

# State of the Science in Knowledge Translation: Where have we been and where are we going?





# Overview

- **Presentations (40 min)**
  - Overview of reviews
  - Measurement & individual determinants of research use
  - Organizational context
  - KT interventions
  - Questions/Comments (20 min)
  - **Group topics**
- **Break (30min)**
- **Discussion (1 hour)**
  - Small groups (6-8/group)
  - Themed group topics
  - Reconvene



# Panel

Lisa Cranley, PDF (University of Alberta, Canada)

Janet Squires, PhD Candidate (University of Alberta, Canada)

Alison Hutchinson, PhD (Deakin University, Australia)

Maaïke Janssen, PhD (HAN University, Netherlands)

Anne Marie Bostrom, PDF (University of Alberta, Canada)



# Theory/Models/Frameworks

- **PARiHS framework** (Kitson et al. 1998; Rycroft-Malone et al. 2002; Kitson et al. 2008)
- **Knowledge to Action Model** (Graham et al. 2005)
- **Diffusion of Innovation** (Rogers, 1995)
- **Stetler Model of Research Use** (Stetler, 2001)
- **Normalization Process Theory** (May & Finch, 2009)
- **Theory of Planned Behaviour** (Ajzen, 1991)
- **IOWA Model of Evidence-Based Practice to Improve Quality Care** (Titler et al. 2001)

# Overviews of Systematic Reviews in Knowledge Translation

Author (Year)	Topic	# Reviews	Identified Gaps
Bero, Grilli, Grimshaw, Harvey, Oxman, & Thomson (1998)	Knowledge translation interventions	18	- relative effectiveness and cost effectiveness of different KT interventions in different settings
Solberg (2000)	Guideline implementation strategies	47	- impact of practice systems or organizational support of clinician behaviour - the process by which change is produced - the role of the practice environmental context within which change is being attempted
Grimshaw, Shirran, Thomas, Mowatt, Fraser, Bero, Grilli, Harvey, Oxman, & O'Brien (2001)	Knowledge translation interventions	41	- economic evaluations - adequately address methodological issues in primary studies in review papers - explore methods to evaluate multifaceted interventions to facilitate understanding about which components contribute to the effectiveness
Wensing, Wollersheim & Grol (2006)	Organizational knowledge translation interventions	36	- cost outcomes - specific components of integrated care services that contribute to effectiveness - description of local context of KT interventions
Prior, Guerin, & Grimmer-Somers (2008)	Guideline implementation strategies	33	- cost and cost-benefit analysis of guideline implementation strategies - environmental, organization and individual clinician factors associated with effective implementation strategies



# **To What Extent Do Nurses Use Research in Clinical Practice? A Systematic Review**



# Team and Study Purpose

## Review Team

- Janet Squires (Lead)
- Alison Hutchinson
- Anne Marie Bostrom
- Hannah Jerke
- Sandra Cobban
- Carole Estabrooks

**Review Purpose:** to systematically identify and evaluate the available evidence related to the extent to which nurses uses research findings in practice



# Methods

- **Systematic review of published and grey literature**
  - 12,418 unique titles
  - Final sample: N=55 articles (N=47 studies)
- **Included:**
  - Studies that examine nurses' use of research
  - English and scandinavian languages
- **Double data extraction**
- **Quality assessment**
  - Estabrooks' Quality Assessment & Validity Tool for Cross-Sectional Studies
  - Quality Assessment Tool for Quantitative Studies (EPHPP)





# Methods

- **Analysis:**
  - Descriptive by type of research use measure
  - Sensitivity analysis for quality
- **Determination of extent of research use**
  - Imposed a common metric on all studies: low, moderate-low, moderate-high, high research use
  - Equal quartiles for each scoring system reported



# Main Findings

## **Extent of Research Use by Date of Publication**

Graph removed as is forthcoming in a manuscript

For further details of this content, contact Janet Squires at  
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# Main Findings

## **Extent of Research Use in *General***

N=36 studies

- Low : N=3; Low-moderate: N=15; High-moderate: N=21; High: N=1

Graph removed as is forthcoming in a manuscript

For further details of this content, contact Janet Squires at  
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# Main Findings

## **Extent of Use of *Specific Research Findings***

N=14 studies

- Low : N=0; Low-moderate: N=2; High-moderate: N=12; High: N=2

Graph removed as is forthcoming in a manuscript

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[jsquires@ualberta.ca](mailto:jsquires@ualberta.ca)



# Main Findings

## **Extent of Use of Research Use According to *Kinds***

N=14 studies

- Low : N=0; Majority high-moderate regardless of kind

Graph removed as is forthcoming in a manuscript

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# Conclusions

1. On average, nurses' extent of research use is moderate high
2. Nurses' extent of research use has increased in recent years
3. There is little variation in extent of research use scores across groups (general, specific findings, kinds) or instruments (e.g., RUQ, NPQ, etc)



# State of the Science on the Extent of Nurses' Research Use

## The 'field' itself has many limitations:

1. Methodological quality
2. Measurement Issues (**new review**)
  - Inconsistency in outcome measures, lack of substantive and measurement theory, use of self-report, lack of psychometric assessments
3. Lack of systematic evaluation of the determinants (individual & organizational) of research use (**new reviews**)
4. Lack of study on the effects of varying levels of research use on patient and other outcomes



# **Individual Determinants of Research Utilization by Nurses: A Systematic Review Update**





# Team and Study Purpose

## Review Team

- Janet Squires (Lead)
- Carole Estabrooks
- Petter Gustavsson
- Lars Wallin

**Review Purpose:** To update and expand upon the evidence published in a previous systematic review (Estabrooks et al.2003) on individual characteristics that influence nurses' use of research evidence in clinical practice



# Methods and Findings

## Methods

- **Systematic review of published and grey literature**
  - 42,770 titles; Final sample: N=45 articles (N=41 studies)
- **Double data extraction, quality assessment**

## Findings

- Individual characteristics and research use generally; N=30
- Individual characteristics and kinds of research use; N=6
- Conclusions drawn on 10 individual characteristics:
  - 7 characteristics – significant determinants of research use
  - 3 characteristics – not significant determinants of research use
  - 9 of 10 conclusions represent new evidence from 2003 review



# **A Systematic Review of the Reliability and Validity of Knowledge Translation Instruments in Healthcare**



# Team and Study Purpose

## Review Team

- Janet Squires (Lead)
- Carole Estabrooks
- Hannah Jerke
- Petter Gustavsson
- Lars Wallin

**Review Purpose:** To conduct a systematic review of the psychometric properties of instruments designed to Measure the use of research among healthcare providers, decision makers, and organizations



# Methods and Findings

## Methods

- **Systematic review of published and grey literature**
  - 42,770 titles; Final sample: N=108 articles (N=99 studies)
- **Double data extraction, validity by *Educational Standards***

## Findings

- **N=60 unique instruments; N=6 instruments assessed in > 1 study**
- **Instrument reliability**
  - Internal consistency assessed in 31 studies (67% of which it was applicable for assessment)
  - Stability assessed in 3 of 99 studies
- **3 level Instrument validity hierarchy developed**
  - Level 1, N=5 instruments, Level 2, N=16 instruments, Level 3, N=36 instruments



# Organizational context

Maaïke Janssen

Alison Hutchinson

# Organizational context

Fleuren et al., 2004	<i>Meijers et al., 2006</i>	Dijkstra et al., 2006	Gifford et al., 2007	Francke et al., 2008	<i>Hutchinson et al., 2010</i>
11 databases	<b>5 databases</b>	6 databases	2 databases	5 databases	<b>13 databases</b>
1990-2000	<b>Up to 2005</b>	Up to 1998	1995-2005	Up to Nov 2006	<b>Up to May 2009 preliminary findings</b>
Health professionals	<b>Nurses</b>	Medical health care professionals in hospitals	Nursing healthcare professionals	Medical staff, nurses or other professionals	<b>Health professionals</b>
Empirical studies	<b>Quant and Qual studies</b>	RCTs and CCTs or Controlled before and after studies	Quant and Qual studies	Systematic reviews	<b>Quant and Qual studies</b>
57 studies	<b>10 studies</b>	53 studies	12 studies	12 studies	<b>88 studies</b>
Determinants of innovation processes in health care organizations	<b>Contextual factors related to RU</b>	Effectiveness of strategies to implement CPGs	Leadership activities/ interventions influencing nurses' use of research	Factors affecting implementation of CPGs	<b>Characteristics of organizations</b>

Author	Overall conclusions
<b>Fleuren, 2004</b>	<ul style="list-style-type: none"><li>•Several methodological flaws</li><li>•The determinants identified in literature were consisted with opinions of experts</li></ul>
<b>Meijers, 2006</b>	<ul style="list-style-type: none"><li>•Studies of sufficient quality; methodological limitations</li><li>•Results were mixed</li></ul>
<b>Dijkstra, 2006</b>	<ul style="list-style-type: none"><li>•Single and multifaceted interventions seemed effective</li><li>•Evidence for effects of organisational determinants is limited; for most there were no significant differences</li></ul>
<b>Gifford, 2007</b>	<ul style="list-style-type: none"><li>•Insufficient information on what interventions are effective to improve research use</li><li>•Facilitative and regulatory activities appear to be necessary</li><li>•Qualitative methods are essential for understanding the process</li></ul>
<b>Francke, 2008</b>	<ul style="list-style-type: none"><li>•Evidence of factors influencing the use of CPGs is thin</li><li>•Comparison between single and multifaceted strategies is needed</li></ul>
<b>Hutchinson, 2010</b>	<ul style="list-style-type: none"><li>•Ongoing</li></ul>





# Characteristics identified in several studies

Characteristics	Studies
Support	Fleuren, Meijers, Gifford, Francke, Hutchinson
Time	Fleuren, Meijers, Francke, Hutchinson
Resources (financial, equipment, manuals, administrative support, opinion leaders)	Fleuren, Meijers, Dijkstra, Francke, Hutchinson
Organizational characteristics (size, structure and stability)	Fleuren, Dijkstra, Francke, Hutchinson
Staff capacity	Fleuren, Francke, Hutchinson
Organizational climate	Fleuren, Meijers, Dijkstra, Hutchinson
Education	Meijers, Gifford
Professionals' role	Meijers, Dijkstra, Gifford, Hutchinson
Leadership	Gifford, Hutchinson



# Knowledge Translation Interventions

Anne-Marie Boström



# Knowledge Translation Interventions

## Cochrane Effective Practice and Organization of Care Group (EPOC)

- Classification of KT Interventions

- Professional interventions

- Educational material
- Educational meetings
- Local opinion leaders
- Audit and Feedback

- Organizational interventions

- Provider oriented interventions such as revision of roles, clinical multidisciplinary teams, skill mix changes
- Patient oriented interventions such as mail order pharmacies, consumer participation
- Structural interventions such as changes in physical structure, facilities and equipment

- Financial interventions

- Provider interventions such as fee-for-service, capitation
- Patient interventions such as premium, co-payment, user-fee

- Regulatory interventions

- Changes in medical liability, management of patient complaints



# What do we know?

- Effective KT interventions
  - Educational outreach
  - Clinical reminders systems
  - Multifaceted interventions
  - Interactive educational meetings
- Variable effectiveness
  - Audit and feedback
  - Use of local opinion leaders
  - Local consensus processes
  - Patient mediated interventions
- Ineffective KT interventions
  - Educational materials
  - Didactic educational meetings
  - Passive approaches

(Bero et al, (1998); Grimshaw et al. (2001); Wensing et al. 2006; Prior et al. 2008)



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# Discussion Groups

**Aims:** To have meaningful conversations about the state of translation science  
To identify the development of working groups over the next year(s)

## What are the next steps in developing translation science?

(20 minutes)

- **Determinants of Research Use** (Facilitators: Cheryl Stetler, Judith Ritchie)
- **Knowledge Translation Interventions** (Facilitators: Margaret Harrison, Bonnie Stevens)
- **Context** (Facilitator: Bridie Kent)
- **Economic Evaluation** (Facilitator: Deb Kenny)
- **How to Build Capacity for KT** (Facilitator: Nancy Donaldson)
- **Expediting KT Through Strategic Alignment**
- **Other - TBD** (Facilitator: Nadine Janes)
- **Other- TBD** (Facilitator: Christian Rochefort)

**Reporting back** (3 points in 3 minutes) - use transparencies & overhead projector



# Discussion Groups

## **What are the next steps in developing translation science?** (20 minutes)

- Determinants of Research Use
- Knowledge Translation Interventions
- Context
- Economic Evaluation
- How to Build Capacity for KT
- Expediting KT Through Strategic Alignment

## **Reporting back** (3 points in 3 minutes)

## **Wrap up – Looking towards KU-11**