

Turning data into care decisions at the bedside: implementation science

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Disclosures

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- Vice President, Anesthesia Patient Safety Foundation
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Objectives



At the end of this talk, participants should be able to:

Define implementation science for a colleague or lay person

Explain the relevance of implementation science to emerging technologies

A reflexivity statement

Some of the hats I wear





anesthesiologist



intensivist



health services researcher

My lab uses implementation science to improve patient care



Advancing patient-centered quality care





PISCE@LDI

Penn Implementation Science Center at the Leonard Davis Institute of Health Economics





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ACHIEVING ACHIEVING MATERNAL EQUITY AND TRANSFORMING HEALTH THROUGH IMPLEMENTATION SCIENCE AND

Implementation science: How do we get people and systems to change their behavior?











not following evidence

Implementation science bridges the evidence-to-practice gap



Evidencebased practices in perioperative medicine



Quantitative neuromuscular blocker monitoring



Active warming during general anesthesia



Nausea prophylaxis



Enhanced Recovery After Surgery



Implementation science "is the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services and care"

Eccles MP, Mittman BS. Welcome to implementation science. *Implementation Science* 2006;1:1.

"Implementation science is the study of human behavior change under organizational constraints"



Anne Sales, PhD University of Missouri

Who should care about implementation?

Patients, families, caregivers Researchers, developers, innovators Clinicians & allied health professionals

Payers & health systems

Regulators, legislators



"I've never actually stormed a castle, but I've taken a bunch of siege-management courses."



University of Arkansas for Medical Sciences Translational Research Institute. https://tri.uams.edu/about-tri/what-is-translational-research/



Res Methodology 2019; 19(1):133



Public health & program evaluation Psychology & behavioral sciences

Community partnered research

Implementation science is a mutt.

Management science & organizational theory

Systems & human factors engineering Communication, dissemination, marketing What makes implementation science different from "business as usual"?



 There is an evidence-based "thing" to be implemented



Implementation science is done in partnership with patients/clients, communities, stakeholders



 IS outcomes are different than traditional effectiveness outcomes



 Contextual nuance is informative, not problematic

Williams & Beidas, *J Child Psychol Psychiatry* 2019; 60(4):430-450

features

Key

of IS



IS uses specific language, methods, theories, frameworks, and strategies

Focal areas within implementation science

Health equity **De-implementation** Policy implementation Dissemination & communication Patient-facing implementation Tech / mobile health Intervention design Global health

Implementation practice

Tensions in the field



- Generalizing lessons from specific contexts
- Implementing imperfect evidence
- Spread and scale
 - Capturing and understanding complexity
 - Balancing speed and rigor

Equity & IS

Ongoing challenges in implementation science

Elements of Equitable Implementation

Six factors have proven essential in successful equitable implementation.



Loper A, Woo B, Metz A. Equity is Fundamental to Implementation Science. Bringing Equity to Implementation. Stanford Social Innovation Review, Summer 2021. Ongoing challenges in implementation science

Equity & IS

- Risk of creating rather than eliminating evidence-to-practice gaps
- When are innovations ready for implementation? What standards of evidence should be used?

What imp sci has to teach us about adopting emerging technologies

Leverage qualitative data

- Observations
- Interviews
- Artefacts



What imp sci has to teach us about adopting emerging technologies

• Leverage qualitative data

Workflow is paramount

- Consider systems, not individual technologies
- Determine competing priorities
- Don't make work harder

We need to understand workflow to change behavior



Contains data from Penn KnowledgeLink HATRICC course, TC210202, MLF210212, MLF210219, MLF210223, MLF210316

Notes:

Time is represented temporally. The length and width of columns and rows are NOT to scale.

*Surgery rep.(s) includes surgery fellow, surgery resident, or intern (may depend on surgery service)

*Anesthesia rep.(s) includes anesthesia attending, certified registered nurse anesthetist, or resident (may depend on (1) pt. stability, (2) rep.'s experience, (3) time of day)

*ICU provider(s) includes attending, critical care fellow, or resident

Circ. = circulating; EMR = electronic medical record; ETA = estimated time of anival; ICU = Intensive Care Unit; inc. = including; LDAs= lines, drains, access; OR = operating room, meds = medications; pt. = patient; rep. = representative; RT = respiratory therapist

Bat-Zion Hose, PhD, for the Lane-Fall lab (unpublished data)

What imp sci has to teach us about adopting emerging technologies

- Leverage qualitative data
- Workflow is paramount
- Match implementation strategies to context
 - Education is necessary but insufficient

Determinants (TICD Checklist; 3-5)



What imp sci has to teach us about adopting emerging technologies

- Leverage qualitative data
- Workflow is paramount
- Match implementation strategies to context
 - Bring all stakeholders to the table
 - Incentives & priorities will differ by stakeholder



Engaging stakeholders in research



What imp sci has to teach us about adopting emerging technologies

- Leverage qualitative data
 - Workflow is paramount
 - Match implementation strategies to context
- Bring all stakeholders to the table
 Design implementable (and usable) technologies

Creating implementable technologies

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What imp sci has to teach us about adopting emerging technologies Leverage qualitative data Workflow is paramount Match implementation strategies to context Bring all stakeholders to the table Design implementable and usable technologies

Thank you! LaneMe@upenn.edu

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