

# Using Implementation Science to Accelerate Impact: Insights from Digital Health

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## What is implementation science?

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“the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services”

Eccles MP, Mittman BS. (2006) Welcome to implementation science. *Implementation Science*, 1(1).

# Why do we need implementation science: The research-to-practice gap

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## But first...a quiz

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1. How long does it take on average for original clinical research to benefit patients?
2. What percentage of original clinical research makes its way into practice to benefit patients?



# Answers

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1. How long does it take on average for original clinical research to benefit patients?  
**17 years**
2. What percentage of original clinical research makes its way into practice to benefit patients?  
**14%**

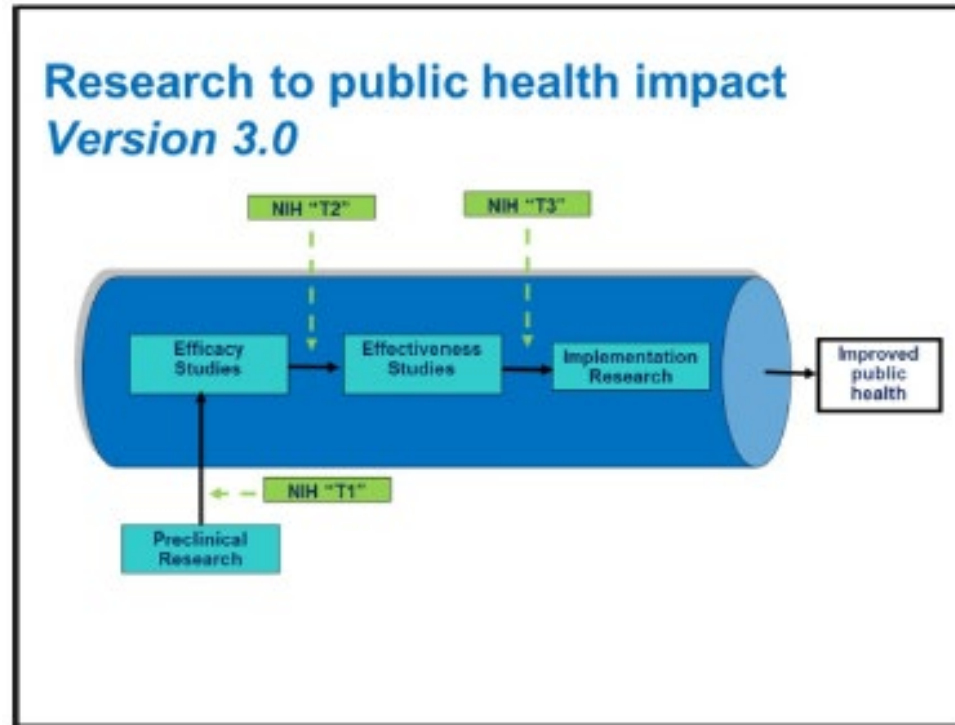


# Why?

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# Traditional Research Approach

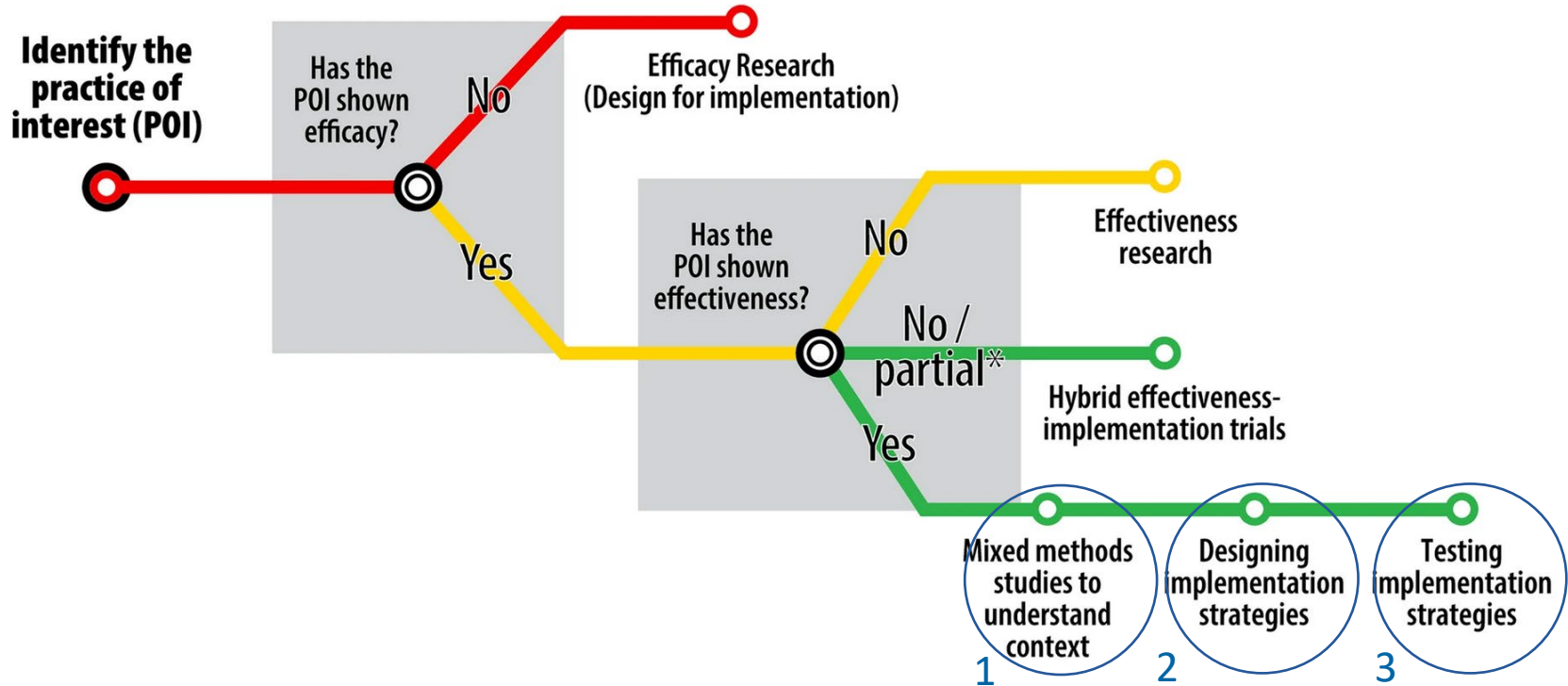


# “Traditional Research Approach”





# The implementation science subway



Lane-Fall, Curran, & Beidas (2019)



# Leadership Interviews (Cities/Counties)

## Reason for Interview:

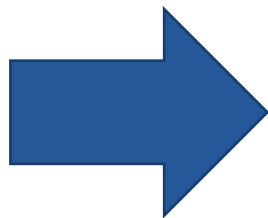
- Understand a range of factors and processes that have/might impact the success of the Help@Hand project
- Document changes in the Help@Hand project to assist with the formative evaluation

## Methodology:

- Semi-structured interviews with City/County “Tech Leads”
- Duration ≈ 45-60 minutes
- Focus on the past year when interview was conducted
- Focus of questions:
  1. Key accomplishments in the Help@Hand project
  2. Challenges experienced, and lessons learned
  3. Changes to the Help@Hand project
  4. Advice for the Help@Hand project and/or similar projects moving forward
  5. Perspectives on technology products in Help@Hand project



# Qualitative to Quantitative Approach



Evaluation Type	Administered	Reporting Period	Respondents
Interview 1	Apr. – May 2022	Past Year	10 Tech Leads
Survey 1	July – Aug. 2022	Past Year (since July 2021)	12 Tech Leads
Survey 2	Oct. – Dec. 2022	Current Year (since Jan. 2022)	12 Tech Leads
Survey 3	Mar. – Apr. 2023	Current Year (since Jan. 2023)	11 Tech Leads
Interview 2	June – July 2023	Past Year (since July 2022)	11 Tech Leads
Survey 4	Oct. – Nov. 2023	Past 6 months (since Apr. 2023)	8 Tech Leads

# 2022 (Year 4) Survey Findings

Surveys (N=24)* Identified the Following Successes, Challenges, Plans, Lessons Learned, and Recommendations in 2022			
Successes		Challenges	Plans
Provided digital literacy training	●	Staff shortages	● Outreach to community organizations
Executed a contract	●	Competing priorities/demands	● Outreach to community members
Collaborated with other counties/cities	●	Contracting difficulties	● Evaluate product/deployment
Launched a product	●	Delayed product launches	● Distribute devices
Conducted data analysis	●	Peer shortages	● Launch a product
		Pandemic related disruptions	●
Lessons Learned		Lessons Learned	Recommendations
Unanticipated delays required <b>flexible timelines</b>	●	<b>Engaging</b> all stakeholders from the start is essential	● Create a <b>roadmap</b> of activities (with budget implications) and allow counties/cities to decide if they want to participate in an activity
<b>Innovation projects</b> benefit consumers, Peers, staff, and other core members	●	Technologies change quickly and as such require continued <b>adaptations and flexibility</b>	● Work on <b>disseminating</b> information and learnings from Help@Hand project to non-participating counties/cities
Technology projects require staffing with <b>specialty skills</b>	●	Access to <b>devices and digital literacy</b> should be examined	● Create new opportunities to <b>review evaluation reports and learnings</b> together
<b>Dedicating staffing</b> is necessary for project success	●	<b>Contracting</b> requires knowledge that has not been present in current teams	● Create more <b>smaller sub-groups</b> within the project to share learnings in specific areas or domains

\*Two surveys were conducted in 2022, one in July-August 2022 and one in October – December 2022. 12 Tech leads responded to each survey resulting in 24 responses overall. ● 26-50%; ● 51-75%; ● 76-100%

# 2023 (Year 5) Survey Findings

Surveys (N=19)* Identified the Following Successes, Challenges, Plans, Lessons Learned, and Recommendations in 2023		
Successes	Challenges	Plans
Outreached to community organizations and community members	Staff shortages	Improve digital literacy of community members
Provided digital literacy training	Consumer engagement challenges	Outreach to community organizations
Executed a contract	Contracting difficulties	Finish a pilot project
Distributed devices	Peer shortages	Apply lessons learned to projects outside Help@Hand
Launched a product		
Hired a new staff member		
Lessons Learned	Recommendations	Recommendations
Dedicated <b>staffing</b> is necessary for project success	Continue <b>collaboration and outreach</b> to increase access to care at a larger scale	Create a plan for <b>informing users</b> about project completion
<b>Innovation projects</b> can benefit consumers, Peers, staff, and other stakeholders	Have more <b>dedicated staff</b> and support staff with <b>carved-out</b> time for training and project operations	Create new opportunities to <b>review evaluation reports and learnings</b> together
<b>Project delays</b> require <b>flexibility</b> to amend and adapt project timelines	Create a <b>roadmap</b> of activities (with budget implications) and allow counties/cities to decide if they want to participate in an activity	Create more <b>smaller sub-groups</b> within the project to share learnings in specific areas or domains
<b>Unanticipated delays</b> in projects are likely	Work on <b>disseminating</b> information and learnings from Help@Hand project to non-participating counties/cities	Secure <b>funding and resources</b> to sustain the project after Help@Hand ends
<b>Initial assumptions</b> about access to devices and knowledge to use technology need to be examined/reconsidered		
A full <b>staff</b> is necessary for project success		

\*Two surveys were conducted in 2023, one in April 2023 and one in October – November 2023. 11 Tech leads responded to Survey 1 and 8 Tech Leads responded to Survey 2 resulting in 18 overall. ● 26-50%; ● 51-75%

# Interview Findings

Individuals Involved
Innovation
<b>Process</b>
Inner Setting
Outer Setting

“The vendor provided us with the additional staff we needed to get the project off the ground”. Another noted, “The county itself cannot do it all, but partnering with other organizations can help.”

“The vendor wasn’t willing to change the contract terms even when it became clear that we needed adjustments.”

- Vendor flexibility benefited technology customization and contracting
- Vendors optimized county/city capacity with additional staffing and expertise
- Communication and coordination between vendors and counties/cities

# Interview Findings

Individuals Involved
Innovation
Process
<b>Inner Setting</b>
Outer Setting

“Our county has always been forward-thinking, and that made it easier for us to embrace new technology and adapt to the changes.”

“Lack of dedicated staffing impeded project success. We were already stretched thin, and we couldn’t allocate enough resources to this project.”

- Expanding the workforce to address digital mental health implementation
- Limited county/city capacity to manage technology projects internally
- Culture and readiness for implementation
- Lack of a clear implementation strategy



# Interview Findings

Individuals Involved
Innovation
Process
Inner Setting
<b>Outer Setting</b>

- Counties/cities worked with external organizations to fill gaps
- Community and stakeholder needs were central to decision-making

“We worked closely with community stakeholders to make sure the tools we were implementing would actually meet their needs.”

“While external partnerships helped us in some areas, managing these relationships was difficult and caused delays in communication and decision-making.”

# Some takeaway thoughts

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## **Major challenges related to staffing and contracting**

Digital mental health requires skills not often present in county/city behavioral health teams

## **Collaborative model useful**

Smaller counties/cities with bigger counties  
Counties/cities with vendors

## **Maintaining flexibility and adaptability is critical**

In products, implementation, and evaluation

# Implementation Strategies

## **Strategies are interventions ... on the system**

Sometimes called “implementation interventions”, but the field has moved away from that

## **Methods or techniques used to enhance adoption, implementation, sustainment, and scale-up/out of a program or practice**

Do **not** have a direct effect on client/patient-level health outcomes

Often multilevel

## **Evaluating strategy effectiveness is the primary focus of implementation research**

### **NIH Definition of Implementation Research**

*The scientific study of the use of strategies to adopt and integrate evidence-based health interventions into clinical and community settings*

# Implementation Strategies

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### Scope

Discrete (e.g., reminders)

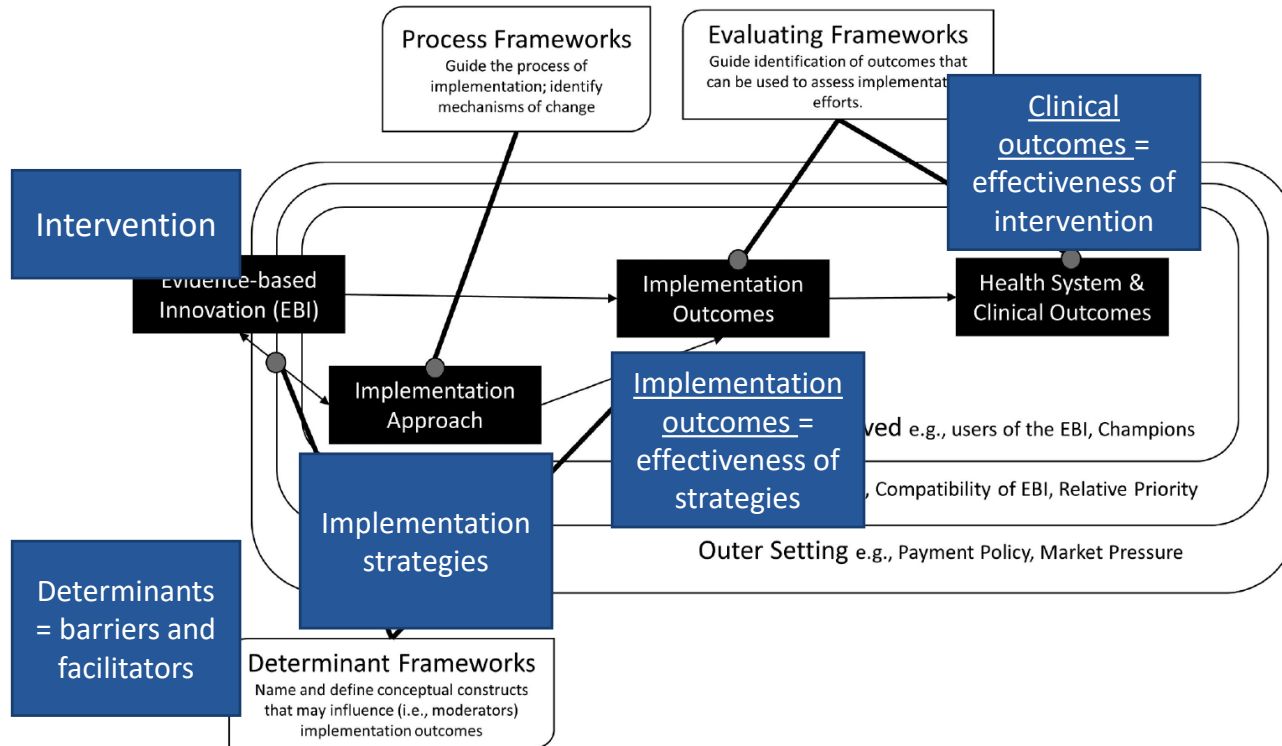
Multifaceted/packaged (e.g., training + consultation)

Blended/protocolized (e.g., Getting to Outcomes)

### Target and/or interact with determinants to achieve implementation outcomes

Rarely one-to-one relationship between strategy and determinant

# Implementation Strategies

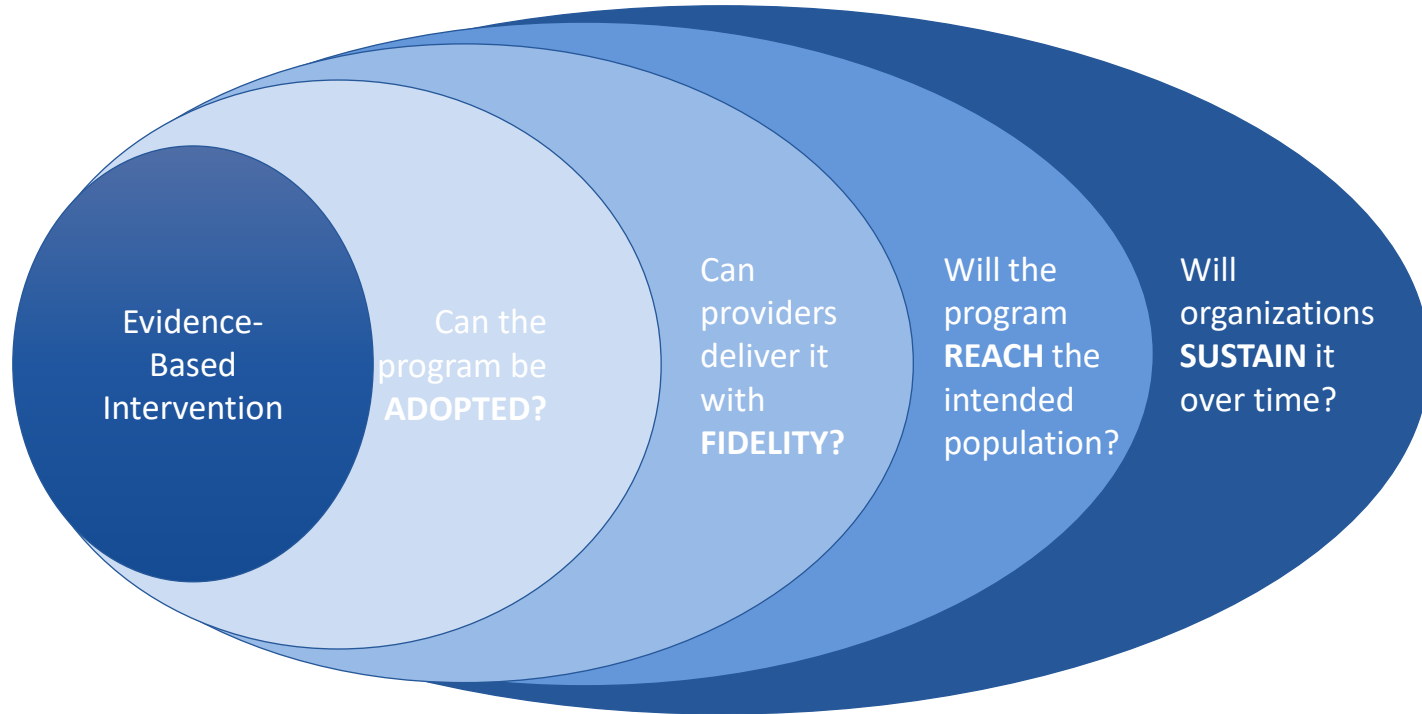


Damschroder, 2020

# Implementation Strategies

Clinical/preventive intervention	→	“The Thing” that improves people’s health
Implementation	→	Doing “The Thing”
Implementation research	→	How to best do “The Thing”
Implementation strategies	→	Actions that change agents take to help other people do “The Thing”
<b>Implementation outcomes</b>	→	<b>How much / how well did others do “The Thing”</b>

# Evaluation of Implementation



# Implementation Outcomes Defined

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**The effects of deliberate and purposive actions to implement new treatments, practices, and services (Proctor et al., 2011)**

## **Three functions (not mutually exclusive)**

1. Indicator of implementation success (e.g., reach, adoption)
2. Proximal indicators of implementation process (e.g., adoption)
3. Intermediate outcomes relative to service system and clinical outcomes (e.g., must reach before having a clinical effect)



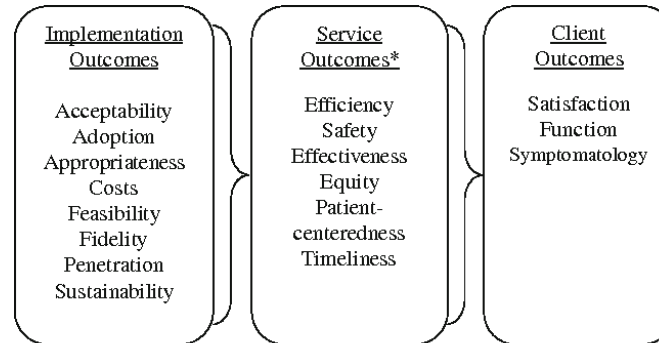
# Evaluation/Outcomes Frameworks

## RE-AIM (Glasgow et al)

Figure 1. Elements of the RE-AIM Framework



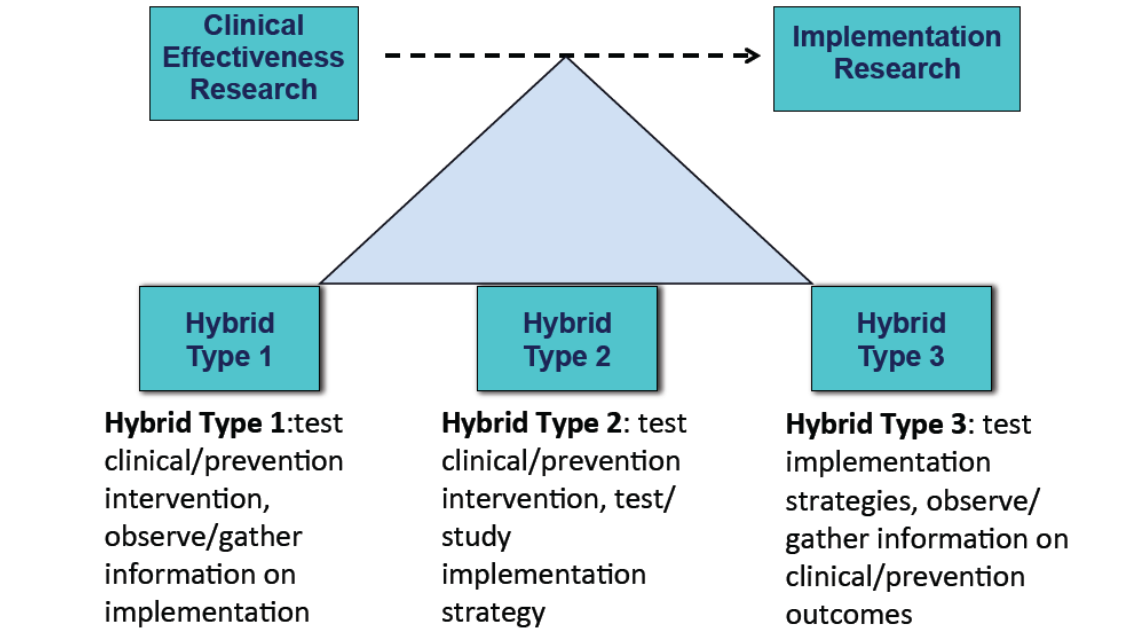
## Proctor et al.



\*TOM Standards of Care

# Hybrid Trials: Combining Effectiveness and Implementation

## Types of Hybrids



# My Well-Being Guide (R37 CA255875, PI: Yanez)

**Aim 1a:** Evaluate the effectiveness of my well-being guide on depressive symptoms

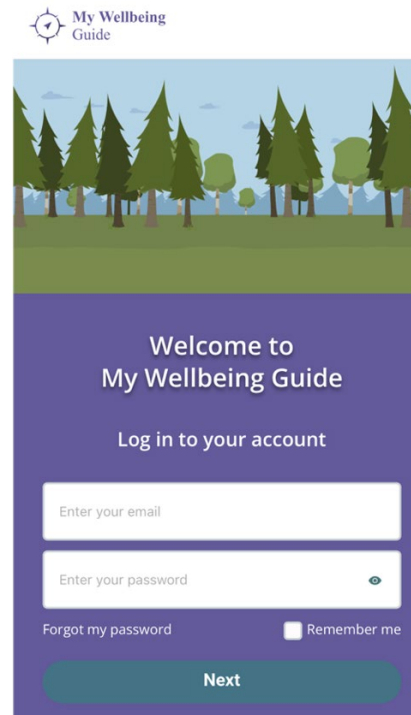
PROMIS Depression at baseline, eight weeks, six months, and 12 months

**Aim 1b:** Evaluate the process of implementing my well-being guide and its impact on patient and system-level outcomes

Clinician and administrator interviews and EHR data

**Aim 2:** identify facilitators and barriers to wide-spread implementation and expansion of my well-being guide

Focus groups at both recruitment sites to gather feedback from clinicians, hospital administrators, and patients



Yanez, Czech, Buitrago, Smith, Schueller, Taub, Kircher, Garcia, Bass, Mercer, Silvera, Scholtens, Peipert, Psihogios, Duffecy, Cella, Antoni, & Penedo, 2023

# SUPERA: Supporting Peer Interactions to Expand Access

(R01 MH126664, MPI: Schueller, Aguilera)

**Aim 1:** Evaluate patient-level randomization on effectiveness of digital cognitive-behavioral therapy (dCBT)

Depression, anxiety, engagement

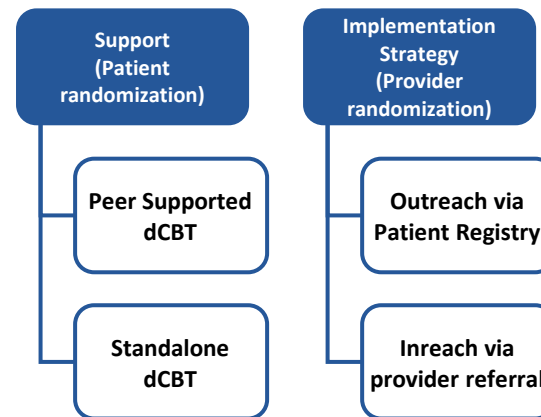
**Aim 2:** Evaluate provider-level randomization on the effectiveness of implementation strategies

Reach, adoption, cost

**Aim 3:** Evaluate putative mechanisms of change

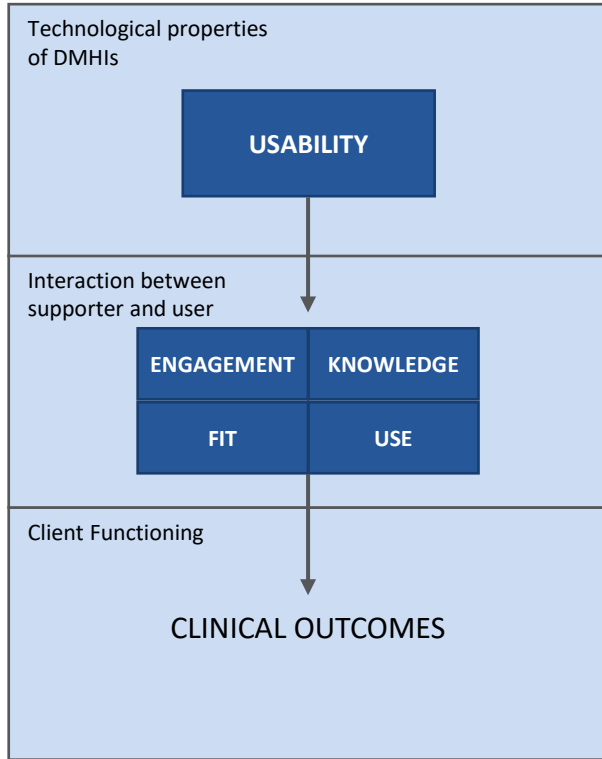
Mixed-methods: surveys, interviews, and focus groups

Attitude towards intervention, implementation climate, clinical readiness, potential for sustainability

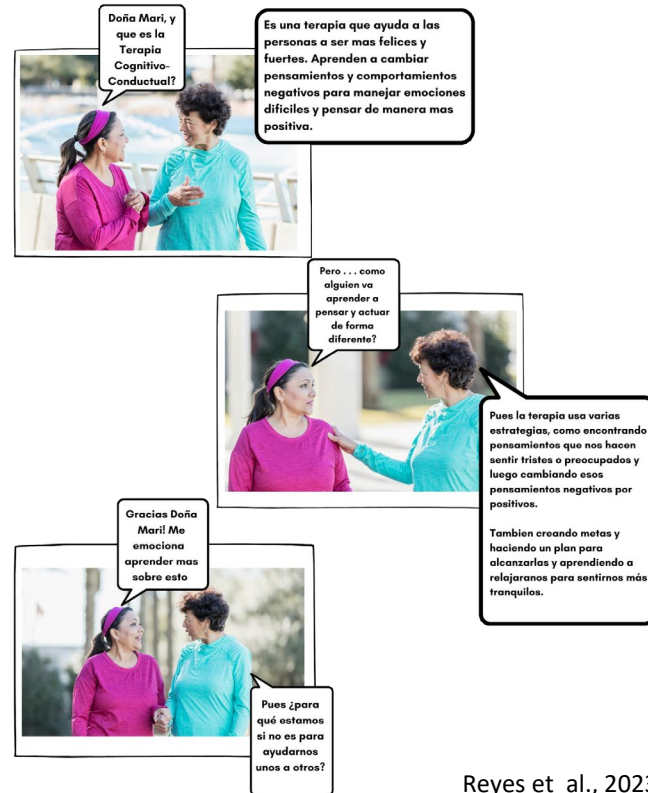


Aguilera, Avalos, Rosales, Reyes, Hernandez-Ramos, Ramos, Garcia, Hoang, Ochoa-Frongia, Fortuna, & Schueller, 2024

# Adapting our model of support for community peers



Schueller, Tomasino, & Mohr, 2017



Reyes et al., 2023

# RE-AIM applied to *My Well-Being Guide* and *SUPERA*

RE-AIM Dimension	Definition	My Well-Being Guide	SUPERA
Reach	Proportion of the target population that participated in the intervention	Proportion of participants who enroll (Spanish, severity, source)	Proportion of eligible individuals contacted and onboarded (age, gender)
Effectiveness	Success rate if implemented as planned	Improvement in depression (primary) and secondary outcomes	Improvements in depression and anxiety (primary) and secondary outcomes
Adoption	Number of settings and people who are willing to initiate the program	Proportion of clinician-initiated referrals of patients to the intervention	Percent of providers with at least one enrolled patient and characteristics
Implementation	Extent to which intervention is implemented as intended in the real world	Fidelity of participants (number who complete 5 of 7 modules)	Fidelity to the protocol and costs associated with implementing
Maintenance	Extend to which program is sustained over time	Program sustainability and assessment tool, sustained improve in depression overtime	Future work

# Some takeaway thoughts and messages

## ► Implementation science is the study of integration of evidence-based innovations into routine care settings

- Some key implementation science concepts
  - **Implementation strategies:**  
Actions that change agents take to help other people do the evidence-based innovation
  - **Implementation outcomes:**  
How much or how well did other people do the evidence-based innovation?
  - **Hybrid Effectiveness-Implementation Designs:**  
Trials that simultaneously evaluate effectiveness and implementation
    - Hybrid Type 1: Effectiveness > Implementation
    - Hybrid Type 2: Effectiveness = Implementation
    - Hybrid Type 3: Effectiveness < Implementation

## ► Implementations rarely succeed or fail due their effect size, they fail due to contextual variables

- Settings, people involved, policies, etc.

# Thanks!



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Questions?