ADVANCING SOCIAL WORK, PUBLIC HEALTH & SOCIAL POLICY

Washington University in St. Louis
Brown School

Implementation Strategies

Byron J. Powell, PhD, LCSW

November 30, 2021

"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)

Developing & Refining a Compilation of Implementation Strategies

Review

Medical Care Research and Review
69(2) 123–157

DOI: 10.1177/1077558711430690
http://mcr.sagepub.com
SAGE

A Compilation of Strategies for Implementing Clinical Innovations in Health and Mental Health

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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 1995 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 multifaceted, multilevel implementation plans that are tailored to local contexts.

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IMPLEMENTATION SCIENCE

RESEARCH Open Access

A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project

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Abstract

Background: Identifying, developing, and testing implementation strategies are important goals of implementation science. However, these efforts have been complicated by the use of inconsistent language and inadequate descriptions of implementation strategies in the literature. The Expert Recommendations for Implementing Change (ERIC) study aimed to refine a published compilation of implementation strategy terms and definitions by systematically gathering input from a wide range of stakeholders with expertise in implementation science and clinical practice.

Methods: Purposive sampling was used to recruit a panel of experts in implementation and clinical practice who engaged in three rounds of a modified Delphi process to generate consensus on implementation strategies and definitions. The first and second rounds involved Web-based surveys soliciting comments on implementation strategy terms and definitions. After each round, iterative refinements were made based upon participant feedback. The third round involved a live polling and consensus process via a Web-based platform and conference call.

Results: Participants identified substantial concerns with 31% of the terms and/or definitions and suggested five additional strategies. Seventy-five percent of definitions from the originally published compilation of strategies were retained after voting. Ultimately, the expert panel reached consensus on a final compilation of 73 implementation strategies.

Conclusions: This research advances the field by improving the conceptual clarity, relevance, and comprehensiveness of implementation strategies that can be used in isolation or combination in implementation research and practice. Future phases of ERIC will focus on developing conceptually distinct categories of strategies as well as ratings for each strategy's importance and feasibility. Next, the expert panel will recommend multifaceted strategies for hypothetical yet real-world scenarios that vary by sites' endorsement of evidence-based programs and practices and the strength of contextual supports that surround the effort.

Keywords: Implementation research, Implementation strategies, Knowledge translation strategies, Mental health, US Department of Veterans Affairs

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IMPLEMENTATION SCIENCE

SHORT REPORT Open Access

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

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Abstract

Background: Poor terminological consistency for core concepts in implementation science has been widely noted as an obstacle to effective meta-analyses. This inconsistency is also a barrier for those seeking guidance from the research literature when developing and planning implementation initiatives. The Expert Recommendations for Implementing Change (ERIC) study aims to address one area of terminological inconsistency: discrete implementation strategies involving one process or action used to support a practice change. The present report is on the second stage of the ERIC project that focuses on providing initial validation of the compilation of 73 implementation strategies that were identified in the first phase.

Findings: Purposive sampling was used to recruit a panel of experts in implementation science and clinical practice ($N = 35$). These key stakeholders used concept mapping sorting and rating activities to place the 73 implementation strategies into similar groups and to rate each strategy's relative importance and feasibility. Multidimensional scaling analysis provided a quantitative representation of the relationships among the strategies, all but one of which were found to be conceptually distinct from the others. Hierarchical cluster analysis supported organizing the 73 strategies into 9 categories. The ratings data reflect those strategies identified as the most important and feasible.

Conclusions: This study provides initial validation of the implementation strategies within the ERIC compilation as being conceptually distinct. The categorization and strategy ratings of importance and feasibility may facilitate the search for, and selection of, strategies that are best suited for implementation efforts in a particular setting.

Keywords: Concept mapping, Implementation research, Implementation strategies, Mental health, US Department of Veterans Affairs

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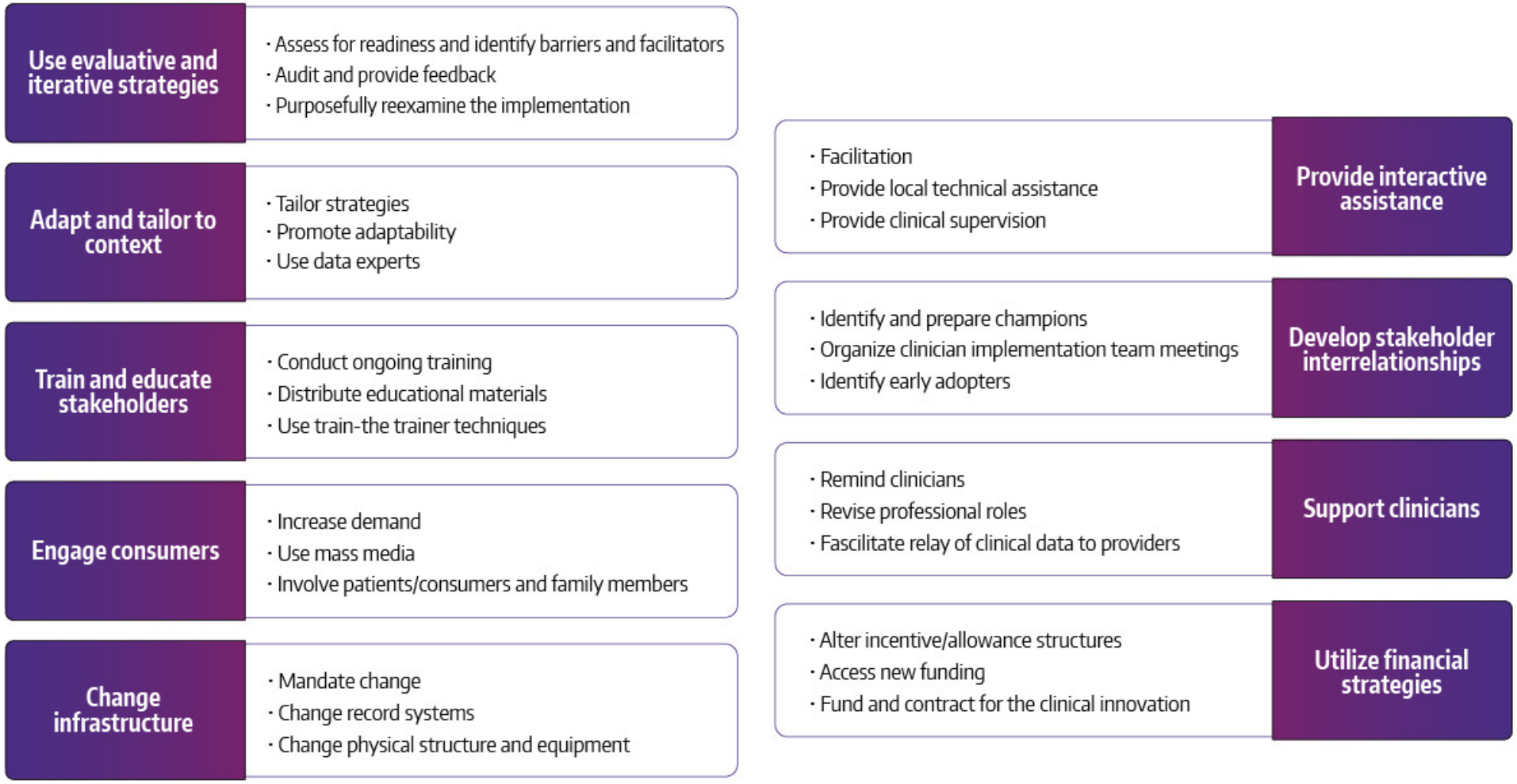
ERIC Compilation of Implementation Strategies



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

NIH National Institutes of Health
Turning Discovery Into Health

U.S. Department of Veterans Affairs

Substance Abuse and Mental Health Services Administration
SAMHSA

The National Academies of | SCIENCES ENGINEERING MEDICINE

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CDC

Extensions for Schools, Digital Mental Health, & Financing in BH

Prevention Science (2019) 20:914–935
https://doi.org/10.1007/s11121-019-01017-1

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

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Published online: 31 May 2019

Abstract
Schools, like other service sectors, are confronted with an implementation gap, with the slow adoption and uneven implementation of evidence-based practices (EBP) as part of routine service delivery, undermining efforts to promote better youth behavioral health outcomes. Implementation researchers have undertaken systematic efforts to publish taxonomies of implementation strategies (i.e., methods or techniques that are used to facilitate the uptake, use, and sustainment of EBP), such as the Expert Recommendations for Implementing Change (ERIC) Project. The 73-strategy ERIC compilation was developed in the context of healthcare and largely informed by research and practice experts who operate in that service sector. Thus, the comprehensibility, contextual appropriateness, and utility of the existing compilation to other service sectors, such as the educational setting, remain unknown. The purpose of this study was to initiate the School Implementation Strategies, Translating ERIC Resources (SISTER) Project to iteratively adapt the ERIC compilation to the educational sector. The results of a seven-step adaptation process resulted in 75 school-adapted strategies. Surface-level changes were made to the majority of the original ERIC strategies (52 out of 73), while five of the strategies required deeper modifications for adaptation to the school context. Six strategies were deleted and seven new strategies were added based on existing school-based research. The implications of this study's findings for prevention scientists engaged in implementation research (e.g., creating a common nomenclature for implementation strategies) and limitations are discussed.

Keywords Implementation science · Implementation strategies · School-based mental and behavioral health · Evidence-based practices

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Introduction

Research continues to produce a steady stream of innovations that can improve routine care for youth with behavioral health problems, such as anxiety, depression, trauma, and disruptive behavior problems (Weisz and Kazdin 2017). Despite the promise of such research, these findings often are not successfully translated into everyday service settings in which youth naturally exist (Dingfelder and Mandell 2011; Owens et al. 2014). Implementation research across different service sectors has shown that without deliberate efforts to bridge the science-to-practice gap through the use of implementation strategies, there is likely to be uneven uptake, use, and sustainment of research findings as part of routine practice (Proctor et al. 2013; Powell et al. 2015). In fact, research from the broader field of implementation science has estimated that two thirds of implementation efforts fail (Burnes 2004; Damschroder et al. 2009) and most have no impact on service recipient outcomes (Powell et al. 2014).

There has been a strong push among researchers and policymakers to strategically increase the availability of

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Implementation Strategies for Digital Mental Health Interventions in Health Care Settings

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U.S. health care systems are tasked with alleviating the burden of mental health, but are frequently underprepared and lack workforce and resource capacity to deliver services to all in need. Digital mental health interventions (DMHIs) can increase access to evidence-based mental health care. However, DMHIs commonly do not fit into the day-to-day activities of the people who engage with them, resulting in a research-to-practice gap for DMHI implementation. For health care settings, differences between digital and traditional mental health services make alignment and integration challenging. Specialized attention is needed to improve the implementation of DMHIs in health care settings so that these services yield high uptake, engagement, and sustainment. The purpose of this article is to enhance efforts to integrate DMHIs in health care settings by proposing implementation strategies, selected and operationalized based on the discrete strategies established in the Expert Recommendations for Implementing Change project, that align to DMHI-specific barriers in these settings. Guidance is offered in how these strategies can be applied to DMHI implementation across four phases commonly distinguished in implementation science using the Exploration, Preparation, Implementation, Sustainment Framework. Next steps to advance research in this area and improve the research-to-practice gap for implementing DMHIs are recommended. Applying implementation strategies to DMHI implementation will enable psychologists to

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Original Empirical Research

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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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Abstract
Background: Increased availability of evidence-based practices (EBPs) is essential to alleviating the negative public health and societal effects of behavioral health problems. A major challenge to implementing and sustaining EBPs broadly is the limited and fragmented nature of available funding.
Method: We conducted a scoping review that assessed the current state of evidence on EBP financing strategies for behavioral health based on recent literature (i.e., post-Affordable Care Act). We defined financing strategies as techniques that secure and direct financial resources to support EBP implementation. This article introduces a conceptualization of financing strategies and then presents a compilation of identified strategies, following established reporting guidelines for the implementation strategies. We also describe the reported level of use for each financing strategy in the research literature.
Results: Of 23 financing strategies, 13 were reported as being used within behavioral health services, 4 had potential for use, 5 had conceptual use only, and 1 was potentially contraindicated. Examples of strategies reported being used include increased fee-for-service reimbursement, grants, cost sharing, and pay-for-success contracts. No strategies had been evaluated in ways that allowed for strong conclusions about their impact on EBP implementation outcomes.
Conclusion: The existing literature on EBP financing strategies in behavioral health raises far more questions than answers. 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 want to develop robust, sustainable financing for EBP implementation in behavioral health systems.

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The Development and Application of the ERIC Survey

Rogal *et al. Implementation Science* (2017) 12:60
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Implementation Science

RESEARCH Open Access

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

Shari S. Rogal[1,2,3*], Vera Yakovchenko[4], Thomas J. Waltz[5,6], Byron J. Powell[7], JoAnn E. Kirchner[8], Enola K. Proctor[9], Rachel Gonzalez[10], Angela Park[11], David Ross[12], Timothy R. Morgan[10], Maggie Chartier[12] and Matthew J. Chinman[1,13]

Rogal *et al. Implementation Science* (2019) 14:36
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Implementation Science

RESEARCH Open Access

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

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Strategy Configurations Directly Linked to Higher Hepatitis C Virus Treatment Starts

An Applied Use of Configurational Comparative Methods

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Ongoing Work to Understand Different Types of Strategies

Leeman *et al. Implementation Science* (2017) 12:125
DOI 10.1186/s13012-017-0657-x

Implementation Science

DEBATE Open Access

Beyond "implementation strategies": classifying the full range of strategies used in implementation science and practice

Jennifer Leeman[1*], Sarah A. Birken[2], Byron J. Powell[2], Catherine Rohweder[3] and Christopher M. Shea[2]

Abstract

Background: Strategies are central to the National Institutes of Health's definition of implementation research as "the study of strategies to integrate evidence-based interventions into specific settings." Multiple scholars have proposed lists of the strategies used in implementation research and practice, which they increasingly are classifying under the single term "implementation strategies." We contend that classifying all strategies under a single term leads to confusion, impedes synthesis across studies, and limits advancement of the full range of strategies of importance to implementation. To address this concern, we offer a system for classifying implementation strategies that builds on Proctor and colleagues' (2013) reporting guidelines, which recommend that authors not only name and define their implementation strategies but also specify who enacted the strategy (i.e., the actor) and the level and determinants that were targeted (i.e., the action targets).

Main body: We build on Wandersman and colleagues' Interactive Systems Framework to distinguish strategies based on whether they are enacted by actors functioning as part of a Delivery, Support, or Synthesis and Translation System. We build on Damschroder and colleague's Consolidated Framework for Implementation Research to distinguish the levels that strategies target (intervention, inner setting, outer setting, individual, and process). We then draw on numerous resources to identify determinants, which are conceptualized as modifiable factors that prevent or enable the adoption and implementation of evidence-based interventions. Identifying actors and targets resulted in five conceptually distinct classes of implementation strategies: dissemination, implementation process, integration, capacity-building, and scale-up. In our descriptions of each class, we identify the level of the Interactive System Framework at which the strategy is enacted (actors), level and determinants targeted (action targets), and outcomes used to assess strategy effectiveness. We illustrate how each class would apply to efforts to improve colorectal cancer screening rates in Federally Qualified Health Centers.

Conclusions: Structuring strategies into classes will aid reporting of implementation research findings, alignment of strategies with relevant theories, synthesis of findings across studies, and identification of potential gaps in current strategy listings. Organizing strategies into classes also will assist users in locating the strategies that best match their needs.

Keywords: Implementation strategies, Dissemination, Scale-up, Interactive Systems Framework, Capacity-building

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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.)

Complementary Resources

ann. behav. med. (2013) 46:81–95
DOI 10.1007/s12160-013-9486-6

ORIGINAL ARTICLE

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

Published online: 20 March 2013

Abstract
Background CONSORT guidelines call for precise reporting of behavior change interventions: we need rigorous methods of characterizing active content of interventions with precision and specificity.
Objectives The objective of this study is to develop an extensive, consensually agreed hierarchically structured taxonomy of techniques [behavior change techniques (BCTs)] used in behavior change interventions.
Methods In a Delphi-type exercise, 14 experts rated labels and definitions of 124 BCTs from six published classification systems. Another 18 experts grouped BCTs according to similarity of active ingredients in an open-sort task. Inter-rater agreement amongst six researchers coding 85 intervention descriptions by BCTs was assessed.
Results This resulted in 93 BCTs clustered into 16 groups. Of the 26 BCTs occurring at least five times, 23 had adjusted kappas of 0.60 or above.
Conclusions "BCT taxonomy v1," an extensive taxonomy of 93 consensually agreed, distinct BCTs, offers a step change as a method for specifying interventions, but we anticipate further development and evaluation based on international, interdisciplinary consensus.

Electronic supplementary material The online version of this article (doi:10.1007/s12160-013-9486-6) contains supplementary material, which is available to authorized users.

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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, duration, intensity)

2.7. Feedback on outcome(s) of behaviour

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

McHugh et al. (In Prep)

HEALTH PSYCHOLOGY REVIEW, 2016
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A taxonomy of behaviour change methods: an Intervention Mapping approach

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ABSTRACT
In this paper, we introduce the Intervention Mapping (IM) taxonomy of behaviour change methods and its potential to be developed into a coding taxonomy. That is, although IM and its taxonomy of behaviour change methods are not in fact new, because IM was originally developed as a tool for intervention development, this potential was not immediately apparent. Second, in explaining the IM taxonomy and defining the relevant constructs, we call attention to the existence of parameters for effectiveness of methods, and explicate the related distinction between theory-based methods and practical applications and the probability that poor translation of methods may lead to erroneous conclusions as to method-effectiveness. Third, we recommend a minimal set of intervention characteristics that may be reported when intervention descriptions and evaluations are published. Specifying these characteristics can greatly enhance the quality of our meta-analyses and other literature syntheses. In conclusion, the dynamics of behaviour change are such that any taxonomy of methods of behaviour change needs to acknowledge the importance of, and provide instruments for dealing with, three conditions for effectiveness for behaviour change methods. For a behaviour change method to be effective: (1) it must target a determinant that predicts behaviour; (2) it must be able to change that determinant; (3) it must be translated into a practical application in a way that preserves the parameters for effectiveness and fits with the target population, culture, and context. Thus, taxonomies of methods of behaviour change must distinguish the specific determinants that are targeted, practical, specific applications, and the theory-based methods they embody. In addition, taxonomies should acknowledge that the lists of behaviour change methods will be used by, and should be used by, intervention developers. Ideally, the taxonomy should be readily usable for this goal; but alternatively, it should be clear how the information in the taxonomy can be used in practice. The IM taxonomy satisfies these requirements, and it would be beneficial if other taxonomies would be extended to also meet these needs.

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KEYWORDS
Taxonomy; behaviour change; meta-analysis; meta-analyses; review; interventions

Introduction

Recent attempts to establish a cumulative science of behaviour change have used taxonomies of behaviour change techniques (or methods; BCTs) to derive effectiveness of such techniques through meta-analysis of intervention evaluations (Michie & Johnston, 2012). These taxonomies

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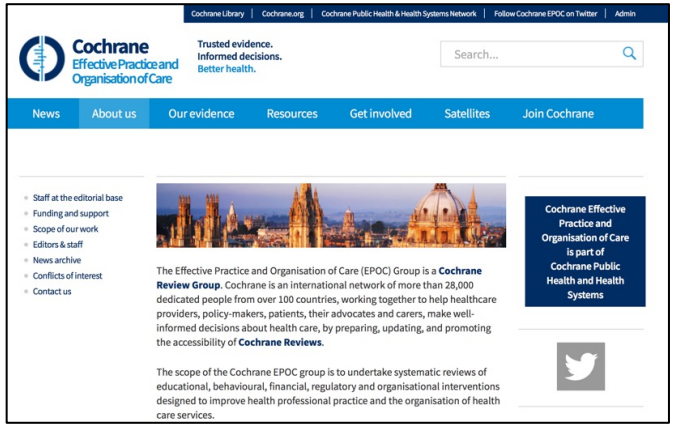
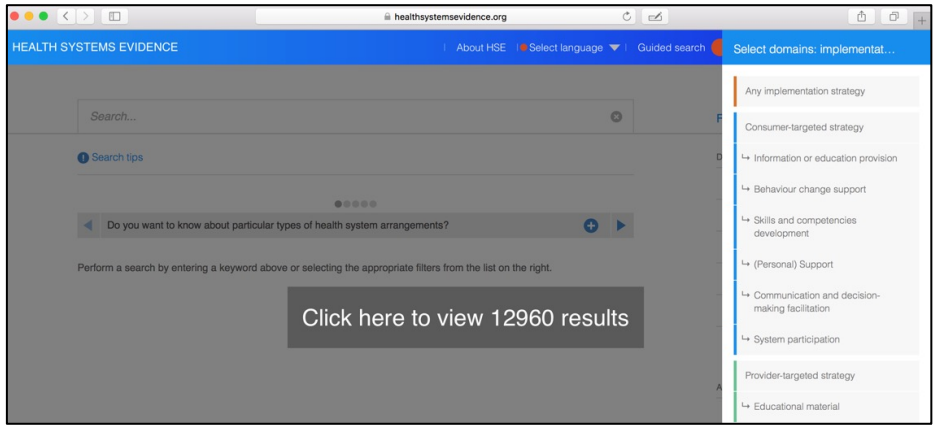
Resources to Assess Evidence

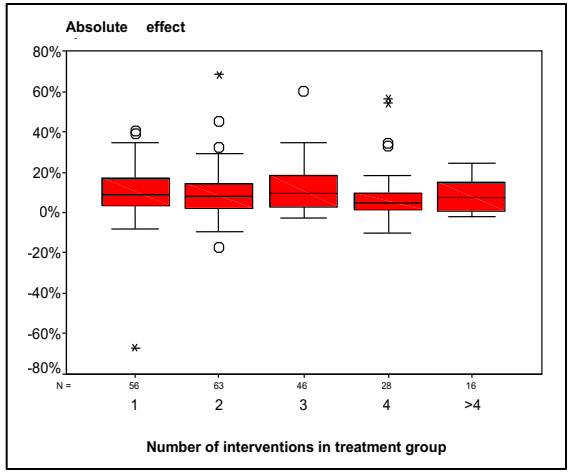
- Cochrane EPOC (epoc.cochrane.org)
- Campbell Collaboration (campbellcollaboration.org)
- Health Systems Evidence (healthsystemsevidence.org)





Potential Pitfalls While Designing Implementation Strategies

"Train and Pray" Approach



"Kitchen Sink" Approach

"One Size Fits All" Approach

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

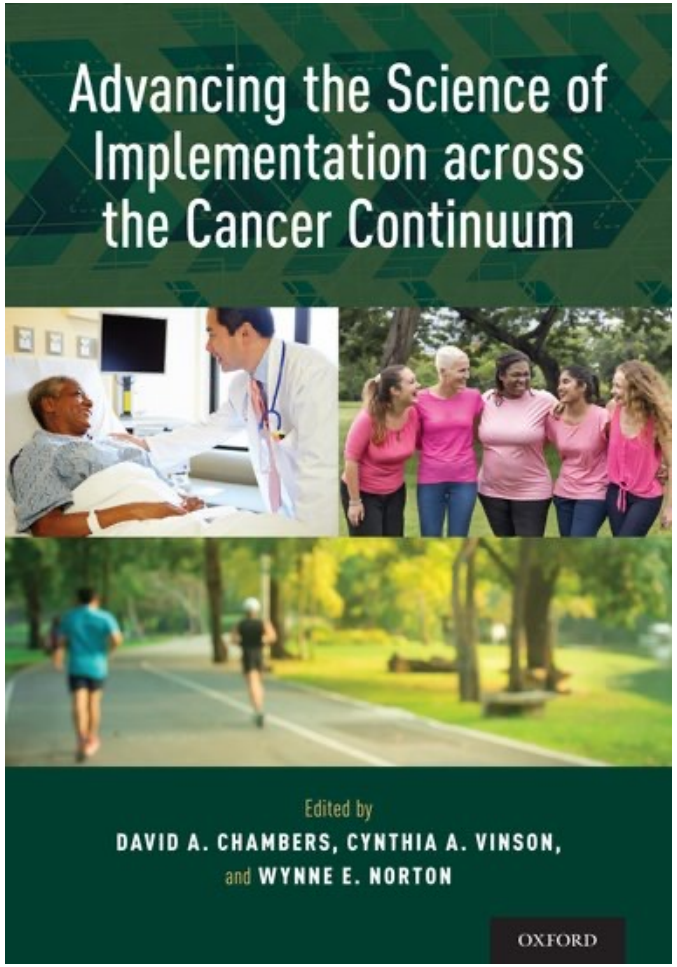
"ISLAGIATT" Approach

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."

Wensing & Grol (2019)

Priorities for Enhancing the Impact of Implementation Strategies



frontiers in Public Health

PERSPECTIVE
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Enhancing the Impact of Implementation Strategies in Healthcare: A Research Agenda

Byron J. Powell[1,2,3], Maria E. Fernandez[4], Nathaniel J. Williams[5], Gregory A. Aarons[6], Rinad S. Beidas[7,8,9], Cara C. Lewis[10], Sheena M. McHugh[11] and Bryan J. Weiner[12]*

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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) conduct more effectiveness research on discrete, multi-faceted, and tailored implementation strategies; (4) increase economic evaluations of implementation strategies; and (5) 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, effectiveness research, economic evaluation, reporting guidelines

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 implementation barriers and facilitators (i.e., determinants) and generate evidence for implementation strategies (2). In this article, we briefly review progress in implementation science and suggest five priorities for enhancing the impact of implementation strategies. We draw primarily upon the healthcare, behavioral health, and social services literature.

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

Powell, Garcia, & Fernandez (2019)

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]

Steps	Description
1	Identify who (eg, individuals or professional groups) needs to do what differently in order for implementation to be improved[98]
2	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)
3	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
4	Decide how change in implementation can be robustly and feasibly measured, including factors on the hypothesised casual pathway (mediators) and appropriate implementation outcomes

French et al. (2012); Wolfenden et al. (2021)

A Tool to Match Strategies (ERIC) to Determinants (CFIR)

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

https://cfirguide.org/choosing-strategies/; Waltz et al. (2019) - https://doi.org/10.1186/s13012-019-0892-4

Intervention (or Implementation) Mapping to Develop Strategies

Methods to Improve the Selection and Tailoring of Implementation Strategies

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

Abstract

Implementing behavioral health interventions is a complicated process. It has been suggested that implementation strategies should be selected and tailored 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 match implementation strategies to identified 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.

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frontiers in Public Health

METHODS
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Implementation Mapping: Using Intervention Mapping to Develop Implementation Strategies

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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 completeness 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 (methods or techniques used to improve adoption, implementation, sustainment, and scale-up of interventions) (1, 2). To move the implementation science field forward and to provide a practical tool to apply the knowledge in this field, we describe a systematic process for planning or selecting implementation strategies: 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 5. It includes insights from both the implementation science field and Intervention 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 theoretical methods (mechanisms 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 to previous steps throughout this process to ensure all adopters and implementers, 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, dissemination, adoption, intervention mapping, adaptation, implementation strategies, mechanisms of change, health promotion

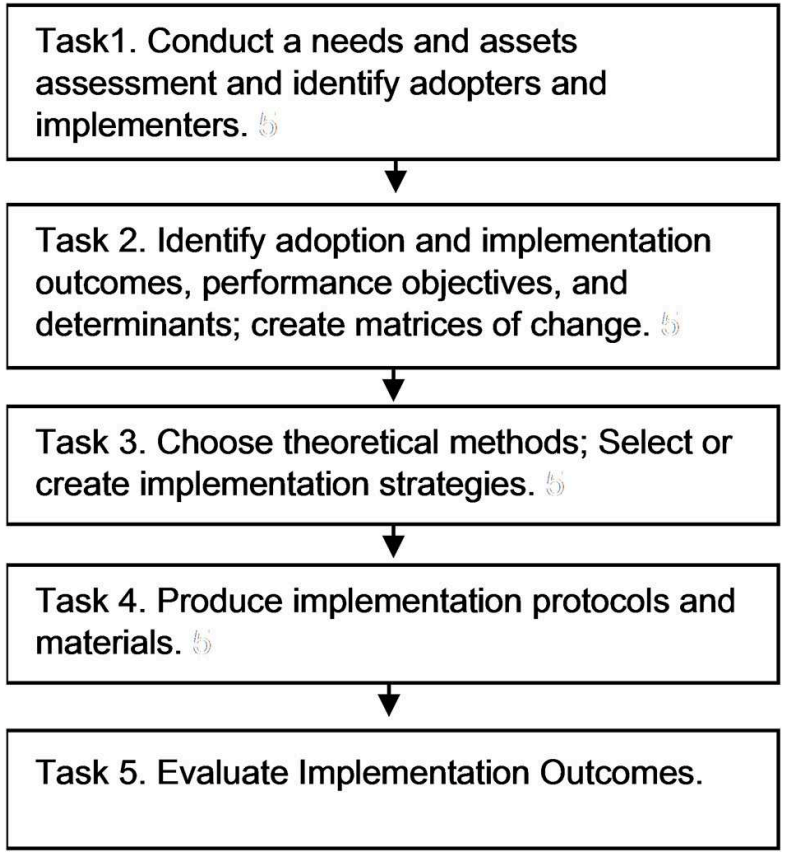

FIGURE 1 | Implementation mapping process.

Example 1: Collaborative Organizational Approach to Selecting and Tailoring Implementation Strategies (COAST-IS)

Powell *et al. Implementation Science Communications* (2020) 1:9
https://doi.org/10.1186/s43058-020-00009-5

Implementation Science Communications

STUDY PROTOCOL Open Access

Improving the implementation and sustainment of evidence-based practices in community mental health organizations: a study protocol for a matched-pair cluster randomized pilot study of the Collaborative Organizational Approach to Selecting and Tailoring Implementation Strategies (COAST-IS)

Byron J. Powell[1,2*], Amber D. Haley[2], Sheila V. Patel[2], Lisa Amaya-Jackson[3,4,5], Beverly Glienke[5], Mellicent Blythe[5,6], Rebecca Lengnick-Hall[1], Stacey McCrary[1], Rinad S. Beidas[7,8,9], Cara C. Lewis[10], Gregory A. Aarons[11], Kenneth B. Wells[12,13], Lisa Saldana[14], Mary M. McKay[1] and Morris Weinberger[2]

Abstract

Background: Implementing and sustaining evidence-based programs with fidelity may require multiple implementation strategies tailored to address multi-level, context-specific barriers and facilitators. Ideally, selecting and tailoring implementation strategies should be guided by theory, evidence, and input from relevant stakeholders; however, methods to guide the selection and tailoring of strategies are not well-developed. There is a need for more rigorous methods for assessing and prioritizing implementation determinants (barriers and facilitators) and linking implementation strategies to determinants. The Collaborative Organizational Approach to Selecting and Tailoring Implementation Strategies (COAST-IS) is an intervention designed to increase the effectiveness of evidence-based practice implementation and sustainment. COAST-IS will enable organizational leaders and clinicians to use Intervention Mapping to select and tailor implementation strategies to address their site-specific needs. Intervention Mapping is a multi-step process that incorporates theory, evidence, and stakeholder perspectives to ensure that implementation strategies effectively address key determinants of change.

Methods: COAST-IS will be piloted with community mental health organizations that are working to address the needs of children and youth who experience trauma-related emotional or behavioral difficulties by engaging in a learning collaborative to implement an evidence-based psychosocial intervention (trauma-focused cognitive behavioral therapy). Organizations will be matched and then randomized to participate in the learning collaborative only (control) or to receive additional support through COAST-IS. The primary aims of this study are to (1) assess the acceptability, appropriateness, feasibility, and perceived utility of COAST-IS; (2) evaluate the organizational stakeholders' fidelity to the core elements of COAST-IS; and (3) demonstrate the feasibility of testing COAST-IS in a larger effectiveness trial.

(Continued on next page)

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- 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

Nguyen *et al. Implementation Science* (2020) 15:64
https://doi.org/10.1186/s13012-020-01020-z

Implementation Science

STUDY PROTOCOL Open Access

Comparing a standard and tailored approach to scaling up an evidence-based intervention for antiretroviral therapy for people who inject drugs in Vietnam: study protocol for a cluster randomized hybrid type III trial

Minh X. B. Nguyen[1,2*], Anh V. Chu[3], Byron J. Powell[4], Ha V. Tran[1,3], Long H. Nguyen[5], An T. M. Dao[2], Manh D. Pham[5], Son H. Vo[5], Ngoc H. Bui[2], David W. Dowdy[6], Carl A. Latkin[7], Kathryn E. Lancaster[8], Brian W. Pence[9], Teerada Sripaipan[1], Irving Hoffman[10], William C. Miller[8] and Vivian F. Go[1*]

Abstract

Background: People who inject drugs (PWID) bear a disproportionate burden of HIV infection and experience poor outcomes. A randomized trial demonstrated the efficacy of an integrated System Navigation and Psychosocial Counseling (SNaP) intervention in improving HIV outcomes, including antiretroviral therapy (ART) and medications for opioid use disorder (MOUD) uptake, viral suppression, and mortality. There is limited evidence about how to effectively scale such intervention. This protocol presents a hybrid type III effectiveness-implementation trial comparing two approaches for scaling-up SNaP. We will evaluate the effectiveness of SNaP implementation approaches as well as cost and the characteristics of HIV testing sites achieving successful or unsuccessful implementation of SNaP in Vietnam.

Methods: *Design:* In this cluster randomized controlled trial, two approaches to scaling-up SNaP for PWID in Vietnam will be compared. HIV testing sites ($n = 42$) were randomized 1:1 to the standard approach or the tailored approach. Intervention mapping was used to develop implementation strategies for both arms. The standard arm will receive a uniform package of these strategies, while implementation strategies for the tailored arm will be designed to address site-specific needs.

Participants: HIV-positive PWID participants ($n = 6200$) will be recruited for medical record assessment at baseline; of those, 1500 will be enrolled for detailed assessments at baseline, 12, and 24 months. Site directors and staff at each of the 42 HIV testing sites will complete surveys at baseline, 12, and 24 months.

(Continued on next page)

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- Used Intervention Mapping to develop "standard" and "tailored" implementation conditions and testing through a cluster randomized hybrid III trial

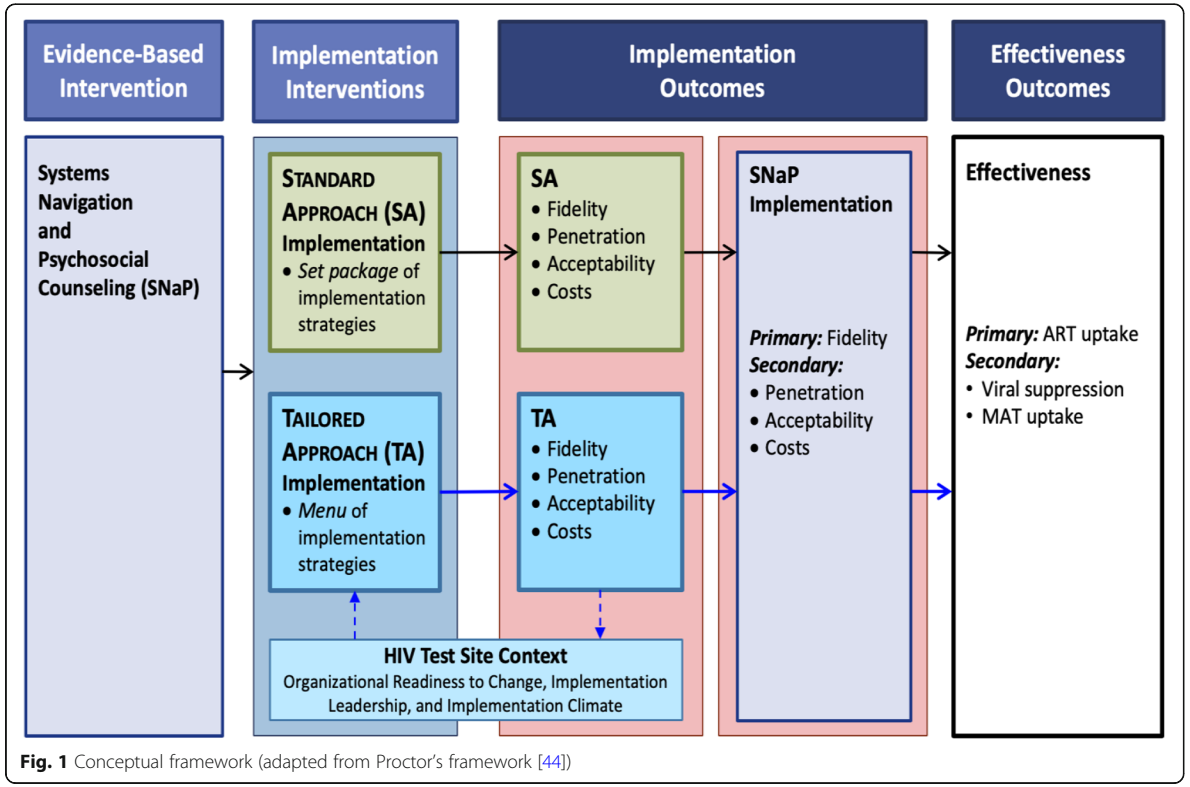

Fig. 1 Conceptual framework (adapted from Proctor's framework [44])

NIDA R01DA047876 (Go & Miller, MPIs; Powell, Co-I)

Forthcoming Special Collection of *Frontiers in Public Health*

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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

Determinant	Implementation strategy	Mechanism	Implementation outcome
Provider knowledge deficit	Education (provision of information)	Awareness-building, knowledge-acquisition	Feasibility, acceptability, appropriateness, adoption
Provider skill deficit	Training (teaching and practice with corrective feedback)	Skill acquisition, refinement, mastery	Fidelity to EBP
Provider views EBP unfavourably	Audit and feedback provision of descriptive social norms indicating peer use of EBP	Social pressure/norms	Adoption
Turnover	Train-the-trainer	Real-time training and consultation	Sustainability
Competing clinical demands	Leadership training	Growing leadership support/ perseverance	Adoption, sustainability

EBP, evidence-based practices.

Lewis, Powell, et al. (2021)

How and Why Do Strategies Work? A Focus on Mechanisms

frontiers in Public Health

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From Classification to Causality: Advancing Understanding of Mechanisms of Change in Implementation Science

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Background: The science of implementation has offered little toward understanding *how* different implementation strategies work. To improve outcomes of implementation efforts, the field needs precise, testable theories that describe the causal pathways through which implementation strategies function. In this perspective piece, we describe a four-step approach to developing causal pathway models for implementation strategies.

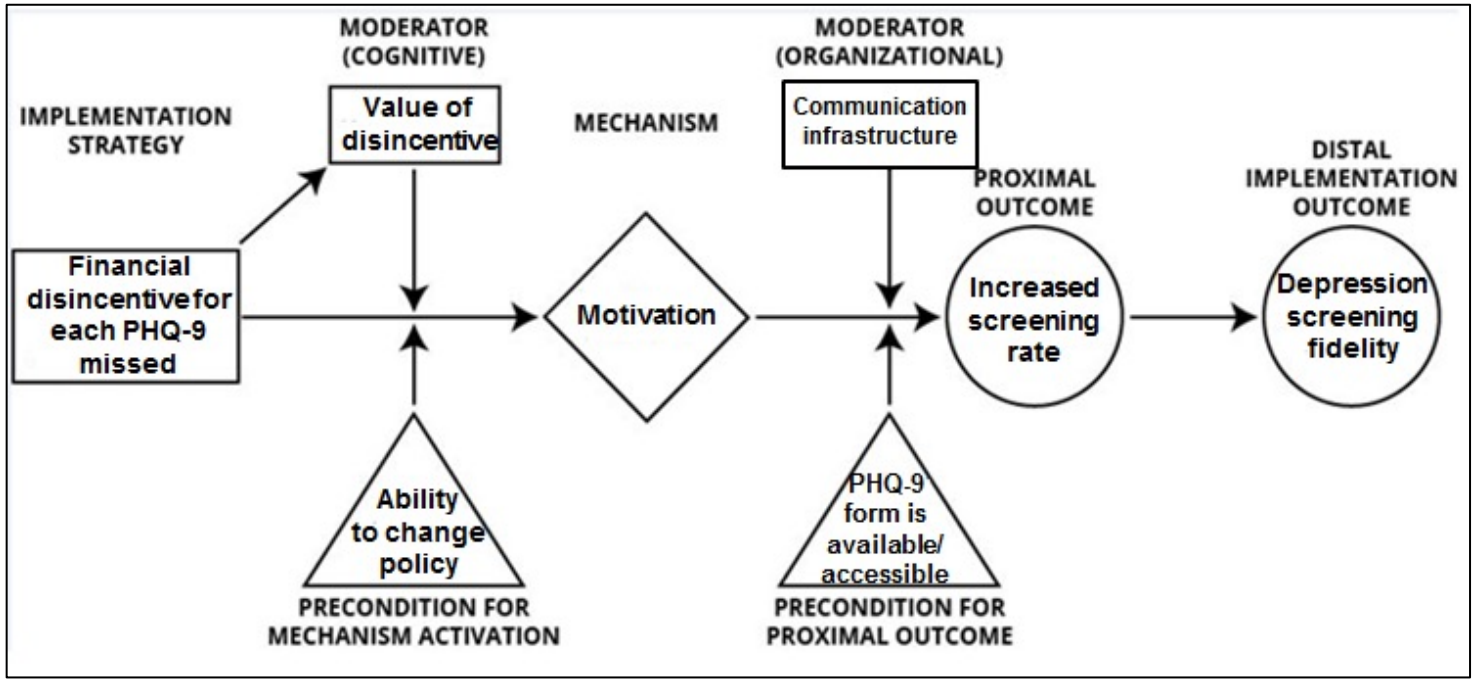
Building causal models: First, it is important to ensure that implementation strategies are appropriately specified. Some strategies in published compilations are well defined but may not be specified in terms of its core component that can have a reliable and measureable impact. Second, linkages between strategies and mechanisms need to be generated. Existing compilations do not offer mechanisms by which strategies act, or the processes or events through which an implementation strategy operates to affect desired implementation outcomes. Third, it is critical to identify proximal and distal outcomes the strategy is theorized to impact, with the former being direct, measurable products of the strategy and the latter being one of eight implementation outcomes (1). Finally, articulating effect modifiers, like preconditions and moderators, allow for an understanding of where, when, and why strategies have an effect on outcomes of interest.

Future directions: We argue for greater precision in use of terms for factors implicated in implementation processes; development of guidelines for selecting research design and study plans that account for practical constructs and allow for the study of mechanisms; psychometrically strong and pragmatic measures of mechanisms; and more robust curation of evidence for knowledge transfer and use.

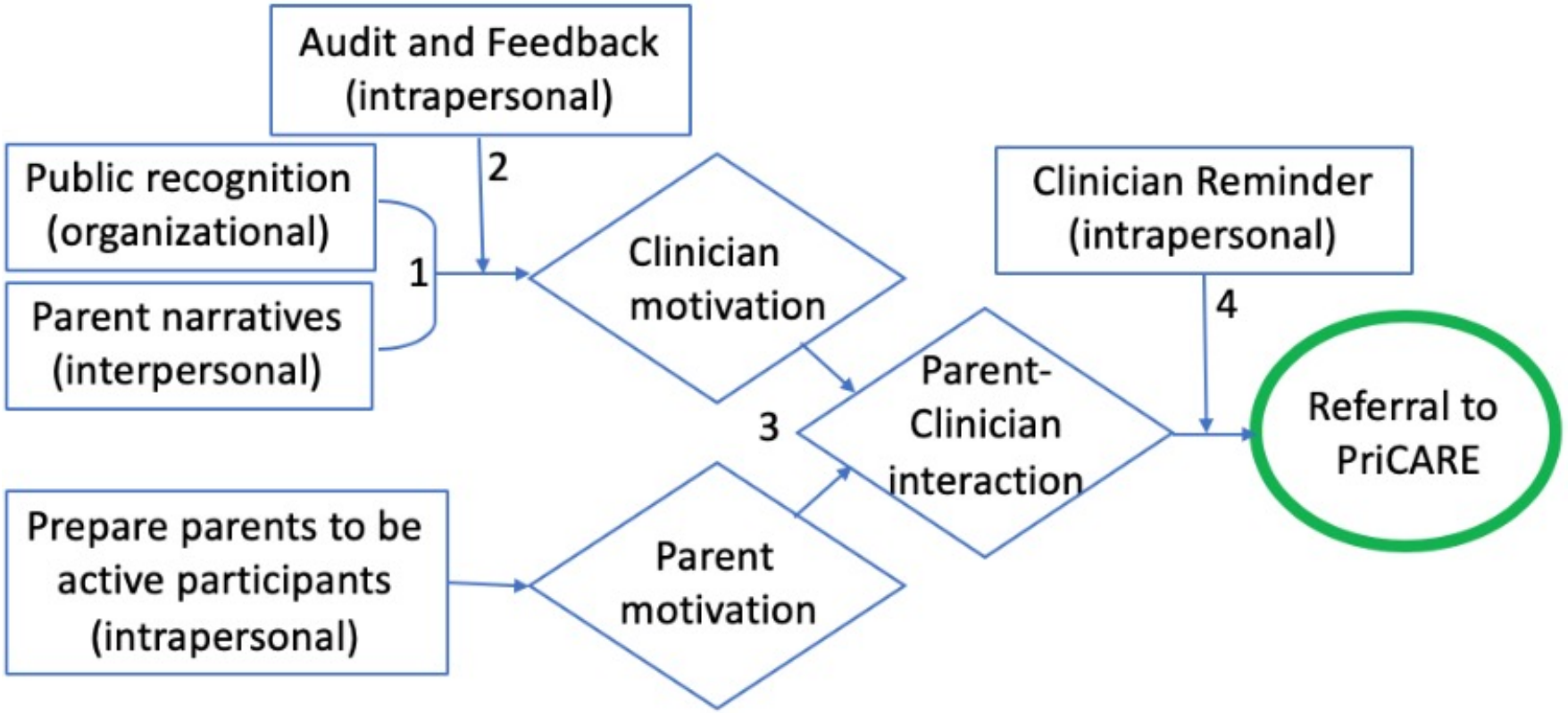
Keywords: implementation, mechanism, mediator, moderator, theory, causal pathway, strategy

BACKGROUND: WHY BUILD CAUSAL PATHWAY MODELS?

In recent years, there has been growing recognition of the importance of implementing evidence-based practices as a way to improve the quality of health care and public health. However, the results of implementation efforts have been mixed. About two-thirds of efforts fail to achieve the intended change (2), and nearly half have no effect on outcomes of interest (3). Implementation strategies are



Seeking Synergy for Multifaceted/Multilevel Strategies



Schilling, Bigal, & Powell (Minor Revision); Weiner et al. (2012)

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.

Developing a Mechanisms-Focused Research Agenda

Open access Protocol

BMJ Open

Advancing mechanisms of implementation to accelerate sustainable evidence-based practice integration: protocol for generating a research agenda

Cara C Lewis ,[1] Byron J Powell,[2] Stephanie K Brewer,[3] Ann M Nguyen,[4] Simone H Schriger,[5] Sarah F Vejnoska,[6] Callie Walsh-Bailey ,[2] Gregory A Aarons,[7] Rinad S Beidas,[8,9] Aaron R Lyon,[10] Bryan Weiner,[11] Nathaniel Williams,[12] Brian Mittman[13]

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ABSTRACT

Introduction Mechanisms explain *how* implementation strategies work. Implementation research requires careful operationalisation and empirical study of the causal pathway(s) by which strategies effect change, and factors that may amplify or weaken their effects. Understanding mechanisms is critically important to replicate findings, learn from negative studies or adapt an implementation strategy developed in one setting to another. Without understanding implementation mechanisms, it is difficult to design strategies to produce expected effects across contexts, which may have disproportionate effects on settings in which priority populations receive care. This manuscript outlines the protocol for an Agency for Healthcare Research and Quality-funded initiative to: (1) establish priorities for an agenda to guide research on implementation mechanisms in health and public health, and (2) disseminate the agenda to research, policy and practice audiences.

Methods and analysis A network of scientific experts will convene in 'Deep Dive' meetings across 3 years. A research agenda will be generated through analysis and synthesis of information from six sources: (1) systematic reviews, (2) network members' approaches to studying mechanisms, (3) new proposals presented in implementation proposal feedback sessions, (4) working group sessions conducted in a leading implementation research training institute, (5) breakout sessions at the Society for Implementation Research Collaboration's (SIRC) 2019 conference and (6) SIRC conference abstracts. Two members will extract mechanism-relevant text segments from each data source and a third member will generate statements as an input for concept mapping. Concept mapping will generate unique clusters of challenges, and the network will engage in a nominal group process to identify priorities for the research agenda.

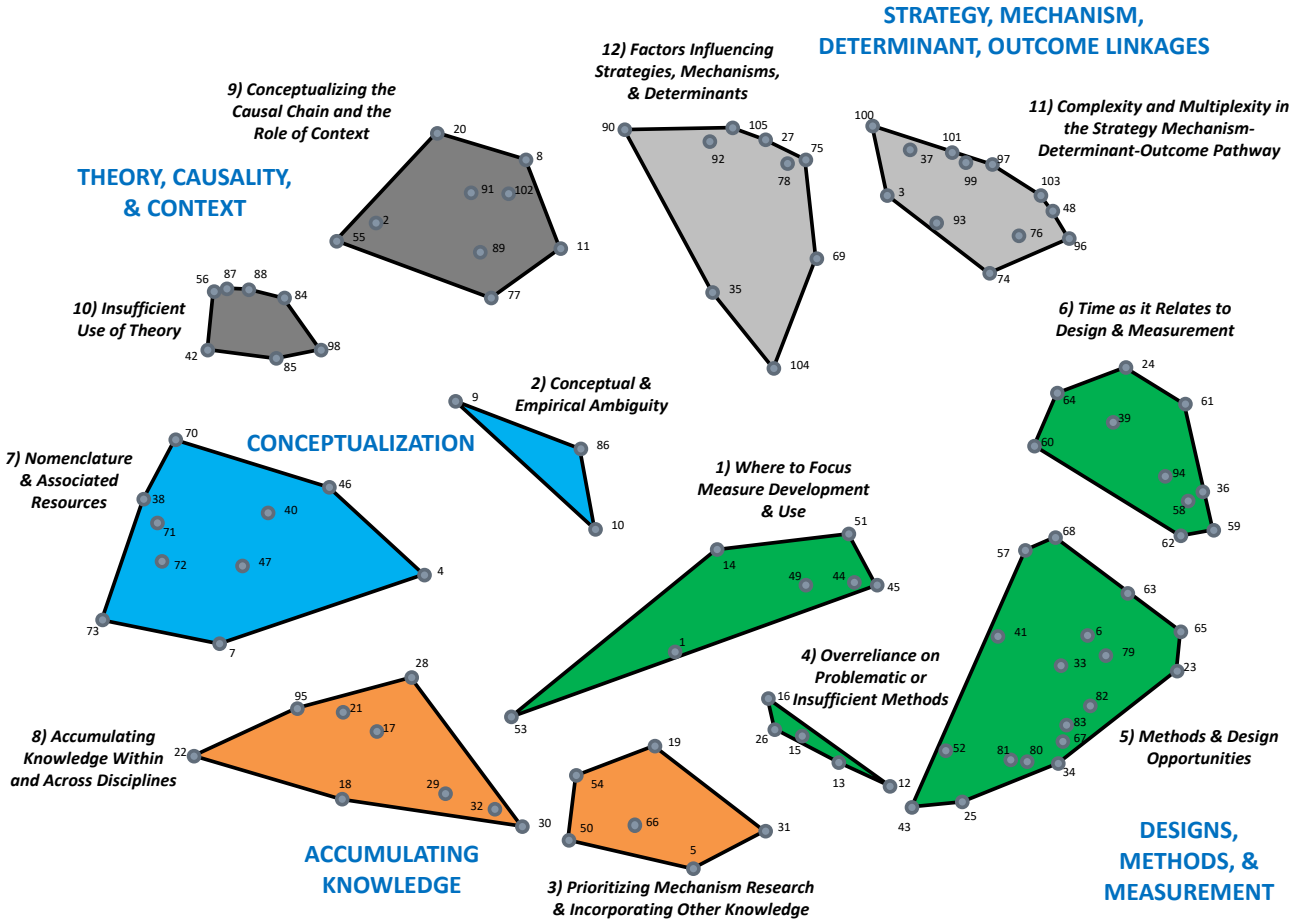
Ethics and dissemination This initiative will yield an actionable research agenda to guide research to identify and test mechanisms of change for implementation strategies. The agenda will be disseminated via multiple channels to solicit feedback and promote rigorous research on implementation mechanisms.

Strengths and limitations of this study

- This study will synthesise multiple data sources to uncover key challenges to studying implementation mechanisms.
- This study will yield a research agenda outlining challenges, priorities and activities that will advance the study of implementation mechanisms.
- This study will disseminate a mechanisms-focused research agenda for implementation science and invite international feedback.
- The generation of this research agenda is largely informed by stakeholders from the USA, potentially limiting its relevance internationally; however, the network has been expanded to obtain global perspectives.
- Given the focus on advancing research methods, stakeholder engagement in this effort focuses primarily on researchers, limiting opportunities for patients and policy makers to inform the research agenda.

MECHANISMS AND WHAT WE KNOW ABOUT THEM IN IMPLEMENTATION SCIENCE

Mechanisms are broadly defined as processes that are responsible for change.[1] Defining, testing and establishing mechanisms is increasingly a priority across fields of study where biological, psychological or social intervention or behaviour change is the focus.[2 3] In the context of implementation science, mechanisms explain *how* or *why* implementation strategies exert their effects on outcomes.[4] Implementation strategies are defined as methods used to facilitate the adoption, implementation, sustainment or scale-up of evidence-based practices (EBPs).[5 6] While over 70 implementation strategies have been



Lewis, Powell, et al. (2021); Powell et al. (In Prep)

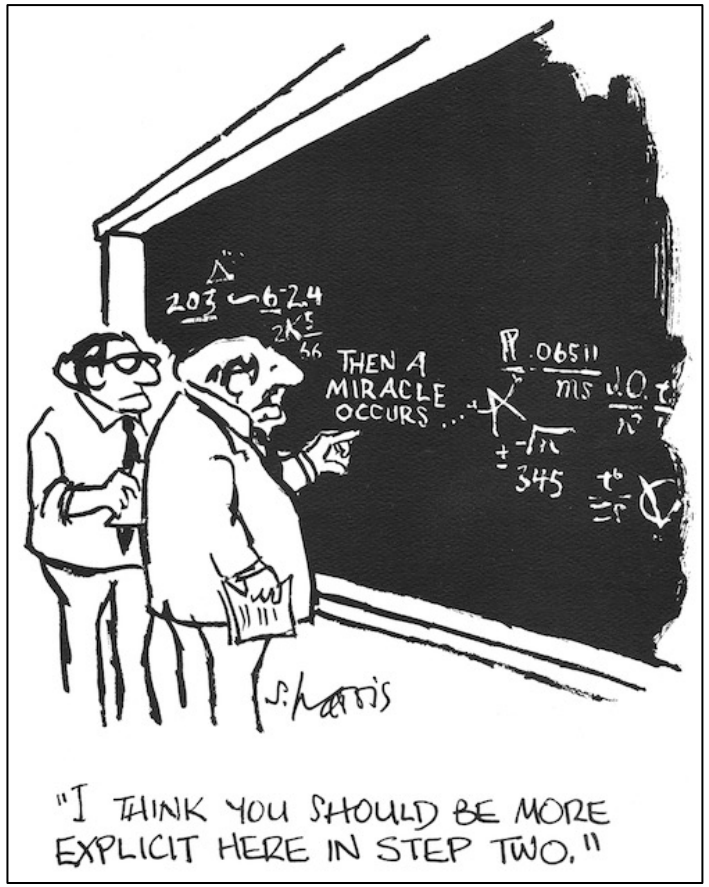
MECHANISMS: The MECHANics of Implementation Strategies and MeasureS (NCI R01CA262325; Lewis & Weiner, MPIs)

(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

THE MILBANK QUARTERLY
A MULTIDISCIPLINARY JOURNAL OF POPULATION HEALTH AND HEALTH POLICY

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

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KIMBERLY EATON HOAGWOOD,[1]
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Context: In response to national efforts to improve quality of care, policymakers and health care leaders have increasingly turned to quality improvement collaboratives (QICs) as an efficient approach to improving provider practices and patient outcomes through the dissemination of evidence-based practices. This article presents findings from a systematic review of the literature on QICs, focusing on the identification of common components of QICs in health care and exploring, when possible, relations between QIC components and outcomes at the patient or provider level.

Methods: A systematic search of five major health care databases generated 294 unique articles, twenty-four of which met our criteria for inclusion in our final analysis. These articles pertained to either randomized controlled trials or quasi-experimental studies with comparison groups, and they reported the findings from twenty different studies of QICs in health care. We coded the articles to identify the components reported for each collaborative.

Findings: We found fourteen crosscutting components as common ingredients in health care QICs (e.g., in-person learning sessions, phone meetings, data reporting, leadership involvement, and training in QI methods). The collaboratives reported included, on average, six to seven of these components. The most common were in-person learning sessions, plan-do-study-act (PDSA) cycles, multidisciplinary QI teams, and data collection for QI. The outcomes data

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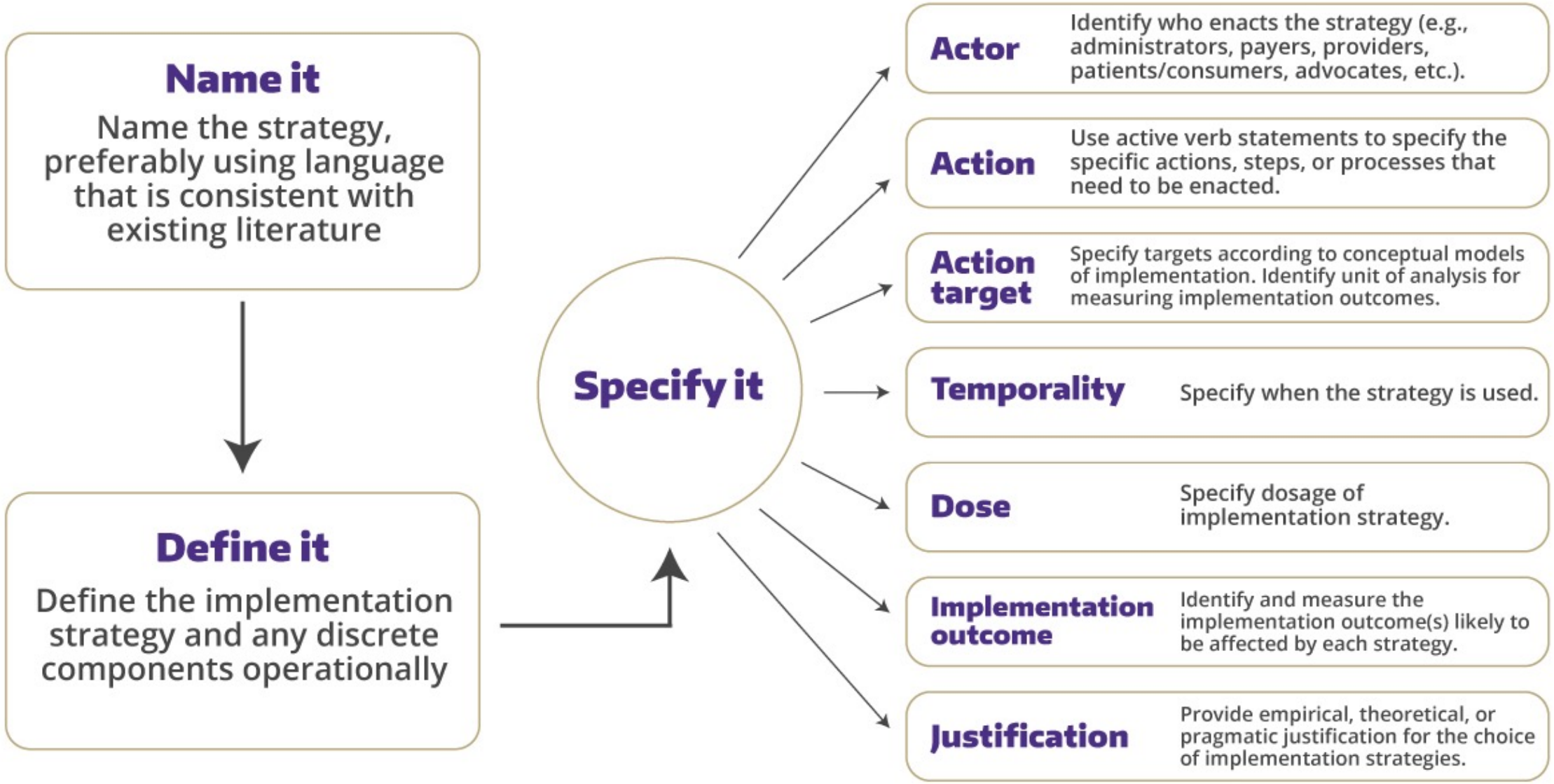
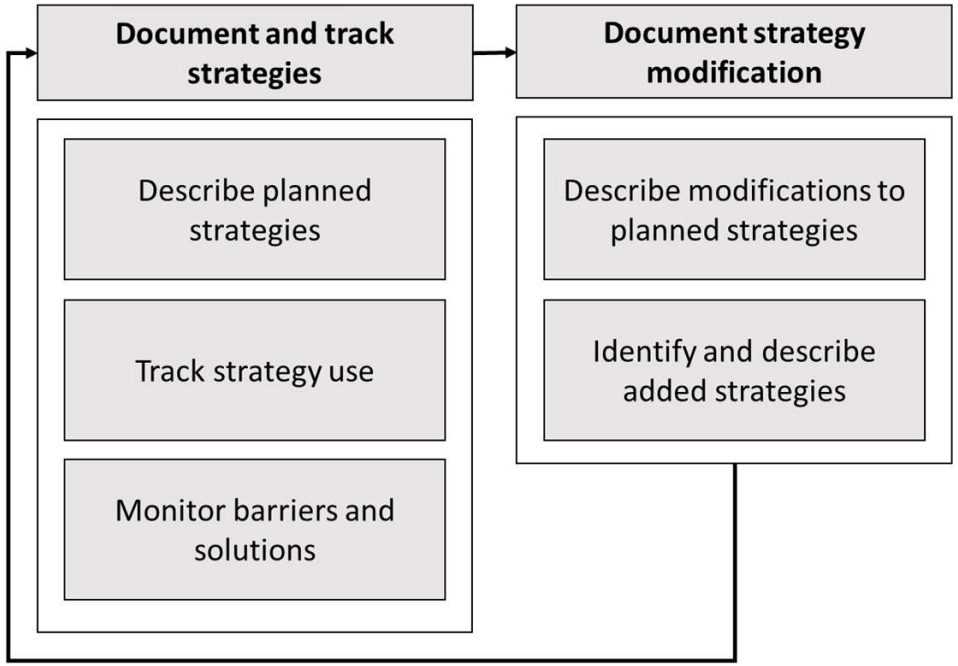
The Milbank Quarterly, Vol. 91, No. 2, 2013 (pp. 354–394)

"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://impsciuw.org/implementation-strategies/

Tracking Implementation Strategy Use & Fidelity



Haley et al. (2021)

Haley *et al. BMC Medical Research Methodology* (2021) 21:133
https://doi.org/10.1186/s12874-021-01326-6

BMC Medical Research Methodology

RESEARCH Open Access

Strengthening methods for tracking adaptations and modifications to implementation strategies

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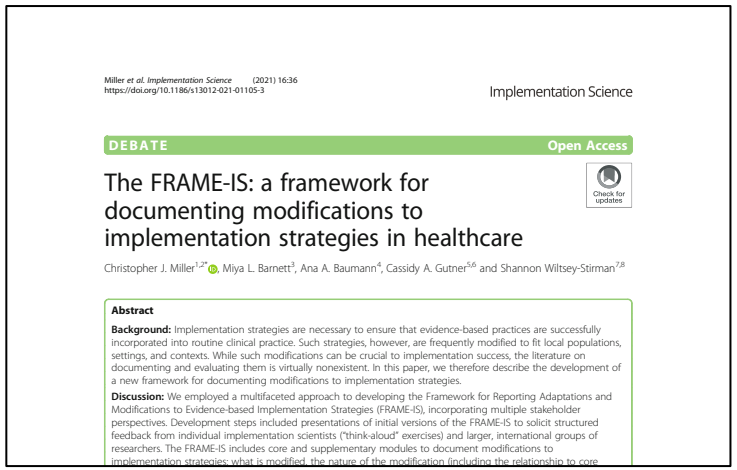
Abstract

Background: Developing effective implementation strategies requires adequate tracking and reporting on their application. Guidelines exist for defining and reporting on implementation strategy characteristics, but not for describing how strategies are adapted and modified in practice. We built on existing implementation science methods to provide novel methods for tracking strategy modifications.

Methods: These methods were developed within a stepped-wedge trial of an implementation strategy package designed to help community clinics adopt social determinants of health-related activities: in brief, an 'Implementation Support Team' supports clinics through a multi-step process. These methods involve five components: 1) describe planned strategy; 2) track its use; 3) monitor barriers; 4) describe modifications; and 5) identify / describe new strategies. We used the Expert Recommendations for Implementing Change taxonomy to



Miller *et al. Implementation Science* (2021) 16:36
https://doi.org/10.1186/s13012-021-01105-3

Implementation Science

DEBATE Open Access

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

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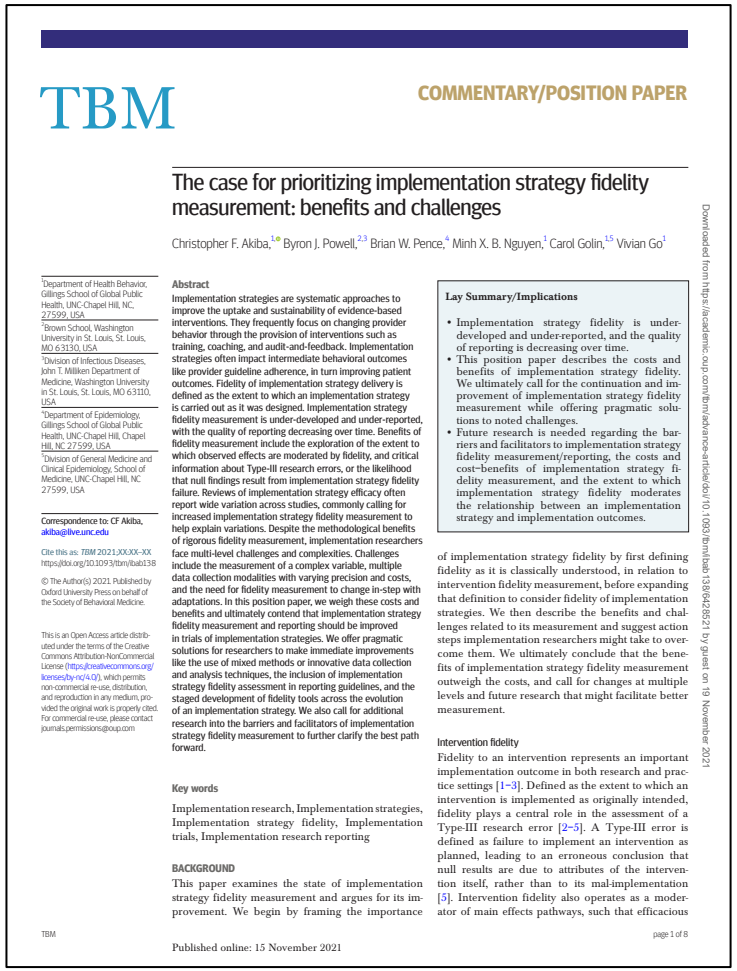
Abstract

Background: Implementation strategies are necessary to ensure that evidence-based practices are successfully incorporated into routine clinical practice. Such strategies, however, are frequently modified to fit local populations, settings, and contexts. While such modifications can be crucial to implementation success, the literature on documenting and evaluating them is virtually nonexistent. In this paper, we therefore describe the development of a new framework for documenting modifications to implementation strategies.

Discussion: We employed a multifaceted approach to developing the Framework for Reporting Adaptations and Modifications to Evidence-based Implementation Strategies (FRAME-IS), incorporating multiple stakeholder perspectives. Development steps included presentations of initial versions of the FRAME-IS to solicit structured feedback from individual implementation scientists ("think-aloud" exercises) and larger, international groups of researchers. The FRAME-IS includes core and supplementary modules to document modifications to implementation strategies: what is modified, the nature of the modification (including the relationship to core



TBM

COMMENTARY/POSITION PAPER

The case for prioritizing implementation strategy fidelity measurement: benefits and challenges

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https://doi.org/10.1093/tbm/ibab138

Abstract

Implementation strategies are systematic approaches to improve the uptake and sustainability of evidence-based interventions. They frequently focus on changing provider behavior through the provision of interventions such as training, coaching, and audit-and-feedback. Implementation strategies often impact intermediate behavioral outcomes like provider guideline adherence, in turn improving patient outcomes. Fidelity of implementation strategy delivery is defined as the extent to which an implementation strategy is carried out as it was designed. Implementation strategy fidelity measurement is under-developed and under-reported, with the quality of reporting decreasing over time. Benefits of fidelity measurement include the exploration of the extent to which observed effects are moderated by fidelity, and critical information about Type-III research errors, or the likelihood that null findings result from implementation strategy fidelity failure. Reviews of implementation strategy efficacy often report wide variation across studies, commonly calling for increased implementation strategy fidelity measurement to help explain variations. Despite the methodological benefits of rigorous fidelity measurement, implementation researchers face multi-level challenges and complexities. Challenges include the measurement of a complex variable, multiple data collection modalities with varying precision and costs, and the need for fidelity measurement to change in-step with adaptations. In this position paper, we weigh these costs and benefits and ultimately contend that implementation strategy fidelity measurement and reporting should be improved in trials of implementation strategies. We offer pragmatic solutions for researchers to make immediate improvements like the use of mixed methods or innovative data collection and analysis techniques, the inclusion of implementation strategy fidelity assessment in reporting guidelines, and the staged development of fidelity tools across the evolution of an implementation strategy. We also call for additional research into the barriers and facilitators of implementation strategy fidelity measurement to further clarify the best path forward.

Key words

Implementation research, Implementation strategies, Implementation strategy fidelity, Implementation trials, Implementation research reporting

Lay Summary/Implications

- Implementation strategy fidelity is under-developed and under-reported, and the quality of reporting is decreasing over time.
- This position paper describes the costs and benefits of implementation strategy fidelity. We ultimately call for the continuation and improvement of implementation strategy fidelity measurement while offering pragmatic solutions to noted challenges.
- Future research is needed regarding the barriers and facilitators to implementation strategy fidelity measurement/reporting, the costs and cost–benefits of implementation strategy fidelity measurement, and the extent to which implementation strategy fidelity moderates the relationship between an implementation strategy and implementation outcomes.

BACKGROUND

This paper examines the state of implementation strategy fidelity measurement and argues for its improvement. We begin by framing the importance of implementation strategy fidelity by first defining fidelity as it is classically understood, in relation to intervention fidelity measurement, before expanding that definition to consider fidelity of implementation strategies. We then describe the benefits and challenges related to its measurement and suggest action steps implementation researchers might take to overcome them. We ultimately conclude that the benefits of implementation strategy fidelity measurement outweigh the costs, and call for changes at multiple levels and future research that might facilitate better measurement.

Intervention fidelity

Fidelity to an intervention represents an important implementation outcome in both research and practice settings [1–3]. Defined as the extent to which an intervention is implemented as originally intended, fidelity plays a central role in the assessment of a Type-III research error [2–5]. A Type-III error is defined as failure to implement an intervention as planned, leading to an erroneous conclusion that null results are due to attributes of the intervention itself, rather than to its mal-implementation [5]. Intervention fidelity also operates as a moderator of main effects pathways, such that efficacious

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Guidance for Designing Evaluations of Implementation Strategies

An Overview of Research and Evaluation Designs for Dissemination and Implementation

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ANNUAL REVIEWS

Annual Review of Public Health

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

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This article is part of a symposium on Implementation Science and Public Health. For a list of other articles in this symposium, see **http://www.annualreviews.org/toc/publhealth/39/1**

Keywords

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

Abstract

Interventional researchers face many design challenges when assessing intervention implementation in real-world settings. Intervention implementation requires 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 terms of logistical benefits, there is still uncertainty about (*a*) selecting from among various QEDs and (*b*) developing strategies to strengthen the internal and external validity of QEDs. We focus here on commonly used

Designing and undertaking randomised implementation trials: guide for researchers

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Implementation science is 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, randomised 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, narrowly focused 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 randomised trials of implementation strategies. Established randomised trial methods from seminal texts and recent developments in implementation science were consolidated by an international group of researchers, health policy makers, and practitioners. This article provides guidance on the key components of randomised trials of implementation strategies, including articulation of trial aims, trial recruitment and retention strategies, randomised design selection, use of implementation science theory and frameworks, measures, sample size calculations, ethical review, and trial reporting. It also focuses on topics requiring special consideration or 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 randomised trials of implementation strategies.

SUMMARY POINTS

Criticisms of current implementation trials include risks of bias, lack of theory use, lack of standardised terminology to describe implementation strategies, and limited measures and poor reporting

This article consolidates recent methodological developments in implementation science with established guidance from seminal texts of randomised trial methods to provide best practice guidance to improve the development and conduct of randomised implementation trials

Consideration of such guidance will improve the quality and use of randomised implementation trials for healthcare and public health improvement

Investments in health research are not fully realised because of delayed and variable uptake of effective interventions by health systems and professionals.[1-3] Implementation science seeks to resolve this problem by generating evidence to facilitate the use and integration of evidence based interventions into health policy and practice.[4] Just as well conducted randomised clinical trials can provide robust estimates of the effects of medical and surgical treatments, well conducted randomised trials of implementation strategies (which we refer to as implementation trials) can provide robust assessments of the effects of implementation strategies. These strategies include audit and feedback, training, or reminders, on measures of the uptake and integration of evidence based interventions in healthcare and public health practice.[5]

Although randomised trials are central to evidence based medicine[6] and are a common evaluation design in the field of implementation science,[7] concerns have been raised about the quality of implementation trials. Criticisms include high risks of bias, limited use of theory, a lack of standardised terminology to describe implementation strategies, limited measures, and poor reporting.[7-11] Progress in the field, however, has been rapid with recent advances in implementation science theory, concepts, terminology, measures, and reporting standards to resolve many of these limitations.[12-14]

This article draws on recent developments in implementation science with established randomised

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