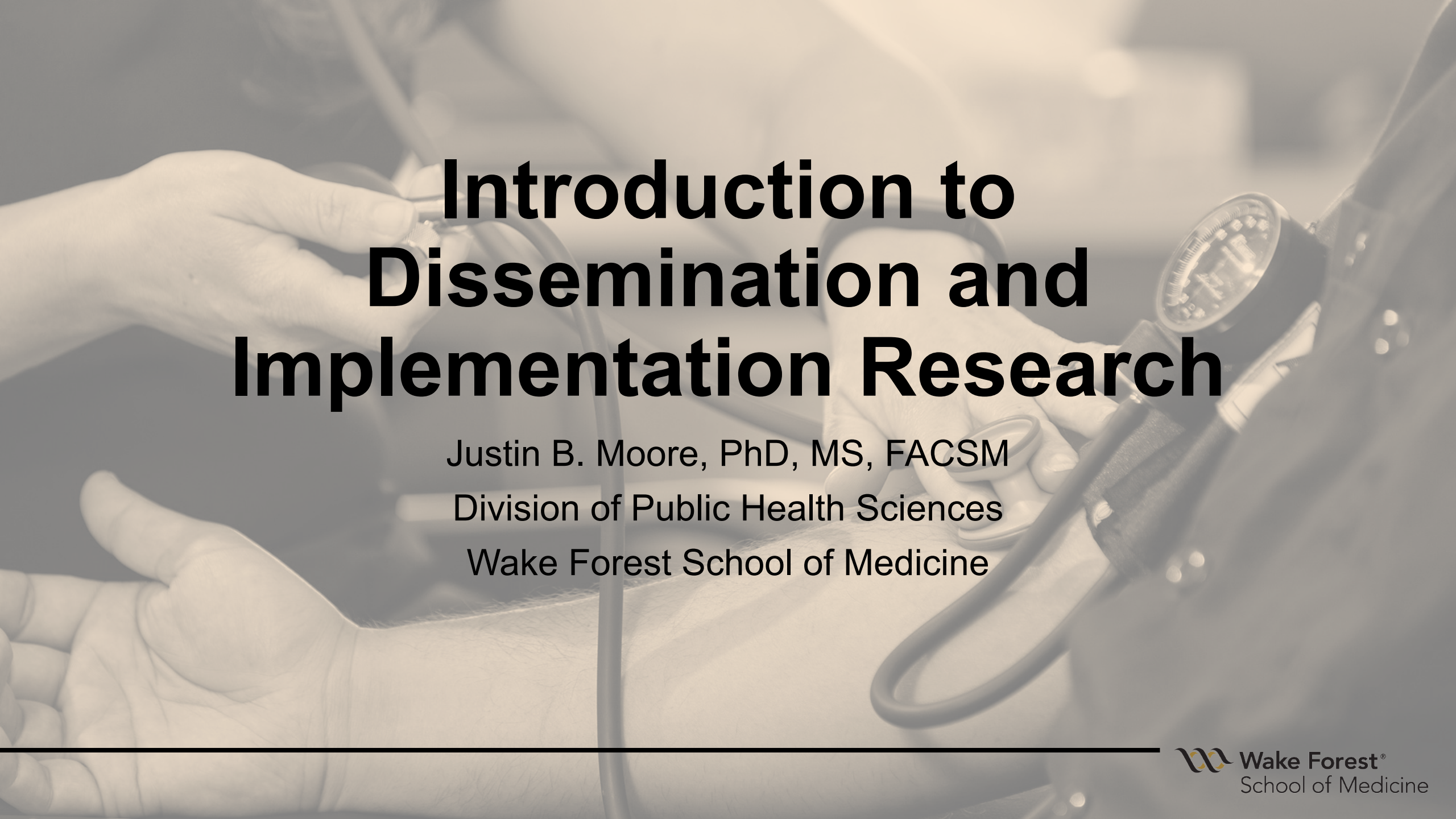

Introduction to Dissemination and Implementation Research

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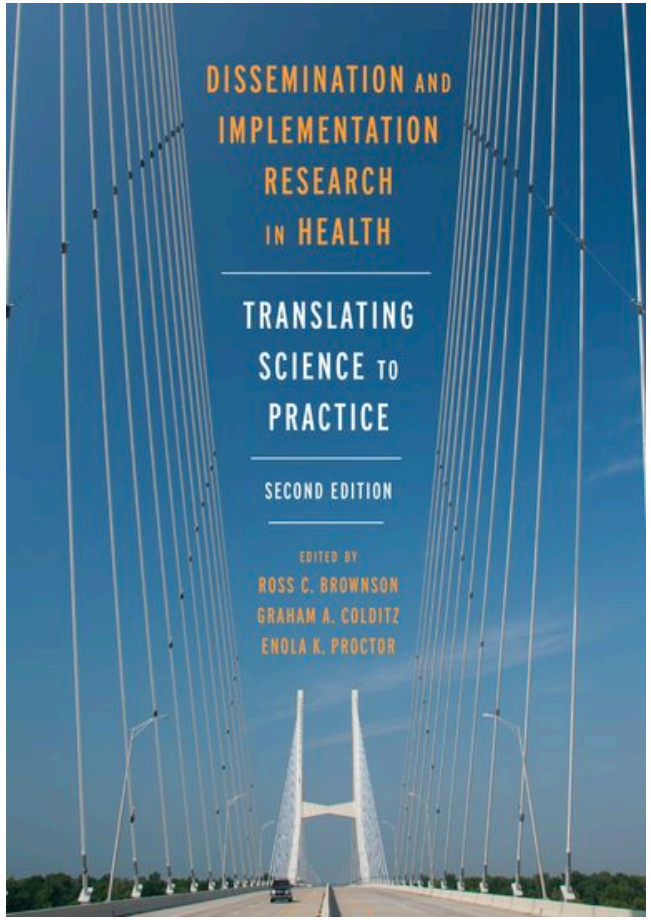
About the series

- **Description**
  - This series provides an introduction to dissemination and implementation (D&I) science and a theoretical foundation to translate evidence into clinical practice, health policy, or public health.
- **Sessions**
  - Introduction to D&I Research (today)
  - Models and Frameworks for D&I Research (9/10/20)
  - Research Design in D&I Science (9/17/20)
  - Evaluation in D&I Research (9/24/20)

A little about me…

- I have formal training in exercise science, health behavior, epidemiology, & implementation science
- I've been conducting implementation science research since 2003.
- The primary focus of my research has been the epidemiology of health behaviors related to obesity and the design, delivery, and evaluation of interventions to prevent or treat obesity.

Recommended Text



- Dissemination and Implementation Research in Health: Translating Science to Practice 2nd Edition
  - Ross C. Brownson, Graham A. Colditz, Enola K. Proctor
- Can be purchased here.

An introduction to Implementation Science

Objectives for today

- To explain why we need dissemination & implementation science
- To define terminology relevant to dissemination & implementation research
- To differentiate implementation from quality improvement and related concepts
- To provide context for dissemination & implementation research in the translation continuum
- To provide a brief introduction to frameworks that can guide dissemination & implementation research

Why D&I science?

- Innovations are sometimes spread passively, but most often they are not
  - Often require active dissemination
- Evidence-based innovations, once disseminated, must be put into practice
  - Moving from adoption to maintenance can be a complicated process
- Often, ineffective or outdated practices need to be uninstalled
- Evaluation shouldn’t be limited to effectiveness

Terminology

What is D&I research?

- **Dissemination research** is the scientific study of targeted distribution of information and intervention materials to a specific public health or clinical practice audience. The intent is to understand how best to spread and sustain knowledge and the associated evidence-based interventions.
- **Implementation research** is the scientific study of the use of strategies to adopt and integrate evidence-based health interventions into clinical and community settings in order to improve patient outcomes and benefit population health.

From: Neta G, Brownson RC, Chambers DA. Opportunities for Epidemiologists in Implementation Science: A Primer. *Am J Epidemiol*. 2018;187(5):899-910. doi:10.1093/aje/kwx323

From: Brownson, Ross C., Graham A. Colditz, and Enola K. Proctor, eds. *Dissemination and implementation research in health: translating science to practice*. Oxford University Press, 2017.

Terminology

- **Dissemination**: An active approach of spreading evidence-based interventions to the target audience via determined channels using planned strategies.
- **Implementation**: The process of putting to use or integrating evidence-based interventions within a specific setting.
- **Innovation**: “An idea, practice, or object that is perceived as new by an individual or other unit of adoption” (Rogers, 2003)

From: Brownson, Ross C., Graham A. Colditz, and Enola K. Proctor, eds. *Dissemination and implementation research in health: translating science to practice*. Oxford University Press, 2017.

Terminology

- **Evidence-based intervention**: The objects of dissemination and implementation are interventions with proven efficacy and effectiveness.
- **Quality Improvement**: a systematic, formal approach to the analysis of practice performance and efforts to improve performance (AAFP, 2018).
- **Implementation Monitoring**: the measurement of what is actually happening during an intervention compared to what is supposed to be happening in an intervention.

Implementation Science

Research discoveries have led to interventions, tools, and programs to better prevent, diagnose, and treat cancer. Yet these innovations can be underused and overused. Implementation science is a research endeavor that studies ways to optimally deliver these innovations to those who will benefit.

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How Do We Improve Implementation?

Interactive Assistance
Working with stakeholders during implementation

Adapt and Tailor
Modifying implementation based on needs

Support Practitioners
Empowering them to effectively implement the innovations

Engage Consumers
Involving individuals and families directly

How Do We Know If Implementation Is Successful?

Acceptability
Innovation is perceived to be appropriate to stakeholders

Uptake
Innovation is used

Cost
Acceptable cost of supporting innovation delivery

Fidelity
Innovation is delivered as intended

Sustainment
Innovation is effectively delivered over time

What Are the Desired Outcomes?

Increased Years of Life

Improved Quality of Life

Health Equity

Quality Improvement vs. Implementation

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Quality Improvement vs. Implementation

- **Quality Improvement**
  - Scale: small
  - Resources: low
  - Intended duration: short
  - Tolerance for failure: high
  - Feedback: continuous
- **Implementation**
  - Scale: medium to large
  - Resources: high
  - Intended duration: long
  - Tolerance for failure: low
  - Feedback: varies

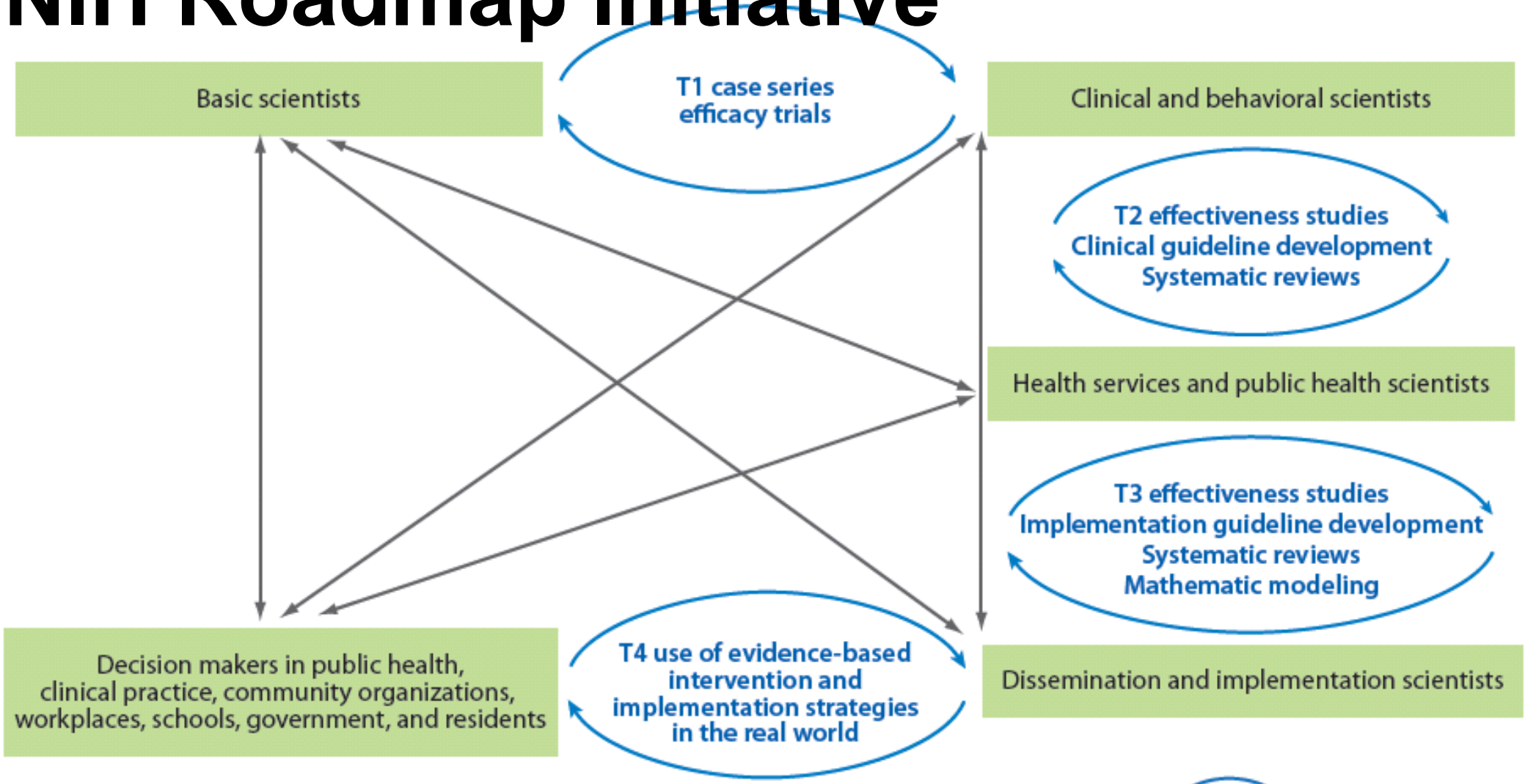
Dissemination & Implementation Research in the Translation Continuum

Translational Continuum

Translation research phase	Notation	Types of research
TI	Discovery to candidate health application	Phases I and II clinical trials; observational studies
T2	Health application to evidence-based practice guidelines	Phase III clinical trials; observational studies; evidence synthesis and guidelines development
T3	Practice guidelines to health practice	Dissemination research; implementation research; diffusion research Phase IV clinical trials
T4	Practice to population health impact	Outcomes research (includes many disciplines); population monitoring of morbidity, mortality, benefits, and risks

From: Khoury MJ, Gwinn M, Yoon PW, Dowling N, Moore CA, Bradley L. The continuum of translation research in genomic medicine: how can we accelerate the appropriate integration of human genome discoveries into health care and disease prevention? Genet Med. 2007 Oct;9(10):665-74.

Stakeholders at translational steps in the NIH Roadmap Initiative



From: Lobb R, Colditz GA. (2013) Implementation science and its application to population health. *Ann Rev Public Health,* 34:235-51.

Frameworks that can guide Dissemination & Implementation Research

Many models to choose from…

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

Context: Theories and frameworks (hereafter called models) enhance dissemination and implementation (D&I) research by making the spread of evidence-based interventions more likely. This work organizes and synthesizes these models by (1) developing an inventory of models used in D&I research; (2) synthesizing this information; and (3) providing guidance on how to select a model to inform study design and execution.

Evidence acquisition: This review began with commonly cited models and model developers and used snowball sampling to collect models developed in any year from journal articles, presentations, and books. All models were analyzed and categorized in 2011 based on three author-defined variables: construct flexibility, focus on dissemination and/or implementation activities (D/I), and the socioecologic framework (SEF) level. Five-point scales were used to rate construct flexibility from broad to operational and D/I activities from dissemination-focused to implementation-focused. All SEF levels (system, community, organization, and individual) applicable to a model were also extracted. Models that addressed policy activities were noted.

Evidence synthesis: Sixty-one models were included in this review. Each of the five categories in the construct flexibility and D/I scales had at least four models. Models were distributed across all levels of the SEF; the fewest models (n=8) addressed policy activities. To assist researchers in selecting and utilizing a model throughout the research process, the authors present and explain examples of how models have been used.

Conclusions: These findings may enable researchers to better identify and select models to inform their D&I work.

(Am J Prev Med 2012;43(3):337–350)

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Considerable variability in focus, flexibility, and level of focus exists

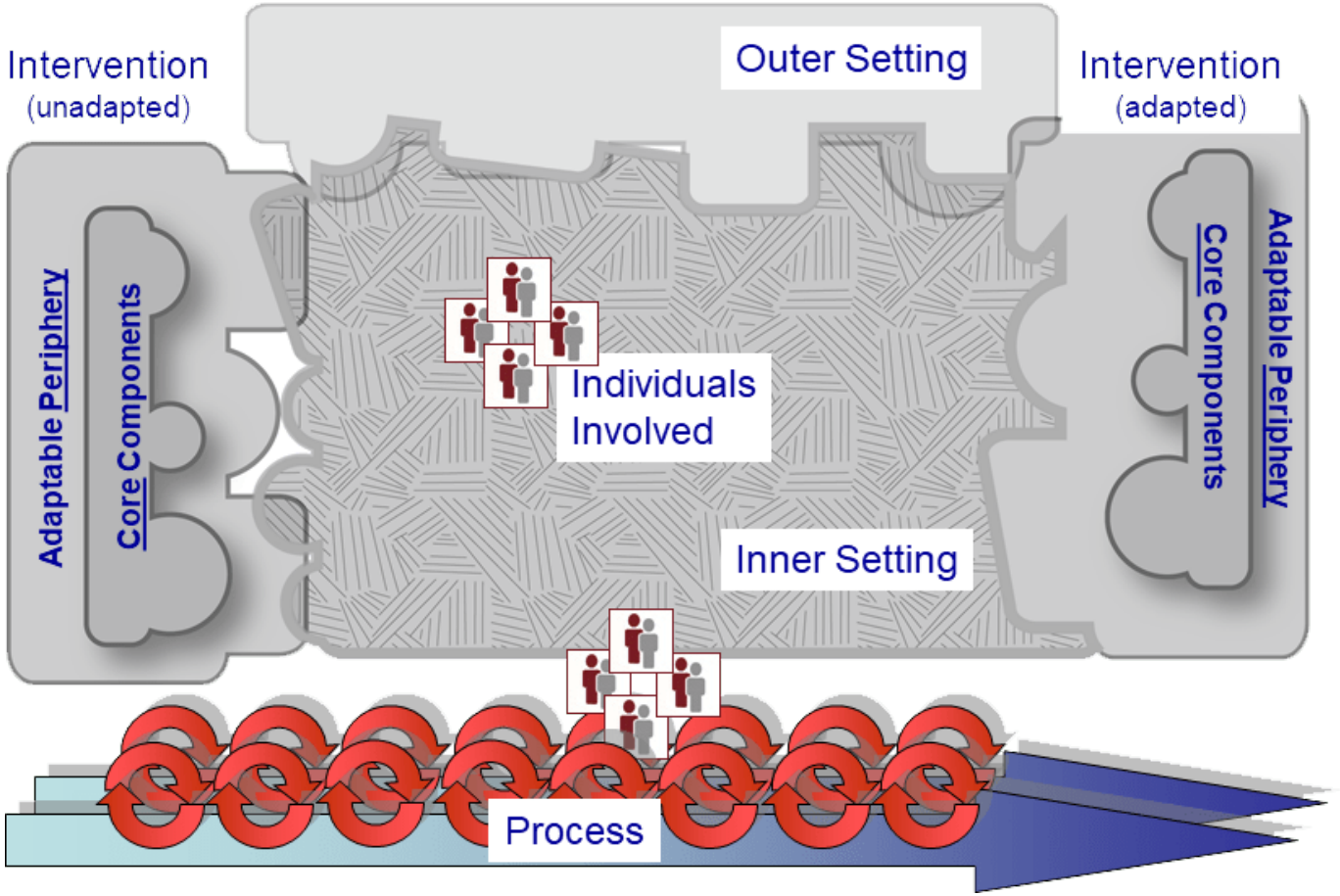
Table 2. Categorization of D&I models for use in research studies

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
Conceptualizing Dissemination Research and Activity: Canadian Heart Health Initiative	D-only	3		x	x			29, 30
Policy Framework for Increasing Diffusion of Evidence-Based Physical Activity Interventions	D-only	3	x	x	x		x	31

Widely used models for D&I Research

- **Consolidated Framework for Implementation Research (CFIR)**
  - Meta-framework for implementation research
- **RE-AIM framework**
  - A dissemination/evaluation framework

Consolidated Framework for Implementation Research (CFIR)



- Intervention
  - Eight constructs
- Outer setting
  - Four constructs
- Inner setting
  - Five constructs
    - Nine sub-constructs
- Individuals
  - Five constructs
- Process
  - Four constructs
    - Four constructs

RE-AIM

- 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 more often effectiveness)
  - Adoption by target staff, settings, systems or communities
  - Implementation consistency, costs, and adaptations made during delivery
  - Maintenance of intervention effects in individuals and settings over time

Questions?