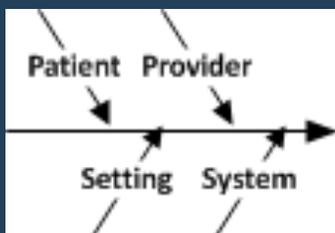


Dissemination and Implementation in Health

Training Guide and Workbook
D&I Training Workshop 2013



Theory & Strategies



Tools & Approaches



Evaluation & Analysis

Center for Research in Implementation Science and Prevention (CRISP)
www.ucdenver.edu/implementation

About this training guide and workbook

A letter from CRISP

Welcome!

Closing the gap between research discovery and clinical and community practice is essential if we are to be successful in improving our nation's health and transforming its healthcare. As Lawrence W. Green, DrPH (UCSF) famously stated, "If we want more evidence-based practice, we need more practice-based evidence." Implementation science is a new, dynamic and evolving area of inquiry aimed at just this challenge.

This D&I Training Workshop is sponsored by the Center for Research in Implementation Science and Prevention (CRISP) in partnership with colleagues from the Colorado Clinical and Translational Sciences Institute (CCTSI), the Kaiser Permanente Center for Health Education Dissemination and Implementation Research and the Department of Veterans Affairs. For the first time, we have a forum for bringing together local D&I researchers and practitioners to learn from one another.

We have designed this workbook as a resource tool for you. We like to think of it as a D&I navigation guide.

The content is divided into five sections:

- Why D&I is important
- Definitions, theories and concepts
- Strategies and tools for designing successful D&I interventions
- Recommendations for evaluation design and measurement
- Tips for success – for researchers and practitioners

In each section we point you to key references and online resources to aid you in further study and application.

We are excited about the national D&I experts who are part of our inaugural training program.

We look forward to your feedback and the D&I community we are forging together in Colorado!

Allison Kempe, MD, MPH
Center Director, CRISP



Elaine Morrato, DrPH, MPH
Collaborative Scientific Lead, CRISP



Supported by: Agency for Healthcare Research and Quality (AHRQ) Department of Health and Human Services *Research Program Project*, Grant Number 5P01HS021138-03. Contents are the authors' sole responsibility and do not necessarily represent official AHRQ views.

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Collaborating Agencies:

Center for Research in Implementation Science and Prevention (CRISP)
Colorado Clinical & Translational Sciences Institute (CCTSI)
Center for Health Education Dissemination and Implementation Research (CHEDIR)
U.S. Department of Veterans Affairs (VA)

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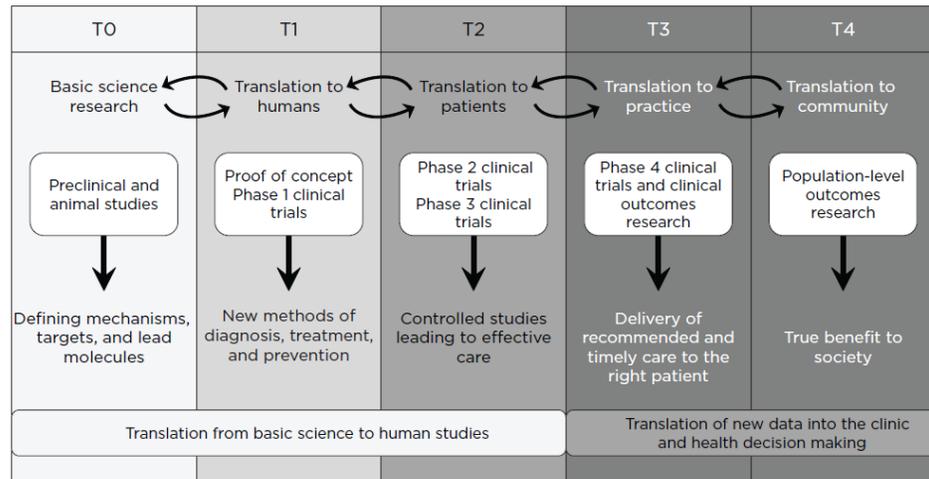
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TRANSLATION MODELS

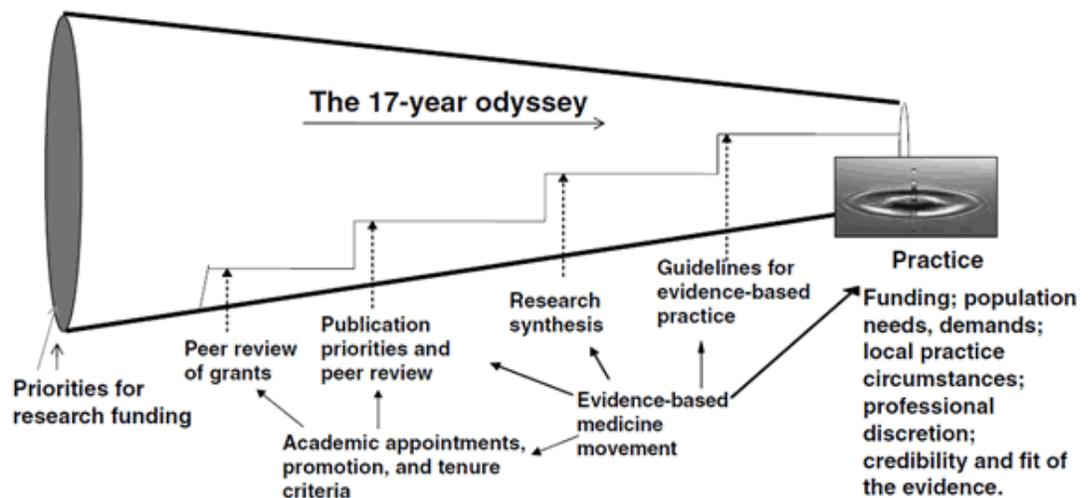
Operational Phases of Translational Research (T0-T4)

GOAL



Transfer of Knowledge from Research to Practice and Policy

REALITY



Sources:

Institute of Medicine. The CTSA Program at NIH: Opportunities for Advancing Clinical and Translational Research (2103). Figure adapted with permission from Macmillan Publishers Ltd: *Nature Medicine* (Blumberg et al., 2012), copyright (2012).

Green LW, Ottoson, J, Garcia C, Robert H. Diffusion Theory and Knowledge Dissemination, Utilization, and Integration in Public Health. *Annu. Rev. Public Health* (2009)

Why is D & I important?

The promises and challenges

LEARNING OBJECTIVE:



To understand the importance of dissemination & implementation research and practice in achieving a healthy America, and its challenges.

“There is a big gap between what we could accomplish in the area of prevention and what we are currently accomplishing in primary care practice in this country. Preventive services that work are not reaching many people who need them. Our mission is to advance the understanding of how to get preventive services that have been shown to be effective to be widely implemented. Simply put, to learn how to get the right preventive care to the right people at the right time.”



Allison Kempe, MD, MPH

Professor of Pediatrics, University of Colorado School of Medicine
Director, Children's Outcomes Research (COR), Children's Hospital Colorado
Director, Center for Research in Implementation Science and Prevention (CRISP)

What national organizations are saying ...

Closing the gap between research discovery and clinical and community practice is both a complex challenge and an absolute necessity if we are to ensure that all populations benefit from the Nation's investments in scientific discoveries.

-- **National Institutes of Health**, *Dissemination and Implementation Research in Health PAR-10-038*

[A national] Comparative Effectiveness Research (CER) Program should promote rapid adoption of CER findings and conduct research to identify the most effective strategies for disseminating new and existing CER findings to health care professionals, consumers, patients, and caregivers and for helping them to implement these results in daily clinical practice.

-- **Institute of Medicine**, *Initial National Priorities for Comparative Effectiveness Research (2009)*

A research priority..... Communication and Dissemination Research. Comparing approaches to providing comparative effectiveness research information, empowering people to ask for and use the information, and supporting shared decision making between patients and their providers.

-- **Patient-Centered Outcomes Research Institute**, *National Priorities for Research (2012)*

A focus area..... Efficiency: Transform[ing] research into practice to facilitate wider access to effective health care services and reduce unnecessary costs.

-- **Agency for Healthcare Research and Quality**, *Focus and Strategic Goals*

[D&I] models help to bridge the gap between research and practice by providing the structure that can be used to spread evidence-based approaches that prevent disease, promote health, and improve health services.

-- **Centers for Disease Control and Prevention**, *Prevention Research Centers*

Implementation research is a new, dynamic, evolving area of inquiry. It is closely linked to the work of implementation, although there are key differences between doing implementation—actually putting into practice new policies, procedures, or approaches—and doing research on implementation. . . Studying how implementation is done can lead to new insights to improve implementation practice.

-- **Veteran's Administration**, *Quality Enhancement Research Initiative (QUERI)*

A FUNDAMENTAL TRANSFORMATION IS UNDERWAY.

Historically, dissemination and implementation has not been a research priority.

The American health research infrastructure lacks a systematic way to translate knowledge from research to practice. . . . Many barriers exist: perverse reimbursement incentives, physician perceptions about patients' expectations, and patients' concerns about denials of care or reluctance to question clinicians. These barriers and others should be addressed and, insofar as possible, overcome. Knowledge translation research must be a high priority.

-- Institute of Medicine, *Initial National Priorities for Comparative Effectiveness Research* (2009)

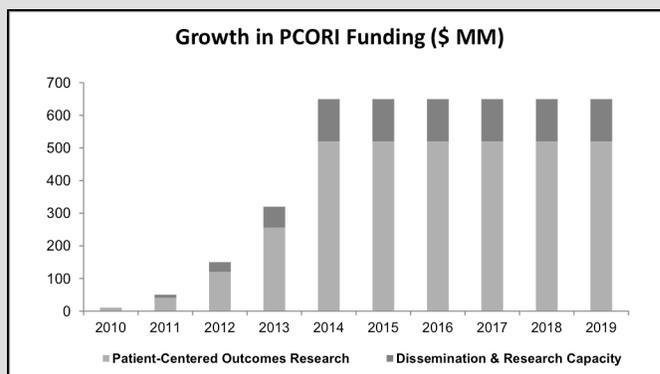
However, there has been increasing recognition of the need to invest in translating research into practice in order to achieve the promised benefits.

The American Recovery and Reinvestment Act of 2009 included new funding for developing better evidence about health interventions . . . nearly 90 percent of the \$1.1 billion will eventually be spent on two main types of activity: developing and synthesizing comparative effectiveness evidence, and improving the capacity to conduct comparative effectiveness research. . . . **Priorities for the new funding should include . . . dissemination of results.**

-- Brenner J S et al. *Health Affairs* (2010)

National funding in dissemination and implementation-ready research is being spearheaded by PCORI....

The Affordable Care Act created the Patient-Centered Outcomes Research Trust Fund which funds the Patient-Centered Outcomes Research Institute (PCORI) to "assist patients, clinicians, purchasers, and policymakers in making informed health decisions". **The Trust Fund will invest an estimated \$3.5 billion in patient-centered outcomes research and \$886 million in dissemination and research capacity building during the 10-year authorization period.**



... and the Healthcare Systems Research Collaboratory funded by the NIH Common Fund.

Funds, totaling approximately \$11.3 million, will support the first year of the Collaboratory, which will engage health care systems as research partners in conducting large-scale clinical studies.

Crossing the Quality Chasm: A New Health System for the 21st Century

"Scientific knowledge about best care is not applied systematically or expeditiously to clinical practice. It now takes an average of 17 years for new knowledge generated by randomized controlled trials to be incorporated into practice, and even then application is highly uneven."

Priority Areas for National Action: Transforming Healthcare Quality

"... the stark reality [is] that we invest billions in research to find appropriate treatments, we spend more than \$1 trillion on health care annually, we have extraordinary knowledge and capacity to deliver the best care in the world, but we repeatedly fail to translate that knowledge and capacity into clinical practice."

These reports are from the landmark series spearheaded by the Institute of Medicine aimed at improving the quality of health care in America.

D&I Agenda-Setting “Must Reads”

Agency for Healthcare Research and Quality

The first website has links to AHRQ’s portfolio for research in: comparative effectiveness, health information technology, innovations & emerging issues, patient safety, prevention & care management, and value. The second website lists grant announcements from AHRQ for supporting research to improve the quality, effectiveness, accessibility, and cost effectiveness of health care. New funding announcements have been appearing regularly in the area of dissemination and implementation research.

Source: <http://www.ahrq.gov/cpi/portfolios/>

<http://www.ahrq.gov/funding/fund-ops/index.html>

National Institutes of Health Approaches to Dissemination and Implementation Science: Current and Future Directions

This paper addresses D&I terminology, provides examples of successful research, and highlights directions and opportunities for future advances in the field. The authors discuss the need for research testing approaches to scaling up and sustaining effective interventions. They also propose that the research field focus on five core values: (1) rigor and relevance, (2) efficiency, (3) collaboration, (4) improved capacity, and (5) cumulative knowledge.

Source: Glasgow RE, Vinson C, Chambers D, Khoury MJ, Kaplan RM, Hunter C. *Am J Public Health*. 2012 Jul;102(7):1274-81.

Patient-Centered Outcomes Research Institute National Priorities for Research and Research Agenda

This report describes how PCORI’s national research priorities were developed from earlier comparative effectiveness research prioritization efforts and from stakeholder input. Five priority areas were identified: (1) assessment of prevention, diagnosis, and treatments; (2) improving healthcare systems; (3) communication and dissemination research; (4) addressing disparities; and (5) accelerating patient-centered outcomes research and methodological research.

Source: <http://pcori.org/assets/PCORI-National-Priorities-and-Research-Agenda-2012-05-21-FINAL1.pdf>

QUERI. An organizational framework and strategic implementation for system-level change to enhance research-based practice

This paper is part of a series which discusses the Quality Enhancement Research Initiative (QUERI) within the U.S. Veterans Health Administration (VA). QUERI was created to generate research-driven initiatives that directly enhance health care quality within the VA and, simultaneously, contribute to the field of implementation science. The article describes the underlying change framework and implementation strategy used to operationalize QUERI. It discusses a unique form of funding and study focused to encourage action-oriented improvement research.

Source: Stetler CB, McQueen L, Demakis J, Mittman BS. *Implement Sci*. 2008 May 29;3:30.



“My interest in D&I research stems from a longstanding interest in asking and answering research questions that are relevant on the front lines of clinical care, to truly make an impact on improving care rather than just generating evidence for evidence-sake. What excites me is the potential for collaborating closely with clinical colleagues to figure out the best ways to get the evidence that has been generated into practice in a way that truly changes and enhances care.”

Jean Kutner, MD, MSPH

**Division Head, Division of General Internal Medicine
University of Colorado School of Medicine**



GETTING STARTED ... CHECKLIST FOR ACTION:

- ✓ Who else is working in D&I research in my field of interest?
- ✓ What are emerging topics in the field?
- ✓ What are the unique challenges and opportunities in my field of interest?
- ✓ Is there anyone with whom I can collaborate?

Notes:

What are we talking about?

D&I definitions and frameworks

LEARNING OBJECTIVES:

1. To define common terminology
2. To demonstrate the use of common frameworks



“In many ways, [dissemination and implementation] is a very new science, and so when something is a new science, there are many undiscovered “corners of the room,” in a sense. I think that fundamentally, we’ve still got work to do in defining the terminology of dissemination and implementation research.”



Ross Brownson, Ph.D.

Professor of Epidemiology | Co-Director, Prevention Research Center in St. Louis
George Warren Brown School of Social Work
Department of Surgery and Siteman Cancer Center,
Washington University School of Medicine Washington University in St. Louis

Dissemination and Implementation as defined by the National Institutes of Health...

*“**Dissemination** is the targeted distribution of information and intervention materials to a specific public health or clinical practice audience. The intent is to spread (“scale up”) and sustain knowledge and the associated evidence-based interventions.*

***Implementation** is the use of strategies to adopt and integrate evidence-based health interventions and change practice patterns within specific settings....*

***Dissemination and implementation research** intends to bridge the gap between public health, clinical research, and everyday practice by building a knowledge base about how health information, interventions, and new clinical practices and policies are transmitted and translated for public health and health care service use in specific settings.”*

Source: Department of Health and Human Services. *Part 1 Overview Information Dissemination and Implementation Research in Health* (R01). <http://grants.nih.gov/grants/guide/pa-files/PAR-13-055.html>.

A COMPREHENSIVE RESOURCE FOR THE FIELD OF D&I:

Dissemination and Implementation Research in Health: Translating Science into Practice

To help propel this crucial field forward, this book aims to address a number of key issues, including: how to evaluate the evidence base on effective interventions; which strategies will produce the greatest impact; how to design an appropriate study; and how to track a set of essential outcomes.

Brownson RC, Colditz GA, Proctor EK. *Dissemination and Implementation Research in Health: Translating Science to Practice*. New York, NY: Oxford University Press; 2012.

ANOTHER APPROACH TO DEFINING D&I

... is to think about it as part of a continuum spanning from Diffusion through Implementation. This concept is well illustrated by the following visual from the Implementation Science Division of the National Cancer Institute.

Diffusion-Dissemination-Implementation Continuum

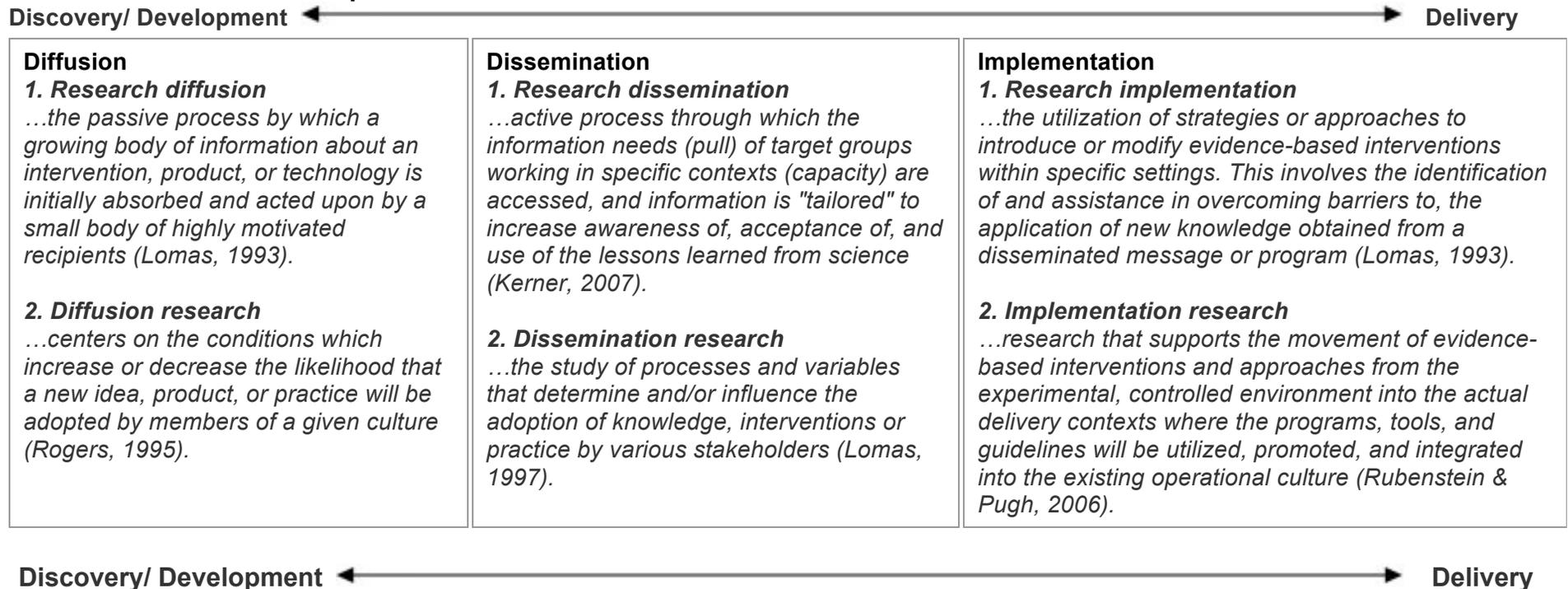


Table from: <http://cancercontrol.cancer.gov/is/definitions.html>

KEY TERMS FOR D&I

Evidence-based intervention

The objects of D&I activities are interventions with proven efficacy and effectiveness (i.e., evidence-based). Interventions within D&I research should be defined broadly and may include programs, practices, processes, policies, and guidelines. More comprehensive definitions of evidence-based interventions are available elsewhere. In D&I research, we often encounter with complex interventions (e.g., interventions using community-wide education) where the description of core intervention components and their relationships involve multiple settings, audiences, and approaches.

Adoption

Adoption is the decision of an organization or community to commit to and initiate an evidence-based intervention.

Sustainability

Sustainability describes the extent to which an evidence-based intervention can deliver its intended benefits over an extended period of time after external support from the donor agency is terminated. Most often sustainability is measured through the continued use of intervention components; however, Scheirer and Dearing suggest that measures for sustainability should also include considerations of maintained community- or organizational-level partnerships, maintenance of organizational or community practices, procedures, and policies that were initiated during the implementation of the intervention, sustained organizational or community attention to the issue that the intervention is designed to address, and efforts for program diffusion and replication in other sites. Three operational indicators of sustainability are: (1) maintenance of a program's initial health benefits, (2) institutionalization of the program in a setting or community, and (3) capacity building in the recipient setting or community.

Reinvention/adaptation

For the success of D&I, interventions often need to be reinvented or adapted to fit the local context (i.e., needs and realities). Reinvention or adaptation is defined as the degree to which an evidence-based intervention is changed or modified by a user during adoption and implementation to suit the needs of the setting or to improve the fit to local conditions. The need for adaptation and understanding of context has been called Type 3 evidence (i.e., the information needed to adapt and implement an evidence-based intervention in a particular setting or population). Ideally, adaptation will lead to at least equal intervention effects as is shown in the original efficacy or effectiveness trial. To reconcile the tension between fidelity and adaptation, the core components (or essential features) of an intervention (i.e., those responsible for its efficacy/effectiveness) must be identified and preserved during the adaptation process.

Dissemination strategy

Dissemination strategies describe mechanisms and approaches that are used to communicate and spread information about interventions to targeted users. Dissemination strategies are concerned with the packaging of the information about the intervention and the communication channels that are used to reach potential adopters and target audiences. Passive dissemination strategies include mass mailings, publication of information including practice guidelines, and untargeted presentations to heterogeneous groups. Active dissemination strategies include hands on technical assistance, replication guides, point-of-decision prompts for use, and mass media campaigns. It is consistently stated in the literature that dissemination strategies are necessary but not sufficient to ensure wide-spread use of an intervention.

For additional terms see Rabin, B.A. and Brownson, R.C. (2012). Developing the terminology for dissemination and implementation research in health. In Brownson, R.C., Colditz, G.A., & Proctor, E.K. (Eds.), *Dissemination and Implementation Research in Health: Translating Science to Practice*. New York: Oxford University Press or visit <http://makeresearchmatter.org/glossary.aspx>

MODELS AND FRAMEWORKS FOR D&I

Why is it important to use models and frameworks?

Models and frameworks can guide the planning, development and evaluation of D&I studies. Tabak and colleagues (see p. 11 for reference) list the following reasons why models and frameworks should be used in D&I. They can:

- Enhance effectiveness of interventions by helping to focus interventions on the essential processes of behavioral change, which can be quite complex
- Enhance interpretability of study findings
- Ensure that essential implementation strategies are included.

How do I use models and frameworks?

The clear integration of the selected D&I model or framework into all aspects of the study is critical. A guide to applying models and frameworks to D&I projects is provided by the VA QUERI Enhancing Implementation and further discussed by the VA Implementation Guide.

Ideally, your theory or framework will guide the formulation of your research question, development of your intervention, the evaluation of the intervention, and the interpretation of your findings. For an exercise to do this, you can use Table 1 Try-It activity at the end of this module.

THE VA QUERI IMPLEMENTATION GUIDE

The **VA QUERI Implementation Guide** provides a summary of resources on the value and use of models and frameworks in D&I:
http://www.queri.research.va.gov/implementation/ImplementationGuide_1.pdf

Science CyberSeminar

http://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/eis-060712.pdf

How can we categorize frameworks and theories?

A recent review (see figure on next page) identified 61 D&I models and frameworks and categorized them along three criteria:

Construct Flexibility (CF): Models were scored on a scale of 1 to 5, where 1 was Broad and 5 was Operational:

- Broad was defined as containing more loosely defined constructs, thereby allowing greater flexibility to apply the model to a wide array of activities and contexts.
- Operational was defined as providing detailed, step-by-step actions clearly defined for a particular activity and context.

Focus on Dissemination and Implementation

Activities (D/I): Models were scored on a continuum of the following five categories: focus on dissemination only (D only), dissemination more than implementation (D < I), both activities equally (D = I), implementation more than dissemination (D > I), and implementation only (I only).

- Dissemination was defined as actively spreading evidence-based programs to specified audiences via determined channels through planned strategies.
- Implementation was defined as the process of using or integrating evidence-based programs within a setting.

Level(s) of Socio-ecological Framework (SEF):

Models were classified as focusing on a specific level or as cutting across several levels of the socio-ecological framework (outline shown below).

Researchers also noted whether models addressed policy.

- System level, such as the hospital system or government level
- Community level, such as the local government or neighborhood level
- Organization level, such as the hospital, service organization, or factory level
- Individual level, or focusing on the personal characteristics of individuals

Three-Factor Construct Definition and Taxonomy

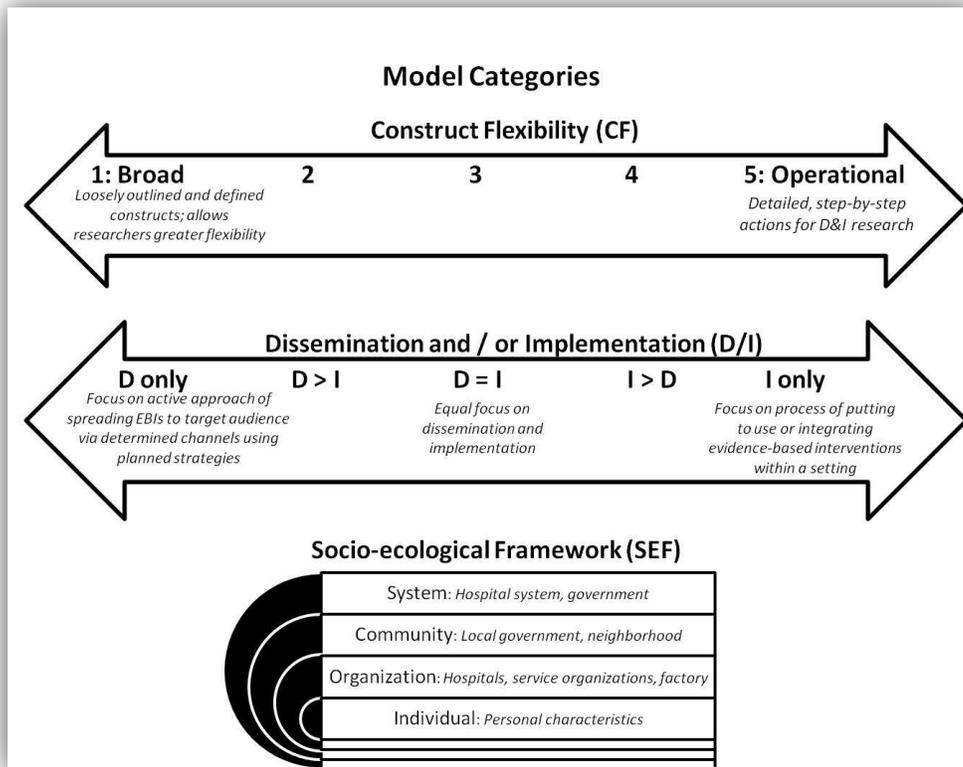


Figure from: Tabak RG, Khoong EC, Chambers DA, Brownson, RC. Models in dissemination and implementation research: useful tools in public health services and systems research. *Frontiers in PHSSR*. 2013; 2(1):8.

CDC PREVENTION RESEARCH CENTERS (PRC) RESEARCHERS DEVELOP THE 1st INVENTORY OF DISSEMINATION & IMPLEMENTATION MODELS

June 2013

Researchers from the St. Louis University and Washington University in St. Louis PRC created an inventory of 61 Dissemination and Implementation (D&I) models and organized them according to three categories for use by D&I researchers. These models help to bridge the gap between research and practice by providing the structure that can be used to spread evidence-based approaches that prevent disease, promote health, and improve health services.

Source: <http://www.cdc.gov/prc/stories-prevention-research/stories-dissemination-and-implementation.htm>

FOR MORE DETAIL ON THE 61 MODELS AND FRAMEWORKS SEE:

Tabak RG, Khoong EC, Chambers DA, Brownson RC. Bridging research and practice: models for dissemination and implementation research. *Am J Prev Med* 2012;43(3):337-350.

Eccles MP, Mittman BS. Welcome to implementation science. *Implement Sci* 2006;1(1):1.

Tabak RG, Khoong EC, Chambers DA, Brownson, RC. Models in dissemination and implementation research: useful tools in public health services and systems research. *Frontiers in PHSSR*. 2013;2(1):8.

Centers for Disease and Prevention (CDC) Prevention Research Centers
<http://www.cdc.gov/prc/stories-prevention-research/stories-dissemination-and-implementation.htm>

KEY MODELS AND FRAMEWORKS FOR D&I

The most traditional model for D&I, Diffusion of Innovations has emerged from outside of the health services and public health arena and was proposed by Everett Rogers.

The **Diffusion of Innovations theory** explains the processes and factors influencing the spread and adoption of new innovations through certain channels over time. Key components of the diffusion theory are: (1) perceived attributes of the innovation, (2) innovativeness of the adopter, (3) the social system, (4) individual adoption process, and (5) the diffusion system.

A number of other frameworks developed in context of health research are recommended for consideration by the Implementation Science Division of the National Cancer Institute

<http://cancercontrol.cancer.gov/is/fundingresources/models&frameworks.html>:

Key D&I Models and Frameworks

	Framework	Description
Framework 1	Canadian Institutes for Health Research (CIHR) Model of Knowledge Translation	<p>A global KT model, based on a research cycle, that could be used as a conceptual guide for the overall KT process.</p> <p>Canadian Institutes of Health Research (2005). <i>About knowledge translation</i>. Retrieved September 10, 2013, from http://www.cihr-irsc.gc.ca/e/39033.html</p>
Framework 2	Consolidated Framework for Implementation Research (CFIR) (Damschroder)	<p>The Consolidated Framework For Implementation Research (CFIR) offers an overarching typology to promote implementation theory development and verification about what works where and why across multiple contexts.</p> <p>Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. <i>Implement Sci</i>. 2009 Aug 7;4:50.</p>
Framework 3	Interactive Systems Framework (Wandersman et al)	<p>The Interactive Systems Framework for Dissemination and Implementation (ISF) was created to help bridge research and practice by specifying the systems and processes required to support dissemination and implementation of evidence-based programs, processes, practices, and policies. The ISF identifies three key systems necessary for this process which include the Prevention Synthesis and Translation System, the Prevention Support System, and the Prevention Delivery System.</p> <p>Wandersman A, Duffy J, Flaspohler P, Noonan R, Lubell K, et al. Bridging the gap between prevention research and practice: the interactive systems framework for dissemination and implementation. <i>American Journal of Community Psychology</i> 2008, 41(3–4), 171-181.</p> <p>Flaspohler P, Lesesne CA, Puddy RW, Smith E, Wandersman A. Advances in bridging research and practice: introduction to the second special issue on the interactive system framework for dissemination and implementation <i>American Journal of Community Psychology</i> 2012, 50(3-4), 271-281.</p>

Framework 4	<p>A practical, robust implementation and sustainability model (PRISM) for integrating research findings into practice. (Feldstein and Glasgow)</p>	<p>A comprehensive model for translating research into practice was developed using concepts from the areas of quality improvement, chronic care, the diffusion of innovations, and measures of the population-based effectiveness of translation. PRISM--the Practical, Robust Implementation and Sustainability Model--evaluates how the health care program or intervention interacts with the recipients to influence program adoption, implementation, maintenance, reach, and effectiveness.</p> <p>Feldstein AC, Glasgow RE. A practical, robust implementation and sustainability model (PRISM) for integrating research findings into practice. <i>Jt Comm J Qual Patient Saf.</i> 2008 Apr;34(4):228-43.</p>
Framework 5	<p>Precede-Proceed Model (Green & Kreuter)</p>	<p>The goals of the Precede-Proceed Model are to explain health-related behaviors and environments, and to design and evaluate the interventions needed to influence both the behaviors and the living conditions that influence them and their consequences. This model has been applied, tested, studied, extended, and verified in over 960 published studies and thousands of unpublished projects in community, school, clinical, and workplace settings over the last decade.</p> <p>Green, LW, and Kreuter, MW, <i>Health Program Planning: An Educational and Ecological Approach</i>, 4th edition (New York: McGraw-Hill) 2001.</p> <p>http://www.lgreen.net/precede.htm</p> <p>Aboumatar, H, Ristaino, P, Davis, RO, Thompson, CB, Maragakis, L, Cosgrove, S, Rosenstein, B, and Perl, TM. Infection Prevention Promotion Program Based on the PRECEDE Model: Improving Hand Hygiene Behaviors among Healthcare Personnel. <i>Infect Control Hosp Epidemiol</i> 2012, 33(2):144-151.</p>
Framework 6	<p>Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM) (Glasgow et al)</p>	<p>The RE-AIM framework is designed to enhance the quality, speed, and public health impact of efforts to translate research into practice in five steps:</p> <ul style="list-style-type: none"> <u>Reach</u> your intended target population <u>Efficacy</u> or effectiveness <u>Adoption</u> by target staff, settings, or institutions <u>Implementation</u> consistency, costs and adaptations made during delivery <u>Maintenance</u> of intervention effects in individuals and settings over time <p>Glasgow RE, Vogt TM, Boles SM. 1999. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. <i>Am J Public Health</i> 1999; 89(9):1922-1927</p> <p>www.re-aim.org</p> <p>Allcock M, Johnson LS, Leone L, Carr C, Walsh J, Ni A, Resnicow K, Pignone M, Campbell M. Promoting fruit and vegetable consumption among members of black churches, Michigan and north Carolina, 2008-2010. <i>Prev Chronic Dis.</i> 2013 Mar;10:E33.</p>

TRY-IT ACTIVITY: D&I FRAMEWORK CONSTRUCTS

Use this simple template to help you practice integrating your selected framework into all aspects of your D&I work. This template can help you clearly describe how the given model or framework was integrated into your research:

Construct	Definition	Design and development of the intervention	Evaluation of intervention
Implementation (RE-AIM)	At the setting level, implementation refers to the intervention agents' fidelity to the various elements of an intervention's protocol. This includes consistency of delivery as intended and the time and cost of the intervention.	Are there safeguards to secure consistent delivery of program component? Is there training, assistance provided to staff delivering the intervention to ensure consistency in delivery?	What percentage of process objectives were achieved (e.g., pamphlets delivered, class hours taught)? Was this done consistently across staff and sites? What is the cost (e.g., monetary and other resources) of the delivery of the intervention?
Organizational Capacity	Organizational capacity is defined as "a set of attributes that help or enable an organization to fulfill its missions." (Eisinger, 2002) Organizational capacity is a critical predictor of an organization's effectiveness and ability to implement and sustain new programs and policies.		
Complexity (Diffusion of Innovations)	The degree to which an innovation is perceived as relatively difficult to understand and use. (Rogers, 2003 p. 15)		
Adaptability (CFIR)	The degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs.		
Cost (CFIR)	Cost can refer to multiple aspects of the development, testing, and implementation of an intervention including the intervention's cost-effectiveness, the cost around intervention development, implementation of the intervention, and recruitment of subjects into a trial. Cost information can inform adoption decisions and contribute to comparative effectiveness considerations.		



GETTING STARTED ... CHECKLIST FOR ACTION:

- ✓ Which models and frameworks could best guide my D&I efforts?
- ✓ Are there resources available to me to help me decide on best model or framework?
- ✓ Is there preferred model or framework identified in the literature for my research interest?
- ✓ What do funders in my area of research think about different models and frameworks?
- ✓ Did I integrate the selected model or framework in all aspects of my D&I work (i.e., planning and development of intervention, evaluation, etc.)?
- ✓ How can the selected model or framework help explain the process and outcome of my D&I efforts?

Notes:

Notes:

What approaches should I take?

Strategies and toolkits



"I think the tremendous interest across organizations in conducting implementation research provides us with a wonderful opportunity to synthesize findings across a tremendous number of different studies and then develop very practical recommendations to healthcare leaders, providing them with information on what works where and under what circumstances. But we need to develop frameworks and protocols that can help us do this."

Julie Lowery, PhD

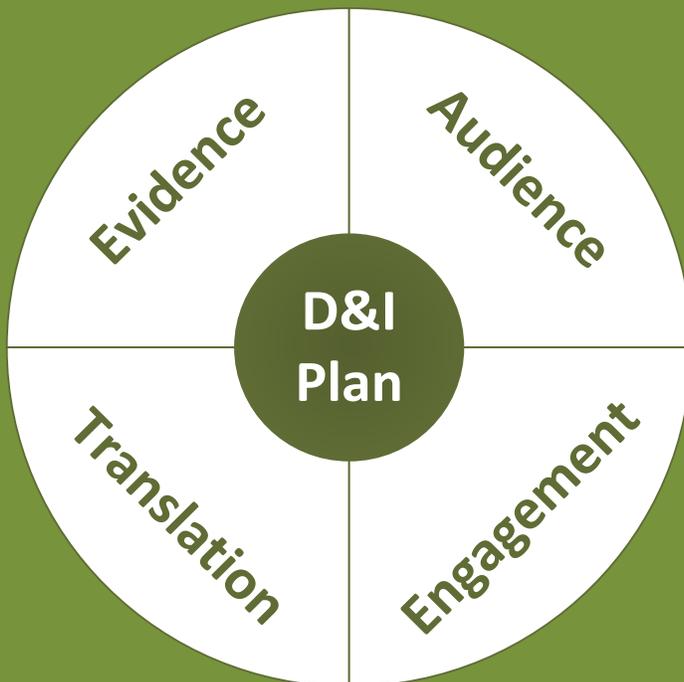
Associate Director, VA Center for Clinical Management Research
VA Ann Arbor Healthcare System, Michigan

LEARNING OBJECTIVES:



To identify existing D&I resources and toolkits

To demonstrate how to design for D&I



EVIDENCE. What evidence-based practice are you wanting to translate? Is it worthy of translating?

AUDIENCE. Who is the group(s) targeted for behavior change? Who else is affected? Who has the power to enact change?

ENGAGEMENT. What are the knowledge, attitudes, beliefs, and norms of your audience?

TRANSLATION. How can you frame your intervention so it speaks to the needs of your audience? Have you addressed potential barriers? Have you leveraged potential facilitators?

DO YOU UNDERSTAND THE ROOT OF THE PROBLEM THAT YOU ARE ADDRESSING?

The Department of Veterans Affairs National Center for Patient Safety (NCPS) supports and leads the patient safety activities for all the VA medical centers. Since 1999, NCPS has developed tools, training and software to facilitate patient safety and Root Cause Analysis (RCA) investigations. These tools function as a cognitive aid to help teams in developing a chronological event flow diagram (an understanding of **what** occurs) along with a cause and effect diagram (**why** the event occurs). RCA is used to retrospectively investigate hazards and near-misses. The same tools can be used to prospectively develop a logic model for the processes you are trying to change with your D&I plan.

Source: <http://www.patientsafety.va.gov/> Developed by: Joe DeRosier, P.E, C.S.P. and Erik Stalhandske, M.P.P., M.H.S.A.

EVIDENCE.

1. Is the evidence for intervening compelling?

Check:

- Systematic literature reviews
 - Meta-analyses
 - Medical guidelines
 - *AHRQ and CDC resources*
 - *U.S. Preventive Services Task Force recommendations*
 - *Choosing Wisely[®] recommendations*
2. Has the *efficacy* of the intervention been demonstrated under ideal conditions?
 3. Has the *effectiveness* of the intervention been demonstrated under real-world conditions?

AUDIENCE.

1. Who is the primary audience(s) for your intervention? Are there key secondary audiences?

For each audience, understand:

- Knowledge, attitudes, and beliefs
 - Current motivations and behaviors
2. What is your setting? Is there readiness for change?
 3. Are there other stakeholders affected by the intervention? Are they in favor, against, or neutral to the intervention? Who has the power to enact or block change?

AHRQ Effective Healthcare Program

Products for researchers and others interested in the systematic study of evidence and research methods

See: www.effectivehealthcare.ahrq.gov

CDC Tools for Community Action

Evidence-based recommendations and interventions and policies that improve health and prevent disease in communities.

See:

www.cdc.gov/healthycommunitiesprogram/tools

7 P's Framework for Identifying Stakeholders

Patient and the Public

Providers

Purchasers

Payers

Policy Makers

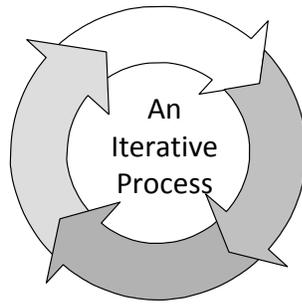
Product Makers

Product Makers

Source: Concannon TW, Meissner P, Grunbaum JA, McElwee N, Guise JM, Santa J, Conway PH, Daudelin D, Morrato EH, Leslie LK. A new taxonomy for stakeholder engagement in patient centered outcomes research. *JGIM*. 2012; 27 (8):985-991.

ENGAGEMENT.

1. Where does your audience typically get its information?
2. What kind of partnerships should be developed? Focus on working “with” a community, not doing research “on” a community.
3. Be open to the possibility that they will want to reframe your intervention or study question – in fact you want their active engagement!
4. Remember - stakeholder involvement in the process is likely to enhance dissemination.



Boot Camp Translation

A community-based approach in which community members, organizations, and primary care practices are brought together to address health problems.

Source: Norman N, Bennett C, Cowart S, Felzien M, Flores M, Flores R, Haynes C, Hernandez M, Rodriguez MP, Sanchez N, Sanchez S, Winkelman K, Winkelman S, Zittleman L, Westfall JM. Boot Camp Translation: A Method For Building a Community of Solution. *J Am Board Fam Med* May-June 2013 26:254-263

TRANSLATION.

1. Are there relevant tools you can use or adapt? Within or outside your discipline?

Check:

- Medical societies / Advocacy groups
 - Funders (AHRQ, CDC, RWJF, PCORI)
2. Pearls of wisdom. . .
 - Dissemination does not occur spontaneously and naturally. Passive approaches are largely ineffective.
 - Single-source messaging is less effective than comprehensive, multilevel approaches.
 - The process of dissemination should be tailored to specific audiences.
 - Frameworks for dissemination are beneficial.

AHRQ Healthcare Innovations Exchange

Innovations and tools to improve quality and reduce disparities.

See: www.innovations.ahrq.gov

AHRQ Effective Healthcare Program

Tools and resources to help consumers, clinicians, policymakers, and others make informed health care decisions.

See: www.effectivehealthcare.ahrq.gov

Source: Brownson RC, Jacobs JA, Tabak RG, Hoehner CM, Stamatakis KA. Designing for Dissemination Among Public Health Researchers: Findings From a National Survey in the United States. *Am J Public Health*, July 2013: e1–e7.

CFIR CONSTRUCTS

Consolidated Framework for Implementation Research

CFIR Constructs with Short Definitions

Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implement. Sci*;4:50.

Topic/Description	Short Description
I. INTERVENTION CHARACTERISTICS	
A Intervention Source	Perception of key stakeholders about whether the intervention is externally or internally developed.
B Evidence Strength & Quality	Stakeholders' perceptions of the quality and validity of evidence supporting the belief that the intervention will have desired outcomes.
C Relative Advantage	Stakeholders' perception of the advantage of implementing the intervention versus an alternative solution.
D Adaptability	The degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs.
E Trialability	The ability to test the intervention on a small scale in the organization, and be able to reverse course (undo implementation) if warranted.
F Complexity	Perceived difficulty of implementation, reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required to implement.
G Design Quality and Packaging	Perceived excellence in how the intervention is bundled, presented, and assembled.
H Cost	Costs of the intervention and costs associated with implementing that intervention including investment, supply, and opportunity costs.
II. OUTER SETTING	
A Patient Needs & Resources	The extent to which patient needs, as well as barriers and facilitators to meet those needs are accurately known and prioritized by the organization.
B Cosmopolitanism	The degree to which an organization is networked with other external organizations.
C Peer Pressure	Mimetic or competitive pressure to implement an intervention; typically because most or other key peer or competing organizations have already implemented or are in a bid for a competitive edge.
D External Policy & Incentives	A broad construct that includes external strategies to spread interventions including policy and regulations (governmental or other central entity), external mandates, recommendations and guidelines, pay-for-performance, collaboratives, and public or benchmark reporting.
III. INNER SETTING	
A Structural Characteristics	The social architecture, age, maturity, and size of an organization.
B Networks & Communications	The nature and quality of webs of social networks and the nature and quality of formal and informal communications within an organization.
C Culture	Norms, values, and basic assumptions of a given organization.
D Implementation Climate	The absorptive capacity for change, shared receptivity of involved individuals to an intervention and the extent to which use of that intervention will be rewarded, supported, and expected within their organization.
1 Tension for change	The degree to which stakeholders perceive the current situation as intolerable or needing change.
2 Compatibility	The degree of tangible fit between meaning and values attached to the intervention by involved individuals, how those align with individuals' own norms, values, and perceived risks and needs, and how the intervention fits with existing workflows and systems.
3 Relative Priority	Individuals' shared perception of the importance of the implementation within the organization.
4 Organizational Incentives & Rewards	Extrinsic incentives such as goal-sharing awards, performance reviews, promotions, and raises in salary and less tangible incentives such as increased stature or respect.

5	Goals and Feedback	The degree to which goals are clearly communicated, acted upon, and fed back to staff and alignment of that feedback with goals.
6	Learning Climate	A climate in which: a) leaders express their own feasibility and need for team members' assistance and input; b) team members feel that they are essential, valued, and knowledgeable partners in the change process; c) individuals feel psychologically safe to try new methods; and d) there is sufficient time and space for reflective thinking and evaluation.
E	Readiness for Implementation	Tangible and immediate indicators of organizational commitment to its decision to implement an intervention.
1	Leadership Engagement	Commitment, involvement, and accountability of leaders and managers with the implementation.
2	Available Resources	The level of resources dedicated for implementation and on-going operations including money, training, education, physical space, and time.
3	Access to Knowledge and Information	Ease of access to digestible information and knowledge about the intervention and how to incorporate it into work tasks.

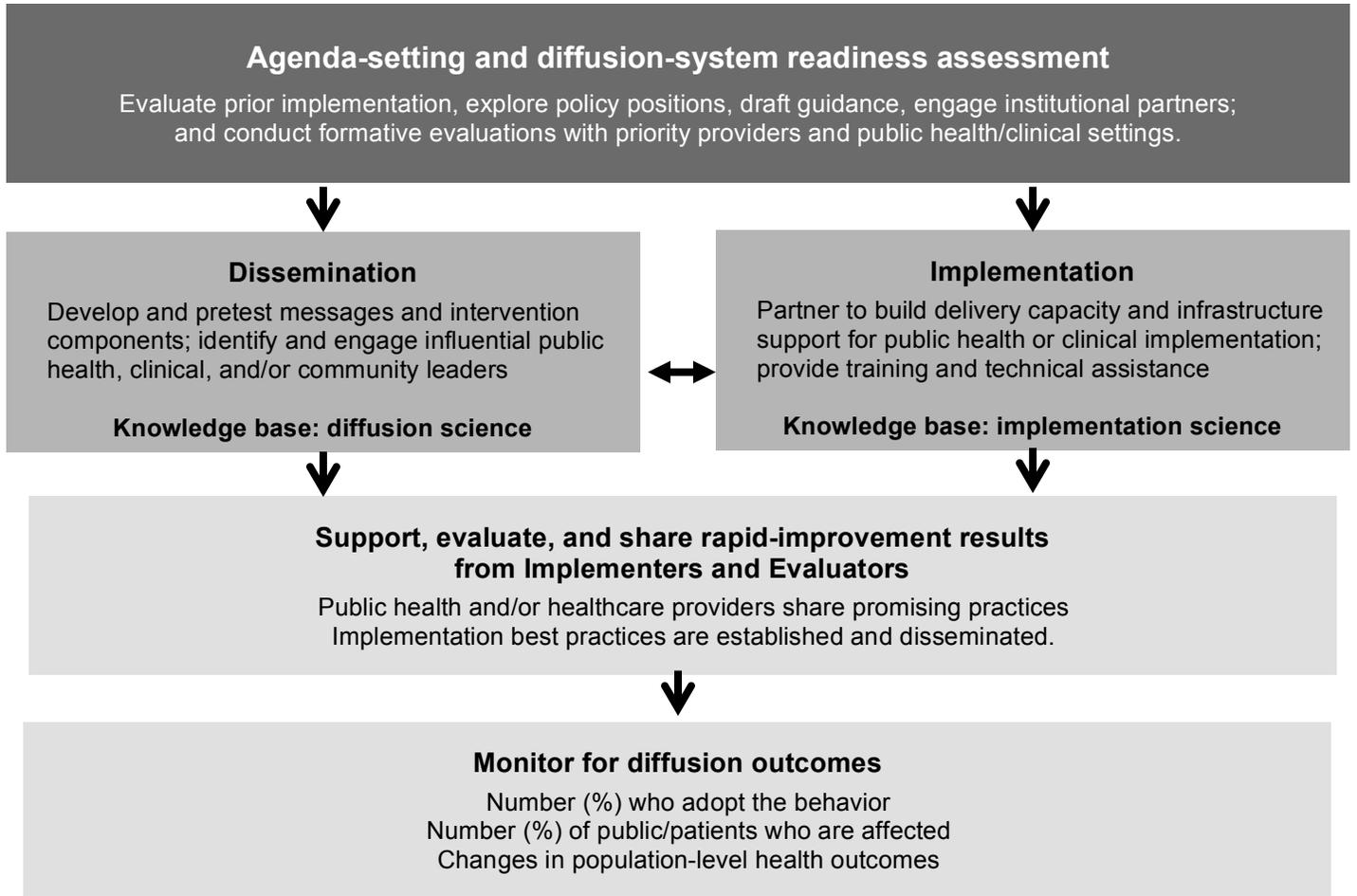
IV. CHARACTERISTICS OF INDIVIDUALS

A	Knowledge & Beliefs about the Intervention	Individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and principles related to the intervention
B	Self-efficacy	Individual belief in their own capabilities to execute courses of action to achieve implementation goals.
C	Individual Stage of Change	Characterization of the phase an individual is in, as he or she progresses toward skilled, enthusiastic, and sustained use of the intervention
D	Individual identification with Organization	A broad construct related to how individuals perceive the organization and their relationship and degree of commitment with that organization
E	Other Personal Attributes	A broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, values, competence, capacity, and learning style.

V. PROCESS

A	Planning	The degree to which a scheme or method of behavior and tasks for implementing an intervention are developed in advance and the quality of those schemes or methods.
B	Engaging	Attracting and involving appropriate individuals in the implementation and use of the intervention through a combined strategy of social marketing, education, role modeling, training, and other similar activities.
1	Opinion Leaders	Individuals in an organization who have formal or informal influence on the attitudes and beliefs of their colleagues with respect to implementing the intervention.
2	Formally appointed internal implementation leaders	Individuals from within the organization who have been formally appointed with responsibility for implementing an intervention as coordinator, project manager, team leader, or other similar role.
3	Champions	"Individuals who dedicate themselves to supporting, marketing, and 'driving through' an [implementation]" [101] (p. 182), overcoming indifference or resistance that the intervention may provoke in an organization.
4	External Change Agents	Individuals who are affiliated with an outside entity who formally influence or facilitate intervention decisions in a desirable direction.
C	Executing	Carrying out or accomplishing the implementation according to plan.
D	Reflecting & Evaluating	Quantitative and qualitative feedback about the progress and quality of implementation accompanied with regular personal and team debriefing about progress and experience.

Try It: A Framework for Designing for Diffusion



We know that ...	How can you build this knowledge into your D&I plan?
Adoption occurs faster with <ul style="list-style-type: none"> • Compatibility with existing systems • Lower perceived complexity • Higher perceived relative advantage • Trial use and when observable behavior 	
Mass communication creates awareness. Interpersonal communication persuades behavior change. Ideas spread faster among individuals with shared professions, education & social status.	
Adoption occurs over time in a population: innovators, early adopters, early majority, late majority, laggards Early adopters are: better able to cope with uncertainty; have greater knowledge and seek information more actively. Later adopters need demonstrated benefit.	
Individuals are more likely to adopt if more members of their personal network have adopted. Opinion leaders within social systems tend to be early adopters, especially if the system norms favor change.	

Sources: Dearing JW, Smith DK, Larson RS, Estabrooks. C. A. *Designing for diffusion of a biomedical intervention*. Am J Prev Med, 2013. Rogers EM. *Diffusion of Innovation Theory* (2003).

OTHER D&I PLANNING TOOLS

Making Research Matter

www.makeresearchmatter.org/

This website contains four helpful tools: Planning Tools, Resource Library, Narrative Library, and Glossary. With the Planning Tool, you are able to:

- develop the dissemination section of a grant proposal;
- identify what kind of preliminary data you might want to collect prior to the development of the intervention;
- identify relevant and tailored resources on D&I that you might want to review prior to the development of the intervention;
- plan for resources necessary to carry out your D&I plan.

MRM was developed, implemented and tested by researchers from the Cancer Communication Research Center and Washington University in St. Louis who were members of the Centers of Excellence in Cancer Communication (CECCR) Dissemination Research Interest Group (D-RIG).

Advances in Patient Safety – From Research to Implementation. Dissemination Planning Tool.

www.ahrq.gov/professionals/quality-patient-safety/patient-safety-resources/resources/advances-in-patient-safety/vol4/planningtool.html

This AHRQ tool was developed to help researchers evaluate their research and develop appropriate dissemination plans, if the research is determined to have "real world" impact. The dissemination planning tool addresses six major elements: research findings; end users; dissemination partners; communication strategies; evaluation; and dissemination work plan. Although it is directed toward application in patient safety, the lessons learned can be applied broadly. It was developed by researchers at Westat.

Academy Health: Navigating the Translation and Dissemination of PHSSR Findings: A Decision Guide for Researchers. www.academyhealth.org/files/TDguidePHSR.pdf

Public health services and systems research (PHSSR) is an emerging field during the critically transformative process the U.S. health system is undergoing. This tool was developed with support from the Robert Wood Johnson Foundation to guide researchers through the decisions that must be addressed to effectively translate and disseminate their work to policymakers and public health practitioners.

Tips for Success from Social Marketing

- ✓ Start with target audiences most ready for action.
- ✓ Promote single, doable behaviors with significant potential for impact.
- ✓ Bring real benefits into the present.
- ✓ Use media channels at the point of decision making.
- ✓ Identify and remove barriers to behavior change.
- ✓ Use (visual and auditory) prompts for sustainability.
- ✓ Track results, make adjustments.

Source: Lee and Kotler. [Social Marketing, 4th edition](#) (2011)



"I've been doing applied research in health and mental health care from the beginning of my career, so D&I comes naturally to me. I get excited about seeing meaningful quality improvement in health/ mental health services through D&I efforts."

Arne Beck, PhD

Director of Quality Improvement and Strategic Research Institute for Health Research, Kaiser Permanente Colorado
Associate Professor of Family Medicine, University of Colorado Denver School of Medicine

CASE EXAMPLE: IMPLEMENTATION DESIGN IN AN HMO

Context:

Implementing and disseminating an evidence-based model of well-child care (WCC) that includes developmental and preventive services recommended by the American Academy of Pediatrics.

Implementation Design:

Twenty-first Century WCC is a parent-centered, team-based, primary care model that combines online pre-visit assessments—completed by parents and caregivers—with vaccinations and anticipatory guidance.

Nurses, nurse practitioners, developmental specialists, and pediatricians all play roles in the WCC model.

Patient and clinician interaction, health records, and resources are all facilitated through a Web-based diagnostic, management, tracking, and resource information tool.

Unlike innovations that are embedded only in technical systems, validated models of team-based health care have multiple components that must be made compatible with complex sociotechnical systems. Interpersonal communication, work, coordination, and judgment are key processes that affect implementation quality. Implementation can involve tailoring to a particular site and customizing either the model or the organizational context to accommodate it.

Source:

Beck A, Bergman DA, Rahm AK, Dearing JW, Glasgow RE. Using Implementation and Dissemination Concepts to Spread 21st-century Well-Child Care at a Health Maintenance Organization Perm J. 2009 Summer; 13(3): 10–18.



GETTING STARTED ... CHECKLIST FOR ACTION:

- ✓ What am I disseminating and implementing? Is it worthy of broad-scale adoption?
- ✓ Who are my target audience(s) for behavior change? Do I understand their knowledge, attitudes, beliefs, and behaviors about what I want to disseminate and implement?
- ✓ Who are other stakeholders affected by the implementation? What are their opinions – are they in favor, against, or neutral? How might this influence adoption among my target audience? How should I address this?
- ✓ How does my target audience view what I want to disseminate and implement? Can I frame what I want to disseminate and implement so the value-added benefit is clear and persuasive?
- ✓ What are potential barriers to adoption that I should address in the design of my translation plan? What are potential facilitators that I can leverage?

Notes:

Notes:

How do I know if I am successful?

Evaluation and measurement

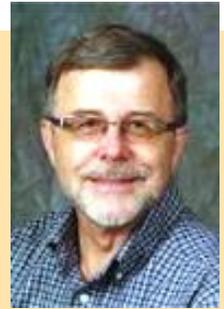
LEARNING OBJECTIVES:

To compare and contrast study evaluation approaches in D&I

To identify key metrics in D&I



"A key gap and opportunity in the implementation science field is the development and identification of practical, validated measures that assess key implementation processes and outcomes. Harmonized use of such standard measures across content areas and studies would greatly help advance the science of D&I."



Russell Glasgow, PhD

Professor, Family Medicine
Associate Director, Colorado Health Outcomes Program
University of Colorado School of Medicine

KEY TERMS FOR D&I EVALUATION DESIGN

Internal Validity

Internal validity is concerned with the ability to draw causal inferences by the extent to which a study minimizes confounding heterogeneity and systematic error – for example, involving patient selection and measurement.

External validity

External validity is concerned with the generalizability or real-world applicability of findings from a study and determines whether the results and inferences from the study can be applied to the target population and settings.

Pre-Post studies

A Pre-Post study compares changes in outcomes following an intervention and then seeks to attribute those changes to the intervention. They are intuitive to conduct. The problem is that, without reference to a comparison group, they cannot answer whether the changes would have occurred anyway.

Observational comparative effectiveness studies

Observational studies seek to draw inferences about the possible effect of an intervention as adopted in real-world practice. Observational studies can be quicker to conduct, more practical, and more cost efficient than clinical trials. External validity is usually strong but studies suffer from confounding due to non-random allocation. In addition, observational studies can rely on data collected for non-research purposes – for example, billing data (administrative claims) or clinical data (electronic health records) – which can also limit internal validity.

Explanatory clinical trials – “efficacy”

An explanatory clinical trial is a specialized randomized experiment in a specialized population under optimal conditions. – often referred to as randomized controlled trials (RCTs). In general, explanatory trials seek to maximize internal validity, often at the expense of external validity.

Pragmatic (practical) clinical trials – “effectiveness”

Pragmatic (or practical) clinical trials are randomized trials that are concerned with producing answers to questions faced by decision makers. Pragmatic trials seek to increase the external validity of the findings while maintaining strong internal validity. Tunis and colleagues defined them as studies that (1) select clinically relevant alternative interventions to compare; (2) include a diverse population of study participants, (3) recruit participants from heterogeneous practice settings, and (4) collect data on a broad range of health outcomes.

Source: Tunis SR, Stryer DB, Clancy CM. Practical clinical trials: increasing the value of clinical research for decision making in clinical and health policy. JAMA 2003;290(12):1624-1632.

OBSERVATIONAL COMPARATIVE EFFECTIVENESS RESEARCH

AHRQ: Developing a Protocol for Observational Comparative Effectiveness Research: A User's Guide.

This guide provides key information for designing comparative effectiveness research protocols to identify both minimal standards and best practices.

www.effectivehealthcare.ahrq.gov/search-for-guides-reviews-and-reports/?pageaction=displayproduct&productID=1166&ECem=130212

Training Modules for instructing others on this User's Guide are also available at:

www.effectivehealthcare.ahrq.gov/index.cfm/tools-and-resources/slide-library/#ocerprotocol

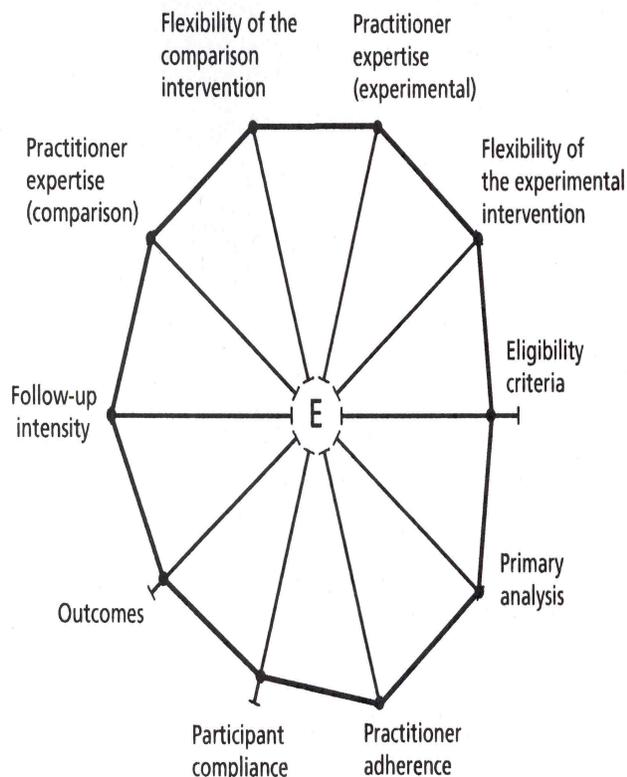
PATIENT-CENTERED OUTCOMES RESEARCH METHODOLOGY

Developing and improving the science and methods of patient-centered outcomes research (PCOR) is one of PCORI's primary efforts: "Research methodology better methods will produce more valid, trustworthy, and useful information that will lead to better healthcare decisions, and ultimately to improved patient outcomes." PCORI has issued a draft methodology report that is currently being modified based on stakeholder feedback. Stay tuned: <http://pcori.org/research-we-support/research-methodology-standards/>

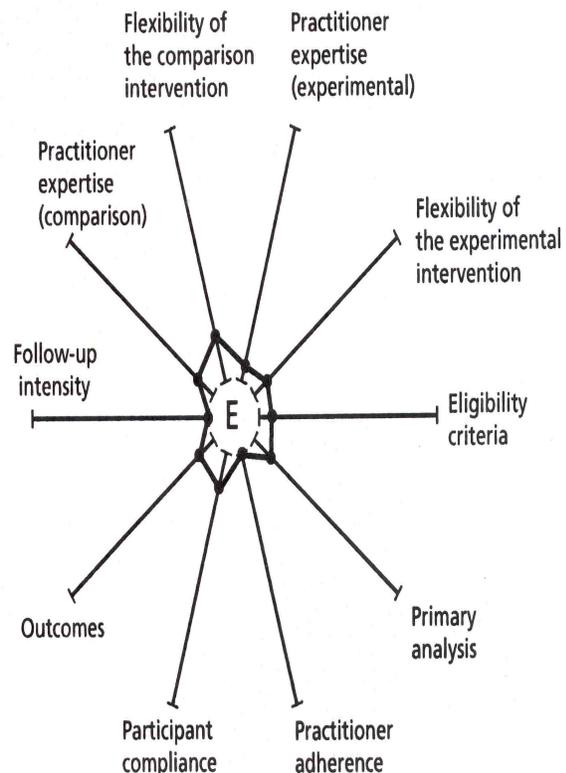
Randomized trials fall on a continuum: Evaluative-to-Pragmatic

Pragmatic-Explanatory Continuum Indicator Summary (PRECIS) was developed by Thorpe and colleagues to measure where a given study might fall. It can be applied to illustrate the degree to which a trial is pragmatic or explanatory. It uses ten domains plotted on a "spoke-and-wheel" diagram.

More Pragmatic



Less Pragmatic



PRECIS EVALUATION CRITERIA

DOMAIN	DESCRIPTION
1. Eligibility criteria	Explanatory trials tend to have more exclusion criteria than pragmatic trials.
2. Intervention flexibility	The pragmatic approach leaves the details of how to implement the experimental intervention up to the practitioners and does not dictate which co-interventions were permitted or how to deliver them.
3. Practitioner expertise (experimental)	A pragmatic approach would put the experimental intervention into the hands of all practitioners treating (educating, and others) the study participants.
4. Comparison intervention	The pragmatic approach would typically compare an intervention to “usual practice” or best available alternative management strategy; an explanatory approach restricts the comparison allowed.
5. Practitioner expertise (comparison)	The explanatory extreme would maximize the chances of detecting benefits whereas the pragmatic extreme would aim to compare benefits and harms to usual practice in the settings of interest.
6. Follow-up intensity	The pragmatic approach would be to seek follow-up contact with the study participants consistent with usual practice for the practitioner.
7. Primary outcome	The most explanatory approach selects endpoints based on biological mechanisms. Time horizons are driven by what is minimally required. Pragmatic approaches choose time horizons most relevant for clinical decision making. Using patient-important outcomes is also more pragmatic.
8. Participant compliance	The pragmatic approach recognizes that noncompliance is a reality in routine medical practice. The more rigorous a trial is in measuring and mitigating noncompliance, the more explanatory it becomes.
9. Practitioner adherence	The pragmatic approach acknowledges that providers will vary in how they implement an intervention. The more rigorous a trial is in monitoring and mitigating protocol nonadherence, the more explanatory it becomes.
10. Primary Analyses	A pragmatic trial answers the question, “Does the intervention work under usual conditions?” An explanatory trial answers the question, “Does the intervention work under ideal conditions?”

KEY REFERENCES ON PRAGMATIC TRIALS AND PRECIS

Glasgow RE, Magid DJ, Beck A, Ritzwoller D, Estabrooks PA. Practical clinical trials for translating research to practice: design and measurement recommendations. *Med Care* 2005;43(6):551-557

Glasgow RE, Gaglio B, Bennett G, Jerome GJ, Yeh HC, Sarwer DB, Appel L, Colditz G, Wadden TA, Wells B. Applying the PRECIS criteria to describe three effectiveness trials of weight loss in obese patients with comorbid conditions. *Health Serv Res.* 2012 Jun;47(3 Pt 1):1051-67.

Rothwell PM. External validity of randomised controlled trials: “to whom do the results of this trial apply?” *Lancet.* Jan 1-7 2005;365(9453):82-93.

Thorpe KE, Zwarenstein M, Oxman AD, Treweek S, Furberg CD, Altman DG, Tunis S, Bergel E, Harvey I, Magid DJ, Chalkidou K. A pragmatic-explanatory continuum indicator summary (PRECIS): a tool to help trial designers. *J Clin Epidemiol.* 2009 May;62(5):464-75.

Tunis SR, Stryer DB, Clancy CM. Practical clinical trials: increasing the value of clinical research for decision making in clinical and health policy. *JAMA* 2003;290(12):1624-1632.

Zwarenstein M, Treweek S, Gagnier JJ, Altman DG, Tunis S, Haynes B, Oxman AD, Moher D; CONSORT group; Pragmatic Trials in Healthcare (Practihc) group. (2008). Improving the reporting of pragmatic trials: an extension of the CONSORT statement. *BMJ*;337:a2390.

Examples: D&I Study Designs

1. Mixed methods multiple case study

Context:

Improving quality in children's mental health and social service settings

Objective:

This study is designed to inform efforts to develop more effective implementation strategies by fully describing the implementation experiences of a sample of community-based organizations that provide mental health services to youth in one Midwestern city.

Evaluation Design:

A mixed methods multiple case study of seven children's social service organizations in one Midwestern city in the United States (the control group of a larger randomized controlled trial).

Qualitative data included semi-structured interviews with organizational leaders and a review of documents (e.g., implementation and quality improvement plans, program manuals, etc.) to understand implementation decision-making and specific implementation strategies that are used to implement new programs and practices. Focus groups with clinicians explore their perceptions of a range of implementation strategies.

This qualitative work informs the development of a Web-based survey that will assess the perceived effectiveness, relative importance, acceptability, feasibility, and appropriateness of implementation strategies from the perspective of both clinicians and organizational leaders.

The Organizational Social Context measure will be used to assess organizational culture and climate.

Source:

Powell BJ, Proctor EK, Glisson CA, Kohl PL, Raghavan R, Brownson RC, Stoner BP, Carpenter CR, Palinkas LA. A mixed methods multiple case study of implementation as usual in children's social service organizations: study protocol. *Implement Sci.* 2013; 8: 92.

2. Pragmatic implementation trial in primary care

Context:

Understanding patient-centered health behavior and psychosocial issues in primary care

Objective:

Our goal is to design a scientifically rigorous and valid pragmatic trial to test whether primary care practices can systematically implement the collection of patient-reported information and provide patients needed advice, goal setting, and counseling in response.

Evaluation Design:

A cluster randomized delayed intervention trial, of the My Own Health Report (MOHR) study. Nine pairs of diverse primary care practices are randomized to early or delayed intervention four months later. The intervention consists of fielding the MOHR assessment and subsequent provision of needed counseling and support for patients presenting for wellness or chronic care.

Stakeholder groups are engaged throughout the study design to account for local resources and characteristics.

Study outcomes include the intervention reach (percent of patients offered and completing the MOHR assessment), effectiveness (patients reporting being asked about topics, setting change goals, and receiving assistance in early versus delayed intervention practices), contextual factors influencing outcomes, and intervention costs.

Source:

Krist AH, Glenn BA, Glasgow RE, Balasubramanian BA, Chambers DA, Fernandez ME, Heurtin-Roberts S, Kessler R, Ory MG, Phillips SM, Ritzwoller DP, Roby DH, Rodriguez HP, Sabo RT, Sheinfeld Gorin SN, Stange KC; MOHR Study Group. Designing a valid randomized pragmatic primary care implementation trial: the my own health report (MOHR) project. *Implement Sci.* 2013;8:73.

3. Implementation in a VA setting

Context:

Heart failure is the primary reason for discharge from the VA medical service. Furthermore, the readmission rate is high.

The Hospital to Home (H2H) Excellence in Transitions Initiative is a new national campaign to reduce preventable readmissions for patients recently hospitalized with a cardiovascular condition (www.H2Hquality.org).

Objective:

- 1) To determine if VA facility enrollment in H2H results in improved care for VA patients with heart failure.
- 2) To determine barriers and facilitators to a) enrolling facilities in H2H, and for those facilities enrolled, b) adopting the H2H interventions.
- 3) To evaluate the use of the VA Heart Failure Network to aid in implementing the H2H initiative in a randomized trial. (HF Network

Evaluation Design:

A 122 VA facilities with <100 discharges were randomized into intervention and control groups. From Month 1 through month 6 the implementation of the VA H2H initiative was facilitated for all the intervention facilities.

All the intervention facilities were asked to participate by (1) enrolling their facility at the H2H website as commitment to, and (2) initiating projects based on the VA H2H initiative. In Month 6 surveys were sent to both the intervention and control facilities to assess participation in the VA H2H initiative. From Month 7 to Month 12 the VA H2H initiative is being facilitated at all remaining 61 control facilities.

Source:

http://www.hsrd.research.va.gov/research/abstracts.cfm?Project_ID=2141700307#.UkWXW9Lktac

MEASURES

Considerations for Practical D&I Measures

Required

- ✓ Important to stakeholders
- ✓ Burden is low to moderate
- ✓ Sensitive to change
- ✓ Actionable

Additional

- ✓ Broadly applicable, has norms to interpret
- ✓ Low probability of harm
- ✓ Addresses public health goal(s)
- ✓ Related to theory or model
- ✓ "Maps" to "gold standard" metric or measure

Source: Glasgow RE, Riley WT. Pragmatic measures: what they are and why we need them. *Am J Prev Med.* 2013; 45(2):237-43.

Actionable

Designed around application to practice, with an emphasis on successful implementation.

Patient Centered

Research questions and goals are strongly aligned with patient-centered research and care.

Relevant

Transparent reporting of results that are focused on issues and data that are relevant for making decisions and taking action.

Proposed criteria for rating dissemination and implementation measures for scientific soundness and practicality (Rabin et al. *Implementation Science* 2012 7:119)

GOLD STANDARD MEASURE RATING CRITERIA - For Primary Research Focus

Reliable: Especially test-retest (less emphasis on internal consistency)

Valid: Construct validity, criterion validity, performed well in multiple studies

Broadly Applicable: Available in English and Spanish, validated in different cultures and contexts; norms available; no large literacy issues

Sensitive to Change* (if applicable) Longitudinal use, for performance tracking over time

Public Health Relevance: Related to Healthy People 2020 goals, key IOM objectives or national priorities

PRACTICAL MEASURE RATING CRITERIA - For Real World Application¹

Feasible* Brief (generally 2 to 5 items or less); easy to administer/score/interpret

Important to Practitioners and Stakeholders* Relevant to health issues that are prevalent, costly, challenging; helpful for decision makers or practice

Actionable: Based on information, realistic actions can be taken, e.g., immediate discussion, referral to evidence-based on-line or community resources

User Friendly: Patient interpretability; face valid; meaningful to clinicians, public health officials, and policy makers

Low Cost*: Publicly available or very low cost to use, administer, score, and interpret

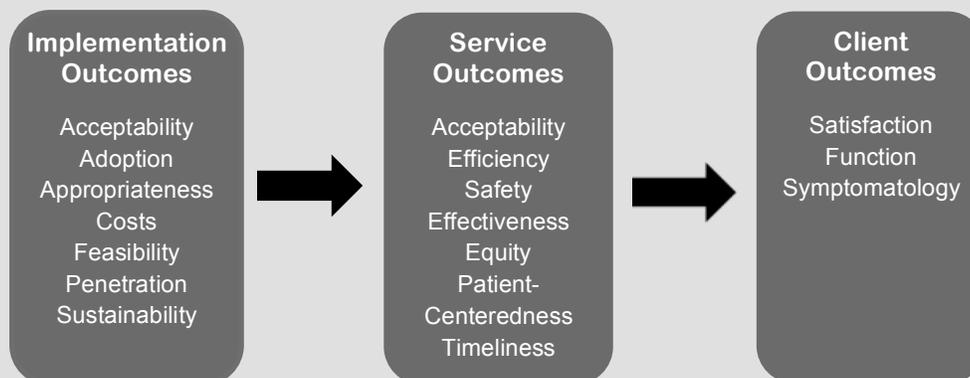
Enhances Patient Engagement: Having this information is likely to further patient engagement

Do No Harm: Can likely be collected without interfering with relationships, putting respondents at risk, or creating unintended negative consequences

¹ For use in pragmatic studies and real world settings where there are many competing demands, many other measures to assess For pragmatic rating, still consider gold standard criteria, but weight criteria on right most heavily.

NOTE: For both Gold Standard and Practical Measure scales, give criteria with *heaviest weighting in assigning ratings.

“Improvements in consumer well-being provide the most important criteria for evaluating both treatment and implementation strategies—for treatment research, improvements are examined at the individual client level whereas improvements at the population-level (within the providing system) are examined in implementation research. However . . . implementation research requires outcomes that are conceptually and empirically distinct from those of service and clinical effectiveness.”



Source: Procter E, Simere H, Raghavan R, Hovmand P, Aarons G, Bunger A, Griffey R, Hensley M. Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda. *Adm Policy Ment Health*. 2011; 38(2): 65-76.

Ongoing efforts to catalogue and harmonize D&I measures

Seattle Implementation Research Collaborative Instrument Review Project: A Systematic Review of Dissemination and Implementation Science Instruments

The overarching aim of the SIRC Instrument Review Project (IRP) is to conduct a systematic review of D&I instruments pulling, not only from published work, but also utilizing existing D&I research networks to obtain instruments in earlier phases of development.

Three primary outcomes for this project series include:

- (1) a comprehensive library of D&I instruments measuring the implementation outcomes identified by Proctor and colleagues (2010) and organized by the Consolidated Framework for Implementation Research (CFIR; Damschroder et al., 2009) to make available to SIRC members;
- (2) a rating system reflecting the degree of empirical validation of instruments, adapted from the evidence-based assessment (EBA) work of Hunsley and Mash (2008) and Terwee et al (2012);
- (3) a consensus battery of instruments decided upon by D&I expert task force members using the EBA criteria to guide future D&I research efforts. To date, 450 instruments were identified. Rating of these measures using the above-described criteria is ongoing.

To learn more:

<http://www.seattleimplementation.org/sirc-projects/sirc-instrument-project/>

Grid-Enabled Measures D&I Project

Grid-Enabled Measures (GEM) is a collaborative, web-based activity using the National Cancer Institute's portal that uses a wiki platform to focus discussion and engage the research community. Its goal is to enhance the quality and harmonization of measures for implementation science health-related research and practice.

The initiative has provided information about 130 different implementation science measures across 74 constructs, their associated characteristics and a rating of these measures for quality and practicality.

This resource and ongoing activity has the potential to advance the quality and harmonization of implementation science measures and constructs.

To learn more:

<http://cancercontrol.cancer.gov/brp/gem.html>

NIH/VA Working Meeting on reporting and measures

A diverse group of experts from the United States and Canada gathered in October 2013 to discuss issues around reporting and measurement on D&I. In contrast to the large annual meetings held over the past five years, the 2013 meeting was a smaller, invitation-only meeting, including Federal and non-Federal experts, and focused on the development of a series of strategic review and position papers articulating needed capacity development for the dissemination and implementation research field.

The recently released NIH Funding Opportunity Announcements on Dissemination and Implementation Research in Health (PARs 13-054; 13-055; 13-056) articulate research priorities for the next set of high impact research studies.

As a companion to this trans-NIH call, the NIH D&I Research working group proposed a working meeting to advance three key areas of focus, including 1) D&I Measure Development and Standardized Reporting; 2) D&I Research Methods and Study Design; and 3) D&I Research Training. Each of these foci was addressed in separate complementary meetings.

Various products including position and agenda setting papers, and a website supporting D&I model selection and measurement are being developed and will be available in early to mid-2014.

Source: Glasgow RE, Riley WT. Pragmatic measures: what they are and why we need them. *Am J Prev Med.* 2013; 45(2):237-43.

Cost Measures for D&I

Information about the cost of an intervention can greatly impact if it is considered, adopted, implemented, and sustained. Cost measures can refer to:

Cost effectiveness ratio: the incremental cost of obtaining an incremental unit of a health effect.

Implementation cost: the proportion of the intervention resources and costs that would be required to implement the intervention in a different setting or population. Calculated as a function of the intervention costs and associated sensitivity analyses.

Intervention cost: the resource costs of conducting and participating in an intervention. Does not include research or development costs.

Recruitment cost: the costs of recruiting subjects to an intervention or pragmatic trial.

Source: Ritzwoller DP, Sukhanova A, Gaglio B, Glasgow RE. Costing behavioral interventions: A practical guide to enhance translation. *Ann Behav Med* 2009.

VA QUERI Economic Analysis Guidelines

A QUERI economic analysis measures costs and often outcomes, and places this information in context. A QUERI economic analysis may be a study of the relationship between quality and production efficiency, the determination of the cost of an intervention, an evaluation of the impact of an intervention on total health care costs, or a cost-effectiveness analysis.

A guide was developed for health services researchers: www.queri.research.va.gov/economic-analysis.doc

Try It: RE-AIM Framework

The RE-AIM framework is designed to enhance the quality, speed, and public health impact of efforts to translate research into practice in five steps:

Reach your intended target population

Efficacy or effectiveness

Adoption by target staff, settings, or institutions

Implementation consistency, costs and adaptations made during delivery

Maintenance of intervention effects in individuals and settings over time

Reach and efficacy are individual-levels of impact whereas adoption and implementation are organizational-levels of impact. Maintenance can be both an individual- and an organizational-level of impact. It is pertinent to evaluate both levels because each provides valuable independent information of intervention impact.

Take, for example, a school-based intervention that has a large impact in terms of reach and efficacy at the individual-level but is only adopted, implemented, and maintained at a small number of organizations with specific resources that are not available in typical "real-world" schools.

If only the individual dimensions of the framework were used to evaluate the intervention described here, it would be concluded that the intervention has a large potential for impact. In reality, this intervention has little hope of resulting in a large public health impact because it could not be adopted, implemented, and maintained in real-world settings.

This is also true of the converse situation where an intervention has systemic organizational adoption, implementation, and maintenance, but little reach, efficacy, or maintenance at the individual-level. Again, if only one level was assessed (i.e., the organizational level), the impact of the intervention would be considered large even though there is no individual-level reach, efficacy, or maintenance.

RE-AIM TOOLS

A checklist has been developed and can be accessed along with other evaluation planning tools.

See: www.re-aim.org/

Try out the following checklist to get started!

Measuring the Use of the RE-AIM Model Dimension Items Checklist

The implementation Science Team at the National Cancer Institute (NCI) Division of Cancer Control and Population Sciences (DCCPS), in partnership with other key leaders and RE-AIM authors, developed and piloted a 2 page instrument to aid those interested in applying RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) to their activities. For each dimension, a list of items which indicate exemplar use of RE-AIM is provided.

This instrument was designed as part of project to review grant proposals for the extent to which they have used RE-AIM and different elements of the framework in their grant applications (manuscript forthcoming). It could easily be adapted for use in planning or reviewing programs or policies, or in drafting grants or journal articles and other reports using the RE-AIM framework.

This coding sheet is an expanded and updated version of earlier coding forms that have been used in reviewing the health promotion literature, but is designed specifically for those wishing to employ RE-AIM.

Study Topic Area:	Study Setting:
Dimensions/Items	Included? (Yes, No, Yes-Inappropriate Use, N/A)
Reach	
Exclusion Criteria (% excluded or characteristics)	
Percent individuals who participate, based on valid denominator (not of volunteers who indicate interest)	
Characteristics of participants compared to non-participants or to target population	
Use of qualitative methods to understand reach and/or recruitment	
Effectiveness	
Measure of primary outcome with or w/o comparison to a public health goal (e.g. HP 2020 goals, exercise 30 min/day; eat 5 Fruits & Veggies)	
Measure of broader outcomes (e.g., other outcomes, measure of QoL or potential negative outcome) or use of multiple criteria	
Measure of robustness across subgroups (e.g. moderation analyses)	
Measure of short-term attrition (%) and differential rates by patient characteristics or treatment condition	
Use of qualitative methods/data to understand outcomes	
Adoption – Setting Level	
Setting Exclusions (% or reasons)	
Percent of settings approached that participate (valid denominator)	
Characteristics of settings participating (both comparison and intervention) compared to either: non participants or some relevant resource data	
Use of qualitative methods to understand adoption at setting level	

Adoption – Staff Level	
Staff Exclusions (% or reasons)	
Percent of staff invited that participate	
Characteristics of staff participants vs. non-participating staff or typical staff	
Use of qualitative methods to understand staff participation	
Implementation	
Percent of perfect delivery or calls completed, etc. (e.g., adherence or consistency)	
Adaptations made to intervention during study	
Cost of intervention (time or money)	
Consistency of implementation across staff/time/settings/subgroups (not about differential outcomes, but process)	
Use of qualitative methods to understand implementation	
Maintenance – Individual Level	
Measure of primary outcome (with or w/o comparison to a public health goal) at ≥ 6 mo follow-up after final intervention contact	
Measure of broader outcomes or use of multiple criteria at follow-up (e.g., measure of QoL or potential negative outcome) at follow-up	
Robustness data – something about subgroup effects over the long term	
Measure of long-term attrition (%) and differential rates by patient characteristics or treatment condition	
Use of qualitative methods data to understand long-term effects	
Maintenance – Setting Level	
If program is still ongoing at ≥ 6 month post study funding	
If and how program was adapted long-term (which elements retained AFTER program completed)	
Some measure/discussion of alignment to organization mission or sustainability of business model	
Use of qualitative methods data to understand setting level institutionalization	

Last Edited: March 15, 2012 | <http://cancercontrol.cancer.gov/IS/>

Gaglio B, Shoup J, and Glasgow RE. The RE-AIM Framework: A Systematic Review of Use Over Time. American Journal of Public Health: June 2013, Vol. 103, No. 6, pp. e38-e46. doi: 10.2105/AJPH.2013.301299

Kessler RS, Purcell EP, Glasgow RE, Klesges LM, Benkeser RM, Peek CJ. (2013) What does it mean to employ the RE-AIM model? Eval Health Prof;36(1):44-66

KEY REFERENCES ON D&I MEASUREMENT

Glasgow RE. What Does It Mean to Be Pragmatic? Pragmatic Methods, Measures, and Models to Facilitate Research Translation. *Health Educa Behav.* June 2013; 4(3): 257-265.

Glasgow RE, Riley WT. Pragmatic measures: what they are and why we need them. *Am J Prev Med.* 2013; 45(2):237-43.

Procter E, Simere H, Raghavan R, Hovmand P, Aarons G, Bunger A, Griffey R, Hensley M. Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda. *Adm Policy Ment Health.* 2011; 38(2): 65-76.

Glasgow RE, Brownson RC, Kessler RS. Thinking about health-related outcomes: what do we need evidence about? *Clin Transl Sci.* 2013;6(4):286-91.

Rabin BA, Purcell P, Naveed S, Moser RP, Henton MD, Proctor EK, Brownson RC, Glasgow RE. Advancing the application, quality and harmonization of implementation science measures. *Implement Sci.* 2012; 11:7:119.

RE-AIM website: <http://re-aim.org/>



GETTING STARTED ... CHECKLIST FOR ACTION:

- ✓ What D&I evaluation designs are commonly used in your field? Where are the opportunities for strengthening their internal and external validity?
- ✓ What D&I measures are commonly used in your field? Where are the opportunities for adding measures used by others?
- ✓ Do you have the right analytic support on your team?

NOTES

NOTES

Tips for Success

In research, practice, and project management

LEARNING OBJECTIVES:



To apply D&I strategies and concepts for success in writing a research proposal, implementing a D&I program, or managing a project in D&I

“Remember your study subjects at the study end. They usually are always interested in receiving a summary or some type of report from the research project that gives them valuable information about what was learned, how they helped answer questions, and what remains to be answered.”



Juliana Barnard, MA
Project Manger

Children's Outcomes Research (COR), Children's Hospital Colorado
University of Colorado School of Medicine

TIPS FROM THE TRENCHES

On collaboration...

- *Buy-in is important – from the top and also from the front-line project people. It takes time to build trust. Meet in-person, build relationships.*
- *Meet regularly – over communicate particularly in the beginning.*
- *Get feedback from key players on all sides, incorporate suggestions into the research plan.*
- *Provide results of the study back to your key stakeholders – they want to know the results and how they can incorporate it into real world practices.*
- *Share concerns and information as you go along, work together to resolve.*

On project management...

- *Plan ahead – keep a timeline and change it as priorities change, often there are multiple pieces of the project in the air and you have to keep your eye on each piece.*
- *Track progress – develop good database systems to manage all the process measures. These are often very valuable and complement the outcomes data quite well.*
- *Meet regularly with your core research team – prioritize questions/concerns so meetings can be focused and solutions can be discussed.*
- *Delegate – hire good graduate students and/or project coordinators who can help you carry out fine details so as a manager you can keep a bird's eye view on all pieces.*
- *Above all else – be flexible and adaptable. Just because something was written into the grant does not mean it will actually work out when you get it. Be willing to think through alternative protocols or techniques if something is not working.*

Alison Saville
Project Manger

Children's Outcomes Research (COR), Children's Hospital Colorado
University of Colorado School of Medicine

Six-Step Process of Implementing Research into Practice

Step 1: Select conditions per patient populations associated with high risk of disease and/or disability and/or burden of illness for Veterans

1a: Identify and prioritize

1b: Identify high-priority clinical practices and outcomes within a selected condition

Step 2: Identify evidence-based guidelines, recommendations, and best practices

2a: Identify evidence-based clinical practice guidelines

2b: Identify evidence-based clinical recommendations

2c: Identify evidence-based clinical practices

Step 3: Measure and diagnose quality and performance gaps

3a: Measure existing practice patterns and outcomes across VHA and identify variations from evidence-based practices

3b: Identify determinants of current practices

3c: Diagnose quality/performance gaps

3d: Identify barriers and facilitators to improvement

Step 4: Implement improvement programs

4a: Identify improvement/implementation strategies, programs, and program components or tools

4b: Develop or adapt improvement/

implementation strategies, programs, and program components or tools

4 c: Implement improvement/implementation strategies/programs to address quality gaps

Step 5/6: Evaluate Improvement Programs

5: Assess improvement program feasibility, implementation, and impacts on patient, family, and healthcare system processes and outcomes

6: Assess improvement program impacts on health-related quality of life (HRQOL)

Stetler CB, Mittman BS, Francis J. (2008). Overview of the VA Quality Enhancement Research Initiative (QUERI) and QUERI theme articles: QUERI Series. *Implement Sci*;3:8. Retrieved from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2289837/>

TEN KEY INGREDIENTS FOR IMPLEMENTATION RESEARCH PROPOSALS

Proposal ingredient	Key question	Review criteria	Check (yes/no)
1. The care gap or quality gap	The proposal has clear evidence that a gap in quality exists?	Significance Impact	
2. The evidence-based treatment to be implemented	Is the evidence for the program, treatment, or set of services to be implemented demonstrated?	Significance Innovation	
3. Conceptual model and theoretical justification	The proposal delineates a clear conceptual framework/theory/model that informs the design and variables being tested?	Approach Innovation	
4. Stakeholder priorities, engagement in change	Is there a clear engagement process of the stakeholders in place?	Significance Impact Approach Environment	
5. Setting's readiness to adopt new services/treatments/programs	Is there clear information that reflects the setting's readiness, capacity, or appetite for change, specifically around adoption of the proposed evidence-based treatment?	Impact Approach Environment	
6. Implementation strategy/process	Are the strategies to implement the intervention clearly defined, and justified conceptually?	Significance Impact Innovation	
7. Team experience with the setting, treatment, implementation process	Does the proposal detail the team's experience with the study setting, the treatment whose implementation is being studied, and implementation processes?	Approach Investigator team	
8. Feasibility of proposed research design and methods	Does the methods section contain as much detail as possible, as well as lay out possible choice junctures and contingencies, should methods not work as planned?	Approach Investigator team	
9. Measurement and analysis section	Does the proposal clarify the key constructs to be measured, corresponding to the overarching conceptual model or theory? Is a measurement plan clear for each construct? Does the analysis section demonstrate how relationships between constructs will be tested?	Approach Investigator team	
10. Policy/funding environment; leverage or support for sustaining change	Does the proposal address how the implementation initiative aligns with policy trends?	Impact Significance	

Table from Enola K Proctor*, Byron J Powell, Ana A Baumann, Ashley M Hamilton and Ryan L Santens. *Writing implementation research grant proposals: ten key ingredients* *Implementation Science* 2012, 7:96. <http://www.implementationscience.com/content>

What are PCORI's research criteria?

PCORI 2012 Funding Criteria		
PCORI Criteria	Statutory Language	Questions
Impact on Health of Individuals and Populations	<i>disease incidence, prevalence, and burden in the United States (with emphasis on chronic conditions)</i>	How many people are impacted by this priority area? How severe are the consequences, in terms of mortality, symptoms, adverse effects of treatment, patient experience, and loss of function?
Probability of Improvability via Research	<i>the potential for new evidence to improve patient health, well-being, and the quality of care</i>	How likely is additional information in this priority area to make important improvements in patients' health status, the quality of their care, or the public's health?
Inclusiveness of Different Populations	<i>Research shall be designed, as appropriate, to take into account the potential for differences in the effectiveness of health care treatments, services, and items as used with various subpopulations, such as racial and ethnic minorities, women, age, and groups of individuals with different comorbidities, genetic and molecular sub-types, or quality of life preferences and include members of such subpopulations as subjects in the research as feasible and appropriate.</i>	Would new information in this priority area be particularly likely to increase understanding of differences in best treatments, prevention strategies, or a personalized assessment of an individual's unique biological characteristics and/or social circumstances?
Address Current Gaps in Knowledge/Variation in Care	<i>gaps in evidence in terms of clinical outcomes, practice variations and health disparities in terms of delivery and outcomes of care</i>	Does medical care in this area currently show wide variations in practice or clinical outcomes, suggesting a lack of clear evidence on effectiveness or a lack of awareness about this evidence?
Impact on Healthcare System Performance	<i>the effect on national expenditures associated with a health care treatment, strategy, or health conditions</i>	Will more information in this priority area help [healthcare systems support] improve healthcare treatment or get better health outcomes for the money invested?
Potential to Influence Decision-Making	<i>the relevance to patients and clinicians in making informed health decisions</i>	Will more information in this priority area be particularly likely to help patients and clinicians address decisions that are currently difficult to make?
Patient-Centeredness	<i>patient needs, outcomes, and preferences</i>	Have patients or other key stakeholders explicitly identified a need for more research or is there a lack of resources in this priority area?
Rigorous Research Methods	<i>The Institute shall make available to the public and disclose ... the process and methods for the conduct of research including ... research protocols, including measures taken, methods of research and analysis, research results and such other information...</i>	Does proposed research or study in this priority area use or develop optimal methodologic and analytic approaches to addressing patient-centered evidence?
Efficient Use of Research Resources	<i>taking into consideration the types of research ... and the relative value (determined based on the cost of conducting research compared to the potential usefulness of the information produced by research)</i>	Will the proposed study use PCORI resources efficiently? Might it create common data or infrastructure that could support future research?

Table from Patient-Centered Outcomes Research Institute. *National Priorities for Research and Research Agenda*. Retrieved from <http://pcori.org/assets/PCORI-National-Priorities-and-Research-Agenda-2012-05-21-FINAL1.pdf>

For more information and updated criteria, visit:
<http://www.pcori.org/research-we-support/pcori-review-criteria/>

Where is PCORI going?

Thoughts from the PCORI Dissemination and Implementation Roundtable

Session Overview: PCORI began the process for developing its Dissemination and Implementation (“D&I”) Action Plan by convening multiple stakeholders at a roundtable and webinar in July 2013. Roundtable panelists representing various stakeholder groups (e.g., patient advocacy groups, providers, clinicians, caregivers, payers, purchasers, medical education groups, professional and specialty societies, journalists, the media, and research and policy groups) provided their advice on what PCORI’s D&I Action Plan should encompass (PCORI 2013).

The table below includes the key challenges and associated best practices identified by the roundtable panelists to improve D&I.

PCORI Stakeholder Summary of Challenges and Best Practices		
	Challenges	Best practices
Frameworks	<ul style="list-style-type: none"> There is no D&I readiness framework to help organizations determine when research and evidence is ready for prime time. The healthcare industry does not include consistent terminology nor standards for D&I. There is a need for an established, standardized and enforced system for translating scientific findings into knowledge and then into computable interventions. A 2000 study concluded that it takes upwards of 17 years for research findings to be incorporated into practice.¹ 	<ul style="list-style-type: none"> A D&I Readiness Framework should be created to vet proposed research findings to improve adoption into practice. PCORI should distribute all findings—whether “good” or “bad”—to its stakeholders to communicate what works, what doesn’t work, and the key implications for stakeholder groups and to inform those implementing and developing health/medical interventions. More oversight and maintenance of D&I activities are required to ensure certification and maintenance of D&I activities and programs. D&I plans should include ongoing evaluation and course correction, including a rapid-cycle approach to evaluate and refine strategies continuously.
Strategies and Approaches	<ul style="list-style-type: none"> There is no one-size-fits-all approach for D&I, and strategies can be influenced by—and/or fail—due to various factors including environment, timing, and diverse settings. Therefore, panelists suggested that PCORI’s D&I Action Plan should be flexible and adaptable to sustain environmental and political factors. There are over 60 D&I frameworks, and the approach and methods vary depending on the needs and preferences of each organization. 	<ul style="list-style-type: none"> Implementation strategies must occur at different levels and should include a multi-component approach, including reach across the community, local, national, regional, state, and organizational/practice settings. This approach must also include focus on heterogeneity, family and social support, physiological factors, individual patients, and clinical decisions.
Project Management	<ul style="list-style-type: none"> Implementers often are overwhelmed and lack required staff, facilities, and resources to develop standardized guidance, procedures, and checklists to inform effective D&I. 	<ul style="list-style-type: none"> When creating D&I strategies, it is important to consider logistics, staffing, resources, training, technology, time and space, equipment, funding, incentives, professional and community norms, leadership, and environmental factors to better manage the workload and support for implementers. If research results are going to be incorporated by stakeholders and clinicians, they must be incorporated seamlessly into the current workflow and include incentives.

1. (Balas EA, Boren SA. Managing clinical knowledge for health care improvement. In: Bommel J, McCray AT, editors. Yearbook of Medical Informatics 2000: Patient- Centered Systems. Stuttgart, Germany: Schattauer Verlagsgesellschaft mbH; 2000:65-70)

Table adapted from:

PCORI. Dissemination and Implementation Roundtable July 29, 2013, Meeting Summary. Retrieved from:

<http://pcori.org/assets/2013/08/PCORI-Dissemination-Implementation-Roundtable-July-2013-Meeting-Summary-083013.pdf>

For more information or to watch the webinar visit:
<http://pcori.org/events/dissemination-and-implementation-roundtable/>

OTHER D&I RESOURCES

Centers and Networks

Center for Research in Implementation Science and Prevention (CRISP)

www.ucdenver.edu/implementation



CRISP is one of three new national centers funded by the Agency for Healthcare Research and Quality (AHRQ) that focuses on improving clinical preventive services within primary care practice. CRISP brings together expertise in implementation of preventive services, practice-based research networks (PBRNs) and national authorities in innovative health information technology (HIT). The website contains archived D&I webinars, educational opportunities, research information. Toolkits are coming soon.

Cancer Prevention and Control Research Network (CPCRN)

www.CPCRN.org



The **Cancer Prevention and Control Research Network (CPCRN)** is a national network of academic, public health, and community partners who work together to reduce the burden of cancer, especially among those disproportionately affected. Its members conduct community-based participatory cancer research across its ten network centers, crossing academic affiliations and geographic boundaries. The CPCRN is a thematic research network of the Prevention Research Centers (PRCs), which are CDC's flagship program for preventing and controlling chronic diseases. The website offers information on workgroups, resources, and presentations.

CCTSI

<http://cctsi.ucdenver.edu/Pages/index.aspx>



The CCTSI is a collaborative enterprise between University of Colorado Denver Anschutz Medical Campus, University of Colorado Boulder, Colorado State University, six affiliated Hospitals and health care organizations, and multiple community organizations with a goal to accelerate the translation of research discoveries into improved patient care and public health. This website is the CCTSI's portal for communication and collaboration tools. It is

SUBJECT AREAS

Education/training



Funding resources



Methods/theory



Applications/tools



Publications



designed to help you navigate the many valuable clinical and translational research and educational resources available through the CCTSI.

IMPLEMENTATION NETWORK

<http://www.implementationnetwork.com>



This listserv distributes information on late-breaking research, practice, and policy activities in the area of dissemination and implementation in health care and public health, including publications, reports, conferences, meetings, program announcements, funding opportunities, and other various proceedings. The listserv encompasses the areas relevant to dissemination and implementation in health care and public health, including: scale-up/spread, capacity building, knowledge translation, quality improvement, research-to-practice, diffusion, knowledge transfer and exchange, adoption, complex interventions, implementation strategies, action research, translational research, and other related terms and sub-disciplines. It is supported in part by VA QUERI. This website is managed by Wynne Norton, Ph.D at the University of Alabama at Birmingham, School of Public Health.

Make Research Matter (MRM)

www.makeresearchmatter.org



MRM provides tools for researchers to incorporate dissemination and implementation science into their products. The MRM site contains four main tools: Planning Tools, Resource Library, Narrative Library, and Glossary.

QUERI Program QUERI Program

<http://www.queri.research.va.gov>

<http://www.queri.research.va.gov/ciprs/training.cfm>



QUERI focuses on the quality of healthcare for Veterans. QUERI seeks to improve care using research evidence to improve clinical practice. QUERI's Resource Center, the Center for Implementation Practice and Research Support (CIPRS) provides tools, resources for theories, methods, models, frameworks, journals, news, among many other resources for those interested in implementation science research.

Funding Agencies

Agency for Healthcare Research and Quality (AHRQ)

www.ahrq.gov



The AHRQ site contains a variety of resources for patients and consumers, healthcare professionals, policy makers, and researchers. AHRQ offers toolkits, funding opportunities, and other information on patient education, preventive care, quality, and patient safety.

Centers for Disease Control and Prevention (CDC)

www.cdc.gov



The CDC website offers D&I resources in a variety of specific areas including violence protection, chronic disease prevention, tobacco cessation, and cancer control. The website also has extensive information on health communication, social media and marketing.

NIH/National Cancer Institute: Implementation Science

<http://cancercontrol.cancer.gov/is>



This website is a comprehensive resource for resources and interactive tools, funding opportunities,

conferences and trainings, publications, and presentations.

The Patient-Centered Outcomes Research Institute (PCORI)

<http://pcori.org>



PCORI helps people make informed health care decisions, and improves health care delivery and outcomes, by producing and promoting high integrity, evidence-based information that comes from research guided by patients, caregivers and the broader health care community.

Journals and Books

Clinical and Translational Science

[http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1752-8062](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1752-8062)



This journal publishes original research articles, interviews with leading translational scientists, NIH and CTSA reports and communications, SCTS and APOR Society updates, and timely reviews on all the hot topics in translational medicine—bridging the gap between bench and bedside to improve human health.

Implementation Science

www.implementationscience.com



This website is an open access, peer-reviewed online journal that aims to publish research relevant to the scientific study of methods to promote the uptake of research findings into routine healthcare in clinical, organisational or policy contexts.

Books



Brownson R, Colditz G, Proctor, E (Eds.). *Dissemination and Implementation Research in Health*. Oxford University Press, New York. 2012. A comprehensive anthology of writings about D&I history, theories and approaches, design and analysis, and settings/populations.

Bennett, G. and Jessani, N. *The Knowledge Translation Toolkit: Bridging the Know-Do Gap: A Resource for Researchers*. International Development Research Centre and Sage Publications, New Delhi, India. 2011.

Books (cont.)



Rogers EM. Diffusion of innovations, 5th ed. Free Press, New York. 2003.
<http://www.ncats.nih.gov/news-and-events/news.html>

Kotler P, Lee N, *Social Marketing: Influencing behaviors for good. 3rd ed.* Sage Publications, Los Angeles. 2008

Websites

UNC Dissemination and Implementation Portal

www.tracs.unc.edu/diportal



The North Carolina Translational & Clinical Sciences Institute's website contains a variety of D&I resources including sample grants, tools, publishing information, frameworks, and information on conferences and training programs.

National Clinical & Translational Science Awards (CTSA)

www.ctsacentral.org



The Clinical and Translational Science Awards (CTSA) program, supported by the National Institutes of Health, is comprised of about 60 academic medical institutions and a coordinating center all working together to transform the way biomedical research is conducted. Its goals are to accelerate the translation of laboratory discoveries into treatments for patients, to engage communities in clinical research efforts, and to train a new generation of clinical and translational researchers. The website contains tools, best practices, collaboration opportunities, and other resources.

RE-AIM

www.re-aim.org



The RE-AIM framework is designed to enhance the quality, speed, and public health impact of efforts to translate research into practice in five steps. This site provides an explanation of and resources for those wanting to apply the RE-AIM framework. Among the RE-AIM website features are Tools and resources to facilitate implementation, and a comprehensive list of RE-AIM publications and presentations organized alphabetically by year.

Precede-Proceed

<http://lgreen.net/precede.htm>



This website offers information on the Precede-Proceed model and links to other resources such as conferences, journals, career opportunities, and information on organizations and health policy.

Training Programs

Health Services Research & Development's Cyberseminars

<http://www.hsrd.research.va.gov/cdp/about.cfm#.Ukeq8GQasox>



Health Services Research & Development's cyberseminars provide state-of-the-art training and special interest sessions right from your computer. Cyber seminars are available 24/7 as live web conferences and as on demand archived presentations.

CIPRS (UCLA, LA VA)

<http://www.queri.research.va.gov/ciprs/about.cfm>



The VA Center for Implementation Practice and Research Support (CIPRS) is a QUERI resource center that aims to facilitate accelerated improvement in the quality and performance of the VA healthcare delivery system through enhanced VA implementation practice and research. CIPRS programs include: education and technical assistance to VA implementation researchers, technical assistance and support for VA implementation practice, and development of implementation science, theory and methods.

Training Institute for Dissemination and Implementation Research in Health (TIDIRH)

<http://ctsi.ucsf.edu/calendar/training/2012-training-institute-dissemination-and-implementation-research-health-tidirh>



The Office of Behavioral and Social Sciences Research, National Institutes of Health, in partnership with the National Cancer Institute, the National Institute of Mental Health, and the U.S. Department of Veterans Affairs, is sponsoring this 5-day training institute to provide participants with a thorough grounding in conducting dissemination and implementation research in health.

Notes:

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SCHOOL OF MEDICINE
Center for Research in Implementation
Science and Prevention (CRISP)
UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

