

An overview of dissemination and implementation science: Illustrations from psycho-oncology and integrative oncology

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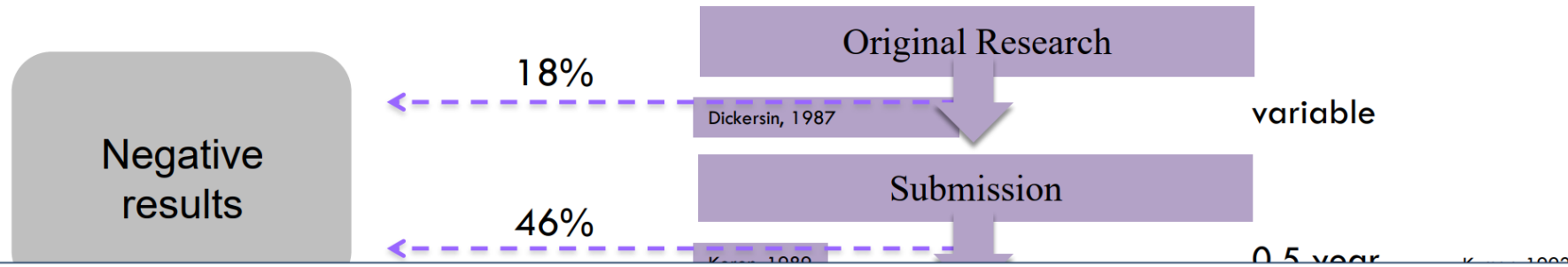
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Objectives

- Background on dissemination and implementation (D&I) science
- Overview of studies
- Core concepts in D&I science
 - Frameworks
 - Barriers and facilitators
 - Implementation strategies
 - D&I outcomes
- Center for Implementation Research in Cancer in Later Life (CIRCL)

Background on D&I science

"PUBLICATION PATHWAY"



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

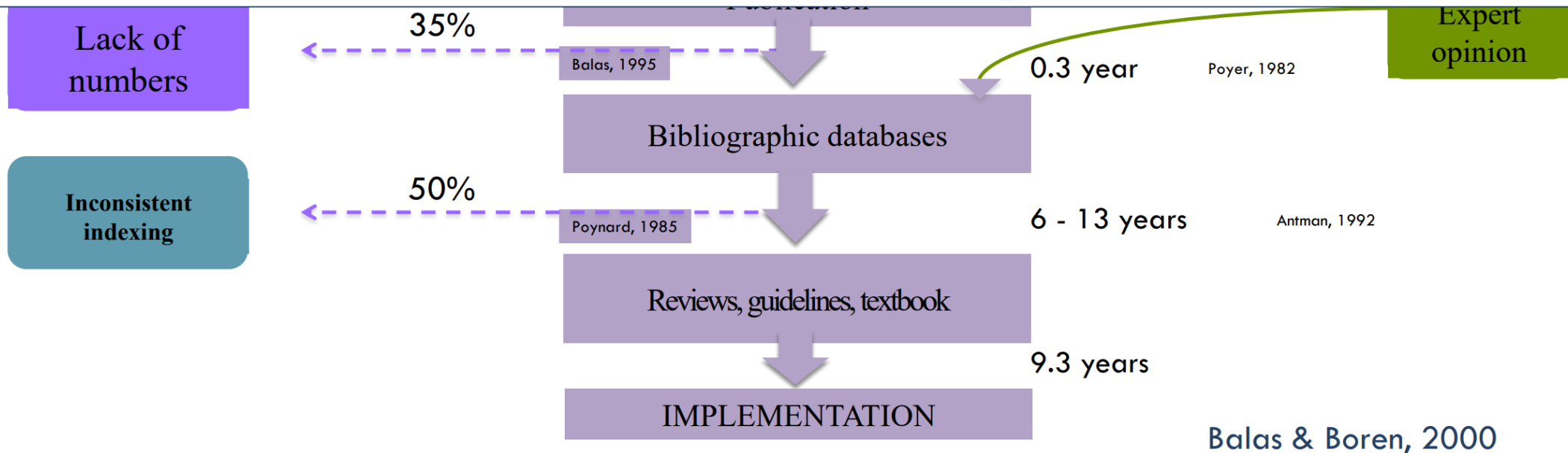
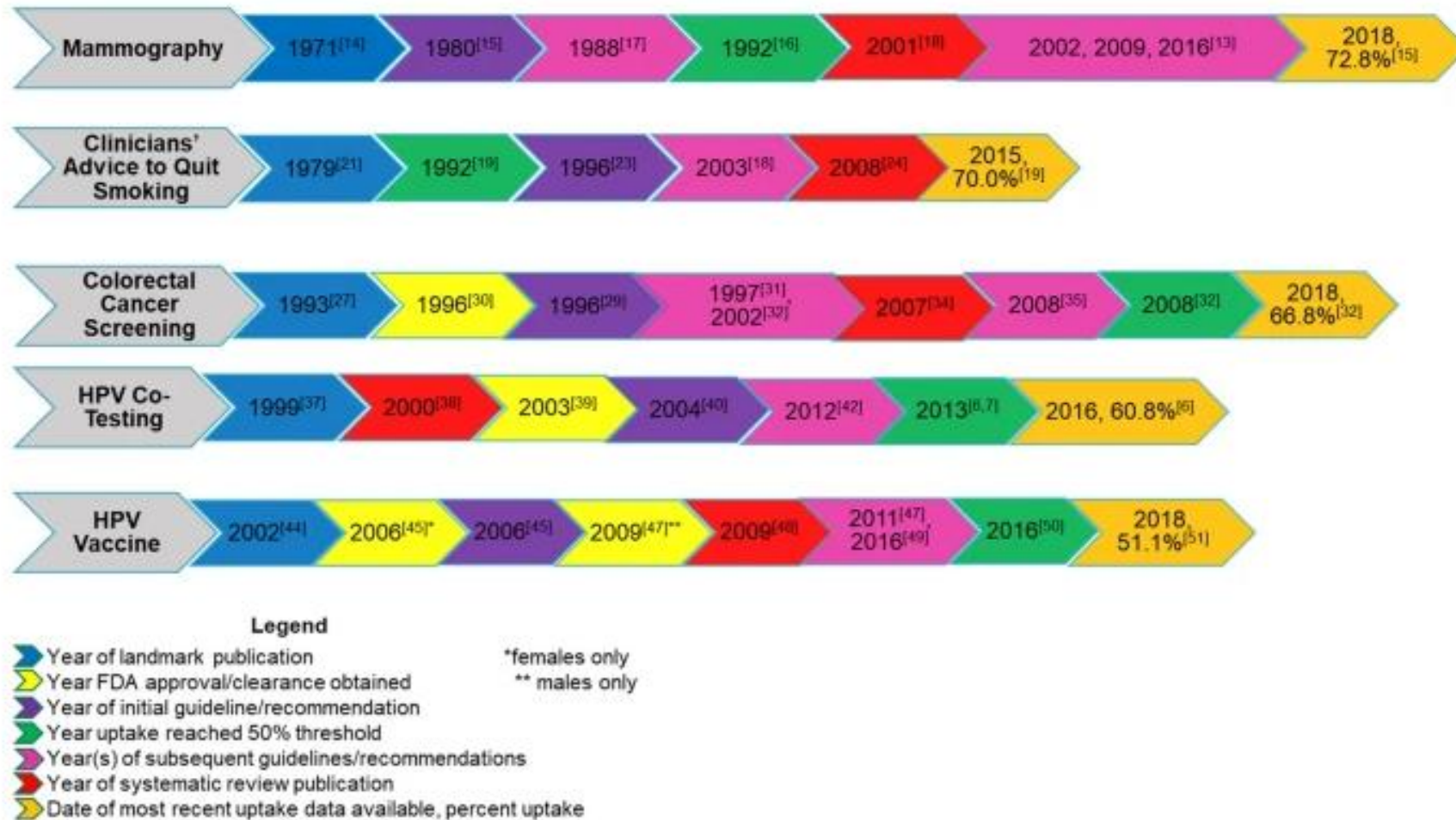


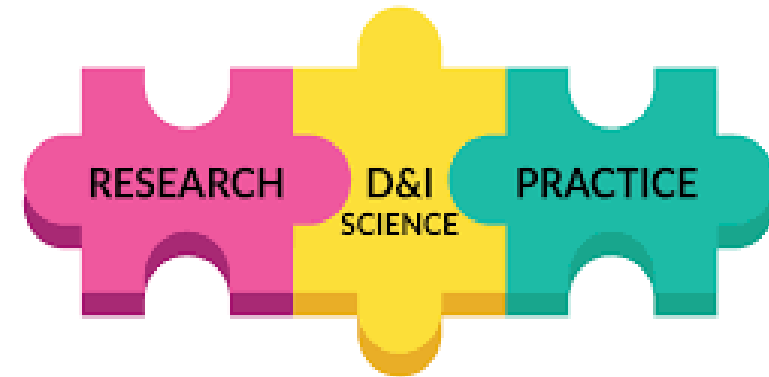
Fig. 2



Note: References cited in the figure reflect data sources used to define each step of the translational pathway

Dissemination and Implementation (D&I) science

- Uses the scientific method to identify strategies for integrating effective interventions into clinical care
- Dissemination research: Scientific study of targeted distribution of information and intervention materials to a specific public health or clinical practice audience
 - Systematic Reviews (Cochrane Reports)
 - Clinical Practice Guidelines
 - Publications
 - Conference Presentations
- Implementation research: Scientific study of the use of strategies to adopt and integrate evidence-based health interventions into clinical and community settings



Where does D&I science fit?

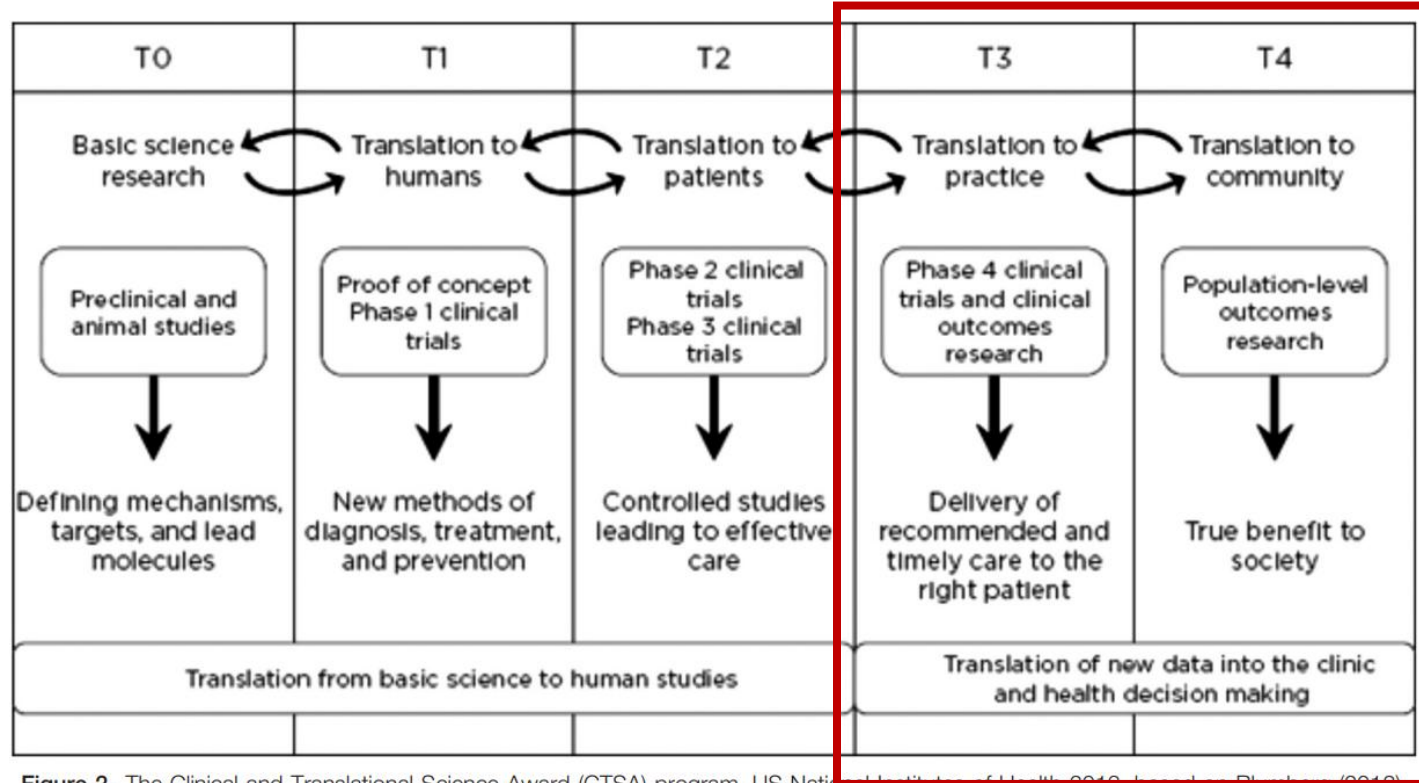
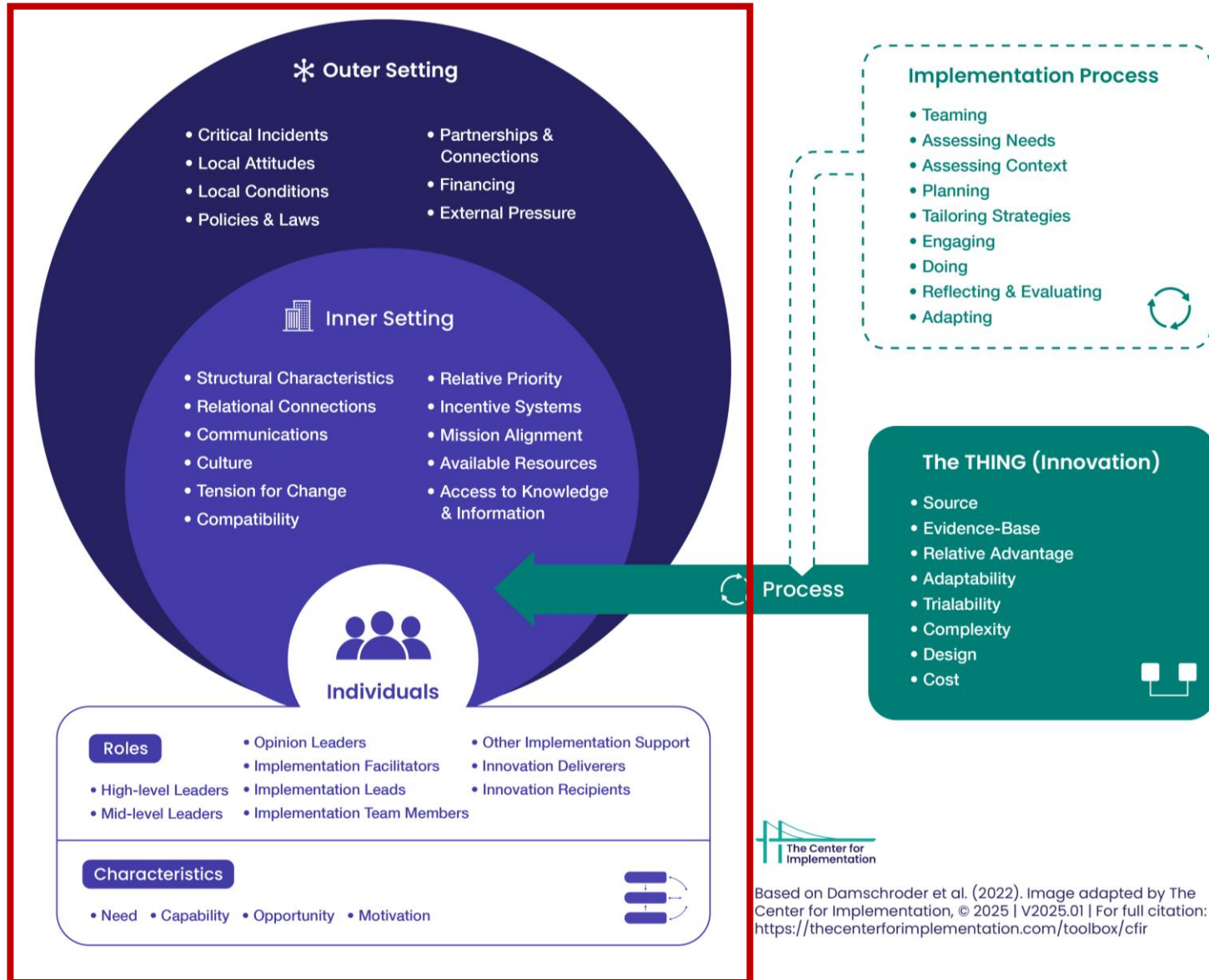


Figure 2. The Clinical and Translational Science Award (CTSA) program, US National Institutes of Health 2010, based on Blumberg (2012).

Dissemination & Implementation Science

Context matters



Based on Damschroder et al. (2022). Image adapted by The Center for Implementation, © 2025 | V2025.01 | For full citation: <https://thecenterforimplementation.com/toolbox/cfir>

Non-technical D&I language

When defining implementation science, some very non-scientific language can be helpful...

- The intervention/practice/innovation is **THE THING**
- *Effectiveness* research looks at whether **THE THING** works
- *Implementation* research looks at how best to help people/places **DO THE THING**
- Implementation strategies are the stuff we do to try to help people/places **DO THE THING**
- Main implementation outcomes are **HOW MUCH** and **HOW WELL** they **DO THE THING**

Example D&I questions



How do we get more providers to use this intervention?



How do we ensure the intervention is provided with fidelity in the real-world?



How do we reach the most patients with this intervention?

Identifying barriers and strategies for implementation of psychological interventions for older adults with cancer

Consensus Conference Project

Purpose:

- 1) Identify the barriers to implementation of evidence-based psychological interventions for older adults with cancer.
- 2) Identify strategies for implementation of these interventions.

Consensus Conference Project

Cornell Institute for Translational Research in Aging Research-Practice
Consensus Workshop Model (n=35)

Qualitative

- Analysis of audio recordings of small group discussions
- Six-step process (Braun, Clarke, & Terry, 2014)

Quantitative

- Electronic survey (n=17)
- Barriers/Strategies grouped by Bronfenbrenner's Ecological Systems Theory
- Ranked each item relative to others in the group
 - “Relative to other strategies in the following table, rate the degree to which each strategy would improve older adult cancer patients’ access to psychological services.”
(1=Improve not at all; 5=Improve a great deal)
 - Analyses informed by concept mapping

Implementing Massage & Acupuncture to Achieve Better Pain Management in Oncology Care (IMAGINE)

PI: Jun Mao, MD

Co-PI: Kelly McConnell, PhD

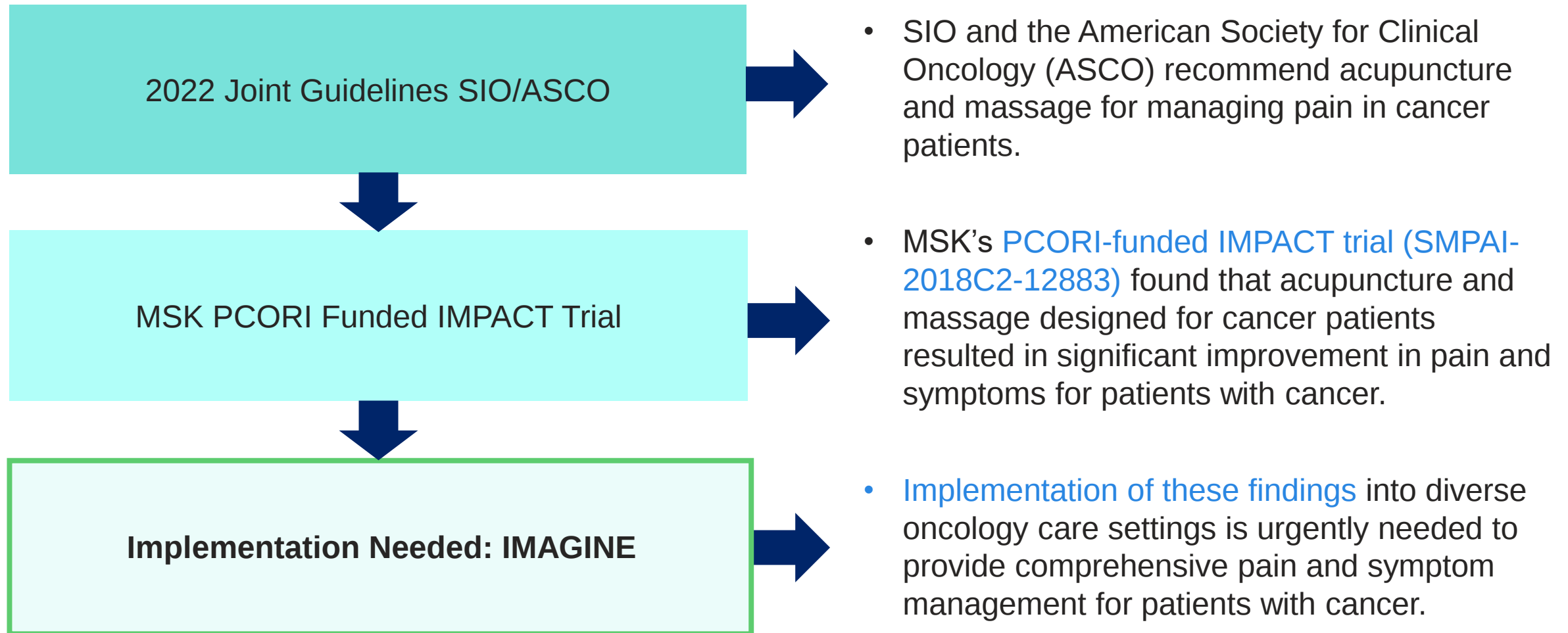
Patient-Centered Outcomes Research Institute

DI-2024C1-37390

What is IMAGINE?

- **An implementation project** to provide evidence-based acupuncture and massage protocols for pain in oncology care.
- A collaboration between MSK, the Society for Integrative Oncology, and 35 cancer centers around the country **to deliver evidenced based acupuncture and massage protocols** to improve pain management and symptom relief for cancer patients on a large scale

Background: Acupuncture & Massage Effectively Reduce Cancer-related Pain



IMAGINE Objectives

Implement evidence-based oncology acupuncture and massage protocols for pain into diverse care settings

Foster collaboration and knowledge exchange across 35 U.S. cancer centers

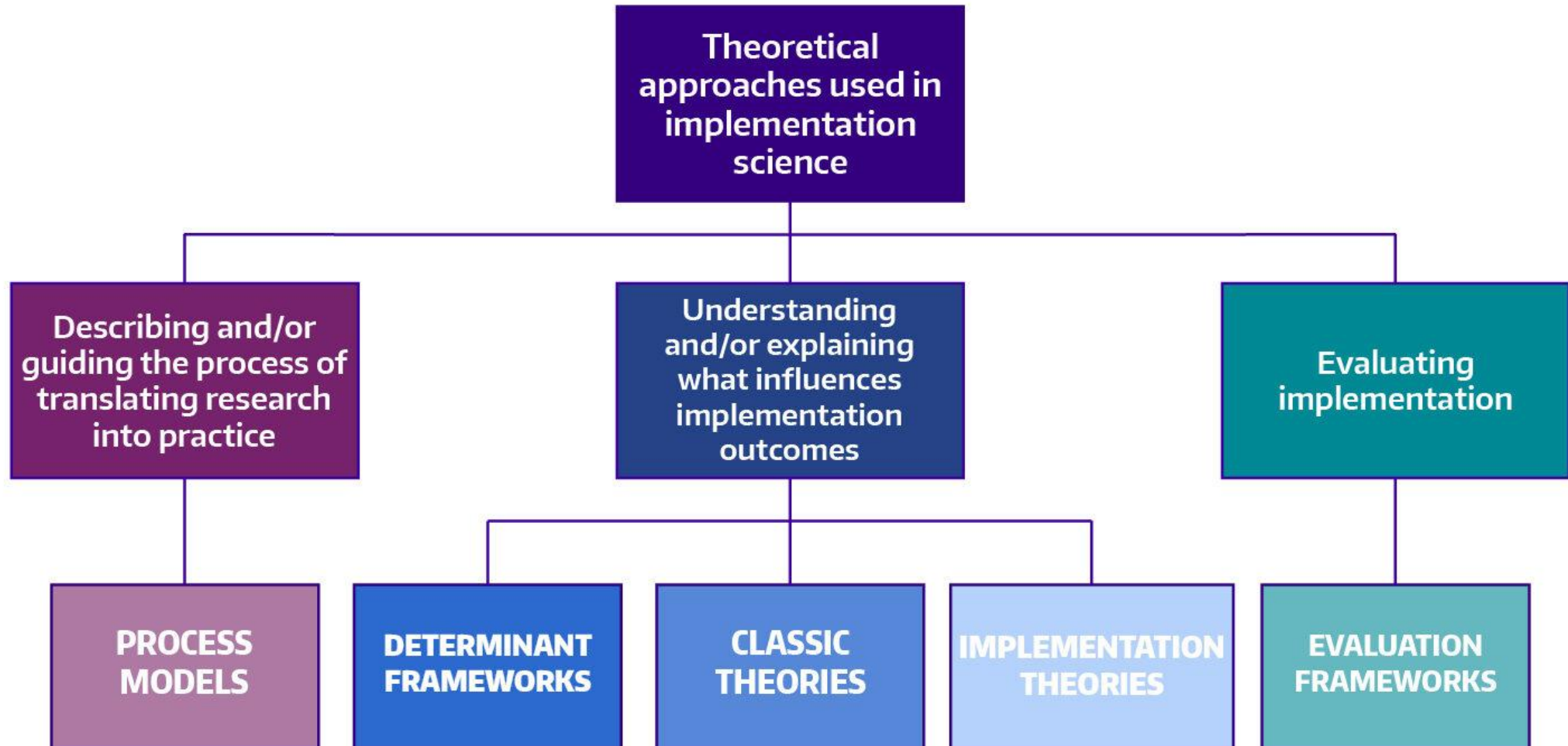
Promote integrative medicine services in oncology care

Enhance pain and symptom management for cancer patients

D&I Frameworks



D&I Frameworks



Types of frameworks

Process

- Describe and/or guide the process of translating research to practice

Determinant

- Describe factors that influence implementation outcomes

Classic

- Describe change mechanisms and explain how change occurs

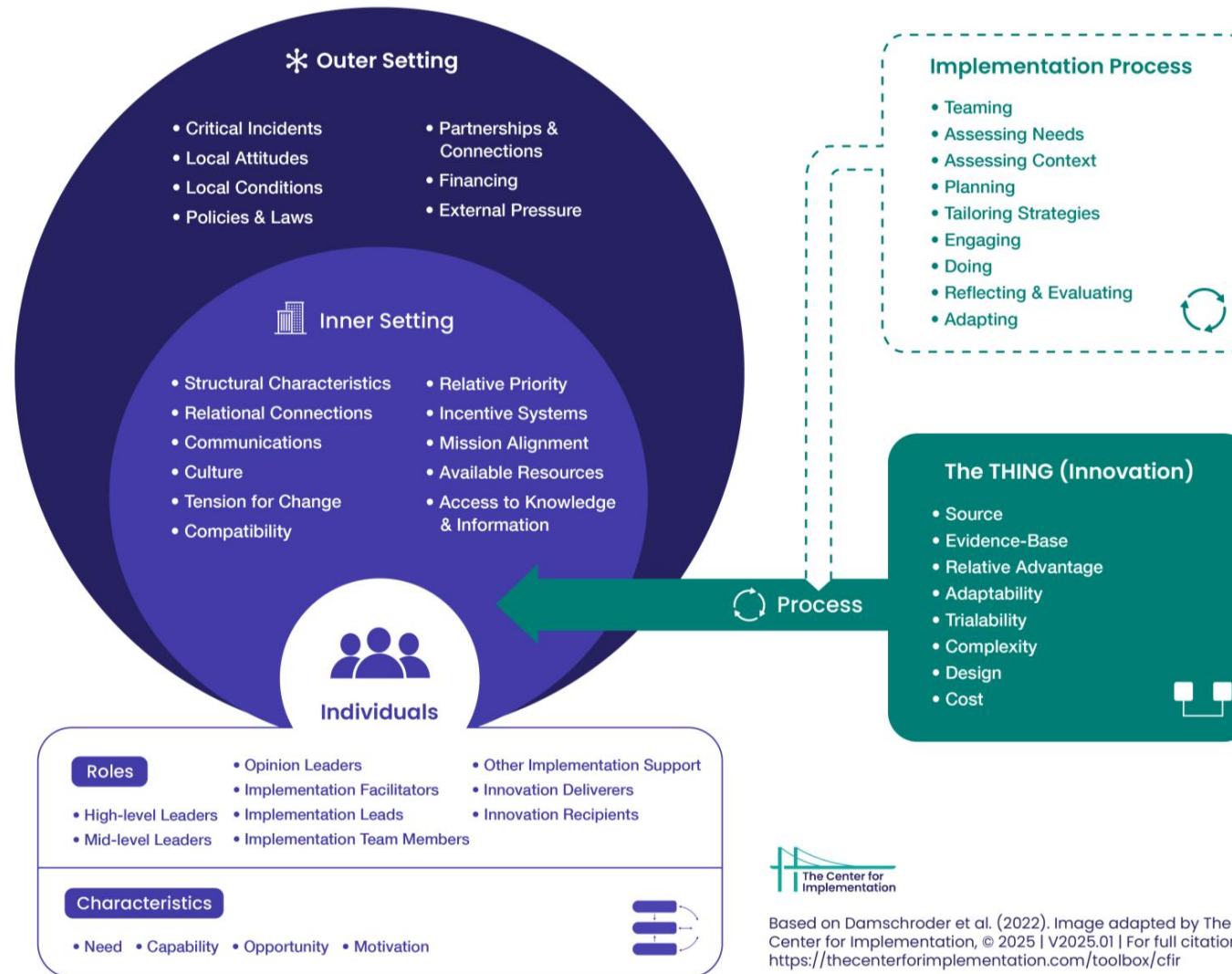
Implementation

- To understand and/or explain certain aspects of the implementation process

Evaluation

- To provide structure for evaluating implementation activities

Consolidated Framework for Implementation Research (CFIR)



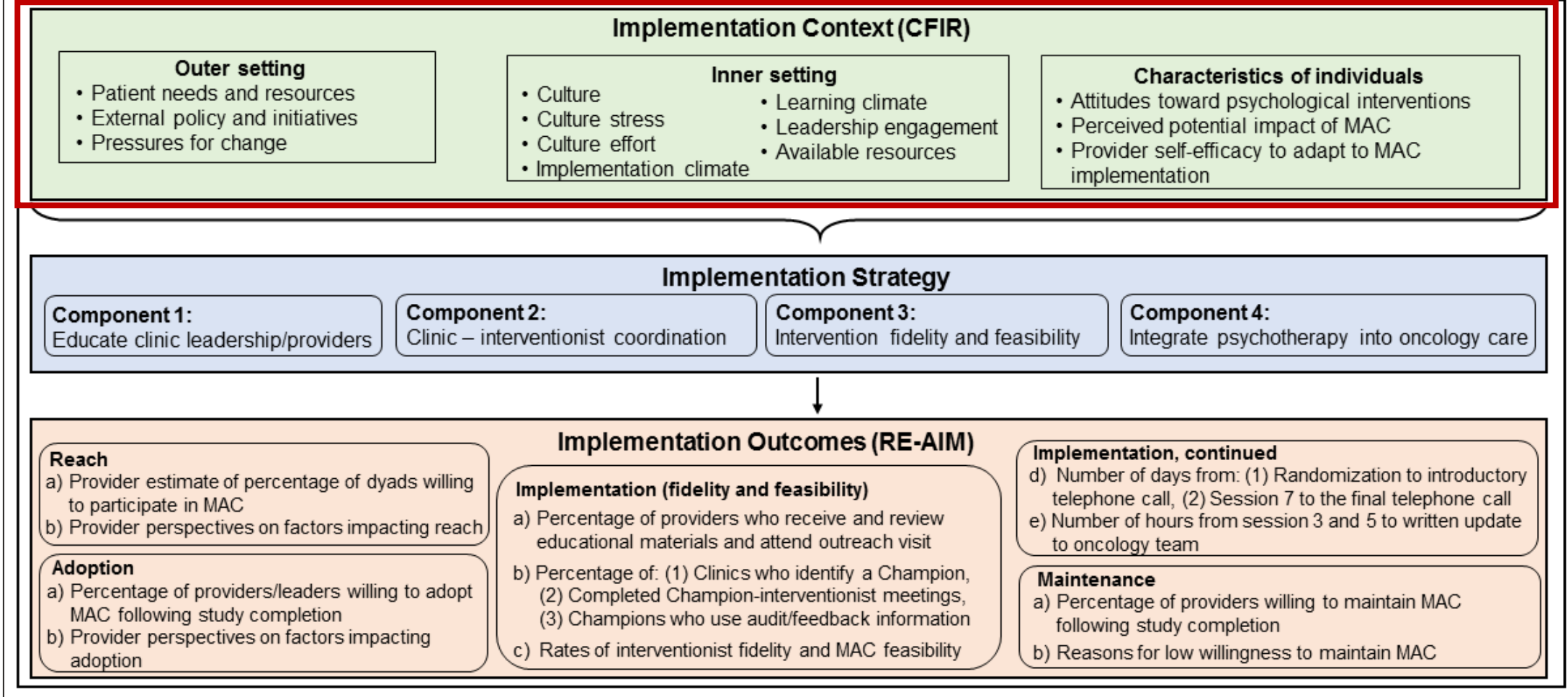
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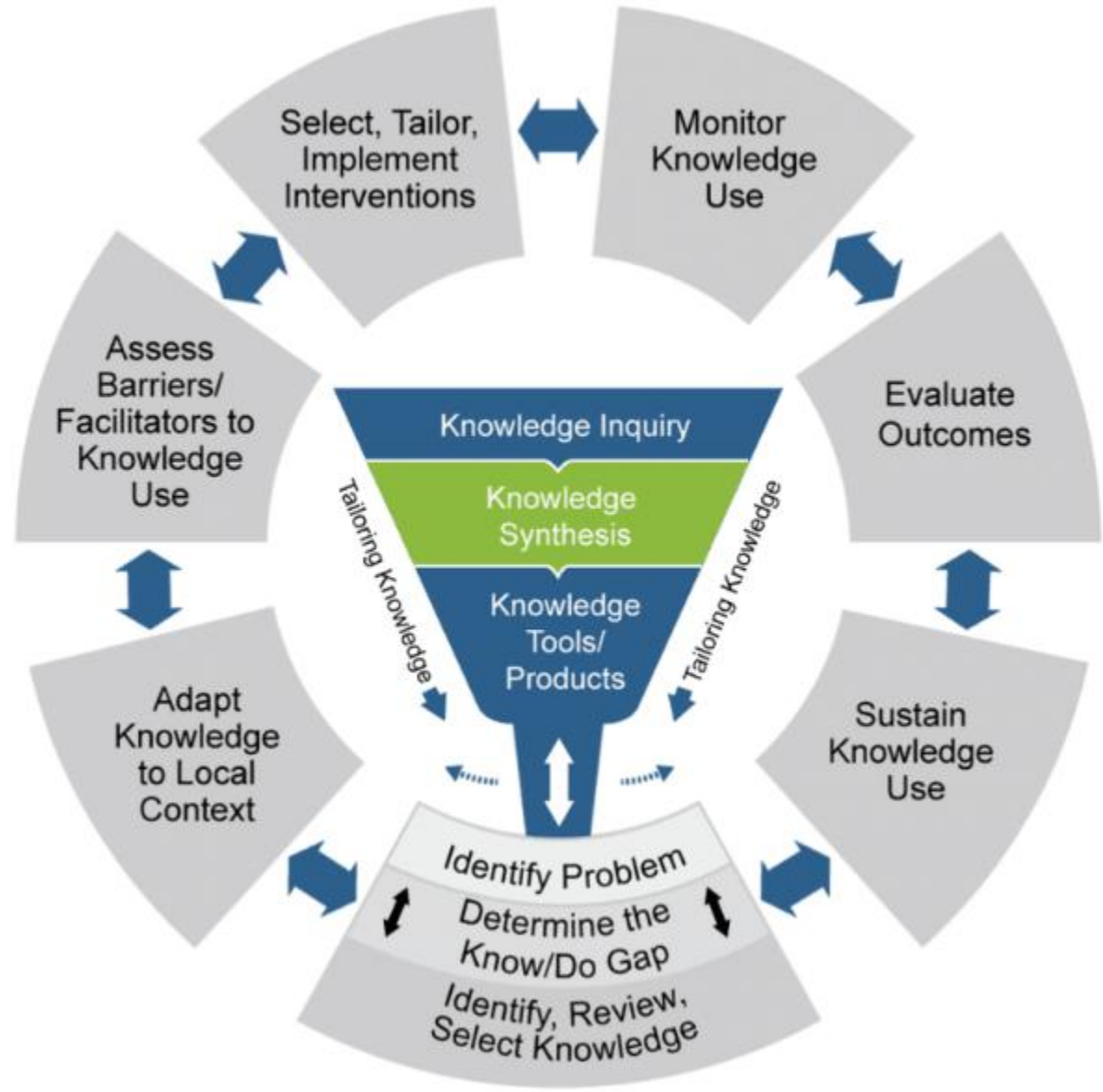
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Application of CFIR

Figure 1. Implementation context, strategy, and outcomes



Process Model: Knowledge to Action Framework



IMAGINE Framework

- Knowledge to Action (KTA) framework
 1. Knowledge Creation Cycle: RCT testing oncology-specific acupuncture and massage protocols and demonstrating their efficacy in reducing pain in patients with advanced cancer.
 2. Knowledge Action Cycle: IMAGINE will advance this work by applying this knowledge to practice to achieve sustainable implementation of the IMPACT protocols.

Knowledge to Action Framework: Example

Table 1. Application of the KTA Knowledge Action Cycle to IMAGINE

KTA Knowledge Action Steps	Outcome and Status
Identify a problem	Acupuncturists/massage therapists lack oncology-specific training (completed) ⁶
Select knowledge relevant to the problem	IMPACT protocols are safe and effective treatments for pain in people with cancer (completed) ⁸
Adapt knowledge to local context	Adaptation is needed to reach beyond advanced cancer to the broader population of people with cancer treated at implementation sites (completed)
Assess barriers to knowledge use	Identified barriers: 1) lack of oncology-specific training for acupuncturists/massage therapists; 2) oncology providers and patients have limited knowledge of acupuncture/massage; 3) acupuncturists and massage therapists working in hospitals are often siloed (completed) ²³
Implement knowledge products	IMAGINE implementation strategy: educational courses, educational materials, external facilitation (IMAGINE project)
Monitor knowledge use	Track fidelity to IMPACT protocols (IMAGINE project)
Evaluate the outcomes of using the knowledge	Evaluation of outcomes informed by RE-AIM (IMAGINE project)
Sustain knowledge use	IMAGINE utilizes virtual resources to promote access and leverages professional societies (i.e., SIO) to sustain IMPACT protocol use

Barriers and Facilitators

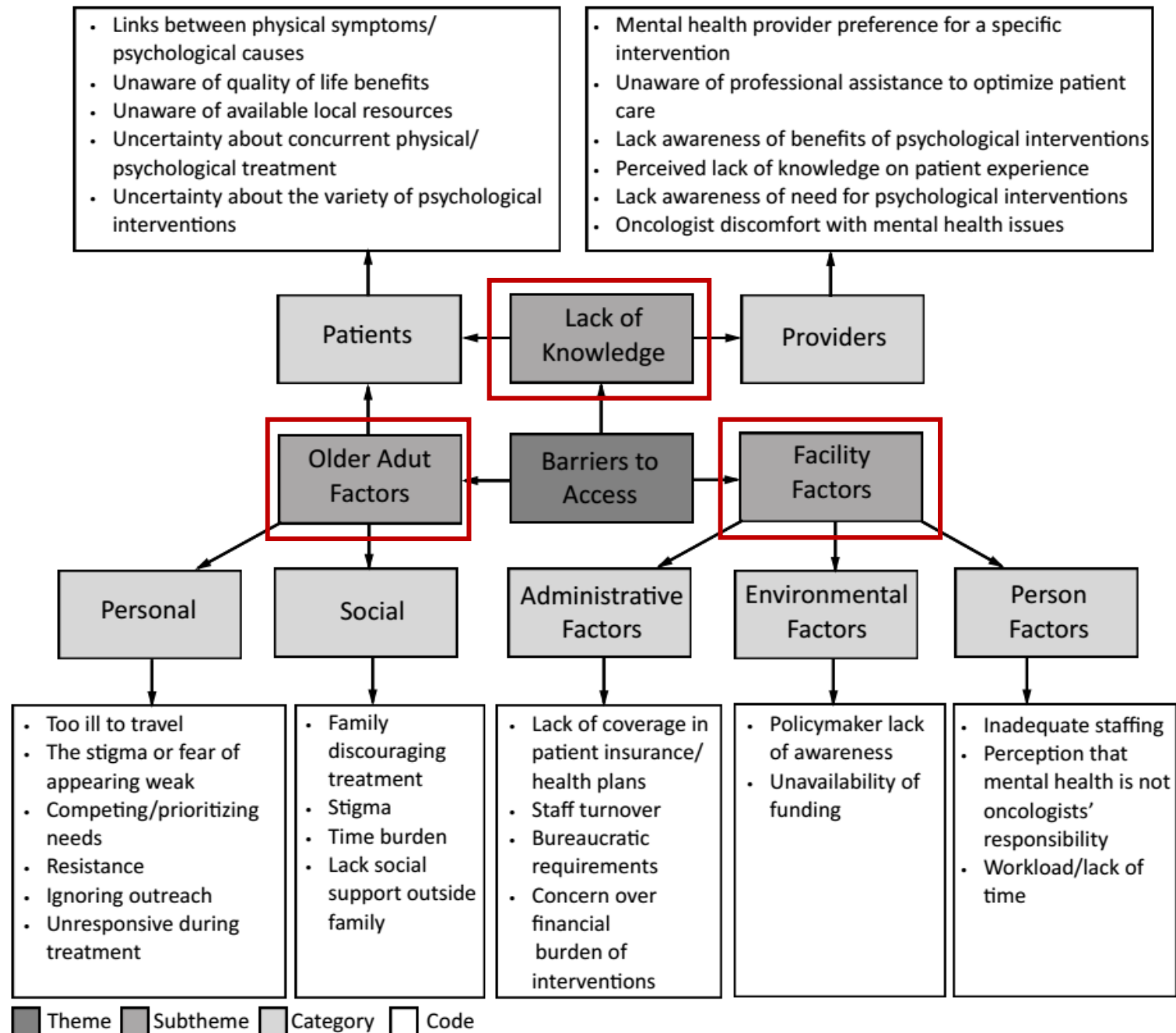
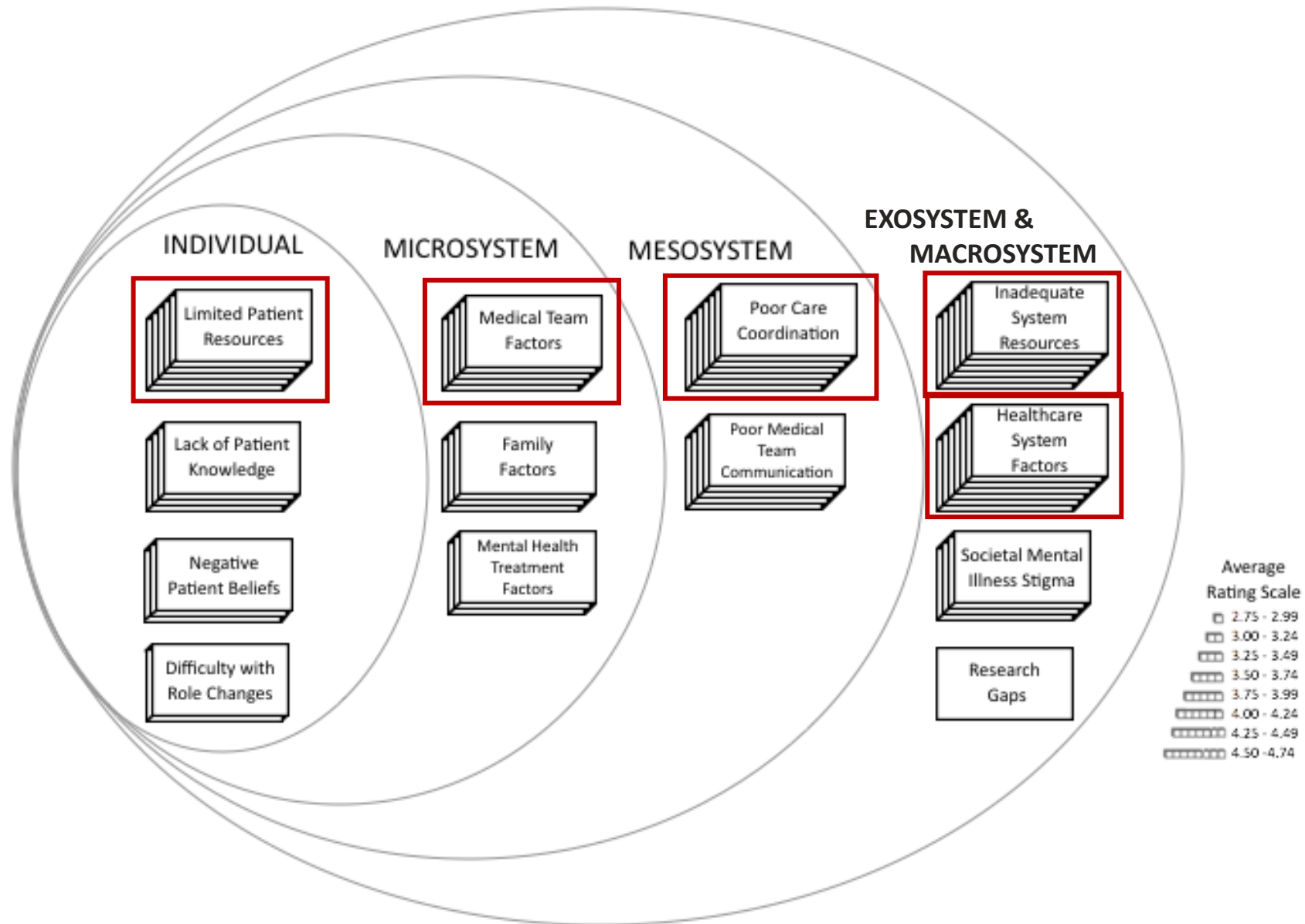


Figure 1. Thematic map for barriers based on small group discussions

Figure 3: Barriers that Interfere with Older Adult Cancer Patients' Access to Psychological Services



Strategies



What are implementation strategies?

- Methods or techniques to enhance the adoption, implementation and sustainability of an evidence-based program or practice
- Overcome **specific barriers** and **leverage facilitators** to increase the pace and effectiveness of implementation
- Can target determinants at any level of the social ecological model (individual, interpersonal, systems, community).
- Can be a single strategy (discrete), multi-faceted or a bundle of strategies (blended protocol) to address multiple implementation barriers.

Expert Recommendations for Implementing Change (ERIC) Compilation/Taxonomy

- Steps to develop ERIC
 - Literature review
 - Engaged panel of experts in implementation science and health care delivery practice
 - Modified mixed methods Delphi process to achieve consensus on implementation strategies and definitions
 - Surveys
 - Iterative discussion of strategy labels and definitions
 - Rankings of feasibility and importance
- A compilation of 73 implementation strategies and definitions

Nine Clusters of (ERIC) Implementation Strategies

Use evaluative and iterative strategies	• Assess for readiness and identify barriers and facilitators • Audit and provide feedback • Purposefully reexamine the implementation
Adapt and tailor to context	• Tailor strategies • Promote adaptability • Use data experts
Train and educate stakeholders	• Conduct ongoing training • Distribute educational materials • Use train-the trainer techniques
Engage consumers	• Increase demand • Use mass media • Involve patients/consumers and family members
Change infrastructure	• Mandate change • Change record systems • Change physical structure and equipment

A SELECTION OF IMPLEMENTATION STRATEGIES

• Facilitation • Provide local technical assistance • Provide clinical supervision	Provide interactive assistance
• Identify and prepare champions • Organize clinician implementation team meetings • Identify early adopters	Develop stakeholder interrelationships
• Remind clinicians • Revise professional roles • Facilitate relay of clinical data to providers	Support clinicians
• Alter incentive/allowance structures • Access new funding • Fund and contract for the clinical innovation	Utilize financial strategies

How to select implementation strategies?

- Draw on an implementation science framework
- Identify the barriers and facilitators that may influence implementation
- Engage stakeholders
- Consider a mixed-methods design

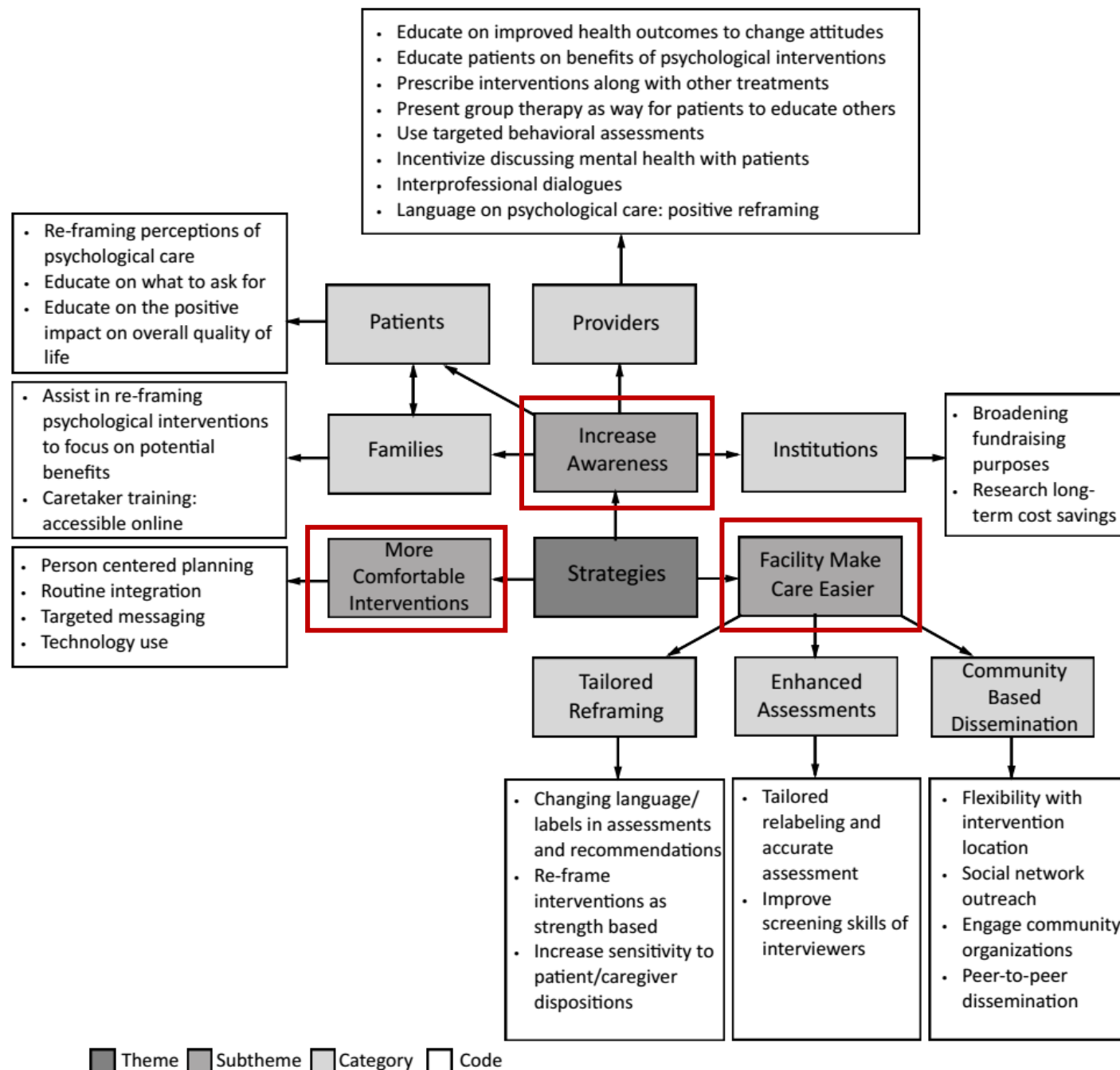
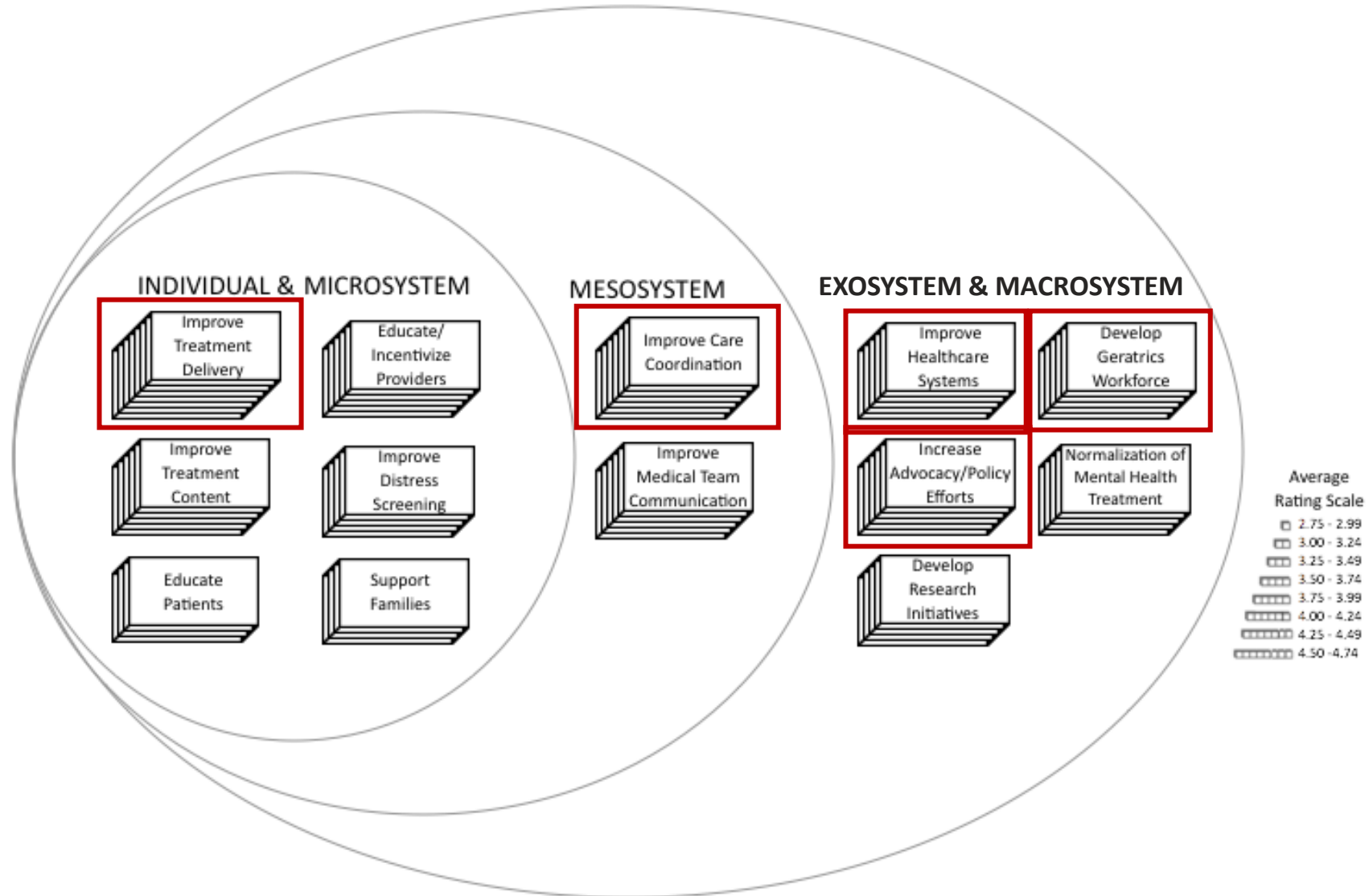
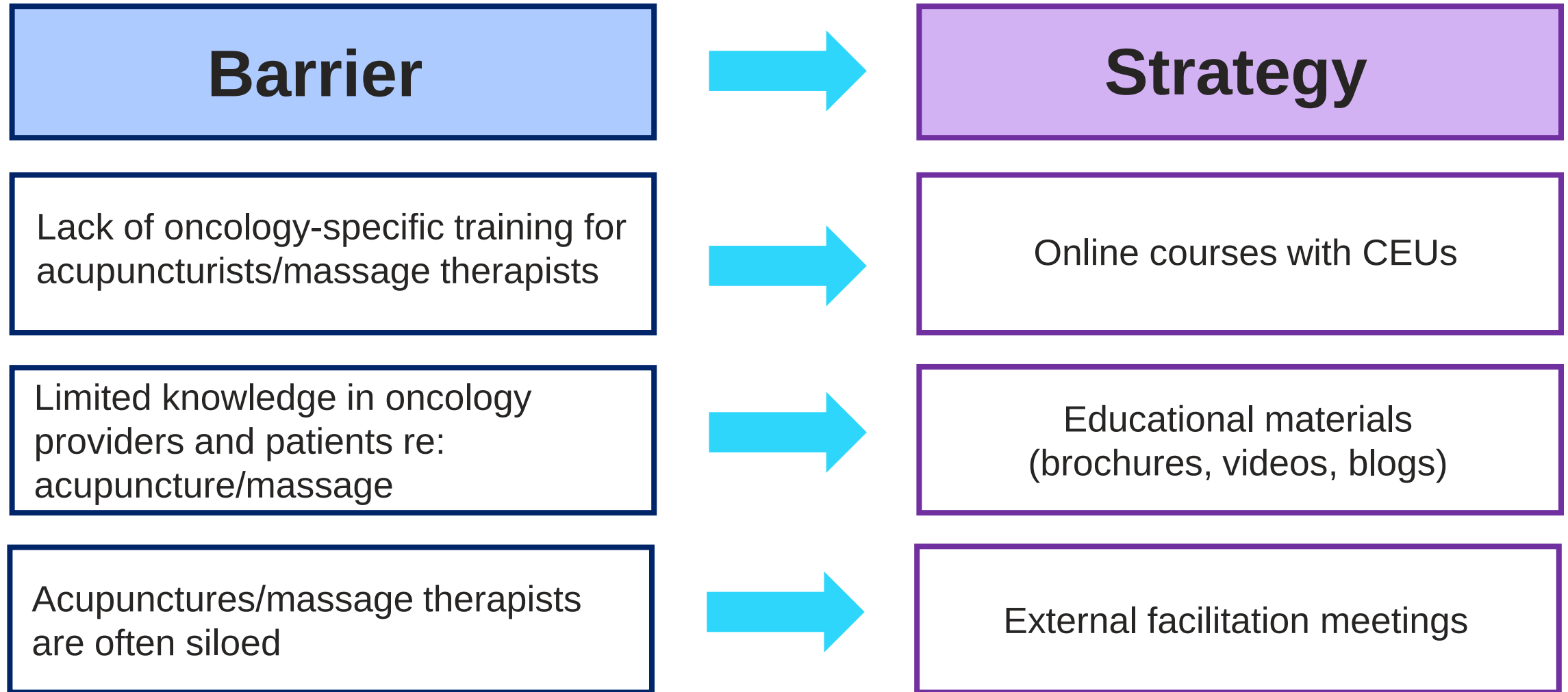


Figure 2. Thematic map for strategies based on small group discussions

Figure 4: Strategies to Improve Older Adult Cancer Patients' Access to Psychological Services



IMAGINE implementation strategies



Outcomes



RE-AIM

Reach: **WHO** is intended to benefit and who actually participates or is exposed to the initiative?

Effectiveness: **WHAT** is the most important benefit you are trying to achieve and what is the likelihood of negative outcomes?

Adoption: **WHERE** is the program applied and **WHO** applied it?

Implementation: **HOW** consistently was the program delivered, how was it adapted, how much did it cost, and **WHY** did the results emerge?

Maintenance: **WHEN** was the program operational and how long are the results sustained?



RE-AIM for IMAGINE

Reach: Number of patients with cancer and pain who are treated with IMPACT protocols during active implementation

Effectiveness:

- Healthcare outcomes: Percent change in number of referrals for acupuncture/massage therapy; Percent change in number of visits for acupuncture/massage therapy
- Health outcomes: Proportion of patients with clinically meaningful change (1 point improvement)

Adoption:

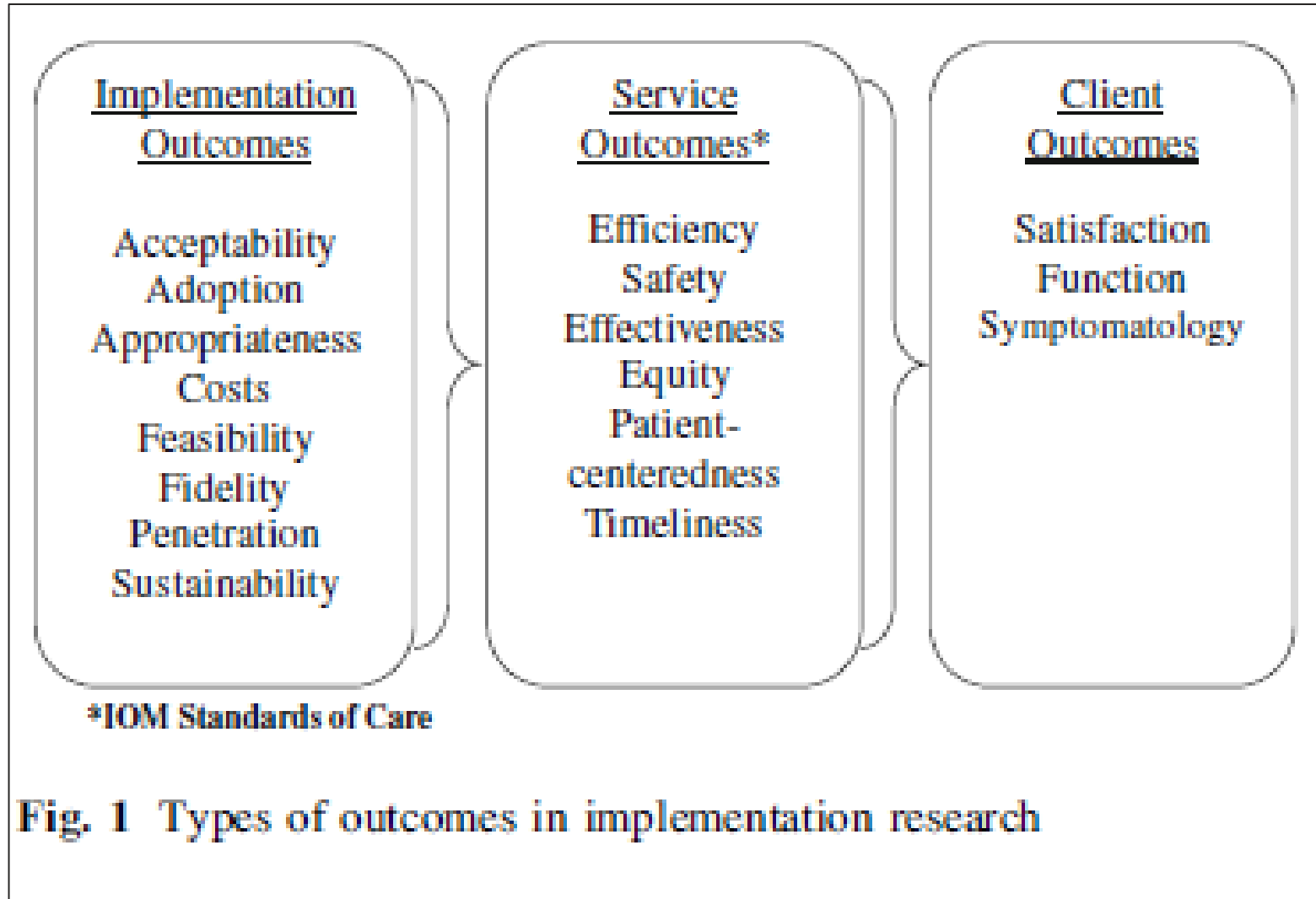
- Staff: Number of acupuncturists and massage therapists who treat at least 10 patients with the IMPACT protocol
- Site: Number of cancer centers where IMPACT protocols are delivered

Implementation:

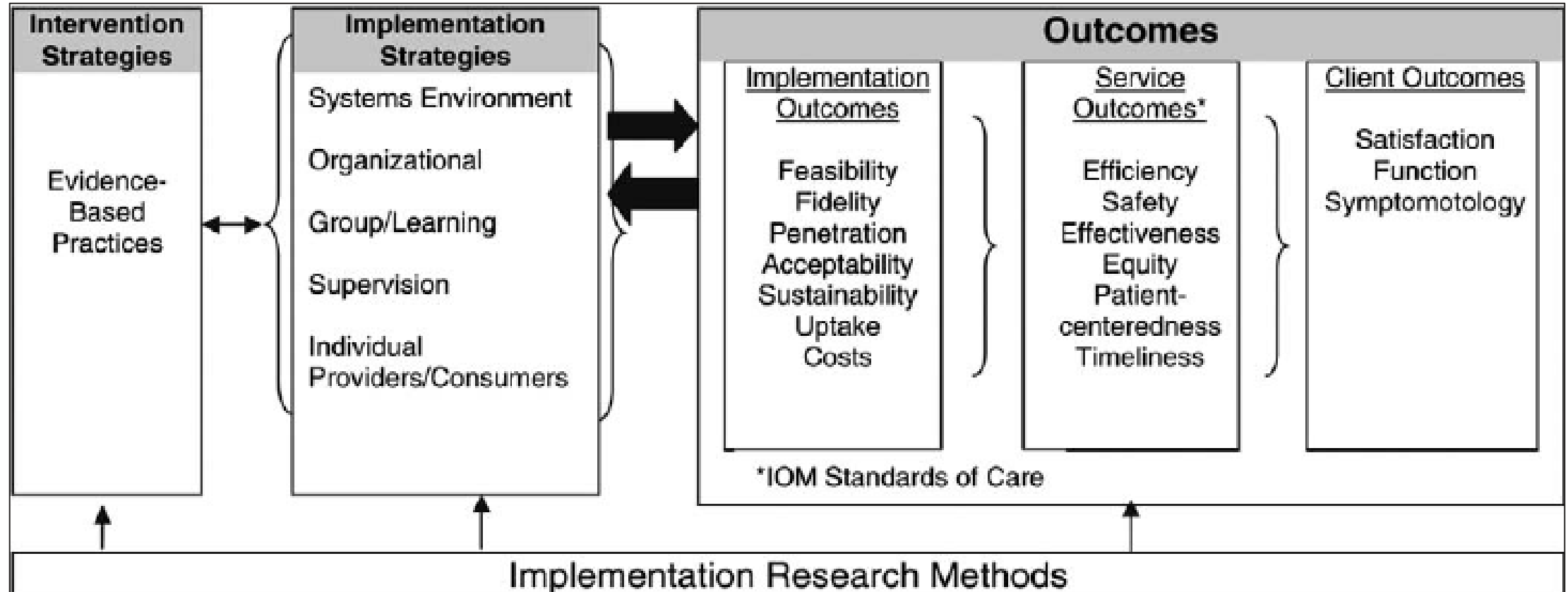
- Educational courses: Number of acupuncturists/massage therapists who complete the educational course
- Educational materials: Number of acupuncturists/massage therapists who use the materials
- External facilitation: Number of facilitation sessions held and number of attendees
- Intervention fidelity: Checklist of core components of the protocols completed by clinicians

Maintenance: Reach, effectiveness and adoption data during the maintenance phase

Outcomes of implementation vs. intervention



Outcomes of implementation vs. intervention



Proctor's model

- Acceptability: Perception that the intervention and/or implementation strategy is agreeable or satisfactory
- Adoption: Intention, decision, or action to employ an intervention (i.e., uptake)
- Appropriateness: Perceived fit/relevance/compatibility of the intervention for a given practice, provider, or consumer and/or fit to address a particular problem
- Cost: Cost of the implementation effort
- Feasibility: Extent to which an intervention can be successfully used in a given setting
- Fidelity: Degree to which an intervention was implemented as it was originally prescribed
- Penetration: Integration of an intervention within a service setting
- Sustainability: Extent to which an intervention is maintained or integrated with a setting's operations

Center for Implementation Research in Cancer in Later Life (CIRCL)



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CIRCL Objectives

To **train and mentor investigators** in the integration of D&I principles and methods into research across the stages of behavioral intervention development for OACs and their caregivers.

To **support the completion of innovative research projects** that integrate D&I principles and methods across the stages of behavioral intervention development for OACs and their caregivers.

Target audience: Researchers interested in integrating D&I science into their research programs



CIRCL: Resources

- Monthly work-in-progress seminar
- Monthly webinar
- Mentorship program
- Annual conference
- Pilot award program: Next RFP - Fall 2026
- Resource library
- Newsletter
- Email: circl@mskcc.org



Thank You

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