Introduction to Knowledge Translation

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Inspired Care. Inspiring Science.

Competing Interests

- Associate Editor – CMAJ, Impl Science, ACP Journal Club
- Guest Editor/Editorial Board – JCE
- Author of books on EBM, KT, Mentorship
  - Royalties directed to trainee fund

Objectives

- To enhance knowledge of a framework for knowledge translation
- To enhance knowledge of challenges to knowledge translation

‘Evidence-based medicine should be complemented by evidence-based implementation’

- Grol, BMJ 1997

What is knowledge translation?

- Knowledge translation is 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
  - CIHR definition www.cihr-irsc.gc.ca/e/29418.html

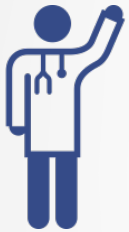
Confusion about what it's called

- Applied dissemination
- Research utilisation
- Implementation
- Evidence uptake
- Effective dissemination
- Diffusion
- Information dissemination

- Knowledge adoption
- Knowledge synthesis, transfer and exchange
- Knowledge linkage and exchange
- Research into action/practice
- Translating research into practice…
  - McKibbon et al. Impl Sci 2010, 5:16

KT: Dissemination and Implementation

Knowledge Translation

	Dissemination	Implementation
 Practice	**Dissemination Practice** Purposive distribution of information and intervention materials to a specific audience. The intent is to spread information. (NIH)	**Implementation Practice** The use of strategies to adopt and integrate evidence-based interventions and change practice within specific settings. (NIH)
 Science	**Dissemination Science** The scientific study of processes and variables that determine and/or influence the spread/sharing of knowledge to various stakeholders. (NIH)	**Implementation Science** The scientific study of the methods to promote the uptake of research findings in clinical, organizational, or policy contexts. (Implementation Science journal)

Dissemination and Implementation Science. (n.d.). *National Institutes of Health.* Retrieved September 21, 2015, from https://www.nlm.nih.gov/hsrinfo/implementation_science.html; Implementation Science. Retrieved September 21, 2015, from http://www.springer.com/public+health/health+promotion+%26+disease+prevention/journal/13012

- Hedges
  - PubMed Clinical Queries
  - Health Services Research Queries
  - Ovid Clinical Queries
  - Nephrology Filters
  - KT Filters
- Program in Evidence-Based Care — Cancer Care Ontario
- Faculty and Staff
- Collaborations
- Contact Info and Directions

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:

1. McKibbon KA, Lokker C, Wilczynski NL, Haynes RB, Ciliska D, Dobbins M, Davis DA, Straus SE. Search filters can find some but not all knowledge translation articles in MEDLINE: an analytic survey. J Clin Epidemiol. 2012 Jun;65(6):651-9. Epub 2012 Mar 16. Review. PubMed PMID: 22424986.

2: Lokker C, McKibbon KA, Wilczynski NL, Haynes RB, Ciliska D, Dobbins M, Davis DA, Straus SE. Finding knowledge translation articles in CINAHL. Stud Health Technol Inform. 2010;160(Pt 2):1179-83. PubMed PMID: 20841870.

KT - Content		
Filter type	**Ovid Filter**	**Sens / spec / prec / acc(%)**
Maximizes sensitivity	Exp clinical medicine OR exp health services administration OR exp review literature OR patient education.mp	83 / 51 / 33 / 59
Maximizes specificity	evidence-based medicine/ OR patient education.mp OR patient.mp OR Review Literature/	70 / 67 / 37 / 67
Best balance of sensitivity and specificity	Exp clinical medicine OR exp review literature OR guideline:.mp. OR patient.mp	74 / 65 / 38 / 67

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KT+ Knowledge Translation

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McMaster Health Knowledge Refinery

McMaster PLUS

KT CANADA

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Search Articles:
Search

Resources
KT Wiki

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.

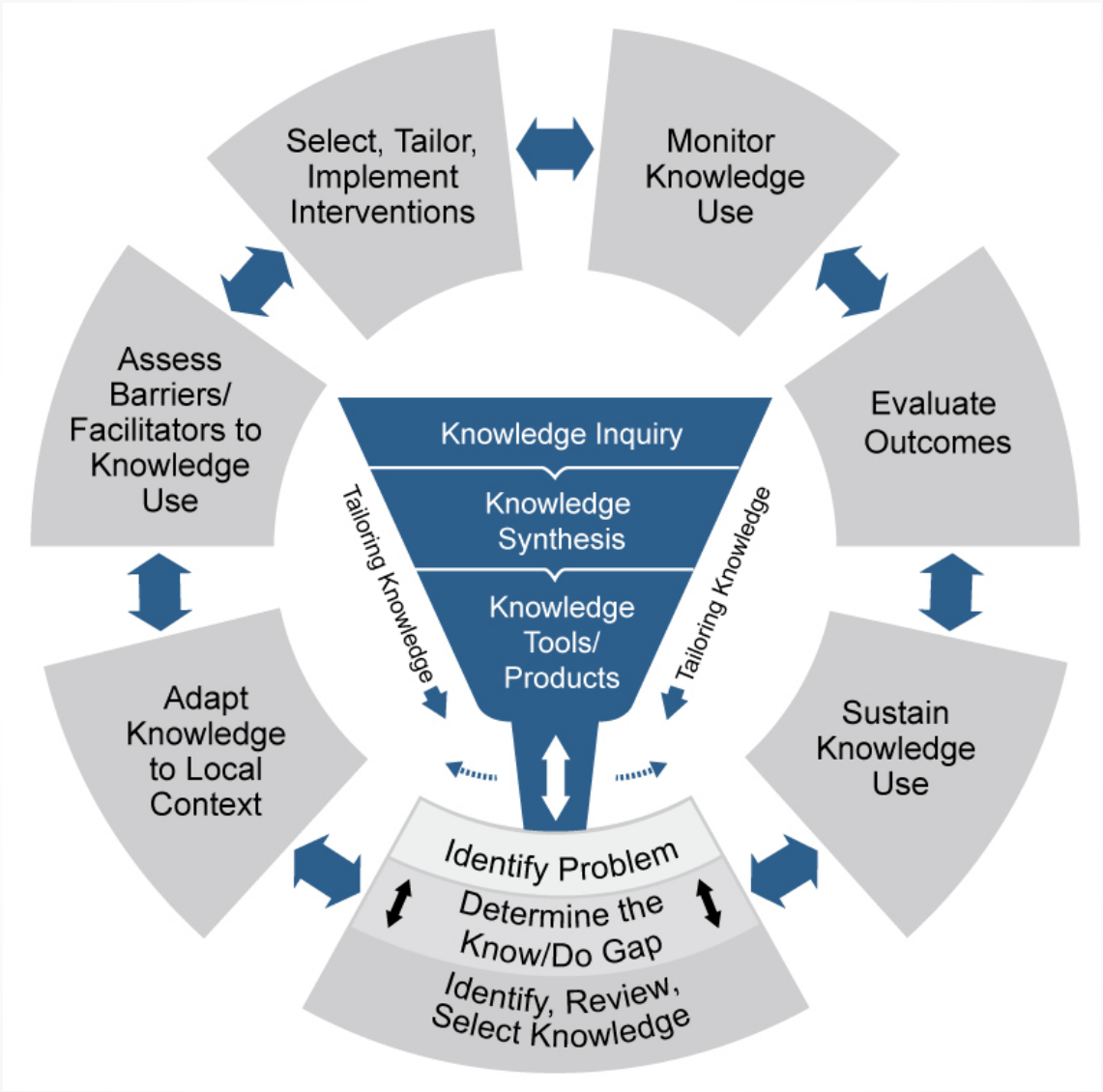
* based on the notion that T1 KT involves translational research from the lab to humans, while T2 KT has to do with understanding and enhancing the dissemination and application of research-derived knowledge in health care (Hulley et al, 2007).

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)

The Knowledge-to-Action (KTA) Model



Source: Graham ID et al. *JCHEP* 2006;26:13-24.

Challenges to Knowledge Translation

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 (secondary to DM)
- How much time is required to implement recommendations from relevant chronic disease practice guidelines?

Applying relevant practice guidelines

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

Applying relevant practice guidelines

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

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

What about organisational readiness?

- 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?
    - Implement Sci. 2014 Oct 30;9:160. doi: 10.1186/s13012-014-0160-6
    - Implement Sci. 2013 Jul 3;8:76. doi: 10.1186/1748-5908-8-76.

Development of decision support tool

- Identified key measures for assessing ORC from review by Gagnon et al
- Categorised individual items of included measures according to key readiness constructs
- Modified Delphi with stakeholder panel to assess feasibility and relevance of the measures
- Developed and tested decision support tool to guide selection of ORC measure
  - Implement Sci. 2014 May 10;9:56. doi: 10.1186/1748-5908-9-56
  - PLoS One. 2014 Dec 4;9(12):e114338

http://readiness.knowledgetranslation.ca/#3
Ready, Set, Change! A readi...
File Edit View Favorites Tools Help

Ready, Set, Change! is a decision support tool designed to guide users in the selection of an appropriate readiness for change assessment measure for their setting. The tool has been developed for use by frontline implementers and decision-makers in healthcare settings including but not limited to acute care, long-term care, public health, mental health, and healthcare policy. Ready, Set, Change! decision support tool is based on a framework for organizational readiness for change comprised of 4 key constructs:

Individual Psychological

Attitudes, beliefs, and perceptions held by individual staff members regarding the change. It may also refer to the extent to which staff members agree with the value of the change

Individual Structural

Staff members' knowledge, skills, and abilities to perform activities and roles related to the change. It may also refer to the willingness of individual staff to undergo training to improve their knowledge, skills, and abilities required for change implementation

Organizational Psychological

Collective commitment and collective efficacy, or the extent to which members of an organization are seen to work together to achieve change implementation

Organizational Structural

Human and material resources, communication channels, and formal policies required to support change implementation

These constructs are important to prioritize and assess before implementing an intervention.

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.

MOVE ON

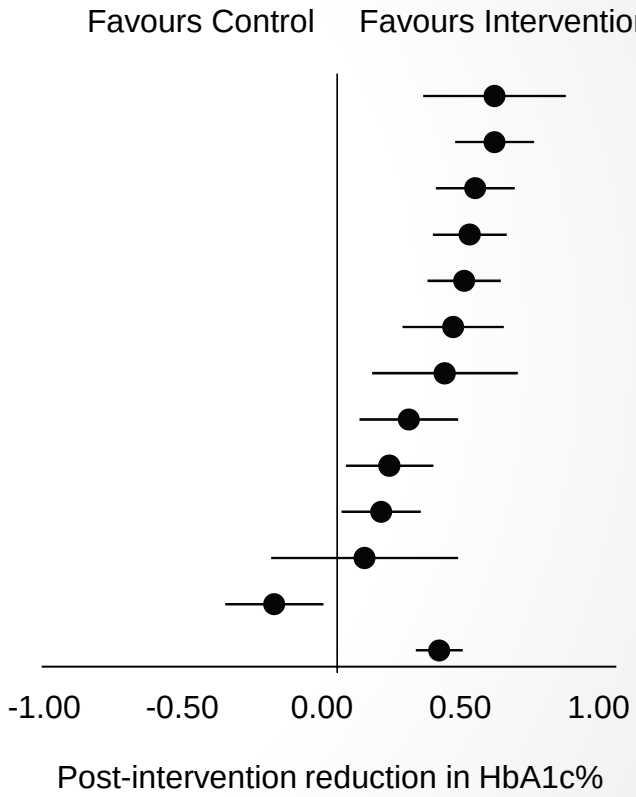
- Enrolled >20000 patients across 17 hospitals
- Median age 80.1 years
- Increased patient mobility
  - The proportion of patients who were mobilized (defined as out of bed at least once a day) increased by 10.6% (p=0.002) across the sites
- Decreased median length of stay
  - 6.1 days (p=0.0147)
- No difference in falls
  - Risk difference 1.2%, p=0.79

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
    - Tricco et al. Lancet 2012; 379:2252-61

Results: Glycemic - HbA1c meta-analysis

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



★ PLUS health systems/provider intervention

Tricco et al. Lancet 2012; 379:2252-61

3. Beware the "ISLAGIATT*" principle

- Systematic review of guideline implementation strategies
  - Few studies used theoretical basis to inform development of intervention
  - Few studies use evidence to inform the development of the interventions
    - Where is the evidence to inform the implementation?
      - Health Technology Assessment 2004;8(6):iii-iv, 1-72
    - *Martin Eccles

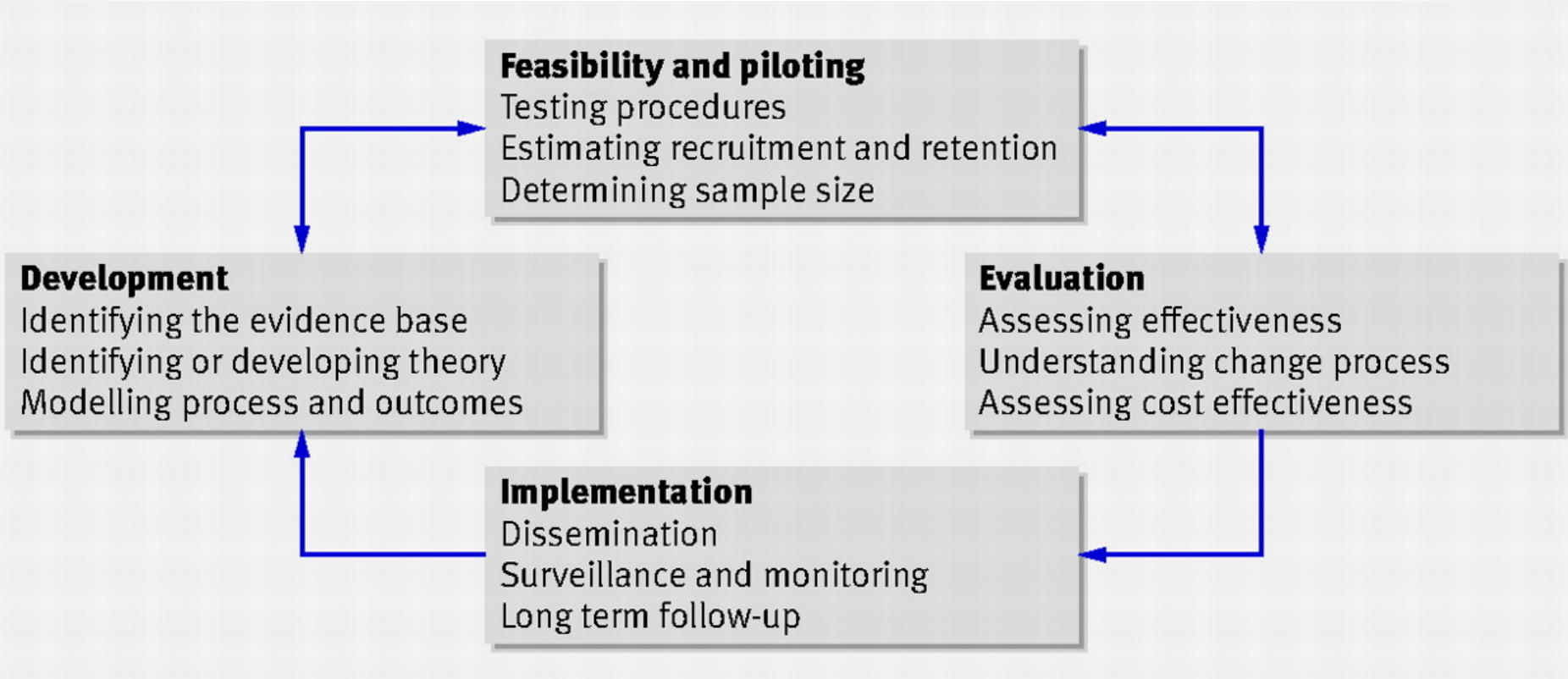
Beware the ISLAGIATT principle

- 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
  - Led by Noah Ivers
    - Cochrane Database of Systematic Reviews 2012, Issue 3. Art. No.: CD000259. DOI: 10.1002/14651858.CD000259.pub3.
- 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
    - Impl Sci 2011;6:97.

MRC Framework

BMJ 2008;337:979-83

J Clin Epidemiol. 2012 Nov;65(11):1163-70



Fracture Prevention

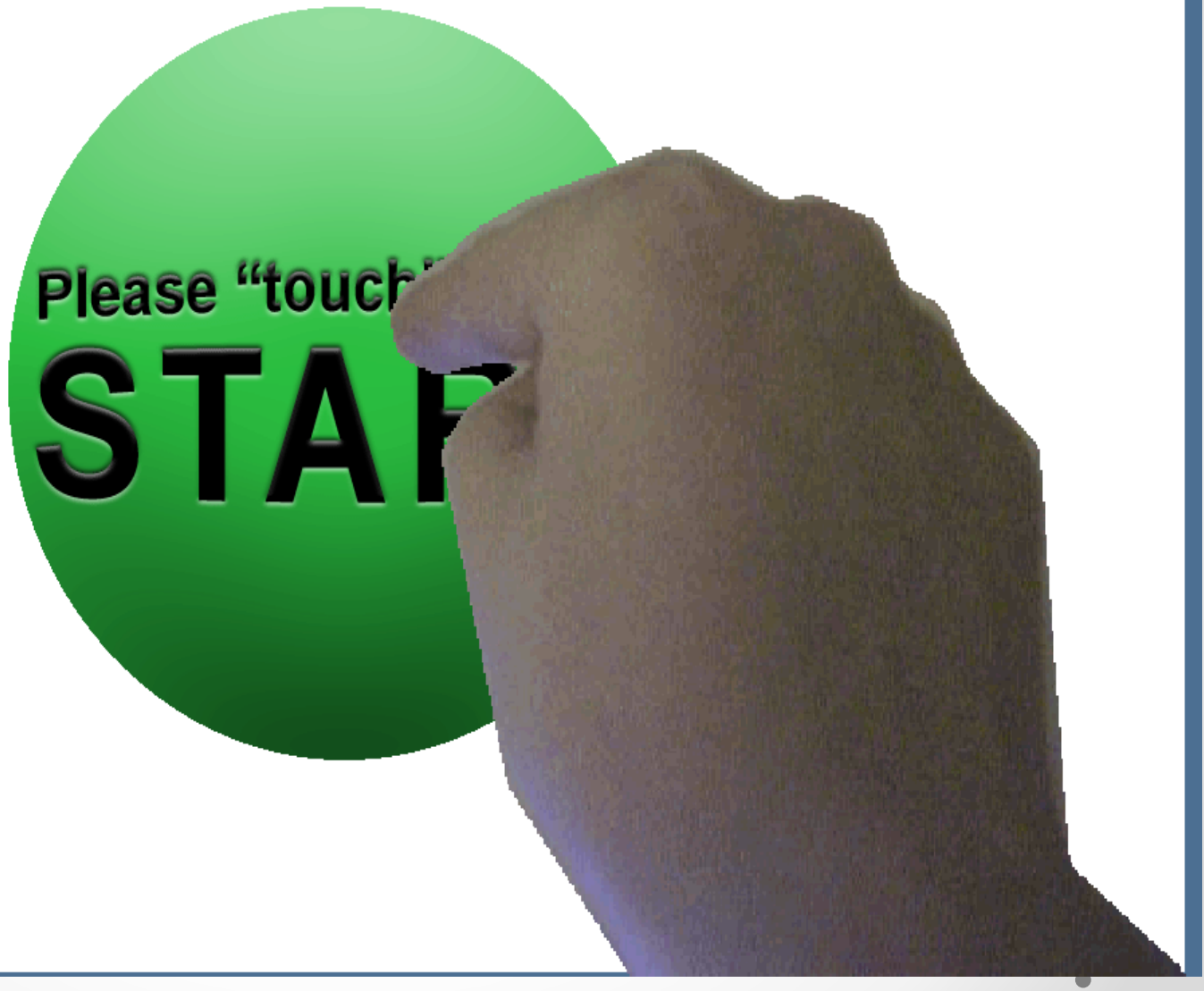
- FORCE RCT identified role for self-management
- BestPrompt
  - Osteoporosis risk management tool for patients and providers

    - Age and Ageing 2009;25:107-12.

Developing the Intervention

- Adapt the knowledge
  - Use focus groups, interviews, surveys, workflow analysis as necessary to understand needs of the end users and context
    - Implement Sci. 2010 Dec 10;5:96. doi: 10.1186/1748-5908-5-96
- Assess determinants of uptake
  - Conduct workflow analysis, focus groups, interviews
    - BMC Med Inform Decis Mak. 2010 Jul 22;10:40. doi: 10.1186/1472-6947-10-40
- Tailor the tool
  - Heuristic testing, individual usability testing
    - Implement Sci 2012; Dec

Osteoporosis Questionnaire



Evaluation of BestPrompt

- **Population:** Patients aged 60 years and older
- **Outcomes:** Initiation of BMD testing and prescription of Op medications
- **Setting:** 3 family practice settings of varying size
- **Study Design:** Interrupted Time Series
  - Baseline Assessment (12 months)
  - Implementation phase (1 month)
  - Intervention (12 months)

Results

- 351 patients accessed the tool (20% of eligible patients)
- Mean age 64 years (SD 10.2)
- Mean 3.4 minutes (SD 0.5 min) for patients to complete the assessment
- Increased BMD testing by 50%
- Increased use of appropriate OP medications by 50%
    - Implement Sci 2014;9:109.

Search Rx for Change Database

Browse

Professional

Financial

Consumer

Regulatory

Organisational

Professional

Interventions that target professionals directly, aiming to improve practice.

- Audit and feedback (45)

  New evidence added as of April 2013

  Any summary of clinical performance of health care over a specified period of time. The summary may also have included recommendations for clinical action. The information may have been obtained from medical records, computerised databases, or observations from patients.

- Distribution of educational materials (60)

  New evidence added as of April 2013

  Distribution of published or printed recommendations for clinical care, including clinical practice guidelines, audio-visual materials and electronic publications. The materials may have been delivered personally or through mass mailings.

- Educational meetings (82)

  New evidence added as of April 2013

  Healthcare providers who have participated in conferences, lectures, workshops or traineeships.

- Educational outreach visits (34)

  Use of a trained person who met with providers in their practice settings to give information with the intent of changing the provider's practice. The information given may have included feedback on the performance of the provider(s). Can also be referred to as "academic detailing".

Definition

Use of providers nominated by their colleagues as

Effectiveness

Two high quality reviews (Flodgren, Thomas) were identified. In one high quality (Flodgren) the use of local opinion leaders alone or combined with other interventions was generally effective for improving appropriate care outcomes. One high quality review (Thomas) had an insufficient number of studies to draw any conclusions about the effectiveness of the intervention on appropriate care outcomes.

Summary of Overall Findings from Reviews

6 reviews that evaluated the effectiveness of local opinion leaders were identified. Of these, 2/2 high quality/key reviews with a sufficient number of studies to draw conclusions found this intervention to be generally effective.

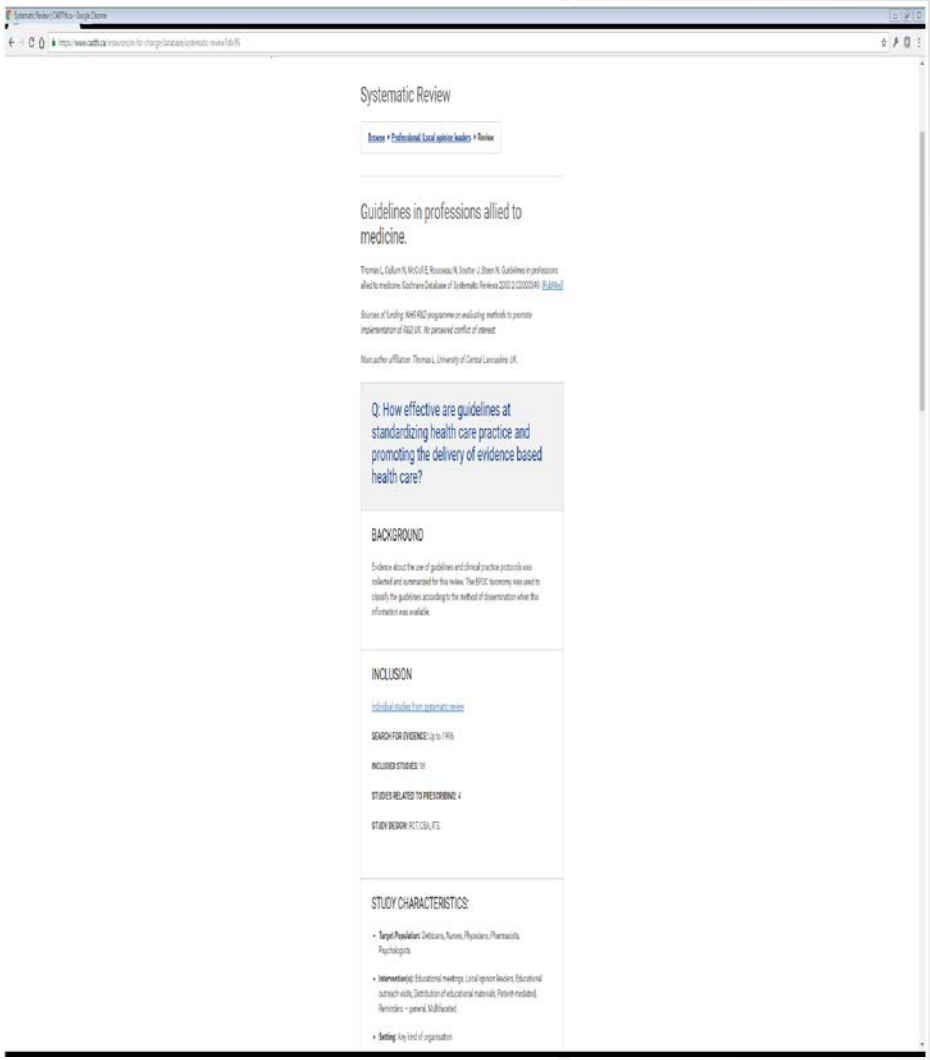
Summary of Findings Related to Prescribing

1/1 high quality reviews with a sufficient number of studies to draw conclusions found this intervention to be generally effective for improving prescribing outcomes.

Reviews listed as 'Summary Pending' will be analyzed, summarized and reported at a later date.

The findings will then be incorporated in the overall evidence summaries of the interventions they address.

Reviews Addressing This Intervention	Quality Assessment Tool: AMSTAR Score (of 11 points)
Flodgren G, Parmelli E, Doumit G, Gattellari M, O'Brien MA, Grimshaw J, Eccles MP. Local opinion leaders: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews 2011 8:CD000125.	9 (High)
Thomas L, Cullum N, McColl E, Rousseau N, Soutter J, Steen N. Guidelines in professions allied to medicine. Cochrane Database of Systematic Reviews 2000 2:CD000349.	8 (High)
van der Wees PJ, Jamtvedt G, Rebbeck T, de Bie RA, Dekker J, Hendriks EJ. Multifaceted strategies may increase implementation of physiotherapy clinical guidelines: a systematic review. Australian Journal of Physiotherapy 2008 54 (4):233-41.	7 (Medium)
Williams N, Woodward H, Majeed A, Saxena S. Primary care strategies to improve childhood immunisation	6 (Medium)



Systematic Review

Guidelines in professions allied to medicine.

Q: How effective are guidelines at standardizing health care practice and promoting the delivery of evidence based health care?

BACKGROUND

INCLUSION

STUDY CHARACTERISTICS:

5. Consideration of sustainability of the KT intervention shouldn't be left until the end

- Systematic review of the diffusion of innovations in health services organizations noted that only two of 1000 sources screened mentioned the term sustainability
    - Greenhalgh T et al. A systematic literature review. Blackwell Publishing, BMJ Books, 2005

Why is sustainability a concern?

- Many theories of planned action focus on short-term perspectives
- Research/project funding usually 1 to 2 years
- ?Academic credit for staying engaged with a project
- Policy cycles are often different from organisational and research timelines

6. Capacity Building in KT

Stream 1	**Stream 2**	**Stream 3**
Seminar series	Seminar Series	Seminar Series
Summer Institute	Foundations of KT	Intro to EBHC
Pragmatic Trials	End of Grant KT	Intro to KT
Systematic Reviews		Foundations of KT
Qualitative Methods		
End of Grant KT		
Twitter Journal Club		
Mentorship		

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