Implementation Strategies

Byron J. Powell, PhD, LCSW

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“An Introduction to Dissemination and Implementation Research in Health: A Short Course for NORAD Countries”
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 Strategy** – Single action or process (e.g., reminders, audit and feedback, supervision)

**Multifaceted Strategy or Implementation Intervention** – Combination of multiple discrete strategies.

Powell et al. (2012; 2015; 2019); Proctor et al. (2013)
A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project

Byron J. Powell, Thomas J. Hofstetter, Matthew J. Chinman, Laura J. Danielschneider, Jeffrey L. Smith, Monica M. Matthieu, Edisa I. Popović, and JoAnn E. Kirchner

ABSTRACT

Background: 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, these efforts have been complicated by the use of inconsistent language and inadequate descriptions of implementation strategies. This project was aimed at improving the conceptual clarity, relevance, and feasibility of implementation science. However, these efforts have been complicated by the use of inconsistent language and inadequate descriptions of implementation strategies. This article brings more depth and clarity to implementation research and practice by presenting a consolidated compilation of implementation strategies.

Methods: A web-based survey was used to collect expert opinions about implementation strategies and their definitions. The survey was conducted in three rounds, and after each round, iterative refinements were made based on participant feedback. Key stakeholders used concept mapping sorting and rating activities to place the 73 implementation strategies into 9 categories. The ratings data reflect those strategies identified as the most important and feasible. Multidimensional scaling analysis provided a quantitative representation of the relationships among the strategies, all of which were found to be conceptually distinct from each other. Hierarchical cluster analysis supported organizing the 73 implementation strategies into conceptually distinct clusters. The resulting clusters reflect the strategies' importance and feasibility. Multidimensional scaling analysis and concept mapping clustering activities identify 73 implementation strategies that are conceptually distinct from one another. The resulting clusters reflect the strategies' importance and feasibility. Multidimensional scaling analysis and concept mapping clustering activities identify 73 implementation strategies that are conceptually distinct from one another.

Conclusions: These findings provide the field with a ready-made set of implementation strategies for future research and practice.

Keywords: Implementation science, Implementation strategies, Mental health, US Department of Veterans Affairs

This research advances the field by improving the conceptual clarity, relevance, and feasibility of implementation science.
ERIC Compilation of Implementation Strategies

- Use evaluative and iterative strategies
  - Assess for readiness and identify barriers and facilitators
  - Audit and provide feedback
  - Purposefully reexamine the implementation

- Adapt and tailor to context
  - Tailor strategies
  - Promote adaptability
  - Use data experts

- Train and educate stakeholders
  - Conduct ongoing training
  - Distribute educational materials
  - Use train-the-trainer techniques

- Engage consumers
  - Increase demand
  - Use mass media
  - Involve patients/consumers and family members

- Change infrastructure
  - Mandate change
  - Change record systems
  - Change physical structure and equipment

- Facilitation
  - Provide local technical assistance
  - Provide clinical supervision

- Identify and prepare champions
  - Organize clinician implementation team meetings
  - Identify early adopters

- Remind clinicians
  - Revise professional roles
  - Facilitate relay of clinical data to providers

- Alter incentive/allowance structures
  - Access new funding
  - Fund and contract for the clinical innovation

Powell et al. (2015); Waltz et al. (2015); https://impsciuw.org/implementation-science/research/implementation-strategies/
Utility and Uptake of the Compilation

- Identifying building blocks of multi-level, multi-faceted strategies for research and practice
- Promoting a common language and improving reporting
Extensions for Schools, Digital Mental Health, & Financing in BH

Adapting a Compilation of Implementation Strategies to Advance School-Based Implementation Research and Practice

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Abstract
School-based service sectors are often a partner in an implementation gap, with the direct adoption and secure implementation of evidence-based practice (EBP) as a key priority. Service delivery, defined as effectively, systematically, and consistently deliver services to a target population, is impacted by barriers within these sectors. Implementation science has been salient in creating strategies to bridge the gap between research and practice (e.g., a Support for Implementing Change (SIF-CHAP)). The SIF-CHAP was created to help bridge the gap between care delivery and evidence. The purpose of this study was to adapt the School Implementation Strategies, Translation, and Implementation (SISTER) project to better align to the educational setting. The results of a seven-step adaptation process resulted in 32 school adapted strategies. Further level changes are needed to the perceived utility of the adapted SISTER strategies (23 of 32). The purpose of this research is to understand how to adapt school adapted strategies to better align with the educational setting. The implications of this study for adapting strategies are discussed.

Keywords: Implementation science – Implementation strategies – School-based mental and behavioral health – Evidence-based practice

Introduction
Research continues to produce a steady stream of innovations that can improve everyday care for youth with behavioral health problems, such as anxiety, depression, school-related issues, and substance use disorders. Each innovation is accompanied by research that supports its potential to improve outcomes. Understanding how to best implement such research is critical in ensuring success. Several barriers to success exist within everyday service solutions in which schools naturally exist (Durlak and DuPre 2011; Olowo 2010). Implementation science research differs from other sectors in that schools have a unique role in the implementation of new programs to bridge the research-to-practice gap through the use of implementation science designs. The purpose of this project was to develop and test three implementation science designs that work together to improve the implementation of evidence-based practices in schools.

Results: A total of 32 implementation science designs were adapted from the existing SIF-CHAP strategies. The three implementation science designs were: (1) an implementation science design that improved delivery of the evidence-based practices in schools, (2) an implementation science design that improved the translation of evidence-based practices into school practices, and (3) an implementation science design that improved the sustainability of evidence-based practices in schools. These designs were adapted to better align with the educational setting.

Conclusion: The results of this project demonstrated that the SIF-CHAP strategies could be adapted to improve the implementation of evidence-based practices in schools.

Disclosure: None of the authors have a financial or proprietary interest in any of the presented works.

References: The authors declare no conflicts of interest with the submitted work.

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American Psychologist

Implementation Strategies for Digital Mental Health Interventions in Health Care Settings

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U.S. health care systems are saturated with the burden of mental health but are frequently underprepared and workforce capacity is deficient. School systems are in a unique position to offer evidence-based services to all youth in need. School-based mental health interventions (SBMHIs) can improve access to evidence-based services and enhance the implementation of EBPs in the school settings. The purposes of this study were to develop an implementation science framework to increase the integration of SBMHIs in school settings by proposing implementation strategies, selected and operationalized based on the dissemination and implementation science framework of Katz and Blustein (2008) for implementing change project (SIF-CHAP) and the adaptation of the Preparation, Implementation, Sustainment Framework. These new strategies are aligned with the research-to-practice gap by proposing implementations of evidence-based practices in school systems.

This study was supported in part by the National Institute of Mental Health of the National Institutes of Health under Award Number K01 MH113806, supported by the National Institute on Drug Abuse (R01 DA040909), and the Center for the Study of Interventions and Knowledge (CSIK) at Indiana University School of Medicine. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or the Indiana University School of Medicine.

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Implementation Research and Practice

A Scoping review of strategies for financing the implementation of evidence-based practices in behavioral health systems: State of the literature and future directions

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Background: Increased variability of evidence-based practice (EBP) is essential to alleviating the negative public health and economic effects of behavioral health problems. A major challenge is implementing and sustaining EBP trends in the limited and heterogeneous nature of available resources. Methods: We conducted a scoping review that assessed the current state of evidence on EBP financing strategies for behavioral health systems (e.g., the Affordable Care Act). We define financing strategies as tools that can secure and direct financial resources to support EBP implementation. This article introduces a conceptualization of the key components of EBP financing strategies. Results: Of 21 financing strategies, 13 were reported to be used within behavioral health systems, 4 had potential for use, and 4 had not been studied. Eleven of the 21 strategies were promising (e.g., financial incentives to increase service volume). Conclusion: These findings suggest that the nature and scale of financial resources to support EBP implementation varies across settings and systems. Therefore, we propose a research agenda that will help better understand these financing strategies. We also discuss the implications of our findings for behavioral health professionals, system leaders, and policymakers who are interested in improving the sustainability of EBP implementation.

Disclosure: None of the authors have a financial or proprietary interest in any of the presented works.

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American Psychologist
The association between implementation strategy use and the uptake of hepatitis C treatment in a national sample

Shari S. Rogal, Vera Yakovchenko, Thomas J. Waltz, Byron J. Powell, JoAnn E. Kirchner, Enola K. Proctor, Rachel Gonzalez, Angela Park, David Ross, Timothy R. Morgan, Maggie Chartier, and Matthew J. Chinman

Longitudinal assessment of the association between implementation strategy use and the uptake of hepatitis C treatment: Year 2

Shari S. Rogal, Vera Yakovchenko, Thomas J. Waltz, Byron J. Powell, Rachel Gonzalez, Angela Park, Maggie Chartier, David Ross, Timothy R. Morgan, JoAnn E. Kirchner, Enola K. Proctor, and Matthew J. Chinman

Strategy Configurations Directly Linked to Higher Hepatitis C Virus Treatment Starts

An Applied Use of Configurational Comparative Methods

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Do the ERIC strategies adequately address:

- De-implementation (Ingvarsson et al.)
- Dissemination (Yoong et al.)
- Sustainment (Ivers & Nathan et al.)
- Community settings (Harden et al.)
- Low and middle-income countries (Lovero et al.)

What are the mechanisms through which they work?

- NCI R01 (Lewis, Weiner, et al.)
- ERIC-BCT (McHugh, et al.)
The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions

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Wendy Hardeman, Ph.D.; Martin E. Eccles, M.D.; Anne Currie, Ph.D.; Caroline K. Neville, P.D.
Published online: 18 March 2013

Abstract

Background: CONSORT guidelines call for precise reporting of behavior change interventions and encourage the use of active content of behavior change theories. The objective of this study is to develop a taxonomy, conceptually agreed behaviorally structured, and focused on methods of characterizing active content of interventions. Methods: In a Delphi-type exercise, 14 experts rated a large number of active ingredients of interventions, according to similarity of active ingredients in an open-ended interview. Inter-rater agreement amongst researchers rating 91 intervention descriptions by BCTs found median ed kappas of 0.60 or above. This resulted in 93 BCTs clustered into 16 groups. Of the 26 BCTs occurring at least five times, 23 had adjusted kappas of 0.70 or above. Conclusion: ‘BCT taxonomy v1.0’, an extensive taxonomy of 93 consensus-agreed distinct BCTs, offers a step forward in describing behavior change as a method for specifying interventions, but we anticipate further development and evaluation based on this initial, interdisciplinary consensus.

Keywords: taxonomy satis

1. Introduction

Recent attempts to establish a cumulative science of behavior change have used taxonomies to describe and classify behavior change methods and their outcomes via a coding taxonomy. That is, although a taxonomy of behavior change methods and their outcomes may not be fully developed, we may continue to improve them. In this paper, we introduce the Intervention Mapping (IM) taxonomy of behavior change techniques (or methods; BCTs) to derive effectiveness of such techniques and provide instruments for dealing with, three conditions for effectiveness of behavior change methods. For a behavior change method to be informative or evaluative

2. Results and Discussion

The online version of this article contains supplementary material, please visit http://dx.doi.org/10.1080/17437199.2015.1077155

3. Conclusion

In this paper, we introduce the Intervention Mapping (IM) taxonomy of behavior change techniques and its potential to be developed into a coding taxonomy. That is, although IM and its taxonomy of behavior change methods and its potential to be developed into a coding taxonomy. That is, although IM and its taxonomy of behavior change techniques (or methods; BCTs) may not be fully developed, we may continue to improve them. In this paper, we introduce the Intervention Mapping (IM) taxonomy of behavior change techniques (or methods; BCTs) to derive effectiveness of such techniques and provide instruments for dealing with, three conditions for effectiveness of behavior change methods. For a behavior change method to be informative or evaluative

4. Acknowledgments

Wendy Hardeman, PhD; Susan Michie, DPhil, CPsychol

5. References

McHugh et al. (In Prep)

Complementary Resources

Strategy: Audit and feedback

Collect and summarize clinical performance data over a specified time period and give it to clinicians and administrators to monitor, evaluate, and modify provider behavior.

BCTs

2.2. Feedback on behaviour

Monitor and provide informative or evaluative feedback on performance of the behavior (e.g. form, frequency, intensity)

2.7. Feedback on outcome(s) of behaviour

Monitor and provide feedback on the outcome of the performance of the behavior

Brown School at Washington University in St. Louis
Resources to Assess Evidence

- 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
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)
“There is often little association between the type of problem and the approach to change taken. More particularly, organizational and system-related problems tend to be ignored, even when these were detected, favoring individual educational and psychological approaches.”
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

INTRODUCTION
Nearly 20 years ago, Grol and Grimshaw (1) asserted that evidence-based practice must be complemented by evidence-based implementation. The past two decades have been marked by significant progress, as the field of implementation science has worked to develop a better understanding of how implementation strategies improve implementation effectiveness. We believe that pursuing these priorities will advance implementation science by helping us to understand when, where, why, and how implementation strategies improve implementation effectiveness and subsequent health outcomes.

The field of implementation science was developed to better understand the factors that facilitate or impede implementation and generate evidence for implementation strategies. In this article, we briefly review progress in implementation science, and suggest five priorities for enhancing the impact of implementation strategies. Specifically, we suggest the need to: (1) enhance methods for designing and tailoring implementation strategies; (2) specify and test mechanisms of change; (3) increase economic evaluations of implementation strategies; and (4) improve the tracking and reporting of implementation strategies. We believe that pursuing these priorities will advance implementation science by helping us to understand when, where, why, and how implementation strategies improve implementation effectiveness and subsequent health outcomes.

Keywords: implementation strategies, implementation science, designing and tailoring, mechanisms, reporting of strategies.
How can we more systematically design and tailor strategies?

Table 5 | Suggested steps for the development of a theory informed implementation strategy. Adapted from French et al, 2012\(^97\)

<table>
<thead>
<tr>
<th>Steps</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identify who (eg, individuals or professional groups) needs to do what differently in order for implementation to be improved(^98)</td>
</tr>
<tr>
<td>2</td>
<td>Using informal and formal theory and frameworks, identify barriers and enablers that need to be resolved, and articulate a pathway of change for the targeted behaviour change to occur. A variety of research methods, including literature reviews and local qualitative and quantitative data collection, should be used to support the development of the change pathway (programme theory)</td>
</tr>
<tr>
<td>3</td>
<td>Select implementation strategies (behaviour change techniques, modes of delivery) that might be effective, locally relevant, acceptable, and feasible to overcome identified barriers and enhance facilitators to change. Selection of strategies could be based on matrices recommended by determinant frameworks, empirical evidence, and engagement with end users</td>
</tr>
<tr>
<td>4</td>
<td>Decide how change in implementation can be robustly and feasibly measured, including factors on the hypothesised casual pathway (mediators) and appropriate implementation outcomes</td>
</tr>
</tbody>
</table>

French et al. (2012); Wolfenden et al. (2021)
A Tool to Match Strategies (ERIC) to Determinants (CFIR)

**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

**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

Intervention (or Implementation) Mapping to Develop Strategies

Methods to Improve the Selection and Tailoring of Implementation Strategies
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Implementing behavioral health interventions is a complicated process. It has been suggested that implementation strategies should be selected and method to address the contextual needs of a given change effort; however, there is limited guidance as to how to do this. This article proposes four methods (concept mapping, group model building, conjoint analysis, and intervention mapping) that could be used to select implementation strategies to identify barriers and facilitators for a particular evidence-based practice or process change being implemented in a given setting. Each method is reviewed, examples of their use are provided, and their strengths and weaknesses are discussed. The discussion includes suggestions for future research pertaining to implementation strategies and highlights these methods’ relevance to behavioral health services and research.

Abstract
Implementing behavioral health interventions is a complicated process. It has been suggested that implementation strategies should be selected to address the contextual needs of a given change effort; however, there is limited guidance as to how to do this. This article proposes four methods (concept mapping, group model building, conjoint analysis, and intervention mapping) that could be used to select implementation strategies to identify barriers and facilitators for a particular evidence-based practice or process change being implemented in a given setting. Each method is reviewed, examples of their use are provided, and their strengths and weaknesses are discussed. The discussion includes suggestions for future research pertaining to implementation strategies and highlights these methods’ relevance to behavioral health services and research.

Background
The ultimate impact of a health innovation depends not only on its effectiveness but also on its reach in the population and the extent to which it is implemented with high levels of competence and fidelity. Implementation science has emerged as the potential solution to the failure to translate evidence from research into effective practice and policy evident in many fields. Implementation scientists have developed many frameworks, theories, and models, which describe implementation determinants, processes, or outcomes; yet, there is little guidance about how these can inform the development or selection of implementation strategies or methods that have been used to improve adoption, implementation, sustainment, and scale-up of interventions (1). To move the implementation science field forward, we propose a practical tool to apply the lessons in this field. We describe a systematic process for planning or revising implementation strategies or implementation mapping.

Methods
Implementation Mapping is based on Intervention Mapping (a six-step protocol that guides the design of multi-level health promotion interventions and implementation strategies and expands on Intervention Mapping step 6. It includes insights from both the implementation science field and Implementation Mapping. Implementation Mapping involves five tasks: (1) conduct an implementation needs assessment and identify program adopters and implementers; (2) state adoption and implementation outcomes and performance objectives, identify determinants, and create matrices of change objectives; (3) choose feasible methods (prevention of change) and select or design implementation strategies, (4) produce implementation protocols and materials; and (5) evaluate implementation outcomes. The tasks are iterative with the planner circling back throughout the process to ensure all adopters and implementers, outcomes, outcomes, determinants, and objectives are addressed.

Discussion
Implementation Mapping provides a systematic process for developing strategies to improve the adoption, implementation, and maintenance of evidence-based interventions in real-world settings.

Keywords: Implementation, intervention mapping, implementation strategies, implementation mapping, intervention strategies, evidence-based interventions

Task 1. Conduct a needs and assets assessment and identify adopters and implementers.

Task 2. Identify adoption and implementation outcomes, performance objectives, and determinants; create matrices of change.

Task 3. Choose theoretical methods; Select or create implementation strategies.

Task 4. Produce implementation protocols and materials.

Task 5. Evaluate Implementation Outcomes.

FIGURE 1 | Implementation mapping process.
Example 1: Collaborative Organizational Approach to Selecting and Tailoring Implementation Strategies (COAST-IS)

- Developed and piloted COAST-IS, which involved coaching organizational leaders and clinicians to use Implementation Mapping to tailor implementation strategies.

- Piloted COAST-IS using a mixed methods, randomized matched-pair design involving 8 organizations participating in an NC CTP learning collaborative.

K01MH113806 (Powell, PI); Powell et al. (2020)
Example 2: Scaling-up the SNaP in Vietnam

- Used Intervention Mapping to develop “standard” and “tailored” implementation conditions and testing through a cluster randomized hybrid III trial
Forthcoming Special Collection of *Frontiers in Public Health*

**Research Topic**

Implementation Mapping for Selecting, Adapting and Developing Implementation Strategies

*Submit your abstract  Submit your manuscript  Participate*

*Topic Editors: Maria Fernandez, Byron Powell, & Gill ten Hoor*

https://www.frontiersin.org/research-topics/19871/implementation-mapping-for-selecting-adapting-and-developing-implementation-strategies
How and Why Do Strategies Work? A Focus on Mechanisms

Table 1 Examples of links between determinants, implementation strategies, mechanisms and implementation outcomes

<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 and practice with corrective feedback)</td>
<td>Skill acquisition, refinement, mastery</td>
<td>Fidelity to EBP</td>
</tr>
<tr>
<td>Provider views EBP unfavourably</td>
<td>Audit and feedback provision of descriptive social norms indicating peer use of EBP</td>
<td>Social pressure/norms</td>
<td>Adoption</td>
</tr>
<tr>
<td>Turnover</td>
<td>Train-the-trainer</td>
<td>Real-time training and consultation</td>
<td>Sustainability</td>
</tr>
<tr>
<td>Competing clinical demands</td>
<td>Leadership training</td>
<td>Growing leadership support/ perseverance</td>
<td>Adoption, sustainability</td>
</tr>
</tbody>
</table>

EBP, evidence-based practices.

Lewis, Powell, et al. (2021)
How and Why Do Strategies Work? A Focus on Mechanisms
Seeking Synergy for Multifaceted/Multilevel Strategies

1) **Accumulation** - strategies at different levels produce a cumulative impact on a common mediating pathway or set of mediating pathways.

2) **Amplification** - one strategy increases the target audience’s receptivity to other strategies.

3) **Convergence** - strategies at different levels mutually reinforce each other by altering patterns of interaction among two or more target audiences.

4) **Facilitation** - one strategy removes the barriers or facilitates the effect of other strategies.

Schilling, Bigal, & Powell (Minor Revision); Weiner et al. (2012)
Developing a Mechanisms-Focused Research Agenda

**Abstract**

Mechanisms explain how interventions influence outcomes. Implementation strategies are defined as deliberate actions taken to bring about the implementation, sustainment or scale-up of interventions. Understanding how implementation strategies work is critically important to replicate that may amplify or weaken their effects. Understanding the pathway(s) by which strategies effect change, and factors that may influence their adoption and effectiveness, is central to implementation research. The systematic operationalisation and empirical study of the causal mechanisms through which implementation strategies effect change is a foundational theme across implementation science. The study of implementation mechanisms is increasingly a priority across fields of study that are responsible for change.

**Protocol for Generating a Research Agenda**

1. **Conceptualization**
   - The agenda will be disseminated via multiple forums to engage the network.
   - The development of the agenda will yield an actionable research agenda to guide research on implementation mechanisms.

2. **Empirical Ambiguity**
   - The study will synthesise multiple data sources to outline by stakeholders developing implementation science and identifying gaps in the agenda.

3. **Prioritizing Mechanism Research & Incorporating Other Knowledge**
   - The network will engage in a nominal group process to identify priorities for the research agenda.

4. **Overreliance on Problematic or Insufficient Methods**
   - The agenda will outline the protocol for an Agency for Healthcare Research and Development (AHRQ)-funded initiative, (5) breakout sessions at the AHRQ-funded initiative.

5. **Methods & Design Opportunities**
   - The agenda outlines the protocol for an AHRQ-funded initiative, (5) breakout sessions at the AHRQ-funded initiative.

6. **Time as it Relates to Design & Measurement**
   - The agenda outlines the protocol for an AHRQ-funded initiative, (5) breakout sessions at the AHRQ-funded initiative.

7. **Nomenclature & Associated Resources**
   - The agenda outlines the protocol for an AHRQ-funded initiative, (5) breakout sessions at the AHRQ-funded initiative.

8. **Accumulating Knowledge Within and Across Disciplines**
   - The agenda outlines the protocol for an AHRQ-funded initiative, (5) breakout sessions at the AHRQ-funded initiative.

9. **Insufficient Use of Theory**
   - The agenda outlines the protocol for an AHRQ-funded initiative, (5) breakout sessions at the AHRQ-funded initiative.

10. **Complexity and Multiplexity in the Implementation Science**
    - The agenda outlines the protocol for an AHRQ-funded initiative, (5) breakout sessions at the AHRQ-funded initiative.

11. **Factors Influencing Strategy, Mechanisms, & Determinants**
    - The agenda outlines the protocol for an AHRQ-funded initiative, (5) breakout sessions at the AHRQ-funded initiative.

12. **Strategy, Mechanism, Determinant, Outcome Pathway**
    - The agenda outlines the protocol for an AHRQ-funded initiative, (5) breakout sessions at the AHRQ-funded initiative.

**METHODOLOGIES AND WHAT WE KNOW ABOUT THEM**

<table>
<thead>
<tr>
<th>7) Nomenclature &amp; Associated Resources</th>
<th>2) Conceptual &amp; Empirical Ambiguity</th>
<th>10) Insufficient Use of Theory</th>
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<tr>
<td>8) Accumulating Knowledge Within and Across Disciplines</td>
<td>4) Overreliance on Problematic or Insufficient Methods</td>
<td>3) Prioritizing Mechanism Research &amp; Incorporating Other Knowledge</td>
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**STRAATEGY, MECHANISM, DETERMINANT, OUTCOME PATHWAY**

- **THEORY, CAUSALITY, & CONTEXT**
- **CONCEPTUALIZATION**
- **ACUMULATING KNOWLEDGE**
- **DESIGNS, METHODS, & MEASUREMENT**
- **EMPIRICAL AMBIGUITY**
- **ACCUMULKATING KNOWLEDGE**
- **METHODOLOGIES AND WHAT WE KNOW ABOUT THEM**
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MECHANISMS: The MECHANics of Implementation Strategies and Measures (NCI R01CA262325; Lewis & Weiner, MPIs)

1. Build a database of strategy-mechanism linkages and associated causal pathway diagrams
2. Develop psychometrically strong, pragmatic measures of mechanisms
3. Develop and disseminate a website of implementation mechanisms knowledge
Need for Improved Specifying, Tracking, and Reporting

- Poor tracking, specification, and reporting:
  - Limits replication in science and practice
  - Precludes answers to how and why strategies work

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

“Reporting on specific components of the collaborative was imprecise across articles, rendering it impossible to identify active QIC ingredients linked to improved care.”
Brown School at Washington University in St. Louis

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/
Tracking Implementation Strategy Use & Fidelity

Haley et al. (2021)

Document and track strategies
- Document strategy modification
  - Describe planned strategies
  - Track strategy use
  - Monitor barriers and solutions

The FRAME-IS: a framework for documenting modifications to implementation strategies in healthcare

Christopher T. Atkins,1 Mario J. Pérez,2 Carol E. Nguyen3,4,5,6,7,8,9,10,11,12

Background: Implementation strategies are complex, and the implementation of strategies requires adaptation. The FRAME-IS aims to help researchers describe how strategies are adapted and modified in practice, building on existing implementation science methods. Use of the FRAME-IS allows for the documentation of modifications to implementation strategies.

The FRAME-IS includes core and supplementary modules to document modifications to implementation strategies, designed to help community clinics adopt social determinants of health-related activities. The FRAME-IS was designed to improve the rigor of implementation science by helping researchers track adaptations and modifications to implementation strategies. The FRAME-IS is intended to support researchers in documenting modifications to implementation strategies.

The FRAME-IS is a framework for documenting modifications to implementation strategies in healthcare. It is designed to help researchers document how implementation strategies are adapted and modified in practice. The FRAME-IS includes core and supplementary modules to document modifications to implementation strategies.

The FRAME-IS is a valuable tool for researchers in the field of implementation science. It provides a systematic approach for documenting modifications to implementation strategies, helping to improve the rigor and transparency of research in this area.
An Overview of Research and Evaluation Designs for Dissemination and Implementation


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Selecting and Improving Quasi-Experimental Designs in Effectiveness and Implementation Research

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Keywords
- quasi-experimental design, stepped wedge, interrupted time series, prepost, implementation science, external validity

Abstract
- International researchers face many design challenges when assessing intervention implementation in real-world settings. Implementation interventions require holding fast on internal validity needs while incorporating external validity considerations (such as uptake by diverse subpopulations, acceptability, cost, and sustainability). Quasi-experimental designs (QEDs) are increasingly employed to achieve a balance between internal and external validity. Although these designs are often referred to and summarized in the literature as a single type or group of designs, they are actually a diverse family of approaches that vary in implementation. This article provides a guide for researchers on the key components of randomized trials of implementation strategies, including articulation of trial aims, that recruitment and retention strategies, randomization designs, selection of outcome assessment science theory and frameworks, measures, sample size calculations, ethical review, and trial reporting. It also focuses on topics requiring special consideration for adaptation for implementation trials. We propose this guide as a resource for researchers, healthcare and public health policy makers or practitioners, research funders, and journal editors with the goal of advancing rigorous conduct and reporting of randomized trials of implementation strategies.

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SUMMARY POINTS
- Implementation science in the study of methods to promote the systematic uptake of evidence-based interventions into practice and policy to improve health. Despite the need for high-quality evidence from implementation research, randomization of trials of implementation strategies often have serious limitations. These limitations include high risks of bias, limited use of theory, a lack of standard terminology to describe implementation strategies, narrowed use of implementation outcomes, and poor reporting. This paper aims to improve the evidence base in implementation science by providing guidance on the development, conduct, and reporting of randomized trials of implementation strategies. Established randomized trials of methods from seminal texts and recent developments in implementation science were consolidated by an international group of researchers, health policy makers, and practitioners. His article provides guidance on the key components of randomized trials of implementation strategies, including articulation of trial aims, that recruitment and retention strategies, randomization designs, selection of outcome assessment science theory and frameworks, measures, sample size calculations, ethical review, and trial reporting. It also focuses on topics requiring special consideration for adaptation for implementation trials. We propose this guide as a resource for researchers, healthcare and public health policy makers or practitioners, research funders, and journal editors with the goal of advancing rigorous conduct and reporting of randomized trials of implementation strategies.
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