Knowledge Translation and Transfer: Nothing New or a New Science?

Ian Young and Andrijana Rajić

Science to Policy Division, Laboratory for Foodborne Zoonoses, Public Health Agency of Canada
Department of Population Medicine, Ontario Veterinary College, University of Guelph

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Overview

• What is KTT?
  – Illustration through a 5-step KTT framework
  – Criticisms and challenges

• KTT in the Science to Policy Division, LFZ, PHAC

• Bridging the gap between science and policy in the agri-food sector (Lead: A. Rajić)

• Nothing new or a new science?
Rationale for KTT Science

• Research knowledge is underutilized by practitioners and policy-makers

• Many barriers towards integrating evidence into practice and policy:
  – Time and resources
  – Skills and training
  – Leadership and organizational capacity
  – Availability and quality of evidence
  – Contextual and political environment
  – Communication and collaboration

(Anderson et al., 1999; Lavis et al., 2005; Graham et al., 2006; Bowen et al., 2009)
What is KTT?

• CIHR Definition
  – “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”

• Purpose
  – Increase the likelihood that the best available research knowledge will be used to inform policy and practice decisions
5-Step KTT Framework

• What should be transferred (*the message*)?
• To whom should it be transferred (*the target audience*)?
• By whom should it be transferred (*the messenger*)?
• How should it be transferred (*KTT processes and supporting infrastructure*)?
• With what effect should it be transferred (*evaluation*)?

(Lavis et al., 2003)
What Should Be Transferred?

- **Actionable messages**

- **Example**
  - MA of prevalence of ciprofloxacin-resistant *Campylobacter* in organic vs. conventional retail chicken

- **Message**
  - Increased risk of CIP-resistant *Campylobacter* in conventional chicken, but more research in Canada is needed
To Whom Should it Be Transferred?

- Target audience must be identified
- Multiple audience-specific messages
- Understand contextual decision-making environment
- Considerable investment of time and resources

*Preempt probiotic reduced the risk of Salmonella colonization by 47% out of 100 in treated chickens compared to the control group*
By Whom Should it Be Transferred?

• Credible and trustworthy messengers
• Ideal choice
  – Researchers with appropriate skills and experience
• Trusted intermediaries
  – Knowledge brokers, agricultural extension services
• Time-consuming and skill-intensive
How Should it Be Transferred?

• Passive processes ineffective
  – Requires more than researcher “push” or user “pull” of results

• Interactive and collaborative approaches recommended

• Importance of supporting infrastructure
With What Effect Should it Be Transferred?

• Evaluation must be appropriate to the target audience and objectives
  – **Instrumental**
    • Acting on research in specific and direct way
  – **Conceptual**
    • General and indirect form of enlightenment
  – **Symbolic**
    • To support or justify a position already held
KTT Criticisms and Challenges

- Inconsistent terminology and definitions
- Multitude of theoretical models and frameworks
- Lack of robust and high-level evidence for KTT
- Medical model of KTT does not fit with complex policy-making process

(Source: Bennett and Jessani, 2011)
Science to Policy Division, LFZ

- Synthesis expertise developed by Dr. A. Rajić and Dr. J. Sargeant (2004-2006)
  - >30 projects and >40 peer-reviewed publications completed with wide range of collaborators
  - >1,000 professionals trained in SR-MA methods in Canada and internationally

- Two recent KTT grants (Lead: Rajić/McEwen)
  1. Developing capacity for KTT in agri-food public health
  2. Bridging the gap between science and policy in the agri-food sector through KTT support tools
KTT Support Tools Objectives

1. Mixed-method review
   - Identify, characterize, and summarize methods to support KTT for policy- and decision-making in various sectors

2. Survey and focus groups
   - Determine applicability and usefulness for agri-food sector

3. KTT Handbook
   - 3-5 key methods will be prioritized and summarized

4. KTT workshop with agri-food professionals
   - Increase awareness of practical methods and tools for KTT
Mixed-Method Review of KTT Methods

**Research Question**
- What are the key KTT methods and characteristics?

**Search Strategy**
- Five databases
- Scopus web search

**Data Characterization**
- Extraction of key characteristics

**Analysis and Summary**
- Thematic analysis
- Narrative summary

**Relevance Screening**
- Pre-tested form
- Two key Qs

**KTT Grant 2:** “Bridging the gap between science and policy in the agri-food sector through KTT support tools”

**Collaborators:** Scott McEwen, Judy Greig, Mai Pham, Lisa Waddell, Barbara Marshall, Katarina Pintar, Kate Thomas, Javier Sanchez, Andrew Papadopoulos
**Preliminary Results: Flow-Chart**

**Search**
- Citations: 1105
- Excluded
  - Duplicates: 278

**Relevance screening**
- Citations: 827
- Excluded
  - Not relevant: 659

**Characterization**
- Articles: 168
- Excluded
  - Not relevant: 8
  - Case studies: Articles: 57
    - Prioritized for coding: 6
  - General overviews: Articles: 75
    - Prioritized for coding: 27
  - Detailed methods: Articles: 28

**Analysis**
- Thematic analysis
  - General KTT uptake: 13
  - KTT for policy-making: 20
- Overall interpretation
- Narrative summary
  - 3-5 methods prioritized
## List of KTT Methods

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<thead>
<tr>
<th>Synthesis</th>
<th>Dissemination</th>
<th>Exchange</th>
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<tbody>
<tr>
<td>• Knowledge mapping</td>
<td>• Scientific journals</td>
<td>• Networks and communities of practice</td>
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<tr>
<td>• Scoping reviews</td>
<td>• Popular print media (e.g. newspapers)</td>
<td>• Knowledge brokering</td>
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<td>• Systematic reviews-meta-analysis</td>
<td>• Websites and email</td>
<td>• Agricultural extension</td>
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<td>• Stakeholder engagement in SRs</td>
<td>• Social media</td>
<td>• Consulting</td>
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<td>• Mixed-method and qualitative reviews</td>
<td>• Conferences</td>
<td>• Journal clubs</td>
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<td>• Workshops</td>
<td>• Policy dialogues</td>
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<td>• Policy briefs</td>
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<td>• Evidence summaries</td>
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Systematic Reviews

• Review of clearly formulated question that uses systematic and explicit methods to identify, select, critically appraise, extract, and analyze data from relevant research

• May or may not include meta-analysis
Systematic Review Examples

The Effect of Hazard Analysis Critical Control Point Programs on Microbial Contamination of Carcasses in Abattoirs: A Systematic Review of Published Data

FOODBORNE PATHOGENS AND DISEASE
Barbara Wilhelmi,1,2 Andriana Rajo,1,3 Judy D. Greig,1 Lisa Waddell,1,2 and Janet Harris1

A systematic review/meta-analysis of primary research investigating swine, pork or pork products as a source of zoonotic hepatitis E virus


B. J. WILHELM1,2*, A. RAJIO,1,3, J. GREIG1, L. WADDELL1,2, G. TROTTIER*, A. HOUGE1, J. HARRIS1, L. N. BORDEN1, and C. PRICE1

Study name | Statistics for each study | Odds ratio and 95% CI | Relative weight
---|---|---|---
Ghaif et al., 2005 | 0.09 | 0.00-1.71 | 3.01
Phillips et al., 2003 | 1.21 | 0.35-4.15 | 17.51
Rose et al., 2002 | 1.77 | 0.10-33.06 | 3.10
Wagene, 1999 | 3.06 | 0.12-76.95 | 2.55
USDA-FSIS, 1998a | 0.84 | 0.46-1.53 | 73.82
Pooled estimate | 0.89 | 0.53-1.48 | 0.01

FIG. 2. Odds of *Salmonella* spp. contamination on beef carcasses before and after hazard analysis critical control point implementation.

Excluded (n = 156) irrelevant population or outcome (n = 137)
Foreign language (n = 137)

Excluded irrelevant study design (n = 57)
Foreign language (n = 9)
Literature review (n = 2)

Diagnostic test studies (n = 67) Part of another systematic review

Relevance screening level 1 (n = 1890)

Fig. 2. A summary of scoping study and systematic review results. Papers included in the scoping study are indicated in *italics*. Papers included in the systematic review are indicated in bold.
Stakeholder Engagement in SRs

- Ongoing interaction between researchers and end-users before, during or after a SR

Adapted from Keown et al., 2008
Stakeholder Engagement Examples

• Two ongoing scoping studies
  1) To evaluate pathways of human exposure to *Mycobacterium avium* ssp. *Paratuberculosis* (Lead: Lisa Waddell)
  2) To evaluate the potential public health risks of emerging zoonotic viruses in pigs and pork (Lead: Barbara Wilhelm)

• Diverse stakeholder committees
  – 3-4 conference calls during study

• Component of “Developing capacity for KTT” grant (Co-lead: Mai Pham)
Evidence Summaries

• Policy-makers prefer research evidence to be presented in a graded entry format (e.g. 1:3:25)

• 1- and 3-page summary sheets in development for published SRs in agri-food
  – 1 page of key messages
  – 3 page contextual summary
  – 25 page full report
Nothing New or a New Science?

• Many KTT elements have always been in place
  – KTT as a “new” science is aiming to formalize these methods and improve evidence-informed decision-making

• Several promising KTT methods exist, but their effectiveness and usefulness needs to be evaluated

• There is a need for:
  – Stronger researcher and knowledge user linkages
  – Cultural and organizational change
  – Genuine support, leadership, and commitment from all sides
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Questions?