Overview of Today’s Presentation

1) What are implementation strategies and how can we identify them?
2) What are some resources for assessing the evidence for implementation strategies?
3) How can we improve the design of implementation strategies?
4) How can we improve our understanding of how and why implementation strategies work (or fail)?
5) How can we ensure that implementation strategies are replicable?
Definition & Types of Strategies

Implementation Strategies – Methods or techniques used to enhance the adoption, implementation, sustainment, and scale-up of a program or practice.

**Discrete** – Single action or process (e.g., reminders, audit and feedback, supervision)

**Multifaceted** – Combination of multiple discrete strategies (e.g., educational workshops + consultation), some of which have been protocolized and branded (e.g., Glisson’s ARC, Aarons’ LOCI)

Powell et al. (2012; 2015; 2019)
## Discrete Strategy Examples

<table>
<thead>
<tr>
<th>Identified Barriers</th>
<th>Relevant Implementation Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of knowledge</td>
<td>Interactive education sessions</td>
</tr>
<tr>
<td>Perception/reality mismatch</td>
<td>Audit and feedback</td>
</tr>
<tr>
<td>Lack of motivation</td>
<td>Incentives/sanctions</td>
</tr>
<tr>
<td>Beliefs/attitudes</td>
<td>Peer influence/opinion leaders</td>
</tr>
</tbody>
</table>

Bhattacharya (2012); Palda (2007)
Multifaceted Implementation Strategy Example (Convergence)

- Health care collaboratives (Organizational)
- Provider communication (Interpersonal)
- Education and counseling for women (Intrapersonal)

1. Physician's motivation
2. Provider-patient interaction
3. Woman’s knowledge
4. Cervical Cancer Screening

Weiner et al. (2012)
Challenges in Examining the Literature on Strategies

“Tower of Babel”

Limited “Menu”

Poor Reporting

McKibbon et al. (2010); Michie et al. (2009); Powell et al. (2012); Proctor et al. (2013)
A Compilation of Strategies for Implementing Clinical Innovations in Health and Mental Health

Byron J. Powell1, J. Curtis McMillan2, Enola K. Proctor1, Christopher R. Carpenter2, Richard T. Griffey3, Alicia C. Bunger4, Joseph E. Glass1, and Jennifer L. York1

Abstract
Efforts to identify, develop, refine, and test strategies to disseminate and implement evidence-based treatments have been prioritized in order to improve the quality of health and mental health care delivery. However, this task is complicated by an implementation science literature characterized by inconsistent language use and inadequate descriptions of implementation strategies. This article brings more depth and clarity to implementation research and practice by presenting a consolidated compilation of discrete implementation strategies, based on a review of 205 sources published between 1999 and 2011. The resulting compilation includes 68 implementation strategies and definitions, which are grouped according to six key implementation processes: planning, educating, financing, restructuring, managing quality, and attending to the policy context. This consolidated compilation can serve as a reference to stakeholders who wish to implement clinical innovations in health and mental health care and can facilitate the development of multi-faceted, multi-level implementation plans that are tailored to local contexts.

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2The University of Chicago, Chicago, IL, USA
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Powell et al. (2012)
A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project

Byron J. Powell\textsuperscript{1*}, Thomas J. Waltz\textsuperscript{2}, Matthew J. Chinman\textsuperscript{3,4}, Laura J. Damschroder\textsuperscript{5}, Jeffrey L. Smith\textsuperscript{6}, Monica M. Matthieu\textsuperscript{6,7}, Enola K Proctor\textsuperscript{8}, and JoAnn E. Kirkner\textsuperscript{9,9}
Utility of Compilation

- Identifying “building blocks” of multi-level, multi-faceted strategies for research and practice
- Promoting a common language and improving reporting
- Tracking strategy use and assessing fidelity
Complementary Resources

Classification schemes for knowledge translation interventions: a practical resource for researchers

Susan E. Slaughter1*, Gabrielle L. Zimmermann2,3, Megan Nuspl2, Heather M. Hanson4, Lauren Albrecht1, Rosmin Esmail4, Khara Sauro4, Amanda S. Newton4, Maoliosa Donalg4, Michele P. Dyson1, Denise Thomson2 and Lisa Hartling1,2

The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions

Susan Michie, DPhil, CPsychol · Michelle Richardson, PhD · Marie Johnston, PhD, CPsychol · Charles Abraham, DPhil, CPsychol · Jill Francis, PhD, CPsychol · Wendy Hardeman, PhD · Martin P. Eccles, MD · James Cane, PhD · Caroline E. Wood, PhD

A taxonomy of behaviour change methods: an Intervention Mapping approach

Gerjo Koë4, Neil H. Gottlieb5, Gjalt-Jorn Y. Peters4,5, Patricia Dolan Mullen5, Guy S. Parcel5, Robert A.C. Ruiter6, Maria E. Fernández6, Christine Markham5 and L. Kay Bartholomew5

3School of Psychology & Neuroscience, Maastricht University, Maastricht, MD, The Netherlands; 4School of Public Health, University of Texas, Houston, TX, USA; 5School of Psychology, Open University, Heerlen, DL, The Netherlands
### Strategy Review

<table>
<thead>
<tr>
<th>Strategy Review</th>
<th>Number of Trials</th>
<th>Effect Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed Educational Materials</td>
<td>14 Randomized Trials</td>
<td>Median absolute improvement 2.0% (range 0% to 11%)</td>
</tr>
<tr>
<td></td>
<td>31 ITS</td>
<td></td>
</tr>
<tr>
<td>Educational Meetings</td>
<td>81 Randomized Trials</td>
<td>Median absolute improvement 6% (IQR 1.8% to 15.3%)</td>
</tr>
<tr>
<td>Educational Outreach</td>
<td>69 Randomized Trials</td>
<td>Median absolute improvement in prescribing behaviors 4.8% (IQR 3% to 6.6%), other behaviors 6% (IQR 3.6% to 16%)</td>
</tr>
<tr>
<td>Local Opinion Leaders</td>
<td>18 Randomized Trials</td>
<td>Median absolute improvement 12% (6% to 14.5%)</td>
</tr>
<tr>
<td>Audit and Feedback</td>
<td>140 Randomized Trials</td>
<td>Median absolute improvement 4.3% (IQR .5 to 16%)</td>
</tr>
<tr>
<td>Computerized Reminders</td>
<td>28 Randomized Trials</td>
<td>Median absolute improvement 4.2% (IQR .8 to 18.8%)</td>
</tr>
<tr>
<td>Tailored Interventions</td>
<td>26 Randomized Trials</td>
<td>Meta-Regression using 15 trials. Pooled odds ratio of 1.56 (95% CI, 1.27 to 1.93, p &lt; .001)</td>
</tr>
</tbody>
</table>

Grimshaw et al. (2012); Powell et al. (2019)
Resources to Assess Evidence

- Cochrane EPOC (epoc.cochrane.org)
- Campbell Collaboration (campbellcollaboration.org)
- Health Systems Evidence (healthsystemsevidence.org)
Priorities for Enhancing the Impact of Implementation Strategies

1) Enhance methods for designing and tailoring
2) Specify and test mechanisms of change
3) Improve tracking and reporting of strategies
4) (Conduct more effectiveness research)
5) (Increase economic evaluations)
Potential Pitfalls While Designing Implementation Strategies

"Train and Pray" Approach

"Kitchen Sink" Approach

"One Size Fits All" Approach

"ISLAGIATT" Approach

"It seemed like a good idea at the time" (Eccles)

Grimshaw et al. (2004); Henggeler et al. (2002); Squires et al. (2014)
1) Enhance Methods for Designing and Tailoring

• Need better methods for identifying and prioritizing barriers

• Need adaptive strategies to address dynamic barriers

• Need “systematic and rigorous methods…to enhance the linkage between identified barriers and strategies”

Baker et al. (2015); Bosch et al. (2007); Colquhoun et al. (2017); Grol et al. (2013); Powell et al. (2017); Wensing (2017)
Potential Methods for Designing and Tailoring

**Methods to Improve the Selection and Tailoring of Implementation Strategies**

Byron J. Powell, PhD  
Rinad S. Beidas, PhD  
Cara C. Lewis, PhD  
Gregory A. Aarons, PhD  
J. Curtis McMillen, PhD  
Enola K. Proctor, PhD  
David S. Mandell, ScD

- Intervention Mapping  
- Concept Mapping  
- Conjoint Analysis  
- Group Model Building

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**SYSTEMATIC REVIEW**

*Methods for designing interventions to change healthcare professionals’ behaviour: a systematic review*

Heather L. Colquhoun\(^1\), Janet E. Squires\(^2\), Niina Kolehmainen\(^4\), Cynthia Fraser\(^5\) and Jeremy M. Grimshaw\(^2,6\)

- 15 papers w/ replicable methods  
- 4 common steps: ID barriers, link barriers and intervention components, use theory, engage users  
- Limited focus on orgs/systems

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Colquhoun et al. (2017); Powell et al. (2017)
How can we more systematically link strategies to identified barriers?

**Invitations sent via email**
- N=435

**Respondents**
- N=169 (39%)

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**Known users of CFIR**
- First authors of articles citing 2009 CFIR article
- Inquiries to CFIR research team
- Participants in earlier user panel for www.CFIRGuide.org technical assistance website

**Implementation research communication channels**
- National Implementation Research Network (NIRN)
- Society of Implementation Research Collaboration (SIRC)
- Implementation Network mailing list
There is little or no quantitative and qualitative feedback about the progress and quality of implementation nor regular personal and team debriefing about progress and experience.

Level 1 Recommendations
- Develop and implement tools for quality monitoring
- Audit and provide feedback

Level 2 Recommendations
- Develop and organize quality monitoring systems
- Obtain and use patients/consumers and family feedback
- Purposely reexamine the implementation
- Facilitation
- Facilitate relay of clinical data to providers
- Organize clinician implementation team meetings
- Use data experts
- Capture and share local knowledge

“Because of the wide diversity of responses by our expert respondents and the lack of consensus this represents for the majority of endorsements, this tool must be used with caution.”

BUT, it might be a very useful first step as you explore potential strategies.
Use of Intervention Mapping to Design and Tailor Strategies

NIMH K01MH113806 (Powell, PI)
NIDA R01DA047876 (Go & Miller, Co-PIs)
2) Specify Mechanisms

“Process or event through which an implementation strategy operates to affect desired implementation outcomes”

Lewis et al. (2018)
<table>
<thead>
<tr>
<th>Determinant</th>
<th>Implementation Strategy</th>
<th>Mechanism</th>
<th>Implementation Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider knowledge deficit</td>
<td>Education (provision of information)</td>
<td>Awareness-building, knowledge-acquisition</td>
<td>Feasibility, acceptability, appropriateness, adoption</td>
</tr>
<tr>
<td>Provider skill deficit</td>
<td>Training (teaching &amp; practice with corrective feedback)</td>
<td>Skill acquisition, refinement, mastery</td>
<td>Fidelity to EBP</td>
</tr>
<tr>
<td>Turnover</td>
<td>Train-the-trainer</td>
<td>Continuous on-site expertise available for consultation</td>
<td>Sustainability</td>
</tr>
<tr>
<td>Provider engagement</td>
<td>Clinical champion-led implementation team</td>
<td>Implementation climate</td>
<td>Feasibility, acceptability, appropriateness</td>
</tr>
<tr>
<td>Unstandardized clinical care options</td>
<td>Guidelines</td>
<td>Clarity of clinical care</td>
<td>Fidelity</td>
</tr>
</tbody>
</table>
Developing a Mechanisms-Focused Research Agenda

Workgroup Co-Leads & Key Issues

<table>
<thead>
<tr>
<th>Strategy → Mechanism → Outcome</th>
<th>Causal Theory &amp; Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brian Mittman &amp; Byron Powell</td>
<td>Rinad Beidas &amp; Nate Williams</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Design &amp; Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bryan Weiner &amp; Cara Lewis</td>
<td>Greg Aarons &amp; Aaron Lyon</td>
</tr>
</tbody>
</table>

AHRQ R13HS025632 (Lewis, PI); societyforimplementationresearchcollaboration.org/mechanisms-network-of-expertise/
3) Need for Improved Description, Tracking, and Reporting

- Poor description, tracking and reporting:
  - Limits replication in science and practice
  - Precludes answers to how and why strategies work
Poor Reporting Limits Accumulation of Evidence

Understanding the Components of Quality Improvement Collaboratives: A Systematic Literature Review

ERUM NADEEM,¹ S. SERENE OLIN,¹ LAURA CAMPBELL HILL,² KIMBERLY EATON HOAGWOOD,¹ and SARAH McCUE HORWITZ¹

¹New York University; ²Columbia University

“Reporting on specific components of the collaborative was imprecise across articles, rendering it impossible to identify active QIC ingredients linked to improved care.”
Proctor, Powell, & McMillen (2013); https://impisciuw.org/implementation-strategies/
Applied Example

**TF-CBT Learning Collaborative (11 components*)**

- Prepare change package
- Commitment
- Learning sessions
- PDSA cycles
- Conference calls
- Web support
- Quality improvement technique training
- Metrics reporting
- Coaching calls
- Onsite visits
- Rostering

*Each specified according to Proctor et al. (2013) standards

Bunger et al. (2016)
Tracking implementation strategies: a description of a practical approach and early findings

Alicia C. Bunger, Byron J. Powell, Hillary A. Robertson, Hannah MacDowell, Sarah A. Briken, and Christopher Shea

Ongoing Pilot Work and Future Directions
Acknowledgments & Contact Information

Department of Veterans Affairs
IBM Junior Faculty Development Award
National Child Traumatic Stress Network
National Institutes of Health
• NIMH LRP (Powell, PI)
• NIMH K01MH113806 (Powell, PI)
• NIMH R25MH080916 (Proctor, PI)
• NIMH R25MH104660 (Gallo, PI)
• AHRQ R13HS025632 (Lewis, PI)
• NIDA R01DA047876 (Go, PI)

North Carolina Child Treatment Program

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Thank You!