

How to Translate Evidence and Best Practice to Specific Practice Settings

May 2011

What is Knowledge Translation?

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Knowledge translation (KT) has been defined as “the effective and timely incorporation of evidence-based information into the practices of health professionals in such a way as to effect optimal health outcomes and maximize the potential of the health system” (Knowledge Translation Program, University of Toronto, as adapted from the Canadian Institutes for Health Research [CIHR]).

Within this broad definition of KT, CIHR includes a wide range of activities:

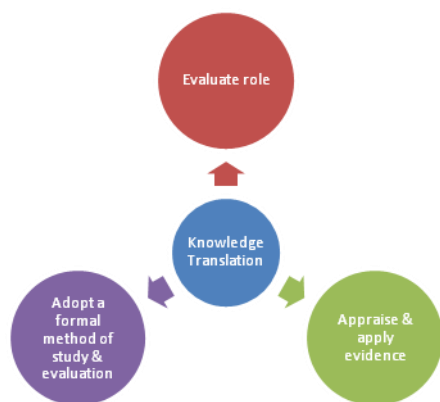
- knowledge dissemination
- communications
- technology transfer
- knowledge management
- knowledge utilization
- two-way exchange between researchers and those who apply knowledge
- implementation research
- technology assessment
- synthesis of results within a global context
- development of consensus guidelines

Why Is KT Important to Pharmacists?

Pharmacists in Canadian healthcare settings, have a role that includes promoting the effective use of medications so that patients will have positive health outcomes. In the Blueprint for Pharmacy, the Vision for Pharmacy is clearly defined as “Optimal drug therapy outcomes for Canadians through patient-centered care”.

Given this vision of pharmacy, KT is important for the following reasons:

- it gives pharmacists an opportunity to evaluate their expanding role within healthcare teams and the impact of that role;
- it gives pharmacists an opportunity to appraise and apply evidence to patient care and to evaluate the impact of pharmacotherapeutic interventions on patient outcomes; and
- it expands what pharmacists are already doing to encompass a more formal method of study and evaluation.



KT aims to bridge the knowledge-to-action gap, which is essentially the gap between evidence and practice. This is a familiar and natural role for pharmacists and one that should be highlighted and explored.

How is KT Developed and Implemented?

Of the many models that have been proposed for the implementation of KT, one of the most commonly used is the “knowledge-to-action” cycle proposed by Graham et al.¹ This cycle is based on first creating knowledge through inquiry and then developing tools or products based on that knowledge. Graham depicted these aspects as the core of the KT process. Surrounding the creation of knowledge and associated tools is the “action cycle” for the application of knowledge. This cyclical process involves identifying an evidence–care gap (the “problem”); assessing the barriers to using knowledge; implementing interventions to improve knowledge use; and then monitoring, evaluating, and sustaining knowledge use and its impact on outcomes. Most of these activities are included in the CIHR’s definition of KT.

Pharmacists have opportunities to become involved in all aspects of the knowledge-to-action cycle. This involvement can take the form of knowledge synthesis, synthesizing the literature by means of systematic reviews or meta-analyses and developing consensus guidelines for use by pharmacists or all healthcare professionals. Pharmacists can participate in the development and implementation of KT through the action cycle in a variety of other ways:

- identifying and, where possible, measuring the gaps between evidence and (e.g., through audits of current practice, database reviews, needs assessment);
- identifying and overcoming barriers to the use of best practices or evidence-based medicine, such as the following:
 - the volume of evidence (number of articles, volume of research, excessiveness of the literature) that exists
 - lack of time to review evidence
 - inability to access evidence
 - lack of skills to appraise and apply evidence
 - unwillingness by the clinician to accept the evidence
 - inconsistency of available evidence
 - cost or financial disincentives
 - lack of resources available to make the necessary changes
 - lack of defined implementation system
 - organizational and peer group barriers (e.g., disagreement by peers on proposed plan of action)

Be involved in the development & implementation of knowledge translation!



**One size does not fit all'
– customize the
'interventions to the
situation**



- developing interventions to overcome identified barriers, including the following:
 - reminders
 - decision support tools
 - local opinion leaders
 - patient-medication interventions
 - education (including education provided by interactive methods
 - academic detailing
 - preprinted order sets
 - audit and feedback
 - involvement of a pharmacist on the team
 - local opinion leaders

The evidence for the effectiveness of these interventions is variable. Of importance is the fact that interventions should be tailored to overcome the specific barriers identified in a particular context or institution. In addition, not all interventions will be appropriate for the target audience and/or setting in which a particular pharmacist is working. Some interventions, including reminders and interactive educational meetings, have been associated with higher levels of effectiveness, whereas others, such as printed educational materials, are less effective.¹ The most important aspects of applying specific interventions are assessing the available resources, identifying the target audience and existing barriers, and designing one or more tailored interventions.

Why is KT Evaluated?

Evaluation is important for measuring the use of knowledge and the impact of applying evidence and integrating that evidence into practice, either at a systems level (e.g., assessing the impact of changing a pre-operative protocol with regards to shaving) or at a patient level for a specific patient (e.g., assessing the impact of a therapeutic intervention given by a health care professional for a certain patient). Evaluation can also be used to provide important feedback for those involved in performing KT, as it allows the interventions to be adjusted if the results show that they are not producing the desired results.

● ● ●
Evaluation
measures the use
of knowledge
and the impact of
putting that
evidence into
practice

Did it make a
difference?
● ● ●

How is KT Evaluated?

The evaluation of KT involves measuring the impact of interventions. The particular evaluation process depends on the level of the intervention:



- patient
 - satisfaction
 - outcomes
- healthcare provider
- organization or process

The process of evaluating if and how a KT intervention has affected practice should be designed like any other evaluation trial. The trial designs that have been used to evaluate KT include the following:

- surveys by questionnaire and/or interview
- before-and-after studies
- time interrupted studies
- cluster randomized controlled trials

The evaluation of the intervention or specific KT strategy (i.e. determining whether the intervention has made an impact) can involve measurements (e.g., audits) or surveys or questionnaires, depending on the desired outcome of the intervention. KT always happens in a “real world” setting, and its evaluation can therefore be challenging and the effect of an intervention may be difficult to tease out. Nonetheless, it is an important area of research that is only now being developed and applied.

How can we ensure that improvements in care are sustained?

The most challenging stage of the knowledge-to-action cycle is sustaining knowledge use, ensuring that the interventions or processes that have been put into place make a sustained change in patient outcomes, processes of care, or the healthcare system as a whole. For example, an interactive educational intervention may increase the knowledge of healthcare providers, which may in turn change their practice over the short term. However, changes in the process of care will also be needed to ensure that the "new practice" becomes part of the overall culture of care and has sustained effect. It is also important that KT interventions be dynamic and allow for integration of new evidence as it becomes available.

Put knowledge to
action!
Integrate new
knowledge into
practice

Just did it!

Success Stories

Appendix A: TOPPS: TOronto ThromboProphylaxis Patient Safety Study: A Cluster Randomized Trial

[3.1CAppendixA_TOPPS.pdf](#)

Appendix B: Establishment of a Collaborative Knowledge Exchange Environment for Facilitating the Communication and Adoption of Best Practices Based on High-Quality Research Syntheses

[3.1CAppendixB_EstablishmentofCollaborativeKnowledgeExchange.pdf](#)

- Therapeutics Initiative Program May 2010 Poster:

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- Therapeutics Initiative Program Nov 2010 Poster

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Presentations on KT

Appendix C: Barwick M. Dispensing knowledge: knowledge translation for the pediatric pharmacist. CSHP Professional Practice Conference; 2009 Feb 1–4; Toronto (ON).

[3.1CAppendixC_DispensingKnowledge.pdf](#)

Appendix D: Graham S. Knowledge translation and behavioural change: an overview of interventions, evidence and evaluation methods. CSHP Professional Practice Conference; 2009 Feb 1–4; Toronto (ON).

[3.1CAppendixD_KnowledgeTranslation&BehaviouralChange.pdf](#)

Funding organizations that have recognized the Importance of KT

Canadian Institutes of Health Research: www.cihr-irsc.gc.ca/e/193.html

Canadian Health Services Research Foundation: http://www.chsrf.ca/home_e.php

Ontario Mental Health Foundation: <http://www.omhf.on.ca/home/>

Michael Smith Foundation for Health Research: <http://www.msfhr.org/>

Heart & Stroke Foundation of Ontario:
http://www.heartandstroke.on.ca/site/c.pvl3leNWJwE/b.3581583/k.F7E3/Heart_Disease_Stroke_and_Healthy_Living.htm

Cancer Care Ontario: <http://www.cancercare.on.ca>

Literature Cited:

1. Grimshaw J, Eccles M, Thomas R, MacLennan G, Ramsay C, Fraser C, et al. Toward evidence-based quality improvement. Evidence (and its limitations) of the effectiveness of guideline dissemination and implementation strategies 1966-1998. *J Gen Intern Med* 2006;21 Suppl 2:S14-S20.

Additional reading

Fraser Health. Knowledge transfer. Surrey (BC): Fraser Health. Available from: http://research.fraserhealth.ca/knowledge_transfer/

Graham I, Logan J, Harrison M, Straus S, Tetroe J, Caswell W, et al. Lost in translation: time for a map. *J Contin Educ Health Prof* 2006;26(1):13-24.

Grindrod KA, Patel P, Martin JE. What interventions should pharmacists employ to impact health practitioners' prescribing practices? *Ann Pharmacother* 2006;40(9):1546-1557.

Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *Lancet* 2003;362(9391):1225-1230.

Straus S, Tetroe J, Graham I, editors. *Knowledge translation in health care: moving from evidence to practice*. Mississauga (ON): Wiley-Blackwell; 2009.