Challenges and Opportunities in Translation and Implementation Science
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Greetings From the UMSN
Dedicated My Career to

- Facilitating the application of evidence into practice to improve processes of care and patient/family outcomes – the “doing of EBP; type of quality improvement.
- The *science of implementation*: conduct of research. Type of translation science.
- Distinction between EBP and translation/implementation science – not the same.
Implementation Science

• Testing implementation interventions to improve uptake and use of evidence by individuals, organizations, and the community to improve patient outcomes and population health.

• Explicating what implementation interventions work for whom, in what settings, and under what circumstances (mechanisms).

Eccles & Mittman, 2006; Titler et al, 2007; NIH, 2018
• Centers funded by NINR and VA
  – Gerontology Nursing Intervention Research Center (NINR)
  – Translation Institute for the Center for Research in the Implementation of Innovative Strategies in Practice (CRIISP). (VA)
• Synthesis of the science in implementation
• My experience as PI conducting implementation studies funded by AHRQ, NIH, and RWJF
Overview of Challenges

• Terminology
• Multiple Theories and Models
• Implementation Strategies/Interventions
• Context
• Research Designs
  – Methods
  – Measurement
• Reporting and publications
• Funding Sources
“The challenge of course is not the answer but asking the right question”

Jonas Salk
• At least 100 different terms
• Knowledge translation; translation research; Knowledge to action
• Evidence-based practice and evidence-informed practice
• Translation science across disciplines even differs – bench research to clinical trials; clinical research to clinical or public health practice
Diversity of Terms

- Impedes the science of translation
  - Search for research (search terms)
  - Synthesize & application of findings
  - Collaboration of investigators across geographic boundaries & disciplines
- Difficult for investigators to learn from each other
Towards a common terminology: a simplified framework of interventions to promote and integrate evidence into health practices, systems, and policies

Heather Colquhoun¹, Jennifer Leeman², Susan Michie³, Cynthia Lokker⁴, Peter Bragge⁵, Susanne Hempel⁶, K Ann McKibbon⁴, Gjalt-Jorn Y Peters⁷, Kathleen R Stevens⁸, Michael G Wilson⁹ and Jeremy Grimshaw¹,¹⁰

Optimising the value of the evidence generated in implementation science: the use of ontologies to address the challenges

Susan Michie¹* and Marie Johnston²
“Clinical” & Implementation Interventions: Differences

• **Clinical intervention** is the EB care, practices or programs that are the focus of adoption, uptake and use. Ex: FOCUS is a psycho-education dyadic intervention.

• **Implementation interventions** (*strategies*) are strategies to promote the use of the EB intervention. Ex: Audit and feedback; Quick Reference Guides
Examples: Clinical Intervention/Program

5-week program of 3 to 4 dyads (group). 90 minutes/session
Theories

• Study of 223 implementation scientists representing 12 countries (Birken, Powell, Shea et al, 2017)
  – Used 100 different theories
  – Most commonly used
    • CFIR (Damschroder et al, 2009; Kirk et al, 2016)
    • RE-AIM (Glasgow et al, 1999; Glasgow & Estabrooks, 2018)
    • Diffusion of innovations (Rogers, 2003)
    • Theoretical domains framework (Michie et al, 2005; Francis et al, 2012)
Theories

• Use in studies
  – 46 R01s (2005-2012) - < half (n=22) used translation framework or model
  – Used superficially or misused

• Dissemination & Implementation Models: (http://www.dissemination-implementation.org)
Example

(Rogers, 2003)
Model to Guide Implementation


Characteristics of the EBP → Communication Process → Social System → Rate & Extent of Adoption → Users of Innovation

Multifaceted strategies are necessary to translate research into Practice (Greenhalgh et al, 2005). Implementation Intervention Leading the way.
Strategies
Implementation Strategies (IS)

- What is an implementation strategy
- Variations in the naming and defining the IS
  - Knowledge broker, opinion leadership, facilitation
- No agreed upon taxonomic structure
  - Organizing IS into conceptual categories and naming of the categories
- Selecting and testing implementation strategies
  - How to select IS for testing
  - Understanding the mechanisms of action of each IS
- Describing the implementation strategies
Implementation Strategies

- Defined as methods to enhance the adoption, implementation, and sustainment of EB practices/programs
  - Discrete IS – one action or process (e.g. audit and feedback)
  - Multi-faceted IS – comprised of 2 or more discrete strategies (e.g. audit and feedback plus opinion leadership)

- Implementation interventions/strategies
  - Implementation strategies – usually multifaceted
  - By definition are complex (Craig et al, 2008)
Examples of Implementation Strategies

• FOCUS implementation study
  – One-day training program with Implementation training manual
  – Implementation manual
  – Pre-packaged materials for implementation
  – Weekly conference calls with facilitators
  – Attendance by facilitators at monthly investigator team meetings.
Example of Implementation Intervention: Fall

Characteristics of the Innovation
- EBP Practices – Risk Specific
  - Intervention:
    - QRGs
    - Posters
    - Key messages

Communication Process
- Intervention:
  - Opinion Leaders (OL)
  - Staff education
  - Change Champions (CC)
  - Outreach visits
  - Train-the-trainer program

Social System
- Hospital; Patient Care Unit
  - Intervention:
    - Senior administrator support
    - Education program for senior leaders and nurse managers
    - Meetings with pharmacists

Users
- Nurses, Pharmacists
  - Intervention:
    - Performance gap assessment
    - Audit and feedback
    - Teleconferences

Adoption of EBPs
- Outcomes & Processes
  - Measures:
    - Fall rates
    - Fall injuries
    - Use of risk specific fall prevention interventions
<table>
<thead>
<tr>
<th>Indicators</th>
<th>Interventions</th>
<th>Hints and Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Unsteady/veering during transfers or walking</td>
<td>• Ambulate 3-4 times per day with assistance unless contraindicated</td>
<td>• Seek advice from PT about safe exercises and activities the patient can perform on their own or with supervision</td>
</tr>
<tr>
<td>• Reaching for walls or other supports while walking</td>
<td>• Refer patient to PT for assessment, gait and strength training</td>
<td>• Ask patient's family and friends to assist with mobility interventions as appropriate</td>
</tr>
<tr>
<td>• Overbalancing, especially when reaching, bending, straightening or turning</td>
<td>• Active or passive range of motion three times daily</td>
<td></td>
</tr>
<tr>
<td>• Unable to rise from chair without assistance</td>
<td>• Minimize use of immobilizing equipment (e.g. indwelling urinary catheters)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Assure proper assist equipment is readily available</td>
<td></td>
</tr>
</tbody>
</table>
PROBLEM
• Urinary incontinence is an important risk factor for recurrent falls and hip fracture.
• Urinary incontinence and the need for toileting is a universal phenomenon and is most often overlooked

FACTS
• More than 50% of falls are associated with toileting activities.
• The combination of urinary frequency and the need for frequent assistance with toileting is much more of a fall risk factor than incontinence itself.

WHAT YOU CAN DO
• Regularly scheduled toileting of high-risk patients with impaired gait and mobility can reduce falls by 50%-70%
• Cochrane Collaboration Effective Practice and Organization of Care (EPOC)
• Scoping review of classification schemes (Lokker et al 2015) – 51 diverse classification schemes
• Behavior change techniques taxonomy V1 – 93 implementation interventions; 16 categories (Michie et al, 2013) [Has been applied]
• ERIC project – 71 experts to name, define & categorize/cluster discrete implementation strategies (concept mapping)
  – Majority from U.S. and the VHA
  – 73 discrete strategies

Kirchner et al, 2018; Powell et al, 2015; Waltz et al, 2015
Selection & Testing of IS

• Use an implementation science framework or theory to
  – Identify factors that influence implementation
  – Select promising implementation strategies

• Select framework based on aims and scope of study

• Use a framework to assist in understanding mechanisms

• Advance the state of the science regarding the IS(s)
• Uncovering why some IS work in some settings and not others
• Process evaluation along side the trial
• Mixed methods approaches
• Implementation outcomes – fairly new in the D and I research area.

– Rationale: To differentiate between “implementation failure” or the EBI was ineffective in the new setting.
Documenting Components of the IS

- Name it - existing terminology
- Define it conceptually
- Operationalize it
  - Actor: who delivers the IS
  - The action: The steps in the process; verb statements
  - Action target: Where or to whom is the IS directed
  - Temporality: Order of sequence of the strategy use as compared to other IS. Stage or phase when strategy is used
  - Dose: how much of the IS (time and intensity)
  - Implementation outcome to be affected (acceptability, reach, fidelity)
  - Justification or rationale for the IS

(Lewis et al, 2018; Colquhoun et al, 2014)
• **Definition:** ongoing auditing of performance indicators & discussing the findings with practitioners during the practice change. Use of fall prevention practices to mitigate patient-specific fall risk factors (e.g. mobility: ambulation, PT referral).

• **Actor:** **Audits - Change Champions; Feedback:** Research staff received data and made graphs. *PI* delivered and discussed with staff during each outreach visit.

• **Action:** audit 5 randomly selected patients/month. Bar graphs of number of patient days with specific fall risk; number of patient days delivered risk-specific fall prevention intervention.
Audit & Feedback Example

- **Action Target**: Nursing staff
- **Dose**: 6 reports months 5 through 15 of implementation phase and discussed during outreach visits. Discussion: 45 minutes each.
- **Implementation outcomes**: acceptability and feasibility
- **Justification**: demonstrate improvements over time
## Implementation: Timing/Temporality

<table>
<thead>
<tr>
<th>TRIP intervention implementation strategies</th>
<th>Translation research model component</th>
<th>Time during implementation phase of the study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting with CNO and education of nurse managers of study units</td>
<td>Social system</td>
<td>Month 1</td>
</tr>
<tr>
<td>Selection of opinion leaders and unit-based change champions</td>
<td>Communication</td>
<td>Month 1</td>
</tr>
<tr>
<td>Train-the trainer program</td>
<td>Communication</td>
<td>Month 1</td>
</tr>
<tr>
<td>Performance Gap Assessment</td>
<td>Users of the EBP</td>
<td>Month 1</td>
</tr>
<tr>
<td>Quick reference guides</td>
<td>Characteristics of the clinical topic</td>
<td>Distributed in month 4</td>
</tr>
<tr>
<td>Educational posters</td>
<td>Characteristics of the clinical topic</td>
<td>Used months 4 through 15</td>
</tr>
<tr>
<td>Staff education</td>
<td>Communication</td>
<td>Distributed month 3</td>
</tr>
<tr>
<td>Outreach/site visits every 6 weeks for a total of 7 visits per site</td>
<td>Communication</td>
<td>Used months 3 through 11</td>
</tr>
<tr>
<td>Audit and feedback — 6 reports</td>
<td>Users of the EBP</td>
<td>Month 3 to 4</td>
</tr>
<tr>
<td>Monthly teleconferences total of 11</td>
<td>Users of the EBP</td>
<td>Month 4 through month 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Month 5 through month 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Month 3 through 14</td>
</tr>
</tbody>
</table>

Leading the way.
Implementation Intervention Principles

• Implementation interventions are
  – process interventions & are complex. (Craig et al, 2008; Pfadenhauer et al, 2017)

• Implementation phase in relation to overall study time frame – when does the implementation phase start and stop

• Describe each implementation strategy: name it, define it, describe it, who did it.

• Track fidelity to implementation strategies
22% reduction in fall rate over time ($p = 0.09$)
Significant ($p < 0.001$) increase in risk-specific fall prevention interventions implemented (mobility; toileting; cognition; risk for injury)

Titler et al, 2016, Applied Nursing Research
Results: FOCUS

- Participant outcomes improved:
  - Quality of life
  - Emotional & functional well-being
  - Emotional distress
  - Perceived benefits of experiencing cancer
  - Level of confidence in managing cancer
Defining Context

• “The environment or setting in which the proposed change is to be implemented” (Kitson et al., 1998)

• “Context is the set of circumstances or unique factors that surround a particular implementation effort...setting includes the environmental characteristics in which implementation occurs (Damschroder et al., 2009)

• “Complex adaptive systems that form the dynamic environment(s) in which implementation processes are situated ” (May et al., 2016)
Recommend Define Context as

The complex, dynamic environment where implementation takes place characterized by:

- Structural Factors
- Social Dynamic Factors
- External Factors
Context Challenges

• What/how to measure dynamic factors
  – Implementation Climate Scale (ICS): Staff perceptions of the extent to which a practice setting prioritizes and values EBP (18 items)
  – Implementation Leadership Scale (ILS): Staff perceptions regarding the extent to which leaders enact behaviors that support EBP implementation (12 items)
  – Implementation Citizenship Behavior Scale (ICBS): Behaviors employees perform that exceed their expected job tasks to support implementation.
  – Mid-level managers EBP competency scale: Self-assessment of level of competency for EBP knowledge and skills. (16 items)
Context Challenges

• Dynamic factors
  – Qualitative approaches
  – Cultural differences or similarities across geographic boundaries

• Structural factors
  – Staffing
  – Patient volume
  – Type of setting
  – Governance structure
• Moderating or mediating variable

  - Moderating: interacts with the independent variable (IV) resulting in the association of the IV and outcome variable being stronger or weaker at different levels of the moderator variable. Ex: The difference between groups (E= A/F vs C= no A/F) of fall rates is lower with higher ICS scores.
• Moderating or Mediator Variable
  – **Mediating**: a variable that impacts the effect of the IV (e.g. A/F) on an outcome variable. *Ex: ILS scores mediates the effect of A/F on use of EB, patient-specific, fall prevention practices.*
Research Designs: Overview

Effectiveness-implementation Hybrid Designs
Combining Elements of Clinical Effectiveness and Implementation Research to Enhance Public Health Impact

Geoffrey M. Curran, PhD,* Mark Bauer, MD,† Brian Mitman, PhD,‡ Jeffrey M. Pyne, MD, * and Cheryl Stetler, PhD‡

Objectives: This study proposes methods for blending design components of clinical effectiveness and implementation research. Such blending can provide benefits over pursuing these lines of research independently; for example, more rapid translational gains, more effective implementation strategies, and more useful information for decision makers. This study proposes a “hybrid effectiveness-implementation” typology, describes a rationale for their use, outlines the design decisions that must be faced, and provides several real-world examples.

Much has been written about the nature of health care science-to-service gaps both in general1–3 and relative specifically to health promotion4 and numerous medical specialties.5–9 Thus far, the literature indicates that gaps between research and practice can result from multiple factors, including educational/knowledge deficiencies and/or disagreements,10,11 time constraints for practitioners,12,13 lack of decision support tools and feedback mechanisms,13 poorly aligned incentives,14 and a host of other organizational and cultural factors.2,15,16

In addition to these provider-level and systems-level barriers to rapid translation, Glasgow et al14 and others17-20 argue that the time lag between research discovery and routine uptake is also inflated by the dominant developmental ap-
Hybrid Designs

- **Clinical Efficacy Research** → **Clinical Effectiveness Research** → **Implementation Research** → **Improved Process and Outcomes**

**Hybrid Type 1**
- Primary: Effectiveness
- Secondary: Implementation

**Hybrid Type 2**
- Equal focus on effectiveness and implementation

**Hybrid Type 3**
- Primary: Implementation
- Secondary: Effectiveness
Primary aim: Assess if an EB exercise intervention for breast cancer survivors- Strength after Breast Cancer – was safe and effective in a new setting.

Secondary aim: qualitatively assess barriers to implementation
Aims:
Determine if brief cognitive behavioral therapy administered by VA PCMH clinicians is effective in treating depression and anxiety in medically ill primary care patients;
Examine the acceptability, feasibility, and preliminary outcomes of a focused implementation strategy on improving adoption and fidelity of the brief CBT intervention.
Primary aim: the effectiveness of a multifaceted implementation strategy to promote adoption of the Diabetes Prevention Program.
Qualitative and quantitative approaches
Summary of Hybrid Designs

• Consider the state of the science of the clinical intervention/program.
• Decide on the principal aim of your study
• Consider type of hybrid design to address the principal aims.
• With type of hybrid design as a backdrop, select the research design.
Research Designs

• Testing implementation strategies – most frequently used are cluster randomized controlled trials (CRCTs).

• Randomization occurs at the “unit” level (e.g. hospital, clinic, school) rather than at the individual level.

• Advantages
  – Accounts for clustering of individuals within the same setting
  – Prevent contamination between groups
  – Secular Trends
• Disadvantages
  – Control/comparison group never receives the implementation of the EBPS
  – Standardization of the “usual care group”

• Example:
  Translating Research into Practice Intervention Improves Management of Acute Pain in Older Hip Fracture Patients
  Marita G. Titer, Keela Herr, John M. Brooks, Xian-Jin Xie, Gail Ardeny, Margo L. Schilling, J. Lawrence Marsh, Linda Q. Everett, and William R. Clarke

  Effect of Evidence-Based Acute Pain Management Practices on Inpatient Costs
  John M. Brooks, Marita G. Titer, Gail Ardeny, and Keela Herr
Cross-over Design

• PULSE Trial to test the effect of implementing the AHA practice standards for ECG monitoring on nurses’ knowledge, quality of care and patient outcomes (Funk et al, 2017)

• Implementation strategies – online education; unit champions; posters and laminated pocket cards; monthly conference calls; ECG monitoring case studies
Cross Over Design Example

Randomized at the hospital level
Step-wedge Design

- Step-wedge cluster randomized trial: random & sequential crossover of clusters from control to intervention until all clusters are exposed.

Hemming et al, 2015; BMJ
A real-world stepped wedge cluster randomized trial of practice facilitation to improve cardiovascular care

Clare Liddy\textsuperscript{1,2,9*}, William Hogg\textsuperscript{1,2}, Jatinderpreet Singh\textsuperscript{1,2}, Monica Taljaard\textsuperscript{3,4}, Grant Russell\textsuperscript{1,5}, Catherine Deri Armstrong\textsuperscript{6}, Ayub Akbari\textsuperscript{7}, Simone Dahrouge\textsuperscript{1,2} and Jeremy M. Grimshaw\textsuperscript{3,8}
<table>
<thead>
<tr>
<th>Step</th>
<th>Total Number of Participants</th>
<th>Time Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>27 practices (59 physicians)</td>
<td>Control</td>
</tr>
<tr>
<td>II</td>
<td>30 practices (79 physicians)</td>
<td>Control</td>
</tr>
<tr>
<td>III</td>
<td>27 practices (53 physicians)</td>
<td>Control</td>
</tr>
</tbody>
</table>
SMART Designs

- SMART - Sequential Multiple Assignment Randomized Trial
- Are used to inform the development of high-quality adaptive interventions
- Adapt or modify the implementation strategies given signs of non-response (or other outcomes) during implementation. If not responding to an initial implementation strategy, then receive another augmented implementation strategy.
SMART Designs

- Implementation strategies: REP (Replicating effective programs) – *program packaging* (treatment materials in user friendly language); *provider training*; *brief technical assistance*. Enhanced REP – add *external facilitation* by designated facilitators.

Cluster randomized adaptive implementation trial comparing a standard versus enhanced implementation intervention to improve uptake of an effective re-engagement program for patients with serious mental illness

Amy M Kilbourne¹,²*, Kristen M Abraham¹,², David E Goodrich¹,², Nicholas W Bowersox¹,², Daniel Almirall³, Zongshan Lai¹,² and Kristina M Nord¹,²

(Kilbourne et al, 2013; Lei et al, 2012)
The SMART Design Applied

Figure 2 Trial design of continued standard REP versus enhanced REP (REP + external facilitation) among VA facilities non-responsive to standard REP.

*Non Response was defined using the as having less than 80% of Veterans on the site's list with an updated documentation of clinical status in the web-based registry. Site response was defined as having >=80% of Veterans on the site list with an updated documented clinical status.
Summary of SMARTs and Adaptive Interventions

• Seeing more of this type of design
• Decision points
• Methodologist/statistician with knowledge of this design
• Decision rules such as what constitutes non-responsive and what are additive implementation strategies
Measurement: Overview

• Dearth of high quality measures for the study of implementation
• Implementation strategies tested and the EB clinical intervention should be viewed as separate each with a distinct set of outcomes.
• Dependent variables & measures are driven by the primary aim (s), clinical intervention/program being implemented and implementation strategies being tested.
• Consider type of Hybrid design
Emerging consensus that we should measure processes of care and outcomes.
- Reliability and validity

Data Sources (advantages/disadvantages of each)
- Self-report
- Existing data (MR, administrative data etc.)
- Observation, clinical assessment
- Qualitative, quantitative, mixed methods

(Martinez et al 2014)
Process Measures

- Is the EB clinical intervention or program being delivered? Often requires multiple measures.
- Select the metrics or measures that reflect this and the data source:
  - Observation checklist
  - Self-report of clinicians
  - Abstract health records
Outcome Measures

• Does the clinical outcome improve as expected?
• What are the central outcomes to be measured?
• What is the data source?
<table>
<thead>
<tr>
<th>Study</th>
<th>Question &amp; Process Measures</th>
<th>Question &amp; Outcome Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOCUS delivered in a group format</td>
<td>Were all components of FOCUS addressed each week? Was the program delivered?</td>
<td>Did quality of life improve? Did emotional distress decline?</td>
</tr>
<tr>
<td></td>
<td>Weekly fidelity checklist Number of programs offered</td>
<td>FACT-G QOL Scale CSC Distress Scale</td>
</tr>
<tr>
<td>Study</td>
<td>Question &amp; Process Measures</td>
<td>Question &amp; Outcome Measures</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Risk-specific fall prevention</td>
<td>If patient had fall risk factor, were fall prevention interventions delivered to mitigate that risk?</td>
<td>Did falls decrease?</td>
</tr>
<tr>
<td></td>
<td>Risk intervention pairs; based on patient days (rate per 100 patient days) Mobility: 33% to 88%</td>
<td>Fall rates; Fall injury rates; Types of fall injuries</td>
</tr>
</tbody>
</table>
Types of Outcomes in Implementation Research

- **Implementation Outcomes**
  - Acceptability
  - Adoption
  - Appropriateness
  - Costs
  - Feasibility
  - Fidelity
  - Penetration
  - Sustainability

- **Service Outcomes***
  - Efficiency
  - Safety
  - Effectiveness
  - Equity
  - Patient-centeredness
  - Timeliness

- **Client Outcomes**
  - Satisfaction
  - Function
  - Symptomatology

* *IOM Standards of Care

(Proctor et al, 2009, 2011)
• Implementation outcomes
  – Need to differentiate implementation effectiveness from clinical treatment effectiveness to know if the failure (or success) occurred because the intervention was ineffective in the new setting or if the effective intervention was deployed incorrectly (implementation failure)
Implementation outcomes

- Fidelity: degree to which clinical intervention was implemented as prescribed or intended
- Acceptability: perceived agreeableness or satisfaction based on stakeholders knowledge or direct experience
- Feasibility: extent to which new program/intervention can be carried out
- Adoption: initial decision to try or use an EBP
Implementation outcomes

- Appropriateness: compatibility for a practice setting, provider, consumer; perceived fit or relevance
- Cost of implementation
- Penetration: reach; integration within a service setting
- Sustainability: extent that intervention is maintained; institutionalization
Implementation Outcomes

- Relatively new
- Paucity of instruments with sound psychometric properties
- Measured at different levels or unit of analysis (individual, system or service setting)
• Health outcomes: clinical outcomes that should improve with implementation of an effective clinical intervention
  – Pain rating
  – Fall rates
  – Fall injury rates
  – QOL
  – Cancer distress

• Derived from the EB program/intervention
Example from FOCUS study

• Clinical intervention/program: FOCUS- (dyads)
• Setting: 2 Cancer Support Community (CSC) sites

**Implementation Outcomes**

– *Appropriateness* (group format) & *Adoption* (intent)
– *Feasibility*: rates of enrollment (71.4%) and retention (90%); number of programs delivered by the CSC (11)
– *Fidelity*: fidelity checklist of activities across the 5 sessions (85%)
– *Cost*: estimates of costs to oversee and deliver FOCUS ($168/dyad assuming 4 dyads/group)
– *Acceptability*: Participate satisfaction with the program (overall=4.4 for patients & 4.5 for caregivers; number of group sessions – 53% of patients and 50% of caregivers wanted more sessions.)

Titler et al, 2017
Example from FOCUS study

• Clinical Outcomes
  – Quality of life: FACT-G – *overall QOL* and physical, social, *emotional*, and *functional* well-being
  – *Benefits of illness*: Benefits of illness scale: perceived benefits of the cancer experience
  – Communication: Lewis mutuality and interpersonal sensitivity scale
  – *Emotional Distress*: Cancer support source distress scale
  – *Self-efficacy*: Lewis Cancer Self-efficacy scale – confidence to manage cancer
• Conclusion: Implementation success with positive impact on clinical outcomes.

Titler et al., 2017
• Focus Groups (Wilson et al, 2016)
• Interviews with key informants plus quantitative data (Stacey et al, 2017 – implementation of evidence-informed remote support protocols for cancer symptom management)
• Conduct a process evaluation along with measuring the effect on process and outcomes of care (Craig et al, 2008).
• **EB clinical intervention**: Perioperative fasting: Clear fluids up to 2 hours & food up to 6 hours prior to anesthesia induction. Compared 3 implementation interventions. No effect on fluid or food fasting time within or across groups. (Rycroft-Malone et al, 2012)

• Process evaluation: to determine how the implementation interventions were received and how implementation processes played out. 1 of many findings: communication challenges. (Rycroft-Malone et al, 2013).
Measurement Resources

- Measurement Resources: Rabin et al, 2016
- Implementation Outcome Measures: Lewis et al, 2015: 104 instruments (MH)
- NCI GRID Enabled Measures Database
- Society for Implementation Research Collaboration (SIRC) – membership fee
• Standards for Reporting Implementation Studies (StaRi) (Pinnock et al, 2017; BMJ open, 7). **MUST READ**
  – Provides clear descriptions for each part of the paper and explanations
  – References to examples
  – Helpful when planning study
• Addresses dual strands: the implementation strategies and the EB intervention/program that is being implemented
• Available on the EQUATOR website ([http://www.equator-network.org](http://www.equator-network.org))
• Implementation Science open access journal: StaRi plus CONSORT guideline appropriate for the study design.
Funding Opportunities

- Clinical Trial and Science Awards (CTSA) – Pilot monies for implementation studies
- UK: Medical Research Council
- Australia: National Health & Medical Research Council
- European Research Council (ERC)
- Canadian Institute for Health Research (CIHR)- robust funding program on knowledge translation
• Recommendations when writing grant applications for knowledge translation or implementation science.
  – Know the funding agency and their priorities
  – Write a specific aims page or concept paper, share with the program officer, and set-up a conference call to discuss.
  – Plan for review of grant application by experts prior to submission
  – Consider a national advisory board as part of the application – letters of support.
Summary

• Discussed some issues in implementation science
  – Terminology
  – Implementation strategies
  – Context
  – Research Designs
  – Measurement
  – Many others not discussed today

• Nurse scientists with expertise in this field of inquiry

• Nurse scientists can lead in addressing these challenges
Resources for doing Evidence-Based Practice

http://www.nnpnetwork.org
Thank you for your participation

mtitler@umich.edu