

# Implementation Science – An Introduction

Co-presented by Rinad S. Beidas, PhD, &  
Meghan B. Lane-Fall, MD, MSHP, FCCM

Advancing Environmental Health Equity Through  
Implementation Science | February 28<sup>th</sup>, 2022



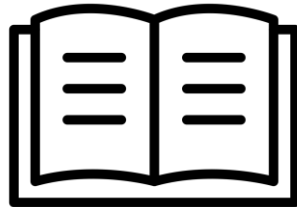
# What we'll discuss today

About us



Foundations

What is it?



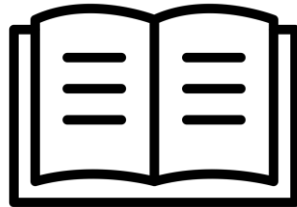
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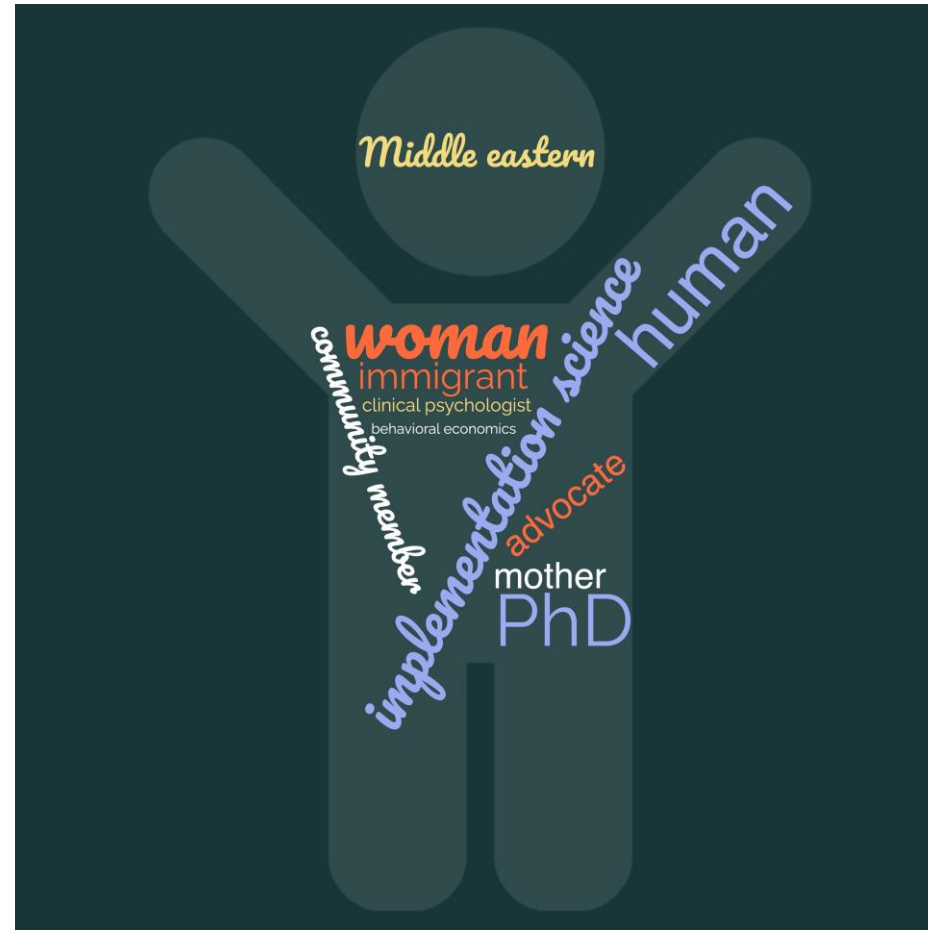
What is it?



Applications

# Positionality statement:

## *Rinad Beidas*

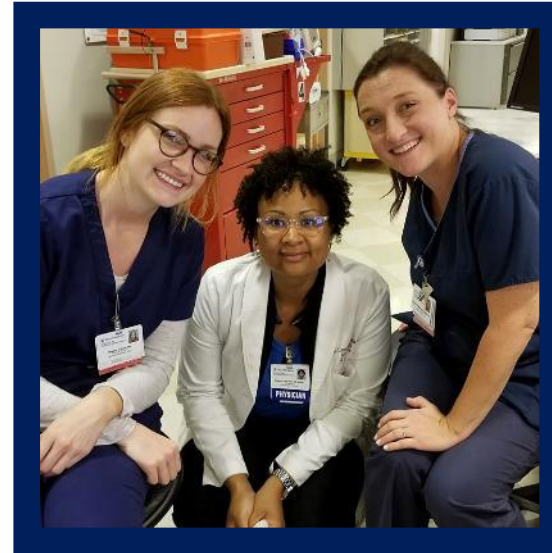


# Positionality statement:

## *Meghan Lane-Fall*



anesthesiologist



intensivist



health services  
researcher



# Our shared vision

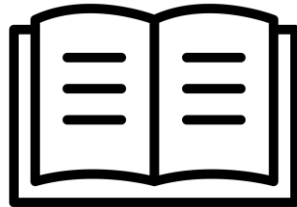
We believe that  
implementation science  
can allow us to  
*move the needle,*  
*achieve the promise of*  
*scientific discovery,*  
and *transform health and*  
*health care equitably.*

About us



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Applications

the **study of methods** to promote  
the adoption and **integration** of  
**evidence-based practices**, interventions,  
and policies into routine health care and  
public health settings  
to **improve population health**





The NIEHS supports the use of implementation science to improve environmental public health through the **adaptation**, uptake, **sustainment** and **spread** of evidence-based interventions, practices, and policies that prevent or **mitigate harmful exposures and support environmental health equity.**



# Implementation science has its own set of assumptions and foci

The work can not be done without partners

Implementation science outcomes are different from traditional efficacy and effectiveness studies

Context is not seen as a nuisance

There is an evidence-based "thing" to be implemented

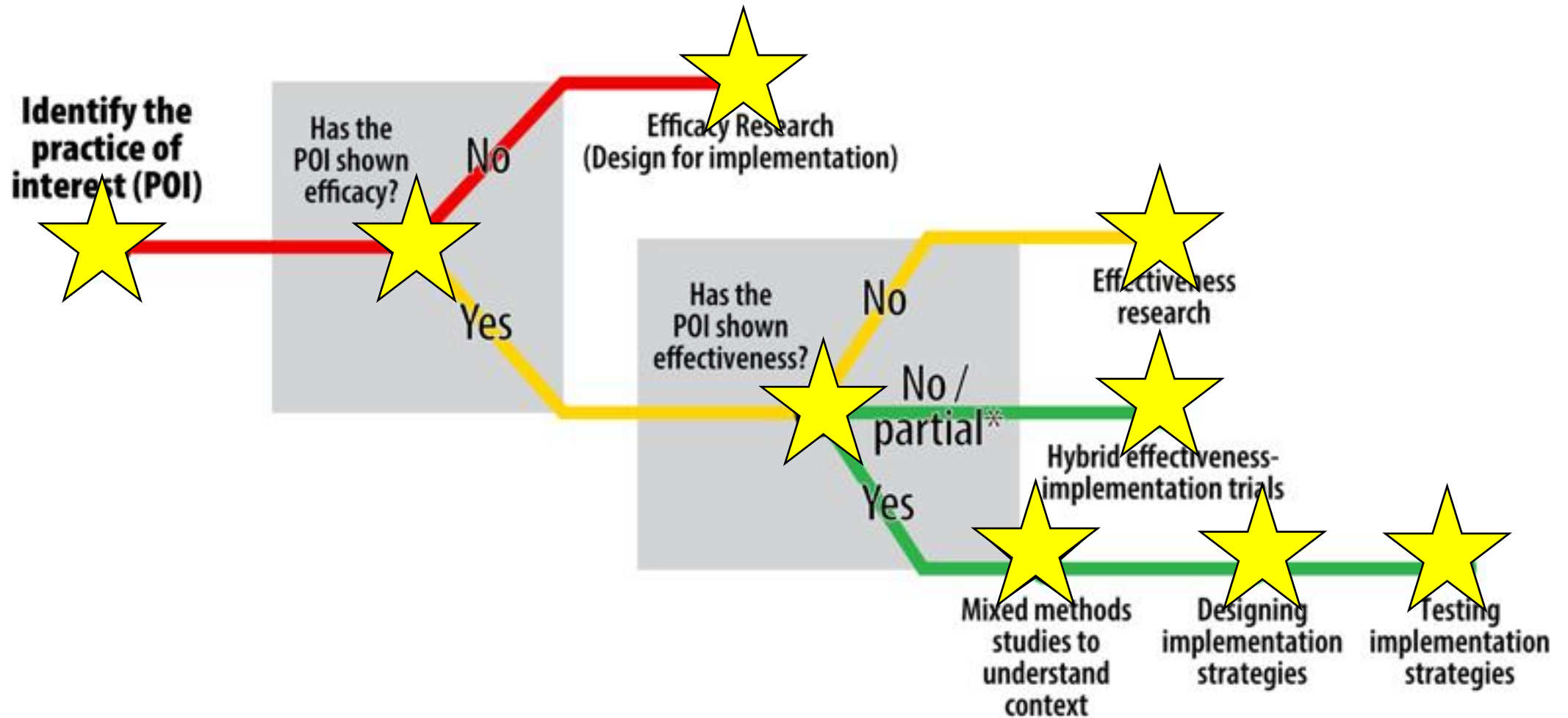
We have a set of specific frameworks, methods, and strategies

# Implementation science also has commonalities with other disciplines

Community engagement and co-creation is paramount

Health equity is foundational

We use study designs and methods commonly used including RCTs, quasi-experimental designs, stepped wedge, etc.

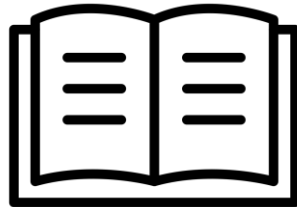


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# Ten crucial ingredients of IS grant proposals

1. The care/quality gap
2. The evidence-based practice
3. Conceptual models
4. Stakeholder engagement
5. Readiness for adoption
6. Implementation strategies
7. Team experience
8. Feasibility
9. Measurement & analysis
10. Policy / funding environment



# Ten core IS concepts

1. The care/quality gap
2. The evidence-based practice (“the thing”)
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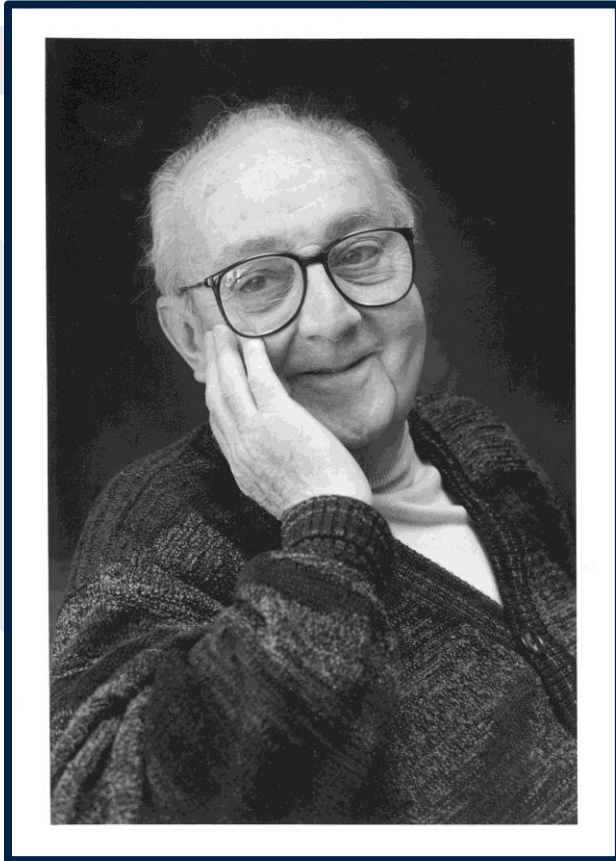


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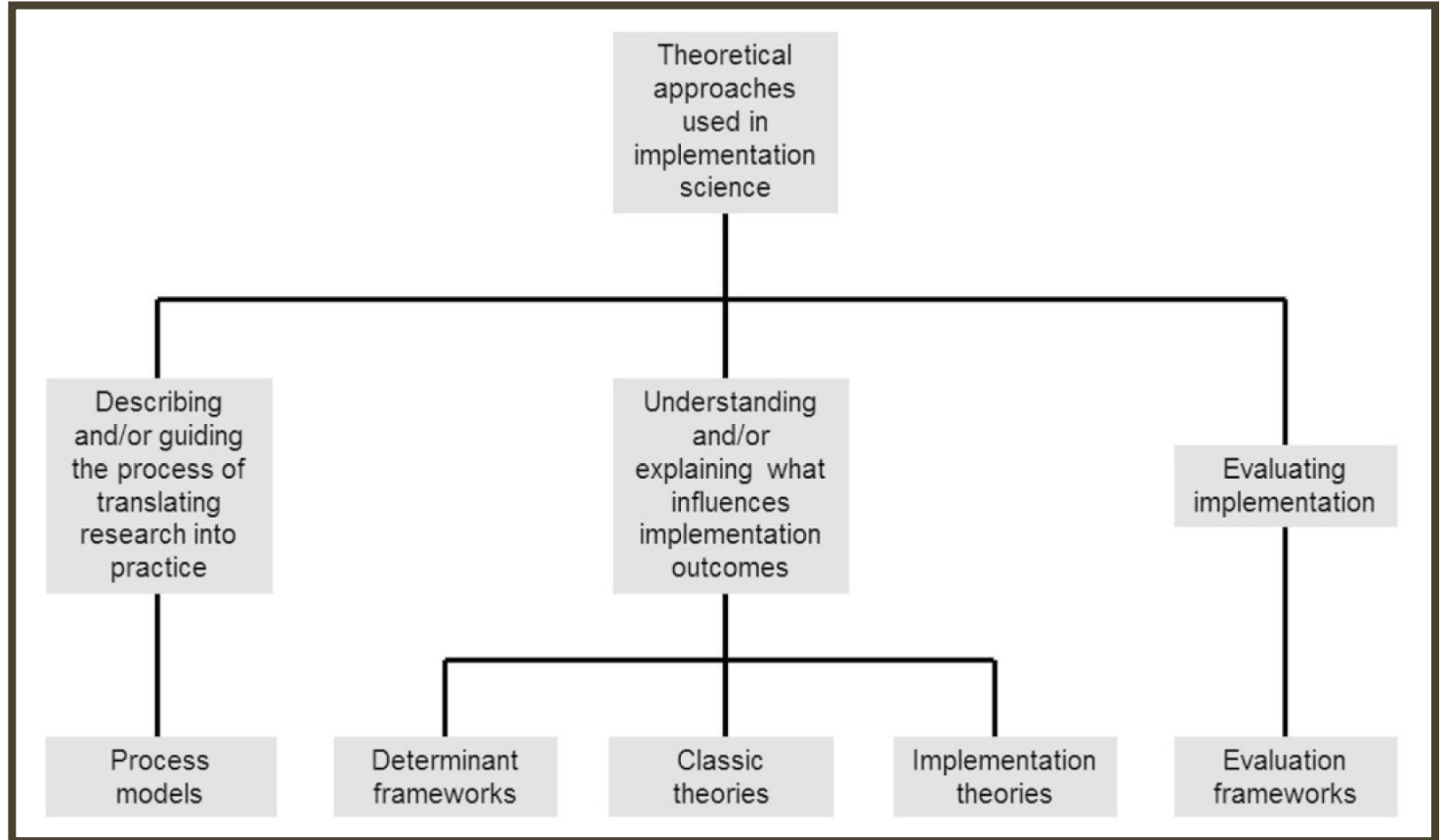
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# Implementation science relies heavily on theories, models, and frameworks

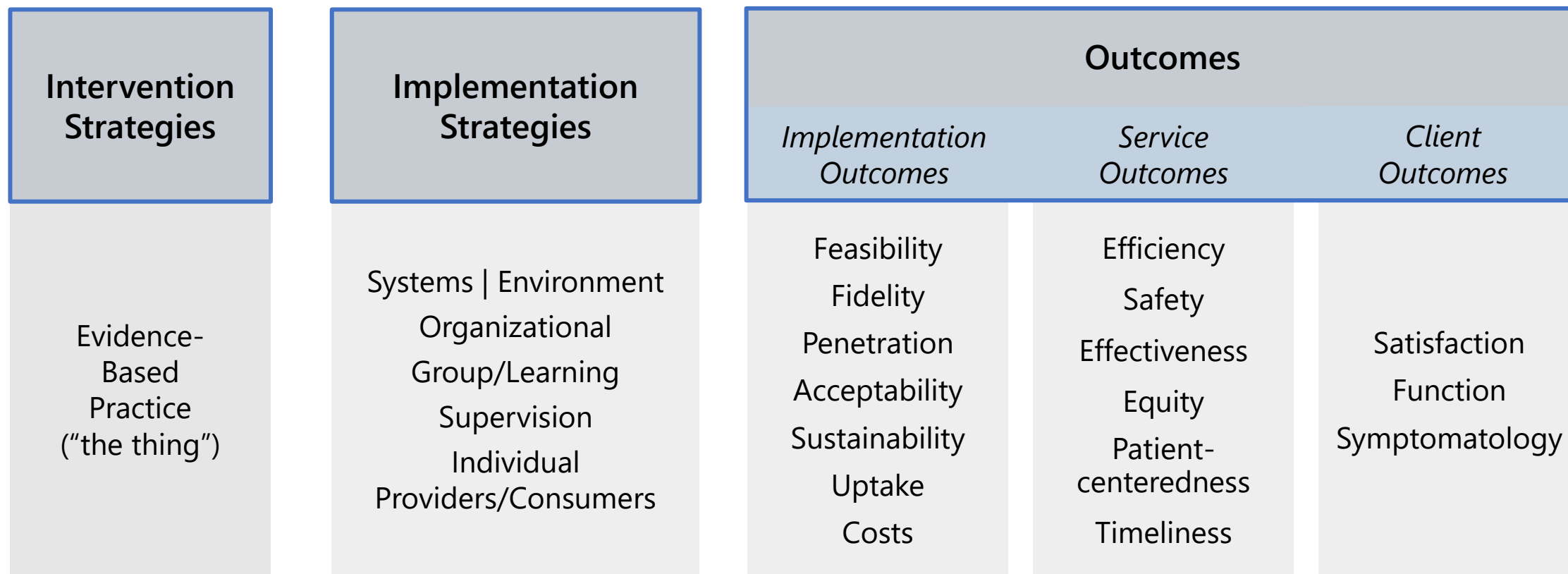


George E. P. Box

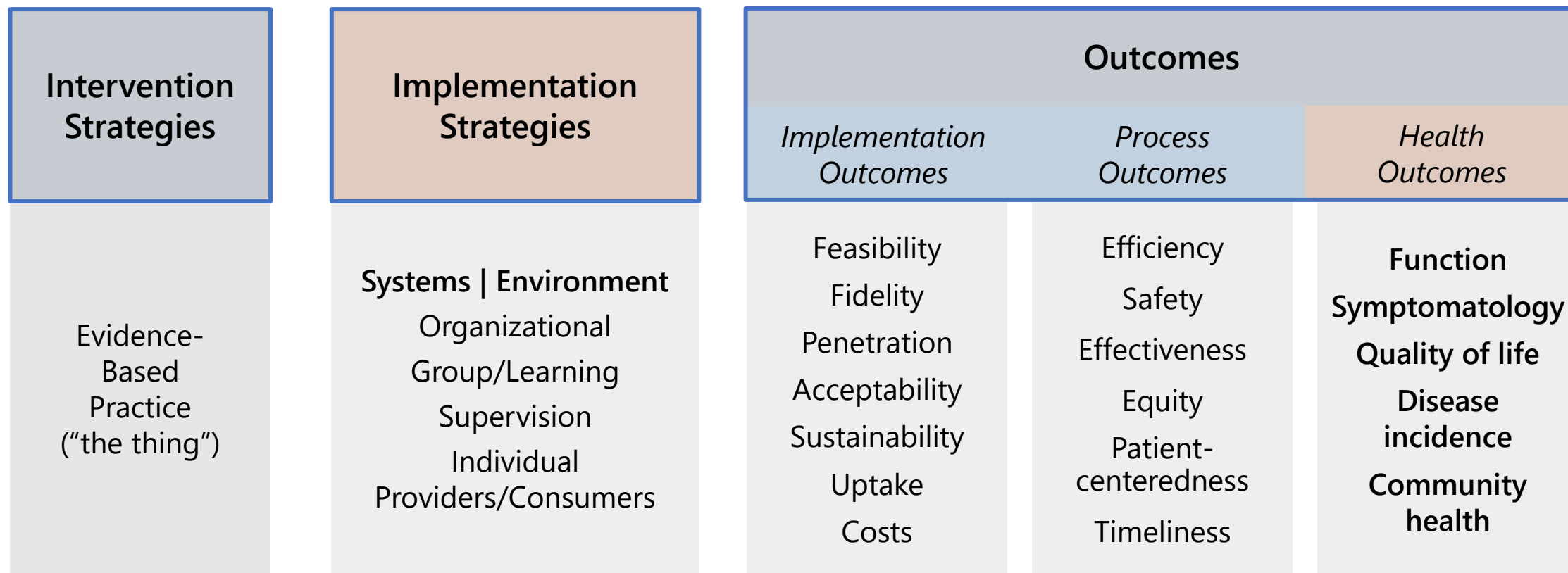


**Source.** Nilsen P. Making sense of implementation theories, models, and frameworks. *Implement Sci* 2015; 10:53.

# Relating interventions & strategies to outcomes



# Relating interventions & strategies to outcomes



# Why theories, frameworks, and models are useful

- Represent a **common language**
- Guide the process of research by **structuring design & measurement**
- Allow **cross-comparison**
- Help with **operationalizing theory**
- Ensure **consideration of relevant variables**, like equity

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# Implementation strategies: the “how” of implementation

## Planning

- Develop leadership
- Build engagement
- Assess context

## Education

- Develop educational materials
- Train-the-trainer
- Provide ongoing consultation

## Restructuring

- Revise professional roles
- Create new teams
- Facilitate relay of clinical data to providers

## Quality management

- Develop and organize quality management systems
- Audit and feedback
- Provide clinical supervision

## Finance

- Institute incentives or penalties
- Alter incentives
- Alter formularies
- Change billing procedures

## Policy

- Change liability laws
- Change credentialing standards
- Change accreditation requirements

**Source.** Powell *et al.* A compilation of strategies for implementing clinical innovations in health and mental health. *Med Care Res Rev* 2012

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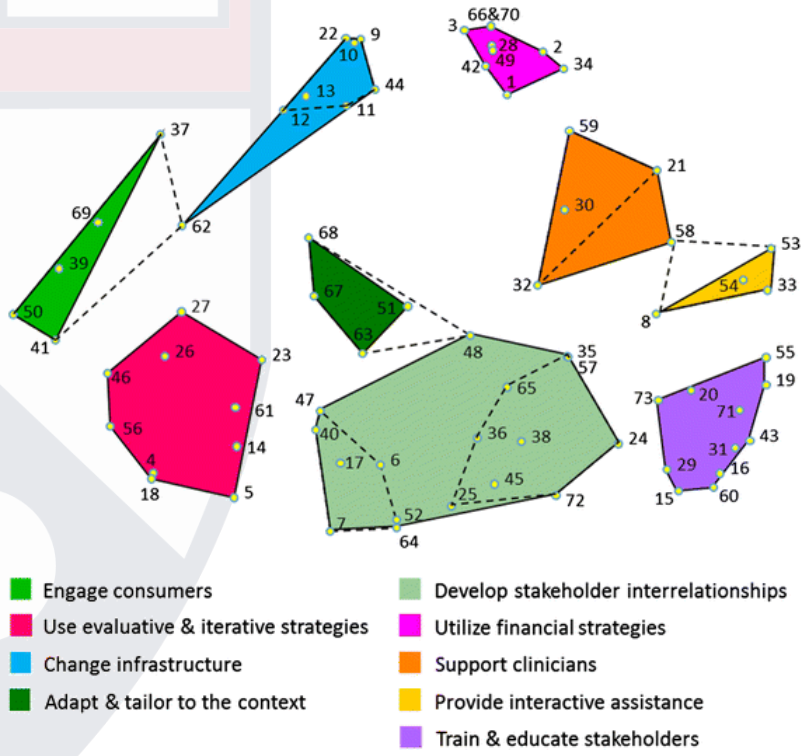
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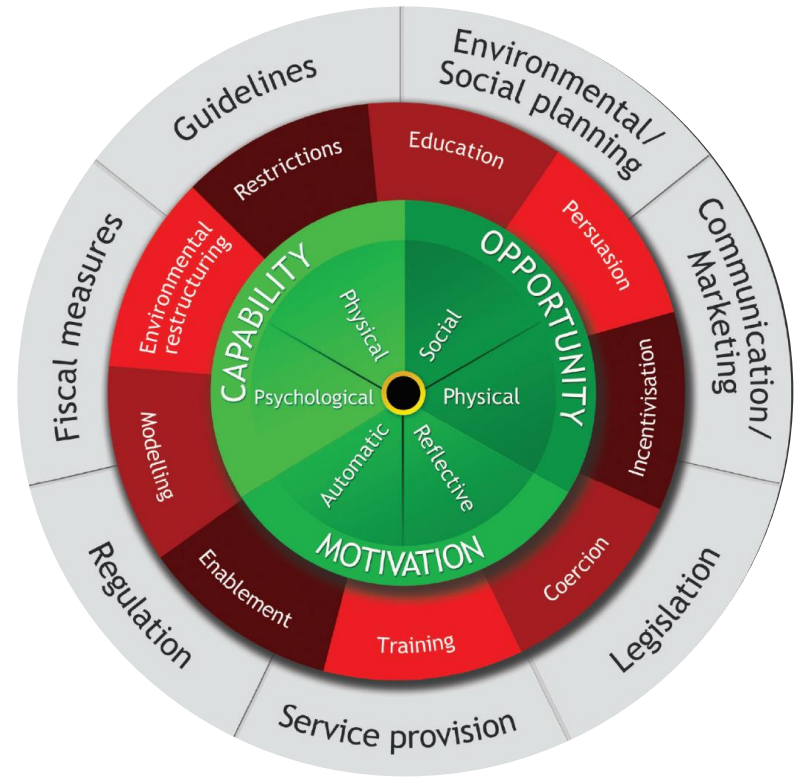
**Source.** Powell *et al.* A compilation of strategies for implementing clinical innovations in health and mental health.  
*Med Care Res Rev* 2012



# There are multiple ways to select implementation strategies



**Sources.** Powell BJ *et al.* *Implement Sci* 2015;10:21  
 Waltz TJ *et al.* *Implement Sci* 2015;10:109.



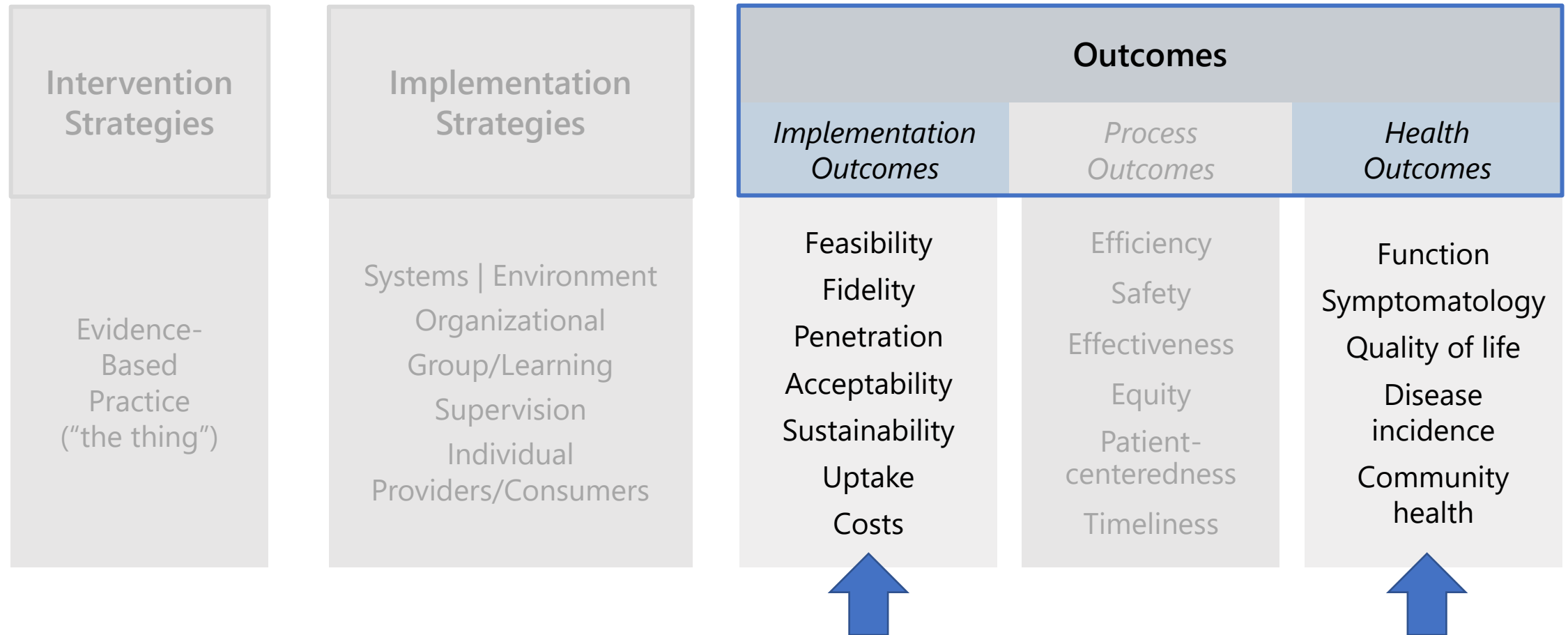
**Source.** Michie S, Atkins L, and West R. *Behavioural Change Wheel*. Silverback Publishing, 2014

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# Implementation outcomes are distinct



## QUALITATIVE METHODS IN IMPLEMENTATION SCIENCE

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A few  
words  
about  
qualitative  
and mixed  
methods

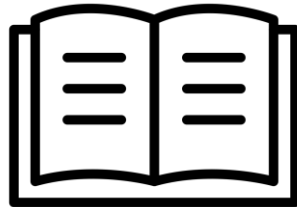
Qualitative & mixed methods offer **nuance** and **depth** in the characterization of implementation outcomes

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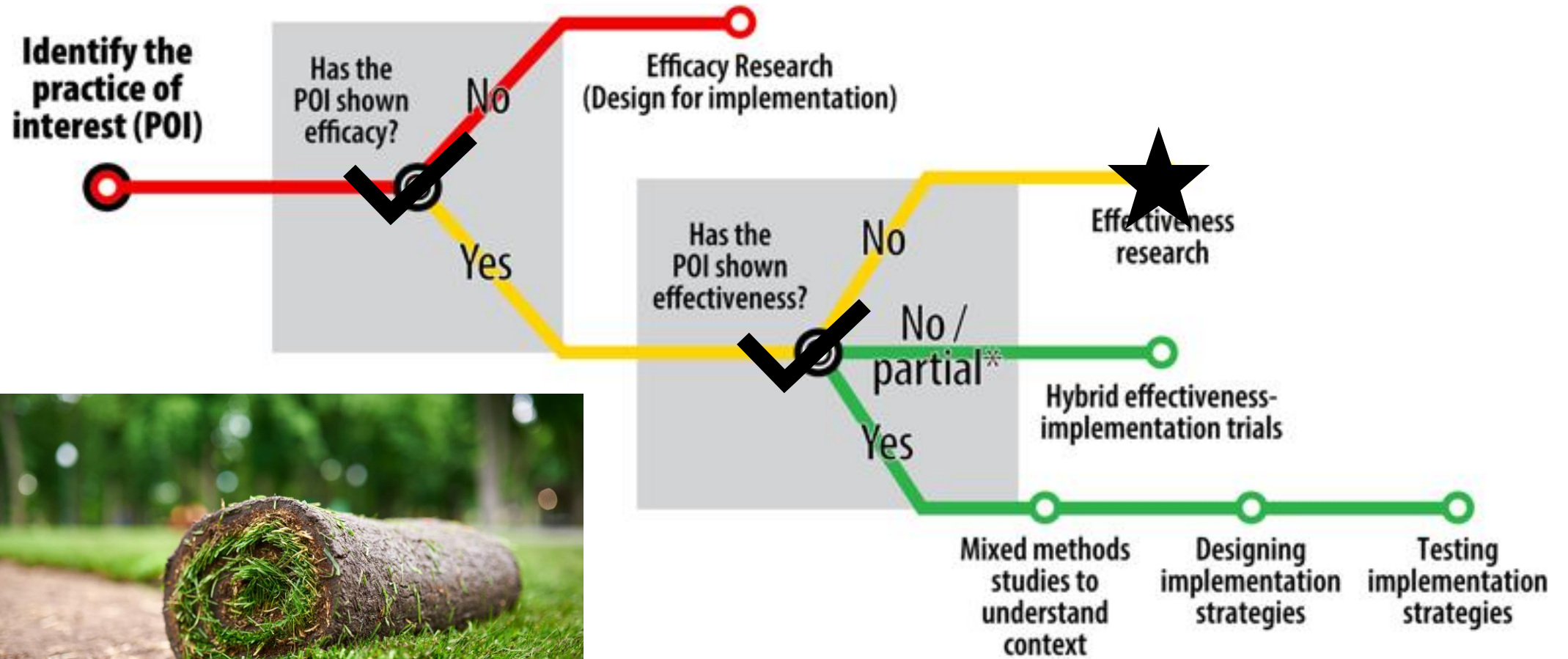


Applications



**Interventions ripe  
for implementation  
science in the  
environmental  
health space**







# Place based interventions such as urban greening

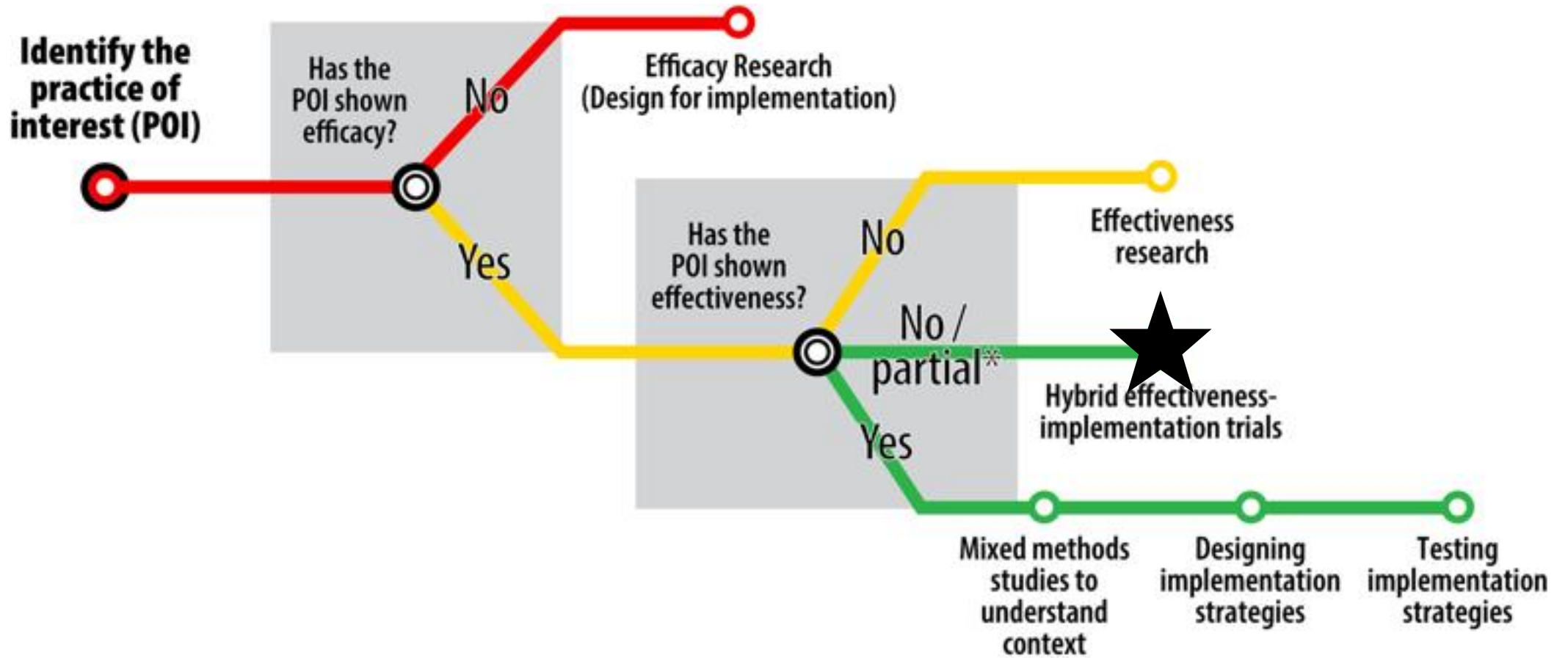


Focus on environmental  
health equity

Strong community  
engagement and  
co-creation

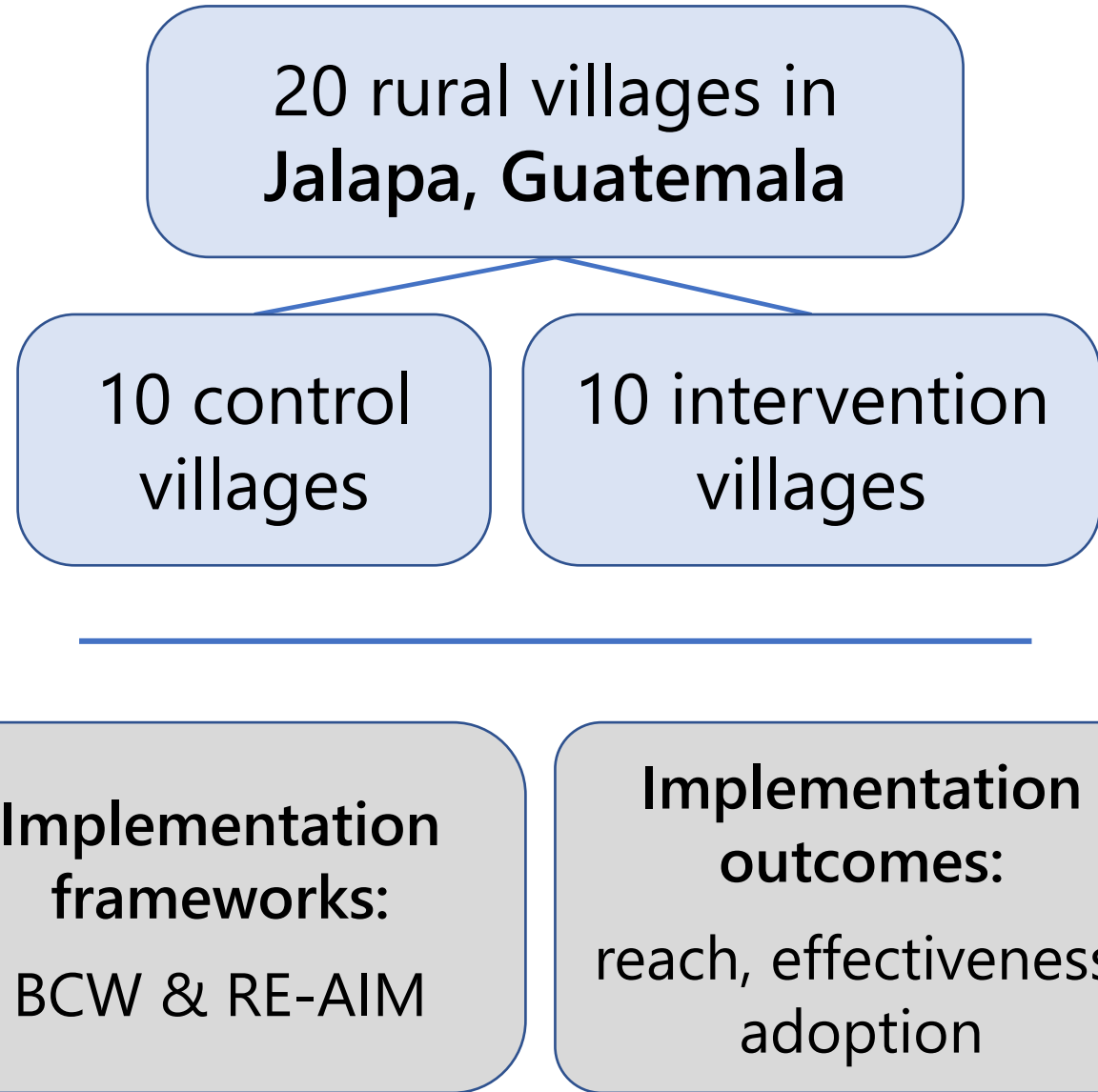
Outcomes focused  
on effectiveness





Source. Lane-Fall, Curran, & Beidas (2019). *BMC Medical Research Methodology*.

# Implementing community working groups to **reduce household plastic waste burning**



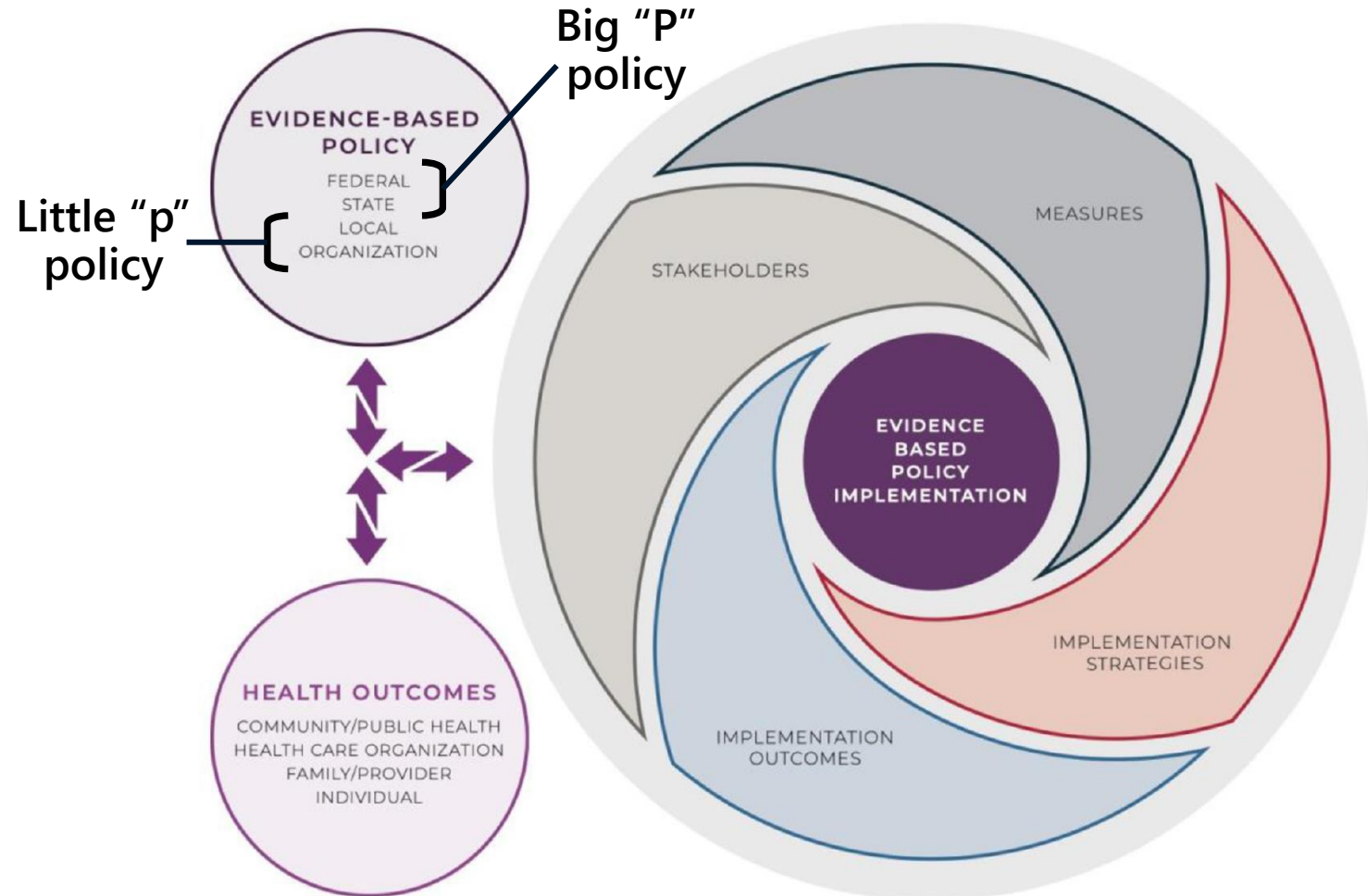
# Possible challenges in applying implementation science to environmental health

- **The thing:** When is evidence ready for implementation?

# Possible challenges in applying implementation science to environmental health

- ✓ **The thing:** When is evidence ready for implementation?
- **Policy:** When is it a strategy, and when is it “the thing”?

Policy itself can have an evidence base



# Possible challenges in applying implementation science to environmental health

- ✓ **The thing:** When is evidence ready for implementation?
- ✓ **Policy:** When is it a strategy, and when is it “the thing”?
- **Outer setting:** What is the right outer setting – the community? The country? The world?

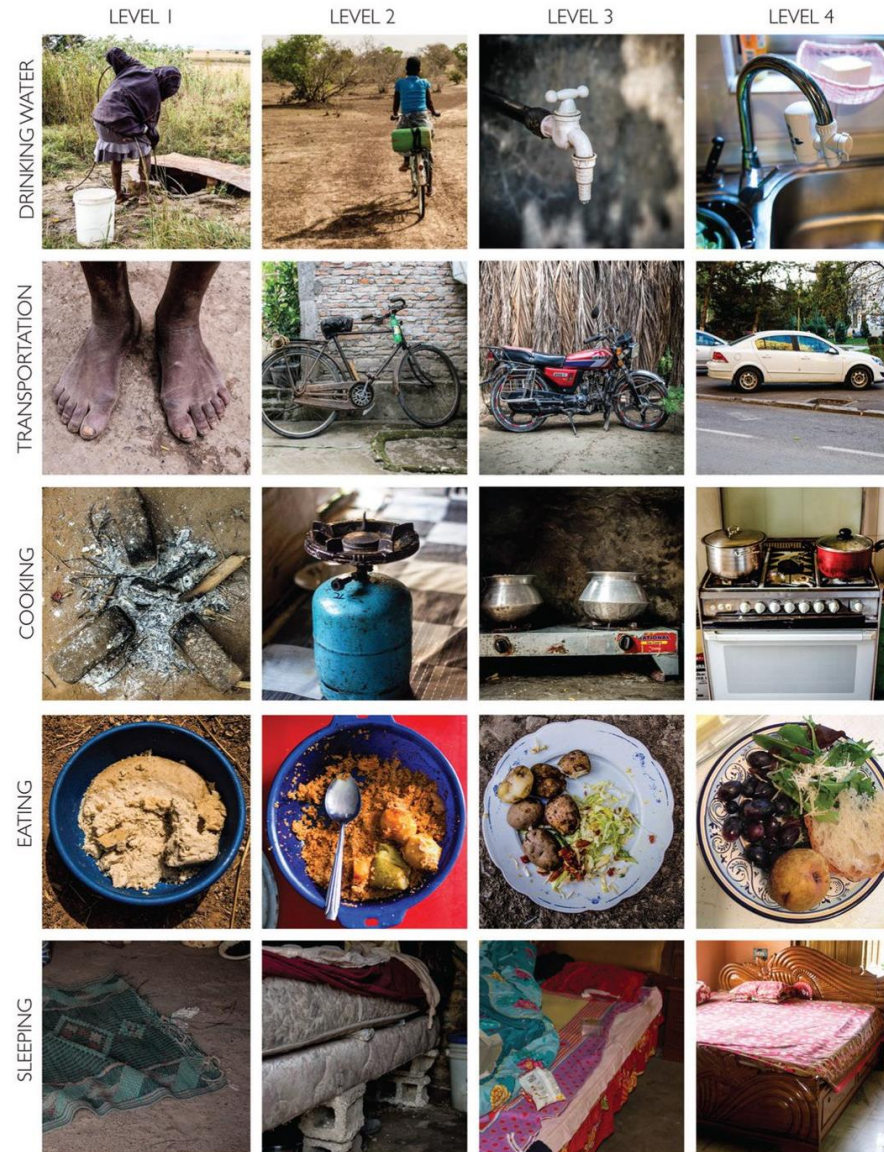
# Possible challenges in applying implementation science to environmental health

- ✓ **The thing:** When is evidence ready for implementation?
- ✓ **Policy:** When is it a strategy, and when is it “the thing”?
- ✓ **Outer setting:** What is the right outer setting – the community? The country? The world?
- **Transferability:** When can implementation evidence be applied across settings?



# Thinking about context around the world

## LIFE ON THE FOUR INCOME LEVELS



Source. Rosling H, Rosling O, Rosling Ronnlund A. *Factfulness*. 2018.



# Our shared vision

We believe that  
implementation science  
can allow us to  
*move the needle,*  
*achieve the promise of*  
*scientific discovery,*  
and *transform health and*  
*health care equitably.*

Click to add text

# The time for implementation science and equitable environmental health has arrived – will you join us?

**EDITORIAL**

## A new lane for science

A recent *Science* editorial on the social and political headwinds that have blunted, obfuscated, and confused public behavior in the United States' COVID-19 response cautioned both politicians and scientists who appoint themselves—including virtually everyone—to stay in their lanes. A central and important question: Should scientists, who have the remarkable knowledge of effective vaccines, only have received their first dose (social distancing and mask evidence are met with wistfulness and rage. Unfortunately, rather than the exception, Americans receive about clinical interventions that do not benefit their health.

To address this failing, we need to add another lane: implementation science. Implementation scientists study how to move beyond medication and development and study how to get their use by clinics, health care providers, communities, and policy. Public health failures that have been avoided, as well as successes attributable to this, illustrate the importance

**“COVID-19 has shown the world that ‘knowing what to do’ does not ensure ‘doing what we know.’”**

messages are most effective? Who are the best opinion leaders? How can health systems overcome delays in identifying mildly ill outpatients eligible for monoclonal antibodies? Data are emerging about how to equip resources necessary to optimize organizational effectiveness as widely as possible. But even the current political and social fabric. Evidence that studies rapid questions pursued in cross-disciplinary collaboration to understand communication, economics, and social disciplines that have interacted with these topics would contribute to a more effective pandemic response in the years ahead. The National Institutes of Health should create an Office of Implementation Research within each of the institutes that must be modeled on the Office of Implementation Research. The office would address emerging intervention obstacles to address obstacles to implementation. Insights would guide the development of a standard. The of-

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**With deep  
gratitude  
to our  
teams  
and  
families**

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