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SPECIAL COMMUNICATION

From Knowledge Translation to Engaged Scholarship: Promoting Research Relevance and Utilization

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Abstract

It is now accepted within health care that clinicians and managers should base their practice and decision making on evidence. One would think that this would be quite a simple undertaking—if good research is available and well communicated, people will act on it. But most of our efforts to date, which have focused largely on research transfer, have had modest success. This has created a need to reexamine the evidence—and the assumptions—on which our current knowledge-to-action activities are based. This article will summarize what is known about what works in promoting evidence-informed action, tracing the evolution from a linear focus on research transfer to complex strategies for user engagement. Using concrete examples, it will illustrate the strengths and limitations of various approaches and implications for rehabilitation medicine.

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The health care systems of many countries are facing critical challenges: underuse, overuse, or misuse of therapies; systems failures that result in risks to patient safety and quality of care; and challenges related to system organization and integration, resource allocation decisions, planning and managing health human resources, promoting preventive practice, and addressing health disparities.

It is proposed that research has an important role in helping address these challenges,[1] resulting in expectations of evidence-based medical practice and, increasingly, evidence-based or evidence-informed management.[2-4] However, there is a significant gap between what we know and what we do in either health care practice or health system management,[5] creating an ethical urgency for translational research—research on what is effective in moving knowledge into action.[6-7]

Many strategies have been adopted to promote the movement of knowledge into action (more recently referred to by a variety of terms, eg, knowledge translation [KT] or implementation science). These include requirements for researchers to incorporate a KT plan in their funding proposals, dedicated funds for KT research, making information available in accessible and user-friendly formats (eg, systematic reviews), developing clinical practice guidelines (CPGs), research training opportunities for executives and managers, and funder requirements that clinicians and managers justify funding requests by demonstrating use of evidence in planning and priority setting. Thousands of articles have been written on the topic.[8]

The purpose of this article is to summarize what we know about what works in moving knowledge into action, identify the different assumptions driving the many knowledge-to-action (KTA) initiatives, and help clarify some of the confusion around concepts in this area. The intent is to provide an overview of current trends and the broader context within which KTA activities specific to rehabilitation medicine are situated.

Clarifying terms

Many different terms are used to refer to the process of moving knowledge into action: terms are often used interchangeably, even though they frequently refer to distinctly different concepts or assumptions.[8-10]

KT is a relatively new term, first proposed by the Canadian Institutes of Health Research (CIHR) in 2000.[11] In 2005, the National Institute on Disability and Rehabilitation Research defined KT as the "multidimensional, active process of ensuring that new knowledge gained through the course of research ultimately improves the lives of people with disabilities, and furthers their participation in society,"[12(p8195)] emphasizing the role of knowledge translation in improving the lives of those

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with disabilities. There are many similarities between this definition and that of CIHR, which defines 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. This process takes place within a complex system of interactions between researchers and knowledge users that may vary in intensity, complexity and level of engagement depending on the nature of the research and the findings as well as the needs of the particular knowledge user."[13]

Unlike the National Institute on Disability and Rehabilitation Research definition, the CIHR definition does not explicitly limit knowledge to research. It also places greater emphasis on (1) the importance of synthesis, promoting use of systematic reviews; (2) the importance of interaction between knowledge users and researchers in the KT process; and (3) the role of the knowledge user. As emerging KT research is highlighting the importance of these factors, we will use the CIHR definition of KT throughout this article. We will define "knowledge transfer" to refer to 1-directional communication of knowledge.

Another area of confusion is that between research and evidence. Research transfer and use refer specifically to the communication and use of research findings. However, clinical and organizational change requires use of many forms of evidence in addition to research. Relevant evidence may include local data (eg, administrative), evaluation findings, organizational priorities, organizational culture and context, patient experience, and resource availability. For this reason, we will speak of evidence-informed (rather than evidence-based) practice and planning, reflecting the understanding that (1) there is often an incomplete research base to inform the complex problems facing the health system, (2) much research is contradictory, and (3) nonresearch forms of evidence are legitimately used in decision-making.[14]

KTA gap as a knowledge transfer problem

The KTA gap is commonly defined as a knowledge transfer problem. In other words, it is proposed that the reason knowledge is not moved into action is because there has been a failure to transfer it effectively to the intended audience. An early contribution to the literature was the work of Rogers,[15] who identified 5 factors predicting the diffusion and uptake of innovations (relative advantage, compatibility, level of complexity, trialability, and observability). Within the field of health, there has been increasing recognition that researchers cannot, however, rely on diffusion: new knowledge will not, without active dissemination and implementation efforts, necessarily make its way to the intended user—or result in action.

The knowledge transfer approach in medicine was bolstered by the evidence-based medicine (EBM) movement.[16] EBM is based on undertaking systematic reviews of biomedical research in order to identify best practice, which is then actively communicated to practitioners: it is promoted as a critical factor in achieving better patient care and health outcomes.

Some authors have explored how efforts by researchers to actively disseminate their research (the push) or the needs of users (the pull) contribute to moving knowledge into action. Others, particularly those studying evidence use at the management and policy levels, have described the 2 very different cultures of research and decision-making, and proposed KTA strategies that can bridge this cultural chasm (eg, by employing a knowledge broker who can effectively communicate—or translate—between the 2 cultures of research and practice).[17] More recently, researchers have focused on the importance of interaction between researchers and knowledge users in predicting uptake of research (partnership theories).

In spite of increasing attention to the importance of using research to address major health issues, efforts to date have resulted in limited impact, even in the clinical area.[18]

Implementation of CPGs is perhaps the most common example of the knowledge transfer paradigm. CPGs are the result of rigorous and systematic reviews of the literature, synthesized into practical guidelines for clinicians. Strategies used to disseminate guidelines include publication in specialty journals, interactive websites, paper and electronic distribution, computerized decision-support, academic detailing, feedback, and audit. However, a number of challenges are found to promoting guideline uptake. In 1 pilot study, which integrated CPGs into a computerized decision support/order entry system for diagnostic imaging, only 2% of advice given resulted in cancelled or changed orders.[19] Analysis of the results highlighted the importance of the context of the study, adequate resources to ensure appropriate implementation, including users in early stages of design, and the complexity of behavior change in a clinical setting.

Even greater challenges are experienced when this paradigm is applied to population health issues or to the fields of health policy and management—where differences are found in the culture of decision-making, type of decisions, importance of context, timelines for decisions, and types of evidence considered credible.[20] There are increasing critiques of the "rational" assumptions about decision-making, which dominate the evidence-based decision-making literature,[21] and of application of the principles of EBM to the management and policy arenas.[2,9,22,23]

These factors suggest that we need to reconsider the assumptions on which the knowledge transfer paradigm are based: (1) research questions are typically driven solely by researcher curiosity; (2) there is knowledge that is ready to use; (3) scientific knowledge (research) is sufficient to inform decisions; (4) the movement of knowledge is unidirectional (ie, from the researcher to the user); and (5) the major challenges relate to appropriate communication and user readiness or capacity to take up the new knowledge.

KTA gap as a knowledge production problem

There is, however, another interpretation of the cause of the KTA gap. According to this interpretation, the KTA gap does not result from a problem of knowledge transfer, but rather of knowledge production. Research goes unused not because of a simple failure in dissemination, but because researchers fail to

List of abbreviations:

CIHR	**Canadian Institutes of Health Research**
CPG	**clinical practice guideline**
EBM	**evidence-based medicine**
KT	**knowledge translation**
KTA	**knowledge to action**