Optimizing Implementation Strategies to Improve the Quality of Health Services

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University of Nebraska Medical Center
Overview of Today’s Presentation:

1) Introduction and Overview of Implementation Strategies
2) Evidence for Implementation Strategies
3) Priorities for Enhancing the Impact of Implementation Strategies
4) Acknowledgments and Discussion
Introduction and Overview of Implementation Strategies
“Evidence-based medicine should be complemented by evidence-based implementation”

Grol & Grimshaw (1999)
Evidence-Based Interventions
- Programs
- Practices
- Principles
- Procedures
- Products
- Pills
- Policies

Implementation Strategies
- Planning
- Educational
- Financial
- Restructuring
- Quality Management
- Policy Context

Barriers & Facilitators
- Intervention-Individual
- Organizational-System

Implementation Outcomes
- Acceptability
- Appropriateness
- Feasibility
- Adoption
- Fidelity
- Penetration
- Sustainment
- Cost

Phases
- Exploration
- Preparation
- Implementation
- Sustainment

Aarons et al. (2011); Brown et al. (2017); Powell et al. (2012); Proctor et al. (2009 & 2011)
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)
Literature Reveals Problems

"Tower of Babel"

Limited "Menu"

Poor Reporting

McKibbon et al. (2010); Michie et al. (2009); Powell et al. (2012); Proctor et al. (2013)
Brown School *at* Washington University in St. Louis

**IMPLEMENTATION STRATEGIES**

- **PLAN**
  - Gather data, build buy-in, and develop relationships

- **EDUCATE**
  - Inform stakeholders

- **FINANCE**
  - Incentive, train and support

- **RESTRUCTURE**
  - After staffing, physical structures and data tracking

- **QUALITY MANAGEMENT**
  - Incentive, train and support

- **ATTEND TO THE POLICY CONTENT**
  - To encourage the promotion of programs and practices through accrediting bodies, licensing boards, and legal systems

Powell et al. (2012)
A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project

Byron J Powell 1, Thomas J. Waltz 2, Matthew J. Chinman 3,4, Laura J. Damschroder 5, Jeffrey L. Smith 6, Monica M. Matthieu 7, Enola K. Proctor 8, and JoAnn E. Kirchner 9,10

Use of concept mapping to characterize relationships among implementation strategies and assess their feasibility and importance: results from the Expert Recommendations for Implementing Change (ERIC) study

Thomas J. Waltz 2,4, Byron J. Powell 1, Monica M. Matthieu 7,10, Laura J. Damschroder 5, Matthew J. Chinman 3,5, Jeffrey L. Smith 1,10, Enola K. Proctor 8, and JoAnn E. Kirchner 4,9,10

See Additional File 6 of Powell et al. (2015) for most complete version of the compilation
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
- Highlighting under-researched strategies and room for further development
Application & Extensions

School mental health settings (Cook et al., 2019; Lyon et al., 2019)
Technical assistance in child welfare (Metz et al., 2019)
Child maltreatment prevention programs in LMICs (Martin, PI, DDCF)
Evidence for Implementation Strategies
<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>

Cochrane EPOC; Grimshaw et al. (2012); Powell et al. (2019)
Resources to Assess Evidence for Implementation Strategies

- **Cochrane EPOC** (epoc.cochrane.org)
- **Campbell Collaboration** (campbellcollaboration.org)
- **Health Systems Evidence** (healthsystemsevidence.org)

### Strategies for scaling up the implementation of interventions in social welfare: protocol for a systematic review

*Luke Wolfenden, Bianca Albers, Aron Shlonsky*
Priorities for Enhancing the Impact of Implementation Strategies
Now what?

There is an increasing focus on how and why implementation strategies work, and how we can design and tailor them to enhance effectiveness.
## 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)

Physician's motivation:
- Provider-patient interaction
- Woman's knowledge

Cervical Cancer Screening

Weiner et al. (2012)
Unfortunately, we far too often…

<table>
<thead>
<tr>
<th>Era of &quot;Train and Pray&quot; for Workers Must End</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Train and Pray&quot; Approach</td>
</tr>
<tr>
<td>&quot;Kitchen Sink&quot; Approach</td>
</tr>
<tr>
<td>&quot;One Size Fits All&quot; Approach</td>
</tr>
<tr>
<td>&quot;ISLAGIATT&quot; Approach</td>
</tr>
</tbody>
</table>

Grimshaw et al. (2004); Henggeler et al. (2002); Squires et al. (2014)

“It seemed like a good idea at the time” (Eccles)
Decision making not driven by evidence, theory, or “best practices”

Strategies not used with frequency, intensity, and fidelity required

“...results suggest a mismatch between identified barriers and the quality improvement interventions selected for use.”

Powell et al. (2013); Powell (2014); Powell & Proctor (2016); Bosch et al. (2007)
Priorities for Enhancing the Impact of Implementation Strategies

1) Enhance methods for designing and tailoring
2) Specify and test mechanisms of change
3) Conduct more effectiveness research
4) Increase economic evaluations
5) Improve tracking and reporting of strategies
1) Enhance Methods for Designing and Tailoring

Cochrane Database of Systematic Reviews

Tailored interventions to address determinants of practice (Review)


15 cluster RCTs, OR = 1.56 (95% CI = 1.27 to 1.93, \( p < .001 \))

“It is not yet clear how best to tailor interventions and therefore not clear what the effect of an optimally tailored intervention would be”

Baker et al. (2015)
1) Enhance Methods for Designing and Tailoring (Cont.)

- 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

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

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%)

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
Brown School at Washington University in St. Louis

**CFIR Barrier**

*Low Reflecting & Evaluating*

*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*

**ERIC Strategy**

**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

Waltz et al. (2019)
“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)

Implementation Mapping: Using Intervention Mapping to Develop Implementation Strategies

Maria E. Fernandez*, Gill A. ten Hoor², Sanne van Lieshout², Serena A. Rodriguez¹,⁴, Rinad S. Beidas¹,⁴, Guy Parcel¹, Robert A. C. Ruiter², Christine M. Markham¹ and Gerjo Kok²
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

Join us! September 12-14th in Seattle!

<table>
<thead>
<tr>
<th>Workgroup Co-Leads &amp; Key Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy → Mechanism → Outcome</strong></td>
</tr>
<tr>
<td>Brian Mittman &amp; Byron Powell</td>
</tr>
<tr>
<td><strong>Measurement</strong></td>
</tr>
<tr>
<td>Bryan Weiner &amp; Cara Lewis</td>
</tr>
</tbody>
</table>

AHRQ R13HS025632 (Lewis, PI)
3) Conduct More Effectiveness Research

- Diversify the strategies tested

- Need for more comparative studies of discrete, multifaceted, and tailored strategies

- Use a wider range of designs and methods

Brown et al. (2017); Institute of Medicine (2009); Lau et al. (2015); Mazzucca et al. (2018); Powell et al. (2014)
4) Increase Economic Evaluations

- In a review of 235 implementation studies, only 10% provided any information about implementation costs
- Severely inhibits decision making regarding strategies

Listen to Dr. Wen You!

Raghavan et al. (2018); Saldana et al. (2014); Vale et al. (2007); Reeves et al. (2019); Roberts et al. (2019)
5) Improve Description, Tracking, and Reporting of Strategies

- Poor description, tracking and reporting:
  - Limits replication in science and practice
  - Precludes answers to how and why strategies work
  - Fortunately, there is guidance on how to improve reporting

Albrecht et al. (2013); Boyd et al. (2018); Bunger et al. (2017); Hoffman et al. (2014); Proctor et al. (2013)
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."
**Name it**
Name the strategy, preferably using language that is consistent with existing literature

**Define it**
Define the implementation strategy and any discrete components operationally

**Specify it**
- **Actor**: Identify who enacts the strategy (e.g., administrators, payers, providers, patients/consumers, advocates, etc.).
- **Action**: Use active verb statements to specify the specific actions, steps, or processes that need to be enacted.
- **Action target**: Specify targets according to conceptual models of implementation. Identify unit of analysis for measuring implementation outcomes.
- **Temporality**: Specify when the strategy is used.
- **Dose**: Specify dosage of implementation strategy.
- **Implementation outcome**: Identify and measure the implementation outcome(s) likely to be affected by each strategy.
- **Justification**: Provide empirical, theoretical, or pragmatic justification for the choice of implementation strategies.

Proctor, Powell, & McMillen (2013); https://impsciuw.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)
Table 1 Specification of the TF-CBT learning collaboratives (LCs)

Goal: Expand regional capacity to meet the mental health service needs of youth who have experienced trauma by scaling up TF-CBT among behavioral health agencies funded by the county.

Description: The LCs focused on providing clinical training and consultation for clinicians, supervisors, and senior leaders from participating agencies. The LCs also provided training on quality improvement techniques for senior leaders.

Actors: -Faculty experts from a local university-based treatment center designed and conducted the LCs, and trained and supported clinicians from other agencies to implement TF-CBT.
-Agency Implementation Teams (comprised of senior leaders, supervisors, and clinicians) were tasked with implementing TF-CBT.

### Specification of LC components

<table>
<thead>
<tr>
<th>Actions</th>
<th>Target</th>
<th>Temporality</th>
<th>Dose</th>
<th>Outcome</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparatory work</strong></td>
<td></td>
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</tr>
<tr>
<td>Prepare change package</td>
<td>Faculty experts prepare resources on TF-CBT, and implementation strategies</td>
<td>Agency implementation team members’ knowledge</td>
<td>Before learning sessions</td>
<td>Once</td>
<td>Adoption, fidelity, penetration, and sustainment of TF-CBT</td>
</tr>
<tr>
<td>Commitment</td>
<td>Implementation team members describe their commitment to, and resources allocated for implementing TF-CBT</td>
<td>Agency implementation team members’ awareness of their readiness to implement</td>
<td>Before learning sessions; before TF-CBT implementation</td>
<td>Once</td>
<td>Adoption, fidelity, penetration, and sustainment of TF-CBT</td>
</tr>
<tr>
<td><strong>Active learning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning sessions</td>
<td>Present information about trauma and TF-CBT practice components; skill practice and behavioral rehearsal; case vignettes and problem-based learning; share experiences, expertise, and lessons learned</td>
<td>Agency implementation team members’ knowledge, skills, and access to expertise within and outside of their home agency</td>
<td>3 sessions over 12 months (approx. month 1, months 3–4, month 9)</td>
<td>Three 2-day sessions</td>
<td>Adoption, fidelity, penetration, and sustainment of TF-CBT</td>
</tr>
<tr>
<td>PDSA cycles</td>
<td>Use TF-CBT with test cases, identify barriers, plan strategies to remove barriers, study and refine strategy; support learning within teams; support team members</td>
<td>Agency implementation team members’ knowledge, skills, access to clinical expertise at their home agency; Removes barriers; Promotes supportive organizational climate for TF-CBT</td>
<td>Three action periods in between learning sessions</td>
<td>12 months total</td>
<td>Adoption, fidelity, penetration, and sustainment of TF-CBT</td>
</tr>
</tbody>
</table>

Tracking Implementation Strategy Use

Tracking implementation strategies: a description of a practical approach and early findings

Alicia C. Bunger1*, Byron J. Powell2, Hillary A. Robertson3, Hannah MacDowell4, Sarah A. Birken2 and Christopher Shea2

A Method for Tracking Implementation Strategies: An Exemplar Implementing Measurement-Based Care in Community Behavioral Health Clinics

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Cara C. Lewis
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  • NIMH R01MH103310 (Lewis, PI)
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  • NIMH R25MH080916 (Proctor, PI)
  • NIMH R25MH104660 (Gallo, PI)
  • NIDA R01DA044051 (Garner, PI)
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  • AHRQ R13HS025632 (Lewis, PI)
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