

Advancing knowledge translation in primary care

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Across Canada, efforts are under way to strengthen primary health care (PHC), from the Divisions of Family Practice in British Columbia and family health teams in Ontario to family medicine groups in Quebec and collaborative family physician–nurse practitioner teams in Nova Scotia. Much work is needed though, as international comparisons suggest that Canada lags behind other developed nations in PHC performance and infrastructure.^{1,2} Canada’s historical lack of investment in PHC research, particularly in the domain of family medicine, has contributed to the current predicament.³ Compared with other health care disciplines, the past decade has seen a disproportionately low level of funding earmarked for family medicine research and few programs providing family physicians with advanced research training.³

In response, Canada’s premier health research agency, the Canadian Institutes of Health Research (CIHR), has recently committed to helping Canada become an international leader in the generation and translation of high-quality PHC research by 2020.⁴ In line with this commitment, CIHR hosted a Summer Institute on Primary Health Care Research for Canadian research trainees in June 2010. The Summer Institute’s theme was chosen by CIHR, which then nominated a leader to help organize the meeting. This leader, Dr Peter Norton, created a Steering Committee consisting of 4 other senior PHC researchers (Drs Earl Dunn, Moira Stewart, Rick Glazier, and Fred Tudiver) who together established the meeting’s objectives and design (Box 1). The result was a 4-day capacity-building initiative that brought together 30 trainees and 13 faculty leaders to focus on the next frontiers in PHC research. Trainees were graduate students, postdoctoral fellows, and clinician scientists (eg, family physicians, nurses, pharmacists), representing a range of disciplines and institutions. Faculty were distinguished researchers in the PHC field and led plenary sessions, directed animated group activities and discussions, and mentored trainees throughout the meeting. Plenary sessions were interactive and allowed trainees and faculty to address many conceptual, methodologic, ethical, and practical issues relevant to PHC research.

At the forefront during the Summer Institute was the importance of translating research knowledge to improve primary care practice. The CIHR has defined knowledge translation (KT) as

a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system.⁵

In essence, KT is about moving knowledge to action. In recent years, the “knowledge-to-action” process has been conceptualized by many authors, notably by Graham and colleagues^{5,6} who have developed a framework describing the dynamic process from knowledge creation to application (Figure 1).⁶ Knowledge creation has 3 phases: *knowledge inquiry* (the production of primary studies of variable quality), *knowledge synthesis* (the aggregation of existing knowledge, such as through systematic reviews and meta-analyses), and *knowledge products and tools* (which present knowledge clearly in user-friendly formats, such as clinical guidelines or

Box 1. 2010 Summer Institute objectives and design

Objectives

- To explore key concepts and current issues in PHC research
- To discuss key methodologies and methodologic gaps in PHC research
- To discuss the implications of PHC research and knowledge translation on health policy and practice
- To provide a high-quality interdisciplinary learning environment that offers trainees the opportunity to interact with students from diverse backgrounds and leaders in PHC research

Design

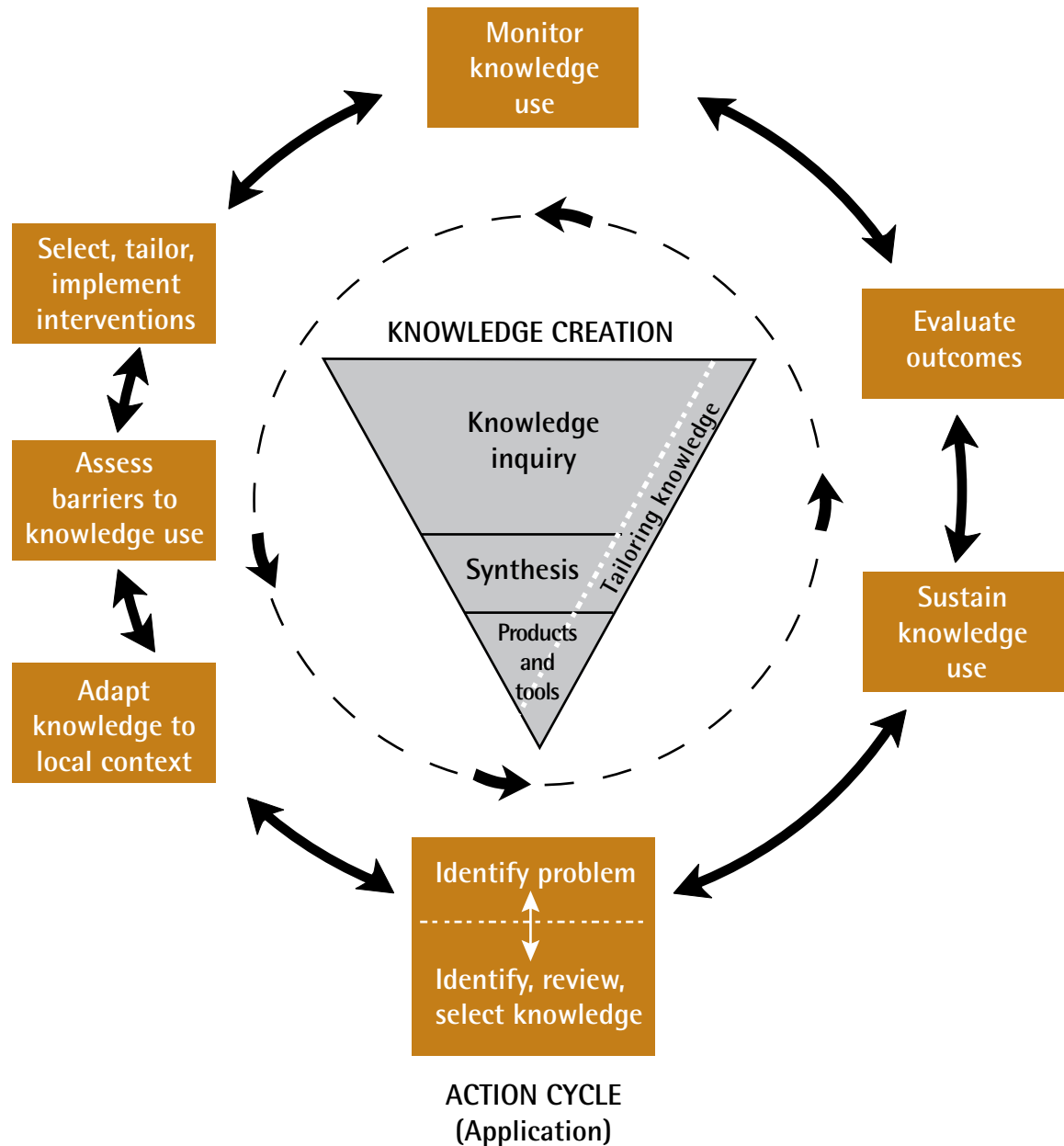
- Day 1: Welcome and introduction to PHC research in Canada; formation of groups for small group work (draft a mock CIHR grant proposal)
- Day 2: Faculty-led plenaries (eg, participatory research, interface between primary care and public health, multimorbidity, health information systems, research ethics); small group work; social event (country line dancing)
- Day 3: Faculty-led plenaries (eg, knowledge translation in primary care, practice-based research networks, models of care, quality improvement in primary care); small group work; fireside chat (informal knowledge exchange and networking event)
- Day 4: Faculty-led plenaries (eg, comparative research, international research, global health); small group presentations; closing remarks

CIHR—Canadian Institutes of Health Research, PHC—primary health care.

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Figure 1. The knowledge-to-action framework



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patient decision aids). As knowledge moves through each stage it is refined and becomes potentially more useful to target knowledge users. This knowledge is then fed into an action cycle that describes activities to facilitate uptake into practice (eg, adapting knowledge to local contexts, evaluating outcomes).⁶

Knowledge translation is critically important given the many gaps that exist between what we know and what is actually done in primary care.⁷ For example, considerable guidance exists for family physicians with respect to childhood immunizations, anticoagulation medication monitoring, post-myocardial infarction care,

and diabetes and depression care, yet Canadian studies have shown variations in care and quality gaps in each of these areas.⁸⁻¹¹

At the Summer Institute trainees and faculty discussed the challenges and opportunities of KT in primary care. In particular they reflected on the ways in which the primary care context differed from that of other health care sectors and how these differences could influence the “practice” of KT (helping stakeholders become aware of research knowledge and facilitating its use to support practice and health improvements¹²). Following the Summer Institute, 3 trainees (M.M., K.G., and K.C.) and 2 faculty members (P.N. and F.L.) decided to continue discussing KT practice in primary care contexts. Together, we also reflected on the value of advancing the “science” of KT in primary care (or *KT research*—studying the determinants of knowledge use and effective methods for promoting the uptake of knowledge¹²).

Primary care: a unique practice setting

Compared with other health care settings, primary care is unique in the breadth of its scope, being concerned with a range of patient health issues and human needs. Primary care providers respond to physical and emotional health concerns of diverse populations, providing and coordinating care across the lifespan. Many patients present with multiple health concerns and other psychosocial, family, or cultural issues requiring attention.¹³

This broad scope of practice contrasts with what some see as the highly specialized nature of medical and intervention research, driven by a focus on single, tightly defined diseases or clinical situations.¹⁴ Clinical trials, for instance, have strict eligibility criteria and typically exclude people with comorbid conditions, which can limit the generalizability of the findings to primary care patients.¹⁵ Similarly, clinical practice guidelines and educational programs are often developed with single diseases in mind and sometimes overlook socioeconomic and cultural differences in populations.¹⁶⁻¹⁸ This disconnect forces primary care providers to assess the applicability of research findings and interventions to the “real-world” patients in their own practice settings, a challenging process of “shaping the square peg of the evidence to fit the round hole of the patient’s life.”¹⁹ Unsurprisingly, the success of researchers in trying to close the gap between what we know and what is done in primary care has also been limited.²⁰ For KT practice to be more effective, *knowledge inquiry* needs to be more responsive to the knowledge needs of family physicians and other primary care providers. Steps in this direction include the growing interest in pragmatic clinical trials, which seek to assess the benefits of different care options in routine clinical settings,²¹ and recent research on multimorbidity.^{13,22} Continued efforts to increase the responsiveness of PHC research should

allow providers to more easily achieve care that is both patient centred and evidence based.

Importance of integrated KT

Despite the volume of research evidence available, relatively little is taken up and applied in clinical practice.²³ Family physicians in particular have been shown to be more cautious than other specialists in applying new research knowledge and more apprehensive of evidence produced in settings that differ from their own (eg, specialized clinical settings).^{24,25} As researchers we can increase the relevance and uptake of our research findings by actively engaging family physicians and other partners throughout the entire research process to coproduce knowledge in their contexts. The CIHR describes this collaborative, action-oriented approach to research as *integrated KT*.²⁶ With integrated KT, researchers and providers share control of the research process and together identify problems, shape research objectives, decide on methodologies, collect and interpret data, and disseminate and apply findings.

While the benefits of participatory research approaches are recognized,²⁷ including increased validity of research and greater exchange and commitment between partners, in practice a variety of barriers (eg, competing demands, time or funding pressures) often hinder active collaborations.²⁸ At the Summer Institute we learned how primary care practice-based research networks (PBRNs) can help to overcome these barriers. Practice-based research networks bring researchers and primary care providers into collaborative learning communities to address the challenges faced in daily practice.²⁹ Although not developed as extensively as in other countries, PBRNs do exist in Canada³⁰ and are key sites for the production and translation of PHC research. Furthermore, when research activities within PBRNs actively engage patients and community members, such networks not only hasten the knowledge-to-action process but can also help to identify solutions that are acceptable and equitable within a wider audience.³¹

Communication and exchange

In primary care systems, family physicians are just one among many professional groups and other stakeholders who play a role in care delivery. During exchanges at the Summer Institute, participants noted that stakeholders often differed with respect to the value they placed on certain types of scientific evidence (eg, systematic reviews, randomized controlled trials, observational studies, qualitative research) the weight given to various types of information (eg, scientific, experiential, contextual, patient or peer opinions) when making decisions, and the knowledge sources (eg, scientific journals, lay magazines, practice guidelines, opinion leaders) they considered credible.

When engaged in KT it is thus important to be sensitive to these issues. As researchers, we can facilitate access to our research findings by using the specific communication channels that are trusted by our target users and we can help remove barriers that stakeholders face when attempting to access and use evidence (eg, time constraints, lack of research skills, insufficient resources or infrastructure). Researchers can further support the application of knowledge by engaging patients and embedding research within the relationships that providers develop across time with patients, such as through the development of patient-mediated KT interventions (eg, patient decision aids) tailored to patients' clinical risk profiles.³² We must also recognize that even when scientific evidence seems solid and incontestable, some stakeholders might interpret and act on it differently. Indeed, researchers and primary care providers would mutually benefit from establishing forums where clinical practice can be reflected upon, knowledge can be exchanged, use of knowledge can be monitored, and concerns over findings can be voiced and resolved.³³ For instance, Baumbusch and colleagues used 3 approaches to promote exchanges between researchers and clinicians: they involved clinical leaders in the research project and its meetings; they created roles for doctoral students with clinical backgrounds to act as consultants who could meet individually or in small groups with clinicians and support KT activities in their practice settings; and they established face-to-face meetings between researchers and clinicians over breakfast where researchers shared

emerging findings, received feedback, and, together with these clinicians, considered how to address issues of common concern.³³ Studies suggest that few primary care practices have such forums in place,^{20,34} yet they might be critical to promoting shared understandings and actions affecting everyday practice.

Advancing KT research for primary care

Knowledge translation is an emerging and increasingly diverse field of science. It includes work to^{35,36}

- develop theory about how knowledge is best generated, shared, and used, and the various factors involved in this process;
- assess gaps in knowledge that affect health decision making and identify determinants and conditions of knowledge use;
- better understand how to accelerate moving evidence to action and the factors that make KT interventions in different contexts effective and sustainable; and
- measure the success and effects of KT interventions.

Put simply, KT research is about making the knowledge-to-action process more effective. Such research has already led to many insights, including the complex, nonlinear nature of the process, the limits of passive dissemination strategies, the importance of practice contexts and facilitating practice changes, and the challenge of scaling up innovations and sustaining change.³⁷⁻³⁹ There remain many gaps in our knowledge of the KT process in primary care. Advances to KT research are thus needed to guide effective KT practice in this unique setting. Our discussions led us to identify 4 broad

Table 1. Actions that can be taken to advance KT research in primary care

CATEGORY	ACTIONS BY PRIMARY CARE PROVIDERS	ACTIONS BY RESEARCHERS
Supporting research	<ul style="list-style-type: none"> • Engage in primary care research or quality improvement initiatives as an investigator, a co-investigator, or a member of a project's advisory group 	<ul style="list-style-type: none"> • Engage in integrated KT research in primary care settings • Provide assistance to local primary care providers wishing to engage in research (eg, British Columbia's Research Help Desk program⁴⁰)
Building capacity	<ul style="list-style-type: none"> • Promote and participate in research training programs organized by universities (eg, TUTOR-PHC⁴¹) or by professional associations (eg, the Ontario College of Family Physicians' 5-weekend training program⁴²) • Participate in scientific conferences (eg, FMF or NAPCRG conference) to gain exposure to KT or PHC research and to network with researchers • Establish forums (face-to-face, telephone, Web-based) with researchers for exchange on clinical and research issues 	<ul style="list-style-type: none"> • Develop undergraduate- and graduate-level courses on KT • Develop training and mentorship programs for primary care professionals to work in consulting or knowledge broker roles • Work with professional associations to build KT and research workshops within CME activities • Establish forums (face-to-face, telephone, Web-based) with primary care providers for exchange on clinical and research issues
Developing infrastructure	<ul style="list-style-type: none"> • Advocate for and support the development of primary care practice-based research networks • Support the development and linkage of primary care electronic medical records 	
Increasing visibility	<ul style="list-style-type: none"> • Share experiences of KT successes or failures with clinician and researcher colleagues 	<ul style="list-style-type: none"> • Establish a national symposium on KT practice and science in primary care

CME—continuing medical education, FMF—Family Medicine Forum, KT—knowledge translation, NAPCRG—North American Primary Care Research Group, PHC—primary health care, TUTOR-PHC—Transdisciplinary Understanding and Training on Research—Primary Health Care.

strategies for achieving this goal: supporting research, building capacity, developing infrastructure, and promoting the visibility of both PHC and KT research. These strategies have relevance for both primary care providers and researchers, although the ways in which each group engages with these strategies might occasionally be different (Table 1).⁴⁰⁻⁴² Often, however, joint actions will be needed to build the science of KT in primary care, such as support for research and the development of primary care PBRNs, linked electronic medical records, and forums for knowledge exchange and translation.

Conclusion

Now more than ever, there is a need to embed KT strategies within primary care practice and research to ensure application of relevant findings in practice, overcome the typically slow uptake of evidence into everyday care, and support primary care reforms. Advancing both the practice and science of KT will necessarily require that the worlds of primary care practice and research be brought much closer together. We must all move forward together so that research can be grounded in primary care practice and so that we can more fully benefit from the knowledge that is produced. Strengthening our relationships is essential to improving our health care system and the health of Canadians.

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Competing interests

None declared

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