Implementation Science
Building a Research Agenda in Pain

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HEALTH
UNIVERSITY OF UTAH

The Research-to-Practice "Chasm"

Institute of Medicine, 2001

o ~17 years to move effective interventions from research into practice
o ~14% of evidence-based interventions reach their intended population

Balas et al., 1998

The Delivery System Matters

"The use of effective interventions without [effective] implementation strategies is like a serum without a syringe; the cure is available, but the delivery system is not."

Fixsen, Blase, Duda, Naoom, Van Dyke, 2010

Interventions vs. Implementation Strategies

- Evidence-Based **Clinical or Preventive Intervention: 7 P's**
  - **Pill** (opioids)
  - **Program** (mindfulness-based meditation; EnhanceFitness)
  - **Practice** (routine pain screening at doctor's visits)
  - **Principle** (multidisciplinary care teams; WHO analgesic ladder)
  - **Product** (EMS muscle stimulation)
  - **Policy** (minimizing barriers to care (e.g., paid sick leave))
  - **Procedures** (surgery)
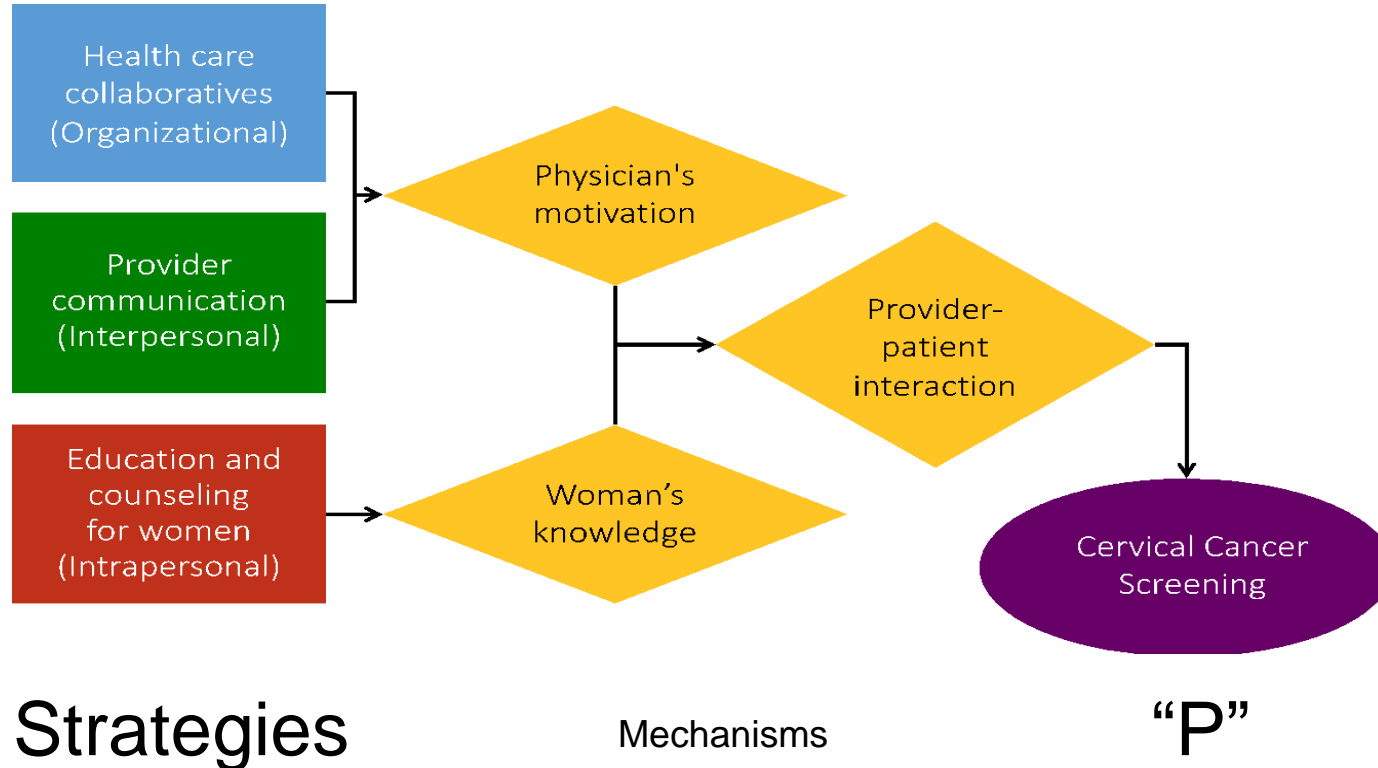
Brown et al., 2017, *ARPH*

Implementation Strategies

Definition– Methods or techniques used to enhance the adoption, implementation, sustainment, and scale-up of a program or practice.

Types:

Discrete – Single action or process (e.g., reminders, audit and feedback, supervision)

Bundled/Multifaceted – Combination of multiple discrete strategies (e.g., educational workshops + consultation)

Powell et al. 2012; 2015; 2019

Multifaceted Implementation Strategy Example
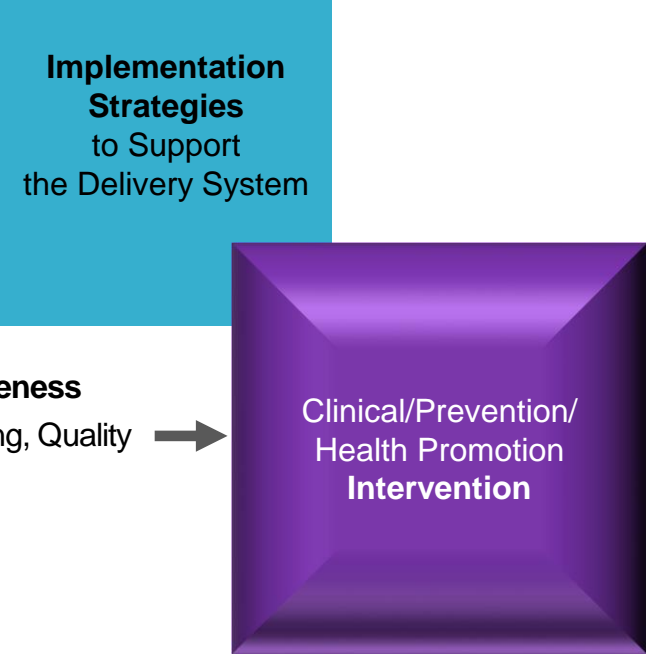

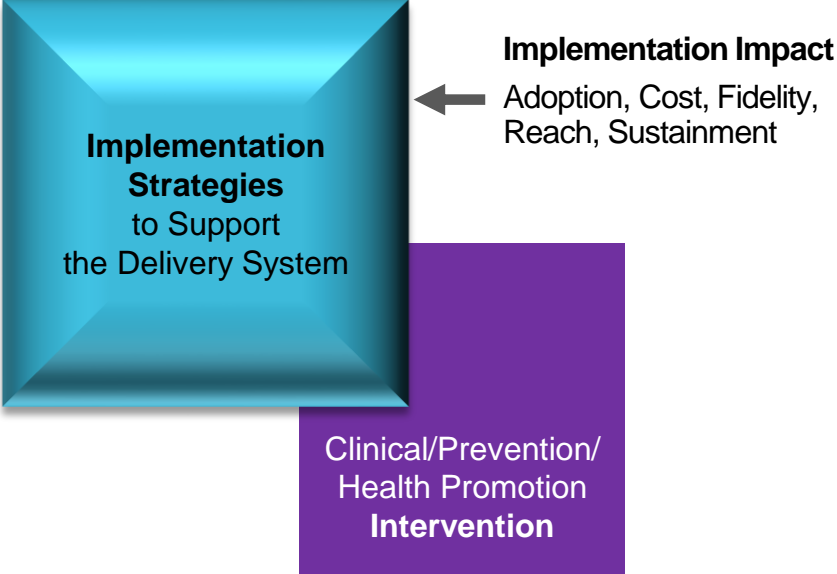Strategies   Mechanisms   "P"

Common Implementation Research Aims

1) understand barriers and facilitators to implementation
2) adapt an evidence-based "P"
3) evaluate the impact of an adapted "P" (for setting/population)
4) select/develop/adapt implementation strategies
5) evaluate the feasibility/acceptability of strategies
6) test the impact of a strategy on implementation outcome(s)
7) compare the impact of one or more implementation strategies

Smith et al. 2020, *AIDS and Behavior*

Paradigm Shift

Effectiveness Research

Implementation Research

Implementation Strategies to Support the Delivery System

Implementation Impact
Adoption, Cost, Fidelity, Reach, Sustainment

Implementation Strategies to Support the Delivery System

Clinical/Prevention/ Health Promotion **Intervention**

Intervention Effectiveness
Symptoms, Functioning, Quality of Life, Infections, etc.

Clinical/Prevention/ Health Promotion **Intervention**

Smith & Hasan, 2020, *Psychiatry Res*
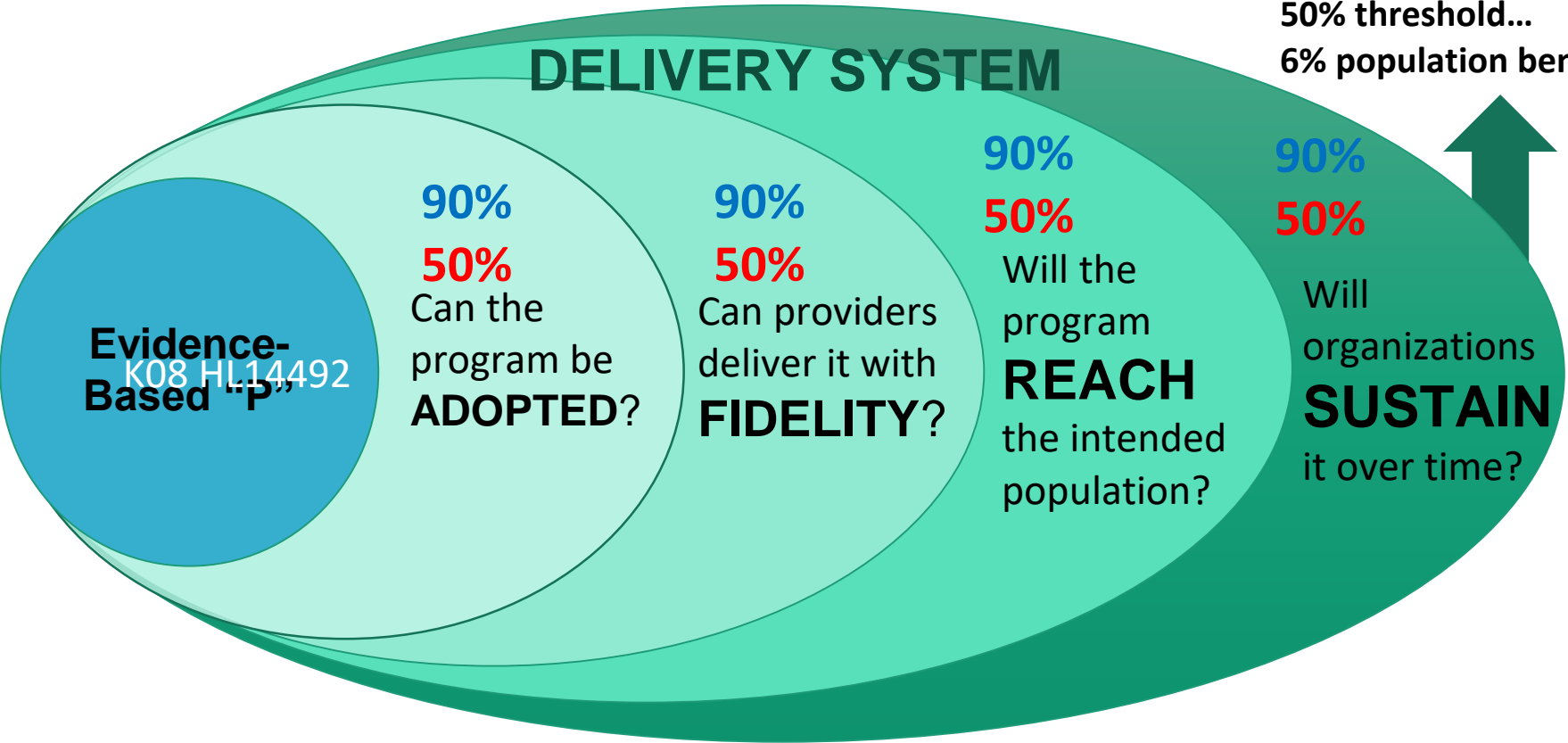
Implementation Outcomes = Population Benefit

90% threshold...
65% population benefit
50% threshold...
6% population benefit

DELIVERY SYSTEM

Evidence-Based "P"
K08 HL14492

90%
50%
Can the program be **ADOPTED**?

90%
50%
Can providers deliver it with **FIDELITY**?

90%
50%
Will the program **REACH** the intended population?

90%
50%
Will organizations **SUSTAIN** it over time?

Adapted by Gaglio, Shoup, & Glasgow, 2013

Sometimes it's ALL about Implementation

"In 2019, the requisite biomedical and behavioral interventions to eliminate new HIV infections exist. "Ending the HIV Epidemic" now becomes primarily a challenge of will and implementation."

Smith et al. 2020, *AIDS and Behavior*

"We have arrived at a moment in the global HIV response where implementation research is ready to take center stage. Perhaps more than ever before, success in the global HIV response depends on the effectiveness, efficiency, and quality of implementation."

Geng et al. 2019, *PLOS Medicine*

COVID-19

By A. David Paltiel, Jason L. Schwartz, Amy Zheng, and Rochelle P. Walensky

Clinical Outcomes Of A COVID-19 Vaccine: Implementation Over Efficacy

"Using a mathematical simulation of vaccination, we find that factors related to implementation will contribute more to the success of vaccination programs than a vaccine's efficacy as determined in clinical trials."

Paltiel et al. 2021, *Health Affairs*