

## Section 1

# **Introduction**

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## 1.1 Knowledge to action: what it is and what it isn't

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### KEY LEARNING POINTS

- Gaps between evidence and decision making occur across decision makers including patients, health care professionals, and policy makers.
- Knowledge translation (KT) is the synthesis, dissemination, exchange, and ethically sound application of knowledge to improve health, provide more effective health services and products, and strengthen the health care system.

Health care systems are faced with the challenge of improving the quality of care and decreasing the risk of adverse events [1]. Globally, health systems fail to optimally use evidence, resulting in inefficiencies and reduced quantity and quality of life [2,3]. The science and practice of knowledge translation (KT) can answer these challenges. The finding that providing evidence from clinical research is necessary but not sufficient for providing optimal care delivery has created interest in KT, which we define as the methods for closing the knowledge-to-action gaps.

### What is knowledge translation?

Many terms are used to describe the process of putting knowledge into action [4]. In the United Kingdom and Europe, the terms *implementation science* and *research utilization* are commonly used in this context. In the United States, the terms *dissemination* and *diffusion*, *research use*, *knowledge transfer*, and *uptake* are often used. Canada commonly uses the terms *knowledge transfer* and *exchange*. In this book, we use the terms *knowledge translation* (KT) and *knowledge to action* interchangeably. For those who want a formal definition of KT, the Canadian Institutes of Health Research (CIHR) defines

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KT as “a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve health, provide more effective health services and products and strengthen the healthcare system.” This definition has been adapted by the U.S. National Center for Dissemination of Disability Research and the World Health Organization (WHO). The move beyond simple dissemination of knowledge to actual use of knowledge is the common element to these different terms. It is clear that knowledge creation, distillation, and dissemination are not sufficient on their own to ensure implementation in decision making.

Some organizations may use the term *knowledge translation* synonymously with *commercialization* or *technology transfer*. However, this narrow view does not consider the various stakeholders involved or the actual process of using knowledge in decision making. Similarly, some confusion arises around continuing education versus KT. Certainly, educational interventions are a strategy for knowledge implementation, but it must be kept in mind that the KT audience is larger than the number of health care professionals who are the target for continuing medical education or continuing professional development. KT strategies may vary according to the targeted user audience (e.g., researchers, clinicians, policy makers, public) and the type of knowledge being translated (e.g., clinical, biomedical, policy) [2].

### Why is KT important?

Failure to use research evidence to inform decision making is apparent across all key decision-maker groups, including health care providers, patients, informal carers, managers, and policy makers, in developed and developing countries, in primary and specialty care, and in care provided by all disciplines. Practice audits performed in a variety of settings have revealed that high-quality evidence is not consistently applied in practice [5]. For example, although several randomized trials have shown that statins can decrease the risk of mortality and morbidity in poststroke patients, statins are considerably underprescribed [6]. In contrast, antibiotics are overprescribed in children with upper respiratory tract symptoms [7]. A synthesis of 14 studies showed that many patients (26–95%) were dissatisfied with information given to them [8]. Lavis and colleagues [9] studied eight health policy-making processes in Canada. Citable health services research was used in at least one stage of the policy-making process for only four policies; only one of these four policies had citable research used in all stages of the policy-making process. Similarly, evidence from systematic reviews was not frequently used by WHO policy makers [10]. And, Dobbins and colleagues observed that although

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systematic reviews were used in making public health guidelines in Ontario, Canada, policy-level recommendations were not adopted [11].

Increasing recognition of these issues has led to attempts to effect behavior, practice, or policy change. Changing behavior is a complex process that requires the evaluation of the entire health care organization, including systematic barriers to change (e.g., lack of integrated health information systems) and targeting of those involved in decision making, including clinicians, policymakers, and patients [2]. Effort must be made to close knowledge-to-practice gaps with effective KT interventions, thereby improving health outcomes. These initiatives must include all aspects of care, including access to and implementation of valid evidence, patient safety strategies, and organizational and systems issues.

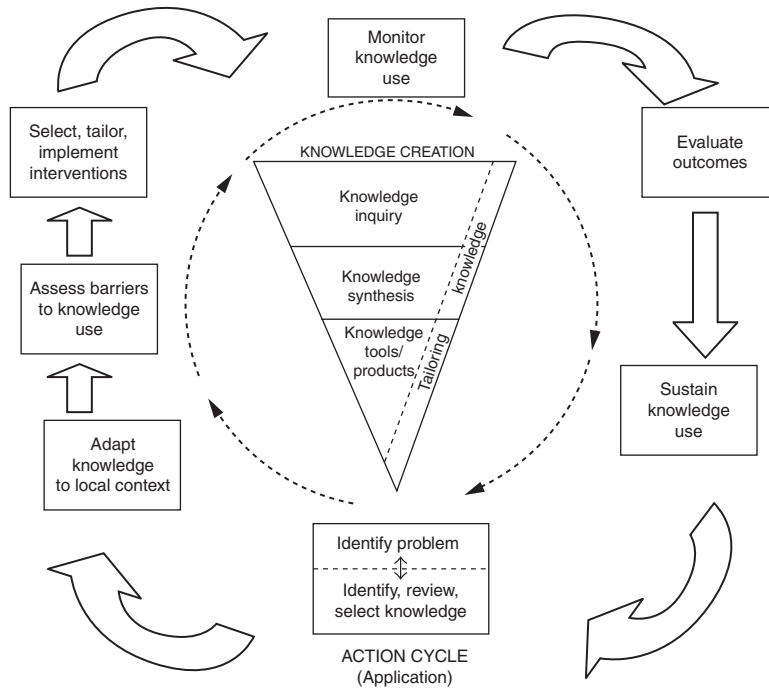
### **What are the KT determinants?**

Multiple factors determine the use of research by different stakeholder groups [12–16]. A common challenge that all decision makers face relates to the lack of knowledge-management skills and infrastructure (the sheer volume of research evidence currently produced, access to research evidence, time to read, and skills to appraise, understand, and apply research evidence). Better knowledge management is necessary, but is insufficient to ensure effective KT, given other challenges that may operate at different levels [16], including the health care system (e.g., financial disincentives), health care organization (e.g., lack of equipment), health care teams (e.g., local standards of care not in line with recommended practice), individual health care professionals (e.g., knowledge, attitudes, and skills), and patients (e.g., low adherence to recommendations). Frequently, multiple challenges operating at different levels of the health care system are present. KT interventions and activities need to keep abreast with these challenges and changes in health care.

### **The knowledge-to-action framework: a model for KT**

There are many proposed theories and frameworks for achieving knowledge translation that can be confusing to those responsible for KT [17–21]. A conceptual framework developed by Graham and colleagues, termed the knowledge-to-action cycle, provides an approach that builds on the commonalities found in an assessment of planned-action theories [4]. This framework was developed after a review of more than 30 planned-action theories that identified their common elements. They added a knowledge creation process to the planned-action model and labeled the combined models the

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**Figure 1.1.1** The knowledge-to-action framework.

knowledge-to-action cycle. The CIHR, Canada’s federal health research funding agency, has adopted the cycle as the accepted model for promoting the application of research and as a framework for the KT process.

In this model, the knowledge-to-action process is iterative, dynamic, and complex, concerning both knowledge creation and application (action cycle) with fluid boundaries between creation and action components. Figure 1.1.1 illustrates the knowledge creation funnel and the major action steps or stages comprising the knowledge-to-action model.

### Knowledge creation

Knowledge creation, or the production of knowledge, consists of three phases: knowledge inquiry, knowledge synthesis, and knowledge tools and/or product creation. As knowledge is filtered or distilled through each stage of the knowledge creation process, the resulting knowledge becomes more refined and potentially more useful to end users. For example, the synthesis stage

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brings together disparate research findings that may exist globally on a topic and attempts to identify common patterns. At the tools/products development stage, the best quality knowledge and research is further synthesized and distilled into a decision-making tool, such as practice guidelines or algorithms.

### The action cycle

Seven action phases can occur sequentially or simultaneously, and the knowledge phases can influence the action phases at several points in the cycle. At each phase, multiple theories from different disciplines can be brought to bear. Action parts of the cycle are based on planned-action theories that focus on deliberately engineering change in health care systems and groups [17,18]. Included are the processes needed to implement knowledge in health care settings, namely, identification of the problem; identifying, reviewing, and selecting the knowledge to implement; adapting or customizing knowledge to local context; assessing knowledge use determinants; selecting, tailoring, implementing, and monitoring KT interventions; evaluating outcomes or impact of using the knowledge; and determining strategies for ensuring sustained knowledge use. Integral to the framework is the need to consider various stakeholders who are the end users of the knowledge that is being implemented.

In this book, we attempt to provide an approach to the science and practice of KT. We will describe the roles of synthesis and knowledge tools in the knowledge creation process, as well as present key elements of the action cycle and outline successful KT strategies targeted to relevant stakeholders including the public, clinicians, and policy makers. Each chapter was created following a systematic search of literature and appraisal of individual studies for validity. Gaps in the literature will be identified; the science of KT is a relatively new field, and we will attempt to reflect this by highlighting future areas of research.

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