EVANS CENTER FOR IMPLEMENTATION AND IMPROVEMENT SCIENCES

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Bringing Science to Quality

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

October 25, 2017

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

Pre-Test Polling Question

Finish this definition by selecting one correct answer.

Implementation science is the study of…

A. how well an intervention improves health outcomes

B. the distribution and determinants of disease and health

C. optimal strategies to increase evidence uptake in real-world settings

Pre-Test Polling Question

Finish this definition by selecting one correct answer.

Improvement science is the study of…

A. rigorously measured outcomes associated with systematically designed efforts to improve care

B. documenting outcomes after implementing a change in delivery, where no baseline measure is needed

C. measuring outcomes associated with adaptive, iterative approaches to effecting improvements in care

Series Overview

"To him who devotes his life to science, nothing can give more happiness than increasing the number of discoveries, but his cup of joy is full when the results of his studies immediately find practical applications."

- *Louis Pasteur*

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Issues in Nascent Fields

- Implementation & improvement sciences are still developing
  - Only 1 journal dedicated to implementation science
- Multidisciplinary
  - Variation in approaches, terminology
- New research should advance science in theses fields

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NIH Proposal Criteria

Main NIH Criteria

- Overall impact
- Significance
- Innovation
- Approach
- Investigator team
- Research environment

Issues Applying NIH Criteria to Implementation & Improvement

- Too broad
  - Non-specific
- Offers no guidance on how to evaluate studies for their contribution to nascent fields

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Proctor's 10 Key Ingredients	NIH Criteria
Quality/care gap	Impact; Significance
Evidence-based treatment	Significance; Innovation
Conceptual model, theoretical justification	Approach; Innovation
Stakeholder priorities, engagement in change	Impact; Approach; Research Environment
Setting's readiness to adopt new services	Impact; Approach; Environment
Implementation strategy/process	Impact; Significance; Innovation
Team experience with the setting, treatment, processes	Approach; Investigator Team
Feasibility of proposed research design	Approach; Investigator Team
Measurement & analysis section	Approach; Investigator Team
Policy/funding environment; support for sustaining change	Impact; Significance

Source: Writing Implementation Research Grant Proposals: Ten Key Ingredients. Proctor EK, Powell BJ, Baumann AA, Hamilton AM, Santerns RL. *Implementation Science.* 2012;7:96.

Conceptually Framing the Series

- ✓ Quality/care gap
- ✓ Evidence-based treatment
- ✓ Conceptual model, theoretical justification
- ✓ Stakeholder priorities, engagement in change
- ✓ Setting's readiness to adopt new services
- ✓ Implementation strategy/process
- ✓ Team experience with the setting, treatment, processes
- ✓ Feasibility of proposed research design
- ✓ Measurement & analysis section
- ✓ Policy/funding environment; support for sustaining change

Source: Writing Implementation Research Grant Proposals: Ten Key Ingredients. Proctor EK, Powell BJ, Baumann AA, Hamilton AM, Santerns RL. *Implementation Science*. 2012;7:96.

Upcoming Sessions

Tentative Date	Session Title	Proposal Areas Addressed
10/25/2017	**Identifying Your Implementation & Improvement Sciences 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
3/22/2018	Quantitative Methods for Implementation & Improvement Sciences	Methodology
4/18/2018	Qualitative Methods for Implementation & Improvement Sciences	Methodology
5/10/2018	Engaging with Stakeholders to Conduct Feasible & Meaningful Research	Stakeholder Engagement, Feasibility, Team Experience, Policy Environment

Purpose


Proctor's 10 Key Ingredients
CIIS Educational Series
High-Quality Implementation & Improvement Sciences
Significant Contributions to Improve Care, Advance Fields

Identifying Your Implementation & Improvement Sciences Question

Study Proposal Areas Addressed:
Quality/Care Gap, Evidence-Based Practice

Erika Crable, MPH
CIIS Research Fellow

Today's Learning Objectives

- Discuss the goals of implementation science & improvement science
- Distinguish between implementation science & implementation of an intervention, efficacy & effectiveness
- Identify quality & care gaps in current health systems delivery & challenges to increasing the use of evidence-based practices (EBP)

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Overview: Definitions & Aims

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

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

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

Answers
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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Implementation Science Goals

YES

- Translate EBP or evidence-informed practices (EIP) into routine clinical practice
- Address gaps in quality/care by increasing uptake of underused evidence
- Develop generalizable knowledge

NO

- Establish efficacy
  - Examining the impact of an intervention delivered under optimal, highly-controlled conditions
- Only study effectiveness
  - Examining the impact of efficacious interventions delivered in real-world settings

Improvement Science v. Quality Improvement

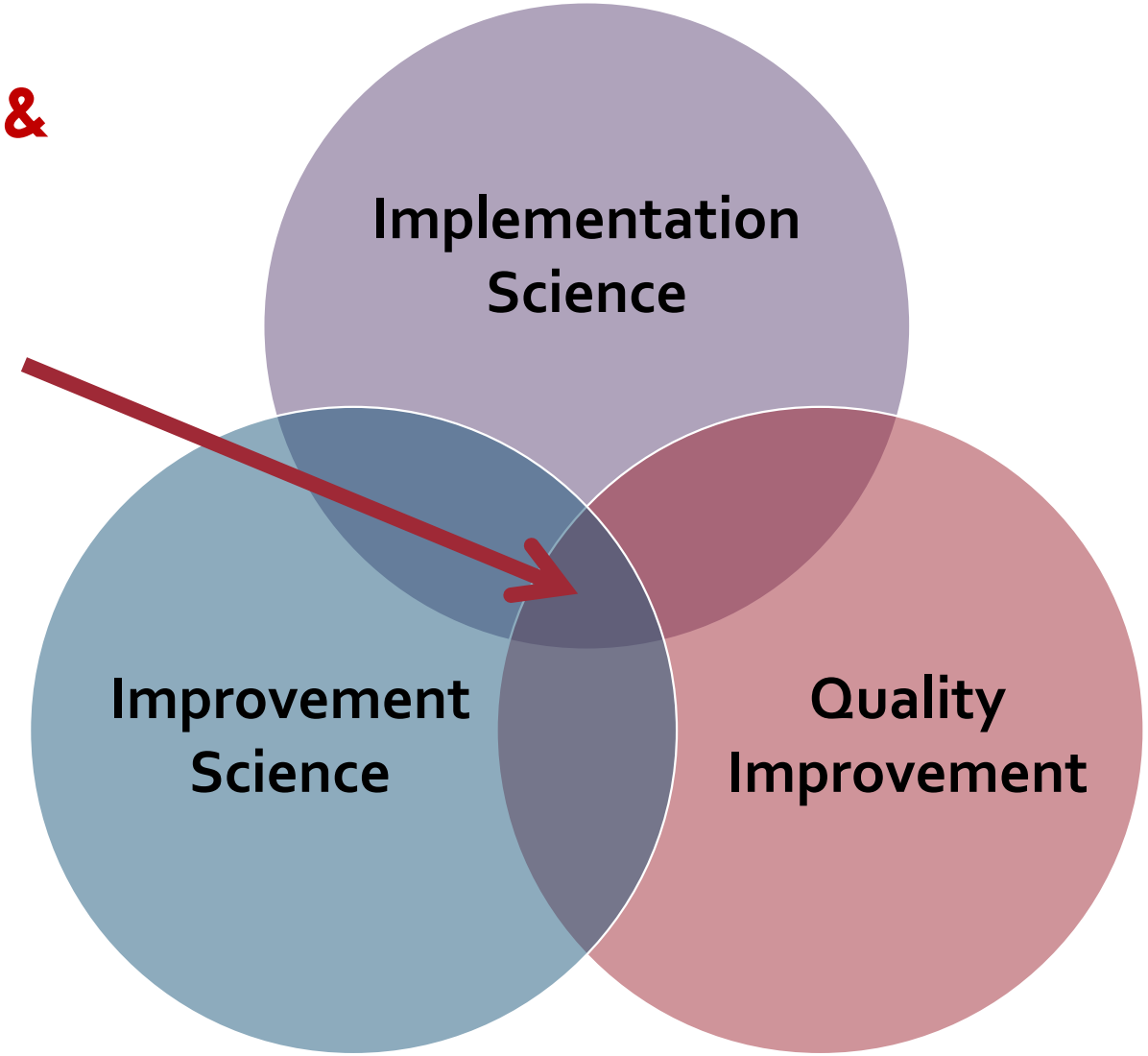
Improvement Science	Quality Improvement
• Test care delivery intervention to measure impact on gap	• Alter service delivery process to improve patient care
• No deviation from study protocol	• May make changes during study process
• Rigorous outcome measures compared to baseline assessment	• Generally uncontrolled assessments to compare with outcome measures
• External validity – generalizable knowledge	• Local improvement

Perceived Differences

Characteristic	Implementation Science	Improvement Science	Quality Improvement
Goal = Improve Care Quality	✓	✓	✓
Requires Changing Practice Processes	✓	✓	✓
Uses Evidence-Based Activities	✓	sometimes	sometimes
Seeks Local Learning	✓	✓	✓
Seeks Generalizable Knowledge	✓	✓	
Focus on Context	✓		
Studies Specific Strategies	✓		
Focus on Intervention Outcomes	sometimes	✓	✓
Uses Theory to Drive Change	✓		
Requires Rigorous Methods	✓	✓	
Focuses on Reproducibility	✓	✓	
Uses Mixed Methods	often	sometimes	sometimes

Reconciling the Fields

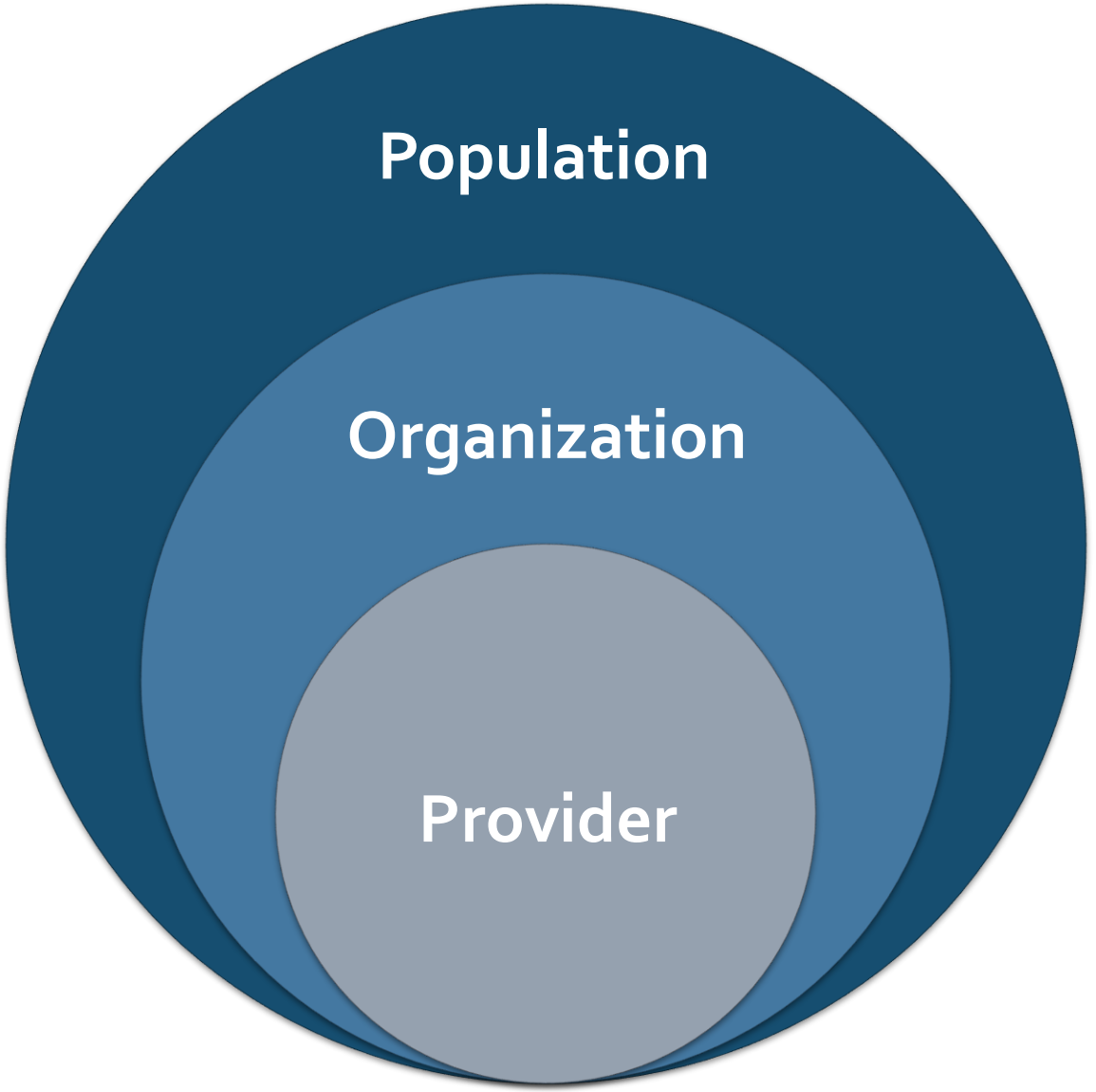
Implementation & Improvement Science-driven Healthcare Advancement



Identifying the quality or care gap in your research proposal

Identifying the Quality/Care Gap

- Quality gaps exist at population-, organization-, provider-levels
- Examples:
  - High prevalence of untreated disease
  - Limited awareness, variation in use of EBP



Identifying a Quality Gap v. Identifying an Issue

It's not enough to just…	What's missing…
Cite disease prevalence, symptom burden	Connection with care delivery issue
Describe a health topic in need of improvement	Connection with care delivery issue
Cite existence of data that could be analyzed	A health quality gap
Define a gap broadly	Linkage to study setting, intervention

Describing the Quality Gap In Your Proposal

- Proposals should:
  - Cite clear evidence that a quality/care gap exists
  - Explain how the proposed effort will positively impact the gap

- Evidence:
  - Preliminary data from the local setting
  - National, regional statistics
  - Stakeholder letters of support attesting to issue

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Identifying the evidence-based practice to promote

Evaluating the Strength of the Evidence

- Variation in the scales evaluating evidence strength

- AHRQ: 3 key elements

Quality	Quantity	Consistency
• Study validity • Minimized bias	• # of studies • # of participants included in studies	• Similarity of findings between studies on the same topic

Source: Systems to Rate the Strength of Scientific Evidence. Summary, Evidence Report/Technology Assessment: Number 47 AHRQ publication. 02-E015, March 2002. Agency for Healthcare Research and Qquality. Rockville, MD.

Evaluating the Strength of the Evidence

- Degrees of evidence
  - **EBP:**
    - Generally accepted standards of care
    - Based on RCT or high level of evidence
    - Strongly recommended by practice guidelines
  - **EIP:**
    - Strong theoretical considerations
    - Local consensus
    - Likely not RCT-level evidence

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Evaluating the Strength of the Evidence

- Field specific terms:
  - Empirically-supported
  - Promising practice

- Evidenced activity may be a practice, initiative, program, treatment, policy, set of services

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Describing the Evidence In Your Proposal

- Proposals should:
  - Include data/citations to support the strength of evidence for the selected practice
  - Explain how the proposed effort will impact the quality gap

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Describing the Evidence In Your Proposal

- Evidence:
  - Prior effectiveness research by the investigator
  - Background literature
    - Systematic reviews
    - Meta-analyses of RCTs
    - Several effectiveness studies by different research teams on the same practice with the same population

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Practice Developing Your Research Question

Developing an Implementation Research Question

Elements of an Implementation Science Research Question

Quality/care gap to be addressed (ex. Low rates of radiation treatment following radical prostatectomy)

Evidence-based/informed practice (ex. Guideline recommendations for post-op radiation treatment)

Population affected (ex. Urologists, patients with high risk prostate cancer)

Study setting (ex. hospital)

Strategy (ex. 'Enhanced': provider education on guidelines, urology champions, audit/feedback on referral rates compared to standard of care)

Example: Does an enhanced training strategy increase referrals for radiation treatment for high risk patients with prostate cancer post-op?

Polling Question

Is this an implementation research question?

Does providing pre-release case management to HIV-positive inmates increase their engagement in community-based HIV treatment post-release?

A. Yes

B. No

Polling Question

Which of these represents an implementation science research question?

A. What is the effect of cognitive behavioral therapy on health status for adults with bipolar disorder?

B. Is routine audit-feedback a more effective strategy compared to a single, brief educational session for increasing provider comfort and provision of cognitive behavioral therapy for patients with bipolar disorder?

Key Takeaways

- Implementation science tests strategies to increase uptake of underused evidence
- Improvement science applies rigorous methods to measure outcomes of efforts to improve care delivery
- Research questions must address a quality gap, identify an EBP/EIP
- Research proposals should cite preliminary data, literature to support quality gap, EBP

Resources

- Writing Implementation Research Grant Proposals: Ten Key Ingredients
  Proctor EK, Powell BJ, Baumann AA, Hamilton AM, Santerns RL. *Implementation Science*. 2012;7:96.

- An Introduction to Implementation Science for the Non-Specialist
  Bauer MS, Damschroder L, Hagedorn H, Smith K, Kilbourne AM. *BMC Psychol*. 2015;3(1),32.

- Promotion of Improvement as a Science
  Marshall M, Pronovost P, Dixon-Woods M. *Lancet*. 2013;381,419-421.

- Developing a Science of Improvement
  Marshall M & Mountford J. Developing a science of improvement. Journal of the Royal Society of Medicine. 2013;106:45-50. doi:10.1177/0141076812472622

Resources

- Does Quality Improvement Improve Quality?
  Dixon-Woods M & Martin G. Does quality improvement improve quality? Future Hospital Journal. 3(3):191-194.

- Systems to Rate the Strength of Scientific Evidence
  Summary, Evidence Report/Technology Assessment: Number 47 AHRQ publication. 02-E015, March 2002. Agency for Healthcare Research and Quality. Rockville, MD.

- Grading Quality of Evidence and Strength of Recommendations
  GRADE Working Group. *BMJ*. 2004;328:1490.

- Cochrane Evidence Practice and Organisation of Care

Post-Test Polling Question

Finish this definition by selecting one correct answer.

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Session Feedback Polling Question

How effective was this session at increasing your knowledge of implementation and improvement concepts?

5 = very effective

4 = somewhat effective

3 = neither effective nor ineffective

2 = somewhat ineffective

1 = very ineffective

Session Feedback Polling Question

How can CIIS make these sessions more effective?

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Thank You!

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