EVANS CENTER FOR IMPLEMENTATION AND IMPROVEMENT SCIENCES

BOSTON UNIVERSITY

Bringing Science to Quality

Transforming Implementation & Improvement Into Science: *A skills building series*

April 18, 2018

Engage with CIIS

Guide & Innovate

- Provide guidance, support & innovation to design projects that rigorously evaluate the effectiveness of efforts to implement change

Accelerate & Promote Sustainability

- Identify strategies that accelerate the adoption & promote sustainability of effective healthcare interventions

Educate

- Provide implementation & improvement sciences education to faculty, trainees, students

Overview: Implementation & Improvement Sciences

Implementation Science
Focuses on optimal strategies to promote evidence uptake in real-world settings

Addresses
Did stakeholders perform the desired endeavor?
Why or why not?
How well?

Improvement Science
Focuses on rigorously measuring outcomes associated with efforts to improve care delivery

Addresses
Did the new endeavor measurably improve desired outcomes?

Aims

Translate research intro practice

Systematically implement evidence-based practices

Improve the quality of healthcare

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Upcoming Sessions

Tentative Date	Session Title	Proposal Areas Addressed
10/25/2017	Identifying Your Implementation & Improvement Sciences Research Question	Quality/Care Gap, Evidence-Based Practice
12/6/2017	Using & Discussing Implementation Science Models	Conceptual Model
1/25/2018	Implementation Strategies Versus Study Interventions	Implementation Strategy
2/28/2018	Designing an Implementation & Improvement Sciences Study	Study Design, Measurement, Analytic Methods
3/22/2018	Designing Your Implementation & Improvement Sciences Study	Measurement, Analytic Methods
4/18/2018	Measuring Implementation & Improvement Outcomes	Measurement, Analytic Methods
5/10/2018	**Engaging with Stakeholders to Conduct Feasible & Meaningful Research**	**Stakeholder Engagement, Feasibility, Team, Policy Environment**

Measuring Implementation & Improvement Outcomes

A. Rani Elwy, PhD

Affiliated Investigator, CIIS
Associate Professor, BUSPH Department of Health Law, Policy and Management
Senior Research Scientist, VA Center for Healthcare Organization and Implementation Research

Outline

- Define implementation outcomes
- Describe how these are different from effectiveness outcomes
- Illustrate how implementation outcomes come from frameworks and models you already know
- Provide examples of studies where I have examined implementation outcomes
- Describe some implementation outcome measures
- Introduce an implementation outcomes toolkit
- Answer your questions at any time

What is an Implementation Outcome

"The effects of deliberate and purposive actions to implement new treatments, practices and services"

(Proctor et al, 2011)

3 functions

1. Serve as indicators of implementation success
2. Proximal indicators of implementation processes
3. Key intermediate outcomes in relation to service system or clinical outcomes in treatment effectiveness and quality of care research

Distinguishing From Effectiveness

"When such efforts fail, as they often do, it is important to know if the failure occurred because the intervention was ineffective in a new setting (intervention failure) or if a good intervention was deployed incorrectly (implementation failure)"

Source: Proctor E, Silmere H, Raghavan R, Hovmand P, Aarons G, Bunger A, Griffey R, Hensley M. Outcomes for implementation research: conceptual distinctions, measurement challenges and research agenda. *Adm Policy Ment Health.* 2011;38(2):65-76.

Implementation Outcomes Framework

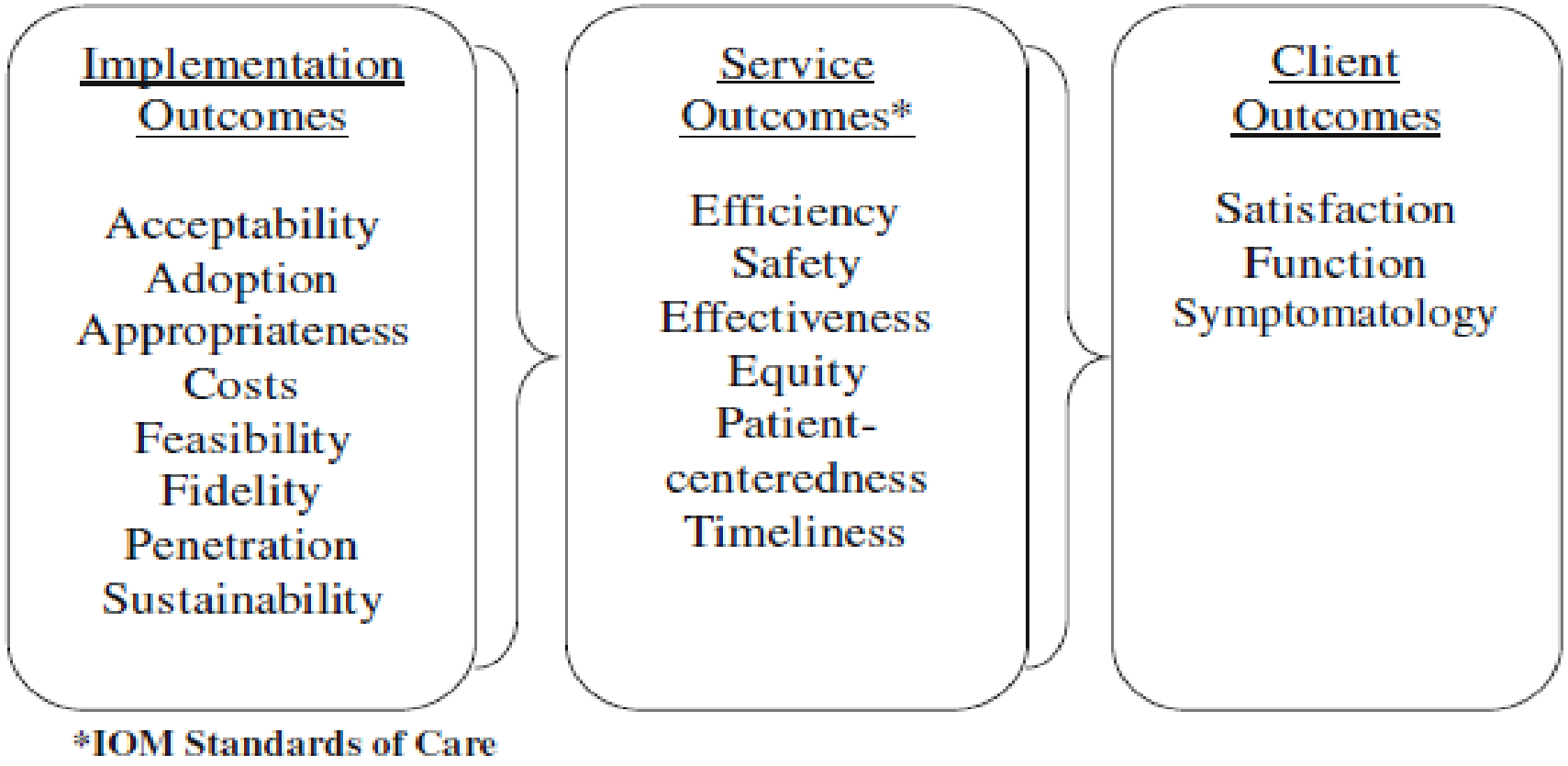


Fig. 1 Types of outcomes in implementation research

Source: Proctor E, Silmere H, Raghavan R, Hovmand P, Aarons G, Bunger A, Griffey R, Hensley M. Outcomes for implementation research: conceptual distinctions, measurement challenges and research agenda. *Adm Policy Ment Health.* 2011;38(2):65-76.

How Do These Work with Effectiveness Outcomes?

Study Characteristic	Hybrid Trial Type 1	Hybrid Trial Type 2	Hybrid Trial Type 3
Research aims	Primary aim: determine effectiveness of a clinical intervention Secondary aim: better understand context for implementation	Coprimary aim*: determine effectiveness of a clinical intervention Coprimary aim: determine feasibility and potential utility of an implementation intervention/strategy	Primary aim: determine utility of an implementation intervention/strategy Secondary aim: assess clinical outcomes associated with implementation trial
Evaluation methods	Primary aim: quantitative, summative Secondary aim: mixed methods, qualitative, process-oriented, could also inform interpretation of primary aim findings	Clinical effectiveness aim: quantitative, summative Implementation aim: mixed method; quantitative, qualitative; formative and summative	Primary aim: mixed-method, quantitative, qualitative, formative, and summative Secondary aim: quantitative, summative
Measures	Primary aim: patient symptoms and functioning, possibly cost Secondary aim: feasibility and acceptability of implementing clinical treatment, sustainability potential, barriers and facilitators to implementation	Clinical effectiveness aim: patient symptoms and functioning, possibly cost effectiveness Implementation aim: adoption of clinical treatment and fidelity to it, as well as related factors	Primary aim: adoption of clinical treatment and fidelity to it, as well as related factors Secondary aim: patient symptoms, functioning, services use

Source: Curran GM, Bauer M, Mittman B, Pyne JM, Stetler C. Effectiveness-implementation hybrid designs: combining elements of clinical effectiveness and implementation research to enhance public health impact. *Med Care.* 2012;50(3):217-226.

Acceptability

- Perception among implementation stakeholders that a given treatment, service, practice or innovation is agreeable, palatable or satisfactory

- Should be assessed based on stakeholders' direct experience with various dimensions of the treatment to be implemented, such as its content, **complexity** or comfort

Where Have I Seen Acceptability Before?

	Topic/Description	Short Description
I. INTERVENTION CHARACTERISTICS		
A	Intervention Source	Perception of key stakeholders about whether the intervention is externally or internally developed.
B	Evidence Strength & Quality	Stakeholders' perceptions of the quality and validity of evidence supporting the belief that the intervention will have desired outcomes.
C	Relative advantage	Stakeholders' perception of the advantage of implementing the intervention versus an alternative solution.
D	Adaptability	The degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs.
E	Trialability	The ability to test the intervention on a small scale in the organization [8], and to be able to reverse course (undo implementation) if warranted.
F	Complexity	Perceived difficulty of implementation, reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required to implement
G	Design Quality and Packaging	Perceived excellence in how the intervention is bundled, presented, and assembled
H	Cost	Costs of the intervention and costs associated with implementing that intervention including investment, supply, and opportunity costs.

Adoption

- Defined as the intention, initial decision or action to try or employ an innovation or evidence-based practice
- May also be referred to as “uptake”
- Could be measured from the perspective or a provider or an organization

Where Have I Seen Adoption Before?

The absolute number, proportion, and representativeness of settings and intervention agents who are willing to initiate a program

Source: RE-AIM. Adoption of Health Behavioral Interventions. 2018. http://www.re-aim.org/about/what-is-re-aim/adoption/

Appropriateness

- The perceived fit, relevance, or compatibility of the innovation or evidence-based practice for a given setting, provider or consumer

- The perceived fit of the innovation to address a particular issue or problem

Where Have I Seen Appropriateness Before?

Theory of Diffusion of Innovations

Key features of the innovation for adoption include:

- a perceived **relative advantage,**
- **compatible** with perceived needs, values and norms,
- low complexity,
- amenable to being **tested** on a limited basis,
- benefits are **observable**, and
- potential for **reinvention or adaption** to local circumstances

TRUST

PEER-TO-PEER CONVERSATIONS

Cost

The cost impact of an implementation effort, which vary according to 3 components:

1. Because treatments vary in their complexity, the costs of delivering them will also vary
2. The costs of implementation will vary depending on the complexity of the particular implementation strategy used
3. Because treatments are delivered in settings of varying complexity and overheads, the overall costs of delivery will vary by setting

Where Have I Seen Cost Before?

Table 1 Comparison of the basic elements of economic analyses

	Cost-identification	CEA	BIA
Research Question	What does it cost to provide a specific intervention	What are the incremental costs and benefits of a new/enhanced intervention compared to a comparator?	What will it cost to adopt this new intervention across our health care system?
Economic Measures	Direct costs of the intervention including personnel, equipment, technology, pharmacy	Direct and indirect costs of intervention delivery, health care, and patient time and services related to the intervention	Variable costs of intervention adoption and implementation
Clinical Measures	None	morbidity, mortality, QALYs	None
Perspective	Payer	Payer, patient or societal	Payer
Timeframe considered	Current	Lifetime	1-5 years

Source: US Department of Veterans Affairs. Economics of Implementation & QUERI. 2017. https://www.herc.research.va.gov/include/page.asp?id=implementation

Feasibility

- The extent to which a new treatment, or an innovation, can be successfully used or carried out within a given agency or setting

- Often invoked retrospectively as a potential explanation of an initiative's success or failure (poor retention, recruitment)

Where Have I Seen Feasibility Before?

van der Krieke *et al. Implementation Science* (2015) 10:73
DOI 10.1186/s13012-015-0262-9

IMPLEMENTATION SCIENCE

RESEARCH

The feasibility of implemen
psychosocial and pharmacc
for psychosis: comparison s

Lian van der Krieke[1,2*], Victoria Bird[2], Mary Leamy[2], Faye Bacor
Monika Janosik[2], Clair Le Boutillier[2], Julie Williams[2] and Mike S

Waltz *et al. Implementation Science* (2015) 10:109
DOI 10.1186/s13012-015-0295-0

IMPLEMENTATION SCIENCE

SHORT REPORT Open Access

Use of concept mapping to characterize relationships among implementation strategies and assess their feasibility and importance: results from the Expert Recommendations for Implementing Change (ERIC) study

Thomas J. Waltz[1,2*], Byron J. Powell[3], Monica M. Matthieu[4,5,10], Laura J. Damschroder[2], Matthew J. Chinman[6,7], Jeffrey L. Smith[5,10], Enola K. Proctor[8] and JoAnn E. Kirchner[5,9,10]

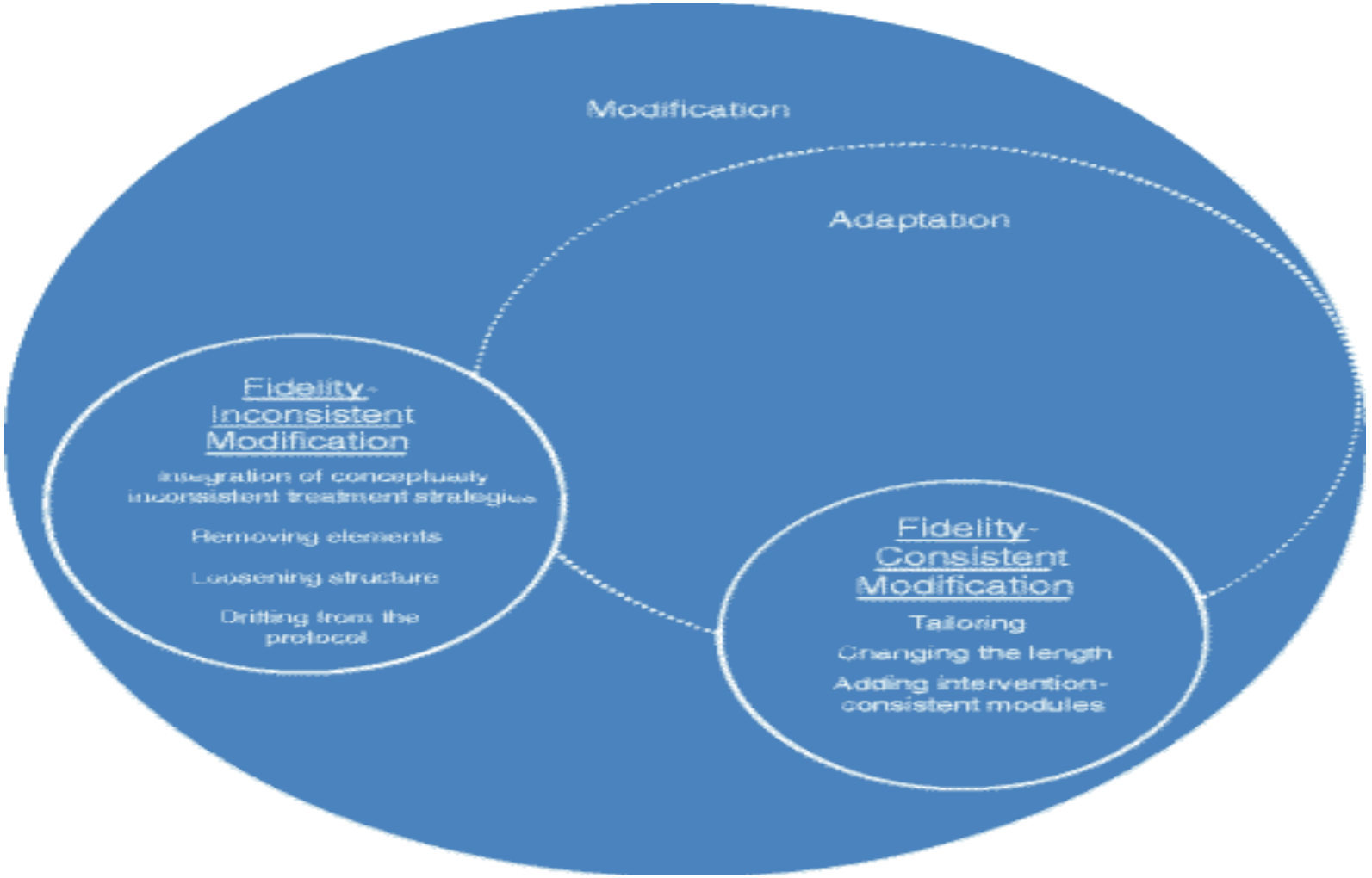
Fidelity

The degree to which an intervention was implemented as prescribed in the original protocol or as it was intended by the program developers

Literature defines fidelity as consisting of:

1. Adherence
2. Quality of delivery
3. Program component differentiation
4. Exposure to the intervention
5. Participant responsiveness or involvement

Where Have I Seen Fidelity Before?



Source: Wiltsey Stirman S, Gutner CA, Crits-Christoph P, Edmunds J, Evans AC, Beidas RS. Relationship between clinician-level attributes and fidelity-consistent and fidelity-inconsistent modifications to an evidence-based psychotherapy. *Implementation Science*. 2015;10:115.

Penetration

- Defined as the integration of the practice within a service setting and its subsystems

Where Have I Seen Penetration Before?

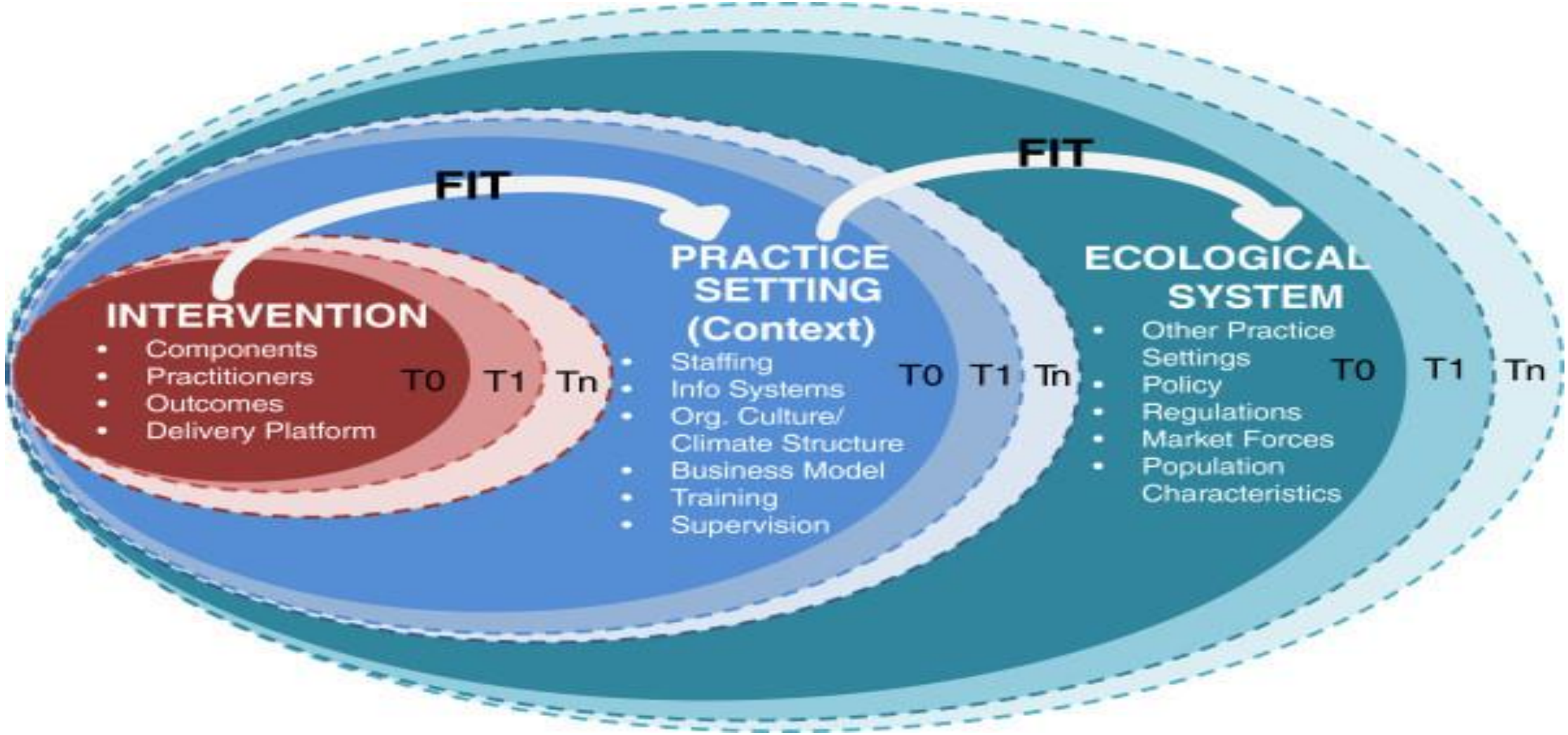
Reach	**Who will benefit from the initiative?** End-users of the program or policy initiative (e.g., students, employees, patients, kids, parents, community members) How or where will you reach them?	Whom do you plan to reach in your initiative? Please define the target population(s). How will you advertise and promote the initiative? Who needs to approve these methods?
		How will you know if the initiative reached the intended audience and who participated?
	How will you know if those who participated are representative of the target population?	What methods will you use to focus on health inequities? What information is available to determine that the sample is representative of the target audience?

Source: RE-AIM Planning Tool. 2018. http://www.re-aim.org/resources-and-tools/self-rating-quiz/

Sustainability

- The extent to which a newly implemented treatment is maintained or institutionalized within a service setting's ongoing, stable operations

Where Have I Seen Sustainability Before?



Source: Chambers DA, Glasgow RE, Stange KC. The dynamic sustainability framework: addressing the paradox of sustainment amid ongoing change. *Implementation Science*. 2013; 8:117

Example: Hybrid Type 1

Social Network

PTSD: Re-experiencing, Avoidance/Numbing, Hyperarousal, related to a traumatic event

National Center for PTSD

POSTTRAUMATIC STRESS DISORDER

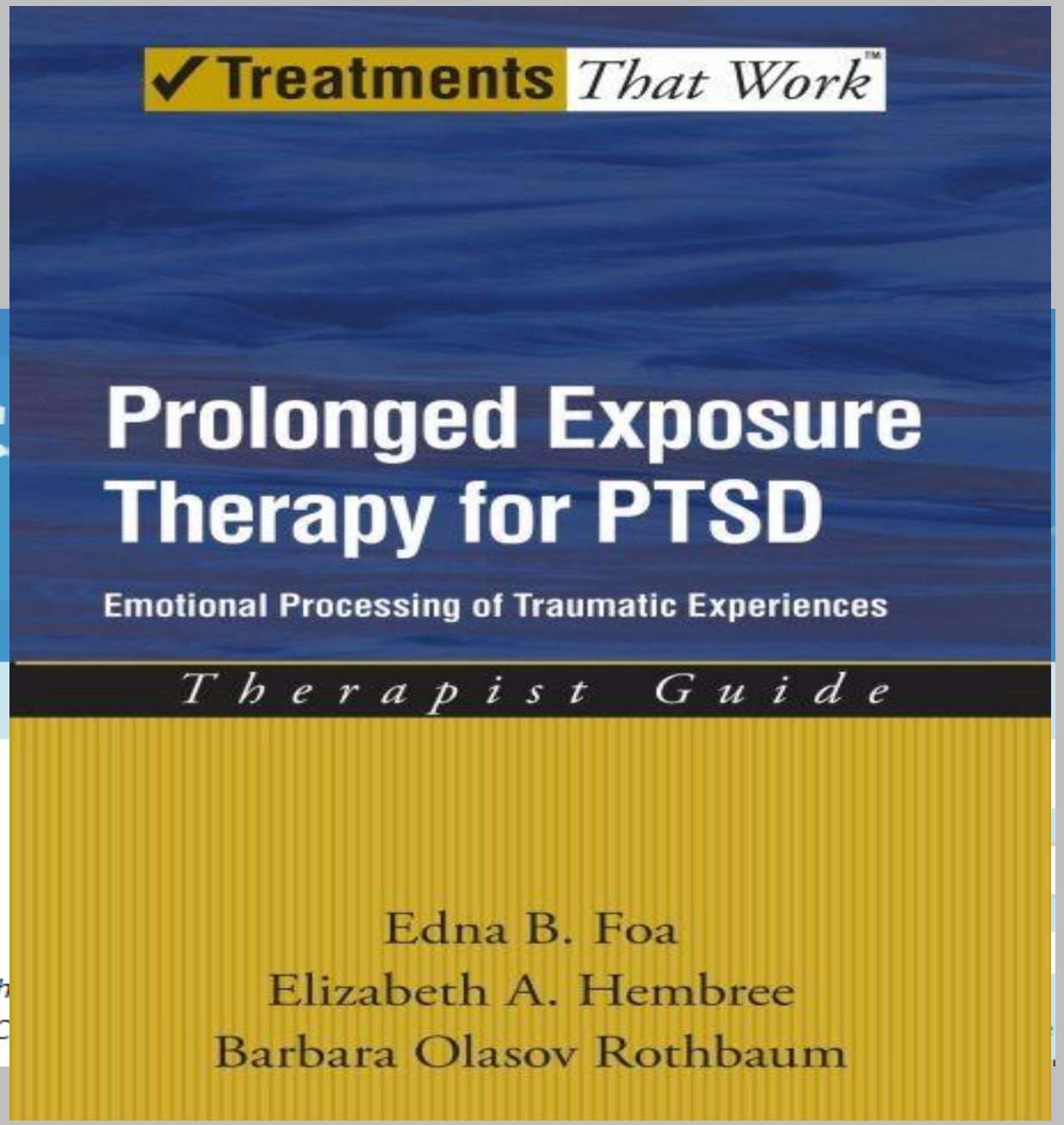
Cognitive Proc

For Posttraumatic Stress Disorder

Welcome | About Us | CPT Resources | CPT Training

Welcome

Welcome to the official website for Cognitive Processing Th
ment authors: Patricia Resick, PhD, Kate Chard PhD, and C



I know I'm depressed, but I'm not getting treatment because I don't want that kind of treatment. I don't want drugs, and I don't want to talk to anyone. I want yoga. I want meditation. Why won't the VA give me that?

Source: Osei-Bonsu PE, Bokhour BG, Glickman ME, Rodrigues S, Mueller NM, Dell NS, Zhao S, Eisen SV, Elwy AR. The role of coping in depression treatment utilization for VA primary care patients. *Patient Education and Counseling.* 2014 94(3):396-402

The New York Times

U.S.

A Veterans of Foreign Wars Post in Denver Trades Beer for a Sun Salute

By DAVE PHILIPPS OCT. 17, 2015

DENVER — At a weekly meeting in the country's oldest Veterans of Foreign Wars post, a Marine began by asking members to close their eyes and inhale.

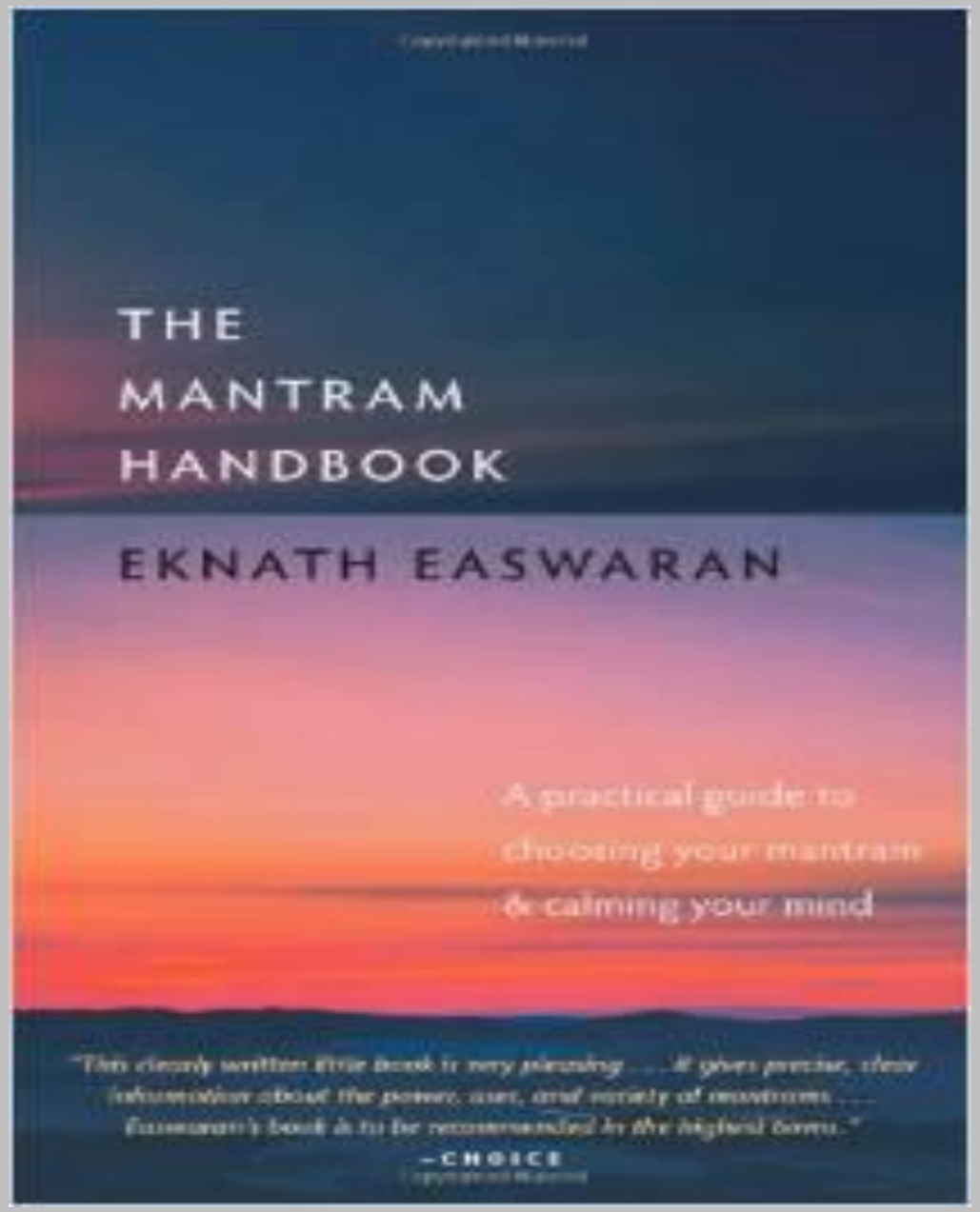
"Bring your hands to your heart center," he said. "Notice all the air that is moving around you."

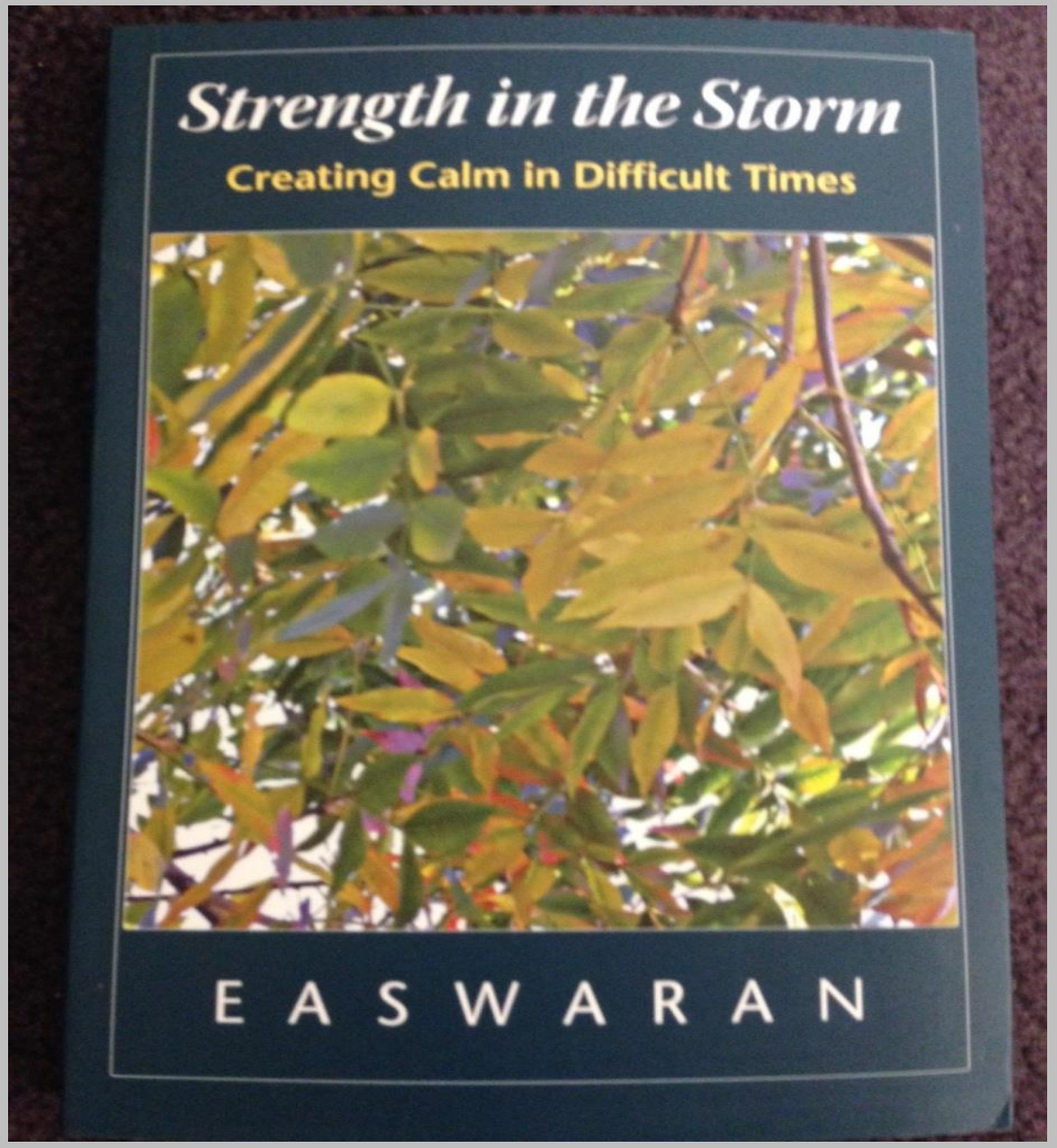
It was Tuesday at V.F.W. Post 1: yoga night. Wednesday is meditation. Friday is photography class — unless it is open gallery night, when hundreds of civilians peruse veteran artwork while a D.J. spins records. The post hosts a monthly film series. And meetings often have as many backward ball caps as V.F.W. hats.

Do not come expecting a bar. There is none.

"We didn't want a dark dive bar," said the senior vice commander of the post, Brittany Bartges, a

A yoga class led by a Marine veteran at V.F.W. Post 1 in Denver.
Benjamin Rasmussen for The New York Times





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Present-Centered Therapy for Post-Traumatic Stress Disorder

Status: Strong Research Support

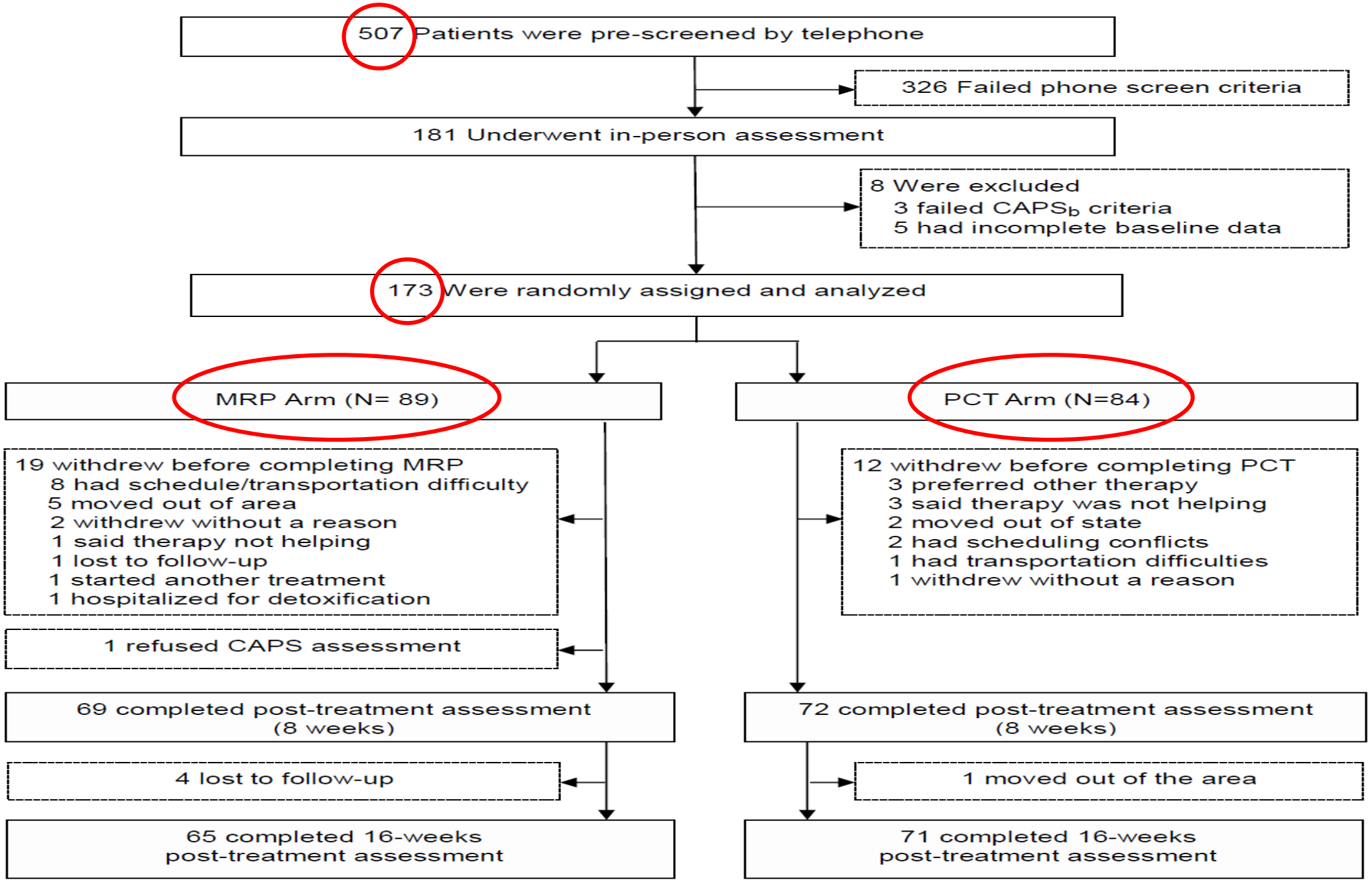
What does this mean?

Description

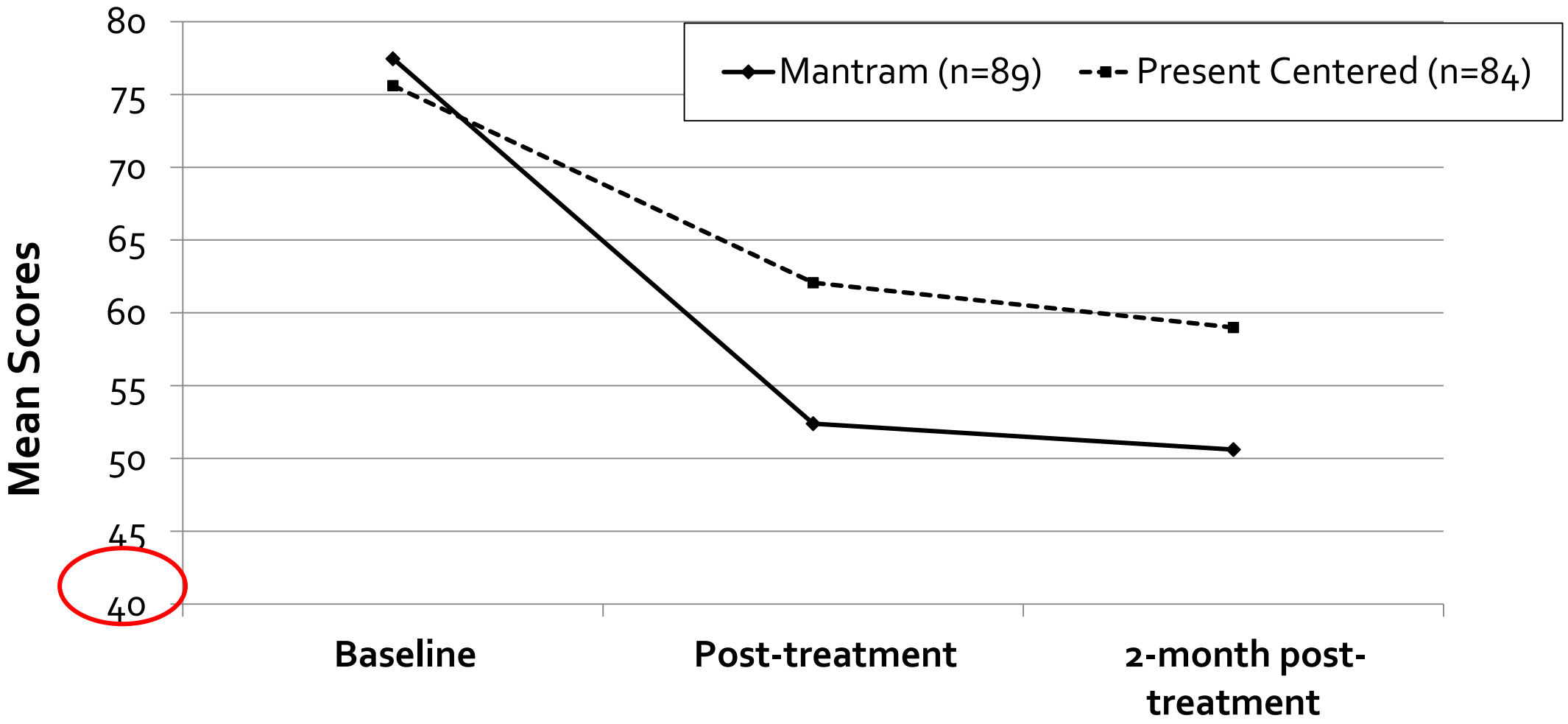
Present-Centered Therapy is a non-trauma focused treatment for PTSD. The primary mechanisms of change from a present centered perspective are grounded in (a) altering present maladaptive relation patterns/behaviors, (b) providing psycho-education regarding the impact of trauma on the client's life, and (c) teaching the use of problem solving strategies that focus on current issues (Mcdonagh et al., 2005; Classen et al., 2011; Schnurr et al., 2003). The treatment omits the use of exposure and cognitive

Source: Schnurr P, Friedman MJ, Foy DW, Shea MT, Hsieh FY, Lavori PW, Glynn SM, Wattenber M, Bernardy NC. A randomized trial of trauma-focused group therapy for posttraumatic stress disorder. *Archives of General Psychiatry*; 2003;60:481-489

- **Rama (Rah-mah): Eternal joy within**
- **Om Namah Shivaya (Ohm Nah-mah Shee-vah-yah): Invocation to beauty and fearlessness**
- **Om Prema (Ohm Pray-Mah): A call for universal love**
- **Om Shanti (Ohm Shawn-tee): Invocation to eternal peace**
- **Shalom (Shah-lome): Peace, completeness**
- **So Hum (So Hum): I am that Self within**
- **Hail Mary or Ave Maria: Mother of Jesus**

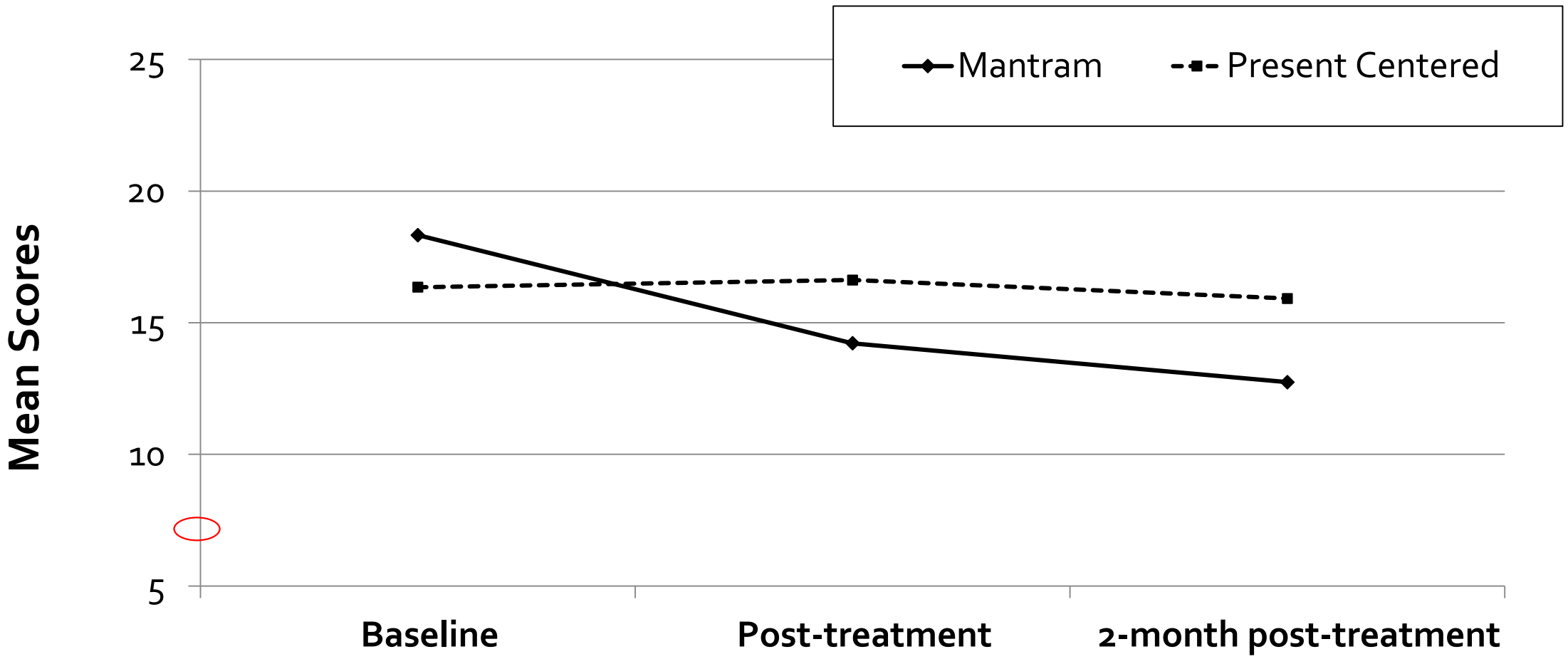

507 Patients were pre-screened by telephone
326 Failed phone screen criteria
181 Underwent in-person assessment
8 Were excluded
3 failed CAPSb criteria
5 had incomplete baseline data
173 Were randomly assigned and analyzed
MRP Arm (N= 89)
PCT Arm (N=84)
19 withdrew before completing MRP
8 had schedule/transportation difficulty
5 moved out of area
2 withdrew without a reason
1 said therapy not helping
1 lost to follow-up
1 started another treatment
1 hospitalized for detoxification
12 withdrew before completing PCT
3 preferred other therapy
3 said therapy was not helping
2 moved out of state
2 had scheduling conflicts
1 had transportation difficulties
1 withdrew without a reason
1 refused CAPS assessment
69 completed post-treatment assessment (8 weeks)
72 completed post-treatment assessment (8 weeks)
4 lost to follow-up
1 moved out of the area
65 completed 16-weeks post-treatment assessment
71 completed 16-weeks post-treatment assessment

Clinician Administered PTSD Scale Mean Scores by Group Over Time



Source: Bormann JE, Thorp SR, Smith EG, Glickman M, Beck D, Plumb DN, Zhao S, Osei-Bonsu PE, Hepner P, Rodgers C, Herz LR, **Elwy AR.** Individual treatment of posttraumatic stress disorder using mantram repetition: a randomized clinical trial. *American Journal of Psychiatry.* In press

Insomnia Severity Index Mean Scores by Group Over Time



Source: Bormann JE, Thorp SR, Smith EG, Glickman M, Beck D, Plumb DN, Zhao S, Osei-Bonsu PE, Hepner P, Rodgers C, Herz LR, **Elwy AR.** Individual treatment of posttraumatic stress disorder using mantram repetition: a randomized clinical trial. *American Journal of Psychiatry.* In press

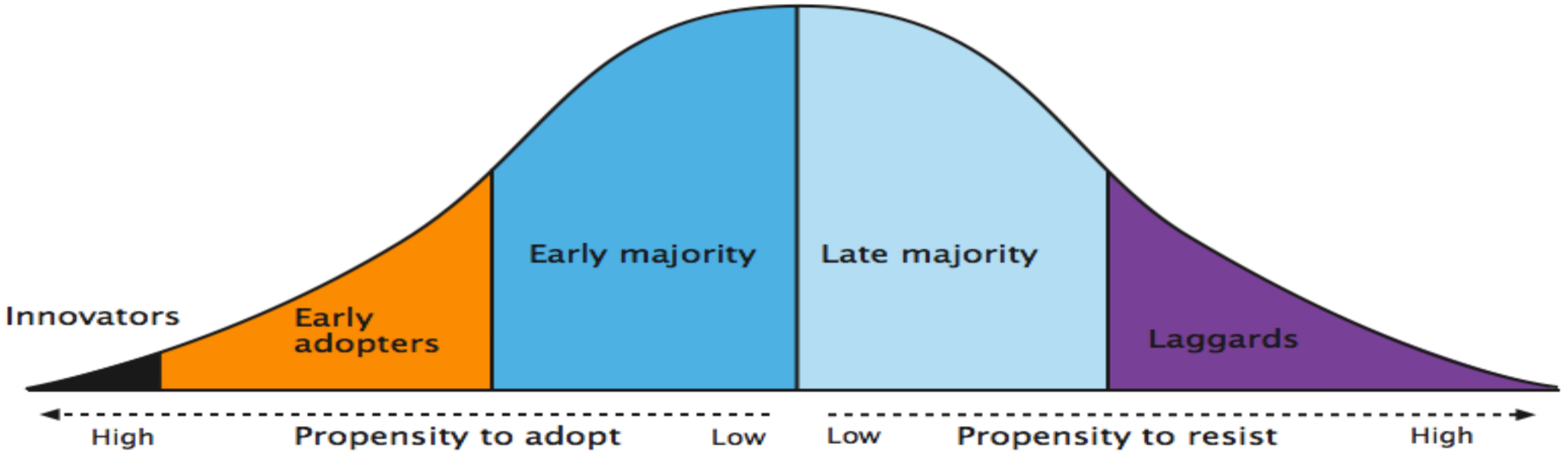
Measures (Scale Range)[a]	Time From Baseline	Mantram Effect (SE[b])	FDR[c] Adjusted *p*-value
Clinician Administered PTSD Scale (CAPS) Total Score (0-136)	Post-treatment	- 9.98 (3.24)	0.006
	16 week follow-up	- 9.34 (4.00)	0.04
CAPS B Re-[illegible] (0-40)			
	Post-treatment	-1.01 (1.40)	0.45
	16 week follow-up	-1.47 (1.65)	0.41
CAPS C Avoidance/Numbing (0-56)			
	Post-treatment	-4.62 (1.58)	0.006
	16 week follow-up	-3.76 (1.96)	0.08
CAPS D Hyper-arousal (0-40)			
	Post-treatment	-4.51 (1.17)	0.001
	16 week follow-up	-4.32 (1.41)	0.006
Checklist-Military (PCL-M) (17-85) PTSD			
	Post-treatment	-5.83 (2.09)	0.01
	16 week follow-up	-4.51 (2.66)	0.11
Insomnia Severity Index (ISI) (0-28)			
	Post-treatment	-4.13 (0.99)	0.0001
	16 week follow-up	-4.81 (1.28)	0.001

Interest In Provider Networks

- Noticed that certain clinicians seemed to be more likely to refer patients to trial than others
- Obtained Hybrid 1 funding from VA QUERI to create and test a social network survey to identify key providers in the network (1 site)
- Collaborated with Palinkas and Valente (USC), Mittman (VA/Kaiser), VA Colleagues
- Special issue in Admin Policy Mental Health

Source: Elwy AR, Kim B, Plumb DN, Wang S, Gifford AL, Asch SM, Bormann JE, Valente TW, Palinkas L. Development of a social network implementation strategy: a mixed methods Implementation Research Institute collaboration. SIRC. 2017.

Theory of Diffusion of Innovations



Source: Everett M. Rogers' *Diffusion of Innovations,* Fifth Edition 2003, Free Press, New York.

Hypotheses

1. Providers who referred Veteran patients to the RCT cluster together (are **"central"**) in their social network compared to providers who did not refer to the RCT

2. Providers who referred Veteran patients to the RCT serve as **"bridgers"** in their social networks—people who have influence across multiple social networks—compared to providers who did not refer to the RCT.

Social Network Survey

- **Three bounded networks (potentially based on trust):**
  - Which colleagues do you **speak to regularly** at work (Q2)
  - Which colleagues' **opinions on new clinical treatments** do you rely on the most? (Q3)
  - Which colleagues do you go to when you **need help managing a complex clinical situation** at work? (Q4)

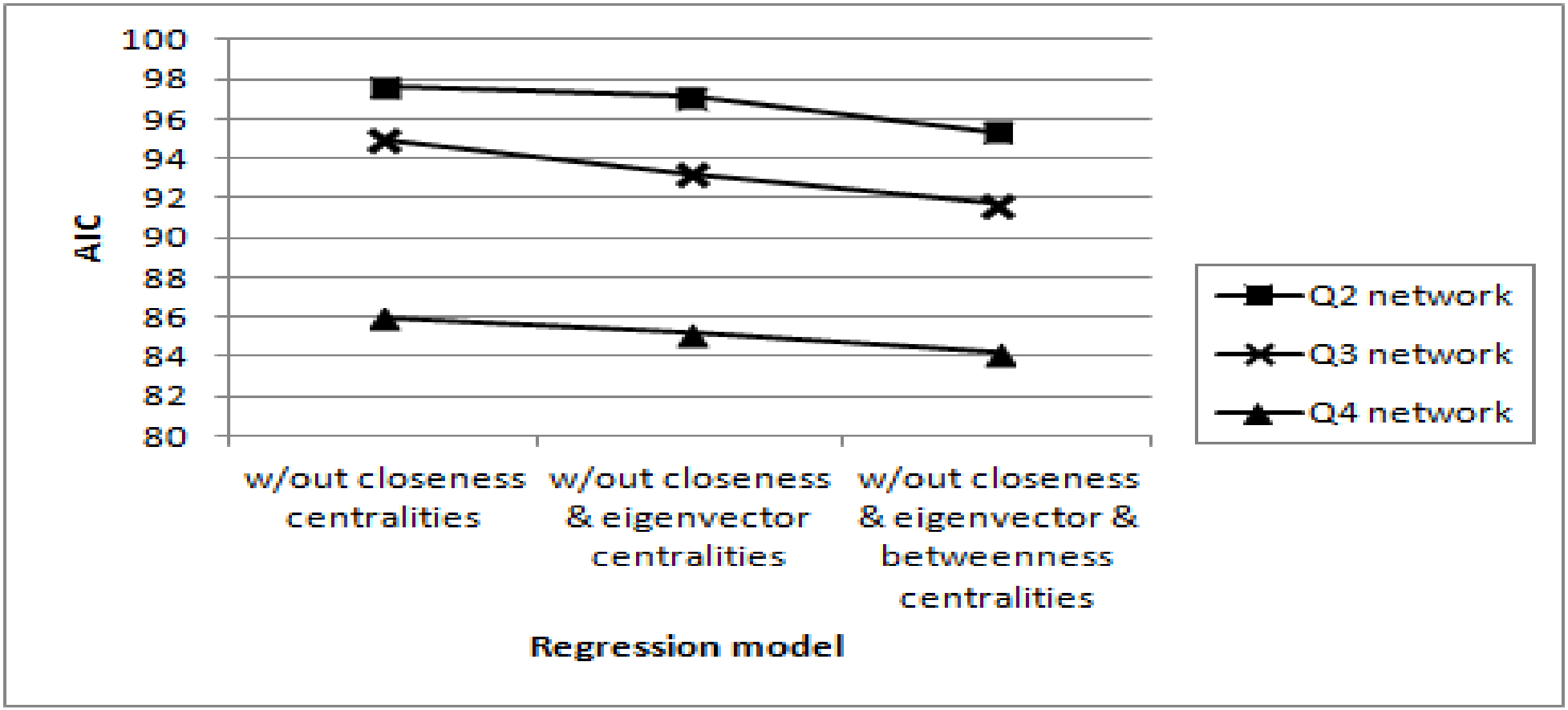
- **Independent Variables:**
  - Social network centrality variables (6)
- **Dependent Variable:**
  - Referred to study (0 or 1)
- **Logistic Regression analyses using R; maps created in Gephi**

- **N=69 (53% response rate)**

Social Network Analysis

Variable	Definition
Indegree centrality	# of individuals designating participant
Outdegree centrality	# of individuals participant designates
Incloseness centrality	Average # of steps from individuals to participants
Outcloseness centrality	Average # of steps from participant to individuals
Betweeness centrality	# of shortest paths going through participant
Eigenvector centrality	Greater if participant connected to other highly connected individuals

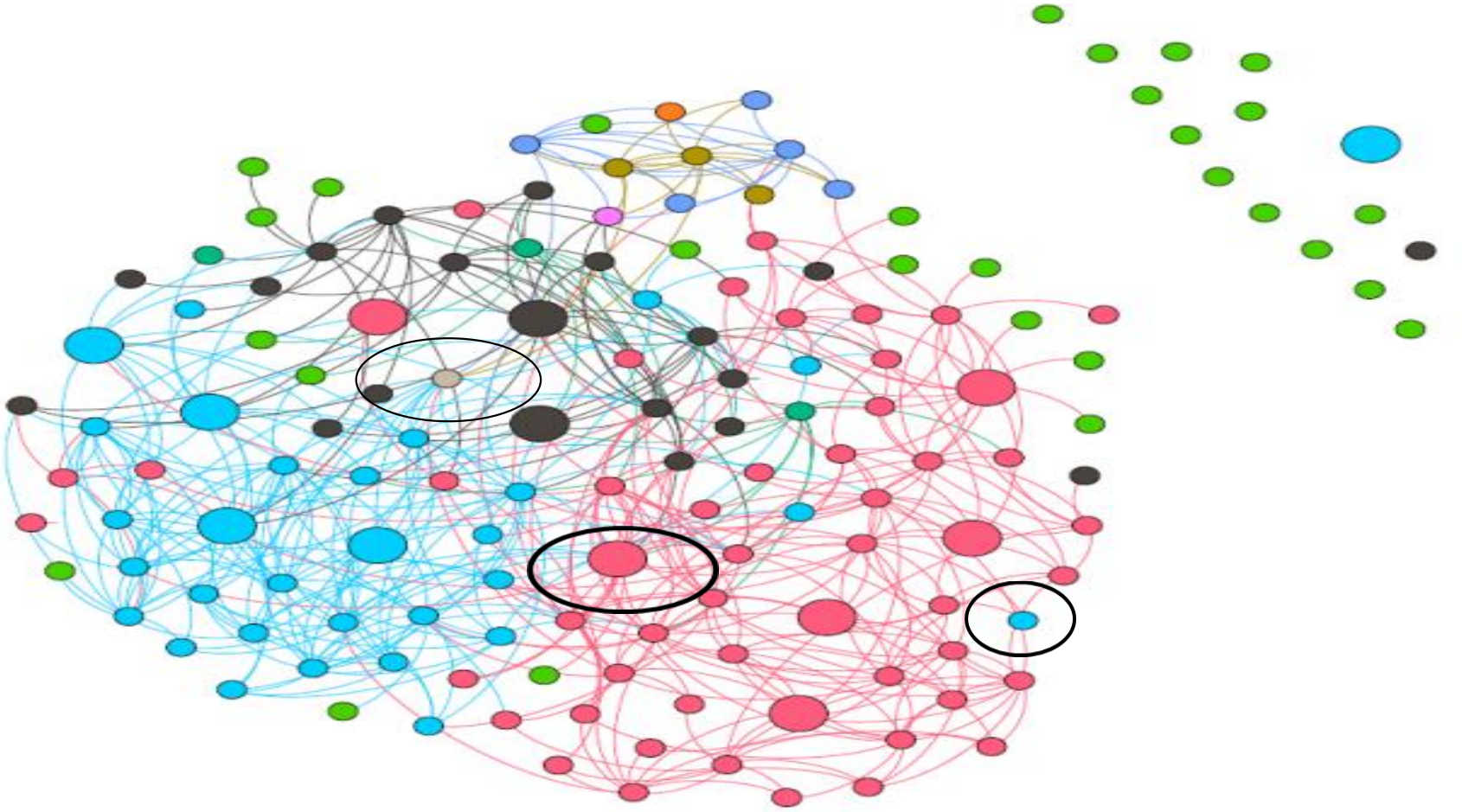
Model Fit Using Akaike's Information Criterion (AIC)



Logistic Regression Summary Table of Centrality Variables Predicting Referral Behavior

Model w/out closeness & eigenvector & betweenness centralities	Significant variable	OR	95% CI	Pr(>|z|)
Q2 network: Which colleagues do you speak to regularly at work?	indegree centrality	1.25	1.00, 1.60	0.0569
Q3 network: Which colleagues' opinions on new clinical treatments do you rely on the most?	indegree centrality	1.37	1.10, 1.84	0.0177
Q4 network: Which colleagues do you go to when you need help managing a complex clinical situation at work?	indegree centrality	1.27	1.03, 1.59	0.0268

Indegree Centrality: the number of individuals in the network who designated the participant



Q2: "Which colleagues do you speak to regularly at work?"

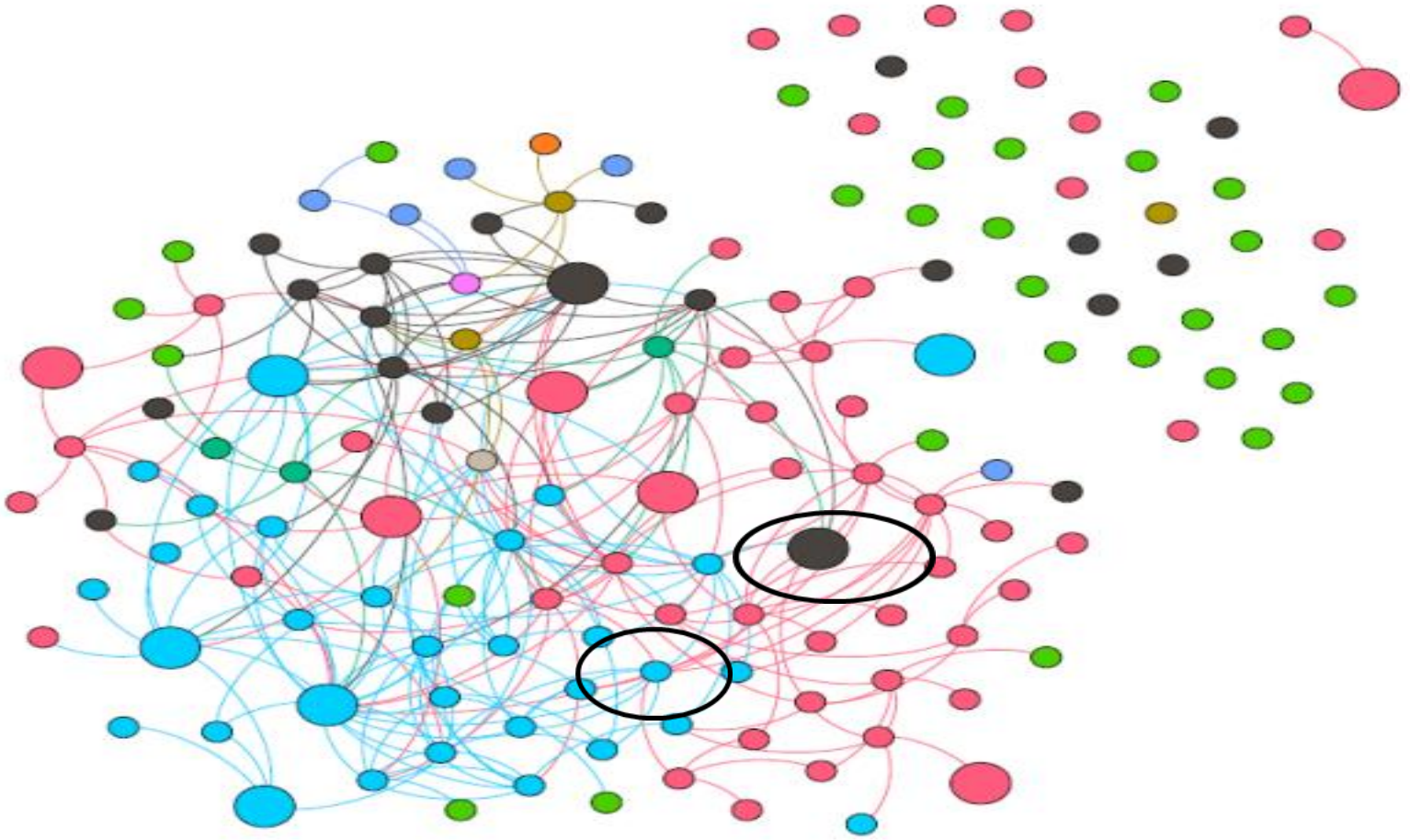
- Social worker
- Psychologist
- Other
- Psychiatrist
- Nurse (intensive case management)
- Nurse (added to study)
- Readjustment counseling specialist (intensive case management)
- Nurse case manager (intensive case management)
- Psychiatrist (also intensive case management)
- Psychologist (also intensive case management)

Larger circles indicate provider referred patient to the RCT. Color of edge indicates its source node.

Bridging Data

- Betweenness centrality was highly correlated with eigenvector centrality (*r*=0.63), followed by outdegree (*r*=0.61) and outcloseness (*r*=0.60)

- Individuals who are connected to other highly connected individuals, those who speak to others most, and those who are the smallest number of steps away to others are the most likely to serve as bridges between particular provider cliques



Q3: "Which colleagues' opinions on new clinical treatments do you rely on the most?"

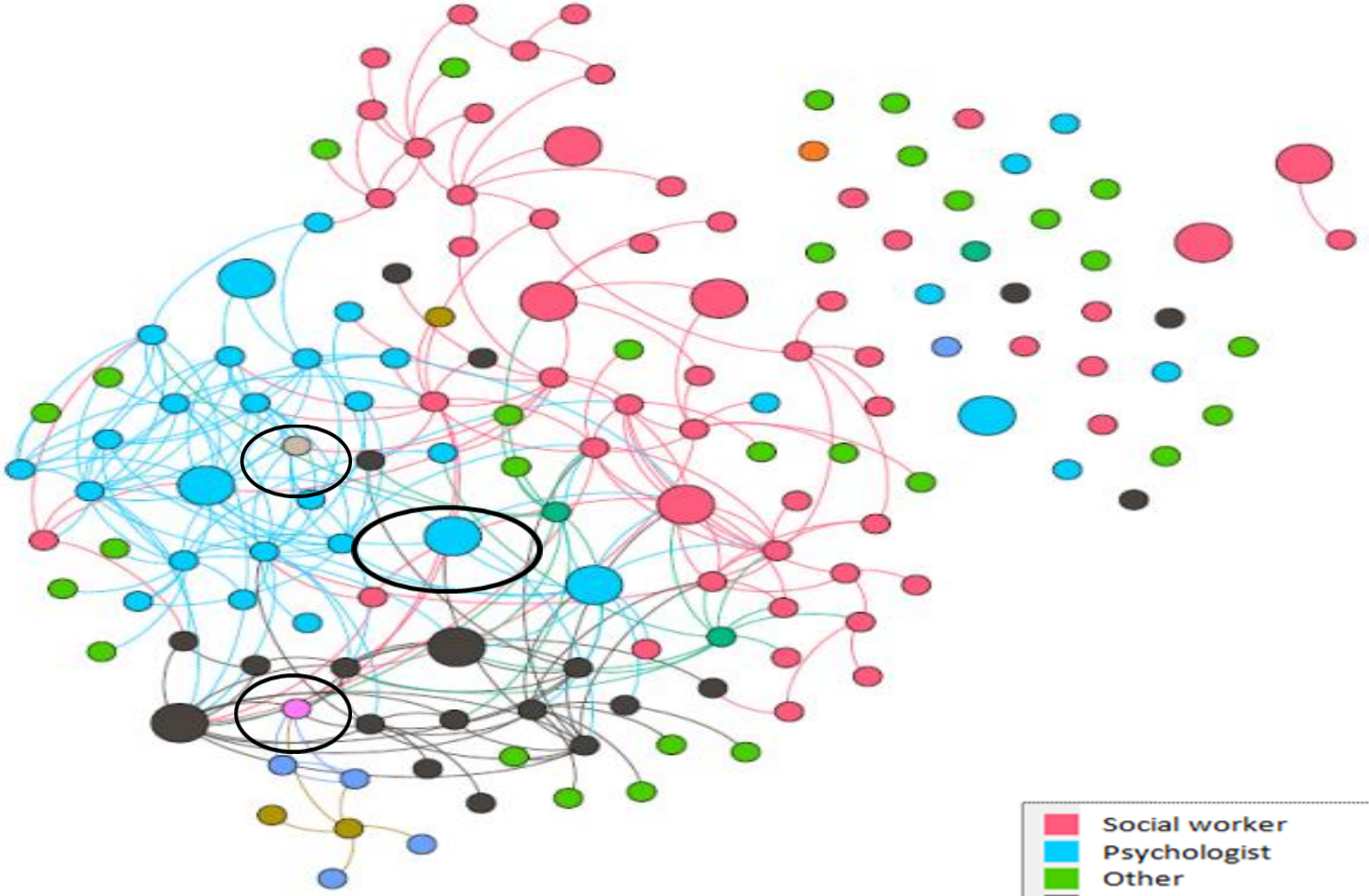
Larger circles indicate provider referred patient to the RCT. Color of edge indicates its source node.

- Social worker
- Psychologist
- Other
- Psychiatrist
- Nurse (intensive case management)
- Nurse (added to study)
- Readjustment counseling specialist (intensive case management)
- Nurse case manager (intensive case management)
- Psychiatrist (also intensive case management)
- Psychologist (also intensive case management)

Bridging Data

- Betweenness centrality shows the highest correlation with eigenvector centrality (r=0.64), followed by outdegree centrality (r=0.57)

- Individuals who are connected to other highly connected individuals, and those who seek others most for opinions on new clinical treatments are most likely to serve as bridges between provider subgroups, or cliques



Q4: "Which colleagues do you go to when you need help managing a complex clinical situation at work?"

Larger circles indicate provider referred patient to the RCT. Color of edge indicates its source node.

- Social worker
- Psychologist
- Other
- Psychiatrist
- Nurse (intensive case management)
- Nurse (added to study)
- Readjustment counseling specialist (intensive case management)
- Nurse case manager (intensive case management)
- Psychiatrist (also intensive case management)
- Psychologist (also intensive case management)

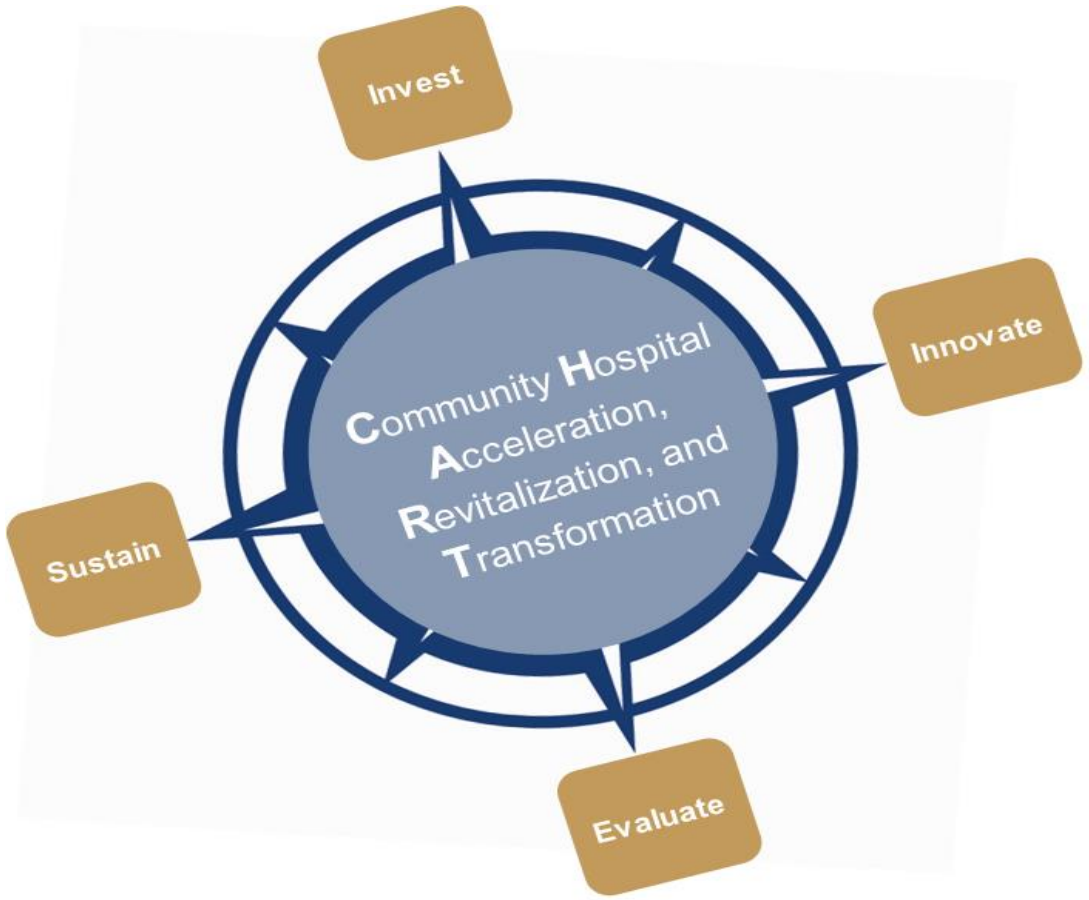
Bridging Data

- Betweenness centrality was highly correlated with eigenvector centrality (r=0.75), followed by indegree (r=0.70)

- Individuals who are connected to other highly connected individuals, and those who are sought by others most for help in managing complex clinical situations are the most likely to serve as bridgers between particular provider subgroups, or cliques.

Example:
Massachusetts Evaluation

The CHART Investment Program



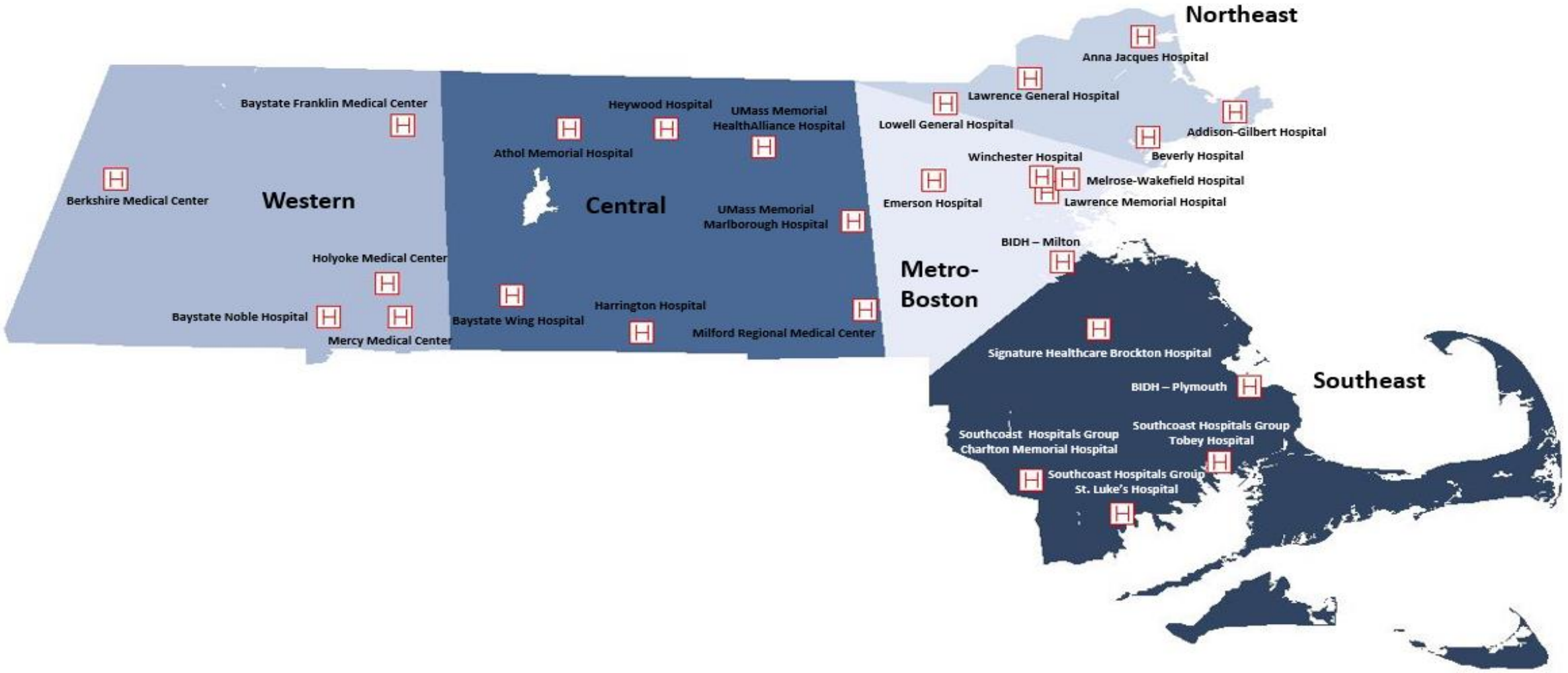
- **MA Health Policy Commission**: an independent state agency that develops policy to reduce health care cost growth and improve the quality of patient care

- **CHART**: established through MA cost containment law, Chapter 224 of the Acts of 2012

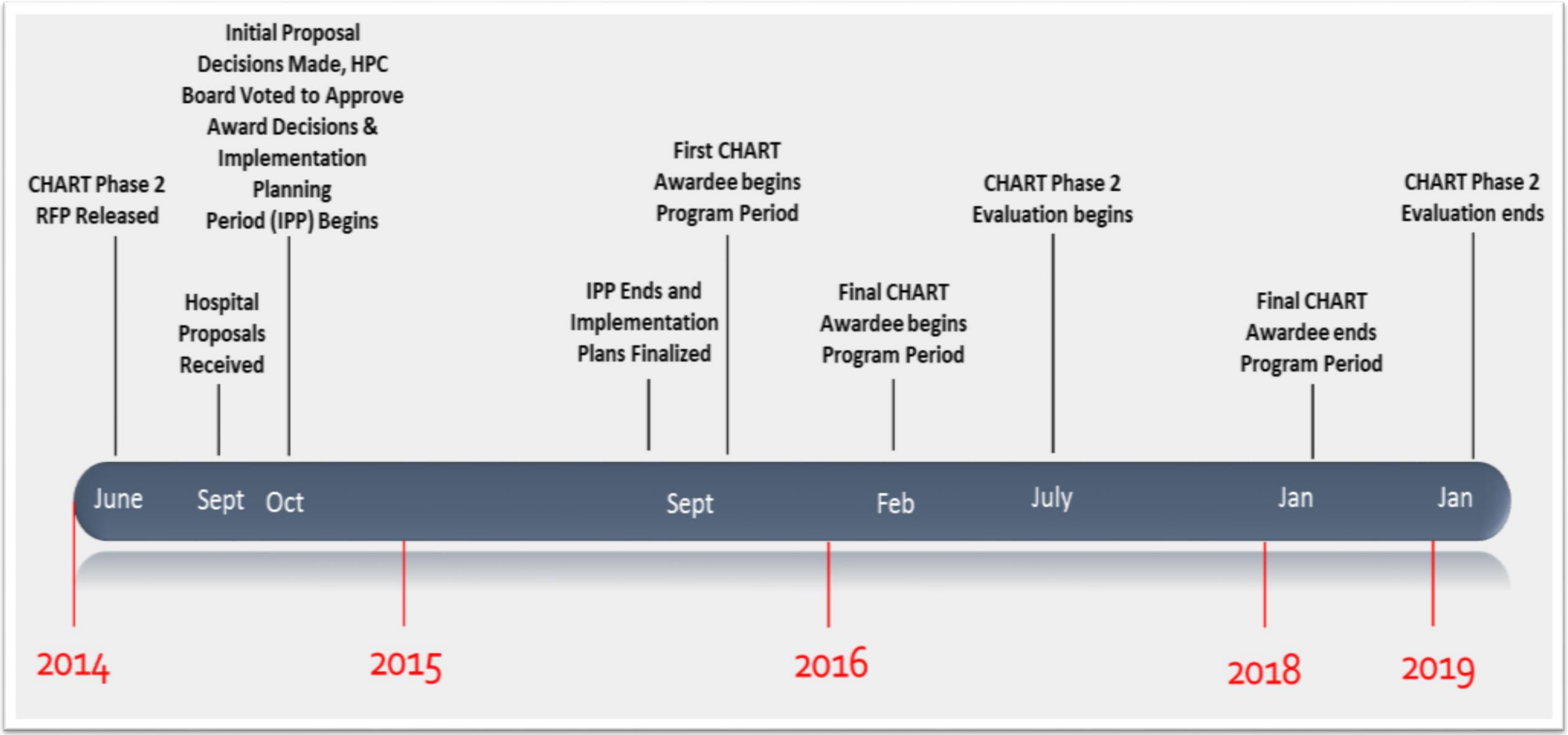
CHART Phase 2 Goals

- Maximize appropriate hospital use
  - Reduce readmissions
  - Reduce emergency department (ED) visits
- Enhance behavioral health care
- Improve hospital-wide (or system-wide) processes to reduce waste and improve quality and safety

CHART Phase 2 Hospitals by Region



Timeline of CHART Phase 2 Events



Example of Innovation

- **Vulnerable Population**: Many non-English speaking immigrants

- **Challenge**: Patients with limited English comprehension, and little access to public transportation, often return to the ED for care that could be provided in an outpatient setting

- **Solution**: Social worker is working with the local Health Department to establish better transportation systems so that these patients can access more local health care providers and avoid returning to the ED

Example of Innovation

- **Issue**: Following discharge, hospitals sometimes lose contact with homeless or transient patients who have been given care plans

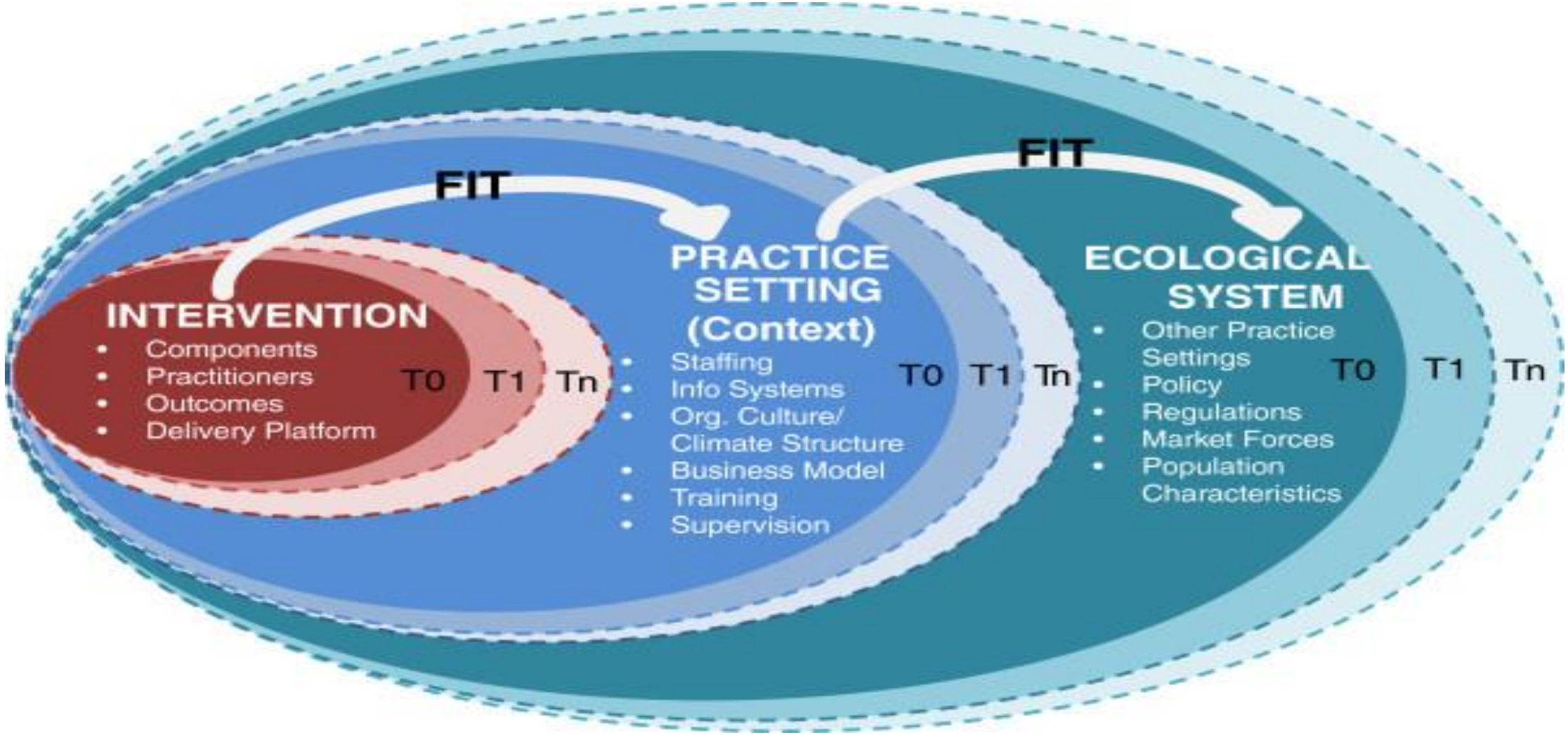
- **Staff involved**: Community Health Worker, BH-trained RN, complex care coordinator

- **Solution**: Institute a CHW role where they are comfortable with and empowered to find and engage with patients in the community

Initial Evaluation

- July 1, 2016 - April 30, 2017
- Focus of this talk: **Sustainability**
- One year into two year project, how do sites continue to learn and problem-solve, ongoing adaptation, and focus on fit between innovation and context?

The Dynamic Sustainability Framework



Source: Chambers DA, Glasgow RE, Stange KC. The dynamic sustainability framework: addressing the paradox of sustainment amid ongoing change. *Implementation Science*. 2013; 8:117

DSF and CHART Evaluation

- **Intervention:**
  - Capacity building for continuous improvement
  - Metric performance
- **Practice setting (Context):**
  - Modernization of hospital health information technology (HIT)
- **Ecological system:**
  - Relationship of program impact to ACO readiness
  - Community partnerships

Evaluation Methods

- 236 interviews between September-December 2016
- Audio recorded & transcribed verbatim
- Directed content analysis approach
- 6 analysts independently coded between 30-40 transcripts
- Reliability/validity of coding frame
- Data checked and entered into the NVivo software package

Evaluation Findings: Capacity Building

"They're totally asking about it [sustainability]. I am concerned for 2 reasons. One, because we do have amazing team members and we might lose them at the end of this initiative. And we might not have them towards the end of the project, either, to support these patients. And the other concern I have is that we've taken in thousands of patients. We're almost at the 2,000 patient mark. And so what are we going to do with all these people when this program is no longer sustained?"

Evaluation Findings: Metric Performance

"If someone used to have 10 ED visits and now they have 5, I'm losing revenue assuming they have a payer source. And most people do in this state. We're in this position where we are doing the right thing but we are not necessarily helping the finances of the hospital"

Practice Setting Findings: Hospital HIT

"Looking to the future, we hope that [technology] can also be used in the ER and with the community partners that we need to collaborate with more. For example, in nursing homes, can we eventually have more communication for medical and psychiatric purposes and reduce the reliance on just sending everyone to the ER? We don't have that yet, but I'm hoping to make it".

Ecological Systems Findings: Program Impact-ACO Readiness

"Because we're taking better care of patients and they're not showing up here, my revenue stream goes down, my costs go up, the grant pays me the costs, but then the grant ends. So I think it is really important to think through the sustainability of this program. When we go into risk, obviously, if you're reducing the costs of care, and we're participating in savings, then we can sustain ourselves. But if we're not participating in the savings, there's no funding model for these resources"

Ecological Systems Findings: Community Partnerships

"I see changes in how some of the community providers—about how many primary care offices have case managers. And I've said to my boss at times, I feel like since we've come on, and are doing some of the transition work, their game has stepped up a notch. Which is almost—it's really exciting to see. Some of the PCP offices are doing more home visits now. A colleague at a physician office tells me all time, "You kind of the set the bar, you inspire me. You know, you're going in and doing kind of almost like in-the-trenches work" and she's like "I see what a benefit that is".

Sustainability Conclusions

- Built capacity but not sure it can be sustained – staff and patient issues
- Improved outcomes but at financial cost
- Community partnerships are strong
- Need better HIT systems to communicate with them to improve outcomes
- ACO readiness important for addressing costs but only if able to share in savings

Implications

- Assessing sustainability of innovations during the implementation process allows stakeholders to understand implementation strengths

- Created case-study memos for each awardee hospital so that they could learn what was going well and what challenges exist for sustainability

Measures of Implementation Outcomes

- Not always possible to conduct qualitative research to assess implementation outcomes or create own survey

- Society for Implementation Research Collaboration (SIRC)
  - New professional society
  - Identify quantitative instruments of implementation outcomes relevant for mental and behavioral health
  - Identified 104 measures, with nearly half assessing acceptability and 19 assessing adoption
  - All other implementation outcomes had fewer than 10 instruments
  - Only one instrument rated as psychometrically strong according to six criteria

Examples of Some Measures

- Log on to SIRC
- https://societyforimplementationresearchcollaboration.org/

Implementation Outcomes Toolkit

Factors to consider when choosing an implementation outcome(s) to include in your study:	The specific barriers to implementation you have observed
	The novelty of the evidence-based practice you are trying to implement
	The setting in which the implementation is taking place
	The resources for and quality of usual training for implementation
	The current stage of implementation and your unit of analysis

Source: Gerke D, Lewis E, Prusaczyk B, Hanley C, Baumann A, Proctor E. Implementation Outcomes. St. Louis, MO: Washington University; 2017 July. Eight toolkits related to dissemination and implementation.

Let's Talk About Your Studies

- What is your research question?
- Implementation outcomes?
- Improvement outcomes?

Upcoming Sessions

Tentative Date	Session Title	Proposal Areas Addressed
10/25/2017	Identifying Your Implementation & Improvement Sciences Research Question	Quality/Care Gap, Evidence-Based Practice
12/6/2017	Using & Discussing Implementation Science Models	Conceptual Model
1/25/2018	Implementation Strategies Versus Study Interventions	Implementation Strategy
2/28/2018	Designing an Implementation & Improvement Sciences Study	Study Design, Measurement, Analytic Methods
3/22/2018	Designing Your Implementation & Improvement Sciences Study	Measurement, Analytic Methods
4/18/2018	Measuring Implementation & Improvement Outcomes	Measurement, Analytic Methods
5/10/2018	**Engaging with Stakeholders to Conduct Feasible & Meaningful Research**	**Stakeholder Engagement, Feasibility, Team, Policy Environment**

Thank You!

Contact CIIS

Website: http://sites.bu.edu/ciis/

Email: ciisinfo@bu.edu

BOSTON UNIVERSITY

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