

Developing and Evaluating KT interventions

Knowledge Translation Program
Li Ka Shing Knowledge Institute of St. Michael's

Objectives

- ▶ To develop a strategy for developing and evaluating the impact of a complex intervention

KT Interventions

- ▶ An art and a science to selecting, tailoring and implementing KT interventions
- ▶ They can:
 - Target different stakeholder groups
 - Include single components or multiple components
 - Be theory driven or
 - Empirically driven or
 - Exploratory

Mapping the intervention

- ▶ Adapt the evidence
 - ▶ Assess the barriers and facilitators to knowledge uptake
 - ▶ Explore the local context and setting
 - ▶ Use evidence on what KT interventions may work – link the intervention to the barriers
 - ▶ Consider sustainability
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Evidence for implementation

- ▶ Systematic review of guideline implementation strategies
 - Identified 235 studies
 - 39% of these are from primary care
- ▶ Most evidence from clinician-oriented interventions
 - Education, reminders, audit and feedback
- ▶ Few studies used theoretical basis to inform development of intervention
- ▶ Multicomponent interventions did not lead to improved outcomes compared with single components
 - Health Technology Assessment 2004;8(6):iii-iv, 1-72

Evidence for KT interventions

- ▶ Professional interventions – overall absolute change in performance of 10%
- ▶ Organisational interventions such as revision of professional roles and teams can influence efficiency and clinical outcomes in some cases
- ▶ Patient directed interventions (such as decision aids) can support decision making
- ▶ Financial interventions can influence volumes, impact on clinical outcomes less clear
 - Knowledge Translation in Health Care Oxford:Wiley, 2009

KT Interventions for health care professionals

- ▶ 8.1% dissemination of educational materials
- ▶ 7.0% audit and feedback
- ▶ 14.1% reminders
- ▶ 6.0% educational outreach
- ▶ Most interventions had modest effects on care
- ▶ Number of components has no impact
- ▶ Grimshaw JM, et al. Health Technol Assess 2004;8(6)1–72

KT Interventions for patients/public

- ▶ Mass media
 - ▶ Education
 - ▶ Patient decision aids (shared decision making)
- 



- Resources
- Generic Drugs
- Rx for Change
 - Search Rx for Change Database
- Academic Detailing Templates
- Grey Matters: a practical search tool for evidence-based medicine

CADTH » Resources » Rx for Change » Search Rx for Change Database

Search Rx for Change Database

Browse » Intervention » Review » Individual Studies

To find information on interventions targeted at a specific group or area, browse the following categories:

Browse

► Professional

Interventions that target professionals directly, aiming to improve practice.

- [Audit and feedback](#) (35)
- [Distribution of educational materials](#) (50)
- [Educational meetings](#) (70)
- [Educational outreach visits](#) (31)
- [Local consensus processes](#) (8)
- [Local opinion leaders](#) (4)
- [Mass media](#) (4)
- [Multifaceted](#) (113)
- [Patient-mediated](#) (14)
- [Professional – other](#) (3)
- [Reminders – computer decision support systems \(drug dosing\)](#) (23)
- [Reminders – computer physician order entry](#) (15)
- [Reminders – general](#) (59)
- [Tailored interventions](#) (2)

► Consumer

► Organisational

► Financial

► Regulatory

[Excluded Reviews](#)

Studies Search

Text Search

Measuring impact of knowledge use

- ▶ Type of knowledge use:
 - Instrumental/concrete
 - e.g. prescribing of warfarin in patients with atrial fibrillation
 - Conceptual
 - e.g. provider attitudes about evidence
 - Symbolic
 - e.g. given your knowledge of the evidence around inappropriate use of restraints on older medical inpatients, you convince the nurse manager to develop a ward-based protocol on restraint use

Measuring impact of knowledge use

Construct	Description	Examples of Measures	Strategy for Data Collection
Knowledge Use			
Conceptual	Changes in knowledge levels, understanding or attitudes	Knowledge attitudes, intention to change	Questionnaires, interviews
Instrumental	Changes in behaviour or practice	Adherence to recommendations (e.g. changes in prescribing, adoption or abandonment of new nursing practice)	Administrative database or clinical database
Outcomes			
Patient	Impact on patients of using/applying the knowledge	Health status (mortality/morbidity); health related quality of life	Administrative database, clinical database, questionnaires
Care Provider	Impact on care providers of using/applying the knowledge	Satisfaction with practice; time taken to do new practice	Questionnaires, interviews
System	Impact on the health system of using/applying the knowledge	Costs; length of stay; waiting times	Administrative database; clinical database

Types of Studies of Interventions

Formative Studies

Design or plan *interventions* (practices, processes, programs, policies)

Descriptive Studies

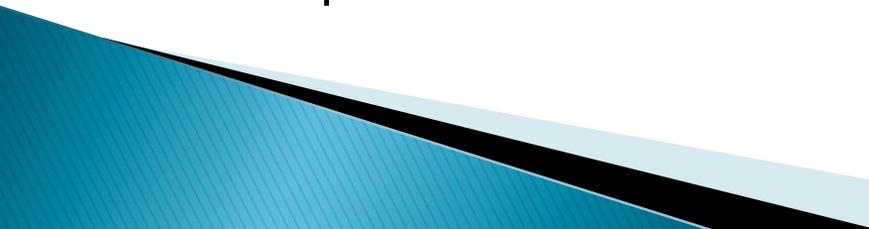
Describe and/or quantify what interventions, or some aspect of them, are like and/or how they function

Evaluation Studies

Find out if interventions are effective and/or efficient

Evaluation Studies may be Quantitative or Qualitative

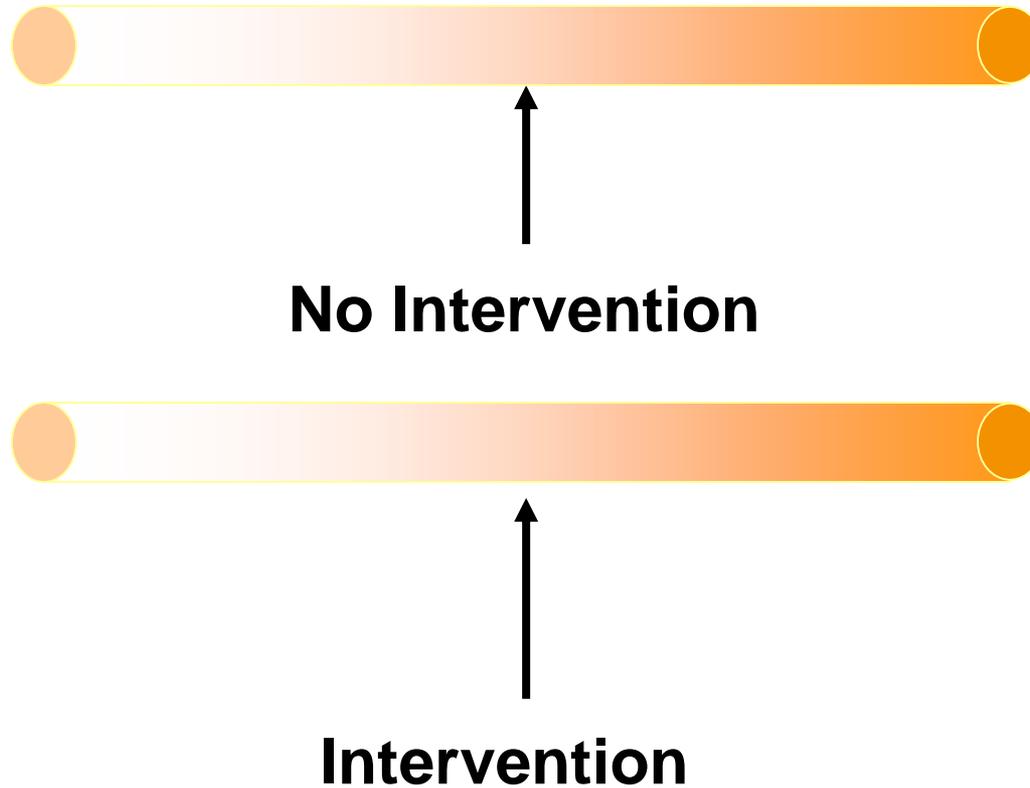
Perception or Measured Change



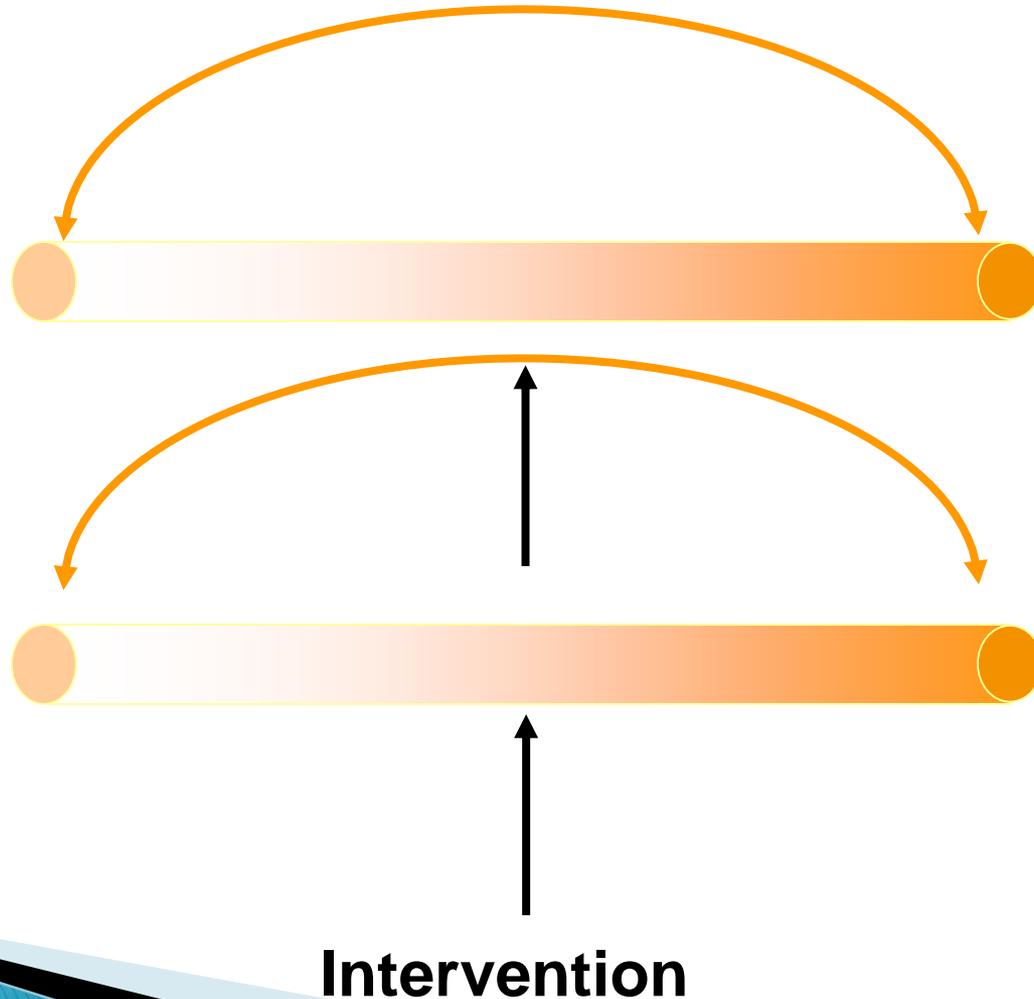
Evaluating the impact of knowledge use

- ▶ Randomised trial
- ▶ Interrupted time series
- ▶ Controlled before and after study
- ▶ Qualitative study
 - Investigate the active ingredients

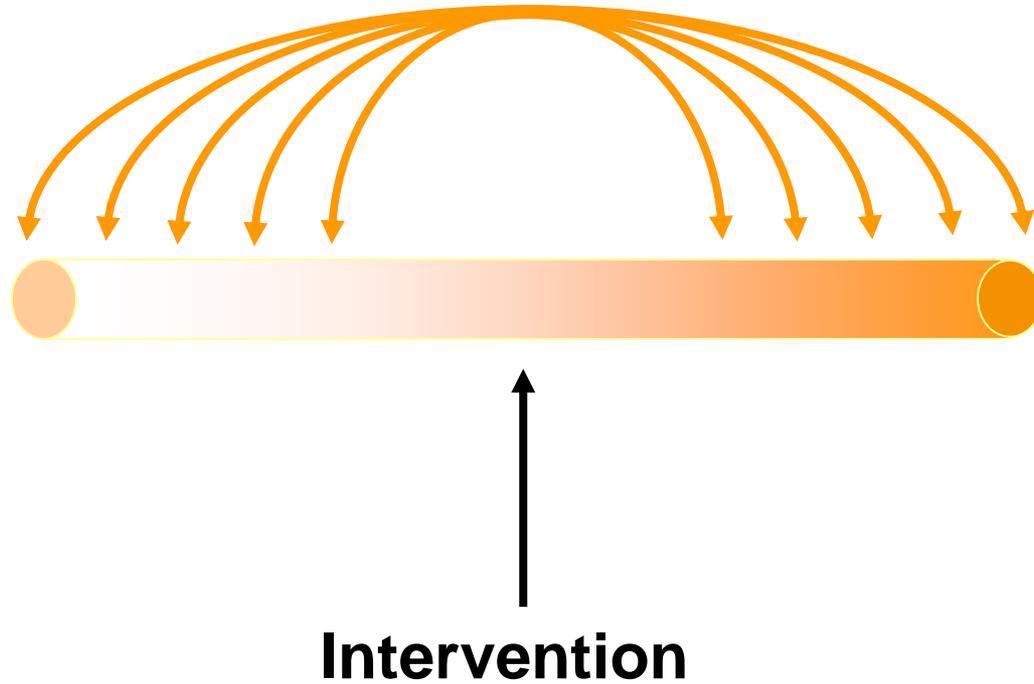
Controlled before and after study



Controlled before and after study



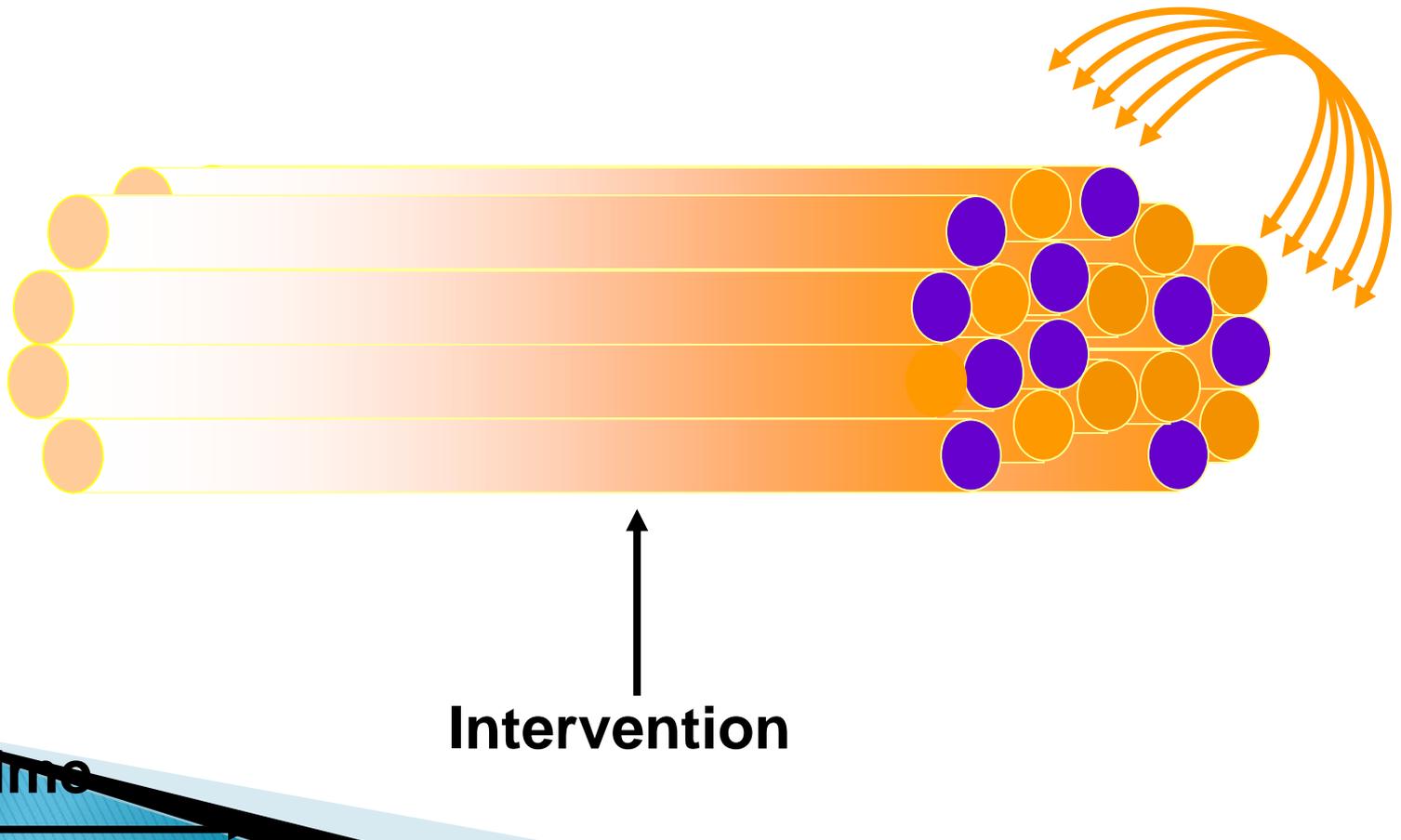
Interrupted time series



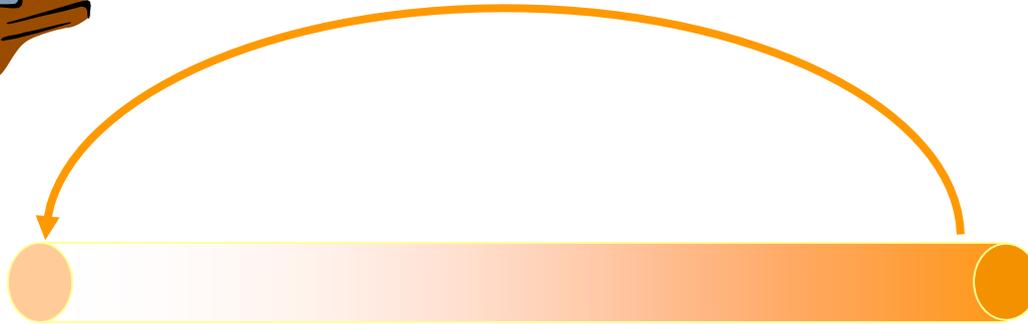
Time



Randomised controlled trial



Qualitative



Intervention

Time



Challenges to KT



1. Lack of knowledge is not the most significant barrier

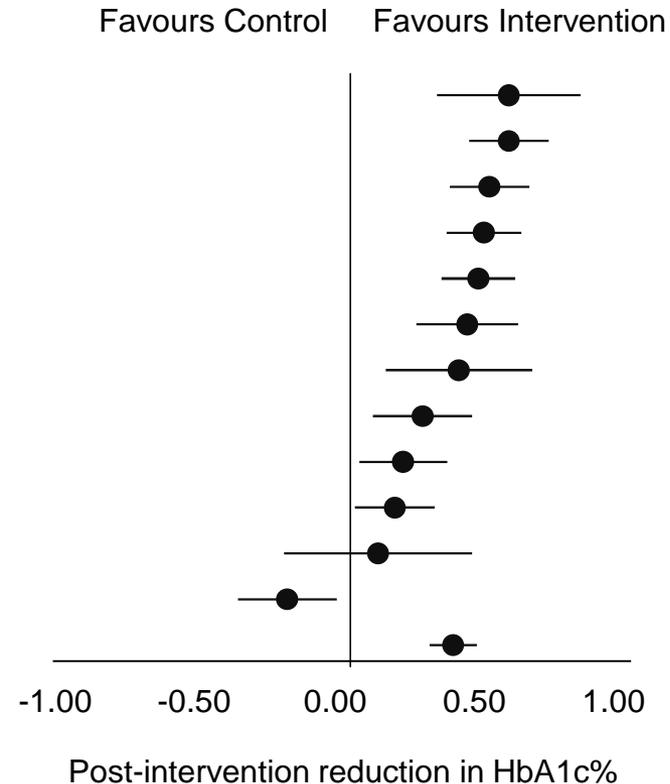
- ▶ Providing preventative services to a typical roster of patients would require 7.4 hours per working day
 - 3.5 hours per day required to manage top 10 chronic diseases in primary care
 - Ann Fam Phys 2005;3:209–14
- ▶ Barriers to KT exist at every level within the health care system

2. Clinicians should not be the only target for KT

- ▶ To examine the influence of KT/QI interventions 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

	<u>Quality Improvement Strategy</u>	<u># RCTs</u>	<u>MD</u>	<u>95% CI</u>	
★	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

Interpretation – HbA1c meta-regression

- ▶ All categories of QI/KT interventions appeared effective but larger effects observed for:
 - Team changes
 - Facilitated relay
 - Promotion of self management
 - Case management
 - Patient education
 - Electronic patient register
 - Patient reminders

3. Multicomponent interventions may not be more effective than single component interventions



What is a single or multicomponent intervention?

- ▶ Outreach visit
 - Includes instruction, motivation, planning of implementation, practical help
- ▶ Professional education
 - Includes lectures, materials, workshop
 - This intervention only addresses lack of knowledge

4. Beware the “it seemed like a good idea at the time” 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
 - Health Technology Assessment 2004;8(6):iii–iv, 1–72

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

Framework for scaling up and sustaining change

- ▶ Relevance
- ▶ Benefits
- ▶ Attitudes
- ▶ Networks
- ▶ Leadership
- ▶ Policy integration
- ▶ Financial
 - Davies B, Edwards N. In, *KT in Health Care*. Eds Straus, Tetroe, Graham. Wiley, 2009.

Some examples

Why delirium?

- ▶ Delirium is an acute disturbance of consciousness accompanied by a change in cognition or by development of a perceptual disturbance
- ▶ It occurs in
 - 25–65% of hospitalized patients treated for acute hip fracture
 - Up to 40% of people in long-term care

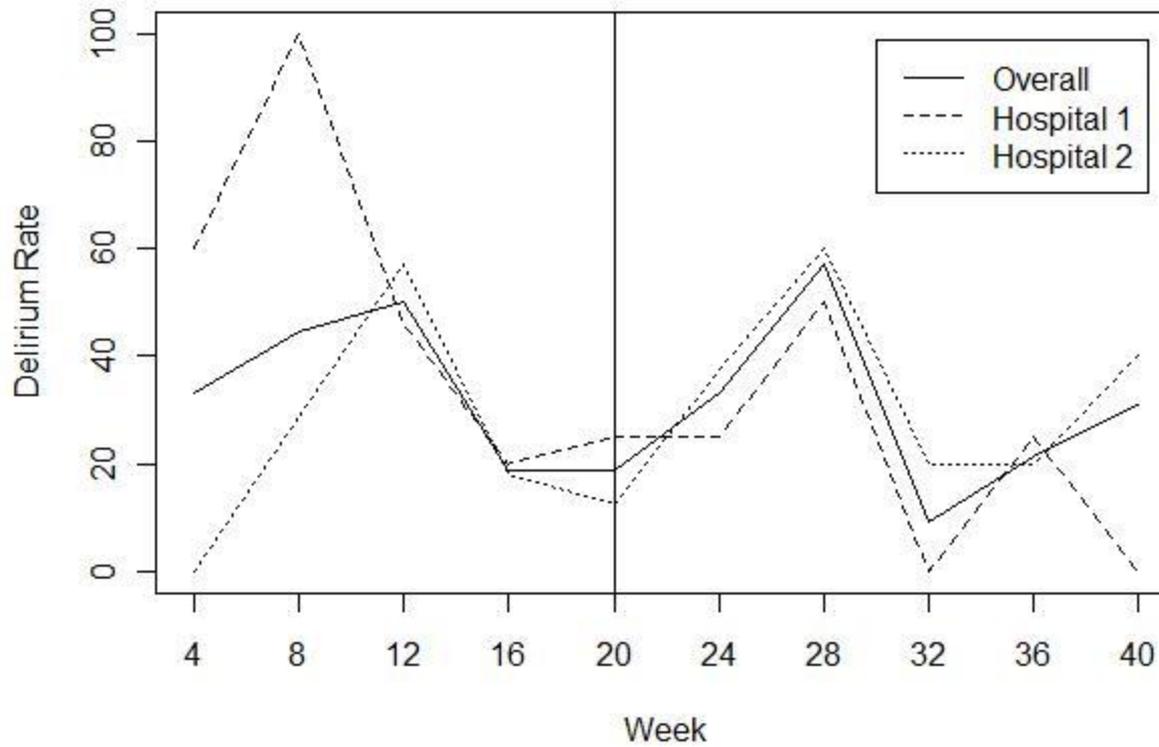
Can it be prevented?

- ▶ Multicomponent interventions in acute care may prevent delirium in hip fracture patients
 - May also be effective in long-term care

Implementation project

- ▶ Multicomponent intervention implemented in 2 hospitals in Calgary, Alberta
 - Care pathway
 - Order set
 - Training for CNS and frontline workers on use of CAM and pathway
- Implementation Science 2010;Oct 22;5:81

Change in delirium rates over time overall and by hospital.



FORCE Study

- ▶ Local public health agency has been working with the home care agency and a patient advocacy group because they noticed a problem with admissions to hospital in older adults with falls and fractures.
- ▶ Existing evidence for management of osteoporosis available
 - Age and Ageing 2009;1–7

FORCE Study

- ▶ They engaged primary care clinicians, general internists, pharmacists and rehabilitation therapists
- ▶ They did a local study showing that less than 40% of these people get assessed for osteoporosis or falls risk
- ▶ Identified barriers and facilitators to adaptation of the evidence
 - Lack of primary care clinicians; lack of referral to specialists...

FORCE Study

- ▶ Randomised trial of a multi-component educational intervention aimed at enhancing implementation of falls and osteoporosis management strategies for high-risk patients
 - ▶ Randomised 201 patients to immediate intervention or delayed intervention
 - ▶ Patients in the delayed intervention group were offered the intervention at 6 months
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Force Study

- ▶ Patients were eligible for inclusion in the study if they were:
 - community-dwelling,
 - aged 55 years or older,
 - able to give informed consent, and
 - were identified to be at high risk for osteoporosis or falls

Intervention

- ▶ Nurse completed the Berg Balance Scale, InterRai Screener, medication review and checked for orthostatic hypotension
 - ▶ BMD ordered and results sent to PCP with relevant prescribing information based on Osteoporosis Society of Canada guidelines
 - ▶ Similar information given to patient
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Results

- ▶ **Appropriate OP therapy**
 - 56% of IP group vs. 27% of DP group at 6 months (RR 2.09 [95% CI 1.29 to 3.40])
 - At 12 months, there was no difference between the 2 groups
- ▶ **Number of falls in IP group was greater at 12 months**
 - (RR 2.07 [95% CI 1.07 to 4.02])
- ▶ **Quality of life enhanced**

LBP in Australia

- ▶ CPG for LBP developed because it's the most frequent MSK condition managed by PCPs
- ▶ 6th most frequent reason for consulting a PCP
- ▶ Direct and indirect cost of LBP in 2001 was over \$9 billion
- ▶ Despite being well informed about and agreeing with LBP guidelines, lack of adherence to guidelines
 - Reasons cited include patients' preferences for non-evidence based care (x-rays) and lack of generalisability to their practice

Cluster RCT

- ▶ Completing a cluster RCT of 92 practices (2300 patients)
- ▶ Testing the effectiveness of a theory-based strategy for implementing a CPG for acute LP in primary care
- ▶ Assessing primary outcome: percentage of patients who are referred for a plain x-ray for acute LBP within 3-months post initial consultation
 - Mean level of disability for patients 3 months post consultation

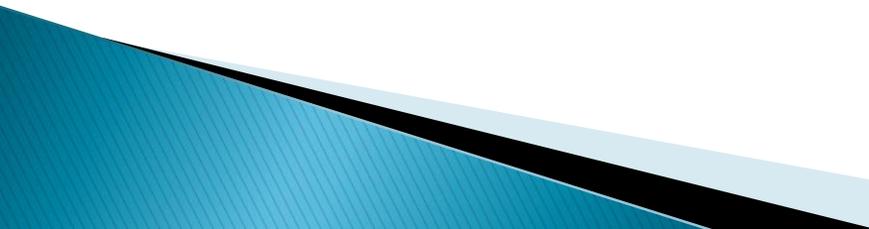
Intervention

- ▶ Focus groups with PCPs completed to identify barriers and facilitators and to map these to domains of behaviour change
 - ▶ Principal barriers include:
 - Beliefs about negative consequences of practising in a manner consistent with guideline recommendations
 - Beliefs about patient preferences or expectations inconsistent with the guideline
 - Limitations in their knowledge
 - Limitations of patient knowledge
 - Social and environmental barriers
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Intervention

- ▶ Face to face small group workshops
- ▶ Workshop developed that will include:
 - Modeling the behaviour by a peer expert
 - Rehearsal
 - Persuasive communication
 - Scripting
- ▶ Content focuses on the 2 key messages
- ▶ Prior to workshop PCPs document their management of a series of patients with LBP that present in the 2 wks preceding the workshop

Intervention

- ▶ 2 workshops of 3 hours each or 1 workshop of 6 hours
 - ▶ Include a mix of didactic and interactive components
 - ▶ DVD of the workshop made available to those who can't attend
 - ▶ Workshops occurred over 3 months in 2007
 - ▶ Patient recruitment begins 6 wks post intervention
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Control Group

- ▶ Will receive access to the guideline
- ▶ Reminders of how to access the electronic version will also be sent

Outcome measures: PCP level

Outcome	Method	Follow-up	Level at which data collected
X-ray referral	Data abstraction	3 months	Patient
Advice to stay active	Telephone interview	7 days after consultation	Patient
Advised bed rest	Telephone interview	7 days after consultation	Patient
Any imaging referral	Data abstraction	3 months	patient
FAB-Q	Questionnaire	Baseline, 12 months	PCP
Measurement of behavioural constructs	Questionnaire	Baseline, 12 months	PCP

Outcome measures: Patient Level

Outcome	Method	Follow-up	Level at which data collected
Disability Q	Telephone interview	7 days and 3 months	Patient
Usual pain	Telephone interview	7 days, 3 months	Patient
X-ray occurred	Telephone interview	3 months	Patient
FAB-Q	Telephone interview	7 days and 3 months	Patient
QoL	Telephone interview	7 days and 3 months	Patient
Health Service Utilisation	Telephone interview	7 days and 3 months	Patient