



DEPARTMENT OF SURGERY

## Wisconsin Surgical Outcomes Research Program

UNIVERSITY OF WISCONSIN

SCHOOL OF MEDICINE AND PUBLIC HEALTH

# Implementation Science

**Association for Academic Surgery  
29th Annual Fundamentals of Surgical Research Course**

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# Disclosures

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- No financial disclosures
- Acknowledgement:
  - Heather Neuman, MD, MS, FACS



# Overview

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- Definitions/context
- Impact
- Conceptual model of Implementation Research
- Couple important concepts
- Models for Implementation Research
- Additional Resources



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# Definitions

- ***Dissemination Research***
  - Study of targeted distribution of information and intervention materials to a specific public health or clinical practice audience
  - Understand how best to spread and sustain knowledge and the associated evidence-based interventions
- ***Implementation Research***
  - Study of the use of strategies to adopt and integrate evidence-based health interventions into clinical and community settings



# Putting it in context

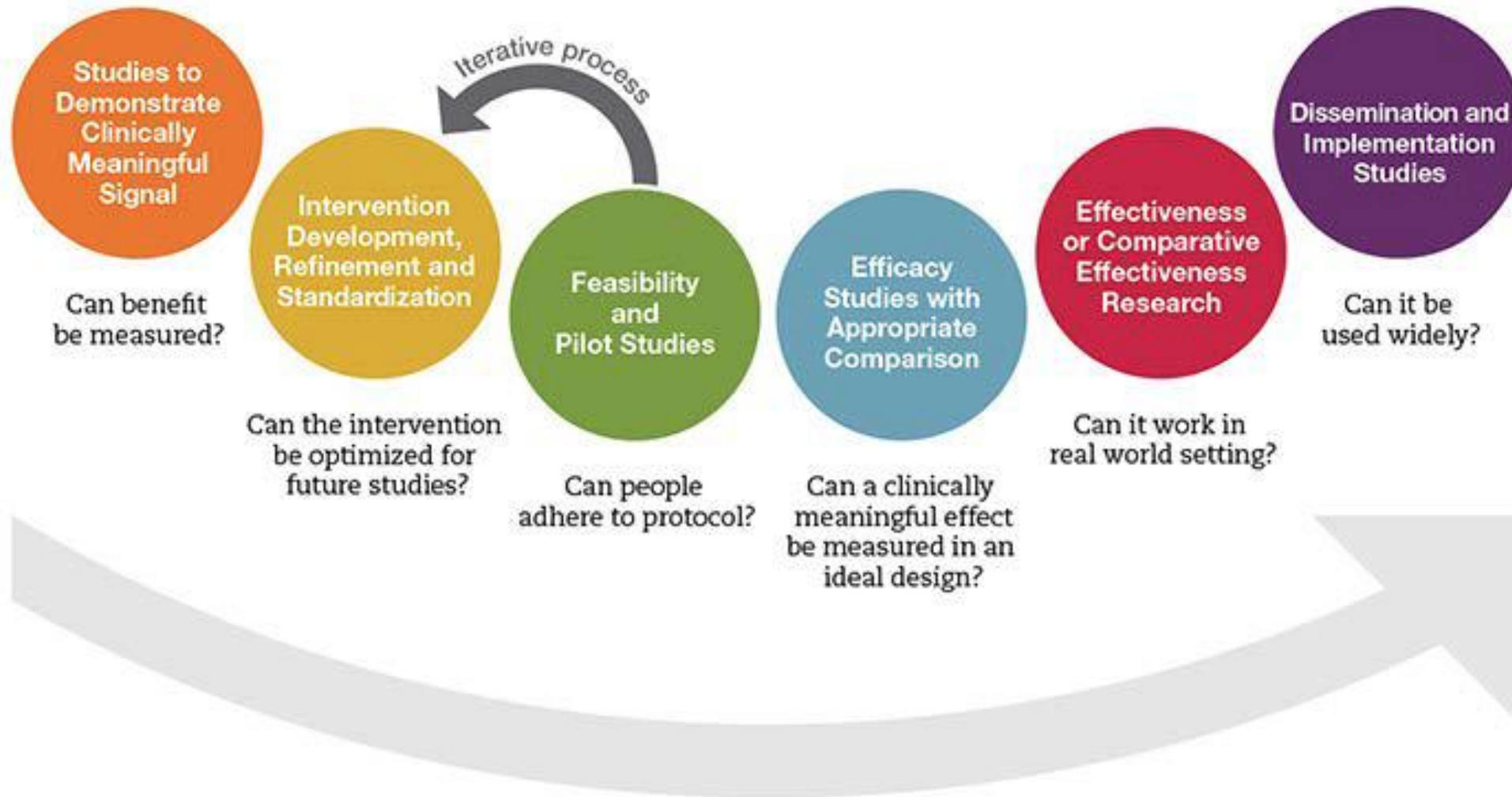
	Quality Improvement	Implementation Science
<b>Focus</b>	A specific patient-level problem within a single healthcare system	An evidence-based practice that is under-utilized across healthcare
<b>Goal</b>	To fix the specific problem within a single healthcare system	To generate generalizable knowledge while also improving healthcare quality
<b>Approach</b>	Design and trial strategies to improve the problem	
<b>Models</b>	Toyota Lean Six Sigma	RE-AIM PARiHS framework

-“What is Implementation Science? Implications for Conducting Antimicrobial Stewardship Research” by H. Reisinger, PhD and D. Livorsi, MD



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# The big picture



URGERY



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# Importance

- Evidence-based health intervention...
  - Is only so good as how and whether...
- It is adopted?
- Providers are trained to deliver it?
- Trained providers choose to deliver it?
- Eligible patients receive it?
- Degree to which access/engagement/quality/sustainability exist?



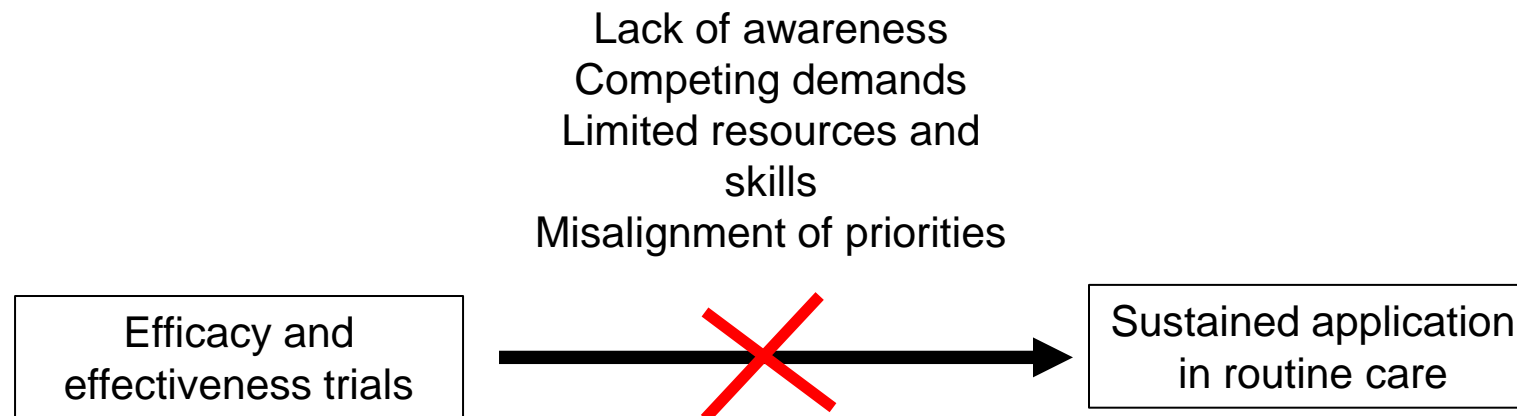
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# Impact

On average, it takes 17 years for evidence based practices to be incorporated into routine care.



# Implementation Scientists

- Want to know:
  - Why evidence-based practices are adopted
  - How they're adapted to fit a specific context
  - How the pace of adoption can be accelerated



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# Conceptual model of implementation research

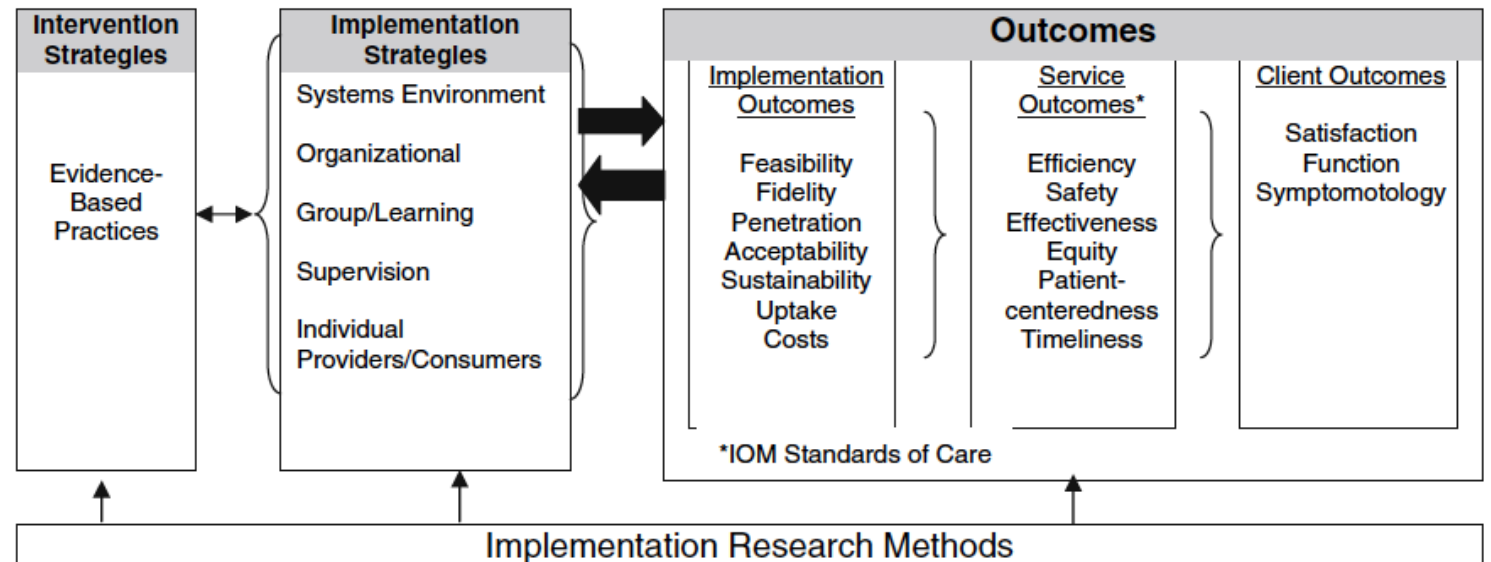
Adm Policy Ment Health (2009) 36:24–34  
DOI 10.1007/s10488-008-0197-4

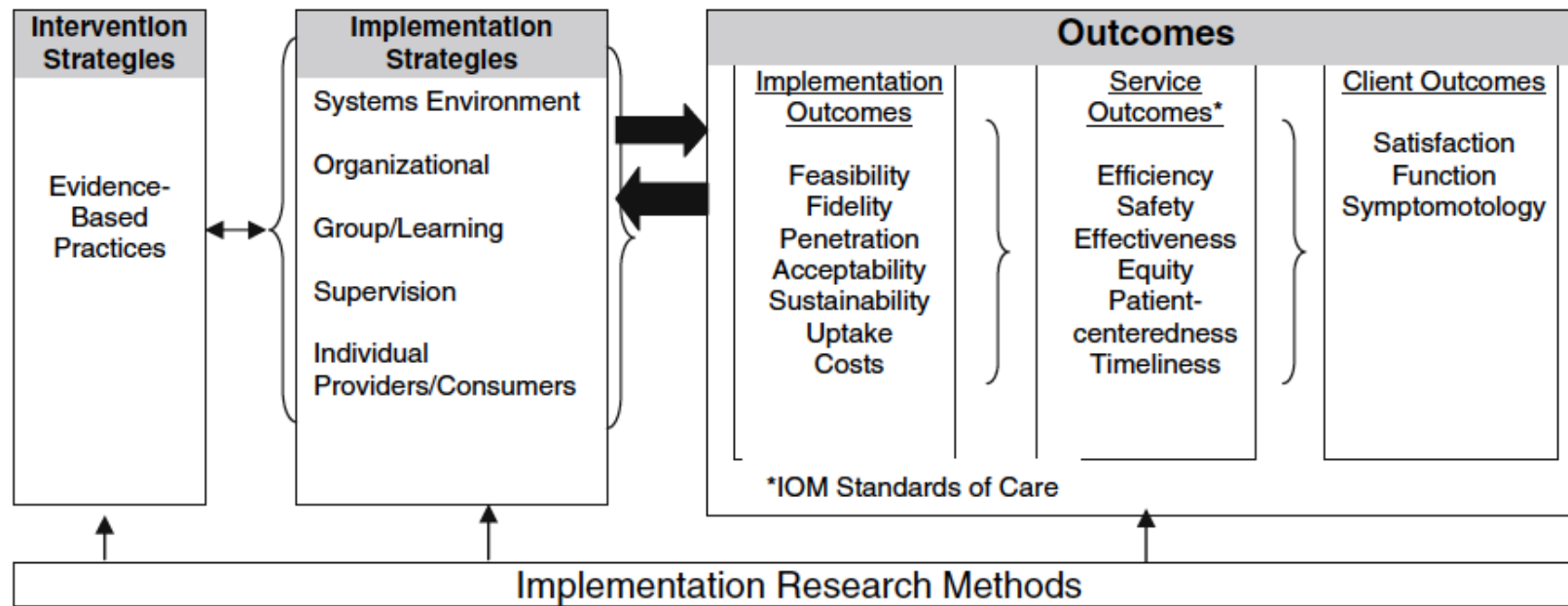
ORIGINAL PAPER



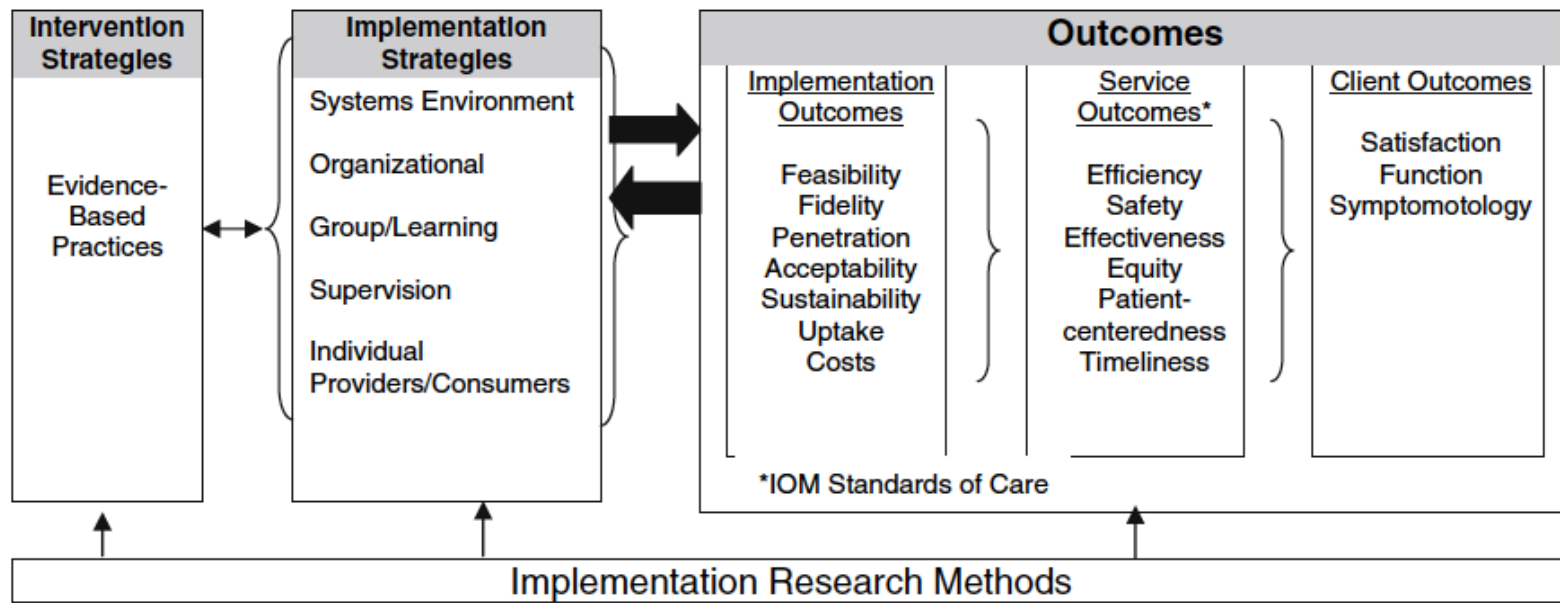
## Implementation Research in Mental Health Services: an Emerging Science with Conceptual, Methodological, and Training challenges

Enola K. Proctor · John Landsverk · Gregory Aarons ·  
David Chambers · Charles Glisson · Brian Mittman





- Frames core elements of implementation research
- Distinguishes two required strategies:
  - Evidence-based intervention strategies
  - Separate strategies for implementing interventions in usual care
- Implementation strategies are key component to be manipulated



- Differential effects on three outcomes
  - Ultimate goal - improve clinical outcomes
- “Intermediate outcomes” - important, particularly in relation to implementation strategies
  - Improving acceptability of interventions may be a worthy goal itself
- Call for multilevel implementation strategies
  - Explicitly mentions levels of implementation context





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Chambers

# Program Drift

- Expected effect of an intervention is presumed to decrease over time as practitioners adapt the delivery of the intervention

Chambers et al. *Implementation Science* 2013, **8**:117  
<http://www.implementationscience.com/content/8/1/117>

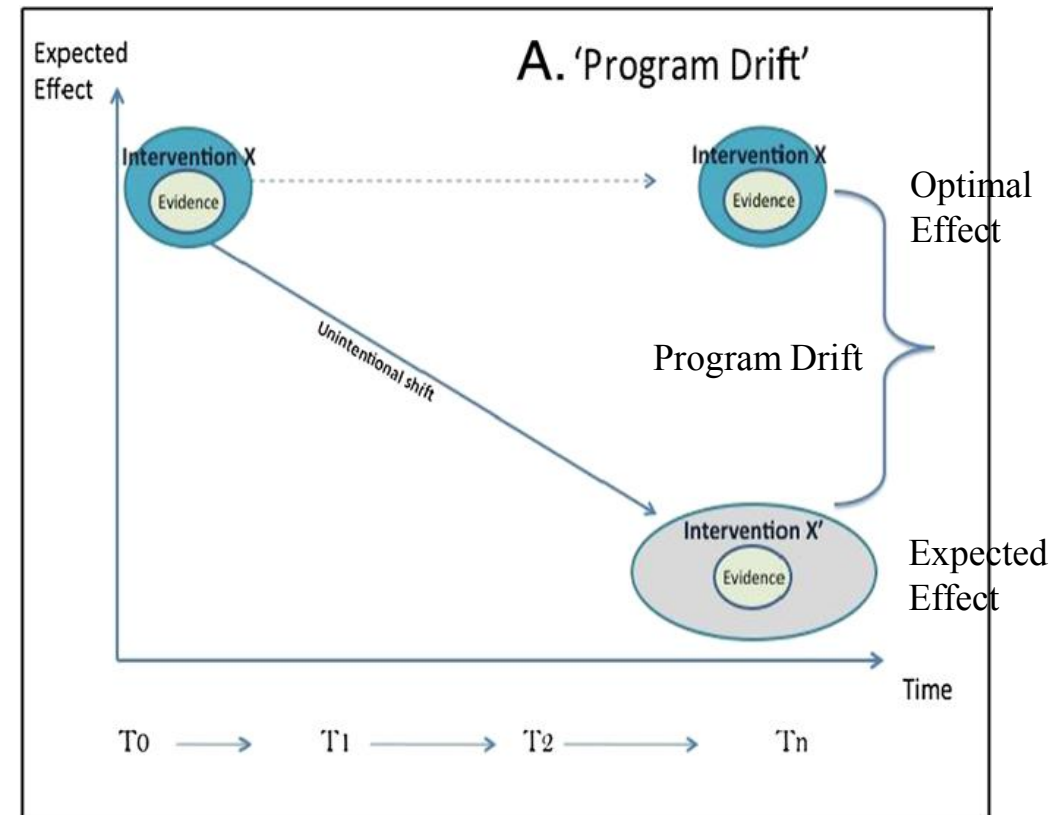


DEBATE

Open Access

The dynamic sustainability framework: addressing the paradox of sustainment amid ongoing change

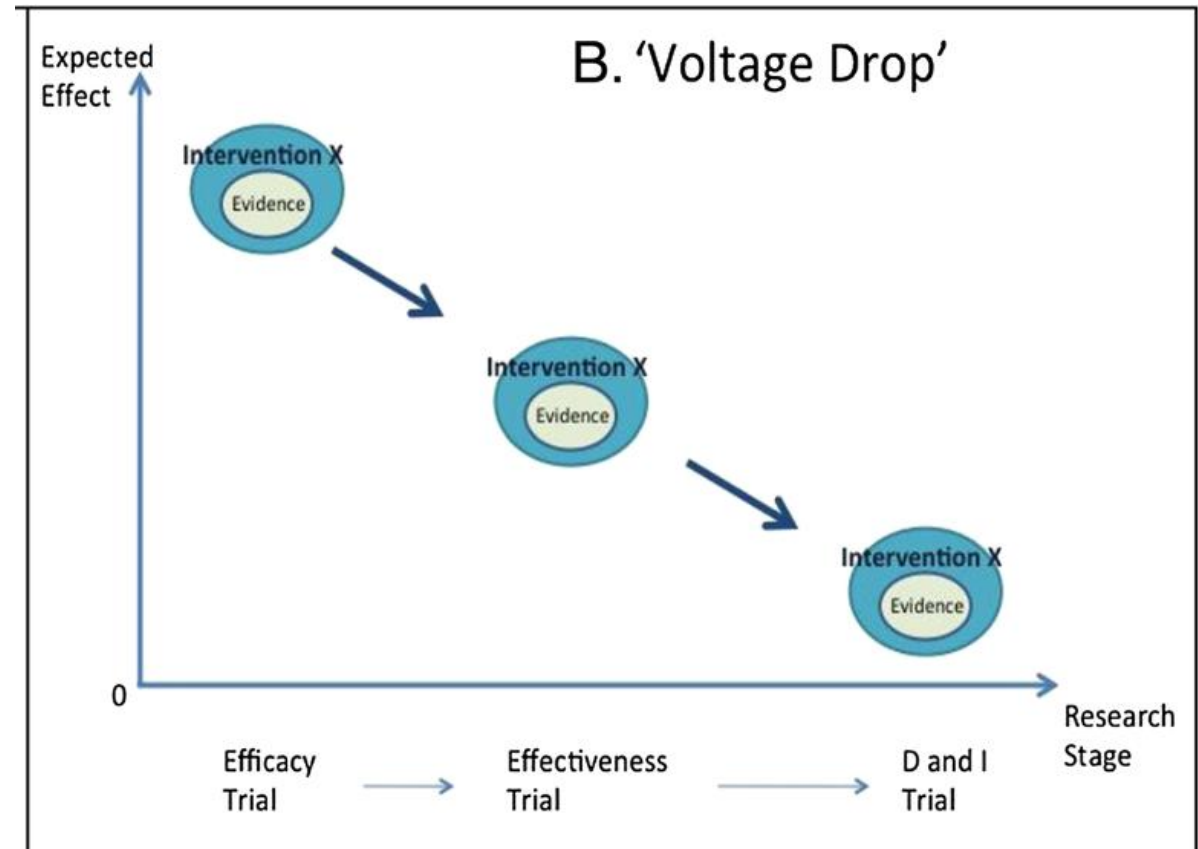
David A Chambers<sup>1\*</sup>, Russell E Glasgow<sup>2</sup> and Kurt C Stange<sup>3</sup>



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# Voltage Drop

- Effect of an intervention is presumed to decrease as testing moves from Efficacy to Effectiveness to Dissemination and Implementation



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Tabak

# Bridging Research and Practice Models for Dissemination and Implementation Research

Rachel G. Tabak, PhD, Elaine C. Khoong, BS, David A. Chambers, DPhil,  
Ross C. Brownson, PhD



Chambers

- Identified 109 models → 61 included in review

Category	Variable definition	Anchor definitions
Construct flexibility	Definition/flexibility of model constructs	1= <i>Broad</i> : loosely outlined and defined constructs; allows researchers greater flexibility to apply the model to a wide array of D&I activities and contexts 5= <i>Operational</i> : detailed, step-by-step actions for completion of D&I research processes
Dissemination and/or implementation (D/I)	Focus on dissemination and/or implementation activities	<i>D-only</i> : Focus on active approach of spreading evidence-based interventions to the target audience via determined channels using planned strategies <i>D=I</i> : Equal focus on dissemination and implementation <i>I-only</i> : Focus on process of putting to use or integrating evidence-based interventions within a setting
Socioecologic framework	Level of the framework at which the model operates	<i>Individual</i> : Personal characteristics <i>Organization</i> : Hospitals, service organizations, factory <i>Community</i> : Local government, neighborhood <i>System</i> : Hospital system, government



Brownson

Tabak, Khoong, Chambers, Brownson, AJPM, 2012



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# Bridging Research and Practice

## Models for Dissemination and Implementation Research

Rachel G. Tabak, PhD, Elaine C. Khoong, BS, David A. Chambers, DPhil,  
Ross C. Brownson, PhD

**Table 2.** Categorization of D&I models for use in research studies

Model	Dissemination and/or implementation	Construct flexibility: broad to operational	Socioecologic Level					References
			System	Community	Organization	Individual	Policy	
Diffusion of Innovation	D-only	1		x	x	x		21
RAND Model of Persuasive Communication and Diffusion of Medical Innovation	D-only	1		x	x	x		22
Effective Dissemination Strategies	D-only	2		x	x	x		23
Model for Locally Based Research Transfer Development	D-only	2		x	x			24
Streams of Policy Process	D-only	2	x	x	x		x	25, 26
A Conceptual Model of Knowledge Utilization	D-only	3	x	x			x	27
Conceptual Framework for Research Knowledge Transfer and Utilization	D-only	3			x			28



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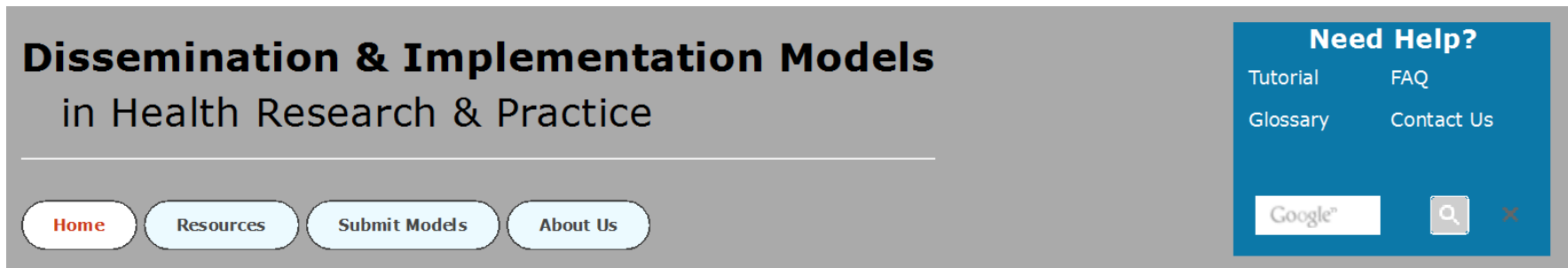
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# Finding the Right Implementation Models

<http://dissemination-implementation.org>



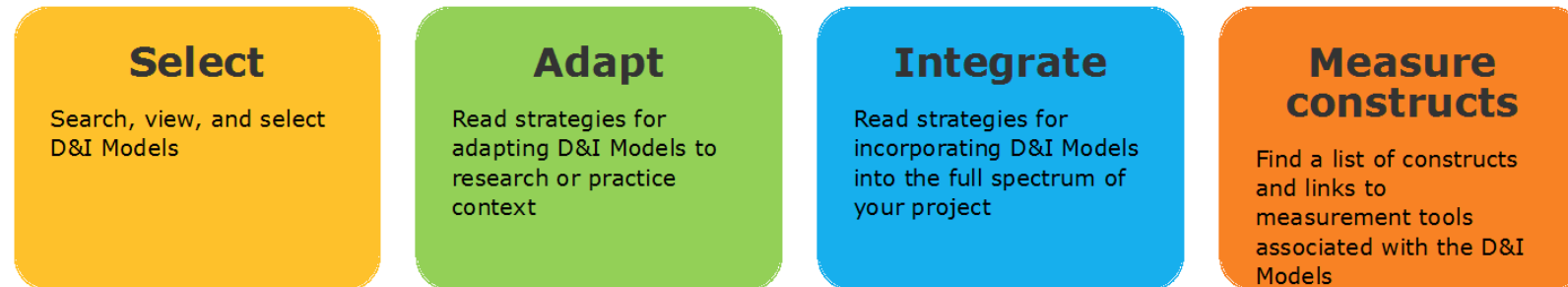
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Google

This interactive website was designed to help researchers and practitioners to select the D&I Model that best fits their research question or practice problem, adapt the model to the study or practice context, fully integrate the model into the research or practice process, and find existing measurement instruments for the model constructs. The term 'Models' is used to refer to both theories and frameworks that enhance dissemination and implementation of evidence-based interventions more likely.



# More than Efficacy/Effectiveness



Ross Glasgow, MS, PhD

## Evaluating the Public Health Impact of Health Promotion Interventions: The RE-AIM Framework



*Russell E. Glasgow, PhD, Thomas M. Vogt, MD, MPH, and Shawn M. Boles, PhD*



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# RE-AIM



- Increase the number of states with statewide protocols or triage guidelines for EMS personnel during mass casualty situations

RE-AIM Dimension	Research Questions
<b>Reach</b> Absolute number, proportion, and representativeness of individuals who participate.	What proportion of states have statewide protocols or triage guidelines?
<b>Effectiveness</b> The impact of an intervention on outcomes (including potential negative effects)	Have there been any unexpected outcomes or negative effects associated with existing protocols?  If so, what implementation factors may be related to negative effects and how can negative effects be avoided?



# RE-AIM



- Increase the number of states with statewide protocols or triage guidelines for EMS personnel during mass casualty situations

RE-AIM Dimension	Research Questions
<b>Adoption</b> The absolute number, proportion, and representativeness of those who carry out the intervention	What states have adopted protocols and how do they compare to others that have not?  What factors influence the decision to adopt protocols?
<b>Implementation</b> Consistency of delivery, time and cost of program, and what adaptations to the program are made in various settings	What challenges had to be overcome when adopting protocols?  How and why do protocols vary across states?
<b>Maintenance</b> Extent to which a program or policy becomes institutionalized	Do protocols or guidelines require government approval for renewal?



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# Other Resources



Implementation Science

IS Home Funding Opportunities ▾ Training & Education ▾ Research & Practice T

## Examples of Funded Grants

- <https://www.academyhealth.org/events/site/11th-annual-conference-science-dissemination-and-implementation-health>

- <https://cancercontrol.cancer.gov/IS/sample-grant-applications.html>



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EVENT

## 11th Annual Conference on the Science of Dissemination and Implementation in Health

Scaling up Effective Health and Healthcare: Advancing the Research Agenda and Necessary Infrastructure



# Thank you





