Evidence-informed healthcare through integration of health research

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Abstract
A foundational element of modern healthcare is an evidence-based practice. However, the conduct of research to generate evidence and the subsequent application of research findings are viewed by many Canadian healthcare organizations as separate from healthcare delivery. This mindset impedes effective translation of knowledge into practice. In this article, underlying issues that enable this disintegrated model to persist are described, and strategies to help healthcare organizations achieve integration of research are summarized.

Introduction
Healthcare systems place a priority on delivering quality care, where quality is generally defined around Maxwell’s six dimensions—access, relevance, effectiveness, equity, acceptability, and efficiency. However, in a 2014 international survey, Canada ranked the second lowest in provision of quality healthcare as compared to other Commonwealth countries. This low standing suggests there are significant risks for the Canadian healthcare system, including failing to deliver appropriate treatments to patients and failing to obtain maximum value for the increasing revenues spent on healthcare.

A lack of evidence-based practice is seen as one of the major drivers for sub-optimal care. For example, it has been estimated that fewer than 60% of decisions in general internal medicine have the support of adequate evidence. For optimal generation and application of the evidence that the Canadian healthcare system needs, research questions should be informed by those who plan, deliver, and receive care. The potential for healthcare organizations to improve patient outcomes through engagement in research is increasingly being demonstrated. This article describes the rationale for integrating research into the Canadian healthcare system and suggests how we can work to achieve it.

Some challenges to the use of evidence in healthcare
Health research includes but is not limited to clinical trials, biomedical studies, epidemiological studies, health system and services research, quality improvement and patient-oriented research. There are positive indications that health research is becoming integrated into healthcare—for example, the increasing interest in academic health centres, Accreditation Canada’s recent addition of research to some of its Qmentum program standards (eg, the Stroke Distinction program and Client- and Family-Centred Services), and the various Knowledge Translation (KT) initiatives underway in healthcare organizations. However, the view still taken by many Canadian healthcare institutions is that the conduct of health research is a separate activity, important but not integral to the delivery of healthcare. Although this separation is appropriate in some cases, generally the mindset that separates healthcare and research impedes the effective translation of knowledge into practice. It also denies the benefits that healthcare could derive from active and closer engagement in research.

It is generally accepted that there are two major gaps in the translation of health research: translating ideas from research into new healthcare services or products, and implementing those new approaches into practice. We suggest that these major gaps exist because the continuum of research to implementation is too often practiced as a linear process—conducted in one sector and transferred to another. Despite advances in the use of health research evidence—referred to as KT—often it does not take into account the complex environments in which evidence is created and used.

The Canadian Institutes of Health Research (CIHR), a national KT leader, acknowledges that KT is a, “process [that] takes place within a complex system of interactions between researchers and knowledge users which may vary in intensity, complexity and level of engagement depending...”

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on the nature of the research and the findings as well as the needs of the particular knowledge user.\textsuperscript{8} Although the acknowledgment of complexity is important, acting on it is a challenge. One of the main reasons for this challenge is oversimplification of the interactions between researchers and knowledge users seen as relatively homogeneous communities. Decades ago, Caplan aptly described the “two communities theory” of knowledge utilization in government. The theory suggested that scientists and policy-makers live in different worlds and have different or conflicting values, different reward systems, different languages, and different cultures.\textsuperscript{9} This theory is still relevant but for it to serve us well in healthcare, we need to expand it beyond groups of people to the contexts in which they work.

Similarly, and specific to health services in Canada, the National Forum on Health summarized factors that hindered decision-makers’ use of research evidence. These included lack of pertinent evidence, lack of consensus, inappropriate use of evidence, lag times, overwhelming amounts of information, failure to keep health outcomes in mind, different and changing values, lack of accountability, reliance on tradition and personal judgment, turf wars and lack of public trust, and poorly coordinated health information systems.\textsuperscript{10} Although exploring the barriers to research use by one stakeholder group provides important insights on KT, this approach also perpetuates the notion of two groups of people, each of which simply needs to understand how the other thinks and works. In reality, these groups are highly differentiated themselves, and their members are embedded in organizations and broader systems that must be engaged for KT to transpire.

Although the KT literature has advanced significantly over the past two decades, more of its concepts and findings need to be tested in real-life settings. Healthcare organizations, where evidence will ultimately be used, offer some of these settings. Funding, resource issues, training and skills development, organizational culture, and resistance to change are among the significant challenges to research engagement by healthcare organizations. Despite the challenge, the growing literature that is exploring research engagement suggests that all healthcare stakeholders stand to benefit from the integration of research into healthcare delivery. Research is a key component of learning healthcare systems, as defined by the Institute of Medicine\textsuperscript{11} as, “systems…in which knowledge generation is so embedded into the core of the practice of medicine that it is a natural outgrowth and product of the healthcare delivery process and leads to continual improvement in care.” Furthermore, the integration of research into the health system—including enhancing patient engagement in such research—has been identified as the cornerstone of evidence-informed healthcare by the CIHR in its strategy for patient-oriented research.\textsuperscript{3}

Towards a solution—Organizational KT

Although traditionally the focus has been on specific stakeholder groups as the drivers of KT, there is increasing interest in the organizations in which these individuals and teams work. Organizations are seen as important catalysts for health research, both in the creation and in the use of evidence. It intuitively makes sense that research done close to practice will improve such practice, but the evidence until recently has been mixed. A recent review by Hanney et al. suggests that this intuition is correct and begins to shed light on some of the mechanisms that enable research to improve healthcare.\textsuperscript{12} The review explored engagement in research defined as, “a deliberate set of intellectual and practical activities undertaken by healthcare staff (including conducting research and playing an active role in the whole research cycle) and organizations (including playing an active role in research networks, partnerships and collaborations) ensuring the research function is fully integrated into organizational structures.” Thirty-three studies were reviewed in which the relationship between research engagement and improved healthcare had to be demonstrated in some way. Twenty-eight of the studies were positive or mixed positive, and five of the studies were negative or mixed negative.

Ultimately, the review found that organizations in which the research function is fully integrated into the organizational structure can outperform those that pay less heed to research/outputs. The authors note that engagement in research is only one of the many influences on performance and that disaggregating how these mechanisms operate in complex systems is not straightforward. However, a key message in this finding seems to be about the full integration of the research function into organizational structures. Organizations that have demonstrated the potential of this full engagement include the National Institute for Health Research Collaborations for Leadership in Applied Health Research and Care in England,\textsuperscript{13} the Veterans Health Administration Quality Enhancement Research Initiative in the United States,\textsuperscript{14} and the Agency for Healthcare Research and Quality in the United States.\textsuperscript{15}

The literature on organizational engagement in research is developing some consistency in the critical success factors for research engagement. Stetler et al. note the importance of being deliberate and strategic about research engagement, with a common research-related vision and goal; having a supportive culture and coherent policy related to research; and ensuring that key people are leading change—both formal and informal leaders.\textsuperscript{16} Using different terminology but describing similar findings, Ellen et al. describe the importance of formal infrastructure (positions and accountability); formal and informal ties to researchers outside the organization; inclusion of research in the mission, vision, values, and strategic plans; and technical infrastructure.\textsuperscript{17}

Who should do what?

Organizational leaders are well placed to encourage integration of research into healthcare settings, and health research funders can also play an important supporting role. An important first step for healthcare leaders is to make a commitment to organizational KT. As noted previously, intentionality is key for research engagement and sets the scene for the culture.
change that is necessary. A second step could be measuring organizational readiness for change, based on any of a number of existing tools. Developing and resourcing a plan, taking into account critical success factors such as those noted previously, is also an important step. An organization-wide plan would connect any individual KT efforts underway, enabling a sum that is greater than its parts. Such a plan would benefit from the involvement of internal stakeholders such as care providers, as well as external stakeholders such as patients, government policy-makers, academic leaders, researchers, and funders. The intent of broad inclusion would be to identify opportunities and challenges to research engagement and commit to the appropriate actions.

Together, healthcare organizations and funders can develop and act on research opportunities. In addition to clinical research, organizational and implementation research are important areas for exploration. In particular, Hanney et al. emphasize the need for observational studies of research engagement in order to further determine the conditions of success. Given the key role of leaders in organizational change, leadership would seem to be an opportunity for study as well. Ideal circumstance for KT training is another area of research potential. For example, Champagne et al. recently published on the former Canadian Health Services Research Foundation’s Executive Training for Research Application program and SEARCH Canada’s SEARCH Classic training program, revealing the influence of specific organizational factors on the impact of such programs. A promising approach for some of this research would be engaged scholarship, which Van de Ven describes as “a participative form of research for obtaining the different perspectives of key stakeholders … in studying complex problems.” Stakeholders would include not only researchers, practitioners, and decision-makers but also patients, who should become partners in research aimed at solving health issues. A range of research methods could be used. For example, participatory action research, where “action” is more than just generating new knowledge—it is putting knowledge into action in real time. Participatory action research is locally defined, facilitated rather than directed, and ensures shared power among participants.

**Conclusion**

It should go without saying that health research is most effective when its results are used to improve healthcare and patient outcomes. However, in many jurisdictions, including Canada, research has been viewed for the most part as separate from healthcare. We assert that integrating research and care is key to the success of the Canadian healthcare enterprise. Such integration supports the Triple Aim of improving the individual experience of care, improving the health of populations, and reducing the per capita costs of care for populations. To fully realize the integration of research and healthcare, we need to recognize and act on the complexity of the health system and its myriad healthcare organizations; strive for enhanced collaboration and cooperation among researchers, practitioners, policy-makers, decision-makers, patients, and the public; and ultimately, focus on our ability to collectively define and solve the health issues that matter most.

**References**


