



FOGARTY



Implementation Science Frameworks That Work: Choosing the Right Tool for the Job

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Yale CMIPS

Center for Methods in Implementation &
Prevention Science



Yale SCHOOL OF
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cira

Center for Interdisciplinary Research on AIDS

A roadmap for today's talk



Implementation Science: Revisiting Definitions and Needs



What are theories, models, and frameworks & how can they help?



How to choose a theory, model, or framework?

A definition of Implementation Science (IS)

How?

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.

Implementation Science can be complex!



1. Multiple scientific objectives

(e.g. plan, introduce, evaluate)



2. Multiple disciplines

(e.g. social sciences, engineering, nursing)



3. Multiple components

(e.g. EBIs, implementation components)



4. Multiple levels

(e.g. individual, provider, health system)



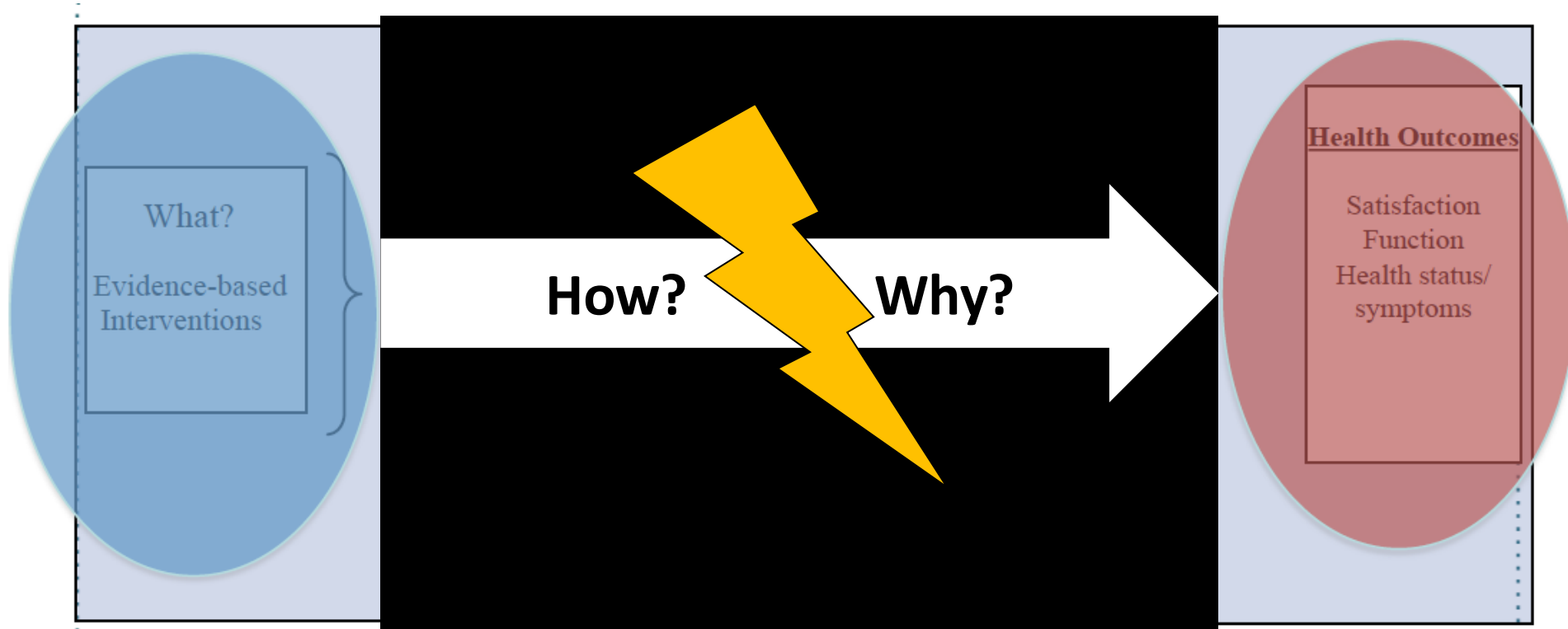
5. Multiple outcomes

(e.g. implementation and effectiveness)



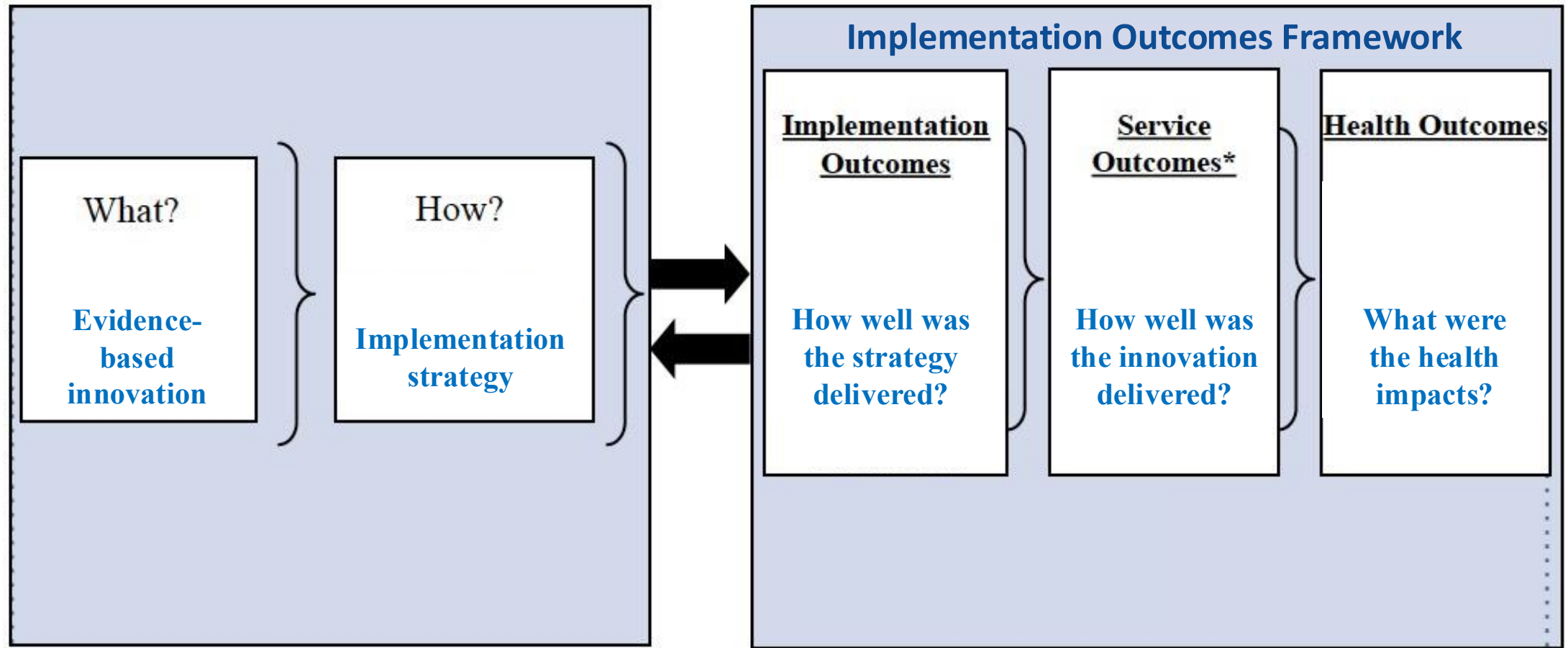
Frameworks and models provide a common language and structure to navigate complexity and increase the rigor, relevance, and impact of our work.

How might frameworks help us in IS?



If implementation does work, we won't know how.
If implementation doesn't work, we won't know why.

Implementation outcomes are a defining feature of IS



Why not just use common sense instead of theory?



Common Sense

vs.**Theory**

Practical

Conceptual

Implicit/Intuition-driven

Explicit/Hypothesis-driven

Inscrutable

Testable

Context-Specific

Generalizable

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How to choose a theory, model, or framework?

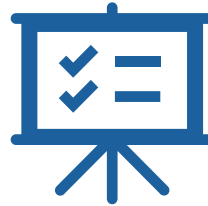
How to be Systematic: Theoretical Approaches in IS



Theory

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

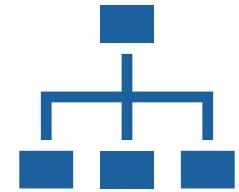
Understand
Causality & Mechanisms



Model

A tool that describes and simplifies a phenomenon.

Plan
Implementation Steps

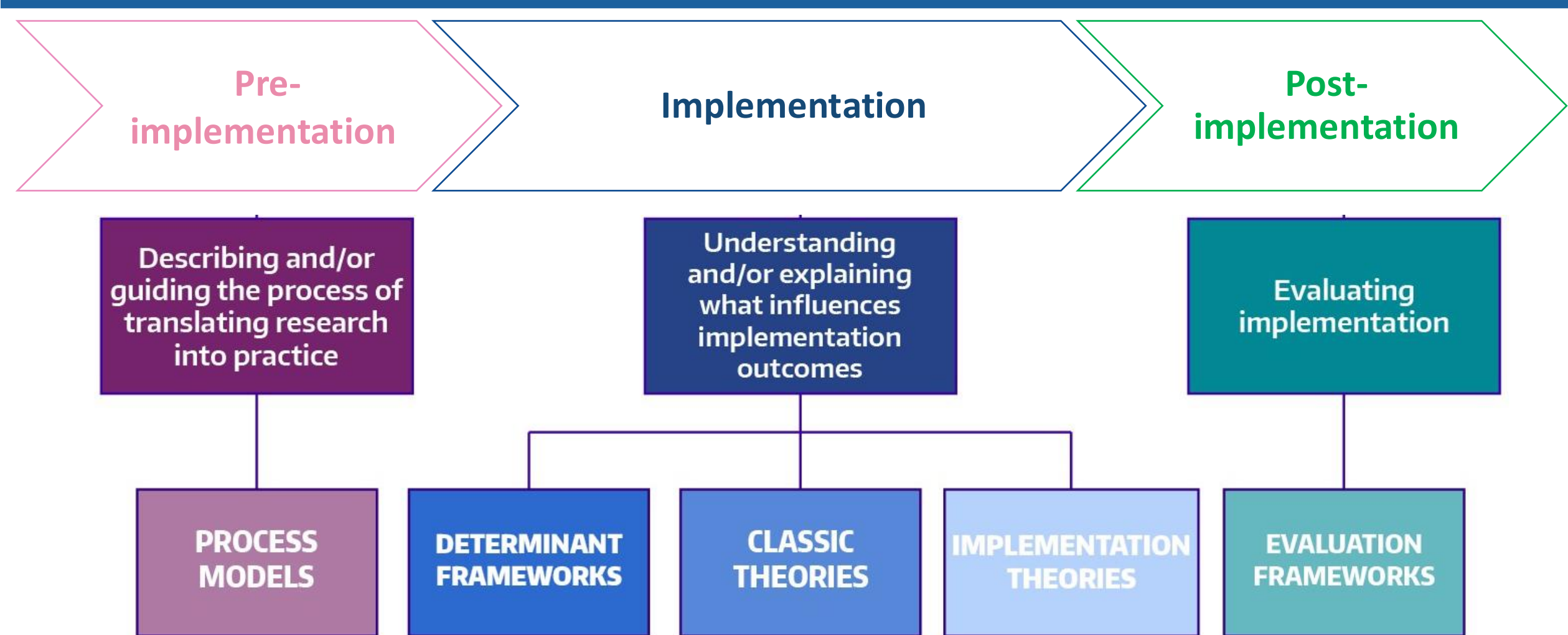


Framework

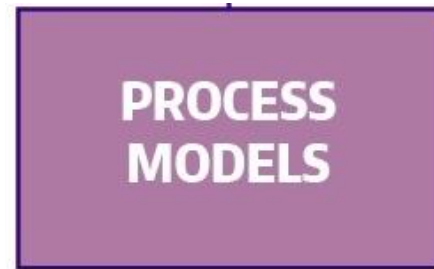
A structure for identifying factors that influence implementation.

Evaluate
Fidelity & Context

Theories, Models, and Frameworks in IS: Phases & Functions



Models



Describing or guiding
the process of translating
research into practice

Process models help us plan implementation

Step 1: Identify the evidence-based practice & define **implementation gap**



Step 2: Identify **determinants** (*e.g.*, barriers & facilitators) of those outcomes

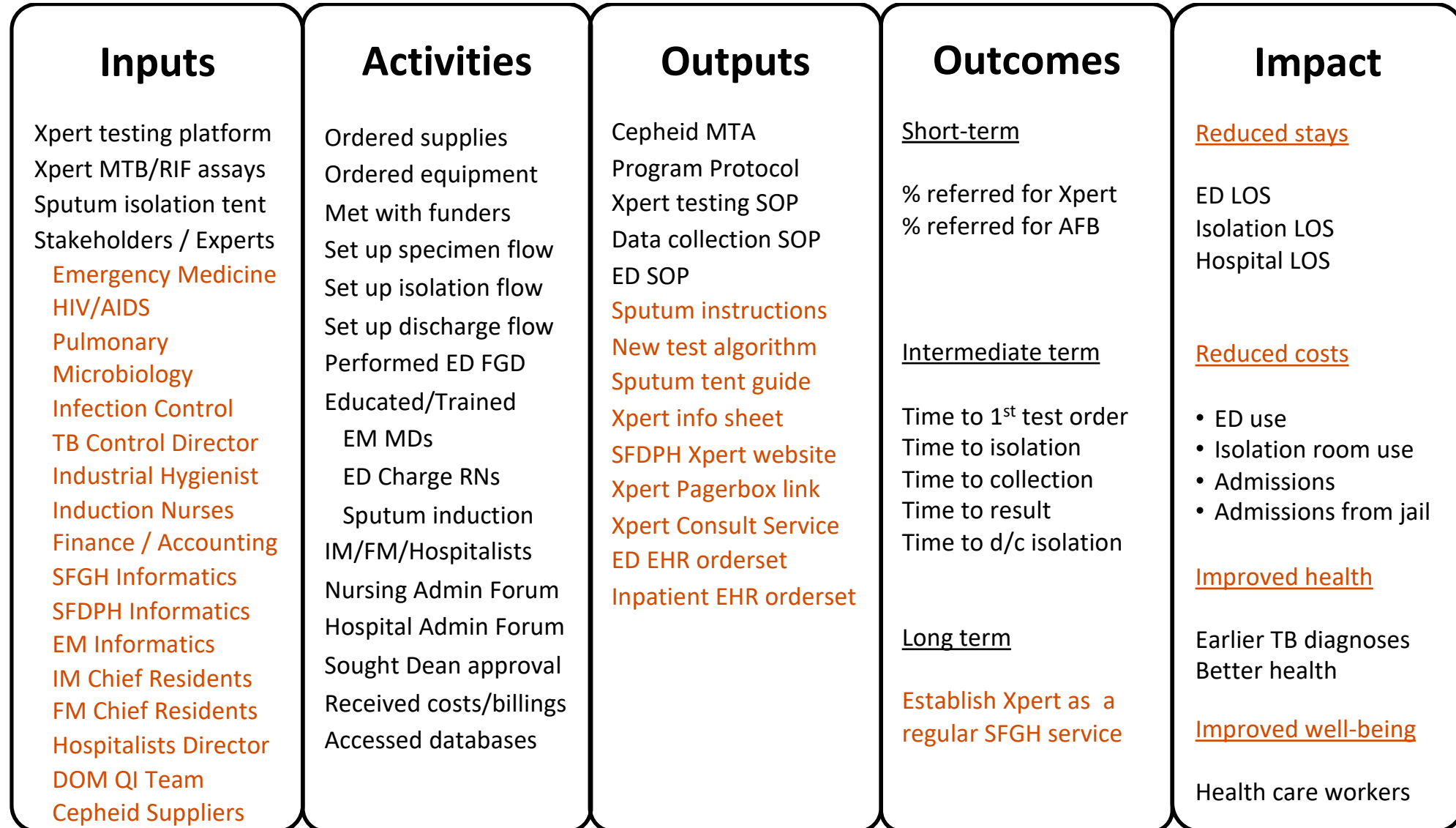


Step 3: Design **implementation strategy** tailored to barriers & facilitators



Step 4: Implement the strategy /practice & evaluate implementation outcomes

Another example: A logic model



Chaisson LH
et al *JAMA Intern Med*
2018

Theories



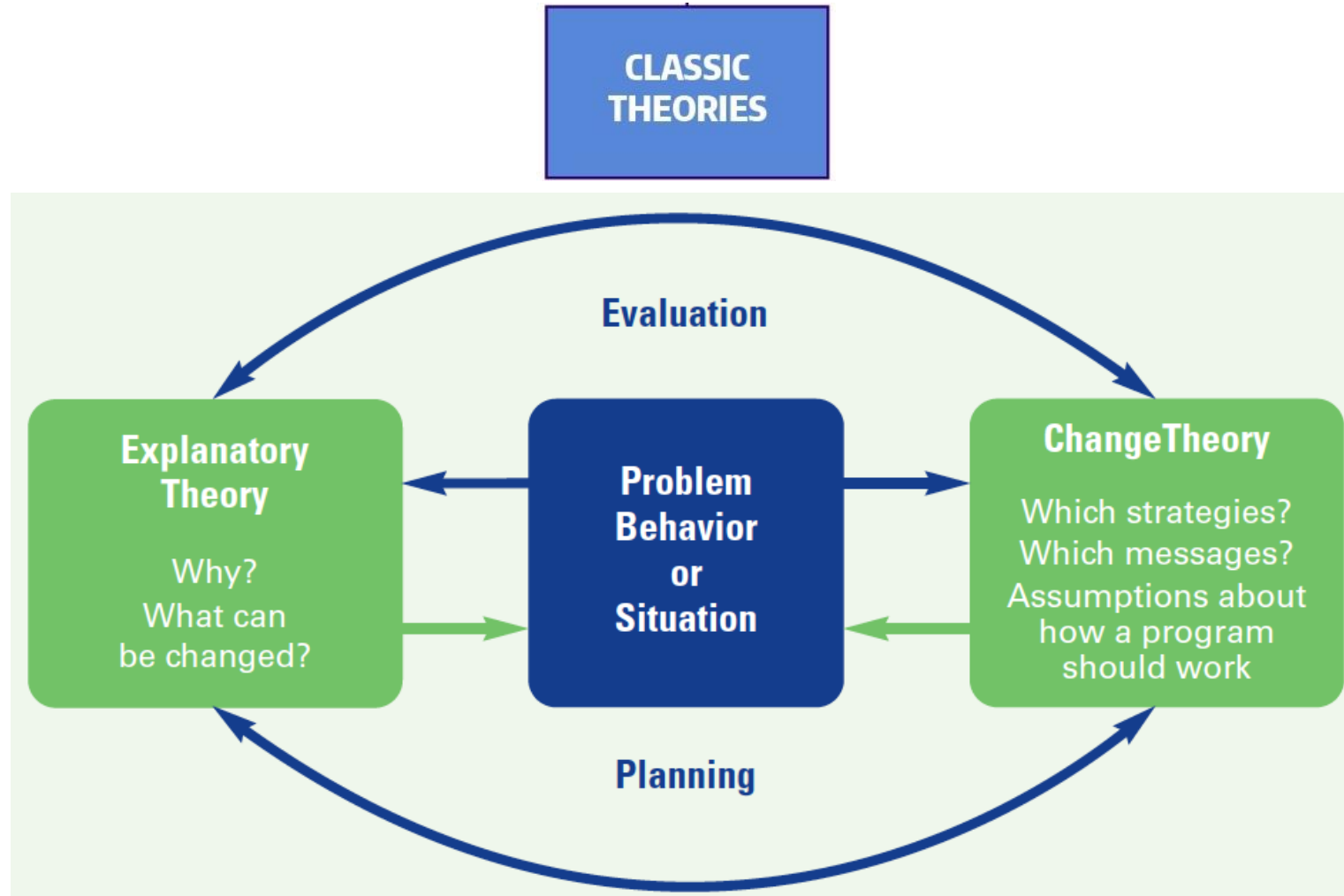
Explaining or testing

how change occurs and how to
make it happen

What is Theory?

- A systematic way to understand events or situations.
- Concepts, definitions, & propositions to explain or predict events or situations by illustrating (and ideally testing) relationships between variables.
- Theories must apply to a broad variety of situations.
- Abstract by nature, not confined to a specific content area.

Two general types of theories



Two classic theories you may have previously encountered

- Explanatory Theory



Understanding why an employee smokes

e.g., Health Belief Model

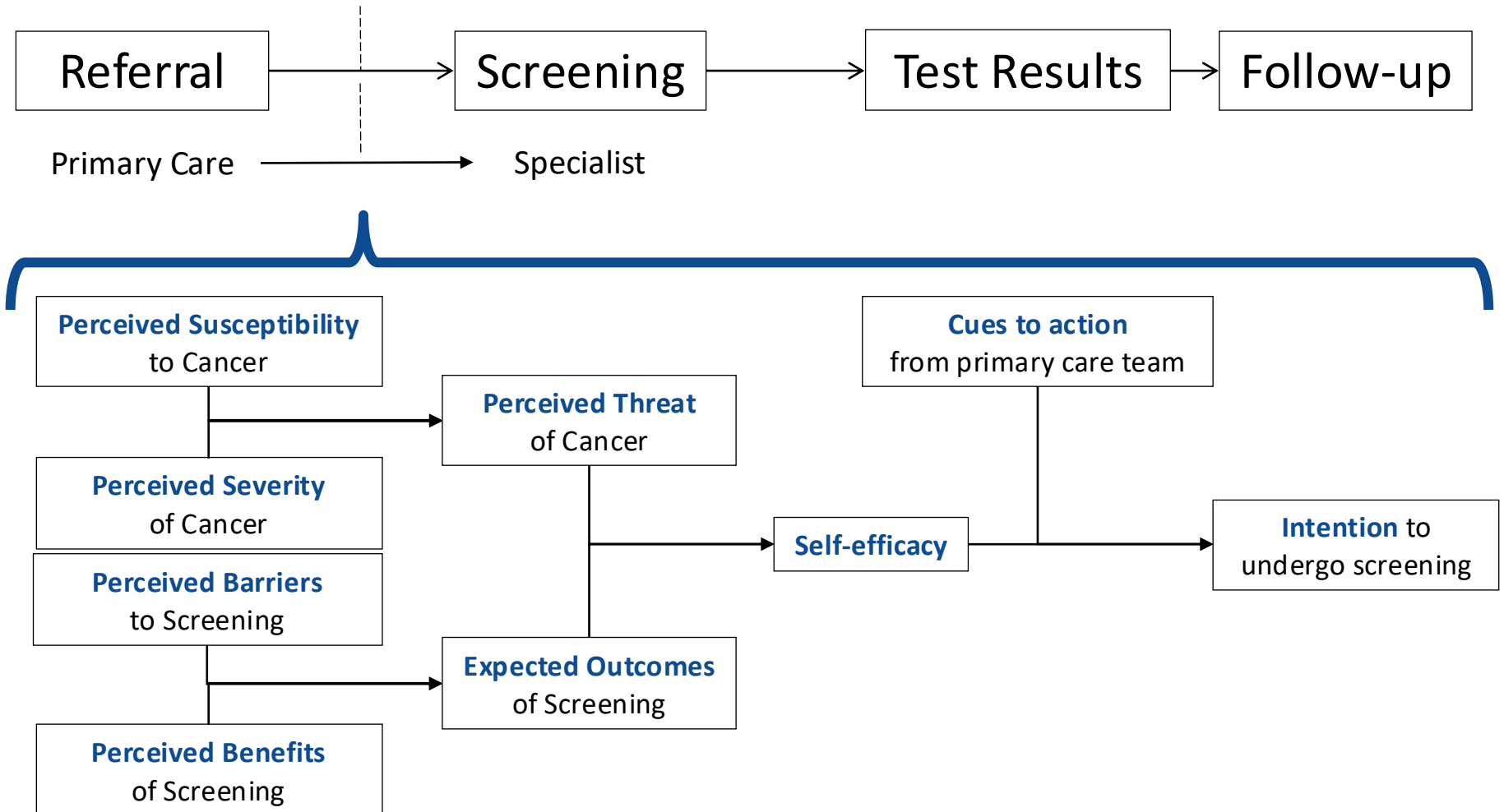
- Change Theory



Understanding how to get an employee to quit smoking

e.g., Transtheoretical Model

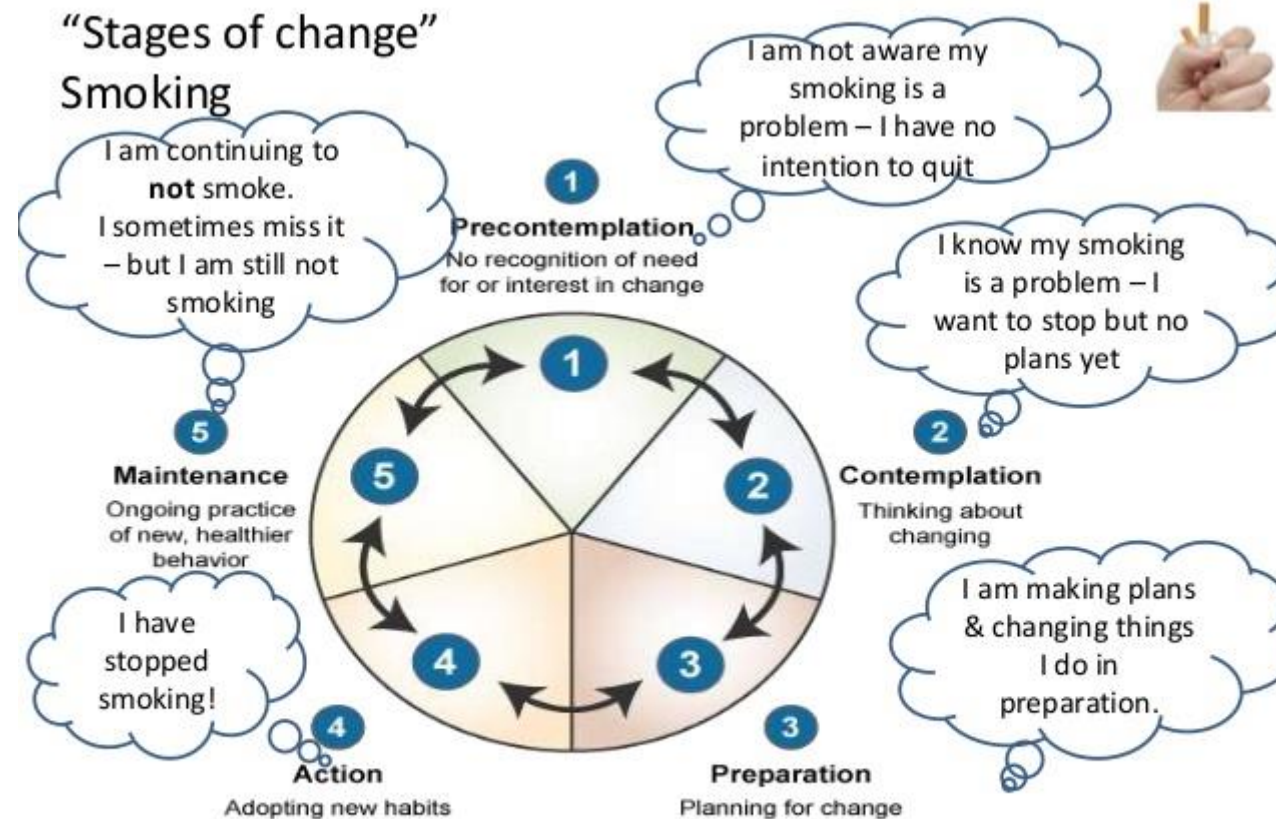
Health Belief Model, a theory of patient engagement



Premise:
Behavior is
influenced by
expected
outcomes.

Stages of Change (Transtheoretical) Model, a theory of change

Premise:
Behavior
change is a
process, not
an event.



 @helenbevan

Prochaska, DiClemente & Norcross (1992)

Frameworks

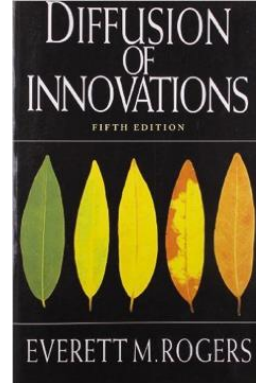
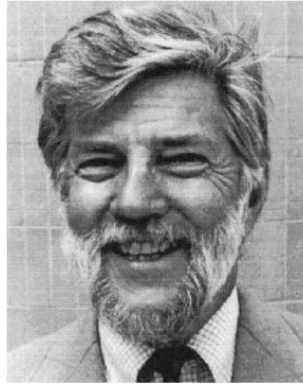
**DETERMINANT
FRAMEWORKS**

Understand which *contextual*
factors influence
implementation & why

**EVALUATION
FRAMEWORKS**

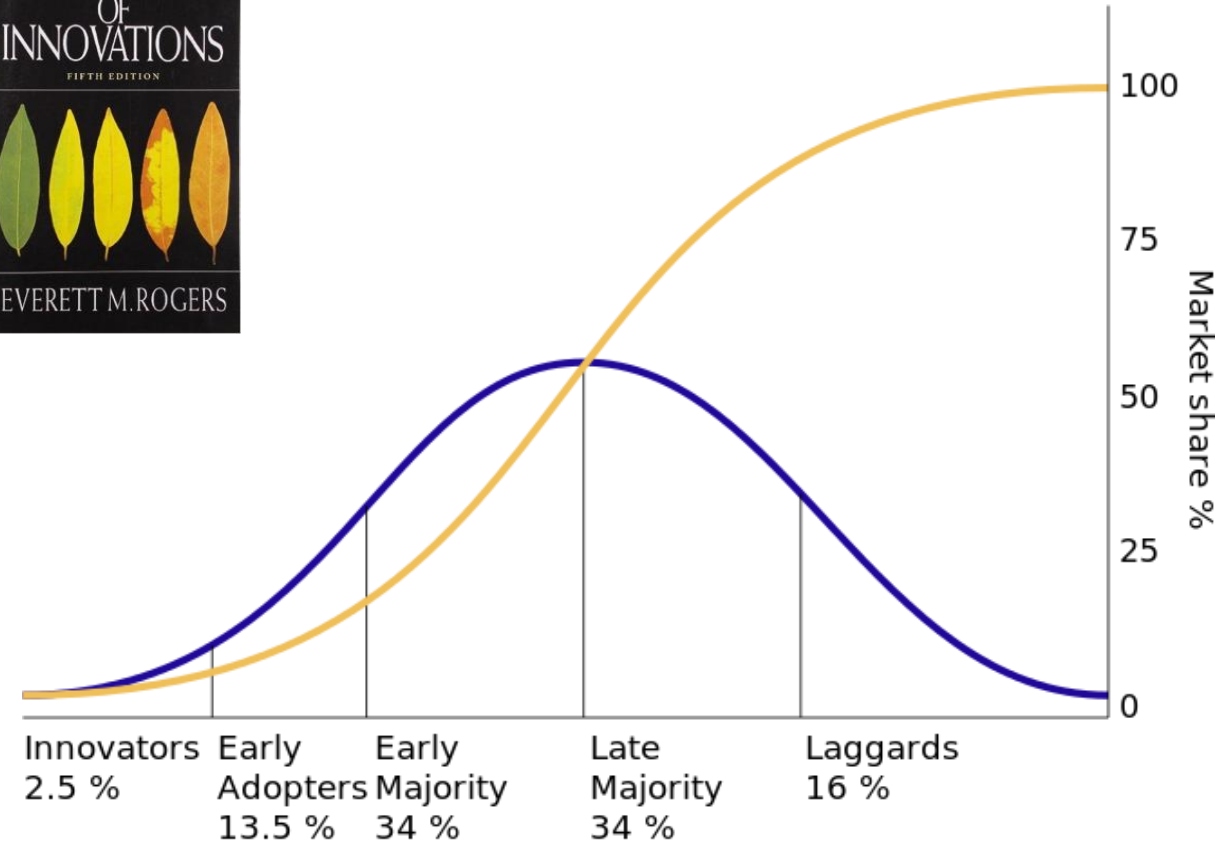
Understand *fidelity/adaptation*
& other implementation
measures & how

Implementation Science Frameworks: Origins



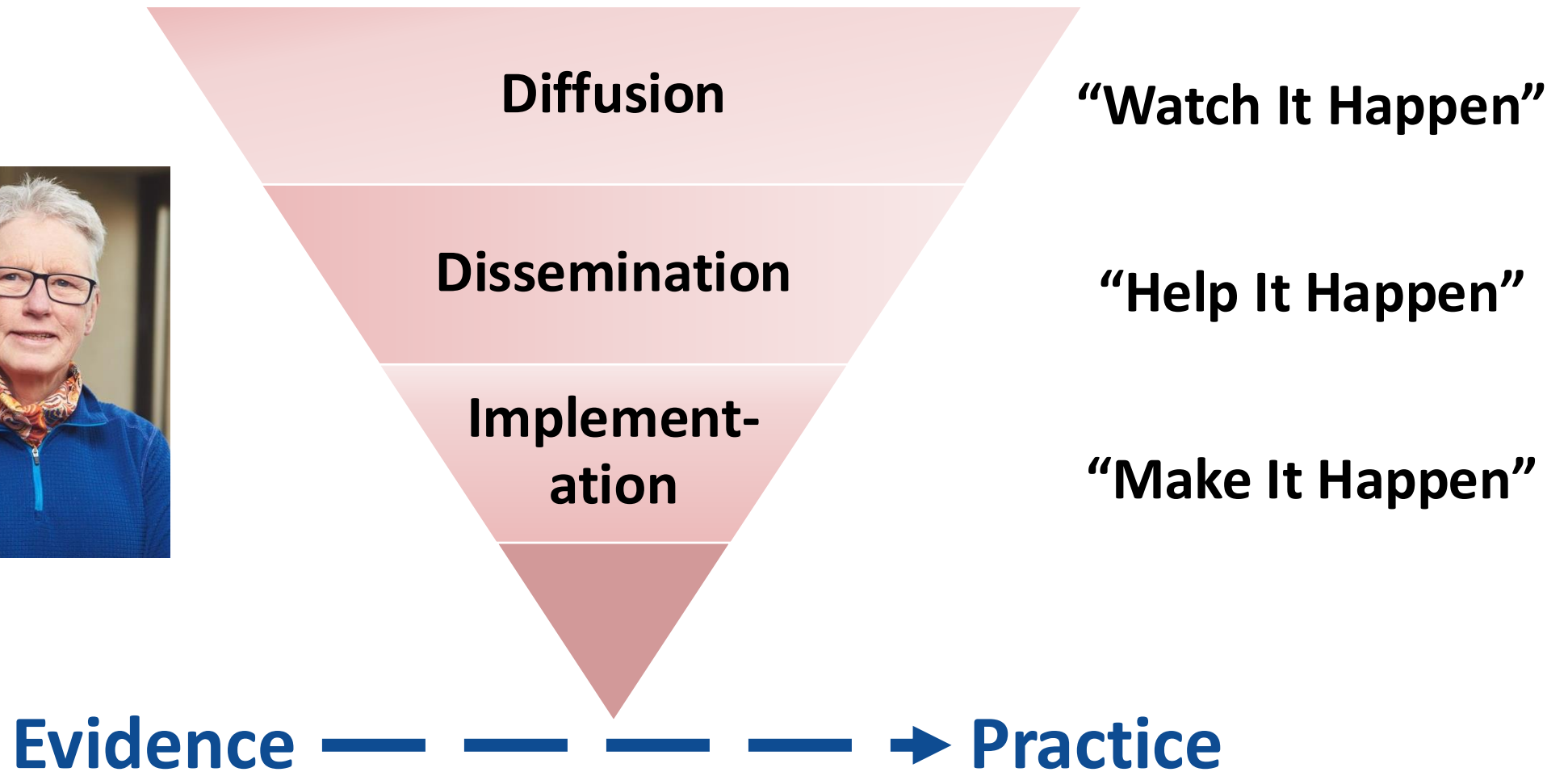
<i>Attribute</i>	<i>Key Question</i>
Relative advantage	Is the innovation better than what it will replace?
Compatibility	Does the innovation fit with the intended audience?
Complexity	Is the innovation easy to use?
Trialability	Can the innovation be tried before making a decision to adopt?
Observability	Are the results of the innovation observable and easily measurable?

Characteristics of innovations



Characteristics of innovators

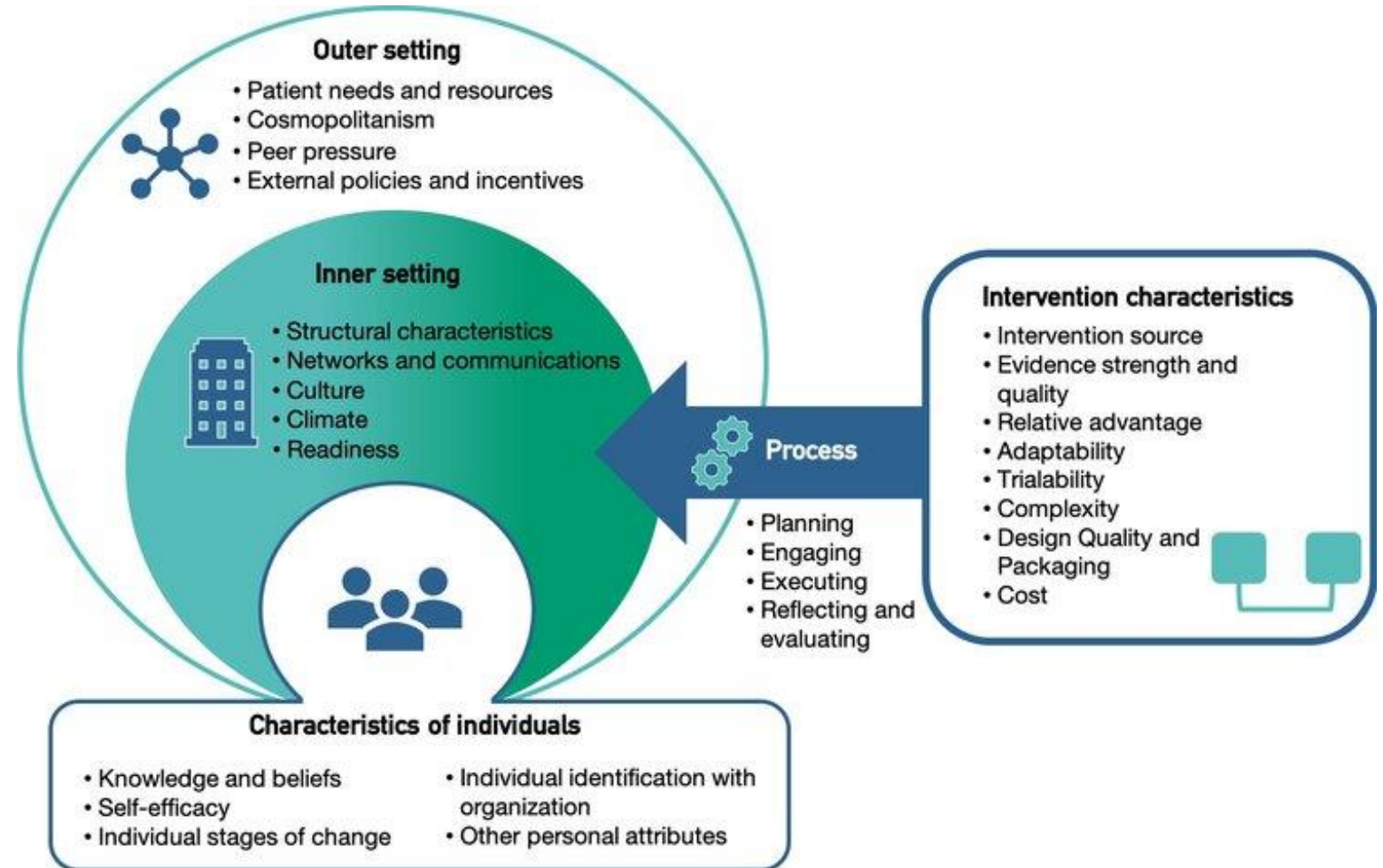
From Diffusion to Implementation



Consolidated Framework for Implementation Research (CFIR)

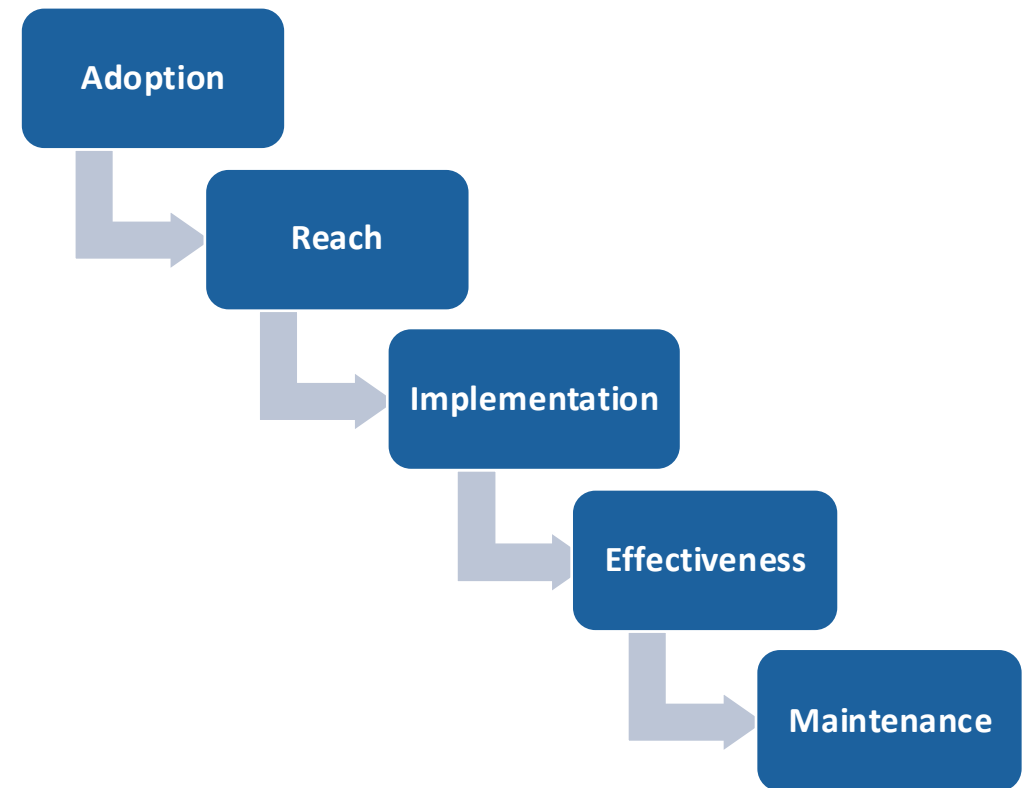
Premise:

Characteristics of individuals, structures, processes, and interventions influence implementation



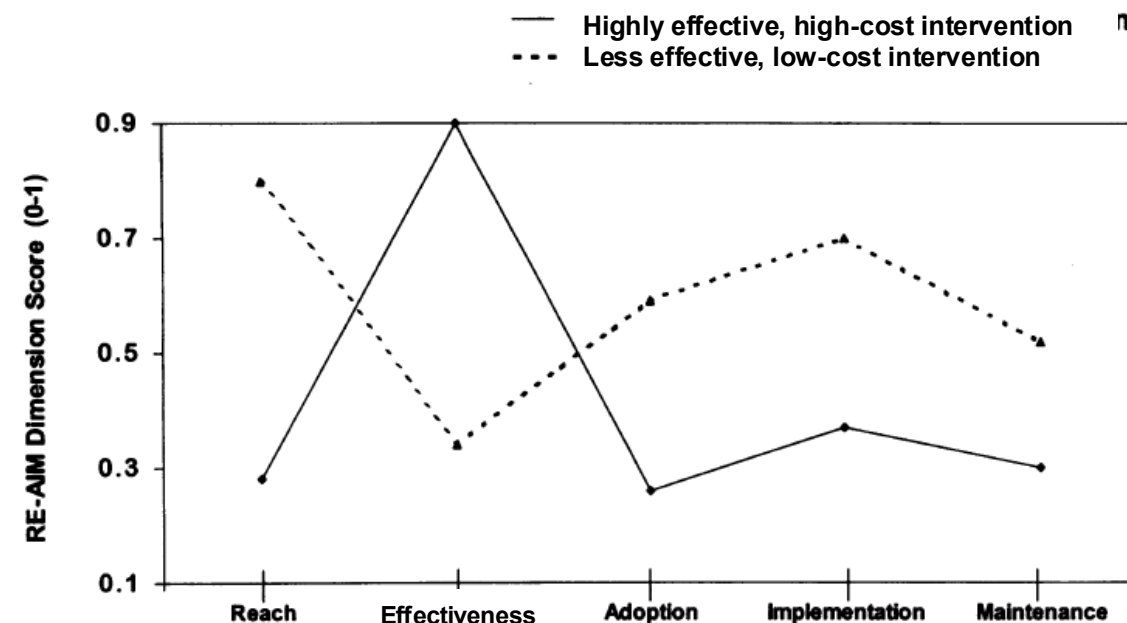
The RE-AIM Framework

Premise: Process measures/cascades assess fidelity, localize determinants, summarize impact



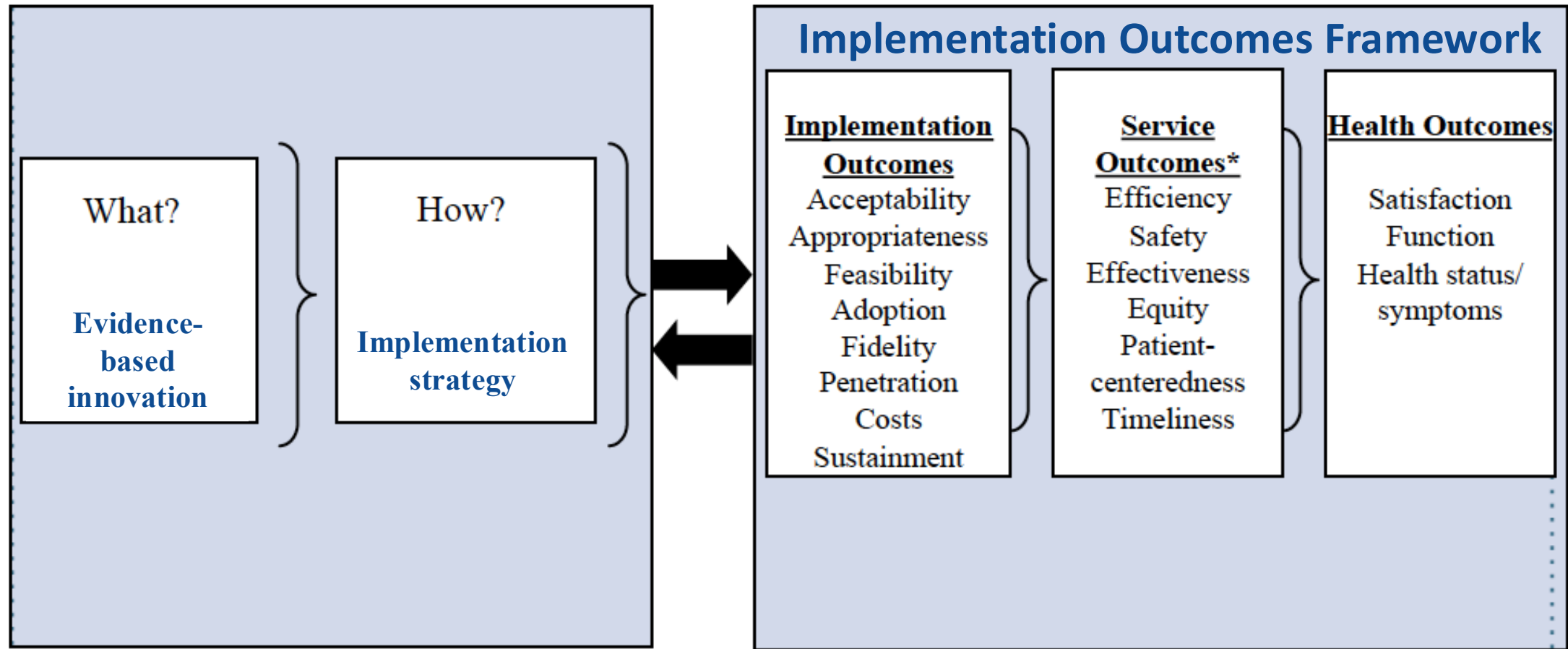
RE-AIM Evaluation Framework: Effectiveness+

Dissemination Step	Concept	% Impacted
50% of clinics use	Adoption	50
50% of clinicians prescribe	Adoption	25
50% of patients accept medication	Reach	12.5
50% follow regimen correctly	Implementation	6.2
50% of those taking correctly benefit	Effectiveness	3.2
50% continue to benefit after 6 mo	Maintenance	1.6

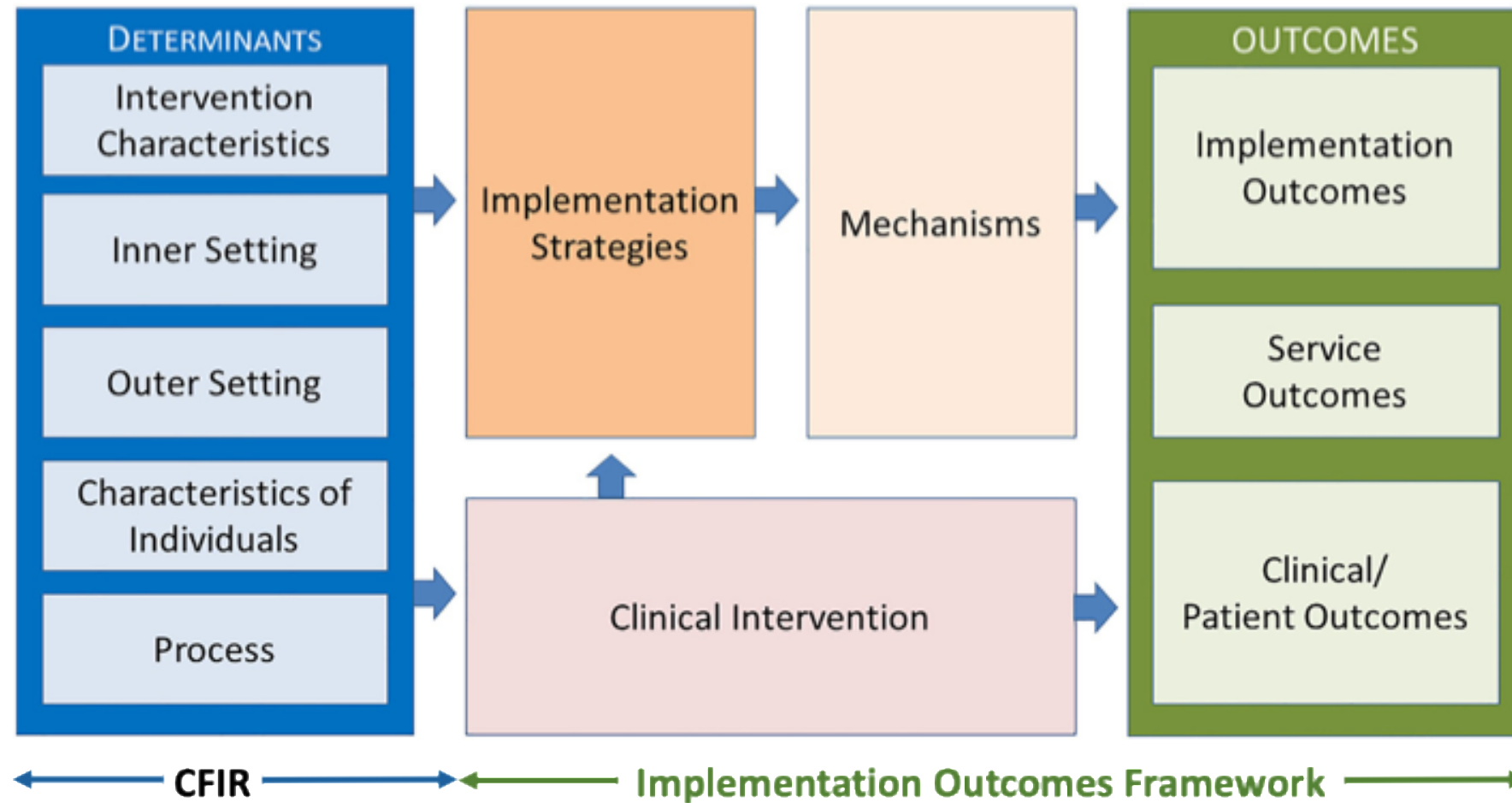


How well was the intervention delivered and for how long?
Why did implementation succeed or fail?

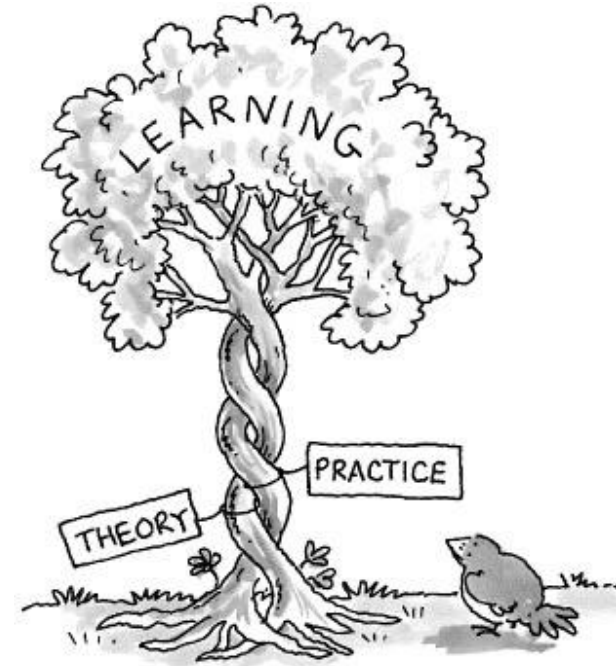
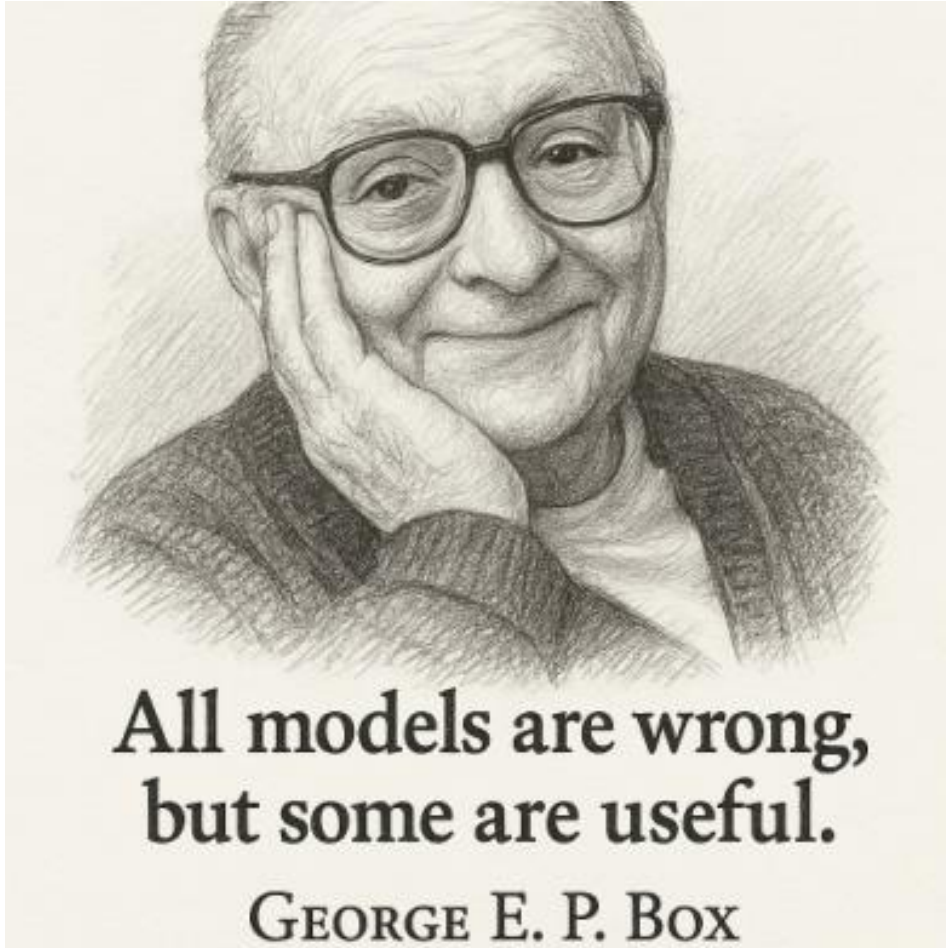
Proctor's Implementation Outcomes Framework is also an evaluation framework.....



Combining Evaluation Frameworks: The Implementation Research Logic Model



Summary



“Experience without theory is blind, but
theory without experience is mere
intellectual play.”

-Immanuel Kant

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How to choose a theory, model, or framework?

Seminal Systematic Review of TMF in IS

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

61 TMF identified focused on multi-level IS

Categorized according to

1. Construct flexibility
2. Dissemination vs Implementation focus
3. Level of social-ecological model

Multiple TMFs at all levels

Needs

1. Standardized terminology
2. Comparative measures
3. Info about how to select among them

How to choose?

Birken *et al. Implementation Science* (2017) 12:124
DOI 10.1186/s13012-017-0656-y

Implementation Science

SHORT REPORT

Open Access



Criteria for selecting implementation science theories and frameworks: results from an international survey

Sarah A. Birken^{1*}, Byron J. Powell¹, Christopher M. Shea¹, Emily R. Haines^{1,2}, M. Alexis Kirk^{1,2}, Jennifer Leeman³, Catherine Rohweder⁴, Laura Damschroder⁵ and Justin Presseau^{6,7,8}

- Choice of models is often haphazard and driven by convenience
- Have a reason why your choice is appropriate for the problem
- Choose an approach that is familiar to you and your audience

Theory Comparison and Selection Tool (T-CaST)

Birken *et al. Implementation Science* (2018) 13:143
<https://doi.org/10.1186/s13012-018-0836-4>

Implementation Science

RESEARCH

Open Access



T-CaST: an implementation theory comparison and selection tool

Sarah A. Birken^{1*} , Catherine L. Rohweder², Byron J. Powell¹, Christopher M. Shea¹, Jennifer Scott³, Jennifer Leeman⁴, Mary E. Grewe³, M. Alexis Kirk^{1,5}, Laura Damschroder⁶, William A. Aldridge II⁷, Emily R. Haines^{1,5}, Sharon Straus⁸ and Justin Presseau^{9,10,11}

The T-Cast Tool

1. Score each as 0, 1, or 2

0 = Poor fit

1 = Moderate fit

2 = Good fit

2. Sum scores for each TMF

Average across team members

3. Select highest scoring

Use sub-scores to justify



T-Cast Worksheet

Usability

- ☐ TMF includes relevant constructs (e.g., self-efficacy; climate)
- ☐ Key stakeholders (e.g., researchers; clinicians; funders) are able to understand, apply, and operationalize TMF.
- ☐ TMF has a clear and useful figure depicting included constructs and relationships among them.
- ☐ TMF provides a step-by-step approach for applying it.
- ☐ TMF provides methods for promoting implementation in practice.
- ☐ TMF provides an explanation of how included constructs influence implementation and/or each other.

Testability

- ☐ TMF proposes testable hypotheses.
- ☐ TMF includes meaningful, face-valid explanations of proposed relationships.
- ☐ TMF contributes to an evidence base and/or TMF development because it has been used in empirical studies.

Applicability

- ☐ TMF focuses on a relevant implementation outcome (e.g., fidelity; acceptability).
- ☐ A particular method (e.g., interviews; surveys; focus groups; chart review) can be used with TMF.
- ☐ TMF addresses a relevant analytic level (e.g., individual; organizational; community).
- ☐ TMF has been used in a relevant population (e.g., children; adults with serious mental illness) and/or conditions (e.g., attention deficit hyperactivity disorder; cancer).
- ☐ TMF is generalizable to other disciplines (e.g., education; health services; social work), settings (e.g., schools; hospitals; community-based organizations), and/or populations (e.g., children; adults with serious mental illness).

Acceptability

- ☐ TMF is familiar to key stakeholders (e.g., researchers; scholars; clinicians; funders).
- ☐ TMF comes from a particular discipline (e.g., education; health services; social work).

Exercise: T-CaST



Birken et al. *Implementation Science* (2018) 13:143
<https://doi.org/10.1186/s13012-018-0836-4>

Implementation Science

RESEARCH

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T-CaST: an implementation theory comparison and selection tool



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- Identify 2 TMFs you are considering
- Would T-CaST help you choose between them? Why or why not?

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Questions & Discussion

