or perceived loss of objectivity that may adversely affect their research". As in *Diagram 1.15* below, they need to have an idea of where their stance sits on the so-called advocacy spectrum (Brownson et al 2006).

Diagram 1.15: The Advocacy Spectrum

Unfortunately, there are few strong conclusions we can draw here about the role of KT in addressing issues of high polarization. This is an area of KT research requiring significant investigation, particularly given the increasing prominence of systems-thinking approaches and the social determinants of health (i.e. recognizing the inherent complexity of any given health problem). Perhaps the first and best step is learning how to recognize when issues display characteristics of high polarization and then to proceed cautiously, understanding where evidence can and cannot make a contribution. No matter the perceived strength of the evidence or evidence base, the politics on these issues will always outweigh or outmaneuver the science.

Note to Instructors

Students should be asked to reflect on issue polarization, as it is a critical part of any KT approach. While the KT literature tends to emphasize positive interactions between researchers and policy-makers, in practice there are just as many negative ones. Questions for discussion include:

- in a situation of high issue polarization, what type of KT approach should researchers adopt?
- what are the major determinants of issue polarization for any particular issue? Do you have any specific examples to illuminate these?
- why is advocacy a delicate issue for researchers? What does this mean for KT strategies?

Lesson 4: KT Approaches and Tools

Lesson 4 Presentation:
A presentation highlighting the major aspects of *Lesson Four* is available in three different formats:

- as a <pdf> for printing. Can be used as a handout, but cannot be modified. Can also be used as a presentation in full-screen mode.
- as a <key> for presentations. This uses Apple's proprietary Keynote software; users of this may modify the presentation as desired.
- as a <ppt> for presentations. This uses Microsoft's proprietary PowerPoint software; users of this may modify the presentation as desired. Please note that the presentation was not created using ppt software; it looks best in pdf or key formats.

Note to Instructors

There is a tremendous amount of ground covered in this *Lesson*. Instructing it well will depend on a good understanding of the students. If the class is predominantly comprised of researchers, then Instructors may wish to focus on the arts of synthesis and dissemination. If the class has a more varied composition, Instructors may wish to focus on some of the KT innovations discussed here, with particular reference to the policy brief and dialogue model of *Lesson 4.3*. Instructors may wish to operate a mock policy dialogue based upon either a mock brief or one of the many policy briefs that can be found online.[14]

[14] Sources of evidence-informed policy briefs include the McMaster Health Forum and EVIPNet.

Lesson 4.1: Brokering and Synthesis

Suggested Readings:

- CHSRF. The Theory and Practice of Knowledge Brokering in Canada's Health System: a report based on a CHSRF national consultation and a literature review. 2003. <pdf>
- Jackson-Bowers E, Kalucy I, McIntyre E. Focus on Knowledge Brokering. *Primary Health Care Research & Information Service*. December 2006. <pdf>
- Ward V, House A, Hamer S. Knowledge Brokering: the missing link in the evidence to action chain? *Evid Policy*. 5:3. 2009. <pdf>
- Lavis J et al. Working Within and Beyond the Cochrane Collaboration to Make Systematic Reviews More Useful to Healthcare Managers and Policy Makers. *Healthcare Policy*. 1:2. 2006b. <pdf>
- Morestin F et al. Method for Synthesizing Knowledge about public policies. National Collaborating Centre for Healthy Public Policy. Institut national de santé publique du Québec. 2010. <pdf>
- Lomas J. Using Research to Inform Healthcare Managers' and Policy Makers' Questions: From Summative to Interpretive Synthesis. *Healthcare Policy*. 1:1. 2005. <pdf>
- Dobbins M et al. A randomized controlled trial evaluating the impact of knowledge translation and exchange strategies. *Implementation Science*. 4:61. 2009.<pdf>
- Ganann R, Ciliska D, Thomas H. Expediting systematic reviews: methods and implications of rapid reviews. *Implementation Science*. 5:56. 2010. <pdf>

The first three lessons in this *Module* have largely covered the theory of KT, or looked at some of the major dynamics from a forest-level perspective (e.g. general barriers and facilitators, the idealized research and policy processes, the levels of polarization). Now we move into a specific discussion of what works, for whom, and under what circumstances. For simplicity's sake, we have grouped specific KT approaches into two distinct – yet complementary approaches as shown in *Diagram 1.16* below: knowledge brokering and knowledge synthesis.

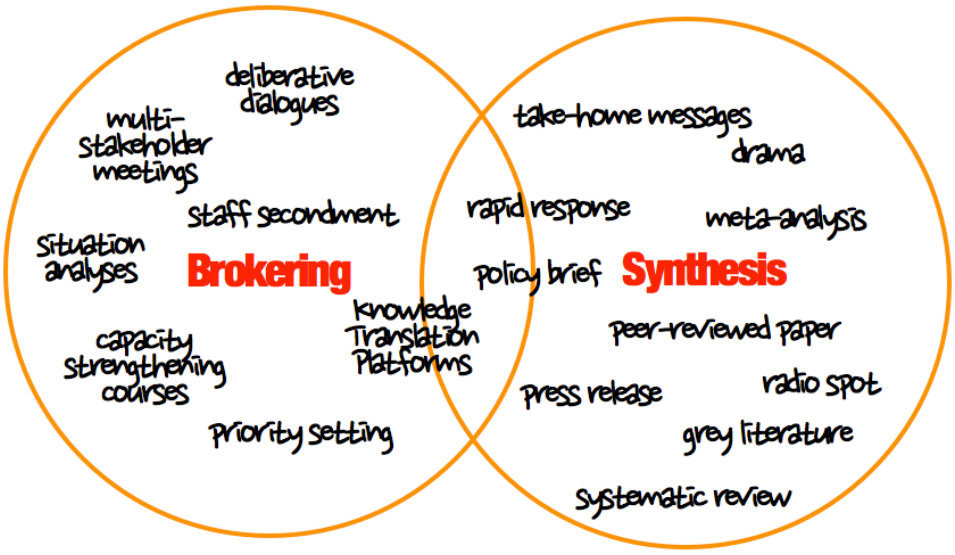

Diagram 1.16: Brokering and Synthesis activities

4.1.1 Knowledge Brokering

This is the loose term to describe the people-centred efforts to bring stakeholders together, to build relationships, to cement coalitions and alliances, to understand abilities and needs, to share

ideas and evidence, and to develop new skills and capacities. Knowledge brokering is about dialogue, relationships, and sharing; to the CHSRF (2003), knowledge brokering is "the human force" behind effective KT.

The act of brokering is typically led by a knowledge broker. In many instances, this is a senior, well-connected individual who tends to have experience in both the research and policy worlds. Harkening back to the four spheres diagram of KT in *Diagram 1.7*, the broker must have some faculty in knowledge production, from research methods to a broader understanding of the context of the research community; in knowledge management, including a sound idea of where and how to access research information, skills in critical appraisal, and an ability to convene people to deliberate over that evidence; in knowledge synthesis, with specific capacities in tailoring and targeting messages, and an understanding of how specific audiences absorb research evidence; and in knowledge utilization, at the very least having an understanding of how health policy is generally made, the conduits into particular policy-making organizations, and quite possibly the ability to build the capacities of research users to access, assess, adapt and apply evidence.

Brokers "may be respected and trusted opinion leaders or champions, academics, policy officers, or communications specialists. They may be employed part-time or full-time, by joint funding bodies, or as consultants" (Jackson-Bowers et al 2006). Importantly, the broker may also be an institution or a wider network, so long as the activities and processes of brokering serve as "a catalyst for systems change, establishing and nurturing connections between researchers and end users, and facilitating learning and exchange of knowledge" (Dobbins et al 2009).

"Brokers then are the links between different entities or individuals that otherwise would not have a relationship. Their core function is connecting people to share and exchange knowledge."
– CHSRF (2003) –

In practice, knowledge brokering could set up (and possibly facilitate):

- deliberative, multi-stakeholder meetings to discuss: the research agenda, research gaps and related policy concerns (e.g. through priority-setting exercises – see *Module 3*); research methodologies and their relative strengths in answering particular topics/questions; partnerships among researchers (e.g. discussing the creation of multi-disciplinary projects); partnerships between researchers and research-users (e.g. discussing the creation of iKT projects); capacity-building needs and possibilities; knowledge management needs and opportunities.
- off-the-record meetings or fora to discuss sensitive policy concerns (potentially using the *Chatham House Rules*, where statements may be discussed publicly but never attributed).
- situation analyses working to identify major stakeholders and the dynamics among them (see *Module 2*).
- deliberative, multi-stakeholder meetings to discuss a particular synthesis tool, and how it could be tailored and targeted (e.g. a systematic review, a policy brief, a two-page executive summary – see *Lesson 4.3* below).
- the development of a Knowledge Translation Platform (see *Lesson 4.2* below).
- the secondment of a broker to a specific organization (e.g. a government ministry) "to work as boundary spanners, identifying, selecting, and obtaining information from the

environment and efficiently transmitting it within the organization according to needs" (Contandriopoulos et al 2010).

4.1.2 Knowledge Synthesis

Synthesis is the area of KT that has commanded the lion's share of attention in recent years. It typically takes two different forms. First is the formal combination of different pieces of research evidence (e.g. in a systematic review, meta-analysis, policy brief or a rapid response) to provide a comprehensive and weighted overview of the evidence responding to a particular question. A peer-reviewed paper may also be thought of as a type of formal synthesis as it must distill in a very condensed format the goals, methods and findings of years of work. Second is the much less formal creation of communications documents or acts (i.e. they lack the same rigours and methods as formal syntheses). This could take the form of a press release, a one-page summary of take-home messages, or even a drama. These all work to situate a piece or pieces of research evidence within the broader context for an audience that may lack the time or abilities to interact with more formal syntheses.

Box 12: Message, Format, Medium

Throughout this Lesson, we discuss three major and connected steps that assist in the movement of research evidence from its creators to its intended audience(s):

- **the message**. This is the short, focused statement that presents a major concept or finding (e.g. "based on these results, we conclude that mental health services are severely underfunded at both the primary and secondary levels and urge national policy-makers to ..."). There may be different messages for different audiences (e.g. a message for the research community might signal the ways in which these findings may shape the future research agenda; a message for the policy community may indicate possible policy responses, etc.). There may be multiple messages for a single audience.
- **the format.** This is the way in which we package our messages. A systematic review, a policy brief, a press release – these are all different formats used to present key messages. Note that each format suggests a particular audience – a systematic review, for instance, typically (though not exclusively) targets the research community and thus should contain messages relevant to that community.
- **the medium.** Otherwise known as "the channel" this is what we use to distribute our formatted messages. The *Internet* is now arguably the most-used medium for disseminating information, but the research community also widely uses peer-reviewed journals as a means to convey their messages.

Evidence has shown that a single piece of research evidence rarely influences policy (Walley et al 2007; Bero et al 1998; McGrath et al 2009). Any research finding must be integrated with other findings, with other pieces of knowledge, and situated against the broader context. The value of syntheses lies in this act of combination, in identifying essential patterns, and in deciphering these according to the abilities of their intended audience (Straus, Tetroe and Graham 2009). Syntheses can be distinguished by the degree of tailoring and targeting: every synthesis is written (tailored) in a way that respects the abilities and needs of a designated (targeted) audience. A systematic review, for instance, is generally intended for the wider research community, and thus must be rigourous, transparent and replicable, spending as much detail on its methods as on its findings. A press release, on the other hand, aims to inform the media itself, which generally has more limited abilities in comprehending research, limited time in which to absorb that information, and relies upon an established press-release format to allow

it to effectively and rapidly filter information. A one-page summary of take-home messages might, for instance, fall somewhere in the middle of the first two tools here. It should reflect exactly what its audience needs to know about the research (the findings and their policy or implementation implications) and omit what it doesn't (necessarily) need to know (the methodology). Note that in *Lesson 4.4* we discuss in more detail the peer-reviewed paper, the press release and the one-page summary of take-home messages.

"In addition to the question "what works to reduce problem x?' managers and policy-makers appear to have at least two other types of questions: 1. What do we know about problem x? This is the general interest question of the decision-maker. Is it a problem? If so, what is causing it, how extensive is it, who is it affecting and what are some feasible options to address it? 2. What will be/now are the issues around doing action y? This is the context question, sometimes asked before embarking on action plans, sometimes after, to aid in finding remedies to the unforeseen. Who opposes, who supports and why? What else is affected, and how (side effects)? What else should we do in concert with this action?

– Lomas (2005) –

Another distinguishing feature of syntheses is their dissemination. Many KT practitioners rely on a passive strategy of dissemination – delivering a speech at a conference, publishing in a journal, posting material on a web site. These actions require others to pay attention, to read, to browse. While popular, and readily funded, these passive strategies often have a negligible impact: they tend not to influence policy debates or change anyone's position (Bero et al 1998). Active dissemination strategies are much more influential, and these begin before the synthesis itself. For instance, if policy-makers are involved in determining the question that a systematic review will answer, or if they demand a Rapid Response (as in *Lesson 4.2* below), then the synthesis becomes a response, an answer to a demand, and has a built-in audience waiting for it. The more that other stakeholders become invested in a synthesis, the more likely it is that they will act upon it.

"knowledge synthesis, or second-generation knowledge, represents the aggregation of existing knowledge. The process involves the application of explicit and reproducible methods to the identification, appraisal, and synthesis of studies or information relevant to specific questions. It is done to make sense of all the relevant knowledge. This knowledge often takes the form of systematic reviews, including meta-analysis and meta-synthesis...Third-generation knowledge consists of knowledge tools or products [that] present knowledge in clear, concise, and user-friendly formats and ideally to provide explicit recommendations with the intent of influencing what stakeholders do, and to meet the stakeholders' knowledge or informational needs, thereby facilitating the uptake and application of knowledge."

– Graham et al (2006) –

Effective syntheses depend upon an understanding of the prevailing context (for instance, understanding the other knowledge or policy inputs of relevance, or the history of policy-making on the issue) and must answer that fundamental "so what?" question. As Morestin et al (2010) state, "decision-makers are influenced by considerations that go beyond effectiveness, and which must be taken into account in the information they are provided: syntheses that present evidence in a manner that is divorced from the realities of policy implementation are of little use to decision-makers".

Lesson 4.2: The Knowledge Translation Platform

Suggested Reading:

- Kasonde J and Campbell S. Creating a Knowledge Translation Platform: Nine Lessons from the Zambia Forum for Health Research. *Health Research Policy and Systems*. 10:31. 2012. <pdf>
- Lavis J et al. Assessing country-level efforts to link research to action. *Bulletin of the World Health Organization*. 84, 2006. <pdf>
- Cheung A et al. Climate for evidence-informed health systems: A print media analysis in 44 low- and middle-income countries that host knowledge-translation platforms. Health Research Policy and Systems. 2011. 9:7. <pdf>
- Lavis J et al. Evidence-informed health policy: 1. Synthesis of findings from a multi-method study of organizations that support the use of research evidence. Implementation Science. 3:53, 2008. <pdf>

Suggested Viewing:

From Mexico to Mali: evidence to policy in Africa. <video> "Shot in various locales with researchers, knowledge brokers, and senior policy-makers, this video looks at three different knowledge translation initiatives/platforms attempting to narrow the divide between evidence and policy. Also available with French subtitles and text."

The Knowledge Translation Platform (KTP) is a relatively new phenomenon embracing – institutionalizing – the acts of brokering and synthesis. A KTP can take many different organizational forms: it might be a national-level NGO or parastatal attached to the Ministry of Health, or it may be a network without a physical presence but with contributors from all over the country or globe. It may have leadership in the form of a knowledge broker, or it may be decentralized and have many different issue-specific leaders. Regardless of its organizational shape, a KTP at root designs and leads different KT strategies, in brokering (providing a neutral space for different stakeholders to convene and engage in deliberative dialogues), in synthesis (tailoring and targeting demand-driven documents), and in capacity strengthening (of researchers and other stakeholders in, for instance, the arts of synthesis, in KT more generally, in particular research methods). A KTP must either host or have access to a strong local evidence base, have links with like-minded organizations in the country, region and across the globe, and maintain a strong visibility (e.g. through routine communications efforts) (Kasonde and Campbell 2012).

Where the KTP locates itself is a critical variable in its organization and operations – whether as part of government, a parastatal, a university, or as a member of civil society. Each of these positions comes with a set of advantages and drawbacks. For instance, as a civil society organization, a KTP may rely upon its neutrality and independence to successfully broker among different stakeholders; yet as an independent entity it may suffer from an uncertain or shifting funding base. As part of government (e.g. a unit within the Ministry of Health), a KTP may capitalize upon its proximity to the policy-making process to stoke demand for evidence or to strengthen the capacity of policy–makers to access, assess, adapt and apply research evidence; yet its proximity may compromise the neutrality essential to science in general and to KT in particular.

– Kasonde and Campbell 2012 –

A KTP, in general, nurtures an environment that supports both research use in policy-making and policy needs in research design. To that end, it may offer some or all of the following types of activities:

- brokering and facilitating meetings among multiple stakeholders (e.g. priority-setting exercises; policy dialogues) to discover and exploit overlaps at the research-policy interface;
- providing leadership for the research/KT community (e.g. bringing together disparate researchers to create a synthesis on a particular issue or for a particular opportunity);
- identifying, describing, compiling an inventory of in-country researchers, institutions, agencies and funders (answering: who's who? who's doing what? who's funding what?);
- synthesizing and packaging research (optimally in response to stated policy needs);
- strengthening the capacity of researchers (e.g. to understand the policy process), research-users (e.g. sensitizing the media to particular research findings), and policy-makers (e.g. to increase their demand for evidence); and
- leading advocacy efforts to disseminate and support the use of research evidence.

4.2.1 Rapid Response Service

A key new feature that several different African KTPs have developed is the Rapid Response Service (RRS).[15] The RRS encourages policy-makers to ask a question that research evidence might answer, and then turns around in a matter of hours or days with an easy-to-read synthesis of the best-available research evidence. These Responses address key questions related to arrangements for organizing, financing and governing health systems, and strategies for implementing change. And best of all, they respond to the unique time horizons of policy-makers – presented to them in hours or days (Ganann, Ciliska, Thomas 2010).

The evidence within these Responses depends upon the original policy-maker request. Systematic reviews are the preferred evidential base for any Response, with priority also given to local research evidence. As shown in *Diagram 1.17* below, upon receiving a request, the RRS clarifies that request, then accesses, appraises and contextualizes the evidence before writing up a Response for peer-review, then disseminating the final Response back to policy-makers. Given the similarity of disease burden and health system capabilities in many developing countries, it is hoped that a database of these Responses will create a global pool that all RRSes will be able to draw upon.

[15] This is sometimes and interchangeably called a Rapid Response Unit (RRU).

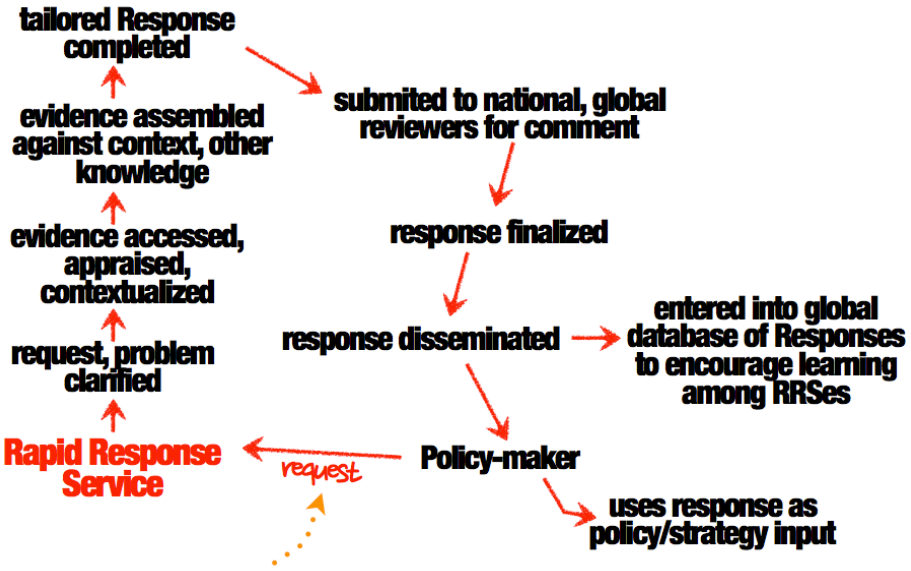

Diagram 1.17: The Stages of an RRS

Responses have a variety of uses. Their speed and comprehensiveness have seen them used as background documents informing strategic government retreats; as the basis for press releases or other responses to the media; and as support for any ongoing decision or policy process. They can assist policy-makers in understanding the possible impacts of any decision, the general (local, national, global) climate for any policy decision – and they can assist researchers themselves in becoming better acquainted with the policy process, and the role that research evidence can (and cannot) play, and how it can be optimally tailored to fit in.

Lesson 4.3: The Policy Brief and Dialogue Process

Suggested Readings

- Lavis JN et al. SUPPORT Tools for evidence-informed health Policymaking (STP) 13: Preparing and using policy briefs to support evidence-informed policymaking. *Health Research Policy and Systems*. 2009, 7(Suppl 1):S13. <pdf>
- Lavis JN et al. SUPPORT Tools for evidence-informed health Policymaking (STP) 14: Organising and using policy dialogues to support evidence-informed policymaking. H*ealth Research Policy and Systems*. 2009, 7(Suppl 1):S14. <pdf>
- The SURE Collaboration. SURE Guides for preparing and using evidence-based policy briefs. Version 2.0. The SURE Collaboration, 2011. *See Table below for relevant pdfs*.

SURE Guides: About <pdf>	Introduction <pdf>	1. Getting Started <pdf>
2. Prioritizing topics for policy briefs <pdf>	3. Clarifying the problem <pdf>	4. Deciding and describing options <pdf>
5. Identifying, addressing implementation barriers <pdf>	6. Clarifying uncertainties and M&E <pdf>	7. Running policy dialogues <pdf>

8. Informing and engaging stakeholders <pdf>

The policy brief and dialogue model is the current darling of the KT world, and for good reason: this approach involves equal acts of brokering and synthesis, and, like the Rapid Response model above, begins with the essential ingredient of policy-maker demand. This model asks policy-makers: *what research evidence might assist you in creating, fine-tuning or modifying a policy?* In other words: *how can research evidence help you do your job better?* An evidence-informed policy brief summarizes the best-available evidence around viable policy options responding to governance, delivery, financing and implementation considerations. This brief is then the substance of a deliberative policy dialogue, where an inclusive group of stakeholders use deliberative techniques to discuss, debate and revise the policy brief, adding in particular their tacit knowledge and expert opinion – two key variables – to the policy development process.[16]

The policy brief and dialogue process is emerging as a cornerstone in the evidence-informed policy movement. The real advantage of this process is its ability to take a simple question or request all the way through the policy-development and even implementation process. While research evidence is the life-blood of the process, the model values the role of other inputs in policy development, including organizational culture, tacit knowledge, and expert opinion. Where the policy brief presents the evidence, the policy dialogue integrates that evidence with these other factors. While researcher skills in creating and tailoring the brief are critical, the process depends on the active participation of policy-makers at several different points in the process – from identifying a topic for the brief, to dynamic involvement in the deliberative dialogue, to formulating a policy that flows out from the brief and dialogue.

A simplified version of this process is in *Diagram 1.18* below, which provides the basis for our ensuing discussion. While we will not explore here the many details of how to actually lead a policy brief and dialogue exercise, we will walk through the major steps.

[16] The structure of this section, and much of the content, is derived from the SURE Guides (SURE is an EC-supported project; its acronym stands for Supporting the Use of Research Evidence to strengthen African health systems). Quotations from these Guides are reproduced here with permission. For more information, please see: http://www.who.int/evidence/assessing/sure/en/index.html.

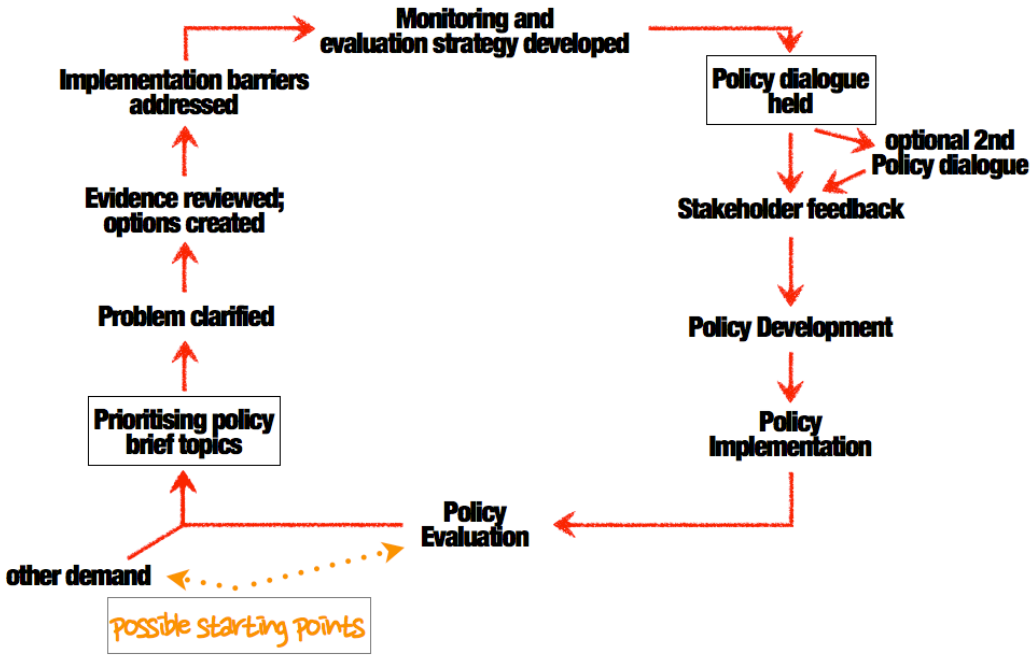

Diagram 1.18: Steps in the Policy Brief/Dialogue Process

4.3.1 Prioritising policy brief topics

In some instances, there may be a clear and obvious topic for the brief/dialogue model – for instance, dramatic new scientific findings that have immediate policy implications. There may be a direct request from a high government official on a specific topic. In other cases, a prioritization process may need to be used to identify the topics suited for the brief/dialogue treatment (using many of the techniques described in *Module 3*). Some identified topics may not be ideal – where, for instance, the evidence base is missing, weak or unresolved. Others may be too large and/or complex for a policy brief, which may result in them being disaggregated into more manageable sizes.

4.3.2 Clarifying the problem

A key aspect of the policy brief process is understanding exactly what the problem is. In some cases this may be unnecessary, but given the role that evidence will play in illuminating the problem – and recognizing the diversity of evidence on any given issue – the problem must be as precise as possible. Clarifying the problem is thus an essential step: if our goal is for the brief and dialogue to influence policy we must be certain that the problem itself warrants this kind of attention. "Clarifying how the problem came to attention, how it has been framed, the size of the problem, and the cause of the problem, can help to ensure that the problem warrants attention and that appropriate options for addressing the problem are considered" (SURE Guides, 2011). Importantly, the act of clarification must be done systematically and even iteratively to ensure that the problem is in fact important to multiple stakeholders; getting more information can be key in illuminating the scope and reach of the problem. Dialogue and discussions – whether face-to-face or virtual – with stakeholders and key informants is one useful way of ensuring that the problem is as precise as possible, and resonates among them.

To clarify the problem, brief/dialogue organizers can ask: "what is the problem and how did it come to attention? How has the problem been framed (described) and what are the consequences of this framing? How big is the problem? What is the cause of the problem?

"Clarifying the problem is often an iterative process. The best way to present a problem may vary: sometimes it may be helpful to include a section in the policy brief that addresses how the problem has been framed (described) after the background section, or it may be better to place this at the end of the description of the problem." (SURE Guides, 2011)

4.3.3 Determining policy options

Following problem clarification, the next step is to arrive at several different policy options – viable means for addressing or solving that problem. There are four major components of this step:

- first, organizers need to determine three or four policy options the brief can present and discuss. "A number of strategies can be used to identify potential policy options, including: a consideration of different delivery, financial and governance arrangements that address the problem or its underlying causes; using frameworks developed to address the specific problem; considering interventions described in systematic reviews; considering ways in which other jurisdictions (e.g. other countries, other districts) have addressed the problem; consulting key informants; and brainstorming among members of the organizing group. For some issues, a broad range of options may need to be narrowed down by appraising each on the basis of evidence and acceptability" (SURE Guides, 2011).
- second, organizers need to illustrate what the research evidence shows about the impact of each different policy option. This is typically done via systematic reviews (with, for instance, Health Systems Evidence, PubMed and the Cochrane Library all good resources). Importantly, "there will need to be some decisions about criteria used to guide judgements around which systematic reviews are relevant, and how much confidence to place in each review" (SURE Guides, 2011).
- third, organizers need to indicate their confidence on the likely impacts for each option. "Decision-makers are influenced not only by the best estimates of the expected impact, but also by their confidence in those estimates. What is the quality of the evidence?" (SURE Guides, 2011) GRADE and AMSTAR are two tools that help to make judgements about the quality of evidence from systematic reviews. "Factors, for instance, in the GRADE framework that increase the quality of evidence include: large estimates of effect; a dose-response gradient; and plausible confounding that would increase confidence in an estimate" (SURE Guides, 2011).
- fourth, organizers need to decide how this impact information for each option should be summarized and presented. "A 'balance sheet' or 'summary of findings table' is a simple but powerful way to present the advantages and disadvantages of the different policy options considered. Presenting these tables together with brief texts that qualitatively summarize the key messages of the brief aids understanding of the potential impacts of the options. The overall aim of a summary of findings is to help decision-makers develop an accurate understanding of the important consequences of the options being compared" (SURE Guides, 2011).

As decision-makers tend to approach any policy option with cost questions or considerations up front, each "individual option should also give some consideration to the costs and savings associated with different options – with costs including both the costs of actual resource use (e.g. the time of health workers) and the monetary value (or prices) attached to those resources (e.g. wages and fees)... Policy brief authors should also consider potential impacts on equity – done, for instance, by examining the findings of a review and considering the possible differential effects of interventions on disadvantaged populations" (SURE Guides, 2011).

4.3.4 Addressing implementation barriers

Following this careful and systematic consideration of policy options, the policy brief authors need to discuss all possible barriers for implementing each option, and devise some strategies to address those barriers. This entails asking four key questions:

- *what barriers exist to implementing each policy option?* "This can be answered informally (e.g. through brainstorming, contacting key informants, etc.), by reviewing the literature for relevant case studies or qualitative studies, or through structured frameworks (e.g. SURE has one). Efforts should be made to find local evidence on these barriers whenever it is available" (SURE Guides, 2011).
- *what strategies are available to address identified barriers?* As with many topics in this *Module*, this can be done through brainstorming techniques to generate as many different solutions as possible. "Subsequent deliberation on the proposed solutions and their merits can help to focus attention (and refinements) on those that are most promising. Additionally, theories can be used to inform the selection of interventions, but this method also relies to a large extent on logic and judgement" (SURE Guides, 2011).
- *what is known about the effects of relevant implementation strategies?* Answering this question "entails finding, selecting, and assessing the reliability of systematic reviews. Based on the evidence from these, judgements are then made about the effects of implementation strategies and about how much confidence to place in those estimates" (SURE Guides, 2011).
- *how should information about these barriers – and the likely effects of strategies to address them – be summarized and presented?* As above, a balance sheet or summary of findings table can illustrate "the evidence and judgements used to characterize the barriers; a concise summary of the advantages and disadvantages (including costs) of the implementation strategies; the quality of the evidence, including any gaps and any other limitations" (SURE Guides, 2011).

4.3.5 Monitoring and Evaluation

The options within every policy brief come with a degree of uncertainty. In most cases, the proposed options have not been implemented in that context before and thus we cannot state for certain how an option will play out. The intangibles of context and, for instance, the actions of street-level bureaucrats actually implementing policy, are significant variables we cannot discount no matter how strong an apparent option is. Thus developing a monitoring and evaluation strategy is an important step in the brief.

"While some options may be promising, they may require large investments or may be associated with important risks of adverse effects. Therefore it may be prudent to undertake an evaluation before fully implementing a policy. This is especially useful when considering a

policy whose effects are based on theories, surrogate outcomes, limited observational studies, or inadequate randomised impact evaluations.

"The extent to which monitoring and/or evaluation is necessary and what exactly should be monitored depends on how much uncertainty there is regarding the inputs, activities, outputs and impacts of an option. The extent to which specific types of uncertainty should be described in a policy brief will depend on a few factors, including the: degree of uncertainty; potential for monitoring and/or evaluation to reduce important uncertainties; the feasibility of monitoring and/or evaluation; and the ability and preparedness to act on the results of monitoring and/or evaluation" (SURE Guides, 2011).

4.3.6 Policy Dialogues

As stated in the introduction to this section, if the policy brief represents the evidence, the dialogue represents the moment for other policy inputs to balance that evidence. This does not mean watering down the evidence; rather it is a recognition that all policy systems make decisions based on multiple factors. If evidence can be a central factor in achieving that policy change, then the brief will have played its role.

The dialogue is the moment in the policy development process when stakeholders add value and context to the brief. This kind of structured discussion can "help to clarify the problem and solutions and to develop a shared understanding among stakeholders; contribute to the development and implementation of effective policies; and contribute to good governance and democracy" (SURE Guides, 2011). In advance of any dialogue, organizers need to consider the following questions:

- *what are the dialogue's objectives?* These may be multiple objectives; each dialogue may have very different objectives. These objectives "may differ depending on the timing of the dialogue and the policy development process. Similarly, the different ways in which dialogues can contribute to the development and implementation of an evidence-informed policy may vary. The extent to which the aim of the dialogue is to reach a consensus may vary; and the ways in which the policy dialogue feeds into the policy development process may also differ" (SURE Guides, 2011).
- *when should dialogues occur in the policy-development process?* Dialogues can occur at different times, and at multiple times during the process: "if they occur early in the process, the objectives may focus primarily on clarifying and framing the problem, and less on the descriptions of the options and their implementation. Alternatively, if they occur later in the process they may focus primarily on the advantages and disadvantages of the options and implementation strategies being considered" (SURE Guides, 2011).
- *who should participate in the dialogue?* As discussed in the previous Section (and in *Module 2's* discussion of Situation Analysis), there are many different ways for mapping and analyzing stakeholders to determine who ought to participate. A policy dialogue should include people with relevant expertise and perspectives, likely a balance of policy-makers, managers from districts or regions, civil society groups, and researchers. Health professionals and consumers may also be relevant to some dialogues.
- *how should the dialogue be organized?* There are many variables to keep in mind when organizing a dialogue. "Consideration should be given to: the type of meeting chosen and how the discussion will be organized and managed in advance of the dialogue; the use of

pre-circulated materials; setting the agenda; planning who will facilitate or chair the dialogue; and deciding the extent to which the dialogue will be open or closed, among other variables. Structured, facilitated face-to-face meetings are the ideal format, though virtual or telephone dialogues may also play a role. Generally, the agenda should include deliberations about the problem, about each option for addressing the problem, about implementation considerations, and about the next steps to be taken" (SURE Guides, 2011). This should also include discussion of other inputs relevant to the policy development process, and how these might (or might not) balance with the research evidence.
- *what needs to be done after the dialogue?* To follow-up on any dialogue, organizers could do various things, such as "preparing and disseminating a report, disseminating the policy brief itself, having further stakeholder consultation, evaluating the dialogue, and following-up on any of the identified next step" (SURE Guides, 2011).

Other key considerations for organizing and running a dialogue include:
- "Because of the complexity of the issues and objectives addressed in most policy dialogues, discussions focused around specific issues are likely to be helpful (e.g. the problem, each option, and the implementation considerations), but the discussions themselves should not be structured. Any structure that is chosen should be designed to maximize the contributions of all participants and the interactions between them."
- "It is desirable for participants to have read a policy brief in advance of the meeting and they should be informed that this is expected."
- "The agenda should allow as much time as possible for interactive discussions and a minimum amount of time for presentations."
- "A skilled, knowledgeable and neutral chair or facilitator is needed to ensure that the available time is used effectively and that the policy dialogue is well run. The will need the skills and experience to: keep the discussions focused on the relevant issues; ensure that all participants contribute; try to explore what underlies important assumptions that appear not to have a clear explanation; and constructively challenge possible misinterpretations of the evidence or the viewpoints of others" (SURE Guides, 2011).

Note to Instructors

At this point, Instructors may wish to stage a mock dialogue. This can be run in many different ways, but for didactic purposes, the Instructor may wish to:
- find a policy brief relevant to the class (i.e. one that will spark discussion), potentially using the sources cited at the beginning of this *Lesson*.
- assign students roles as different stakeholders. They may represent: the research community, civil society, practitioners, the policy community, and so on. Another layer would be giving each stakeholder a particular agenda vis-à-vis the policy brief under discussion.
- discuss whether to implement the *Chatham House Rules*.
- spend time deliberating over the problem that the brief addresses. Do all stakeholders agree with the nature and magnitude of the problem? With how the problem has been framed?
- spend time deliberating over the presented policy options. There may be three mutually exclusive options, a choice between alternatives, or a description of a comprehensive

approach (i.e. three staged options). The discussion may be one of emphases, or of the order in which the options could be pursued.
- spend time deliberating on the implementation considerations. What barriers are likely to be encountered? How to overcome them?
- spend time discussing the next steps for different stakeholders, including those who will author the next version of the brief.

Note that the Instructor should serve as a facilitator for this dialogue, ensuring that all stakeholders remain on the same page, that the room is not dominated by the loudest, and that major issues or contentions can be untangled, if not resolved. Note as well that consensus on the policy brief is not necessarily the intended goal of the dialogue; its real purpose is to add tacit knowledge to the explicit as sketched out in the brief, which in turn will lead to a more comprehensive and acceptable brief with realistic and implementable options.

4.3.7 Stakeholder feedback

Engaging stakeholders after the policy dialogue can help to add further tacit knowledge to the policy brief, and further contribute to the development and implementation of appropriate, evidence-informed policies. This includes attention to:

- "the stakeholder groups that should be informed and engaged in the preparation and use of a policy brief. Can anything change as a result of adding certain stakeholders? Is there a demand among these stakeholder groups to be informed and engaged?
- the contextual factors that might affect efforts to engage stakeholders" (SURE Guides, 2011).

Ways of informing stakeholders include disseminating the policy brief, updating a website, press releases, conference presentations and so on. Their feedback can be achieved via workshops, working groups, or another policy dialogue.

4.3.8 Conclusions

There are several more steps in the process – namely policy development, implementation and evaluation, but these elements won't be covered here as they move well beyond this *Module's* mandate. Nonetheless, these are obviously key areas, and KT practitioners may, through the policy brief/dialogue process, discover different ways they can continue participating in this development-implementation-evaluation phase.

In summary, the policy brief and dialogue model is still a relatively new innovation, with a great deal of experimentation and lessons still to come. KT research must increasingly evaluate attempts at the policy brief/dialogue model to get a fully rounded picture of how it works, for whom, and in which circumstances. However, as a method to infuse policy-making with evidence, and to involve multiple stakeholder groups, it is without a doubt a pre-eminent KT tool. It is an ideal melding of the policy and research processes, yet to be done well it requires significant funding, visionary leadership, and commitment from a range of different actors.

Lesson 4.4: End-of-Grant Dissemination Tools

Suggested Readings

- Lange P. How to write a scientific paper for a peer-reviewed journal. Chapter 5 in Babor TF, Stenius K, Savva S, Eds. *Publishing Addiction Science: A guide for the perplexed*. National Clearinghouse for Alcohol and Drug Information. 2007. <pdf>
- Canadian Institutes of Health Research. Guide to Knowledge Translation Planning at CIHR: Integrated and End-of-Grant Approaches. 2012. <pdf>
- Bowler S. Preparing articles for publication in peer-reviewed journals. No year. <pdf>
- Lavis JN et al. Working Within and Beyond the Cochrane Collaboration to Make Systematic Reviews More Useful to Healthcare Managers and Policy Makers. *Healthcare Policy*. 1:2. 2006. <pdf>
- Rosenbaum SE et al. Evidence summaries tailored to health policy-makers in low- and middle-income countries. *Bulletin of the World Health Organization*. 89. 2011. <pdf>
- Canadian Health Services Research Foundation. Reader-Friendly Writing – 1:3:25. 2001. <pdf>

Overview

As discussed in *Lesson 1.2*, end-of-grant KT typically refers to the dissemination of research results following the completion of a research project. These dissemination tools discuss and describe the research project, and the particular implications of the research findings. Most research grants require this kind of output to "finalize" the research project. For many, this signals the end of their work. Upon publication, they view their research as complete.

As many of the preceding lessons have preached, however, publication does not and should not signal the completion of the research process. In many ways, publication can become a moment of overlap with the policy process, and the more attuned a researcher is to this – the more the researcher can tailor and target the research findings to particular policy audiences – the greater the chance of achieving policy influence.

Note however that these end-of-grant tools are very much the weaker sister in KT. They represent a one-way, researcher-controlled flow of evidence – from source to recipient, like water moving down a river. While this can certainly be an important part of the research process, when it comes to the uptake of research evidence, dissemination activities on their own are relatively ineffective (Dobbins et al 2009). The passive communication of research evidence leads to negligible levels of policy influence. It doesn't change or challenge the status quo, and if anything just contributes more data to what seems an already unmanageable information overload.[17] However, publication remains an event of great prominence in research circles, and thus a discussion of publication is warranted here.

By far the most desired type of publication for academics and researchers is the peer-reviewed paper. The traditional research process demands, funds, and expects this type of dissemination for most research projects, and rewards those who regularly publish with better career opportunities and increased funding. From a KT perspective, however, there are some fundamental problems with this type of activity. Given the weak link between publication and policy influence, can these two goals mutually exist? How can we modify the research process so

[17] It's been estimated that for healthcare professionals to stay apprised of all articles relevant to their field, they would need to read around 20 articles per day (Shea et al 2007).

that influence – be it of policy or of implementation or behaviour change – is equally rewarded? And if we see influence as a key outcome of our research, *how can we modify existing end-of-grant KT approaches to increase their chances of influencing key stakeholders?*

To answer this question, we have divided this *Lesson* into three, with each providing some ideas and thoughts for modifying existing tools into approaches that are more dynamic, connected, and ultimately influential. Unlike the integrated KT approach in *Lessons 4.2* and *4.3* above, the following dissemination tools hope to tweak or to "get more mileage" out of tools that are already familiar to most, and already widely used. First we will discuss the peer-reviewed paper, then a press release, and then a one-page summary of take-home messages, asking throughout: *how can we improve each to increase their influence and relevance?*

4.4.1 The Peer-Reviewed Paper

The peer-reviewed paper is a core feature of the research process. It has a strong role to play in documenting and advancing scientific inquiry, serves to connect the research community and share new findings, and can serve as a marker indicating individual or institutional achievement. Without disputing these strengths, we argue that the peer-reviewed paper – as a KT tool – requires some updating to convert itself into a truly robust tool connecting the worlds of research and policy. Below are a series of suggestions that might ultimately serve to make the peer-reviewed paper more relevant to policy and uptake.

4.4.1.1 Inviting co-authorship

Perhaps one of the most straightforward ways to improve the policy relevance of any peer-reviewed paper is to open up its authorship. As noted in previous *Lessons*, evidence has a much greater chance of influencing policy if policy-makers are involved in its creation; and thus if policy-makers can be involved – as a second author, for instance – in writing a paper, they have much more invested in its findings.[18] While operating in a different environment than a research institution, policy-makers may also receive institutional rewards for publication. Aside from creating this type of useful alliance (which can lead to trust and respect – critical KT ingredients), involving policy-makers in writing a paper can add an operational element to the work. This might describe precise policy pathways the findings might need to take to become influential, or indicate what else might need to complement this evidence to achieve greater policy relevance.

4.4.1.2 Improving the Structure of the Paper

Leaving aside any scientific merits or demerits for a moment, many articles submitted to a peer-reviewed journal are poorly written. They are riddled with spelling errors and logical inconsistencies, omit required sections, ignore or over-include jargon, are targeted at the wrong journal, do not respect a journal's stated style guide, and so on. A poorly written article will not get published, and an unpublished article doesn't get read. And an unread article, it goes without saying, has no influence at all.

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[18] Note that many journals have strict authorship requirements (e.g. they must have been involved in the actual writing of the paper as opposed to editing it). Most journals require statements specifying how each author contributed to the paper.

Conversely, a well-written article that aligns with the style of its intended journal stands a much better chance of publication. Publication may then see the article achieving a greater scientific impact, and standing a much better chance of being noticed by policy-makers or other research stakeholders. Publishing an article in *the Lancet*, for instance, would likely have immediate ramifications in most LMICs. Validation of findings at this level in many cases forces policy-makers to pay attention.

The following is a summarized list of elements researchers might follow to improve the quality of their paper:[19]

- review the style guide for the intended journal. This is an essential step. Journals require that all articles meet their *own* standards of style – not a researcher's. They provide parameters and technical requirements for all submissions (from the types of articles they publish to the required styles of citations, tables, figures etc.). It is crucial that researchers follow these instructions – and better yet, doing this is as simple as clicking on a journal's web site and taking the time to read, digest and amend.
- ensure the literature review section of the paper is comprehensive. As lit reviews tend to be among the first sections in a paper (often in the background section), this is an easy place for reviewers to gauge whether a researcher is on top of the field. This section should show that a researcher is not only aware of all related publications, but is able to synthesize their essence. Lange (2007) recommends authors have all literature on hand needed to establish a theory or hypothesis; to describe challenges, refinements etc. for each measure; and to support the sections on Methods, Procedures (if applicable) and Results.
- submit an abstract – perhaps one-page at most – to a potential journal to gauge whether the article is a good fit. This saves time for all involved.
- highlight the originality of the paper – what it adds to the understanding on a particular issue.
- find a title that is concise, original, appealing, yet fits with the other titles the targeted journal typically publishes.
- writing is rewriting. In other words, a finished sentence or paper may go through ten or twenty different versions before the publishable one is fully refined and complete.

Moreover, authors may submit to a journal they believe gives their work a greater chance of policy influence. Along these lines, authors should pay particular attention to:

- the journal's readership and its geographic circulation. Some journals are without a doubt global in nature (e.g. *The Lancet, Bulletin of the World Health Organization*), but some are regionally- or even nationally-oriented. Assuming high circulation numbers (i.e. number of individuals who subscribe to or read every issue), publication in a local journal may be an ideal option for achieving local influence. Alternatively, there may be journals with lower circulation numbers but that have a far-reaching credibility among policy-makers. Obviously, the more we know about the way in which a key audience absorbs information, the better we can actually use those channels.
- the journal's impact factor. This is "is a measure reflecting the average number of citations to recent articles published in the journal. It is frequently used as a proxy for the relative

[19] For more details on writing for peer-review, see Lange (2007) and Bowler (no year).

importance of a journal within its field, with journals with higher impact factors deemed to be more important than those with lower ones" (Wikipedia, 2012).
- access to the journal. The open-access movement has gained tremendous momentum in recent years, whereby authors or funders cover the costs of production[20] to ensure that the science itself is free and all peer-reviewed papers are freely available. While some high-quality journals remain behind so-called "pay walls," researchers should question whether their findings are indeed served by such a wall (with particular relevance here to the findings' potential influence). Given the plethora of open-access journals, and the ensuing widespread availability of information – which can only enhance the influence of research findings – researchers (and funders) may consider this criterion of primary importance, and *only* publish in open-access journals.

4.4.1.3 A source for other outputs

Much as the Rapid Responses discussed in *Lesson 4.2* above can be the basis for many different types of outputs (e.g. a policy dialogue, a background document for a strategic planning retreat), researchers need to recognize that while the peer-reviewed paper may represent the conclusion of the process for them, it can also signal the beginning of their dissemination work. The findings, even the phrasings, in a peer-reviewed paper can be repackaged in many different ways. They can form the skeleton of a press release or other tool designed to interact with the media. They can be shortened into a one-page summary of take-home messages and delivered to policy-makers. They can inform the creation of a brochure or pamphlet, they can inspire a drama or radio spot – tools of particular use when researchers want to target local communities. They can inform a policy brief or be discussed at a policy dialogue.

These tools all target different audiences, and to be done well they require a good idea of how that audience absorbs information, and what type of information that audience needs to interact meaningfully with the research findings (see *Module 2* for more on this). These tools can also serve as a kind of appetizer – for instance, someone reading a two-page summary of take-home messages may then want to access the full paper. Someone who has read the press release may also want the full story. In short, the more we can squeeze out of the peer-review process, the wider the reach of our findings.

4.4.1.4 Databasing and social networking

If an article is to be read, it must be accessible. With more and more journals migrating to the open-access standard, accessing science requires little more than an Internet connection and some searching skills. As argued above, researchers themselves can push the evolution of the open-access movement by only publishing in open-access journals. This signals their desire to keep their findings "free," and allows the size of the audience to multiply astronomically.

Beyond open-access publication, there are other techniques for ensuring a researcher's paper is widely accessible. Assuming the expiration of copyright (or that copyright has always been the author's), authors may place a copy of their paper – sometimes the pre-production proof copy (i.e. the copy without the journal's formatting and logo) – on their own web site or that of their institution. They can distribute their paper on social media platforms (such as *academia.edu*, for

[20] In many cases – particularly for authors in LMICs – these fees are also waived.

instance, or *facebook*).[21] They can also comb their own email boxes for contact addresses and send out one mass email alerting all to their work. Every little bit counts.

Box 1.13: Photographs

Photographs, as the saying goes, capture a thousand words. For research, they are an essential tool for documenting some of the unfolding process or elements. They are able to convey extremely complex concepts or undertakings in a simple glance. All researchers should have a bank of photographs – to illustrate their press releases, annual reports, presentations, and to furnish to journalists who may wish to write about their project, and on. They are exceptionally economical, and return a great value. Photographs, quite simply, make research come alive.

4.4.2 Press Releases

The completion of a successful research project is an event worthy of wider attention, but we can't always count on others showering that attention on us. Creating a press release can be another piece of useful informational support for the peer-reviewed paper, or for some of the other ongoing KT activities. They may be tailored for a particular event or a particular audience.

Most press releases follow a formulaic structure – there is a standard template that most news organizations use and expect. Newspapers and other media outlet receive dozens of press releases every day, so the more unified and simplified they are, the easier it is for them to sort and filter through them. Typically, press releases:

- are one page long. They may have a small photograph to illustrate something important about the project (*see Box 1.12 above*), and there may also be the logo of the research organization, but otherwise are plain text.
- begin with a strong, catchy and informative **headline**. Newspapers routinely find the best way to summarize an article in 10 words or less – and the right headline can make all the difference in whether people read the article or not.[22] For the non-specialist, what would be the most fascinating/horrifying/compelling aspect of any given research project?
- next comes the **summary**, typically three to five lines that explain why the research project is worthy of more attention. A small photograph may accompany the summary to provide additional colour. Note that the brief should use the third person throughout – not using "we" or "I".
- have a **body** that answers, in very simple language, the who, what, where, why and how questions, with enough details that, ideally, don't inundate readers with information but leave them wanting more.

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[21] Given present momentum and investments in social media, there can be little doubt that such platforms will increasingly exert a great influence on the health research community. However as of writing (April 2012), social media has not proven itself a routine or even reliable vehicle for the health research community, and thus our discussion of the topic here is brief.

[22] One recent example emphasizing the importance of headlines saw a *New York Times'* article called "How Companies Learn Your Secrets" (Feb 17, 2012) condensed (without any content changes) onto another web site as "How Target Figured Out A Teen Girl Was Pregnant Before Her Father Did". The latter article received a tremendous amount of online attention, far outstripping attention given to the original article. [Note that *Target* is a multi-national corporation specializing in the retail of consumer goods, based in Minneapolis, USA.]

- conclude with an **about** section at the bottom of the release, providing background information on the institution or researcher. This should also include contact information (including, perhaps, a link to the peer-reviewed paper or other supporting information).

4.4.3 Take-Home Messages

Take-home messages are, quite simply, a list of three or four major points or implications arising from a single research project or a larger body of research evidence. They are part of the wider (and proven) 1:3:25 graded-entry format, which sees researchers arrange their work into a one-pager of take-home messages, a three-page executive summary, and a 25-page full length paper (CHSRF 2001, Lavis et al 2005, Rosenbaum et al 2011). More precisely, the graded-entry approach sees researchers create:

- a one-page summary of concise take-home messages. The content here would be purely on the most important *implications* of the findings, and why attention is required now. Its audience would be those with little time or ability to access and read a fuller report.
- a three-page executive summary discussing some of the background to the work, the major findings, and the implications of those findings. Its audience could be policy-makers, health system managers, the media, other researchers etc.
- a twenty-five-page paper. This is typically the peer-reviewed paper or synthesis, and its audience is almost always restricted to researchers.

"Policy-makers participating in user tests indicated that the graded-entry format (one page of key messages followed by a short summary) was well suited to their needs. The sections of the summary on key messages and relevance for LMICs proved to be the most interesting to participants, who had difficulty understanding the risks presented in the tables and were often frustrated with text that seemed too long and complicated. Some did not seem to understand what a systematic review was and expected or wanted information not usually found in one. Some were also confused about the source of the summaries."

– Rosenbaum et al 2011 –

"One of our overriding findings was a clear strong preference for short messages, also found in other studies of policy-maker preferences in research presentation. There is, however, a limit to how much information can be condensed before it loses value and credibility. When these limits are reached, editing the text does not suffice and methods such as graded-entry structuring of the text and front-page summaries of key messages must be used. In recent years, research on the use of web sites has taught us much about how people visually scan texts, rather than read them. This knowledge can be applied to improve information delivery in policy contexts where readers have limited time. Bulleted lists, shorter paragraphs and judicious use of headings are known to make scanning a text easier."

– Rosenbaum et al 2011 –

By far, the key advantage to the graded entry approach is readability. By understanding and respecting the abilities and time pressures of the intended audience, these crafted pieces (e.g. the 1- and 3-pagers) have a much greater chance of being read by those with the power to act upon them. Highlighting take-home messages up front aligns with how the media typically arranges its articles: the most important information – the implications – appears first, followed by a sequence of information declining in importance.

Box 1.14: The paradox of bias

It's worth noting again that researchers may lose some of their neutrality when engaged in advocacy. Creating and disseminating take-home messages, a peer-reviewed paper, a press release etc. – these

outputs that hope to impress upon certain audiences the importance of (putatively) bias-free findings – may in fact erode one's neutrality. As noted in *Lesson 3.2*, researchers must by necessity walk a very fine line between evidence and advocacy: "some argue that researchers who take a public stance on a given health policy issue may face real or perceived loss of objectivity that may adversely affect their research" (Brownson et al 2006).

The bottom line in considering this paradox of bias is that researchers must make *very careful decisions* when it comes to tailoring and targeting their work. More is not always merrier. To make some of those more informed decisions, the tools and techniques in *Module 2's* discussion of Situation Analysis may prove helpful.

In terms of policy influence, the short summary of take-home messages is essential. Such an output should, in fact, become a requirement of all research projects – while all papers submitted for peer-review must include an abstract, this is something very different. An abstract aims to condense the highlights of the paper into 300 words or a long paragraph; take-home messages are less about the paper or project than about the overarching implications and conclusions. The essence of any research project is not, after all, in the project itself – the essence lies within why this project is important, and what it contributes to the bigger picture. Policy-makers can easily interact with this type of document, as may other key stakeholders (from the media to other researchers), which may result in some accessing the full paper. See *Box 1.13* below for the key process details in writing a summary of take-home messages.

Box 1.15: Take-home Messages

"The one in the Foundation's 1:3:25 rule is one page of main message bullets. They are the heart of your report, the lessons decision makers can take from your research. Don't confuse them with a summary of findings: you have to go one step further and tell your audience what you think the findings mean for them. The messages, per se, may not even appear in the text. They are what can be inferred from your report. This is your chance, based on your research, to tell decision makers what implications your work has for theirs.

"How to formulate them? Set aside your text and focus on expressing clear conclusions based on what you've learned. Consider your audience - who are they, and what do they most need to know about what you've learned? Summon up that bright, educated reader and answer this question for him or her: So what does this really mean? Say your study is on how to set budgets in a regional health system. You've found a tendency to keep money flowing on traditional lines. That's the problem. The actual main message you write may be that it's wiser to focus on reallocating other resources - people, space, equipment - to health promotion than to take cash away from acute care. A study on the impact of increasing use of homecare might show that hip-implant patients regain mobility faster out of hospital than as inpatients. The key message would be to encourage early discharge. Spell it out. Your study has found that job security is the biggest factor driving nurses to work in the U.S. Your main message might be that governments should make 10-year commitments to funding levels for nursing services. Writing main messages can be difficult for researchers to do, trained as they are to be detached and to collect evidence, rather than judge it, but it has to be done if research is to be of real use to decision makers. And remember - if you don't do it, you're leaving your work to be interpreted by someone else, who won't likely have your insight.

"This is not to say that you have to come up with definitive recommendations from research that just doesn't offer them. Be as concrete as you can and then, if you're really not ready to draw more

conclusions, don't just fall back on "more research is needed." Use your main messages to define the questions that still need to be asked." (CHSRF 2001).

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