FOGARTY

An Overview of Implementation Science:
What it is and what it is not!

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30 July 2025

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Center for Methods in Implementation & Prevention Science

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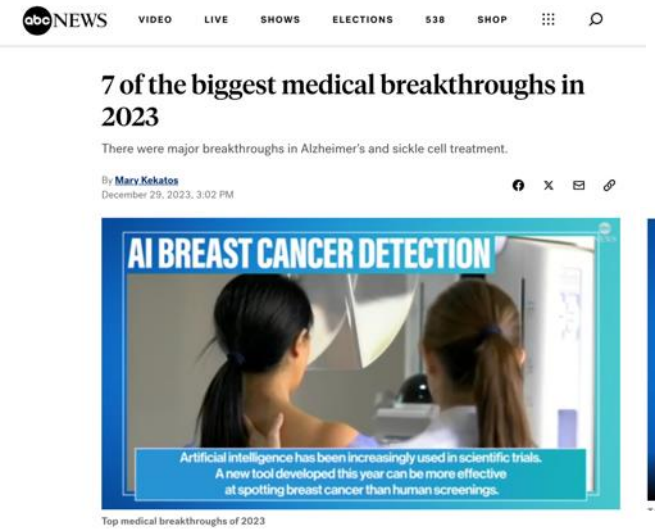
cira
Center for Interdisciplinary Research on AIDS

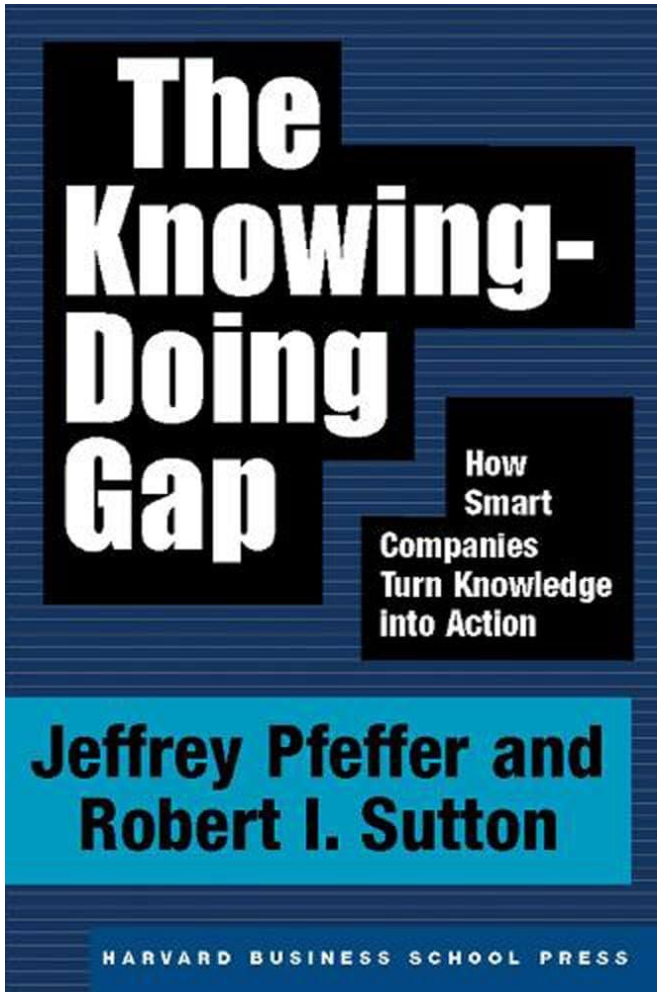
Innovations: Always in the news, rarely followed-through



The Washington Post

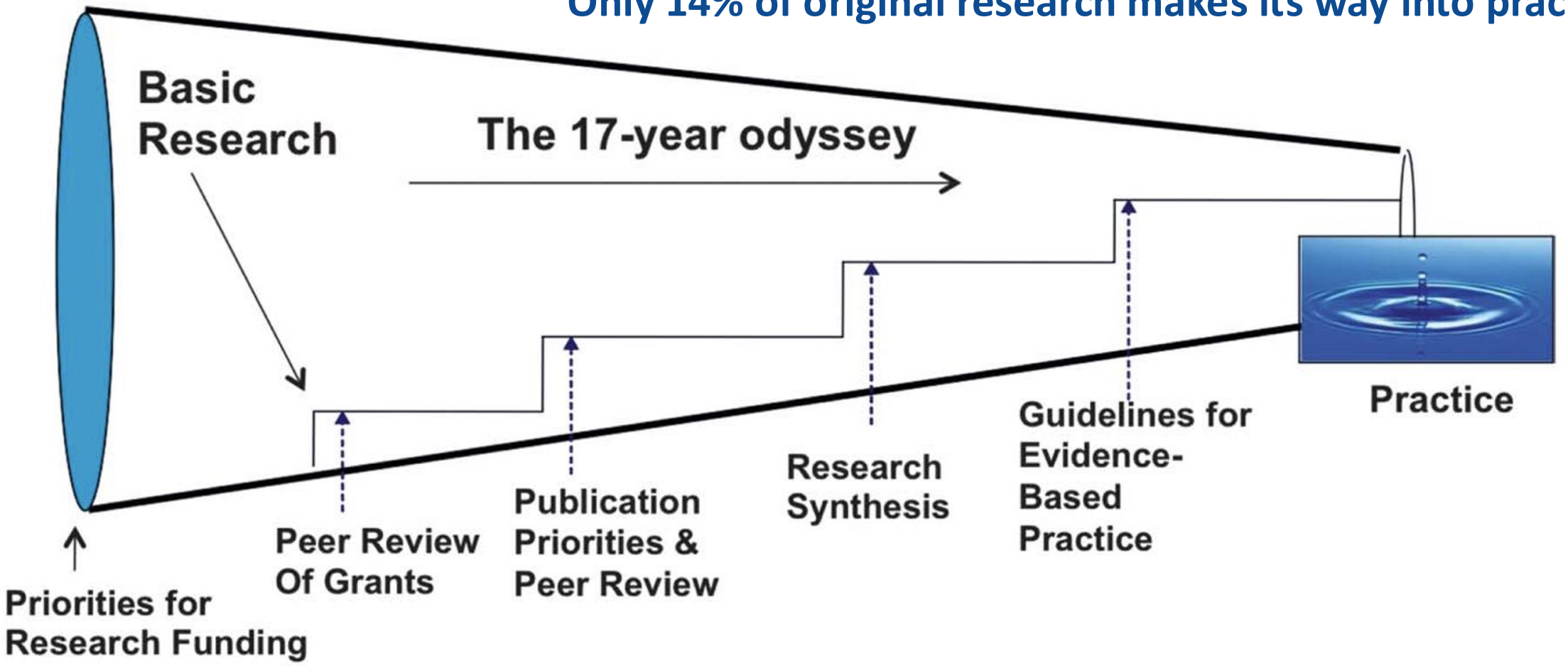
Unhealthy Medicine All Breakthrough, No Follow-Through

By **Steven H. Woolf**
January 8, 2006



Innovations → Practice: Too little, too late!

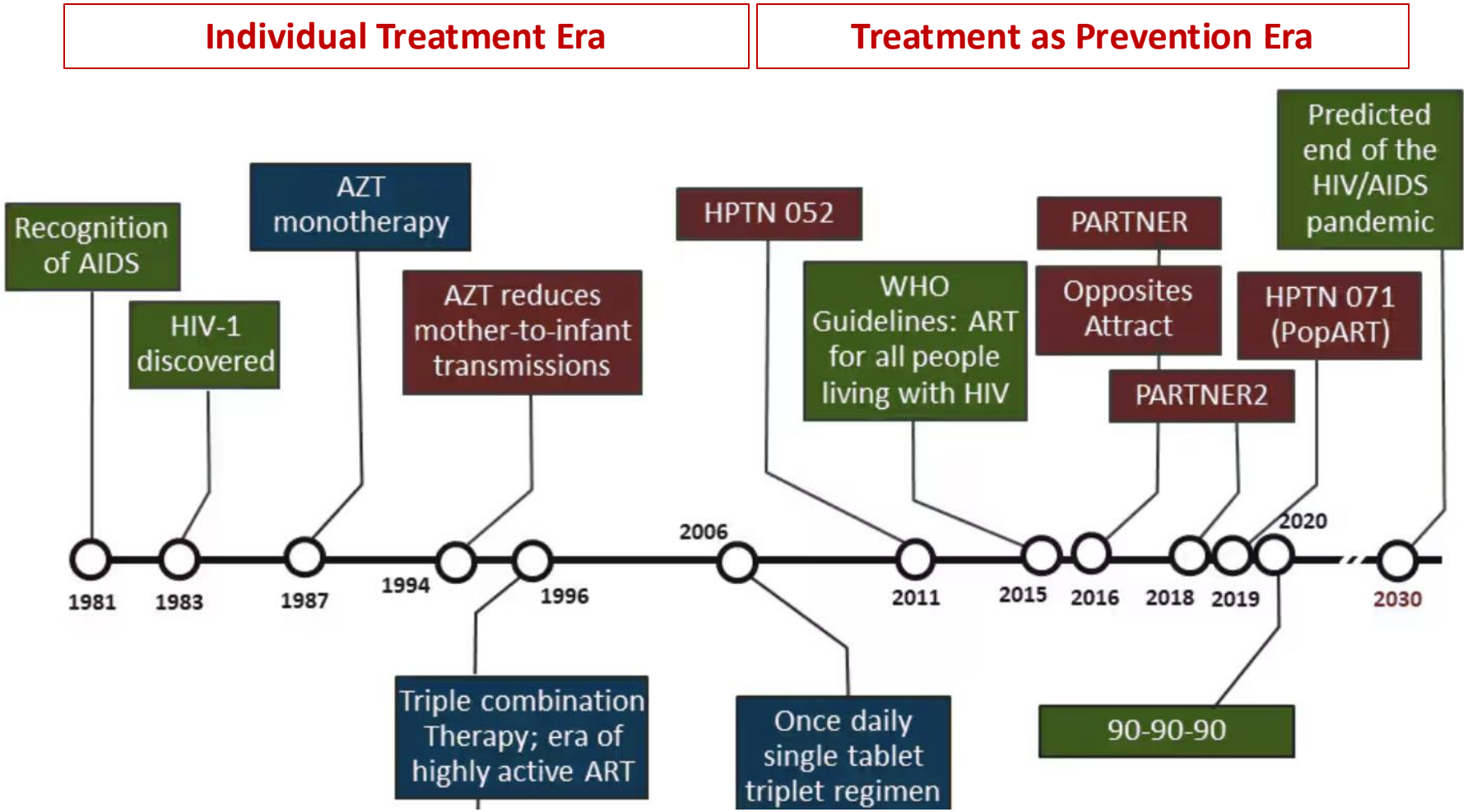
Only 14% of original research makes its way into practice.



Green et al Ann Rev Publ Health 2008

Example: HIV Treatment as Prevention

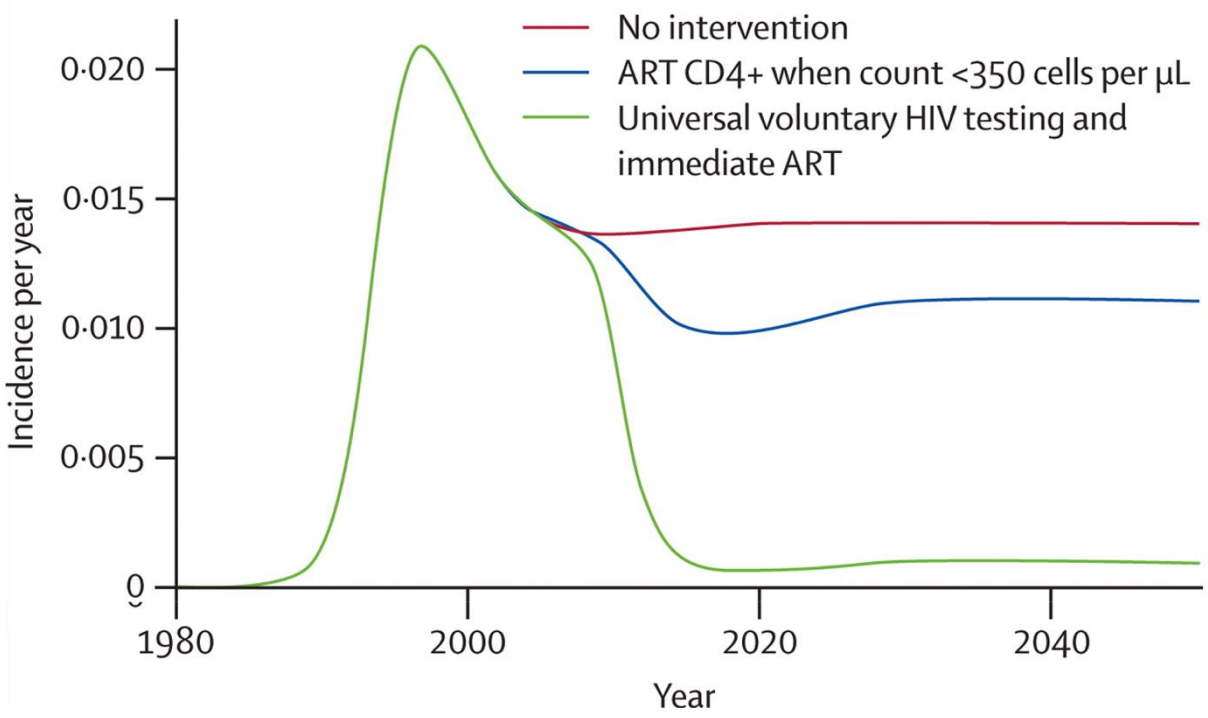
A brief history of HIV treatment



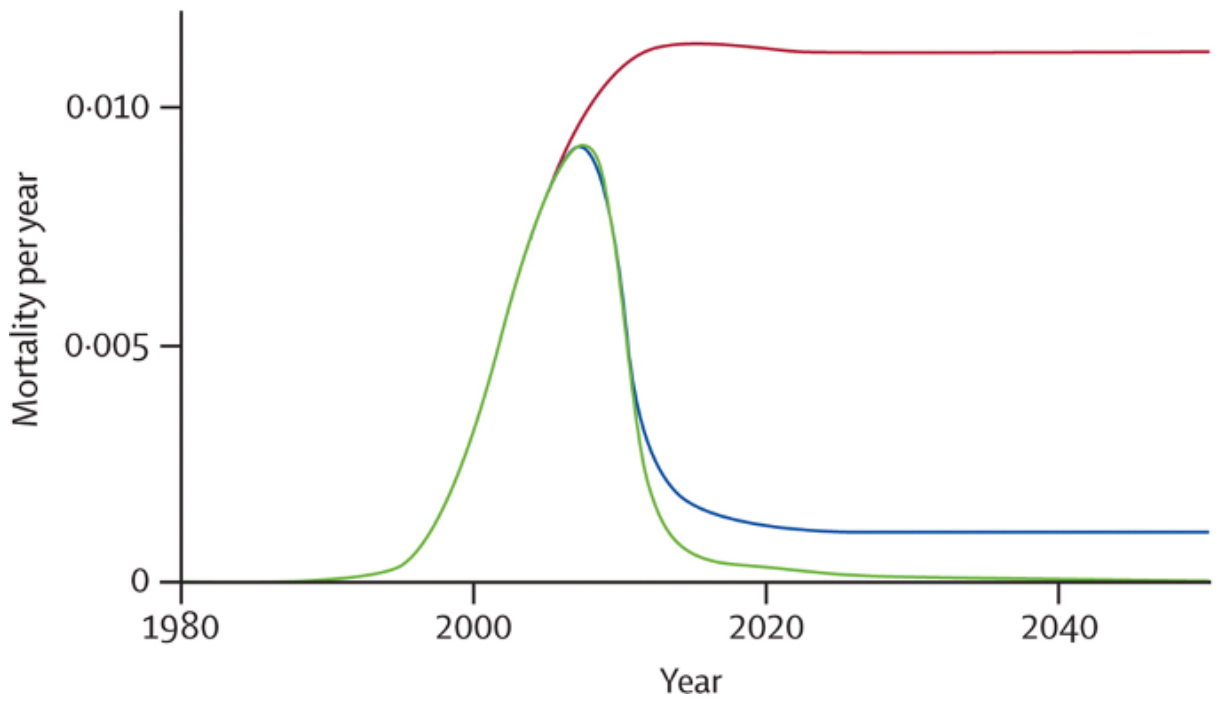
Adapted from M. Cohen, https://www.medscape.org/viewarticle/915551_3

T1: Modeling Treatment as Prevention in South Africa, 2007

Incidence

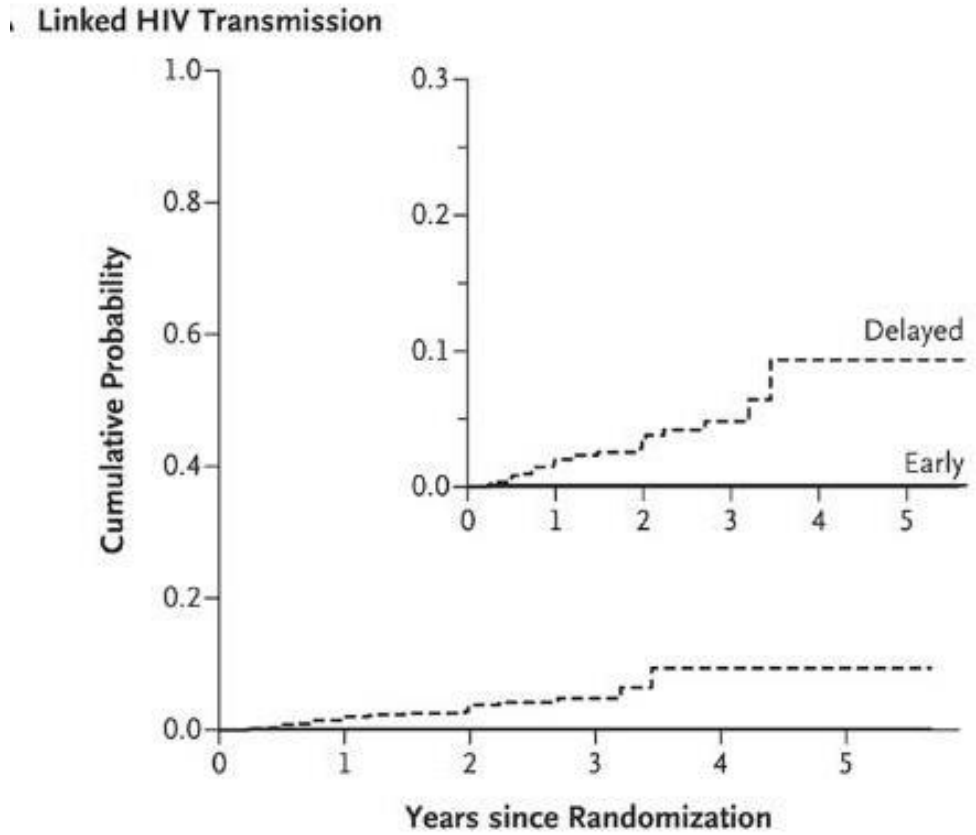


Mortality

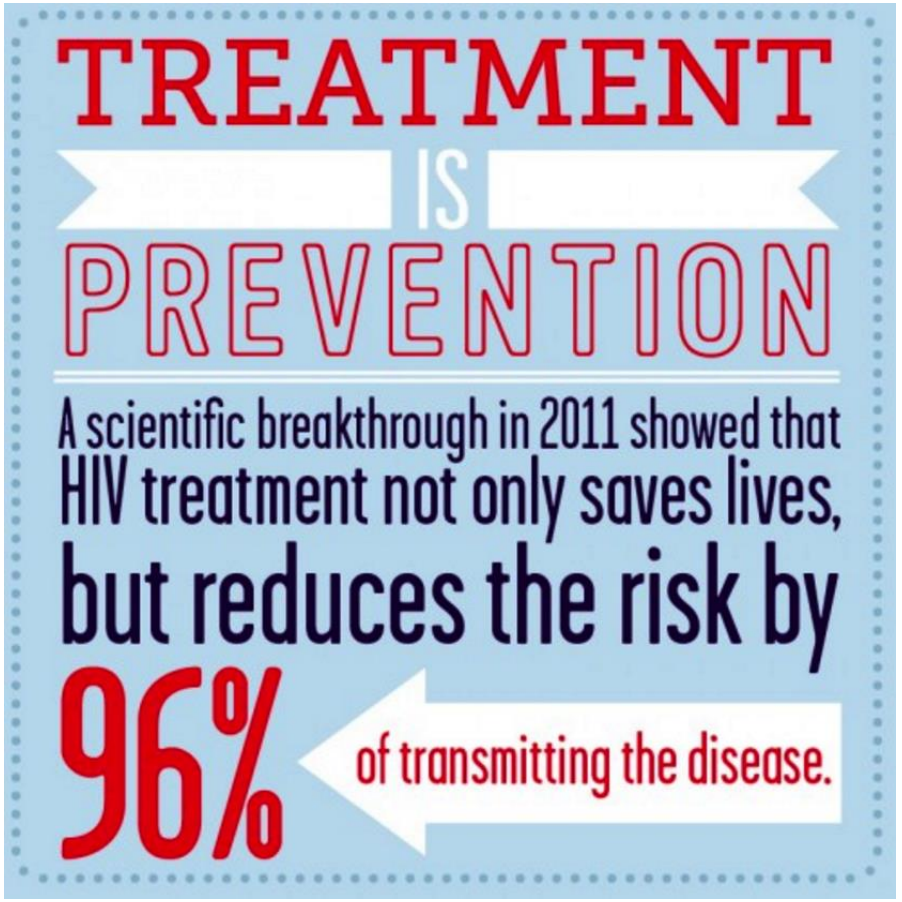


Granich R et al Lancet 2009

T2: Can ART prevent HIV infection? Phase III Trial, 2011

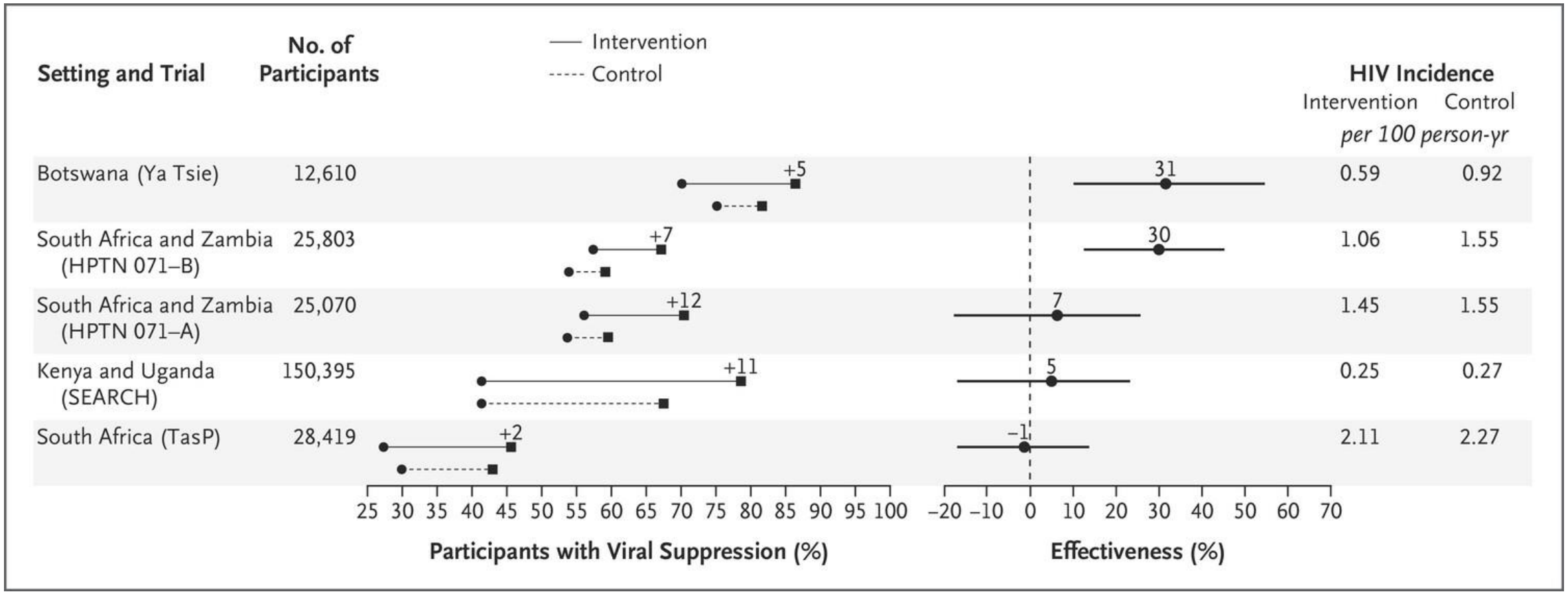


No. at Risk						
Early	893	658	298	79	31	24
Delayed	882	655	297	80	26	22



Cohen et al NEJM 2011

T3: Does Universal Test & Treat work? Phase IV Trials, 2019



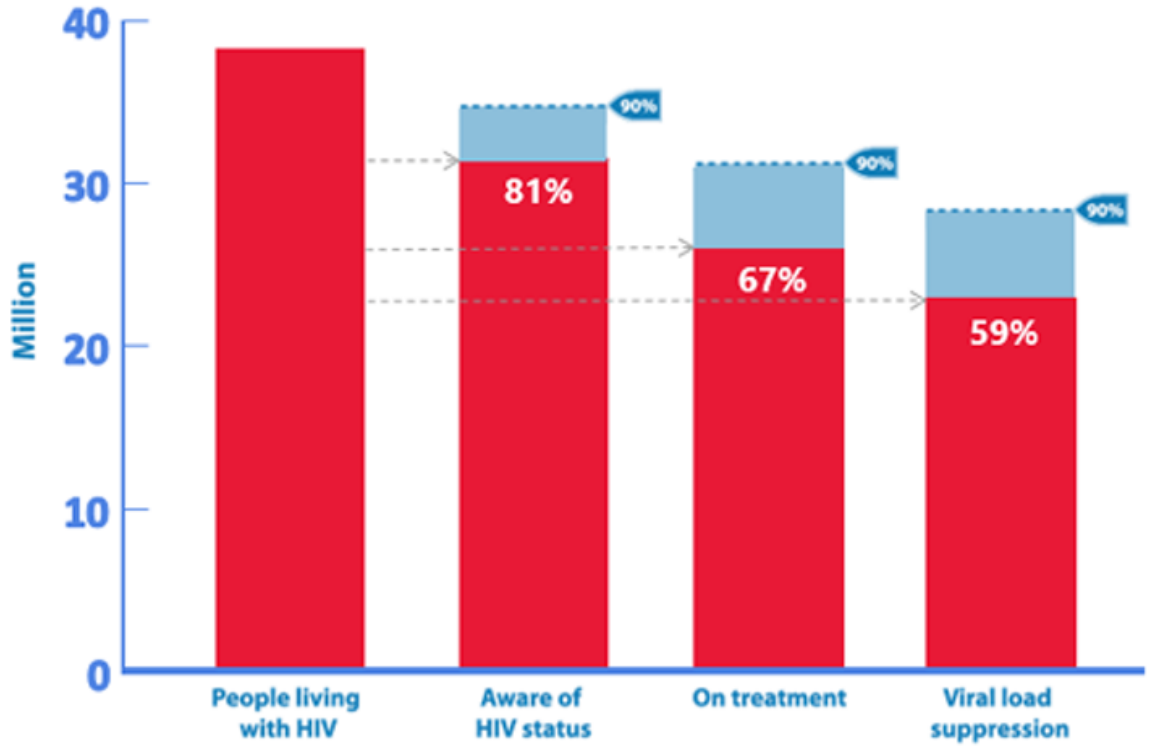
SS Abdool Karim N Engl J Med 2019

~17 years later: How to move UTT from evidence to practice?

Fast-Track Targets

by 2020	by 2030
90-90-90 HIV treatment	95-95-95 HIV treatment
500 000 New HIV infections or fewer	200 000 New HIV infections or fewer
ZERO Discrimination	ZERO Discrimination

WHO / UNAIDS Global Estimates, 2019



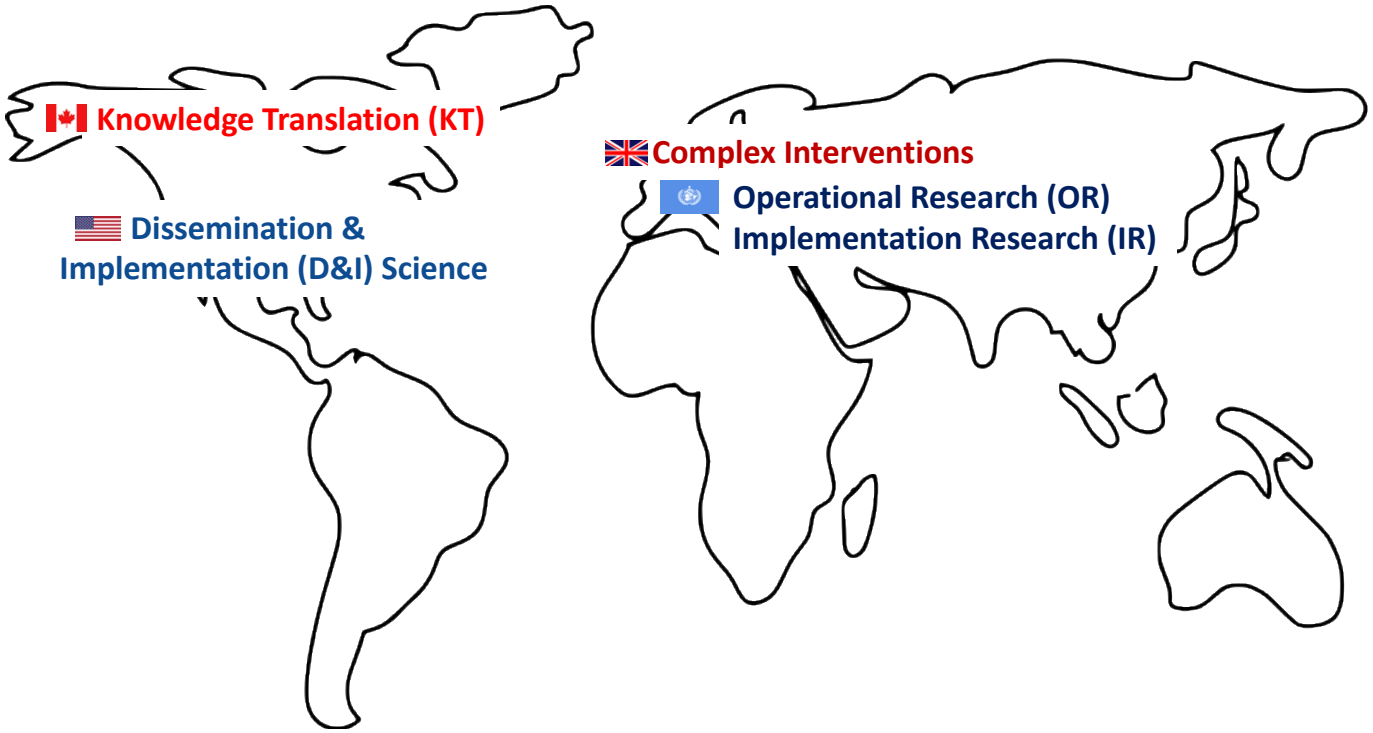
Why do we need Implementation Science?

A definition of Implementation Science (IS)

Implementation science is the
scientific study of methods to promote the systematic uptake of research findings & evidence-based practices into routine practice
to improve the quality & effectiveness of health services.

Eccles M. Implementation Science 2006

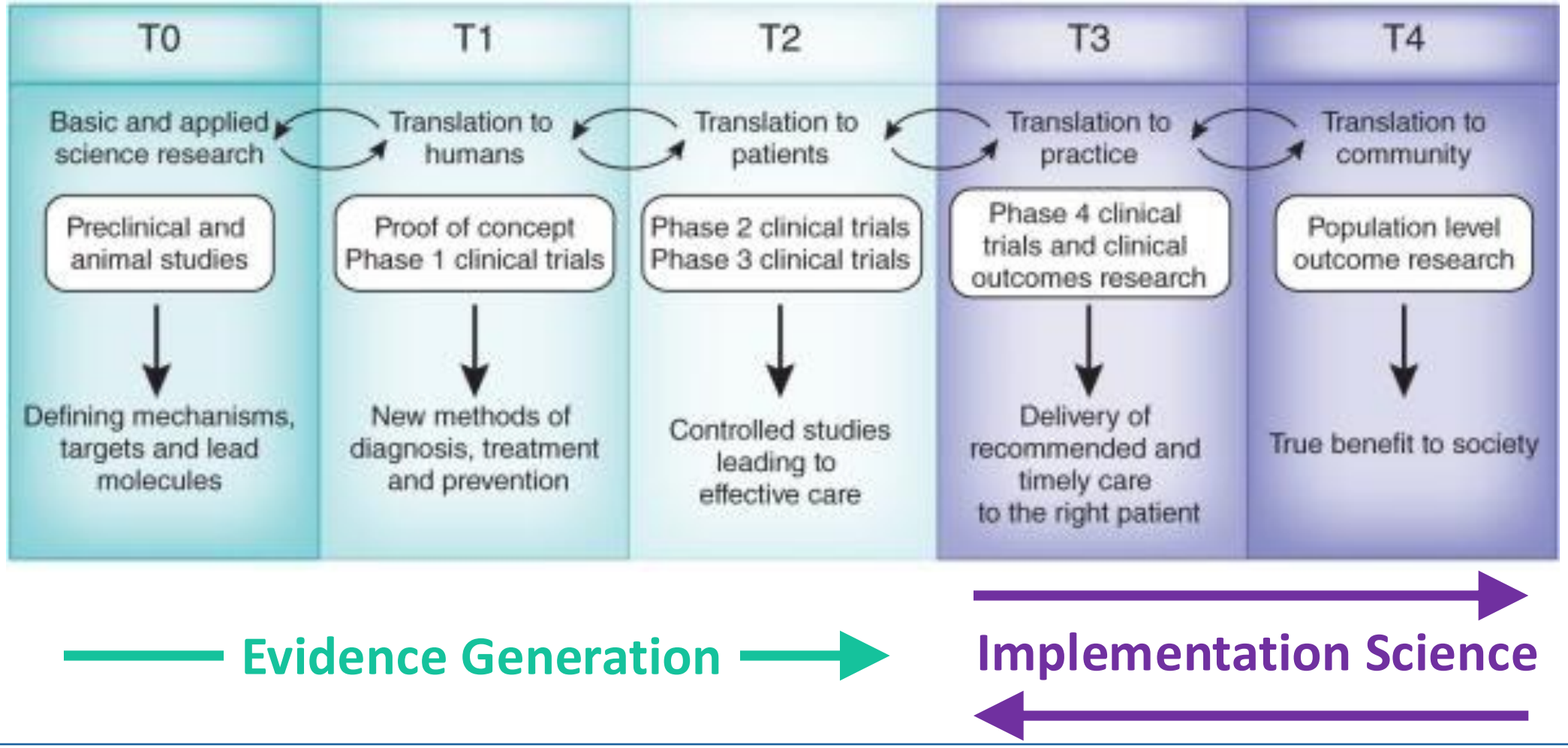
Terminology used varies around the world…



Knowledge Translation	Dissemination Science	Implementation Science
Research	Dissemination Research	Implementation Research
Practice	Dissemination Practice	Implementation Practice

….but the need to bridge research & practice is a constant theme.

IS is a translational & iterative process



Blumberg et al. *Nature Medicine* 2012

Today's talk

What is Implementation Science & why do we need it?

5 Key Ingredients

3 Common Misconceptions & Open Questions

Questions & Discussion

5 key ingredients for implementation science

Evidence-based practices

Community Engagement

Theories, Models, & Frameworks

Implementation Outcomes

Multi-modal Evaluation Plans

How would you define "evidence-based practice"?

Nobody has responded yet.

Hang tight! Responses are coming in.

IS starts with evidence-based practices (EBPs), a.k.a. evidence-based interventions / innovations (EBIs)*

*May often include guideline-recommended or empirically-supported treatments

EBI/EBPs: The 7 P's

In IS, "interventions" are narrowly defined as
actions to improve health-related biomedical or behavioral outcomes.

Actions to encourage people to adopt the 7P's
are known as "implementation strategies."

Image courtesy of https://impsciuw.org

C. H. Brown et al. *Annual Review of Public Health,* 2017.

5 key ingredients for implementation science

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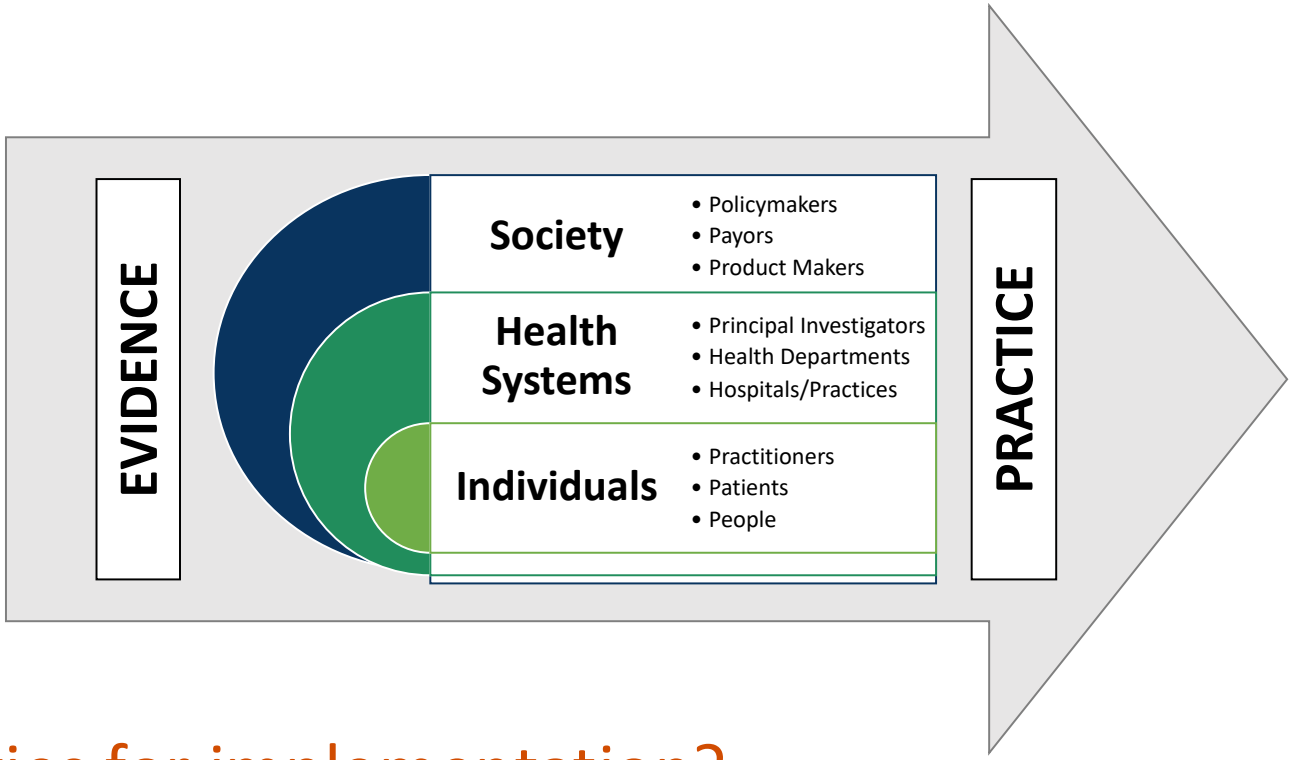
Community engagement key to all phases of IS



What are local priorities for implementation?

What are the barriers to/facilitators of implementation?

How can we sustain & scale successful strategies?

Principles of Community Engagement. 2nd Ed. Wash, DC: HHS, 2011.

Examples: Authentic engagement & participation key to IS

Audet et al Implementation Science 2017

Pfeiffer J Medical Anthropology Quarterly. 2004.

5 key ingredients for implementation science

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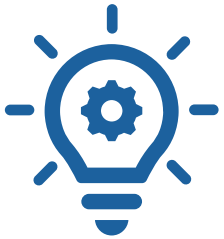
Theories, Models, and Frameworks



Theory

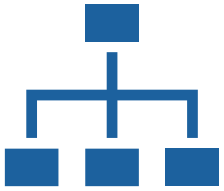
A set of principles or statements that explain & predict a phenomenon.

IS Application:
To explain how & why implementation succeeds or fails

Model

A tool that describes and simplifies a phenomenon.

IS Application:
To guide the process of carrying out implementation

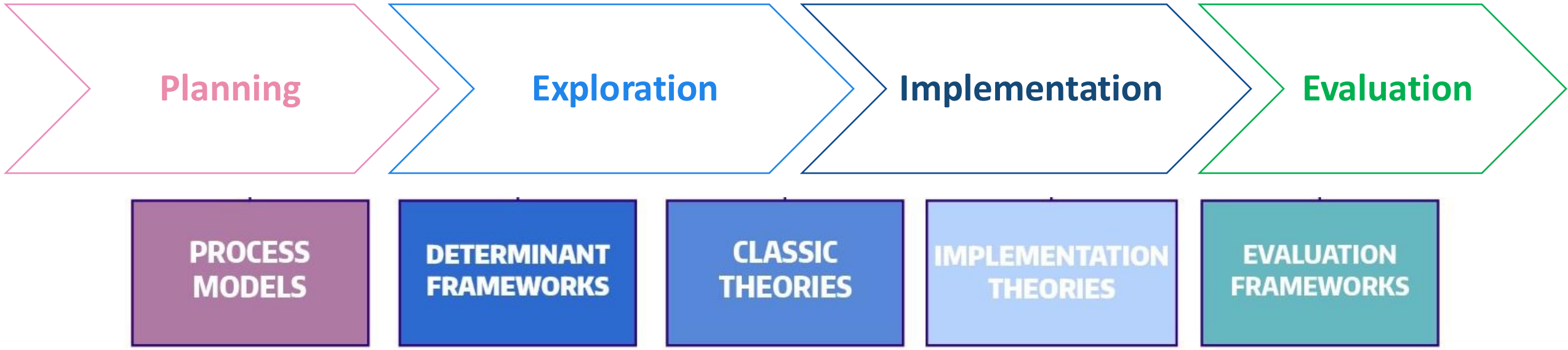


Framework

A structure for identifying factors that influence implementation.

IS Application:
To conduct a comprehensive evaluation of implementation

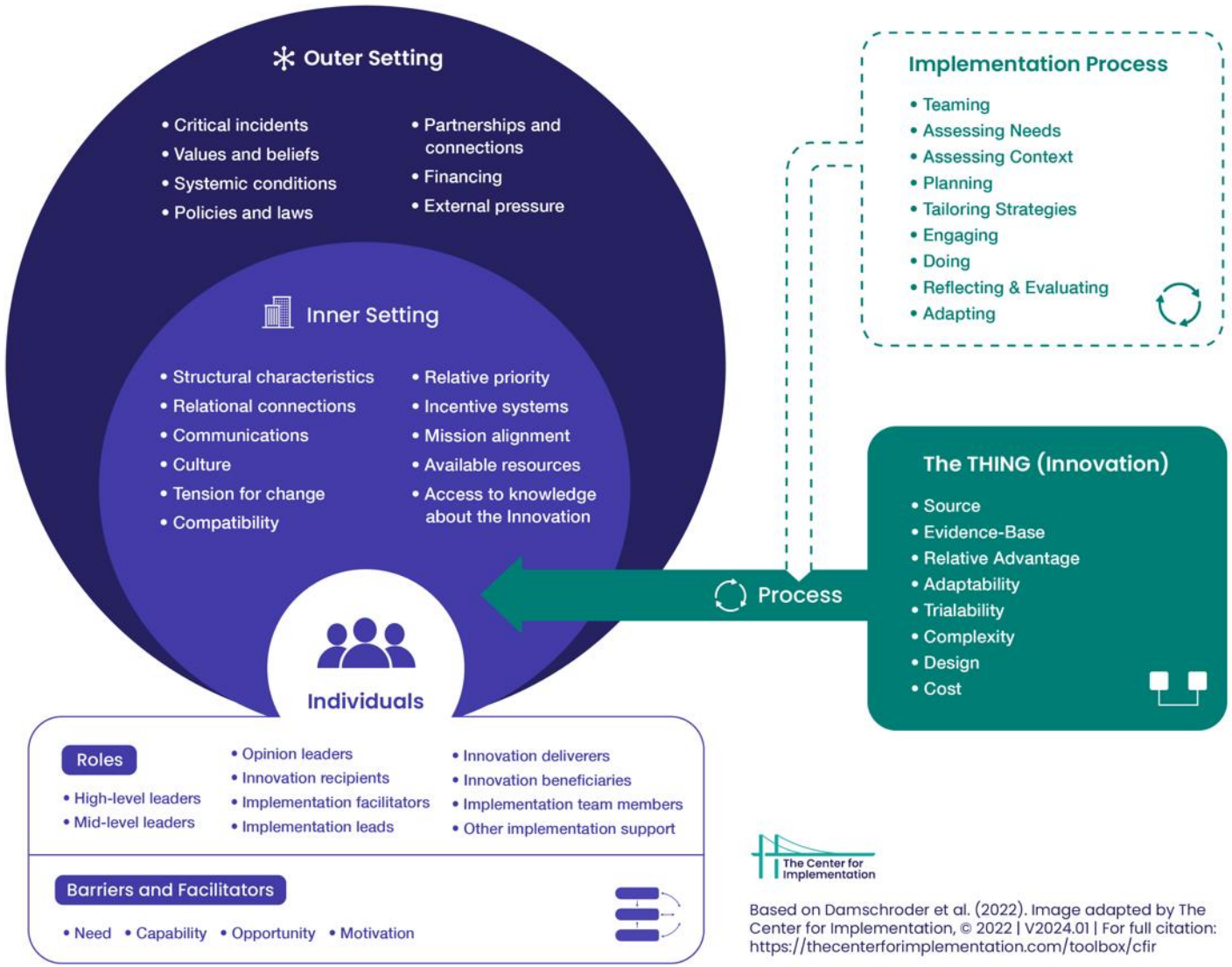
Theories, models, & frameworks stages



CFIR: A framework to identify barriers & assess readiness

Consolidated Framework for Implementation Research (CFIR)

www.cfirguide.org



What are the barriers to implementation in this setting?

Is this setting ready to implement a new practice?

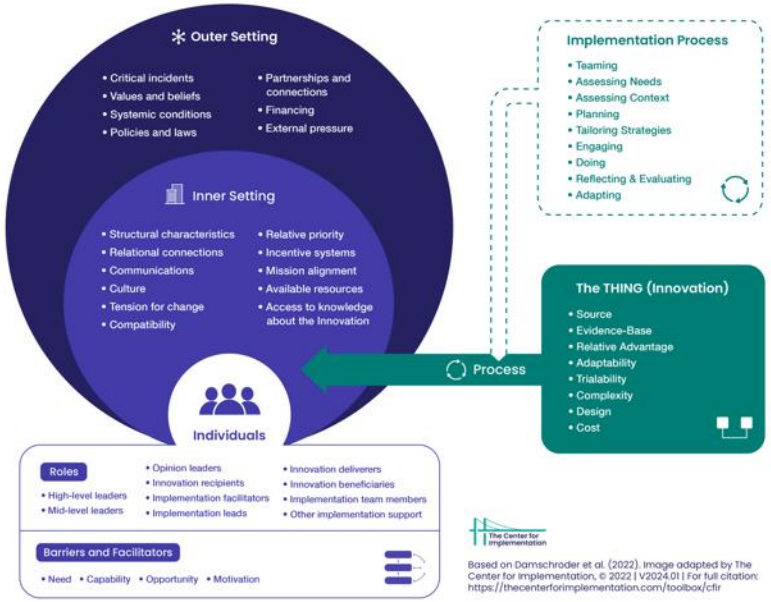
The Center for Implementation

Based on Damschroder et al. (2022). Image adapted by The Center for Implementation, © 2022 | V2024.01 | For full citation: https://thecenterforimplementation.com/toolbox/cfir

OOL OF PUBLIC HEALTH

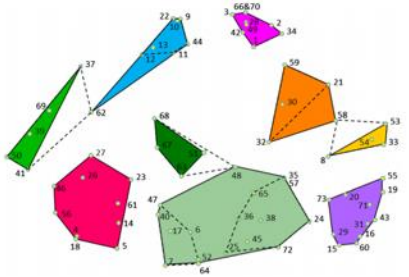
ERIC: A theory for selecting implementation strategies

Consolidated Framework for Implementation Research (CFIR)



Expert Recommendations for Implementing Change (ERIC)

- Engage consumers
- Use evaluative & iterative strategies
- Change infrastructure
- Adapt & tailor to the context
- Develop stakeholder interrelationships
- Utilize financial strategies
- Support clinicians
- Provide interactive assistance
- Train & educate stakeholders



Which strategies might facilitate implementation?

5 key ingredients for implementation science

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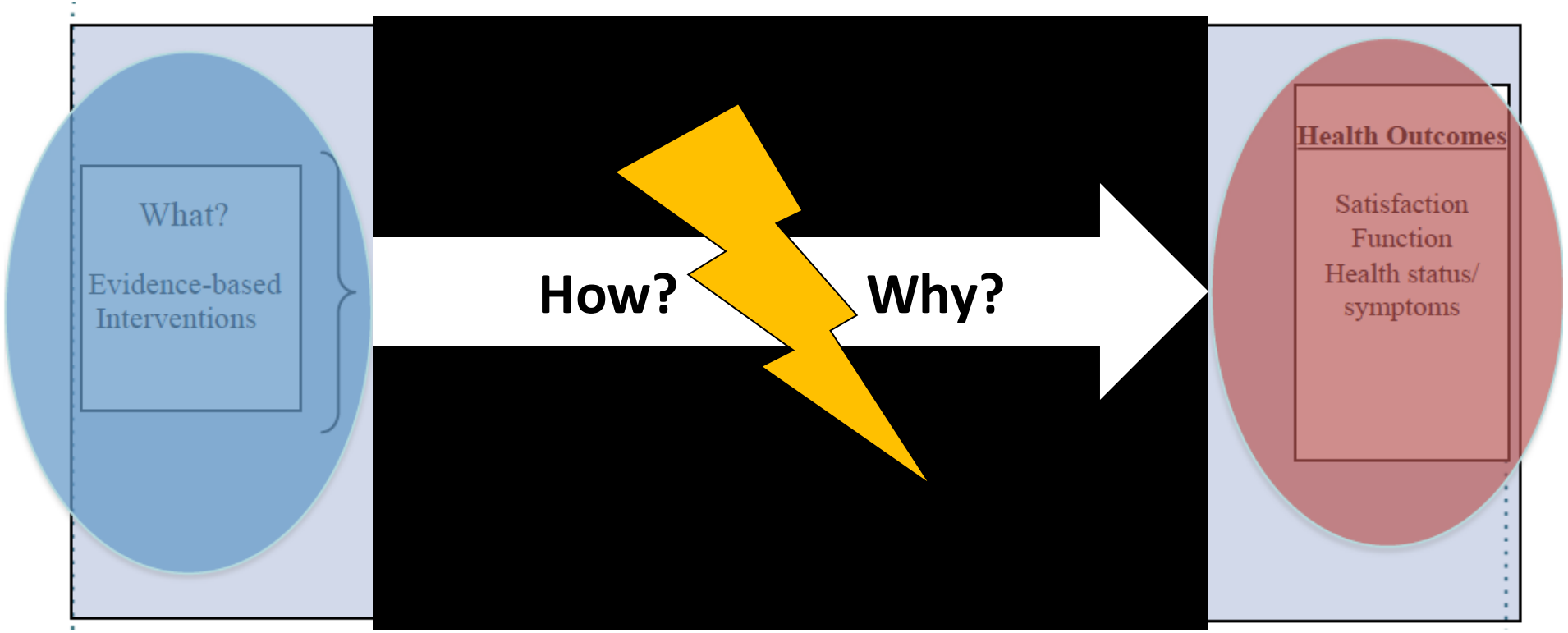
Multi-modal Evaluation Plans

Something is missing in most effectiveness research

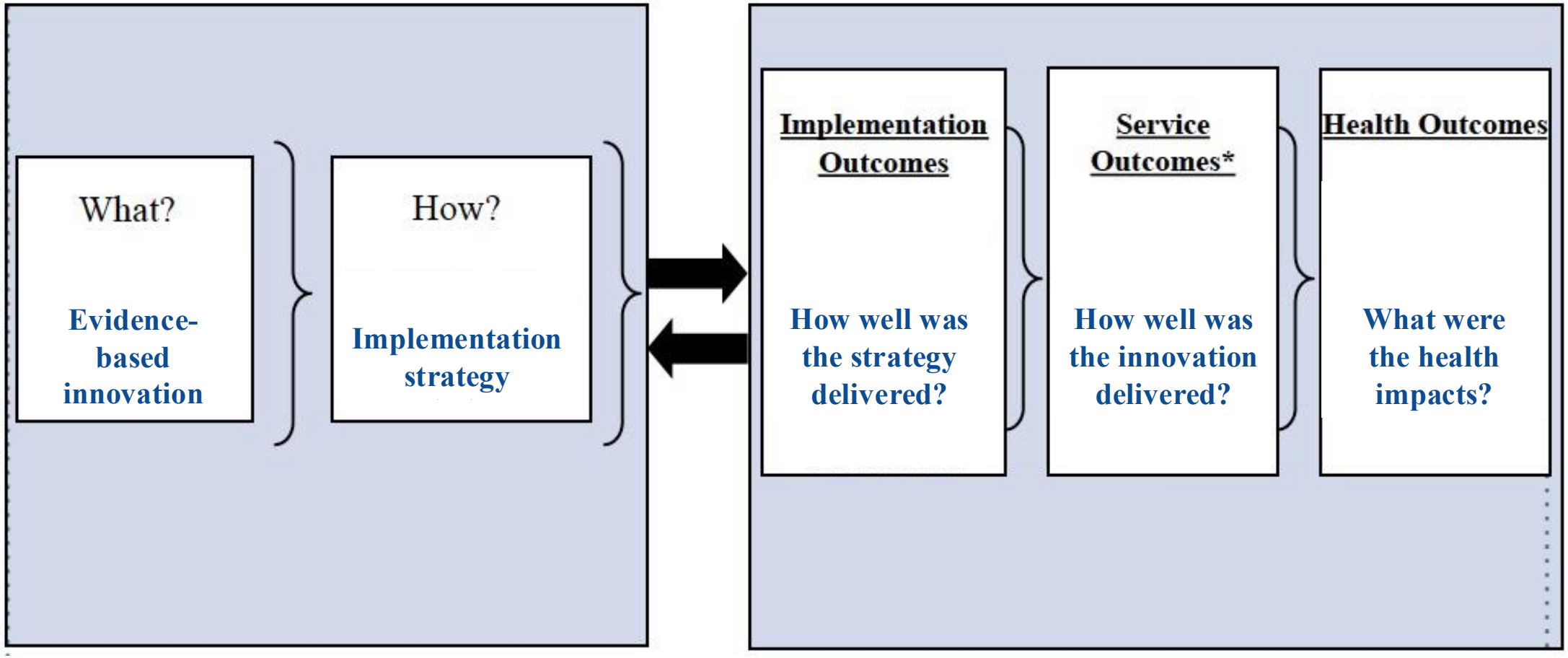


If the intervention does work, we won't know how.

If the intervention doesn't work, we won't know why.

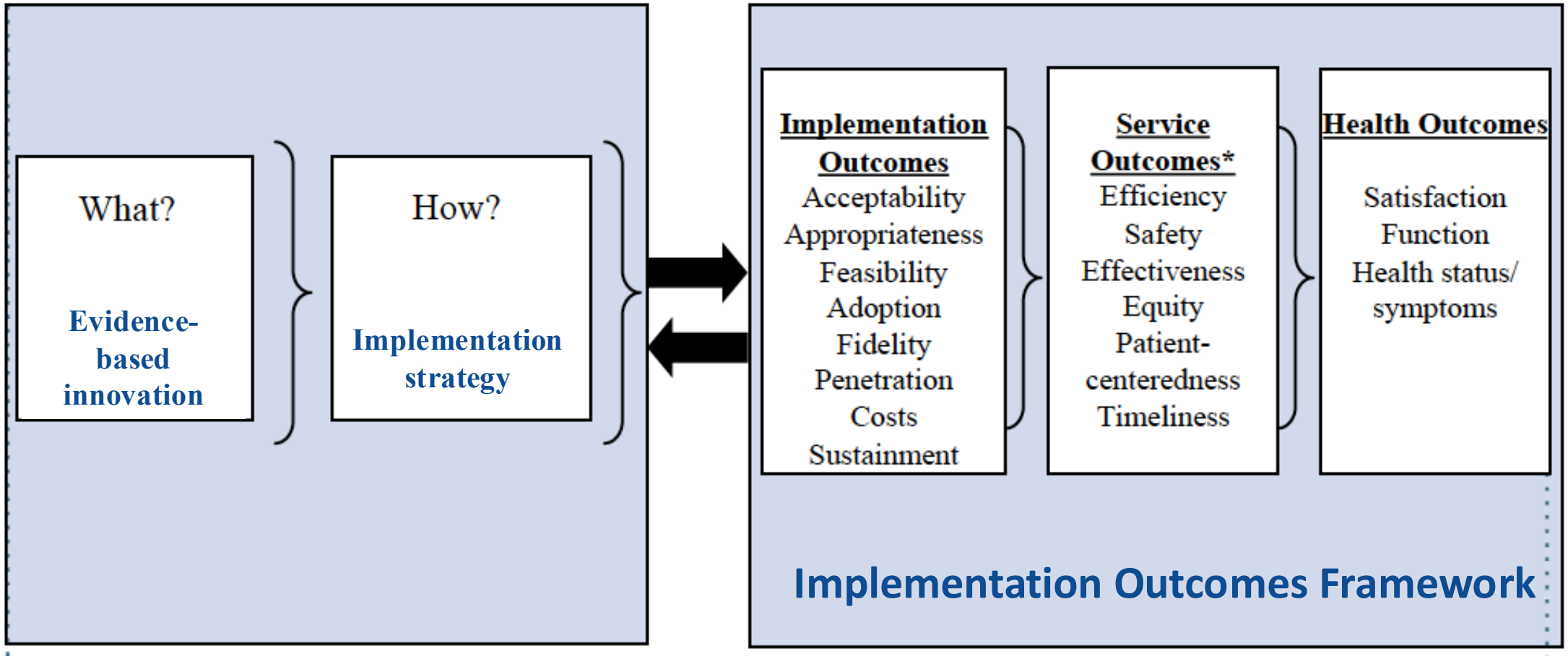
Slide adapted from Beidas, Lewis, Lane-Fall, Powell, D&I Conference, 2019

Process evaluations help answer "How?" & "How well?"…



Proctor et al Adm Policy Ment Health 2011

…through implementation & service outcomes.



Proctor et al Adm Policy Ment Health 2011

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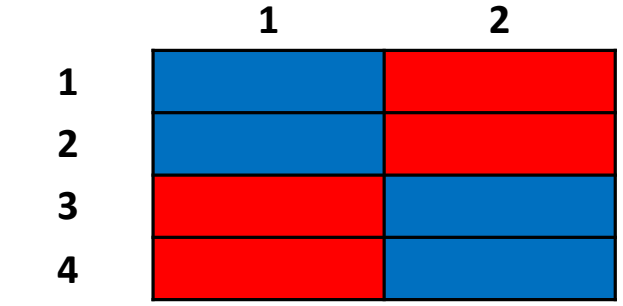
Study designs for quantitative evaluation of implementation

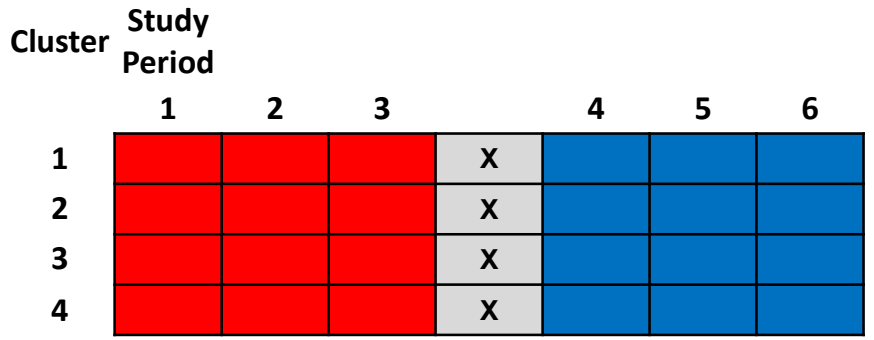
Pre-Post

Cluster	Study Period	
	1	2
1		
2		
3		
4		

Cluster-randomized



Quasi-experimental



Cluster	Study Period				
	1	2	3	4	5
1					
2					
3					
4					

Glasgow RE et al. Frontiers in Public Health. 2019.
Glasgow RE, Vogt TM, Boles SM. Am J Public Health 1999.

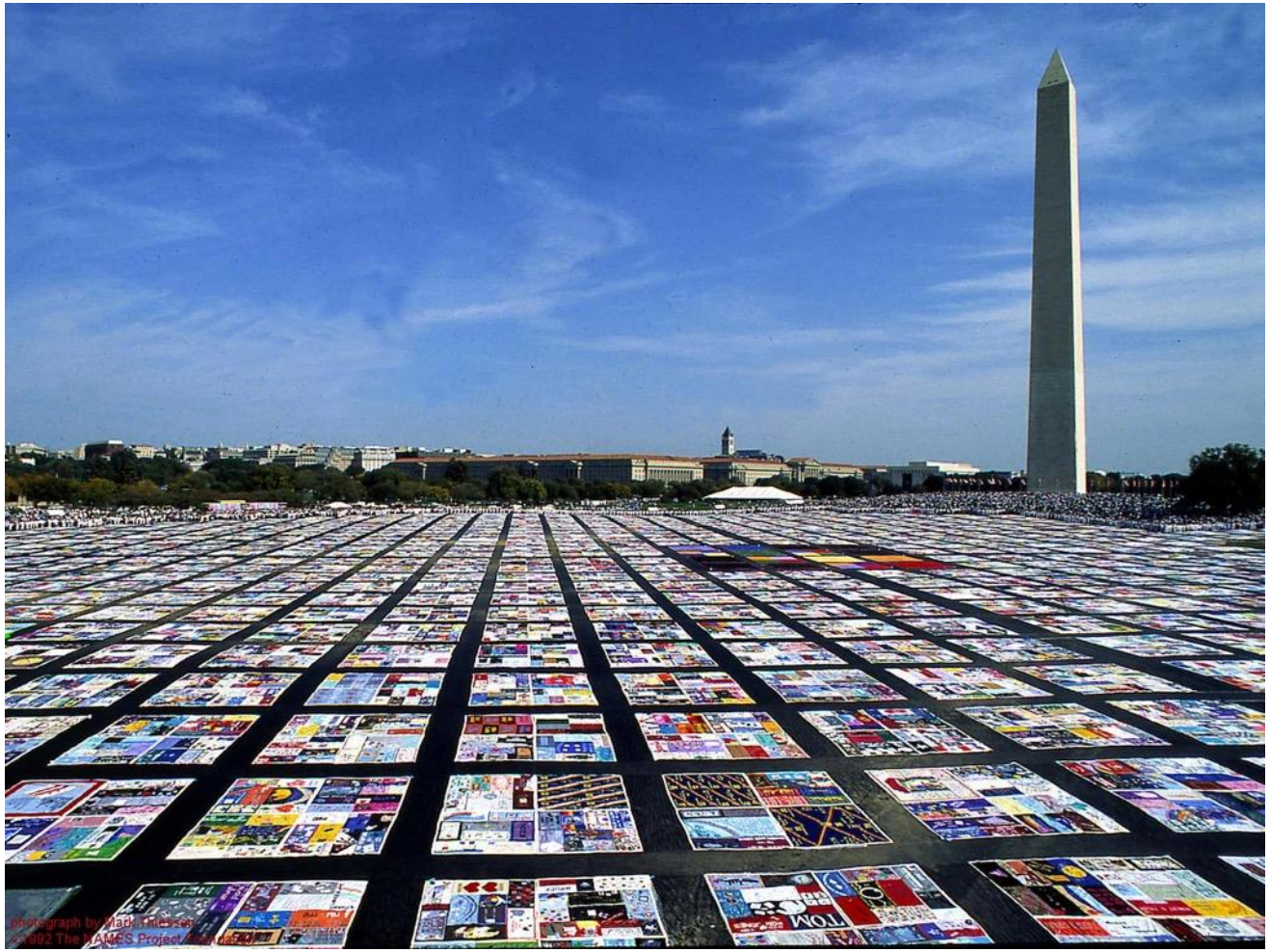
Qualitative & mixed-methods studies answer “Why?” & “How?” for both planning and evaluation

NIH NATIONAL CANCER INSTITUTE
Division of Cancer Control & Population Sciences

QUALITATIVE METHODS IN IMPLEMENTATION SCIENCE

1. Identifying barriers and facilitators
2. Assessing readiness for implementation
3. Tailoring interventions to the local context
4. Evaluating implementation processes
5. Engaging stakeholders for design research

Returning to our Example:
Antiretroviral Treatment (ART) as HIV Prevention



T4: Streamlined ART Implementation (START) Trial, 2013

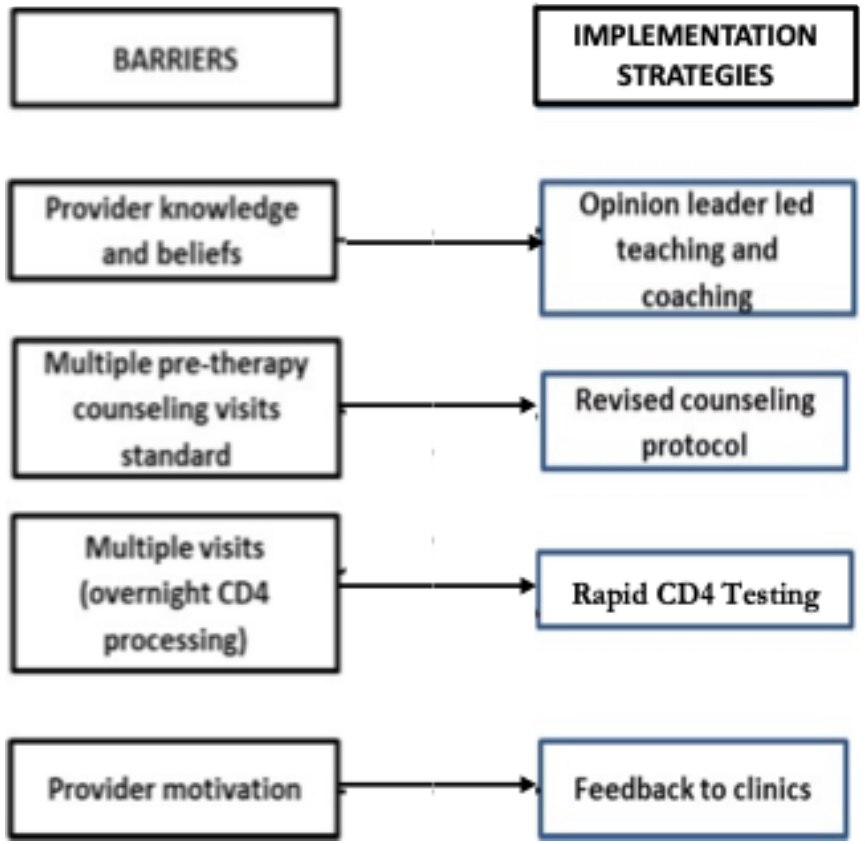
Implementation strategy

Understanding uptake of an intervention to accelerate antiretroviral therapy initiation in Uganda via qualitative inquiry

Fred C Semitala[1,2,3], Carol S Camlin[4], Jeanna Wallenta[5], Leatitia Kampiire[3], Richard Katuramu[3], Gideon Amanyire[2,3], Jennifer Namusobya[2], Wei Chang[5], James G Kahn[5], Edwin D Charlebois[6], Diane V Havlir[6], Moses R Kamya[1,2,3] and Elvin H Geng[6]

Cluster	Study Period				
	1	2	3	4	5
1					
2					
3					
4					

Theory-informed Design of Implementation Strategy



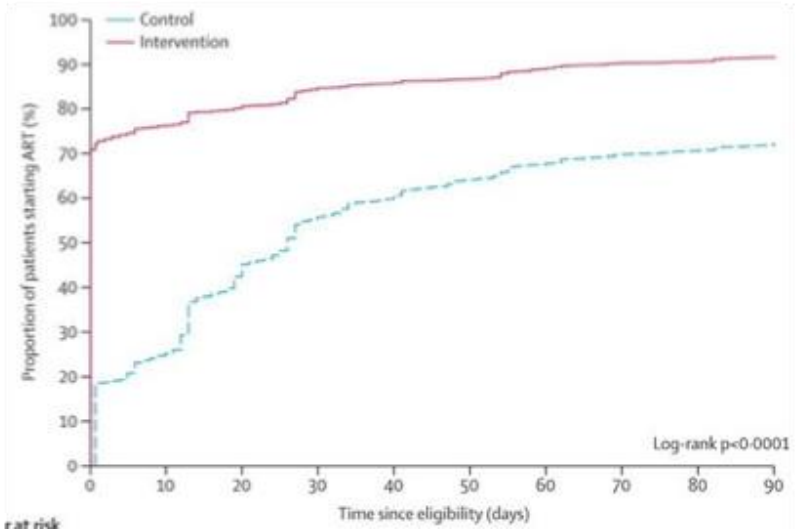
Semitala FC et al. J Int AIDS Soc 2017

T4: Streamlined ART Implementation (START) Trial Results, 2018

Implementation strategy

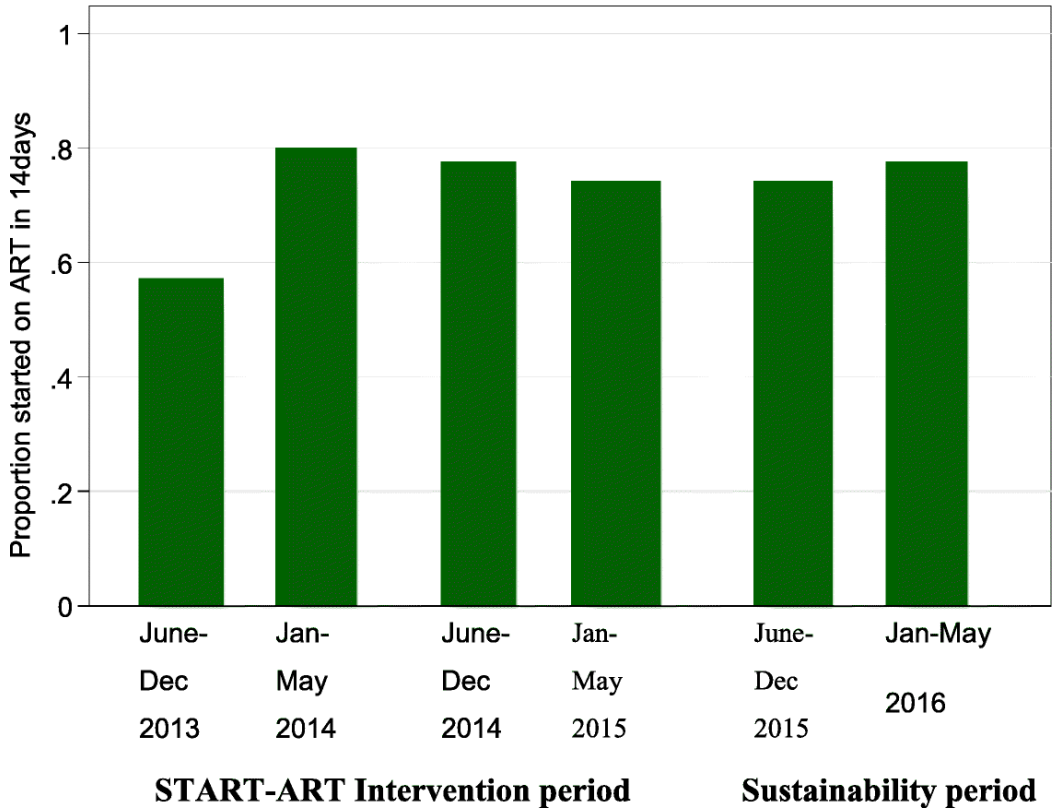
Effects of a multicomponent intervention to streamline initiation of antiretroviral therapy in Africa: a stepped-wedge cluster-randomised trial

Gideon Amanyire, Fred C Semitala, Jennifer Namusobya, Richard Katuramu, Leatitia Kampiire, Jeanna Wallenta, Edwin Charlebois, Carol Camlin, James Kahn, Wei Chang, David Glidden, Moses Kamya, Diane Havlir, Elvin Geng



1° Implementation Outcome

Multi-modal Evaluation



Amanyire G et al. Lancet 2018
Katuramu et al Implement Sci Comm 2020

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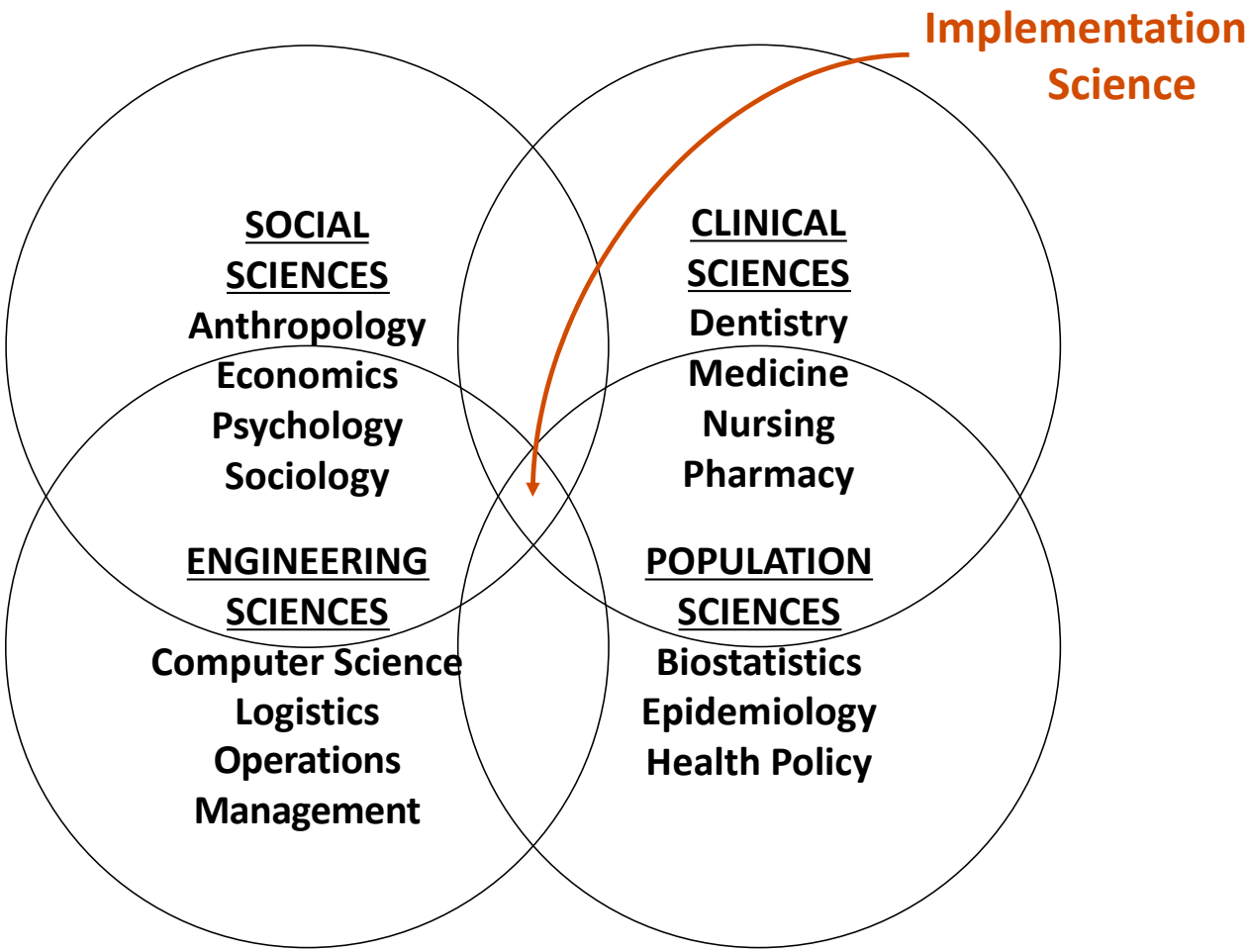
3 Common Misconceptions & Open Questions about IS

- "I don't know anything about implementation science!"
- "Can implementation science really be called a science?"
- "Isn't it too early to think about implementation?"

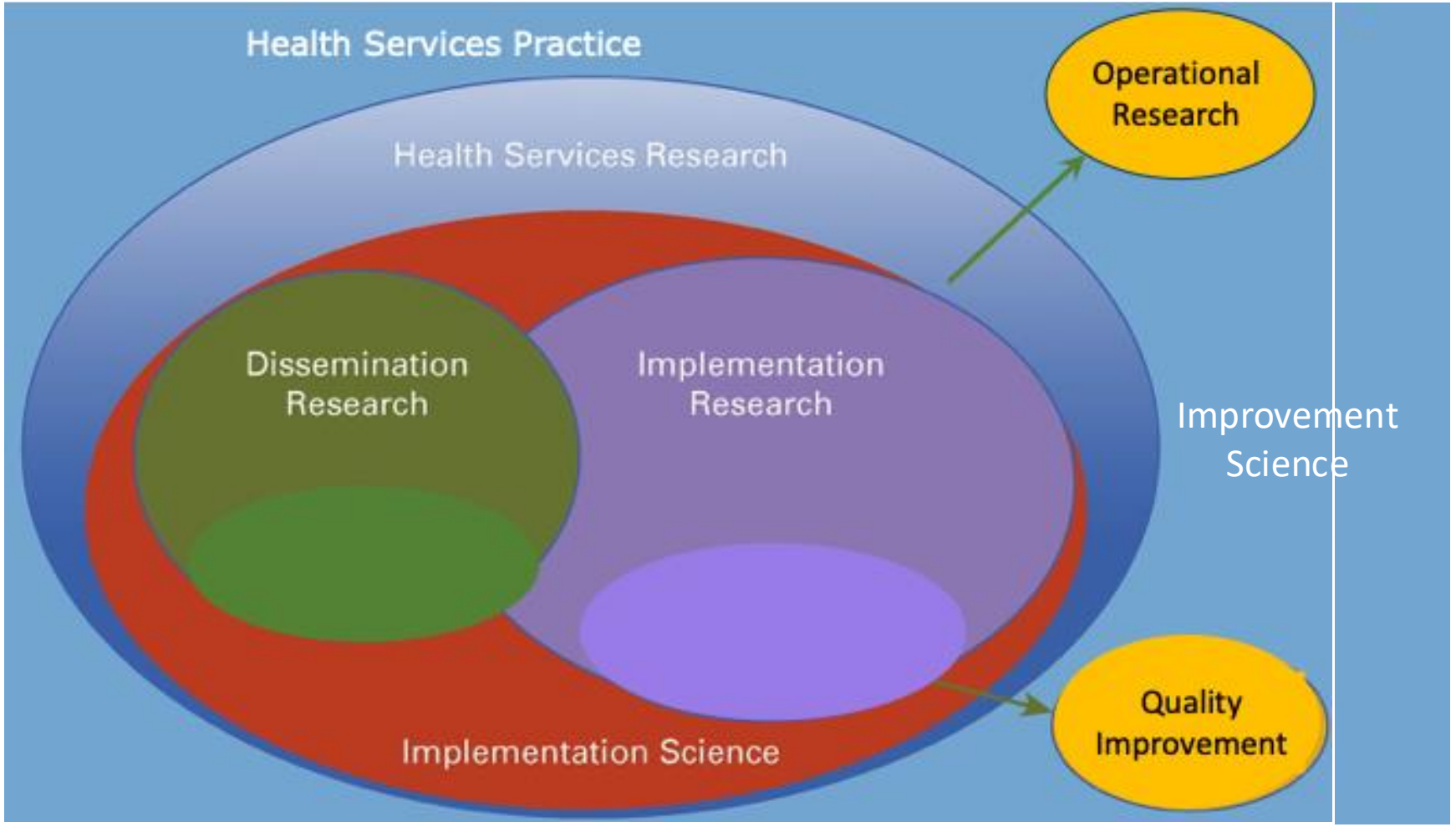
The capacity for implementation science often already exists

~~"I don't know anything about implementation science"~~



IS seeks to create generalizable knowledge on implementation

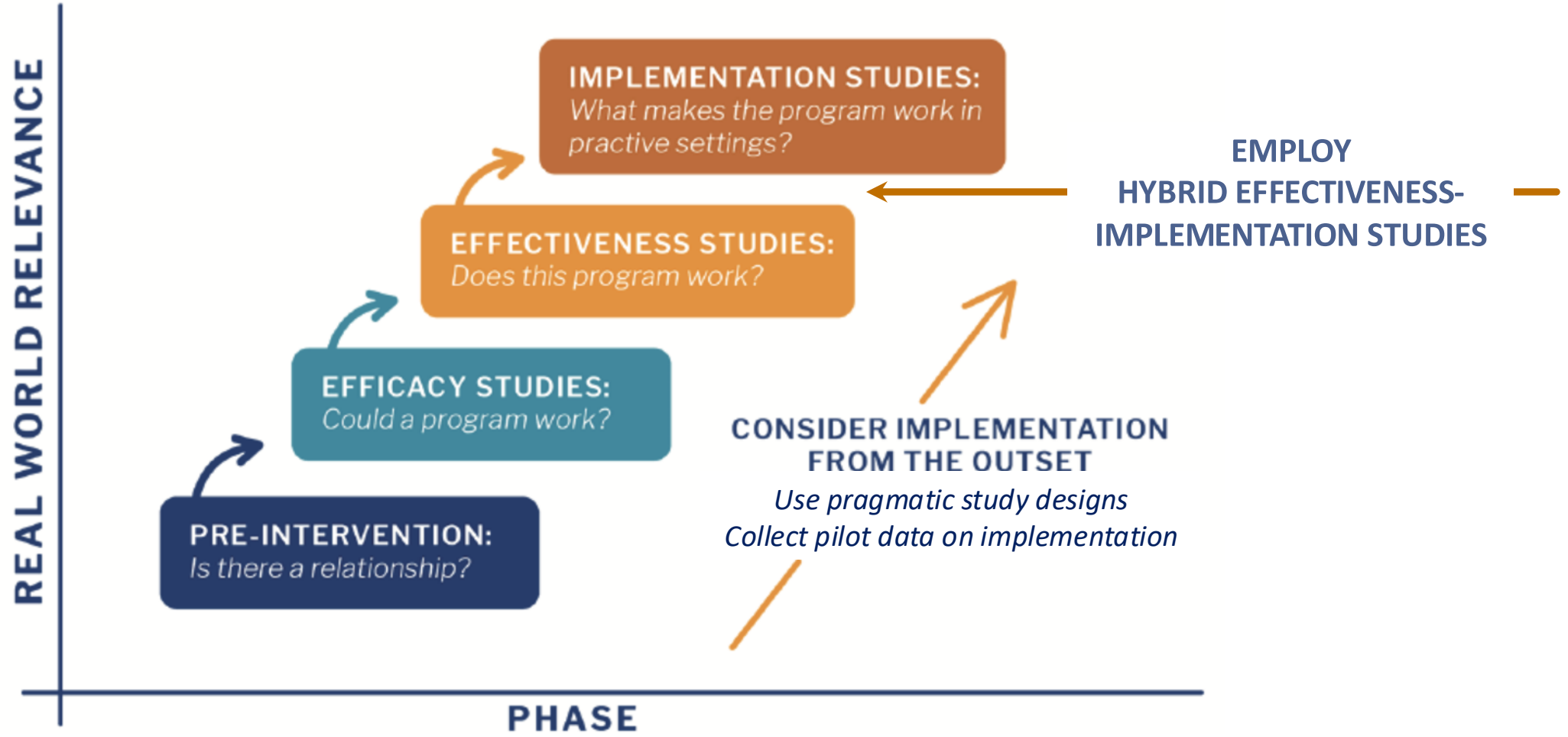
~~"Implementation science is not a science"~~



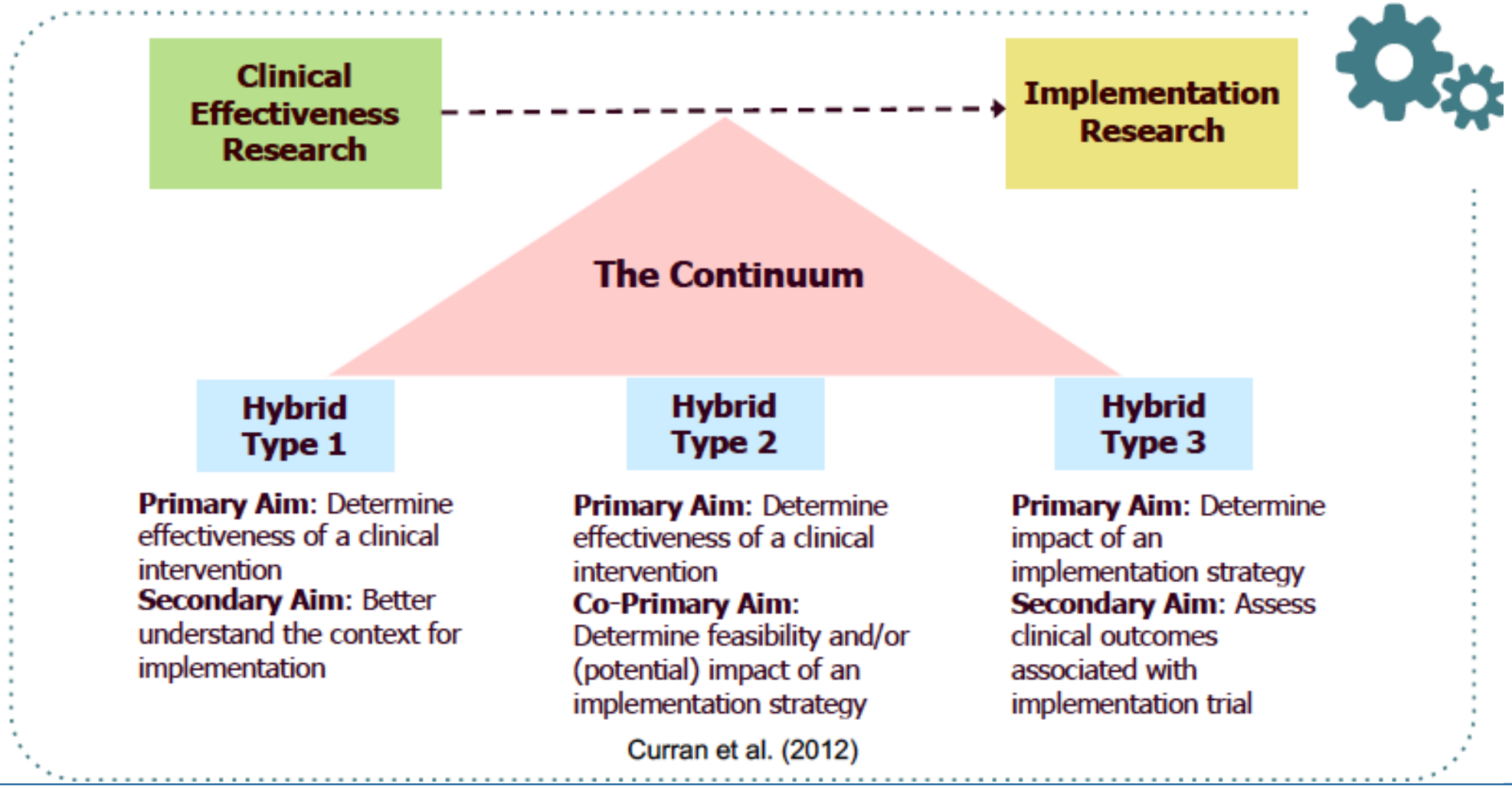
Adapted from Mitchell et al Journal of Oncology Practice 2017

"It's never too early to think about implementation"

~~"Isn't it too early to think about implementation?"~~



Three types of hybrid designs



Slide courtesy of Beidas, Lewis, Lane-Fall, Powell, D&I Conference, 2019

Take Home Points: Implementation Science Made Simple

- The intervention/practice/innovation is **THE THING**
- Implementation strategies are the stuff we do to try to help people/places **DO THE THING**
- Main implementation outcomes are **HOW WELL** they **DO THE THING**

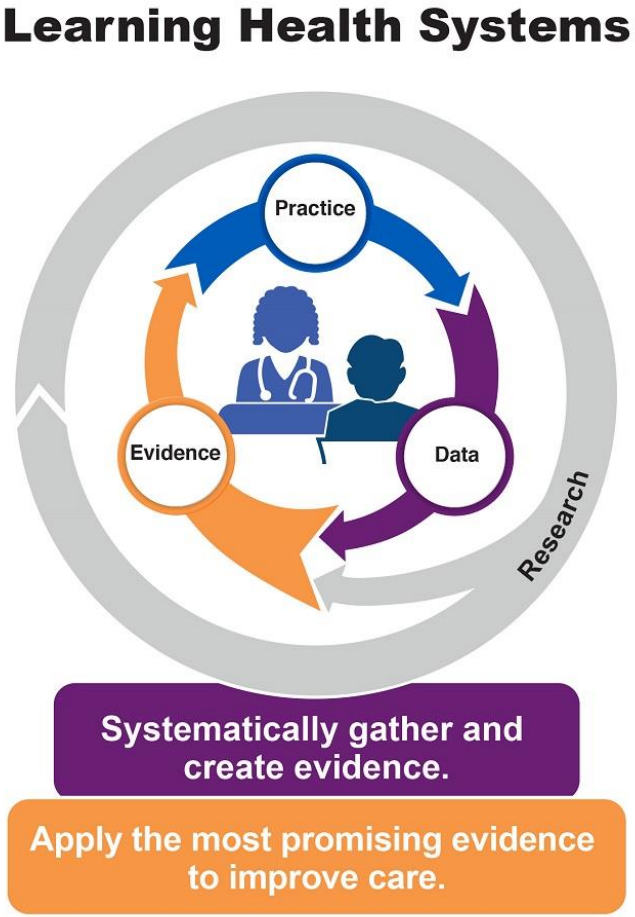
What are we learning?

COMMENTARY

The Science of Improvement

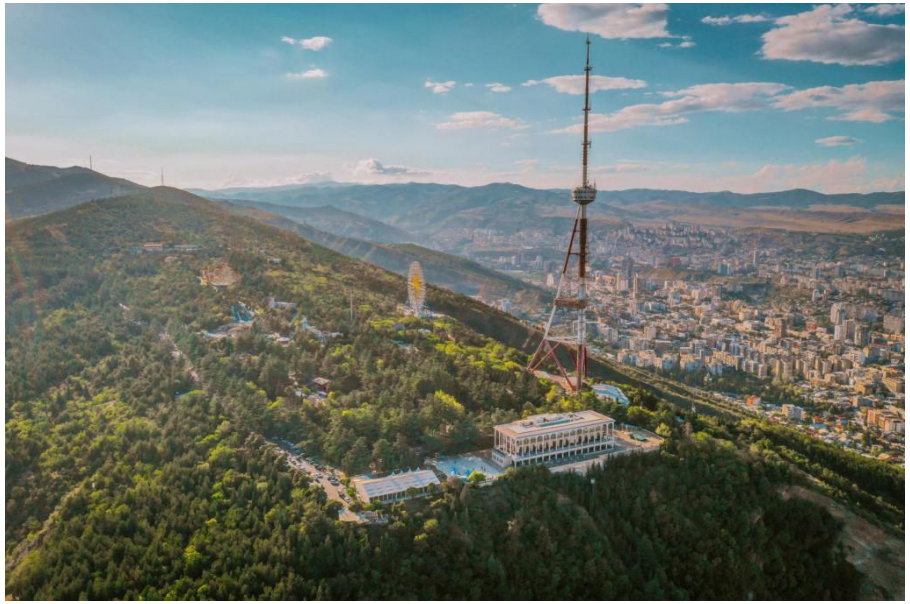
Donald M. Berwick, MD, MPP, FRCP

"Where is the randomized trial?" is, for many purposes, the right question, but for many others it is the wrong question, a myopic one. A better one is broader: "What is everyone learning?"



Berwick DM JAMA 2008

Thank you & let’s scale the heights of D&I Science together!



Questions?

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