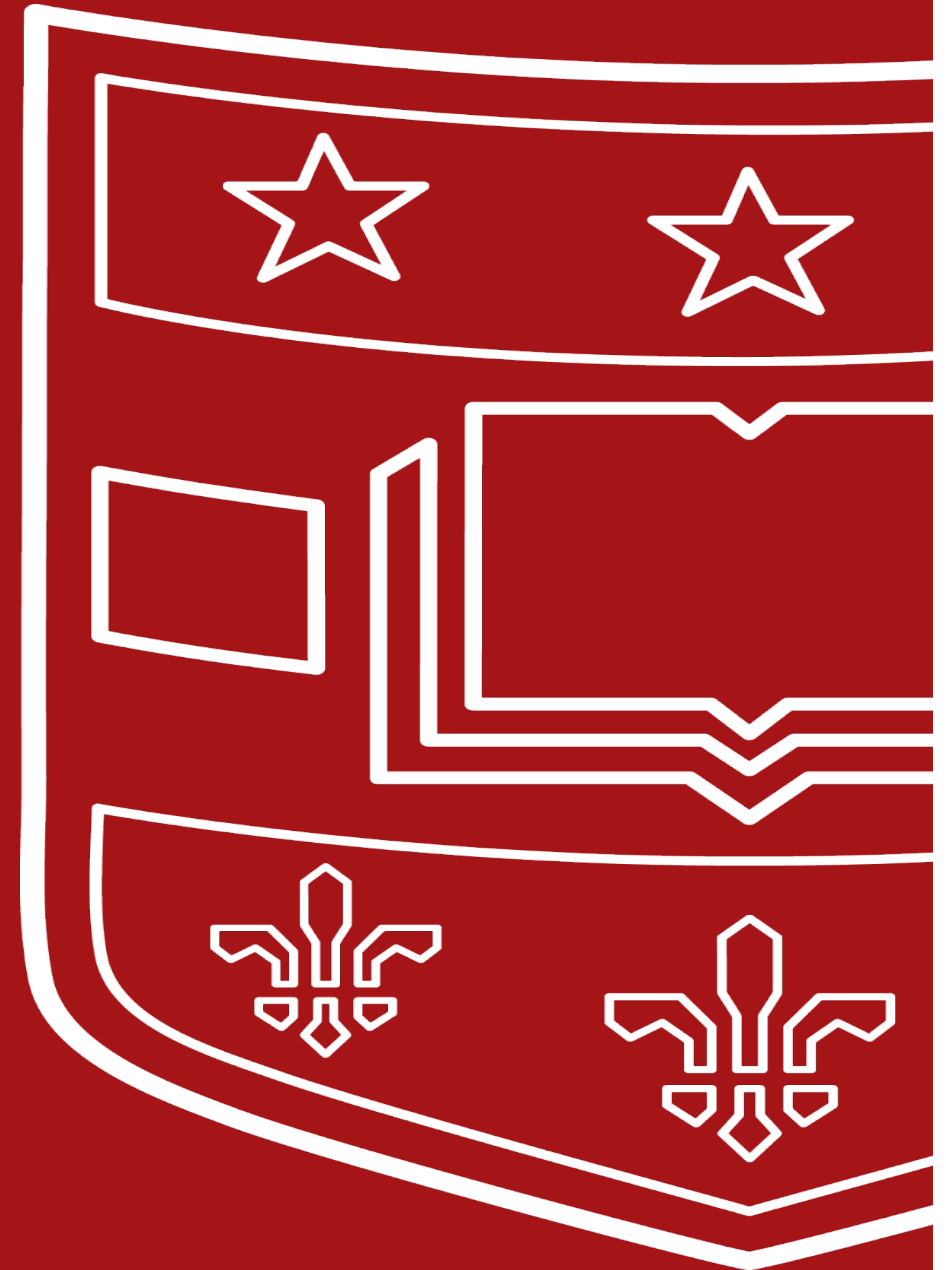


Ten Years of Implementation Outcomes Research: Progress & Future Directions

Enola Proctor, Ph.D.

UT Houston School of Public Health
October 17, 2023

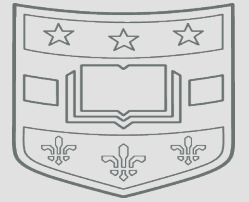


Reflection.....Implementation

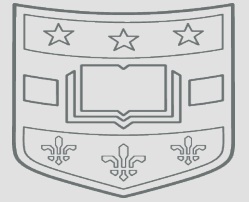
Outcomes 2012-2023



- How it started
- Key points of 2012 paper
- What happened?
- Where are we, ten years later?
- What's ahead?

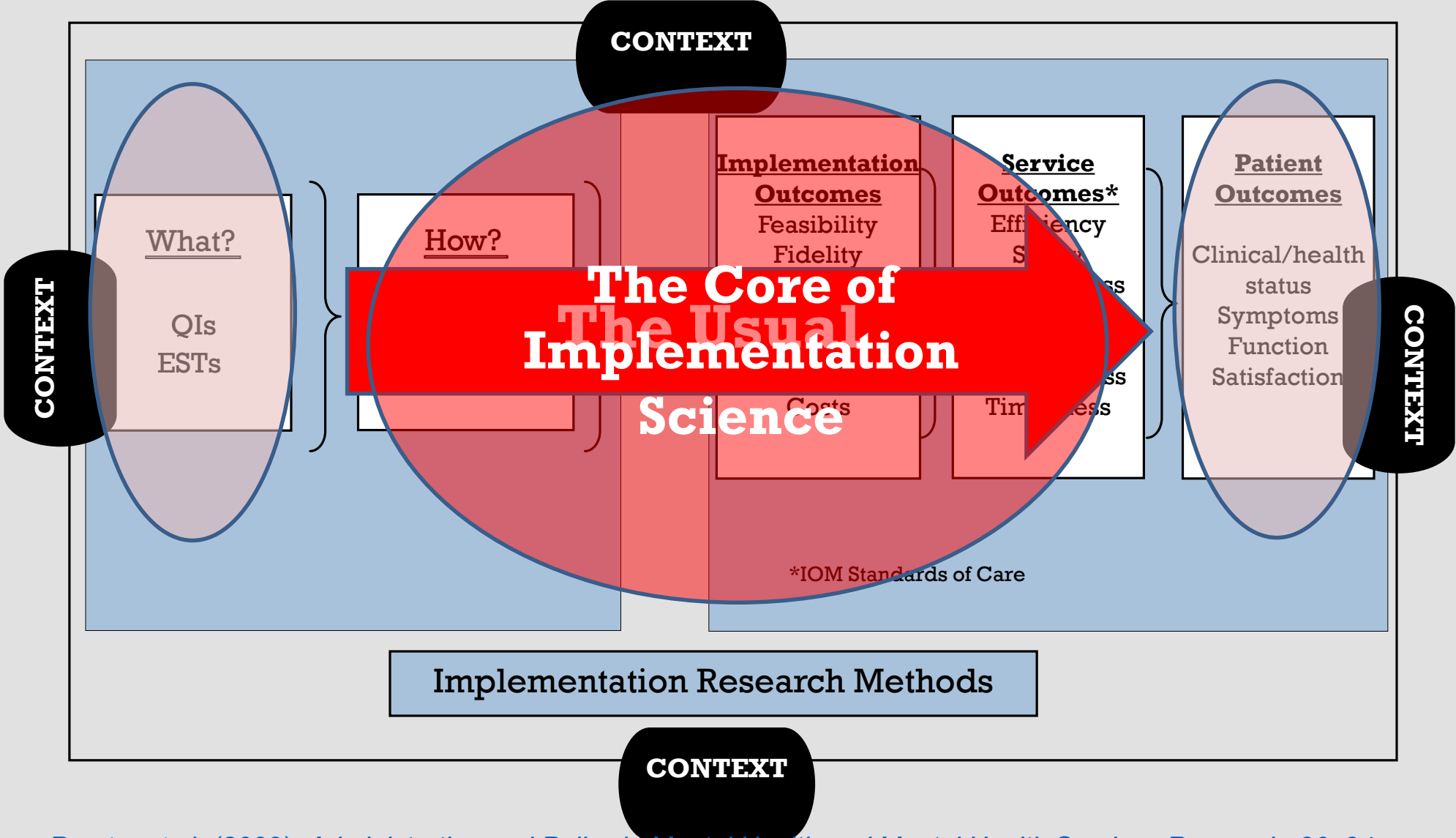


IMPLEMENTATION OUTCOMES: HOW IT STARTED



HOW TO EVALUATE IMPLEMENTATION SUCCESS?

Conceptual Model of Implementation Research



Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda

Enola Proctor · Hiie Silmere · Ramesh Raghavan ·
Peter Hovmand · Greg Aarons · Alicia Bunger ·
Richard Griffey · Melissa Hensley

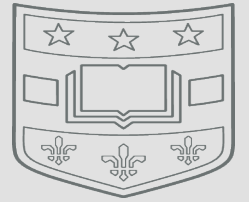
“We define implementation outcomes as the effects of deliberate and purposive actions to implement new treatments, practices, and services.”

1. Indicators of implementation success
2. Proximal indicators of implementation processes.
3. Intermediate outcomes



Implementation Outcomes

Acceptability
Adoption
Appropriateness
Costs
Feasibility
Fidelity
Penetration
Sustainability



Implementation Outcomes

Acceptability
Adoption
Appropriateness
Costs
Feasibility
Fidelity
Penetration
Sustainability

Service Outcomes*

Efficiency
Safety
Effectiveness
Equity
Patient-Centeredness
Timeliness

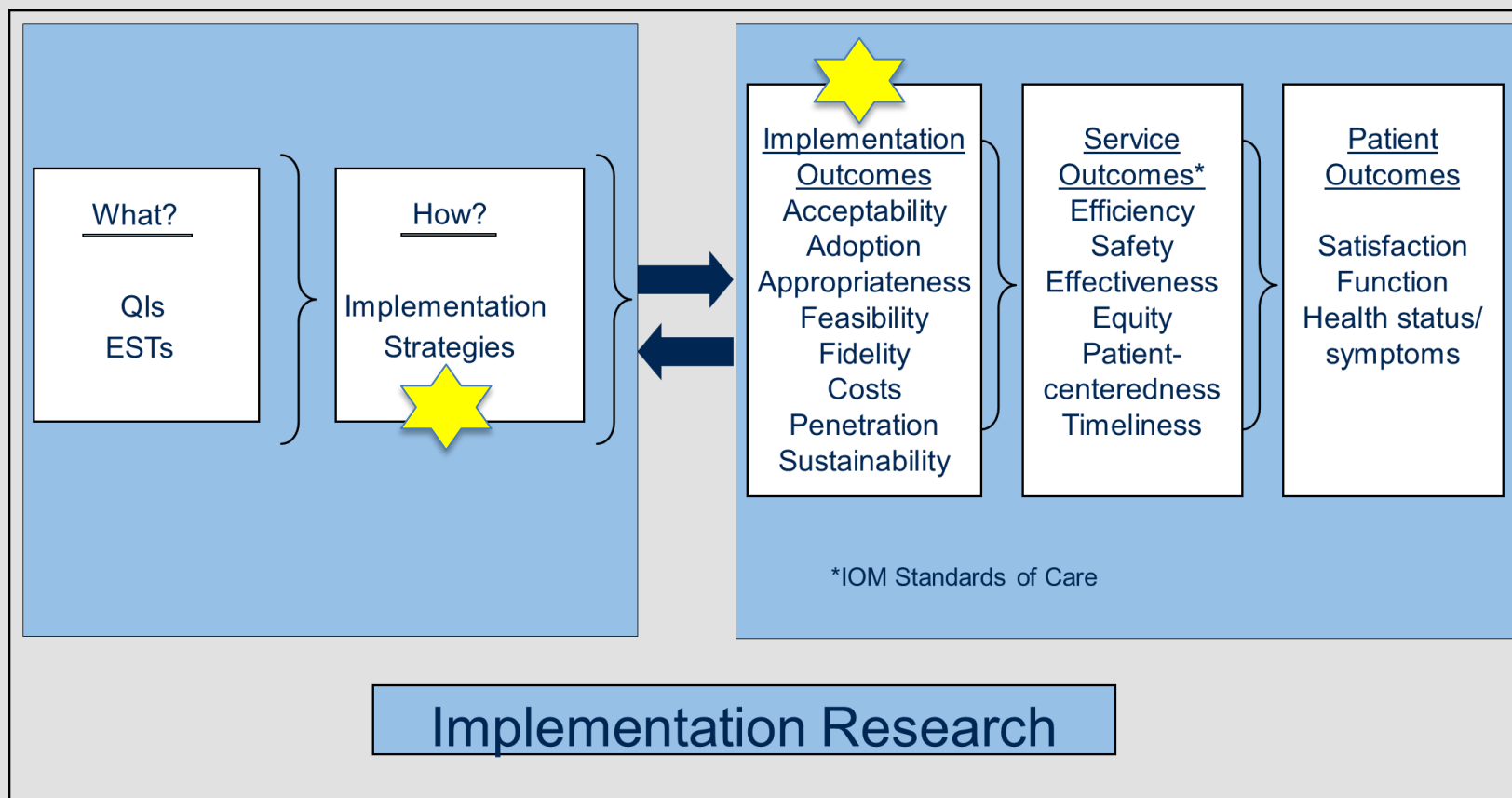
**IOM Standards of Care*

Patient Outcomes

Morbidity
Mortality
Health Status
Quality of Life



IMPLEMENTATION OUTCOMES OUR KEY POINTS



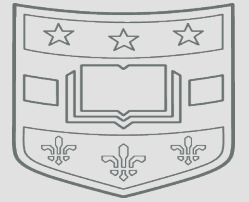
Implementation outcomes are indicators of implementation success.

Implementation outcomes need to be measured distinct from intervention outcomes



Could have an effective intervention:

- Information never reaches potential users
- Information poorly understood
- Poor delivery
- Poor reach in relevant health systems
- Implemented but with poor fidelity
- Not sustained



What we proposed.....

- **Use consistent terminology (TAXONOMY)**
- **Build theory**
 - What mechanisms & processes of change captured in outcomes?
- **More robust measurement**
- **Rigorous testing to build evidence**
 - How are implementation outcomes interrelated?
 - What is the effect of implementation outcomes on other outcomes?
 - How do we achieve them?



IMPLEMENTATION OUTCOMES SO WHAT HAPPENED?



THE FIELD RESPONDED



- ADVANCES IN CONCEPTUALIZATION
 - Linked to CFIR
 - Distinctions sharpened-anticipated/ achieved, perceptual, behavioral
- MEASUREMENT ADVANCES
 - Review papers (psychometric properties)
 - SIRC Instrument Review Project
- FUNDING PROGRAM ANNOUNCEMENTS
 - NIH-Dissemination and Implementation Research in Health
PAR # 22-105

SHORT REPORT**Open Access**

Measurement resources for dissemination and implementation research in health

Borsika A. Rabin^{1,2*†}, Cara C. Lewis^{3†}, Wynne E. Norton⁴, Gila Neta⁴, David Chambers⁴, Jonathan N. Tobin⁵, Ross C. Brownson^{6,7} and Russell E. Glasgow²

Martinez *et al.* *Implementation Science* 2014, **9**:118
<http://www.implementationscience.com/content/9/1/118>

**IMPLEMENTATION SCIENCE****DEBATE****Open Access**

Instrumentation issues in implementation science

Ruben G Martinez^{1*}, Cara C Lewis^{2,3} and Bryan J Weiner⁴




SYSTEMATIC REVIEW

Open Access

Rectangular Snip



Quantitative measures of health policy implementation determinants and outcomes: a systematic review

Peg Allen^{1*} , Meagan Pilar¹, Callie Walsh-Bailey¹, Cole Hooley², Stephanie Mazzucca¹, Cara C. Lewis³, Kayne D. Mettert³, Caitlin N. Dorsey³, Jonathan Purtle⁴, Maura M. Kepper¹, Ana A. Baumann⁵ and Ross C. Brownson^{1,6}

Lewis et al. *Implementation Science* (2015) 10:155
DOI 10.1186/s13012-015-0342-x



IMPLEMENTATION SCIENCE

SYSTEMATIC REVIEW

Open Access



Outcomes for implementation science: an enhanced systematic review of instruments using evidence-based rating criteria

Cara C. Lewis^{1,2*}, Sarah Fischer¹, Bryan J. Weiner³, Cameo Stanick⁴, Mimi Kim^{5,6} and Ruben G. Martinez⁷

SIRC Instrument Review Project



- HOME
- CONFERENCE INFO
- MEMBERSHIP
- STRATEGIC PLANNING GROUP (SPG)
- INITIATIVES**
- APA DIVISION
- LINKS
- ABOUT
- DIS SIG

Instrument Review Project

The SIRC Instrument Review Project: A Systematic Review of Dissemination and Implementation Science Instruments

[Video of Instrument Review Taskforce at SIRC 2011](#)

[Power Point Presentation from ABCT](#)

[SIRC_IRP Update_2013](#) (video of full presentation coming soon).

Exciting advances have been made in the field of dissemination and implementation (D&I). However, much like the science-practice gap that motivates our field, a communication gap exists among stakeholders at the forefront of this work. Measurement issues have slowed the progression of the field of D&I given the laborious process of systematically developing psychometrically sound yet feasible and cost-effective ways to assess our efforts. The lag that occurs between initial development, implementation, and then publication delays the process further, resulting in instances in which independent research teams are devoting considerable resources to unnecessarily redundant work. As a consequence, progress toward the development of commonly used instruments has been very slow, limiting the extent to which researchers have access to and are able to

USER LOGIN

User

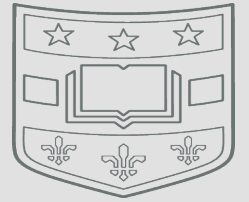
Password

Login Remember me

- > [Register](#)
- > [Lost your password?](#)

Looking ahead to SIRC 2015

Thank you for your interest in the Seattle Implementation Research Collaborative.



IMPLEMENTATION OUTCOMES WHERE ARE WE NOW?



Proctor et al. *Implementation Science* (2023) 18:31
<https://doi.org/10.1186/s13012-023-01286-z>

Implementation Science

SYSTEMATIC REVIEW

Open Access

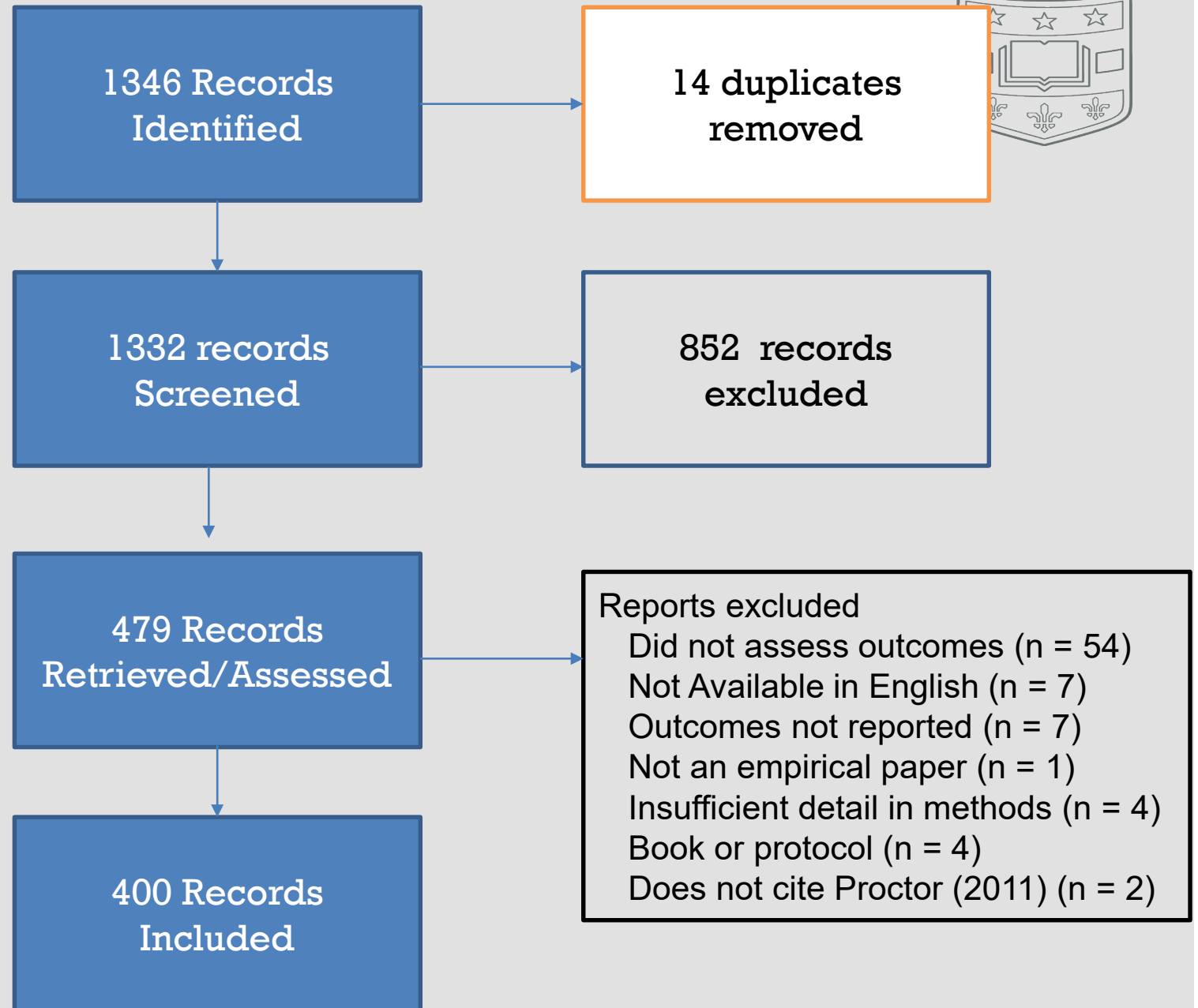
Ten years of implementation outcomes research: a scoping review



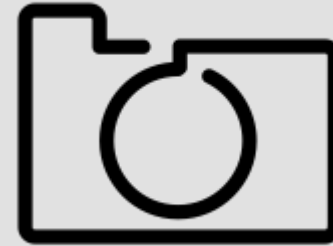
Enola K. Proctor^{1*} , Alicia C. Bunger², Rebecca Lengnick-Hall³, Donald R. Gerke⁴, Jared K. Martin⁵,
Rebecca J. Phillips⁶ and Julia C. Swanson⁷

Methods

- Forward citing tracing (cited Proctor et al 2011) in WOS and in citation alerts
- Inclusion
 - Empirical
 - Peer-Reviewed
 - Assessed/Measured at least 1 IO

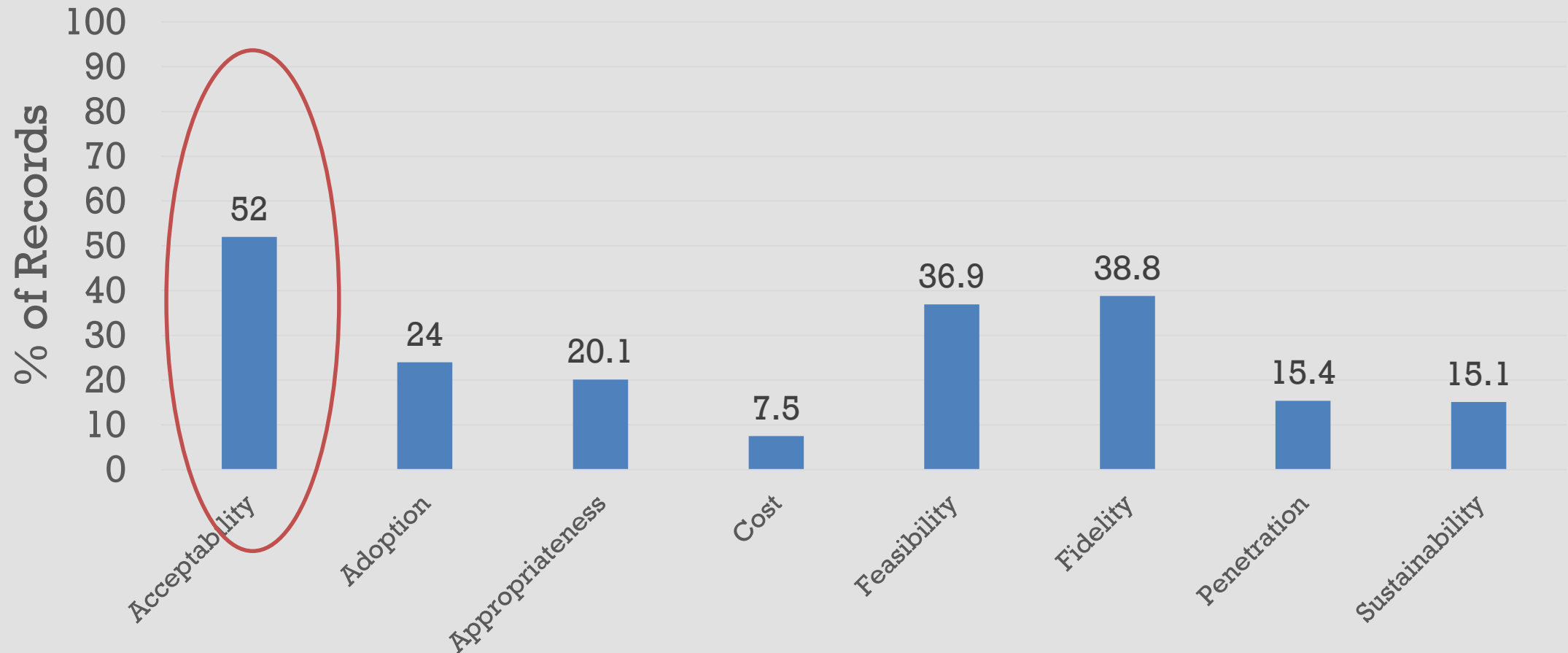
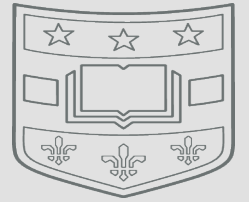


SNAPSHOT OF STUDIES



- GLOBAL
- VARIED FUNDERS
- HEALTHCARE (45.8%)
- ONE INTERVENTION/ EBP (40%)
- OBSERVATIONAL DESIGNS (66.5%)

What outcomes are investigated?

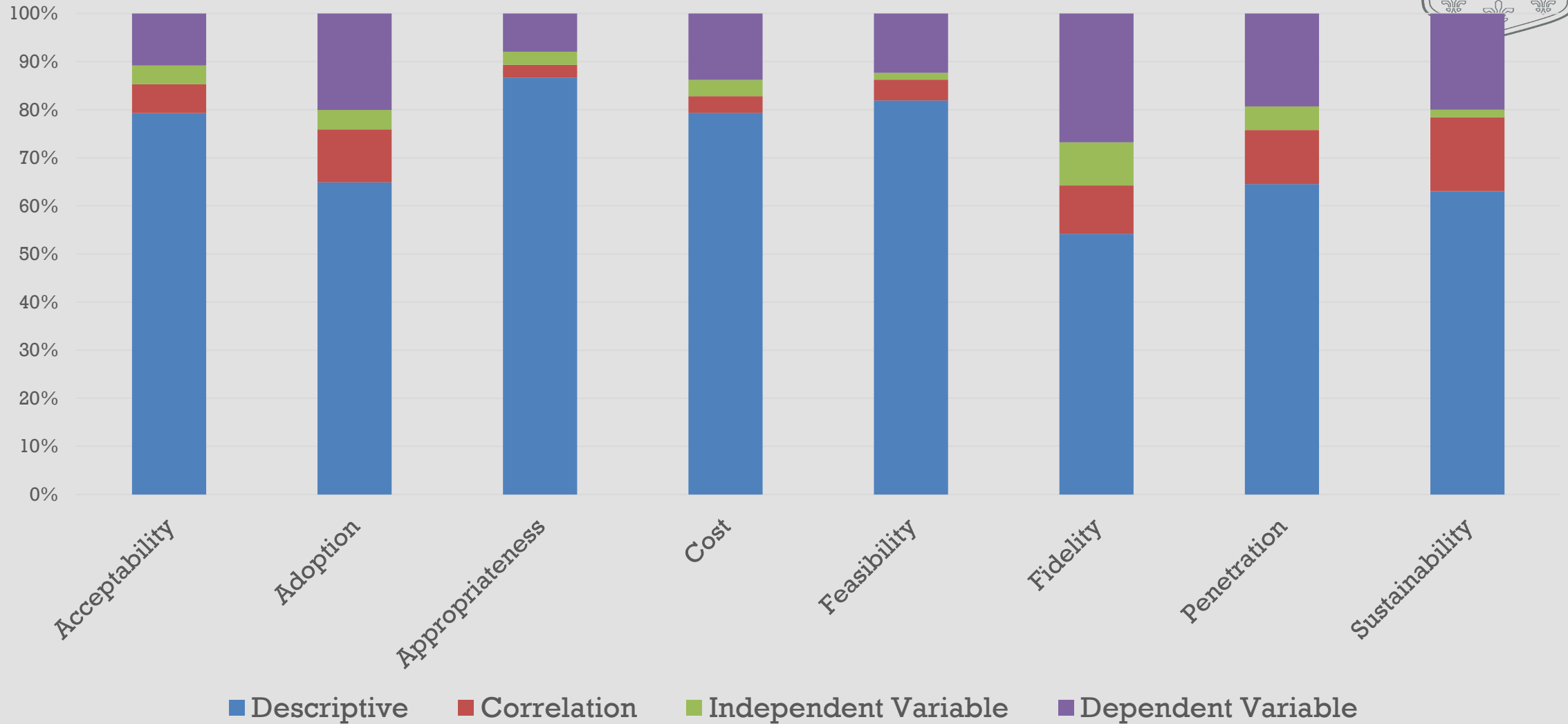
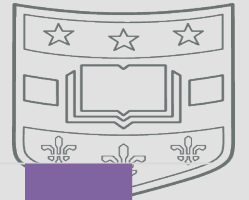


Implementation Outcomes Variation by Stage/Phase



- Exploration phase:
 - Appropriateness, feasibility, acceptability, and adoption
- Preparation phase:
 - Adoption, cost, and feasibility
- Sustainment phase:
 - Sustainability

WHAT WAS THE OUTCOME'S ROLE IN ANALYSIS?



Harmony of language



- Terms not in original taxonomy: 8% (n = 32) of manuscripts
- Free text coding captured 24 unique alternative implementation outcome constructs
 - evidence of delivery, usefulness, client efficacy & competence, scale up, and timely initiation

BUILDING EVIDENCE & THEORY

Relationships among implementation outcomes

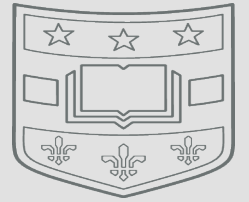


5.3% of studies (n = 21)

Sustainability was examined most often, particularly in relation to fidelity penetration, and adoption

No studies looked at cost and other implementation outcomes.

Tests of relationship of implementation outcomes on service outcomes



- How does attaining implementation outcomes improve service delivery?
- Hypotheses:
 - *Equity = f of service acceptability + feasibility + appropriateness*
 - *Effectiveness = f of feasibility + fidelity + penetration*
 - *Equitable access = f of fidelity + penetration + sustainment of evidence – based care*

BUILDING EVIDENCE:

Implementation Outcomes and Service Outcomes



4.8% of studies

Which Implementation outcomes?

Cost: 16.1%

Sustainability: 6.3%

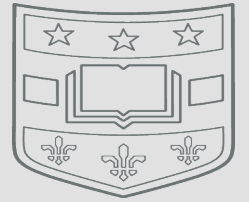
Feasibility, Fidelity Penetration: 4.5~%

Adoption: 3.8%

Acceptability: 1.9%

BUILDING EVIDENCE

Implementation Outcomes and Service Outcomes



Which Service Outcomes?

Cost: 16.1%

Sustainability: 6.3%

Feasibility, Fidelity Penetration: 4.5~%

Adoption: 3.8%

Acceptability: 1.9%



BUILDING EVIDENCE

Implementation Outcomes and Service Outcomes

**No studies of implementation outcomes
in our sample addressed service
outcomes of safety or equity.**

BUILDING EVIDENCE

Implementation Outcomes &

Client Outcomes: 5.5%

Which Implementation outcomes?

- Fidelity 10.2%
- Penetration: 7.8%
- Acceptability: 3%
- Appropriateness and Feasibility: ~2%
- Adoption & Sustainability: ~1%
- Cost: 0%



BUILDING EVIDENCE

Strategies to Attain Implementation

Outcomes

14% (n = 56)

Which Implementation outcomes?

Fidelity: 7%

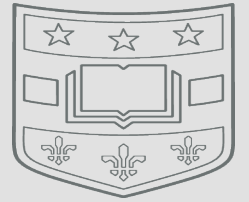
Acceptability: 5%

Adoption & Feasibility: 4%

Penetration & Sustainability: 3%

Appropriateness & Cost: 1-2%





**IMPLEMENTATION OUTCOMES
WHERE DO WE GO FROM HERE?**

Unfinished business: Original 2011 Research Agenda



Advance the
conceptualization and measurement of
implementation outcomes:

- Employing consistent terminology when describing implementation outcomes
- Report the referent for all implementation outcomes measured
- Specify level and methods of measurement

Theory building research
using outcomes:

- Explore the salience of implementation outcomes to different stakeholders
- Identify importance of various implementation outcomes by phase in implementation processes

CODING CHALLENGES!

DEBATE

Open Access



Six practical recommendations for improved implementation outcomes reporting

Rebecca Lengnick-Hall^{1*}, Donald R. Gerke², Enola K. Proctor³, Alicia C. Bunger⁴, Rebecca J. Phillips⁴, Jared K. Martin⁵ and Julia C. Swanson¹

Abstract

Background: Implementation outcomes research spans an exciting mix of fields, disciplines, and geographical space. Although the number of studies that cite the 2011 taxonomy has expanded considerably, the problem of harmony in describing outcomes persists. This paper revisits that problem by focusing on the clarity of reporting outcomes in studies that examine them. Published recommendations for improved reporting and specification have proven to be an important step in enhancing the rigor of implementation research. We articulate reporting problems in the current implementation outcomes literature and describe six practical recommendations that address them.

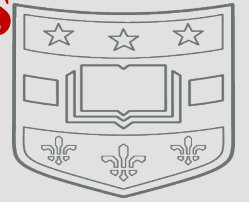
Recommendations: Our first recommendation is to clearly state each implementation outcome and provide a definition that the study will consistently use. This includes providing an explanation if using the taxonomy in a new way or merging terms. Our second recommendation is to specify how each implementation outcome will be analyzed relative to other constructs. Our third recommendation is to specify "the thing" that each implementation outcome will be measured in relation to. This is especially important if you are concurrently studying interventions and strategies, or if you are studying interventions and strategies that have multiple components. Our fourth recommendation is to report who will provide data and the level at which data will be collected for each implementation outcome, and to report what kind of data will be collected and used to assess each implementation outcome. Our fifth recommendation is to state the number of time points and frequency at which each outcome will be measured. Our sixth recommendation is to state the unit of observation and the level of analysis for each implementation outcome.

Conclusion: This paper advances implementation outcomes research in two ways. First, we illustrate elements of the 2011 research agenda with concrete examples drawn from a wide swath of current literature. Second, we provide six pragmatic recommendations for improved reporting. These recommendations are accompanied by an audit worksheet and a list of exemplar articles that researchers can use when designing, conducting, and assessing implementation outcomes studies.

Keywords: Acceptability, Adoption, Appropriateness, Feasibility, Fidelity, Implementation cost, Penetration, Sustainability, Implementation outcome

Improve measurement of implementation outcomes

Increase data sources & improve rigor



Implementation outcome	Data sources
Acceptability	Surveys Interviews Observation
Adoption, scale up, sustainability	Records of use
Appropriateness	Surveys, interviews, observation
Fidelity	Observation Checklists
Implementation cost	Time logs Budget data

Refine unit of analysis & test salience by phase



Implementation outcome	Unit of analysis	Salience by phase
Acceptability	Individual provider Individual health user (pt)	Early, ongoing
Adoption	Individual provider Organization or health setting	Early to mid
Appropriateness	Individual provider Individual health user Organization or setting	Early (prior to adoption)
Fidelity	Individual provider Provider teams (aggregated)	Early, mid, overtime (drift)
Implementation cost	Provider Organization or health setting	Early, mid, late

Test relationships



- **How do implementation outcomes inter-relate?**
 - Does acceptability enhance reach/penetration?
 - Does feasibility increase sustainability?
- **What strategies are effective to attaining implementation outcomes?**
 - Very few studies in our sample tested strategies
- **What is the effect of achieving an implementation outcome?**
 - On service outcomes
 - Equity
 - Safety
 - On clinical outcomes

Current analysis: Key take away points



Lots of:

- **DESCRIPTION**
- **Qualitative/**
- **Mixed**
- **Assessments**
- **Settings**

**Little examining
relationships with:**

- **Strategies**
- **Other**
- **Implementation**
- **Outcomes**
- **Service Delivery**
- **& Client**
- **Outcomes**

Current analysis: Key take away points



Implementation outcomes need to be measured distinct from other outcomes

We need research to identify strategies for their attainment

We need to know how successful implementation matters

Current analysis: Key take away points



The implementation outcomes taxonomy should not serve merely as a checklist

Outcomes to be measured at one point in
time,
one and done

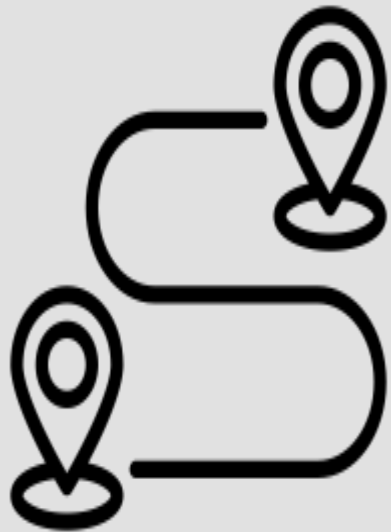


**The next ten
years of
implementation
outcomes
research:
strengths,
opportunities,
and priorities**

- Greater testing how implementation outcomes can advance equity
- Prioritize testing interrelationships among outcomes
and leverage recent design advances that enable this
- Prioritize testing strategies and mechanisms to attain



THANK YOU!



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Disclosure: Enola Proctor Shanti K. Khinduka Distinguished Professor Emerita



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Salaried professor emeritus at Washington University in St. Louis

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Nonfinancial

Reviewer for several peer-reviewed journals