Knowledge Translation in Canada: Today and tomorrow

Sharon E. Straus MD MSc FRCPC
Tier 1 Canada Research Chair

A webcast hosted by AIR’s Center on Knowledge Translation for Disability and Rehabilitation Research (KTDRR)
Competing Interests

• No Pharma funding
• Associate editor for CMAJ, ACP Journal Club, Implementation Science; Editorial Board for JCE
• Wrote a book on KT, royalties go to a trainee fund
What is the challenge?

• Research Waste
  – The ‘know-do’ gap
  – 85% of research funding is wasted
    • $250B/year
Knowledge translation: A potential solution

• It is a dynamic and iterative process that includes synthesis, dissemination, and implementation of knowledge

• It is about putting knowledge into action, at all levels of decision making, to improve health
  • Citizens, Patients, clinicians, managers, policy makers, researchers, funders
Different Terms for KT

- Evidence-based programs
- Evidence-based guidelines
- Evidence-based practices
- Spread
- Knowledge Transfer
- Research Utilization
- Research Use
- Knowledge Exchange
- Implementation Science
- Knowledge Translation
- Knowledge Mobilization
- Knowledge Uptake
- Dissemination and Diffusion
- Implementation
- Sustainability
- Scale up
- Evidence implementation
- Evidence
- Research use
- Dissemination science
Our objective was to produce search filters for KT articles in the major healthcare databases, Medline and CINAHL. We approached the KT literature as having two natural subgroups of articles, those describing interventions designed to change behaviours (KT applications) and those related to the theory and understanding of KT (KT theory). In this study, we sought to develop and validate search filters to retrieve articles with content related to KT in general (general KT articles, KT applications, and KT theory) as well as KT applications and KT theory separately.

View the KT search filters for CINAHL.

**Citations:**


Welcome to KT+

Knowledge Translation+ (KT+) is provided by McMaster University’s Health Information Research Unit.

KT+ provides access to the current evidence on "T2" knowledge translation* (ie, research addressing the knowledge to practice gap), including published original articles and systematic reviews on health care quality improvement, continuing professional education, computerized clinical decision support, health services research and patient adherence. Its purpose is to inform those working in the knowledge translation area of current research as it is published.

* based on the notion that T1 KT involves translational research from the lab to humans, while T2 KT has to do with understanding and enhancing the dissemination and application of research-derived knowledge in health care (Hulley et al, 2007).

You will find two types of articles on this site:

Quality-filtered KT Articles
The best evidence relevant to knowledge translation in the areas of quality improvement, continuing medical education, computerized clinical decision support, health services research and patient adherence, identified from over 130 premier clinical journals. All citations are pre-rated for quality by research staff at McMaster University. All articles are then rated for clinical relevance and interest by at least 3 members of a worldwide panel of practicing health professionals.

Additional KT Articles
Knowledge translation research articles identified from other sources (i.e., the included studies of KT systematic reviews and studies and reviews identified from searching PubMed) that are not quality filtered but have relevant KT content. These papers are not rated by the
Knowledge Mobilisation

**Dissemination**

**Practice**
- **Dissemination Practice**
  Purposive distribution of information and intervention materials to a specific audience. The intent is to spread information. (NIH)

**Science**
- **Dissemination Science**
  The scientific study of processes and variables that determine and/or influence the spread/sharing of knowledge to various stakeholders.

**Implementation**

**Practice**
- **Implementation Practice**
  The use of strategies to adopt and integrate evidence-based interventions and change practice within specific settings. (NIH)

**Science**
- **Implementation Science**
  The scientific study of the methods to promote the uptake of research findings in clinical, organizational, or policy contexts. (Implementation Science journal)

Two broad types of KT at CIHR

**End of grant KT**

- The researcher develops and implements a plan for making knowledge users aware of the knowledge generated through a research project

**Integrated KT**

- Research approaches that engage potential knowledge users as partners in the research process
- Requires a collaborative or participatory approach to research that is action oriented and is solutions and impact focused
- For example, the knowledge user partner helps to define the research question and is involved in interpreting and applying the findings

Source: [http://www.cihr-irsc.gc.ca/e/45321.html](http://www.cihr-irsc.gc.ca/e/45321.html)
KT Canada

• Funded by CIHR-CFI in 2007
• National training initiative funded in 2008
• Now, many of the centres are funded by CIHR-SPOR
KT Canada

- 4 *interlinked research programs*
  - Knowledge synthesis and distillation
  - Determinants of knowledge use
  - Selecting, tailoring and evaluating effectiveness and efficiency of KT interventions, and
  - Sustaining KT

- Targeting 3 *key stakeholder groups*
Building capacity in KT: KT Canada

• Provide outstanding, innovative training centres and laboratories for trainees from various research disciplines to develop skills in KT and KT research;
• Link trainees and mentors to collaboratively advance the science and practice of KT; and,
• Partner with other national and international research groups to promote KT research and training
4 core competencies:

• Understanding models of KT and KT research;
• Developing capacity to conduct systematic reviews to address KT questions;
• Developing capacity in qualitative and mixed methods to examine factors that influence use of evidence; and,
• Developing skills to evaluate the impact, effectiveness and sustainability of KT strategies in different settings and targeting different stakeholders.
Building capacity in KT

Stream 1

- Seminar Series
  - Research Operations
- Summer Institute
- KT Courses
  - Pragmatic Trials
  - Systematic Reviews
  - Mixed Methods
  - End of Grant KT
- Student Stipends
- Community of Learners
- Mentorship
Mentorship is a key component

- In a systematic review of factors influencing career choice, important factors include:
  - Having a mentor
  - Being exposed to someone who enjoys what they do

- In a systematic review of mentorship, good mentorship enhances:
  - Personal development
  - Career guidance
  - Career choice
    - Discipline selected
    - Academic vs. non-academic position
  - Research productivity
  - Retention and recruitment
    - JAMA 2006;296:1103-15; JGIM 2006 Dec;21(12):1222-9
Building capacity in KT

• Stream 2
  – KT Seminars
  – KT Courses
    – End of Grant KT
    – KT Basics/Practising KT
Building capacity in KT

Stream 3

• KT courses
  – Introduction to KT
  – KT basics/Practising KT
What are some of the key KT challenges that need to be addressed?
1. Lack of knowledge isn’t the most significant barrier

- You see a 74 year old woman (Mrs. M) in clinic with a history of
  - Osteoporosis and history of vertebral fracture
  - Type 2 diabetes (on oral agents)
  - Hypertension
  - Chronic kidney disease

- How much time is required to implement recommendations from relevant chronic disease practice guidelines?
## Applying relevant practice guidelines

<table>
<thead>
<tr>
<th>Patient Sub-Group</th>
<th>Time Required/pt (minutes)</th>
<th>Patients</th>
<th>Total time (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any patient aged 55 and over</td>
<td>61</td>
<td>160 (100%)</td>
<td>162.67</td>
</tr>
<tr>
<td>Male diabetics</td>
<td>8.3</td>
<td>23 (14%)</td>
<td>3.18</td>
</tr>
<tr>
<td>Diabetics with neuropathy</td>
<td>6.9</td>
<td>4 (3%)</td>
<td>0.46</td>
</tr>
<tr>
<td>Diabetics with blood pressure greater than 130/80</td>
<td>5.1</td>
<td>12 (8%)</td>
<td>1.02</td>
</tr>
<tr>
<td>Diabetics with left ventricular dysfunction</td>
<td>5.1</td>
<td>3 (2%)</td>
<td>0.26</td>
</tr>
<tr>
<td>Diabetics with an estimated glomerular filtration rate less than 60</td>
<td>1.1</td>
<td>12 (8%)</td>
<td>0.22</td>
</tr>
<tr>
<td>Type 1 diabetics</td>
<td>24</td>
<td>1 (1%)</td>
<td>0.40</td>
</tr>
<tr>
<td>Type 2 diabetics</td>
<td>25</td>
<td>44 (28%)</td>
<td>18.33</td>
</tr>
<tr>
<td>Diabetics on only a single oral anti-hyperglycemic</td>
<td>10</td>
<td>19 (12%)</td>
<td>3.17</td>
</tr>
<tr>
<td>Diabetics on 2 or more anti-hyperglycemics</td>
<td>5</td>
<td>13 (8%)</td>
<td>1.08</td>
</tr>
</tbody>
</table>
Applying relevant practice guidelines

<table>
<thead>
<tr>
<th>Patient Sub Group</th>
<th>Time Required/pt (minutes)</th>
<th>Patients (n=160)</th>
<th>Total Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteoporotic patients</td>
<td>14</td>
<td>25 (16%)</td>
<td>5.83</td>
</tr>
<tr>
<td>Patients who have had a bone mineral density test</td>
<td>1.3</td>
<td>78 (49%)</td>
<td>1.69</td>
</tr>
<tr>
<td>Patients with a vertebral fracture</td>
<td>7.9</td>
<td>0 (0%)</td>
<td>0.00</td>
</tr>
<tr>
<td>Hypertensive patients with a urine albumin:creatinine ratio&gt;30</td>
<td>6.5</td>
<td>2 (1%)</td>
<td>0.22</td>
</tr>
<tr>
<td>Patients with chronic kidney disease of any stage</td>
<td>18</td>
<td>22 (14%)</td>
<td>6.60</td>
</tr>
<tr>
<td>Patients with chronic kidney disease stage 3-5</td>
<td>0.89</td>
<td>14 (9%)</td>
<td>0.21</td>
</tr>
</tbody>
</table>

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Mrs. M

• How much time is required annually to manage these conditions (assuming no complications arise)?
  – 129.2 minutes/year
  – Mrs. M is only seen for 36 minutes/year
    • Kerr J et al. CGS 2013
Clinical Literature * thanks to Paul Glasziou!

* Used with permission - personal communication
Why is assessing organisational readiness important?

• MOVE ON
  – Implemented and evaluated an early mobilisation strategy for older adults admitted to acute care hospitals in Ontario
  – How do we know if 14 hospitals are ready to implement this?
    • Age and Ageing 2017; doi.prq/10.1093
Organizational Readiness for Change (TCU-ORC) has been recommended for you to use in your unique setting to assess your organization’s level of readiness to implement the change initiative.

Why this measure was recommended

This measure was recommended to you because your top priorities are related to Individual Structural aspects of readiness for change (refer to the definitions below).

Facts about this measure

- This measure contains a total of 118 items, of which 17 items (14%) are designed to assess Individual Structural priorities.
- A panel of your peers rated this measure as feasible to use, (i.e., can be implemented in a timely manner without causing undue burden to existing resources) and relevant to health care settings.
- A promoter score (i.e., likelihood to recommend to others) of 6 out of 10 was awarded to this measure by your peers.
- For details on how to access this measure click below.
Barriers at all levels

Barriers at different levels:

– **Health care system** (e.g. financial disincentives)

– **Health care organization** (e.g. inappropriate skills)

– **Health care teams** (e.g. local standards of care not aligned with desired practice)

– **Individual clinicians** (e.g. knowledge, skills, attitudes)

– **Public/Patients** (e.g. lack of adherence to recommendations)
2. Clinicians should not be the only target for KT

• To examine the influence of KT/QI interventions in patients with diabetes mellitus on the following:
  – glycemic control
  – vascular risk factor management
  – microvascular complication monitoring
  – smoking cessation
  – harms

## Quality Improvement Strategy

<table>
<thead>
<tr>
<th>Quality Improvement Strategy</th>
<th># RCTs</th>
<th>MD</th>
<th>95% CI</th>
<th>Favours Control</th>
<th>Favours Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion of Self-management</td>
<td>60</td>
<td>0.57</td>
<td>0.31 0.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Changes</td>
<td>48</td>
<td>0.57</td>
<td>0.42 0.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case Management</td>
<td>57</td>
<td>0.50</td>
<td>0.36 0.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Education</td>
<td>52</td>
<td>0.48</td>
<td>0.34 0.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilitated Relay</td>
<td>32</td>
<td>0.46</td>
<td>0.33 0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic Patient Register</td>
<td>27</td>
<td>0.42</td>
<td>0.24 0.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Reminders</td>
<td>21</td>
<td>0.39</td>
<td>0.12 0.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audit and Feedback</td>
<td>8</td>
<td>0.26</td>
<td>0.08 0.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinician Education</td>
<td>15</td>
<td>0.19</td>
<td>0.03 0.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinician Reminders</td>
<td>18</td>
<td>0.16</td>
<td>0.02 0.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Incentives</td>
<td>1</td>
<td>0.10</td>
<td>-0.24 0.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous Quality Improvements</td>
<td>2</td>
<td>-0.23</td>
<td>-0.41 -0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>All Interventions</strong></td>
<td>120</td>
<td>0.37</td>
<td>0.28 0.45</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Results: Glycemic - HbA1c meta-analysis

**PLUS health systems/provider intervention**

Post-intervention reduction in HbA1c%

Source: Tricco et al. (2012)

3. Beware the “ISLAGIATT*” principle

- Systematic review of guideline implementation strategies
  - >250 studies of guideline implementation
  - Few studies use evidence to inform the development of the interventions

- Health Technology Assessment 2004;8(6):iii-iv, 1-72

» *Martin Eccles (Used with permission – personal communication)
Beware the ISLAGIATT principle

• Systematic review of 140 trials of audit and feedback
  – 17 head to head trials
  – Less than half use elements that theory would suggest might optimise the intervention

• Systematic review of 99 studies of quality/safety teams
  – 2 trials
  – Few studies included any element of description of the planning of the intervention
  – No study provided information on mechanism of action or fidelity of the intervention
4. Consideration of sustainability of the KT intervention shouldn’t be left until the end

• ‘Canada is a country of perpetual pilot projects in health care’
  • Bégin, CMAJ 2009
• Policy cycles are often different from organisational and research timelines
• Academic credit for staying engaged with a project
Common Sense
KT
5. KT theories, models and frameworks

• Scoping review of KT theories/models/frameworks for chronic disease assessment/management or cancer prevention/control

• 597 studies reporting on the use of 159 KT theories/models/frameworks to inform 669 interventions.

• The three most common theories/models/frameworks were:
  – Prochaska and DiClemente’s Transtheoretical Model of Behaviour Change (144 studies),
  – Bandura’s Social Cognitive Theory (143 studies),
  – Rosenstock’s Health Belief Model (65 studies)

• 60% were used only once

• 26 were ‘full spectrum’ theories/models/frameworks

  – Strifler et al, under review
Summary

1. Move beyond considering lack of knowledge as the key barrier to implementation
2. Consider targets for implementation - Clinicians are not the only target
3. Beware the ISLAGIATT principle
4. Consider sustainability from the beginning
5. We don’t need another KT theory/model/framework and those that have been developed need to be tested
Acknowledgements

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• KT Canada investigators

Evaluation:
Disclaimer

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