Driving Innovation, Implementation, and Sustainability in a Learning Health System

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MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

VA Quality Enhancement Research Initiative
QUERI
Evidence into Practice

Outline

- Implementation science in Learning Health Systems
- Aligning research and health system strategies
- Implementation study designs → accelerated uptake of evidence-based practices (EBPs)

Setting the Stage

- ***Quality Improvement*** → analysis of healthcare performance, and the systematic efforts to improve it

- ***Implementation research*** → scientific study of methods or strategies to promote evidence-based practice (**EBPs**) uptake in health care → improve outcomes

- ***Implementation strategy*** → An integrated set, bundle, or package of implementation interventions to enhance adoption of a clinical intervention

- ***Learning Health System*** → Using health system data to inform practice and generate new questions for further study

Implementation Challenge
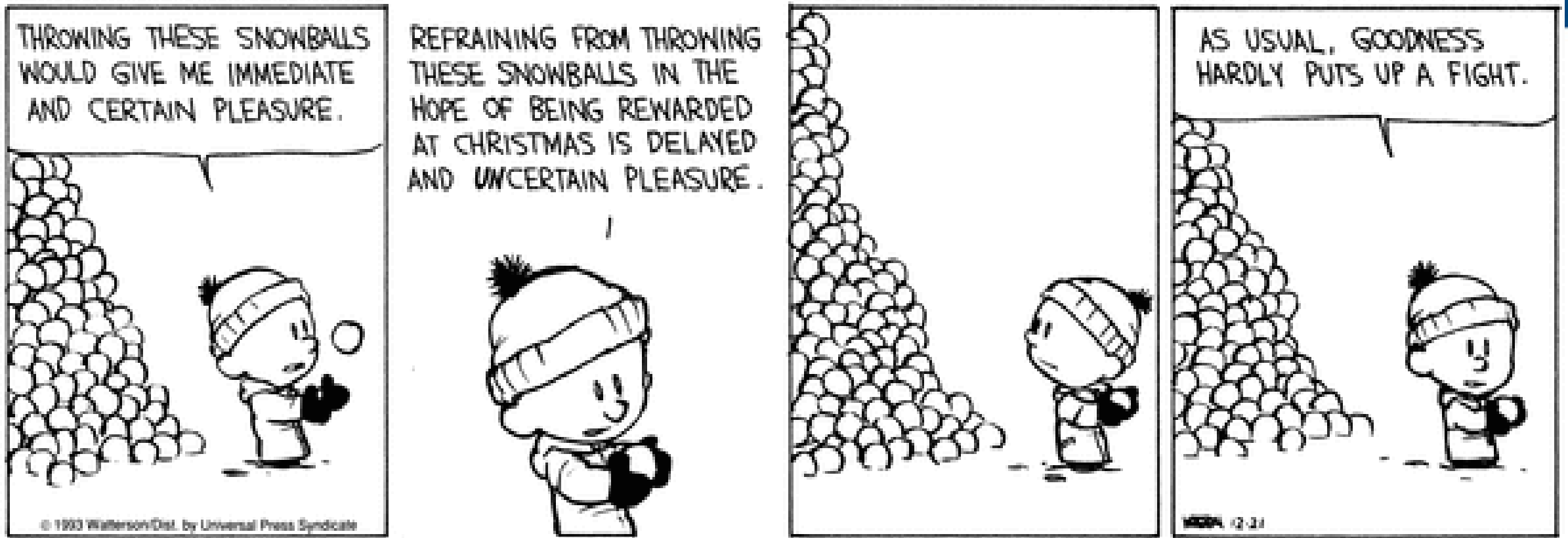
Using my old strategy will be productive right now…

… while trying this new strategy <u>might</u> be more productive at <u>some point</u> in the future…

Hmmm….

Meh.

Credit: Mark Bauer, MD Chris Miller, PhD,

Why Implementation?

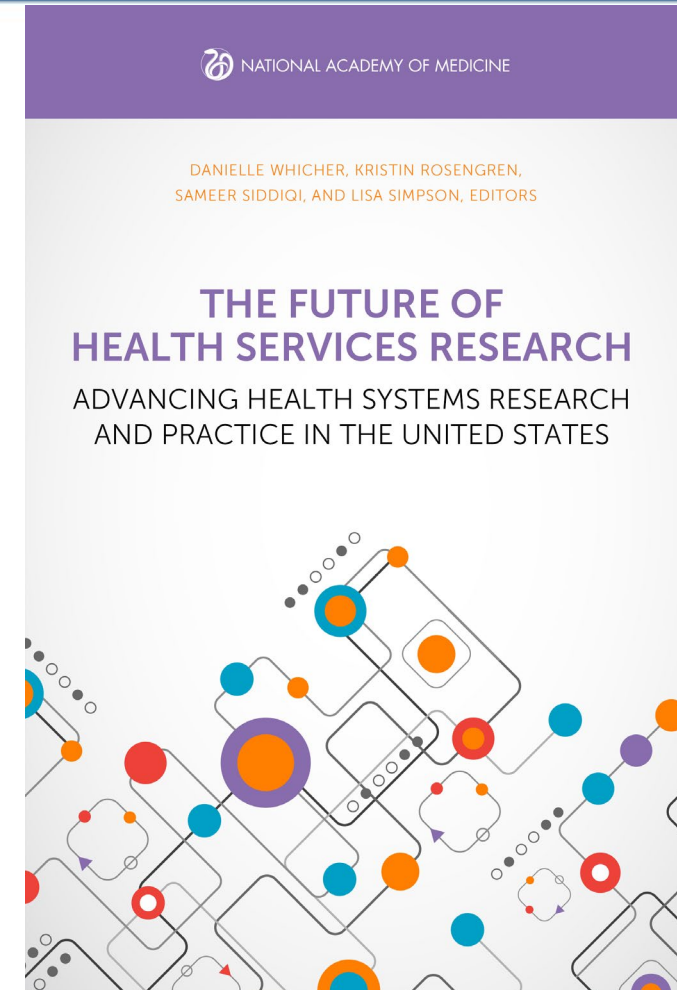It takes 17 years to turn 14 percent of original research to the benefit of patient care

Too often, we have assumed…
"If you build it…"

The Need for Top-down Support

- "C-suite" research needs of health systems
  - AHRQ Learning Health Care System Core Competencies
  - National Academy of Medicine: Future of HSR

"Health services research has been less influential in informing more nuanced management and implementation decisions that health systems face"

NATIONAL ACADEMY OF MEDICINE

DANIELLE WHICHER, KRISTIN ROSENGREN, SAMEER SIDDIQI, AND LISA SIMPSON, EDITORS

THE FUTURE OF HEALTH SERVICES RESEARCH

ADVANCING HEALTH SYSTEMS RESEARCH AND PRACTICE IN THE UNITED STATES

Frontline Provider, Manager, Consumer Involvement

"Here is Edward Bear, coming downstairs now, bump, bump, bump, on the back of his head, behind Christopher Robin. It is, as far as he knows, the only way of coming downstairs, but sometimes he feels that there really is another way, if only he could stop bumping for a moment and think of it."

--A.A. Milne

The Disconnect: Research and Practice

How practitioners find out about research findings	How researchers communicate findings
1. Professional associations	1. Journal articles
2. Seminars/workshops	2. Face-to-face meetings
3. Email alerts	3. Media interviews
4. Journal articles *(Really?)*	4. Press releases

Implementation Research: Why Should We Care?

An intervention or treatment (EBP) is only as good as how and whether…

1. *It is adopted?*

2. *Practitioners are trained to use it?*

3. *Trained practitioners choose to use it?*

4. *Eligible populations/patients benefit from it?*

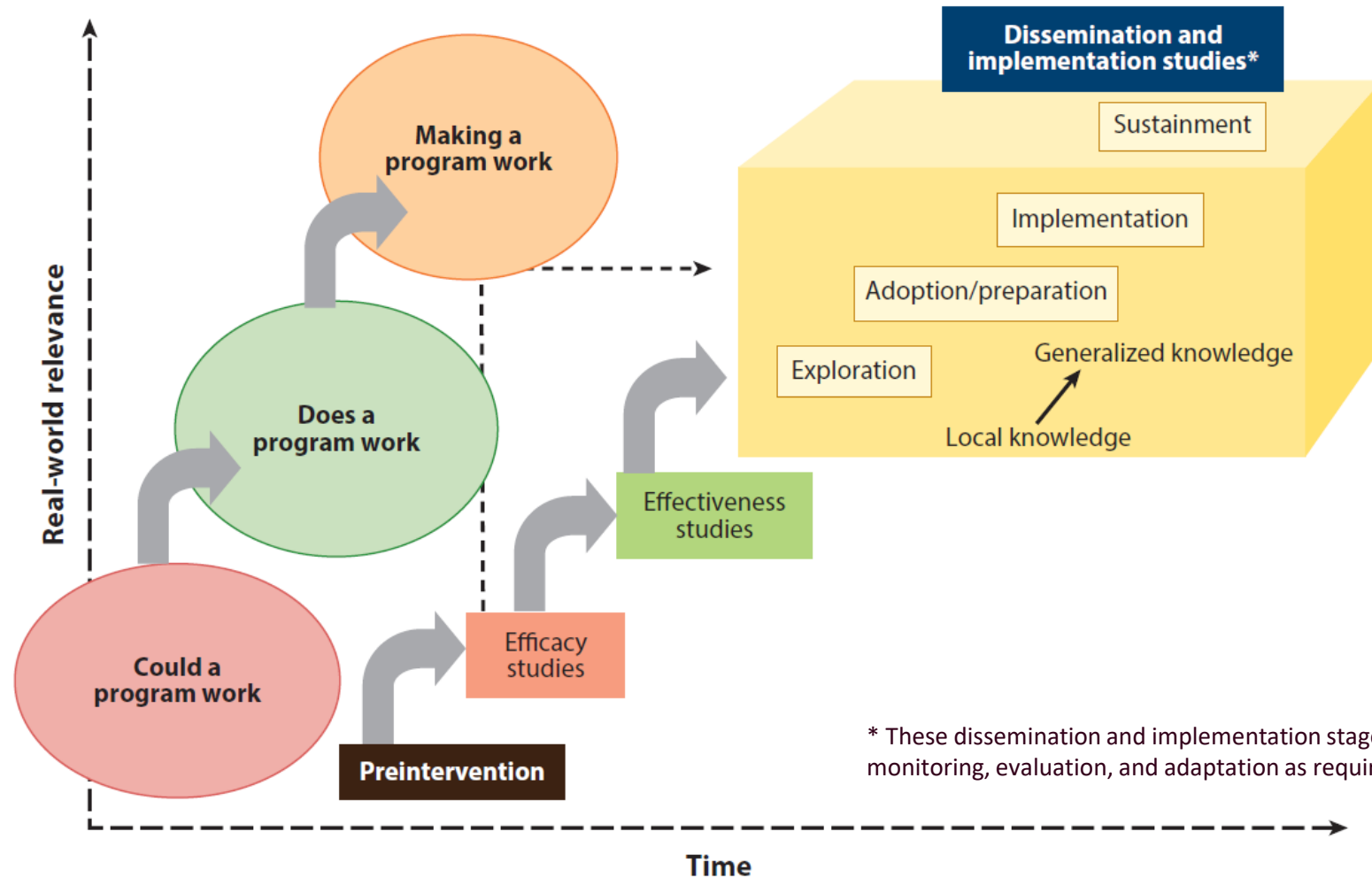If we assume 50% threshold for each step… even with perfect access, adherence, dosage, and maintenance….

Clinical Impact: 50% x 50% x 50% x 50% = 6% benefit

Overcoming the Persistent Research-to-Practice Gap

Existing providers don't have the resources or training to implement evidence-based practices once the research dollars go away

- Research **not aligned** with clinical operations priorities

- Interventions **not designed** with frontline providers in mind

- **Variation** in organizational capacity, commitment

- **Top down** strategies do not engage middle managers

- Effective **implementation strategies needed at** all levels for consumers, providers, managers **innovate and own** process

- Implementation is **iterative**, not always linear

The Traditional Translational Research Pipeline
(linear, sequential, but slow!)

Hendricks-Brown, Curran, Palinkas, et al. 2017. *Ann Rev Pub Health*; 38:1-22.

Implementation Research: Planning the Methods

What?
Evidence-based Interventions

How?
Implementation Strategies

Implementation Outcomes
Feasibility
Fidelity
Penetration
Acceptability
Sustainability
Uptake
Costs

Service Outcomes*
Efficiency
Safety
Effectiveness
Equity
Patient-centeredness
Timeliness

Health Outcomes
Satisfaction
Function
Health status/ symptoms

THE IMPLEMENTATION PATHWAY

THE USUAL

*IOM Standards of Care

Implementation Research Methods

Proctor, Landsverk, Aarons et al. *Admin Policy Ment Health* 2009. 36(1): 24-34

Implementation is Context Dependent, Multi-level Factors

Nation
State
Community
Organization
Service setting
STAKEHOLDERS AT ALL LEVELS!
Provider Consumer
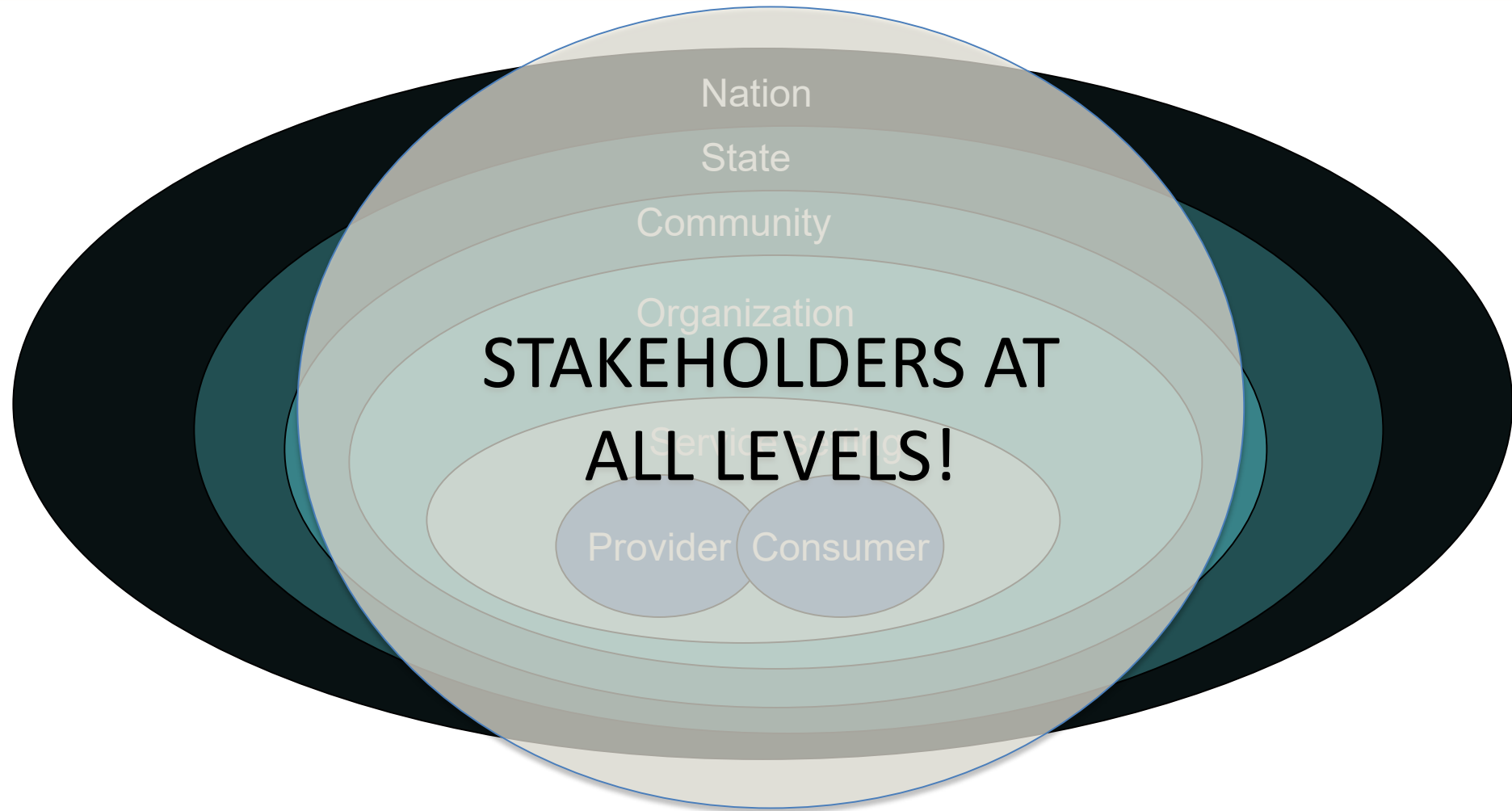
From David Chambers, DPhil, NCI

Implementation Strategies
Achieving the Art of Implementation Practice

Implementation Strategies – highly specified, systematic processes derived from implementation frameworks or theories that are used and tested at the clinic or system level, to help providers implement EBPs

- Assumes guideline and toolkit dissemination with education are insufficient
- Reduce multi-level barriers to uptake, facilitate adaptation and adoption:
  - Provider and middle manager buy-in
  - Integrating the practice with administrative and system workflows
  - Tailoring for local contexts without compromising EBP core elements

- Like clinical interventions, *implementation strategies are protocolized* in research

VA Quality Enhancement Research Initiative (QUERI)

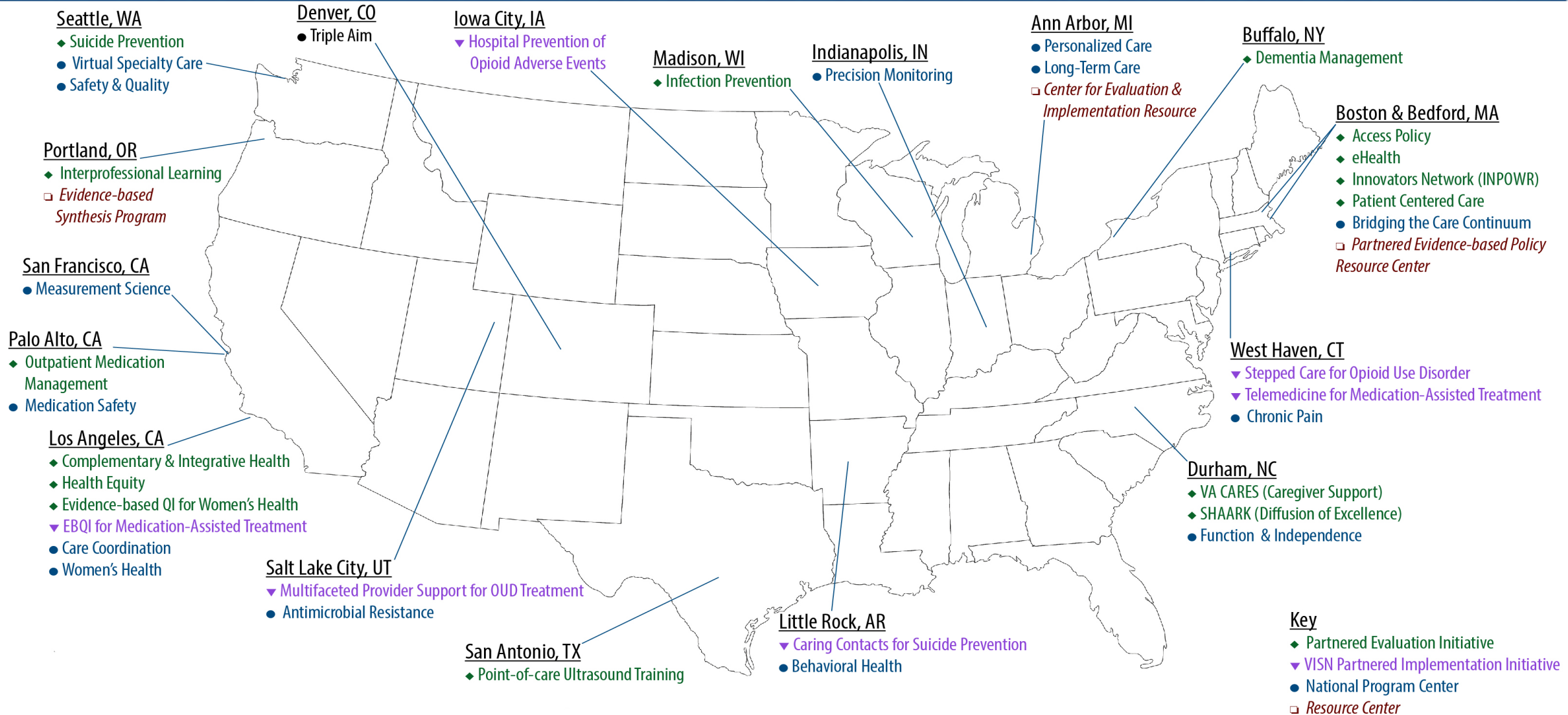*Accelerate adoption of evidence-based practices into routine care*

Three priority goals:
- Implement and sustain effective practices across various health settings
- Conduct rigorous evaluations with operations partners to optimize policies
- Promote implementation science across the translation pipeline

QUERI funds VA investigators to co-lead implementation and evaluation initiatives with clinical operations leaders

QUERI Funds Over 40 Centers Across U.S.

Seattle, WA
- ◆ Suicide Prevention
- ● Virtual Specialty Care
- ● Safety & Quality

Portland, OR
- ◆ Interprofessional Learning
- ❑ *Evidence-based Synthesis Program*

San Francisco, CA
- ● Measurement Science

Palo Alto, CA
- ◆ Outpatient Medication Management
- ● Medication Safety

Los Angeles, CA
- ◆ Complementary & Integrative Health
- ◆ Health Equity
- ◆ Evidence-based QI for Women's Health
- ▼ EBQI for Medication-Assisted Treatment
- ● Care Coordination
- ● Women's Health

Salt Lake City, UT
- ▼ Multifaceted Provider Support for OUD Treatment
- ● Antimicrobial Resistance

San Antonio, TX
- ◆ Point-of-care Ultrasound Training

Denver, CO
- ● Triple Aim

Iowa City, IA
- ▼ Hospital Prevention of Opioid Adverse Events

Madison, WI
- ◆ Infection Prevention

Indianapolis, IN
- ● Precision Monitoring

Little Rock, AR
- ▼ Caring Contacts for Suicide Prevention
- ● Behavioral Health

Ann Arbor, MI
- ● Personalized Care
- ● Long-Term Care
- ❑ *Center for Evaluation & Implementation Resource*

Buffalo, NY
- ◆ Dementia Management

Boston & Bedford, MA
- ◆ Access Policy
- ◆ eHealth
- ◆ Innovators Network (INPOWR)
- ◆ Patient Centered Care
- ● Bridging the Care Continuum
- ❑ *Partnered Evidence-based Policy Resource Center*

West Haven, CT
- ▼ Stepped Care for Opioid Use Disorder
- ▼ Telemedicine for Medication-Assisted Treatment
- ● Chronic Pain

Durham, NC
- ◆ VA CARES (Caregiver Support)
- ◆ SHAARK (Diffusion of Excellence)
- ● Function & Independence

Key
- ◆ Partnered Evaluation Initiative
- ▼ VISN Partnered Implementation Initiative
- ● National Program Center
- ❑ *Resource Center*

QUERI Promotes Scale Up & Spread of EBPs

Interdisciplinary Team-Based

- Evidence-based Behavioral Health Interdisciplinary Program teams

- Integrated pain teams, Pharmacist led pain care program

Personalized

- Caring Contacts for suicide prevention in non-mental health settings

- Automated Cognitive Behavioral Therapy for non-pharmacologic pain care

Patient-Centered

- Stepped Care for Opioid Use Disorder

- Collaborative care model tailored to women Veterans with anxiety, depression, or PTSD

Technology-Facilitated

- Telemedicine outreach for PTSD among rural Veterans

- Telemedicine for multimodal pain care and Medication Assisted Treatment

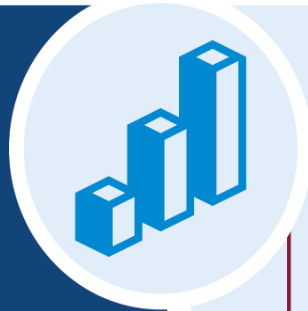# QUERI National Impacts

QUERI Impacts

Implementation

60+ effective practices being implemented across VA

>96,000 Veterans Impacted

>3,500 VA staff trained

Evvaluation

25+ evaluations of national VA programs and policies

Dissemination

100+ tools/products developed

285+ journal publications

415+ conference presentations

QUERI Deploys Implementation Strategies to Promote Uptake of EBPs

Evaluative and iterative strategies	Provide interactive assistance	Adapt and tailor to context
Develop stakeholder interrelationships	Train and educate stakeholders	ID, prepare clinical champions
Engage consumers	Use financial strategies	Change infrastructure, policies

Highly specified, theory-based methods used at the clinic or system level to help providers implement EBPs

Focus on improving provider technical and strategic skills

Like clinical interventions, implementation strategies are protocolized in research

Waltz, Powell, Mattieu et al. *Implement Sci* 2015.
Slide from Gila Neta, PhD, NCI
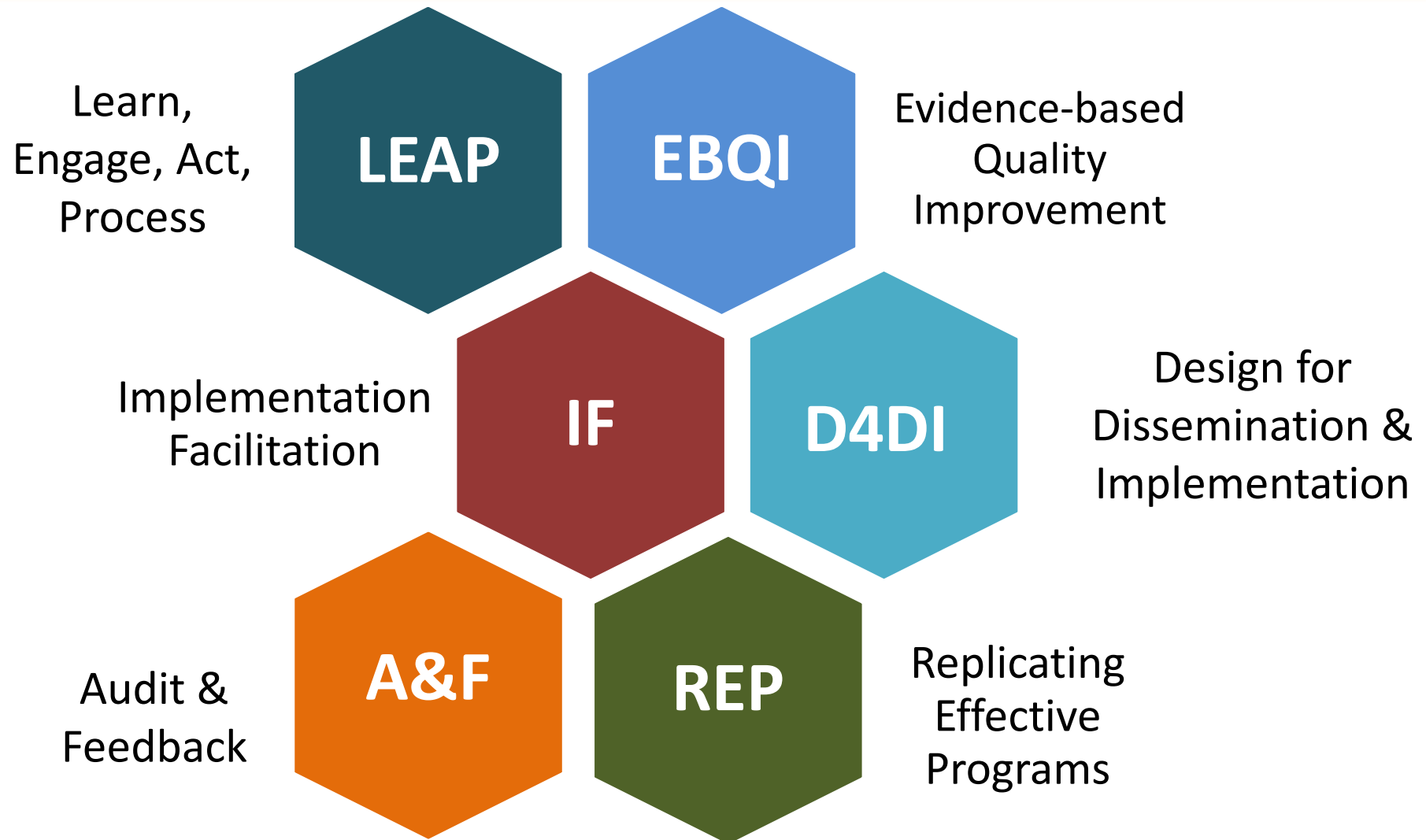
QUERI Systematic Review of Implementation Strategies to Use Beyond "Early Adopters"

Miake-Lye et al. VA ESP Report Scaling Beyond Early Adopters, 2019
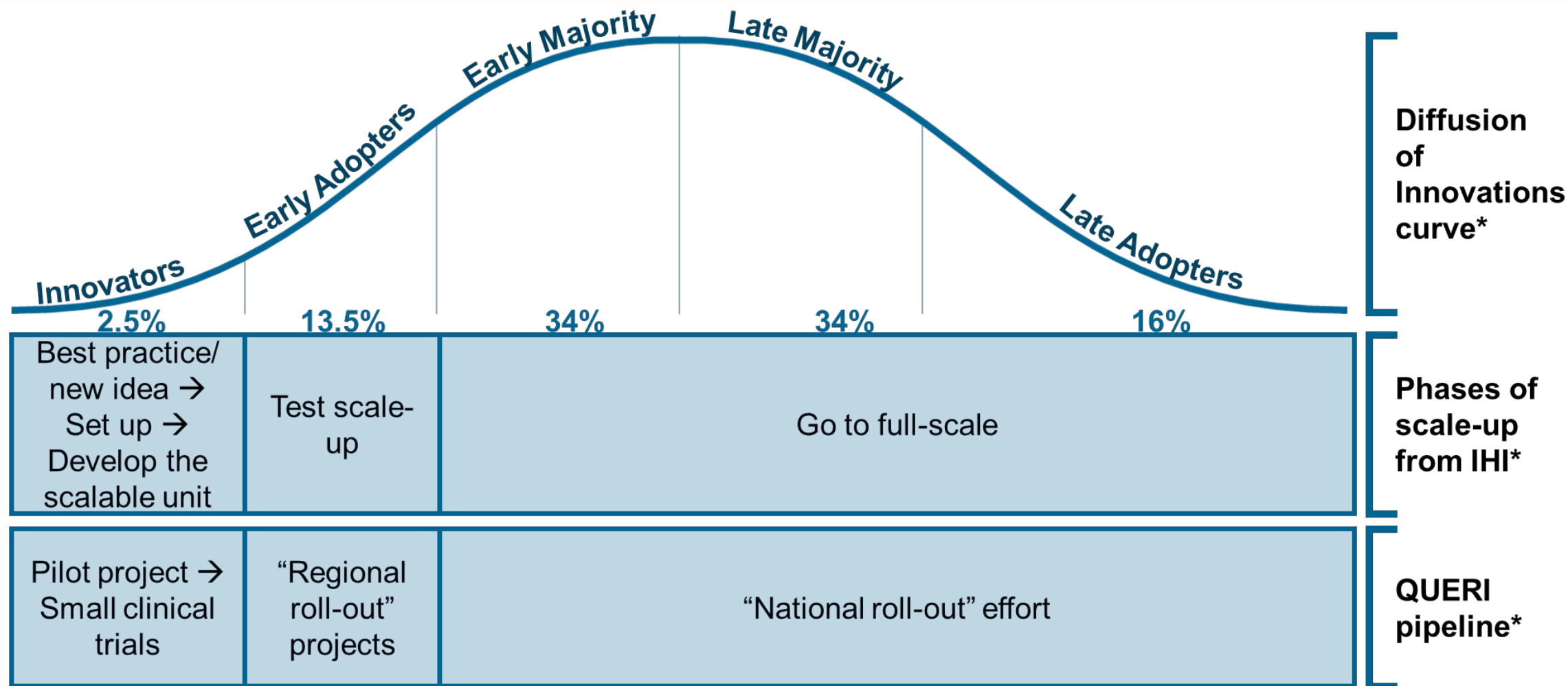
Strategies for Hard-to-Engage Sites

Common Challenges | Strategies Used

Low Bandwidth ----→ External facilitation
----→ Web of support

"they kind of stole from each other, which was great"

Local Innovations ----→ Peer to peer communication
----→ Kick the tires

Competing Priorities ----→ Tackling upstream issues
----→ Visibility with multi-level leadership

"we'll go fight the battles for you"
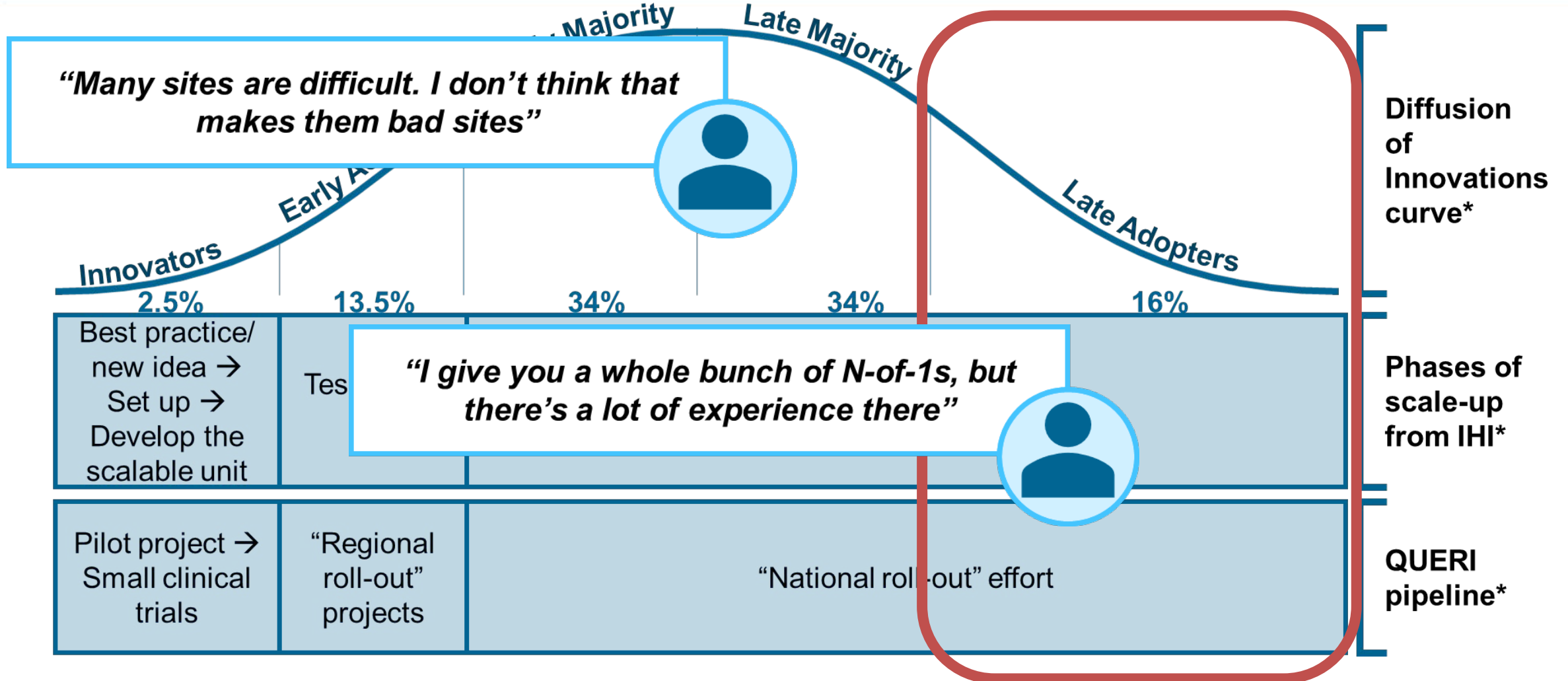
Potential Benefits | Strategies Used

Active Resistors ----→ Hard core/ soft periphery

"It's not one size fits all. They have room to adapt"

Taking the Long View ----→ Engagement → Adoption

Needs Alignment ----→ Framing the pitch

Getting to Implementation Strategies: Hybrid Effectiveness/Implementation Designs

- Address limits of step-wise research, speed it up

- Promote external validity ("design-for-implementation")

- Blend effectiveness, implementation stages

- Used to identify, test, compare implementation strategies

Curran, et. al. Effectiveness-Implementation Hybrid Designs. Med Care 2012

Types of Hybrid Designs

Clinical Effectiveness - - - - - - - - - - - - - - → **Implementation**

Study-supported providers deliver intervention

Transition to Existing Providers: Develop "First Follower"

Existing Providers deliver intervention

Hybrid Type 1

Hybrid Type 2

Hybrid Type 3

Hybrid Type 1: test clinical intervention, observe implementation

Hybrid Type 2: test clinical intervention & implementation strategy

Hybrid Type 3: test implementation strategies, observe clinical outcomes

Hybrid Type 1 Example:

National Implementation of Collaborative Care Model (CCM) for Aetna Health Plan Enrollees with Mood Disorders from Small Group Practices
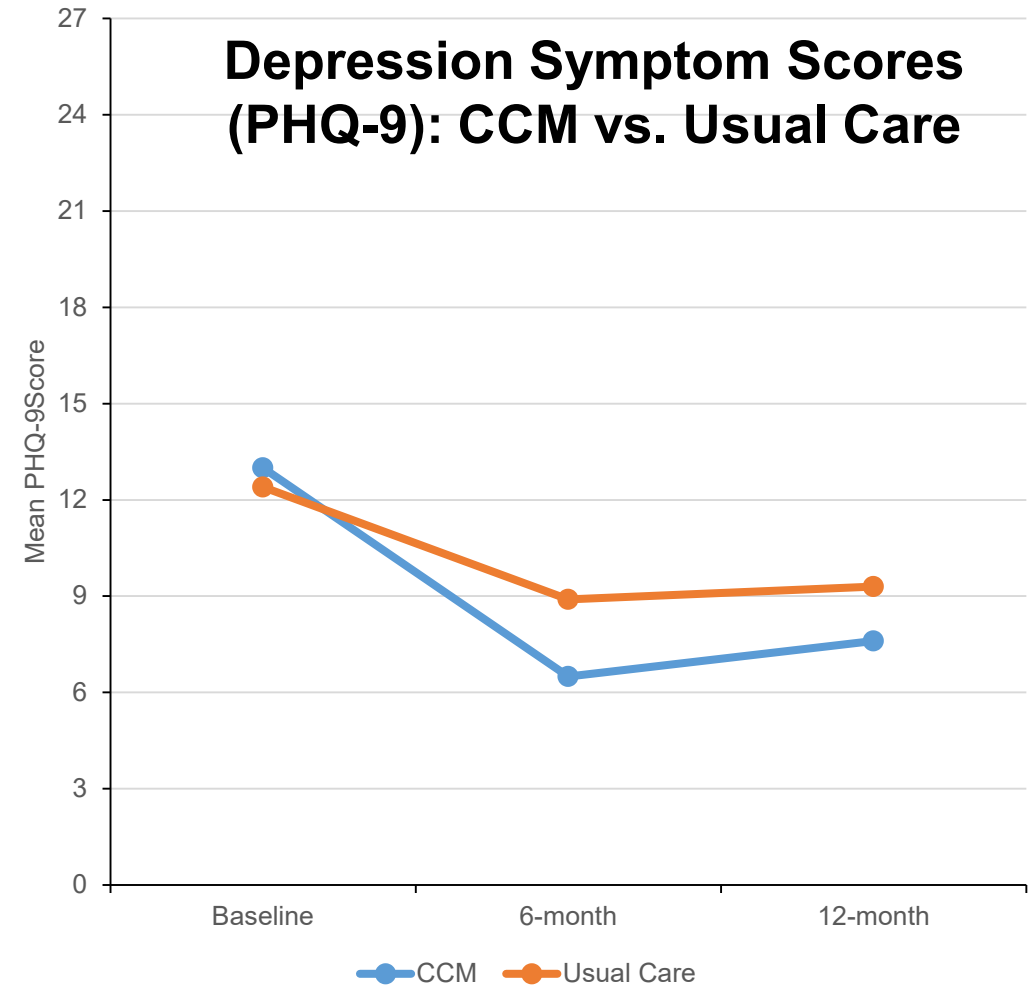
Collaborative Care Model

Care Management

Self-management support

Usual Care

Wellness mailings

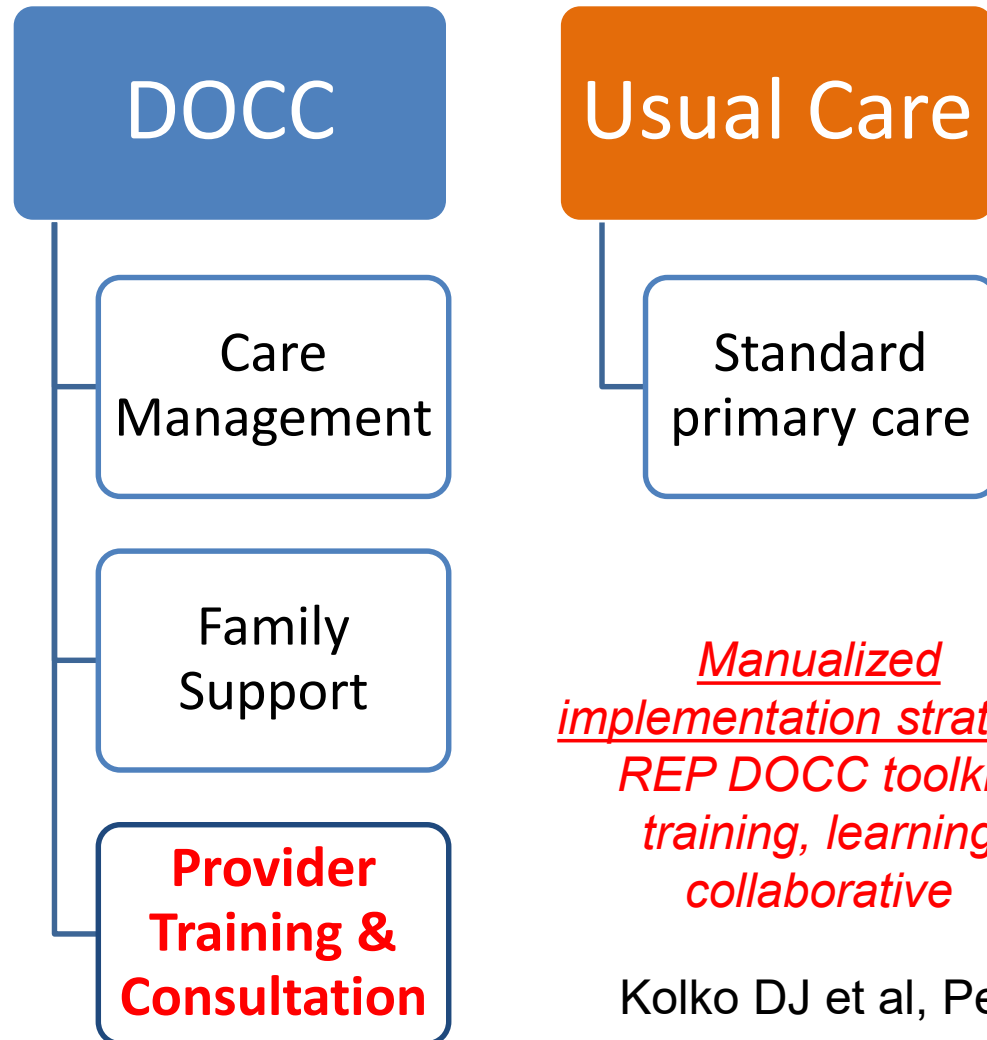*Observed barriers:*
PCP engagement
Health plan turnover

Depression Symptom Scores (PHQ-9): CCM vs. Usual Care

Mean PHQ-9 Score

Baseline — 6-month — 12-month

CCM   Usual Care

Kilbourne AM et al, BMC Psychol, 2014

Hybrid Type 2 Example:
Implementing Doctor-Office Collaborative Care (DOCC) in Pediatric Practices

DOCC
- Care Management
- Family Support
- **Provider Training & Consultation**

Usual Care
- Standard primary care

Manualized implementation strategy: REP DOCC toolkit, training, learning collaborative

Kolko DJ et al, Pediatrics 2014

Quality of Care: DOCC vs. Usual Care

Legend: DOCC, UC

% Tx Initiated — DOCC ≈ 0.99, UC ≈ 0.54
% Tx Completed — DOCC ≈ 0.77, UC ≈ 0.12
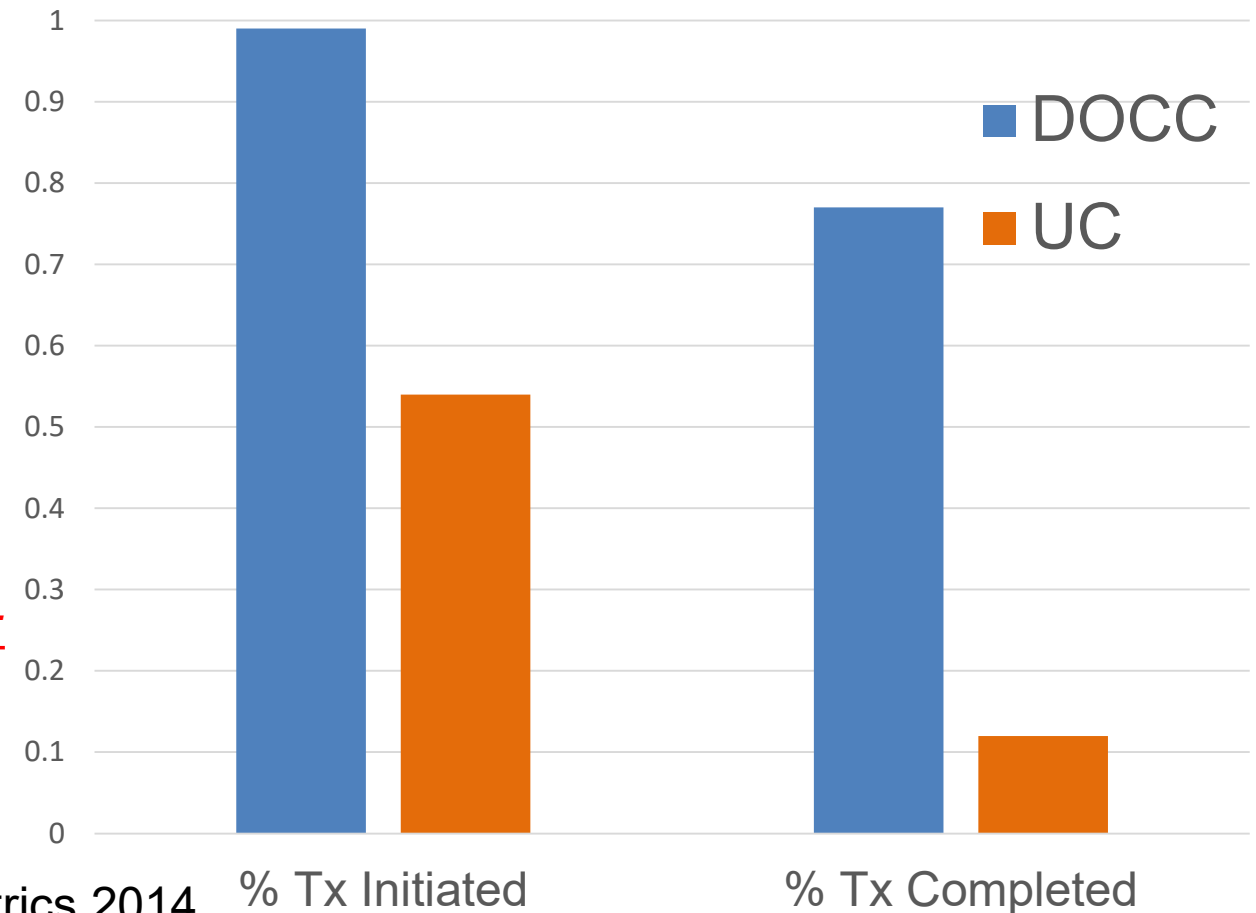
Hybrid Type 3 Example: Enhanced REP National Adaptive Implementation Strategy (Re-Engage)

- Patients with serious mental illness lost to care were dying from unforeseen causes

- Brief outreach program (Re-Engage) shown to reduce mortality in SMI

- VHA released national directive implement Re-Engage across all sites

- Two-arm cluster randomized adaptive implementation trial comparing implementation strategies

  - REP initially used to implement program in 158 sites

  - Sites (N=89) not responding to REP only support randomized to receive Enhanced REP (added Facilitation) or continue standard REP

- *Enhanced REP Facilitation time= 7.3 hours per site for six months*

Hybrid Type 3 Example:
Enhanced Replicating Effective Programs (REP) Implementation Strategy

Pre-implementation

Identification of quality gaps/barriers

Identify stakeholders

Identify and customize EBPs- local input

Package intervention
　Manual core elements
　Menu options (adapt)

Implementation

Orientation
　Cross-functional team
Training
Technical assistance

Evaluate

Facilitation
(Enhanced REP)

Sustainability

Further diffusion, spread

Budget impact (return on stakeholder investment)

Implementation "owner"

Hybrid Type 3 Example: REP vs. Enhanced REP
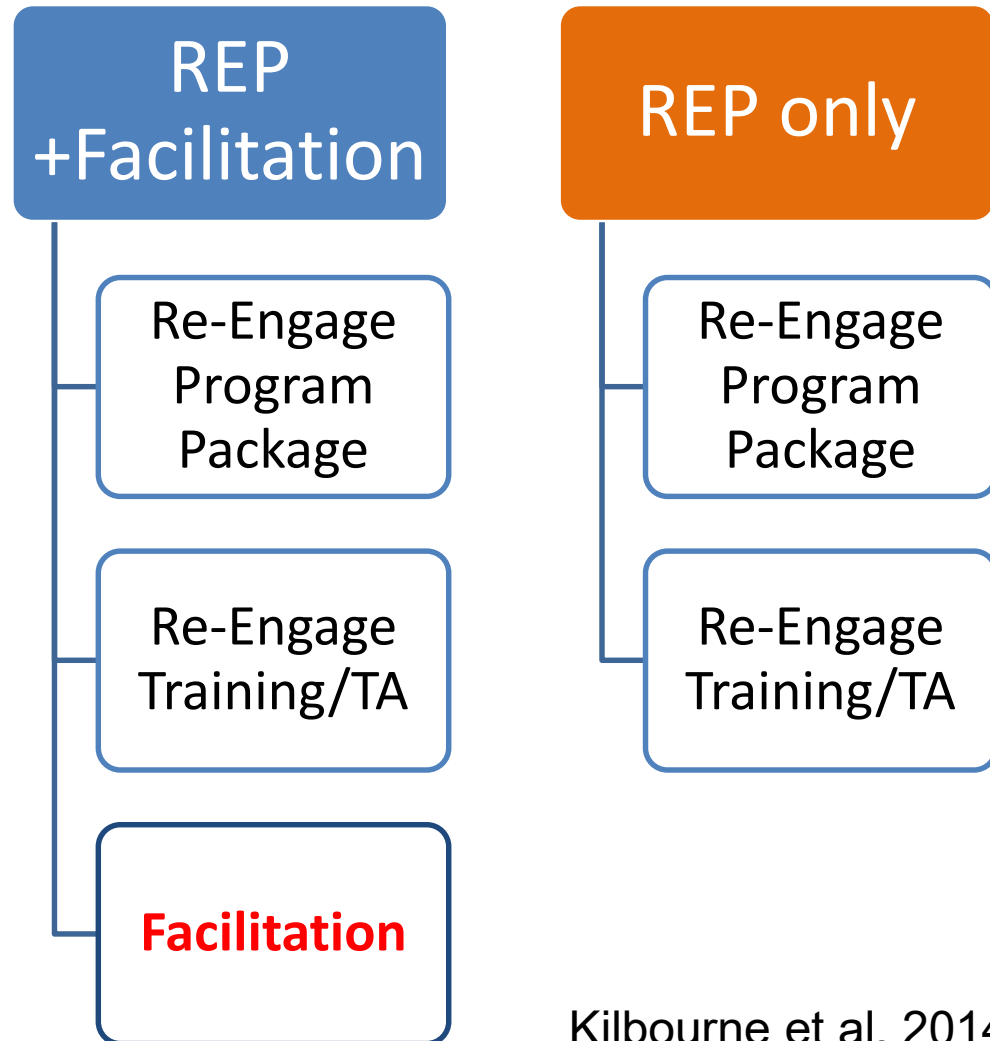
Standard REP

- Package (toolkit, guide)
- Training (calls, website)
- Brief technical assistance
- Uptake monitoring reports

Enhanced REP

- Package (toolkit, guide)
- Training (calls, website)
- Brief technical assistance
- Uptake monitoring reports
- ❖ **Match solutions to barriers**
- ❖ **Strategic thinking skills**
- ❖ **Build coalitions**
- ❖ **Business case to leaders**

Hybrid Type 3 Example:
Immediate vs. Delayed Enhanced REP Implementation Strategy to Improve Uptake of Outreach Program for Veterans with SMI

REP +Facilitation
- Re-Engage Program Package
- Re-Engage Training/TA
- **Facilitation**

REP only
- Re-Engage Program Package
- Re-Engage Training/TA

Chart legend:
- E-REP-% Attempted contact
- REP-% Attempted contact
- E-REP- % Updated documentation
- REP- % Updated documentation

Month/Year

Kilbourne et al. 2014, 2015
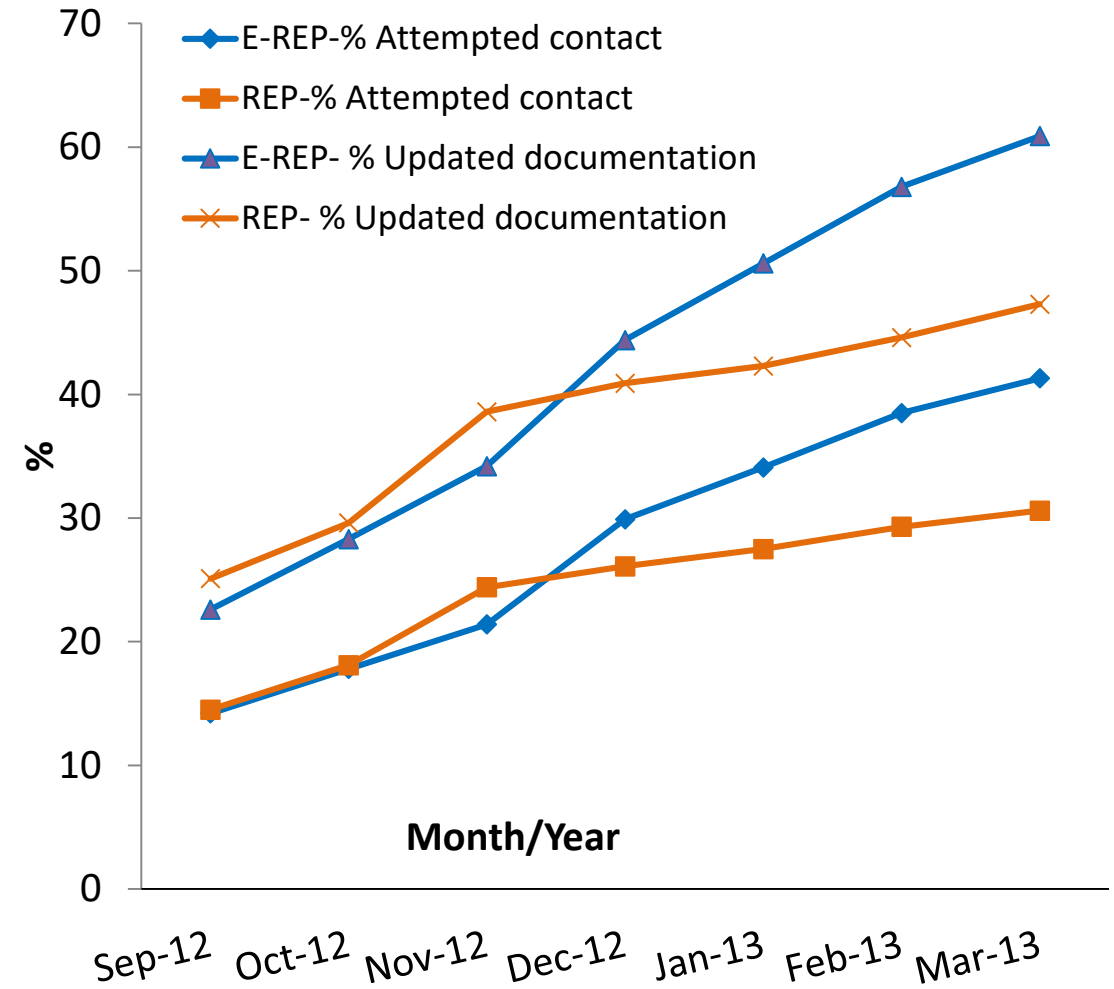
Hybrid Type 3 Sequential Multiple Assignment Trials (SMART) *Towards Precision Implementation*

- Multi-stage trials; same subjects throughout

- Each stage corresponds to a critical decision point

- Pre-specified measure of responsiveness

- Treatment options at randomization restricted depending on history of responsiveness

- Subjects randomized to set of treatment options

The goal of a SMART is to inform development of adaptive intervention strategies

When to Use SMART Designs for Implementation

Often insufficient evidence/theory to decide:

- Which implementation strategy(ies) should I **start with**?
- What should I do for sites that are ***non-responsive*** to first-line implementation strategy?
- What should I do for sites that are ***responsive*** to first-line implementation?

SMART designs
can help to answer these questions.

Example: Adaptive Implementation of Effective Programs Trial (ADEPT) Study

The question:

What is the best way to implement a collaborative care model (Life Goals) in community-based practices to improve patient mental health outcomes?

Background
Collaborative care models work

Decision Support

Self-management

Access/Continuity

Practice guidelines: Best practice tx, metabolic syndrome for mental health conditions

Life Goals sessions: CVD Risk, symptoms, healthy behaviors, provider engagement

Care management: Registry tracking (Symptoms, QOL, functioning), General Medical Provider Liaison

Kilbourne et al. Psych Serv 2008; 2013
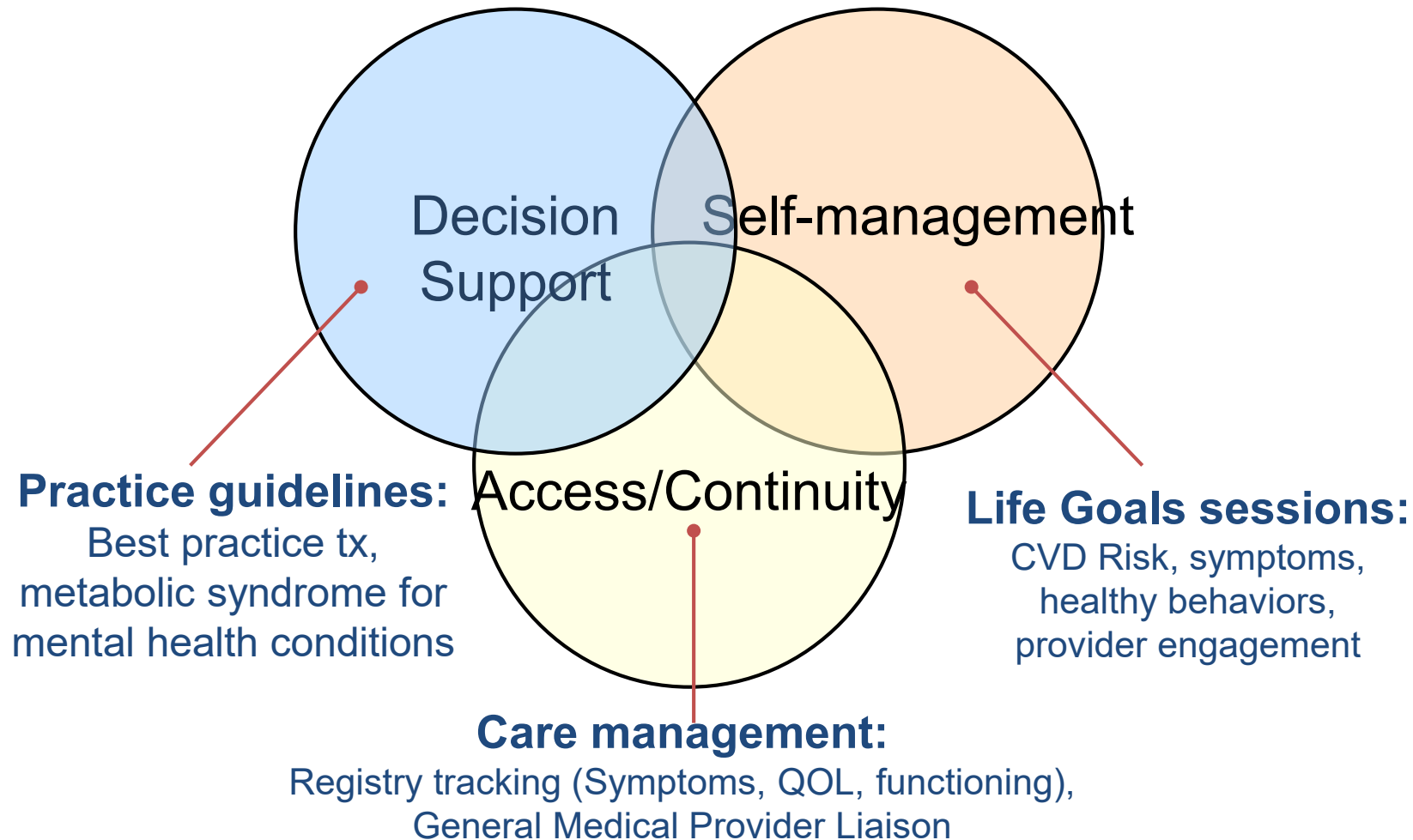
ADEPT Setting:
Community-based Practices in Michigan & Colorado
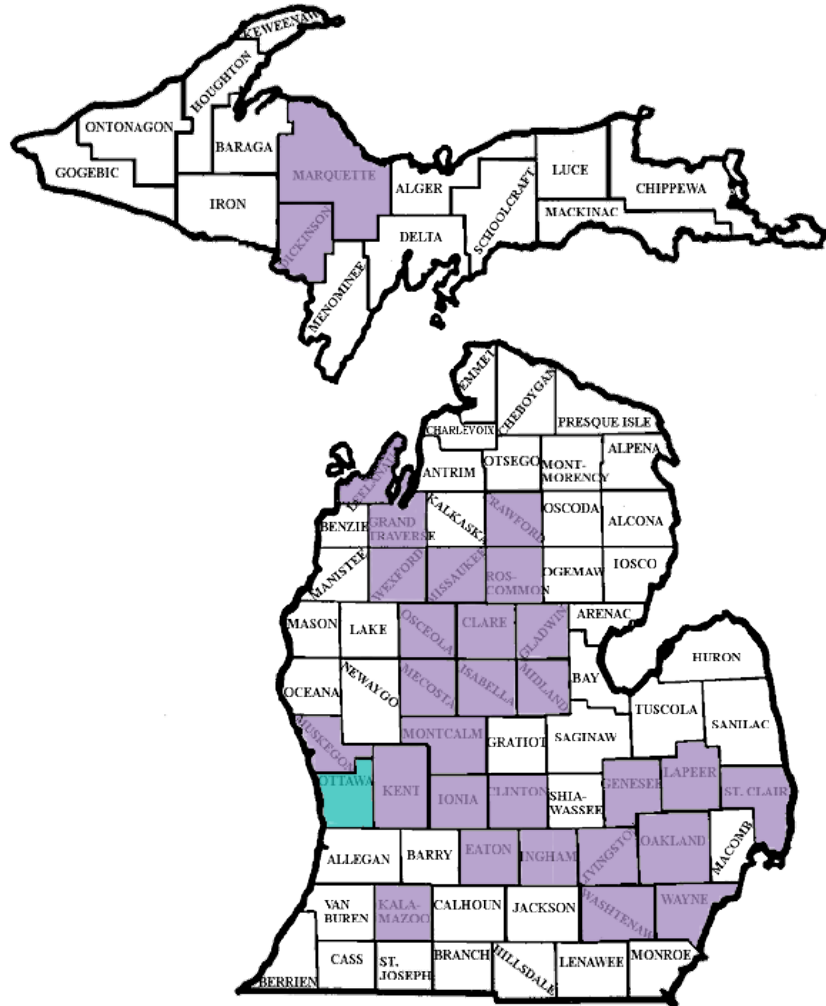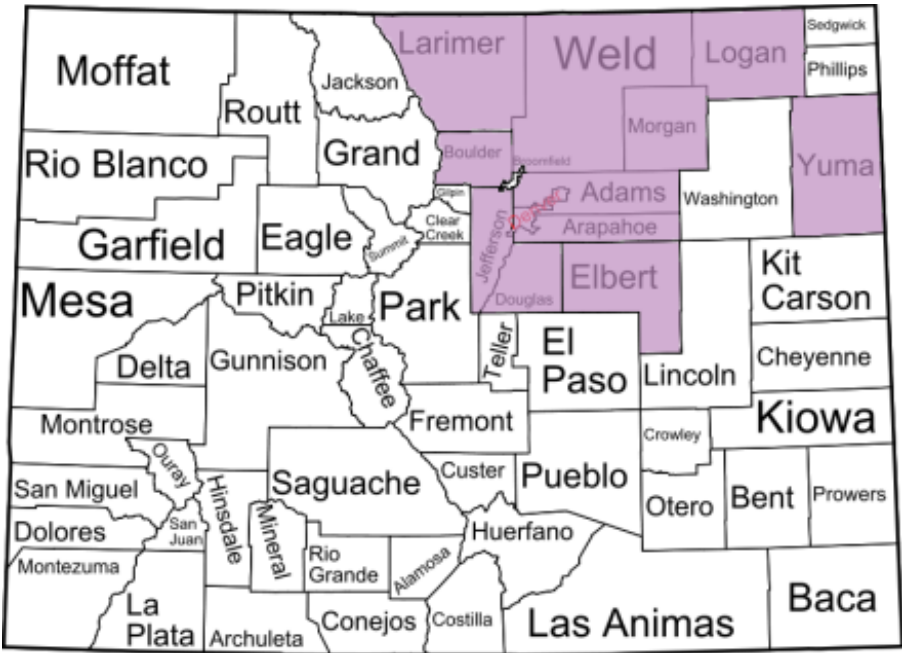
Implementation Strategy Options

REP
(Replicating Effective Programs)
Provides intervention manualization, didactic training and technical assistance.

+

EF
(External facilitation)
Help identifying & addressing barriers from an outside 'expert.'

+

IF
(Internal facilitation)
Inside expert who works with site leaders to address barriers & champion cause.

Less intensive ←——————————————→ More intensive

Two Types of Facilitation

External facilitator (EF):

- **Location:** Off-site, research team member
- **Topical focus:** Benchmarking, coaching
- **Role:** Confidante, outside observer

Internal facilitator (IF):

- **Location:** On-site, direct report to leadership
- **Topical focus:** Leveraging, rapport-building, internal recognition, sustainability
- **Role:** Inside expert, champion

Kilbourne AM et al. 2013; 2014; Goodrich et al. 2012

Kilbourne et al, 2014; Funding: NIMH R01 MH99899
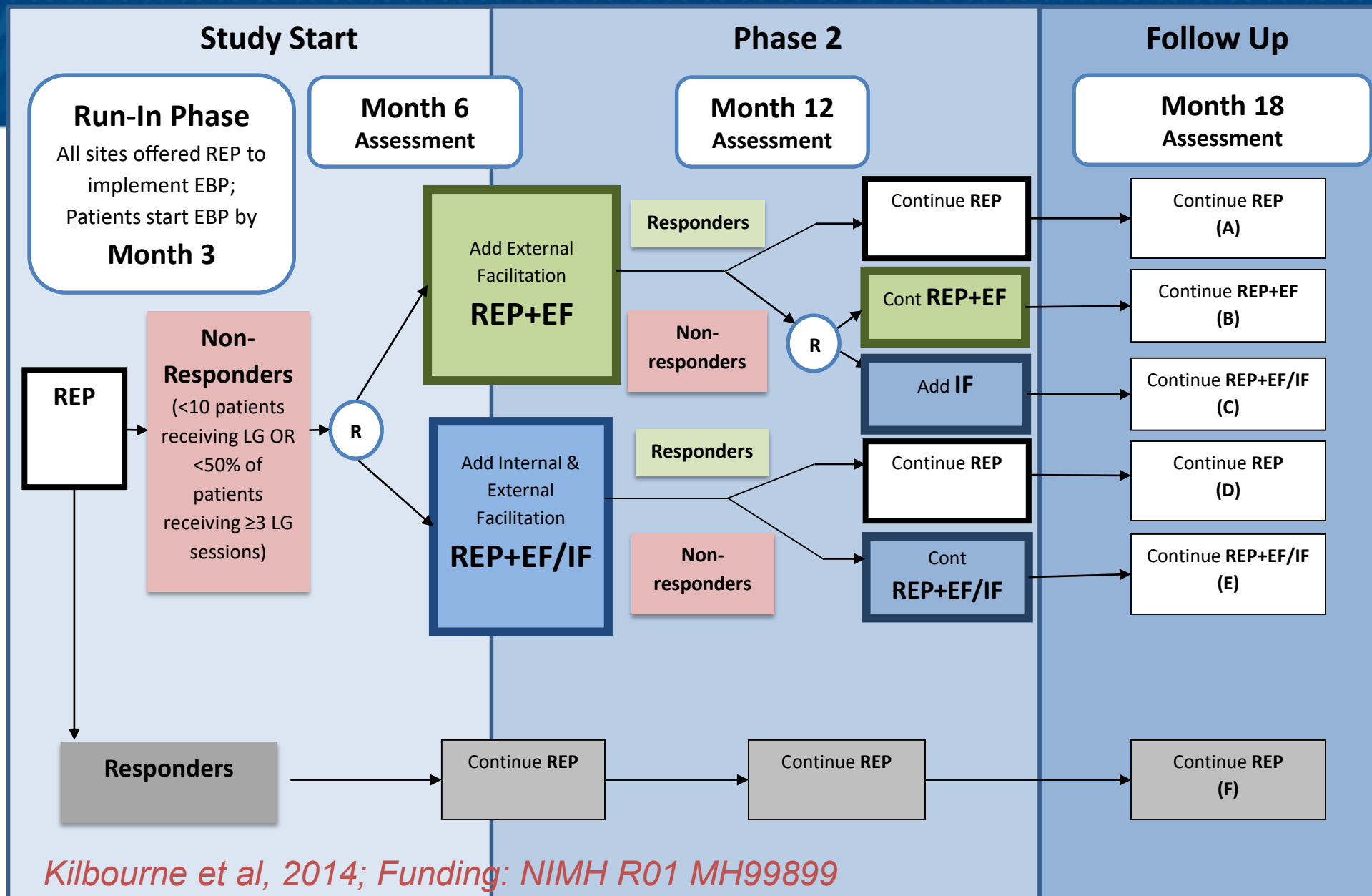
Results: Receipt of CCM (Life Goals)

Odds ratios for reporting receipt, months 6-18
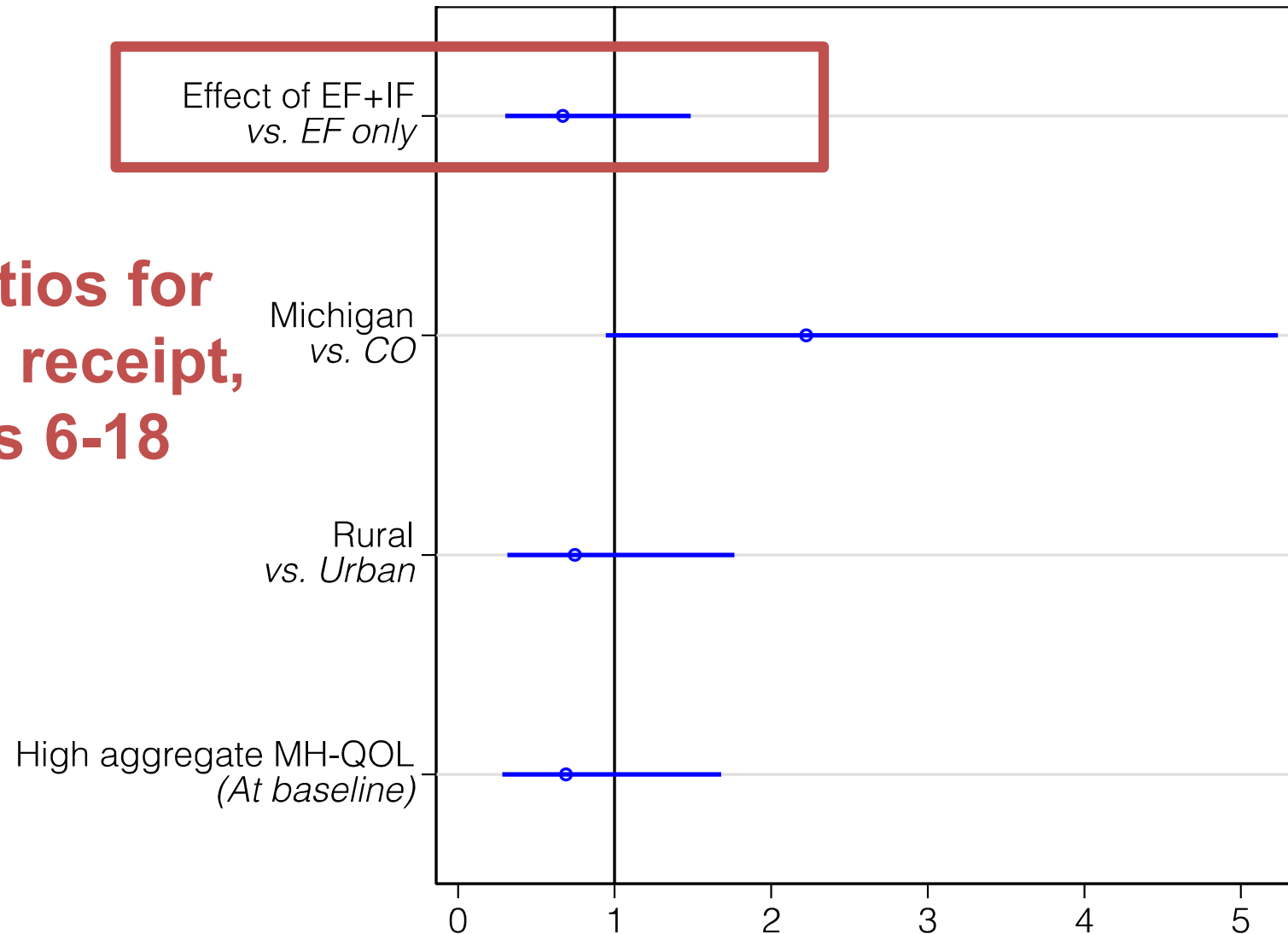
Effect of EF+IF
vs. EF only

Michigan
vs. CO

Rural
vs. Urban

High aggregate MH-QOL
(At baseline)

0   1   2   3   4   5
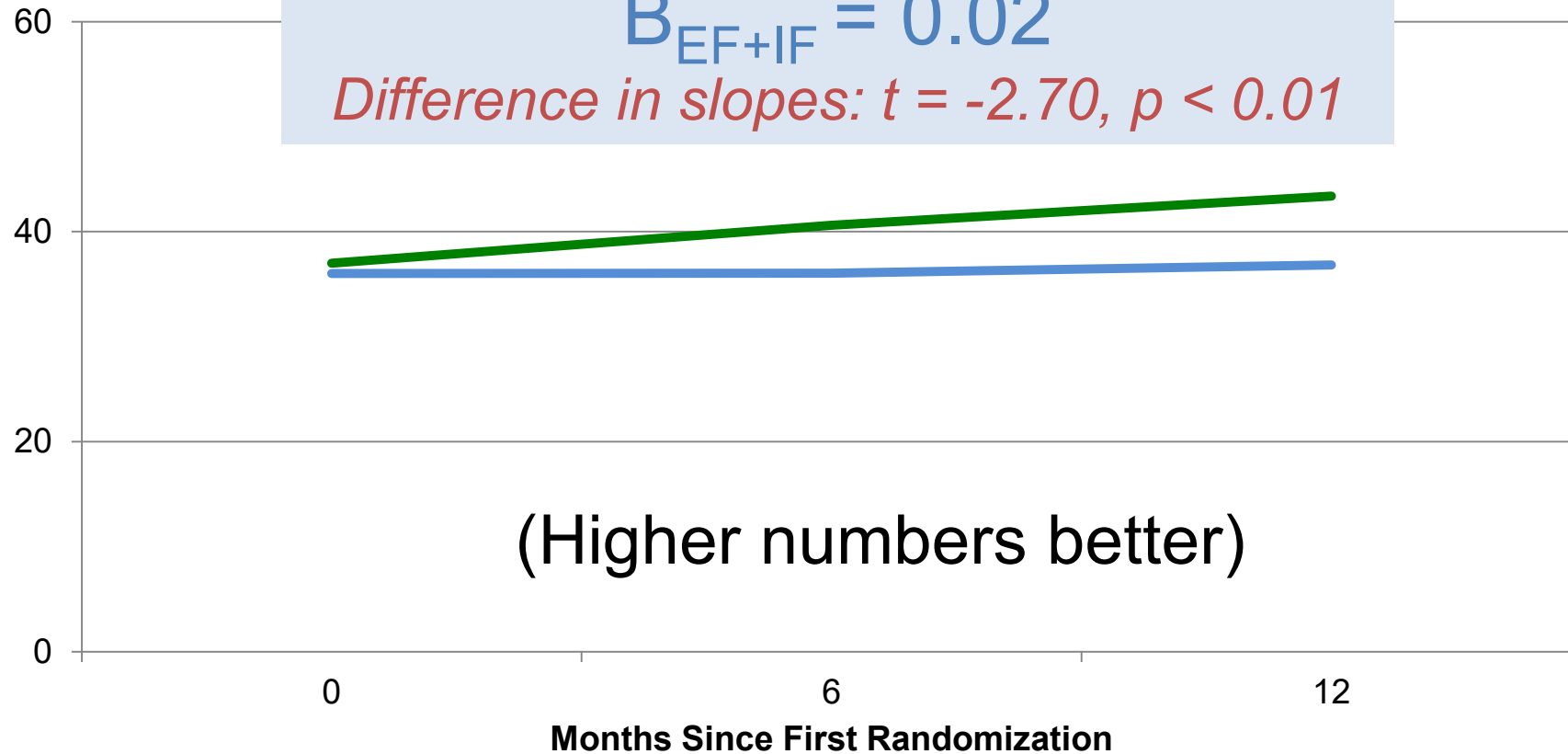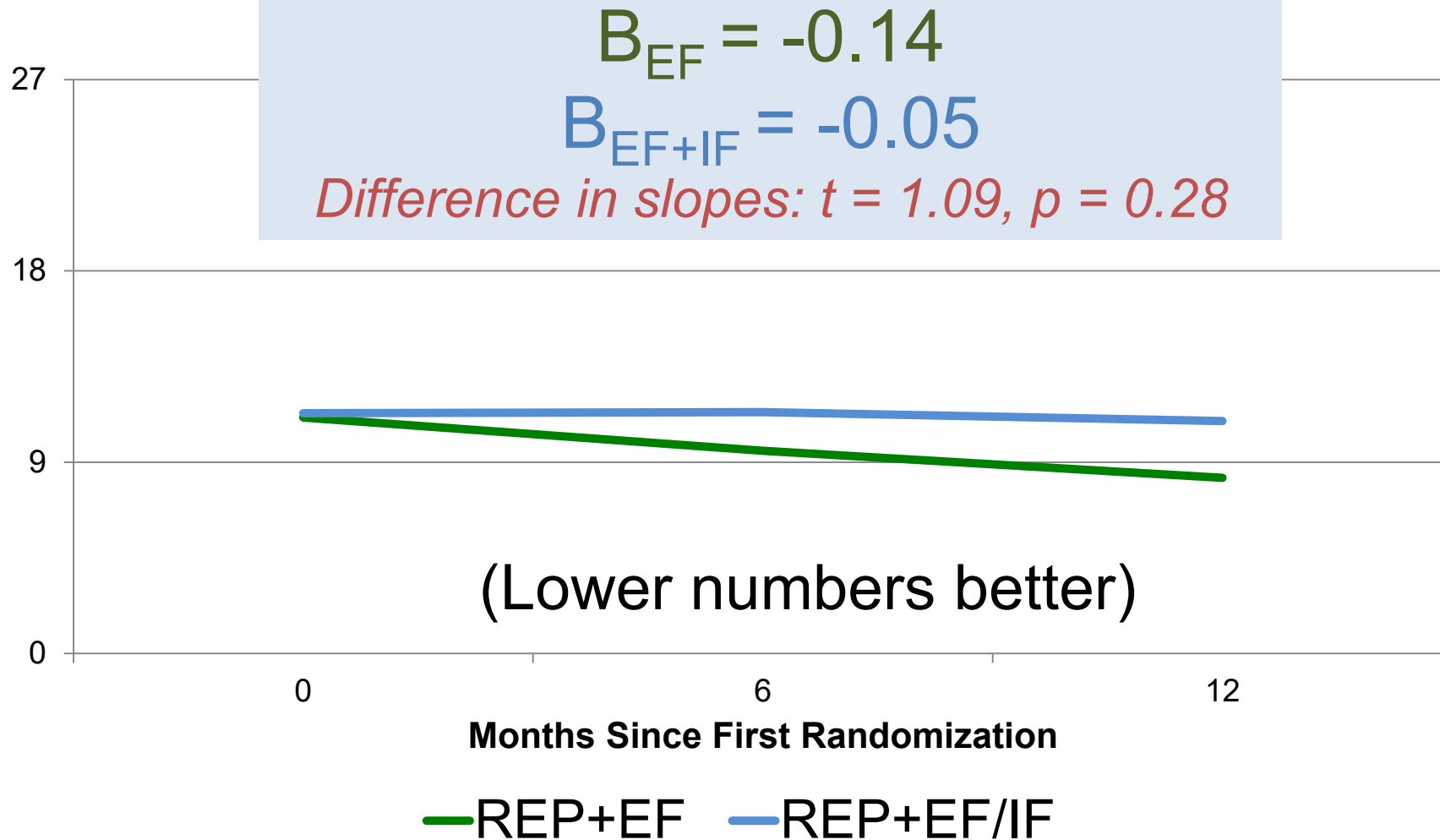
Implications

In spite of its added expense and intensity, augmenting **EF with IF** did not lead to better downstream patient outcomes than offering **EF** alone.

Why? We conjecture…

- EF more easily scalable
- Potential EF dose response
- Heterogeneity in quality/activity of IFs
- Burden of EF+IF at initial assignment

Adaptive School-based Implementation of CBT (ASIC)

1 in 5 students affected by mood disorders, 20% receive any treatment

EBTs such as CBT are effective, school professionals not adequately trained

Organizational barriers to EBT uptake in schools

ASIC will compare the effectiveness of a statewide, school-level adaptive implementation intervention involving REP, provider-CBT Coaching, and school-based Facilitation versus REP alone on:

– Frequency of CBT delivered to students by SPs

– Student mental health outcomes

NIMH R01 MH114203 (PI: Kilbourne)

Adaptive School-based Implementation of CBT (ASIC)

ASSESSMENT SCHEDULE

REP Run-In
Oct-Dec, 2018
Baseline assessment

Jan 2019
REP Didactic Training
Randomization 1
3 month assessment

March 2019
Assess Benefit from Facilitation
Randomization 2

April 2019
6 month assessment

Summer Break

October 2019
12 month assessment

Jan 2020
Implementation strategies stop

April 2020
18 month assessment

Initiate REP for Schools
k=100 schools
N≥200 SPs

Disseminate Package:
Website access with tools

Identify Students:
SPs identify students at-need for CBT

Start ongoing technical assistance (TA)
(web-based, monthly calls)

Provide Training:
1-day didactic CBT training
For all SPs
N≥200 SPs

(R)

REP only
k=50 schools
N≥100 SPs

No Potential to Benefit from Facilitation (Anticipated 10%, k=5)

Potential to Benefit from Facilitation (Anticipated 90%, k=45)

(R)

Continue REP → Assessments only **A** (k=5; N=10)

Continue REP → Assessments only **B** (k=22; N=44)

Continue REP and Add Facilitation → Assessments only **C** (k=23; N=46)

REP + Coaching
k=50 schools
N≥100 SPs

Potential to Benefit from Facilitation (Anticipated 50%, k=25)

No Potential to Benefit from Facilitation (Anticipated 50%, k=25)

(R)

Continue REP + Coaching → Assessments only **D** (k=25; N=50)

Continue REP + Coaching → Assessments only **E** (k=12; N=24)

Continue REP + Coaching and Add Facilitation → Assessments only **F** (k=13; N=26)

Run-In Phase | *Phase 1: Coaching treatment* | *Phase 2: Facilitation treatment* | *Phase 3: Follow-up assessment*

QUERI Updated Implementation Roadmap:
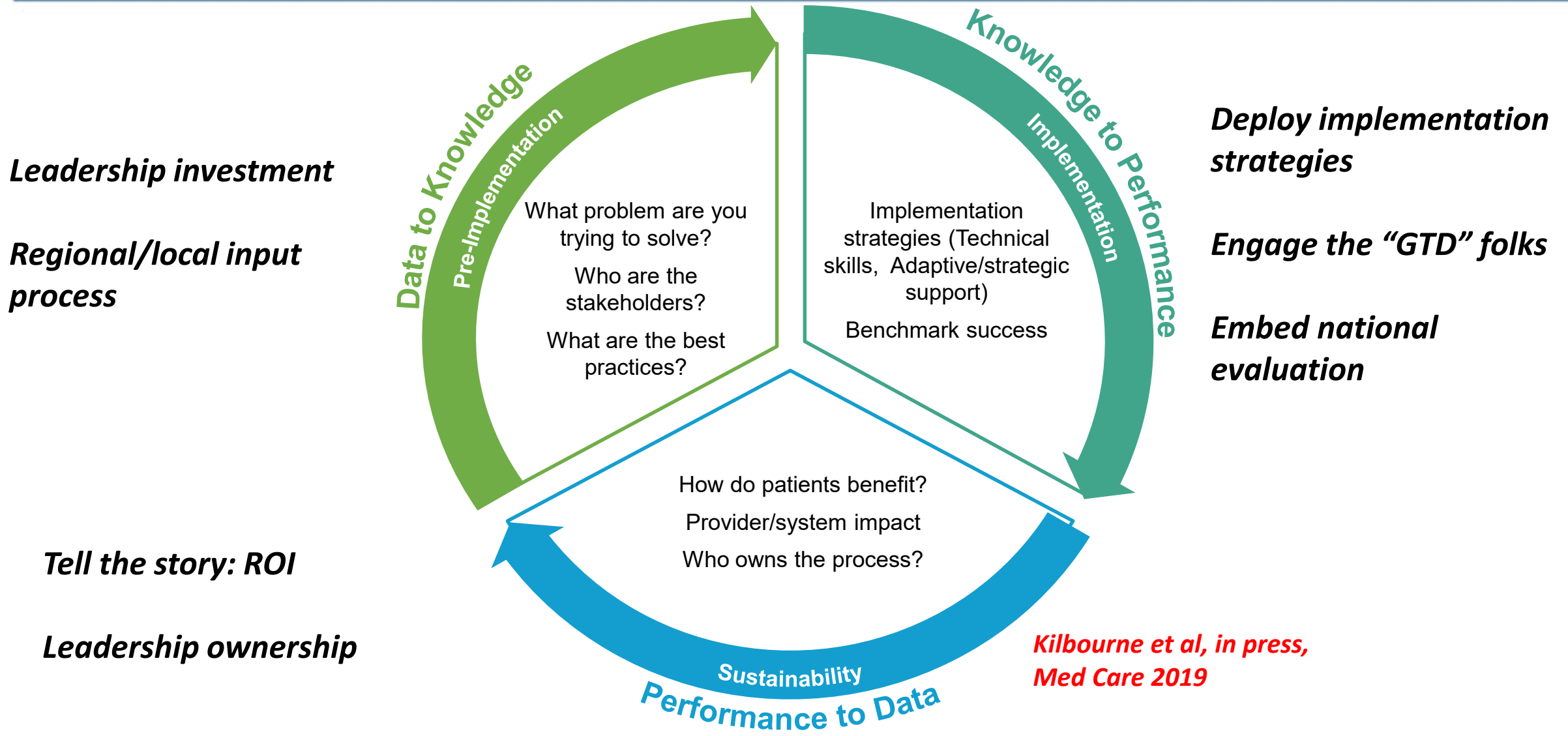## *Informing a High-Reliability, Learning Health Care System*

Leadership investment

Regional/local input process

Tell the story: ROI

Leadership ownership

Data to Knowledge

Pre-Implementation

What problem are you trying to solve?

Who are the stakeholders?

What are the best practices?

Knowledge to Performance

Implementation

Implementation strategies (Technical skills, Adaptive/strategic support)

Benchmark success

Deploy implementation strategies

Engage the "GTD" folks

Embed national evaluation

How do patients benefit?

Provider/system impact

Who owns the process?

Performance to Data

Sustainability

Kilbourne et al, in press, Med Care 2019

QUERI Implementation Roadmap Components

- 3 Phases: pre-implementation, implementation, and sustainability

- 3 levels within each phase describing activities to:
    1. Support the uptake/sustainment of the EBP
    2. Activate stakeholders or local delivery capability
    3. Optimize use of data and measurement to asses progress

- Phases are iterative cycles of experimentation and refinement - expect to pilot & pivot (and sometimes, lather, rinse, repeat)

- Deploy different implementation strategies depending on context

- Flexible application – planning and evaluation of national program deployments or supporting scale-up and evaluation of local promising practices

QUERI Implementation Roadmap Components

	Pre-implementation	Implementation	Sustainability
What is being implemented?	**Identify a problem and solution** • Identify high-priority need and goals • Agree on EBPs and settings • Clarify EBP core elements, adaptation options (consumer, provider input)	**Implement an intervention** • Select implementation strategies • Tailor strategies to local settings • Disseminate implementation plan and support tools	**Sustain an intervention** • Develop business plan to continue EBP • Monitor for changes in EBP, whether different EBP is needed • Weigh costs of maintaining EBP
Who and what settings are involved?	**Engage stakeholders** • Cultivate leadership/stakeholder support • Assess capacity, including barriers and solutions to EBP delivery • Package EBP with delivery adaptations	**Activate implementation teams** • Convey top-down practice support "push" to local sites from leadership • Empower bottom-up "pull" to enhance stakeholder buy-in at local level • Create stakeholder feedback channels	**Transition ownership to stakeholders** • Provide management support • Plan and budget for resources • Support continuous learning and innovation in local stakeholder teams
How is it being measured?	**Develop measures and data** • Design evaluation to match goals • Identify measures of success and data sources • Establish baseline performance	**Monitor implementation progress** • Report progress to stakeholders • Make data accessible to stakeholders • Adjust plan based on feedback	**Ongoing Evaluation and Reflection** • Consumer outcomes • Delivery of EBP (fidelity vs. adaptation) • Provider and system costs

Kilbourne et al, Med Care, in press, 2019)

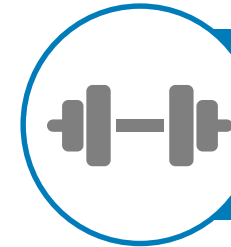# QUERI Roadmap: Scaling Up Effective Innovations in Real-World Practices

- The **Innovators Network** helps employees implement, disseminate and sustain innovative programs to serve Veterans.

- Each site (33 total) led by an Innovation Specialist provides employee training and guidance in the innovation development

- Within sites, there funding opportunities for "Spark-Seed-Spread" projects

- The **Diffusion of Excellence Initiative (DEI)** aims to identify and spread promising clinical and administrative practices from employees

- Facility directors bid on the most promising practices (Gold Status Practices) via a "Shark Tank" for further spread at their sites

- QUERI provides implementation and evaluation support to Shark Tank winners
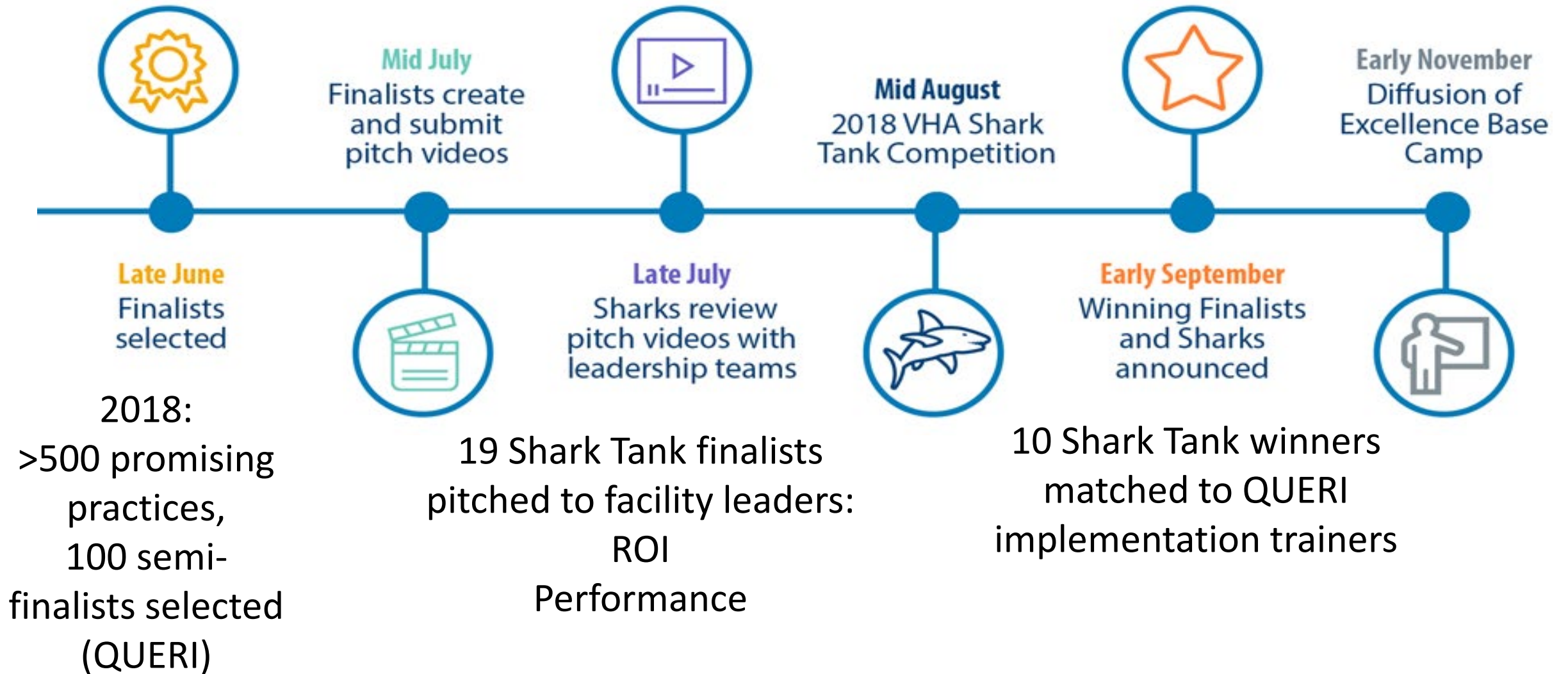
Diffusion of Excellence Process & Goals

Acknowledgements: Ryan Vega

Diffusion of Excellence Initiative

Late June
Finalists selected

2018:
>500 promising practices, 100 semi-finalists selected (QUERI)

Mid July
Finalists create and submit pitch videos

Late July
Sharks review pitch videos with leadership teams

19 Shark Tank finalists pitched to facility leaders: ROI Performance

Mid August
2018 VHA Shark Tank Competition

Early September
Winning Finalists and Sharks announced

10 Shark Tank winners matched to QUERI implementation trainers

Early November
Diffusion of Excellence Base Camp

QUERI Implementation Strategy Learning Hubs

- Train providers in specific <u>implementation strategies</u>

- Most interventions never get implemented because the original research <u>pays for the providers</u>, and facilities may not sustain when funding goes away

- Strategies range from training, toolkit development, to engaging opinion leaders, mentoring champions

- QUERI Learning Hub Sites use <u>evidence-based implementation strategies</u> coordinated by Center for Evaluation & Implementation Resources

QUERI-Diffusion of Excellence Partnership: IMPaCT Community Peer Support Implementation

IMPaCT effectiveness demonstrated in 3 RCTs

CHRONIC DISEASE CONTROL ⬆

QUALITY ⬆

MENTAL HEALTH ⬆

HOSPITAL ADMISSIONS lowered by 30% ⬇

Dr. Judith Long, MD
HSR&D
Crescenz VA Medical Center

IMPaCT trains community health workers to join a health care team and provide social support to high risk patients

IMPaCT applied to VHA Diffusion of Excellence, chosen to participate in their Shark Tank, selected as Gold Status practice

Diffusion of Excellence BaseCamp:
IMPaCT obtains ongoing implementation support from QUERI D4DI Learning Hub and DEI Diffusion Specialists

Lynette Kelley

Marina McCreight

Implementation Strategies: Lessons Learned

- Need bottom-up as well as top-down support- specify from the start
- Show return-on-investment for leadership (WIIFM)
- Hard-to-engage sites are highly variable, require tailored strategies
- Providers "lead from the middle", let them own the implementation
- De-mystify implementation science, train in implementation practice

"Let the other person feel that the idea was his or hers"-
Dale Carnegie

THANK YOU!

Melissa Braganza, Faith Booker, QUERI
Isomi Miake-Lye, Evidence Synthesis Program
Ryan Vega, Blake Henderson, VHA Innovation Ecosystem
Nick Bowersox, David Goodrich, CEIR
Shawna Smith, UM Dept. of Psychiatry, Institute for Social Research
Daniel Almirall, ISR, Shawna Smith, Psychiatry
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The views expressed are those of the authors and do not necessarily represent the views of the VA

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