



**IMPROVEMENT SCIENCE
RESEARCH NETWORK**
improving patient outcomes

**Easy Approaches to Convert
Quality Improvement to Research**

UT HEALTH SCIENCE CENTER
ACCE • Academic Center for Evidence-Based Practice

This seminar series is supported in part by a grant from the Dean's Scholarship Project Award Program: Scholarship of Teaching Award from the University of Texas Health Science Center San Antonio School of Nursing.

Moderator



Kathleen R. Stevens, RN, EdD, MSN, ANEF, FAAN
Director
Improvement Science Research Network

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ISRN Research Priorities

- A. Coordination and Transitions of Care
- B. High-Performing Clinical Systems and Microsystems Approaches to Improvement
- C. Evidence-Based Quality Improvement and Best Practice
- D. Learning Organizations and Culture of Quality and Safety

7 Improvement Science Research Network (ISRN). (2010). Research priorities. Retrieved from <http://www.isrn.net/research>



About our Web Seminar

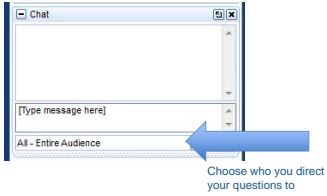
- For help, notify the ISRN Coordinating Center through the Questions window
- Problems with slides?
 - Refresh your screen, or
 - Log off and log back into the web seminar
- Visit www.ISRN.net/Oct2012webseminar to download the presentation slides

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Submitting Questions

- When: Anytime during the presentation
- How: Sending a written question through the Chat window



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Audio

- Mic and Speakers need to be connected to your computer
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Presenters

Darpan I. Patel, PhD
Clinical Research Project Manager
Improvement Science Research Network

Frank Puga, PhD
Research Scientist
Improvement Science Research Network

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State of the Science

- Medical errors cost the nation approximately \$37.6 billion each year.
- \$17.1 billion are associated with preventable errors. (Van Den Bos et al., 2011)
- About half of the \$17 billion expended on preventable medical errors are for direct health care costs. (IOM, To Err is Human)

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State of the Science

- Quality improvement and patient safety are high priorities in healthcare.
 - Fed government, accrediting bodies, regulatory agencies and patient advocacy groups
- Insufficient progress has been made in knowing how to improve care.

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The Quest for Improvement

- QI for patient safety
- Hospital engagement in research (e.g. Magnet recognition)
- Policy reform (e.g. CMS readmission penalty)

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Quality of Care

- Healthcare delivery falls short of providing care that is safe, timely, effective, efficient, equitable, and patient-centered (IOM, 2001).
- Quality improvement and patient safety efforts still lack scientific advancement (IOM 2006).
 - lack of emphasis on discovering "what works" in system improvement
 - lack of scientific rigor in improvement research
 - an insufficient number of scientists and studies in the field

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Improvement Science

- Identifies a field of research focused on healthcare improvement at individual provider, microsystem, and system levels
- Determines improvement strategies that work to assure effective and safe patient care
- Focuses on healthcare improvement
- Evaluates quality improvement strategies STEEEP-based principles
- Investigates improvement strategies in healthcare, healthcare systems, and safety

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Goal of Improvement Science

- The overriding goal of improvement science is to ensure improvement efforts and implementation strategies have an evidential base of their own.

(Shojania & Grimshaw, 2005)

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A Paradigm Shift

- Infrastructure
- Terminology
- Methodology
- Research Priorities

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www.transitionalcare.info

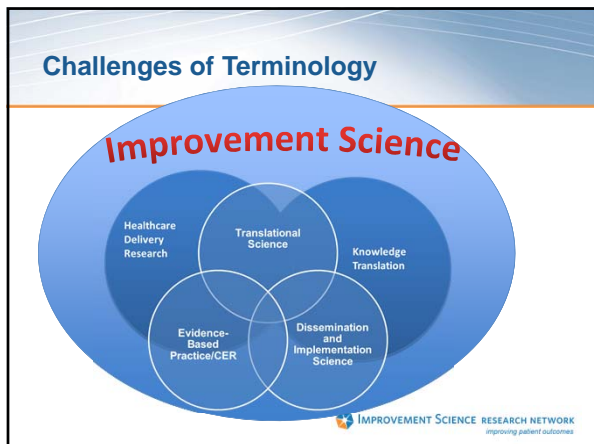


An Infrastructure to Support Network Studies in Improvement Science

- The Improvement Science Research Network (ISRN) is a one of its kind, national practice-based research network (PBRN).
- The ISRN creates a robust research environment that brings together a network of over 200 academic-practice partners to collaborate on improvement science studies.
- At the core of the ISRN is a Coordinating Center that carries out the networks day to day activities.

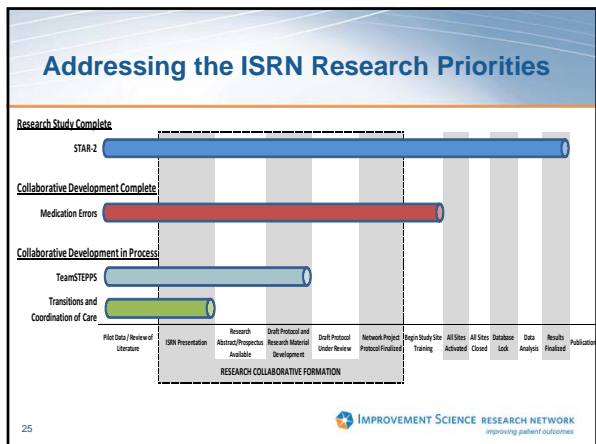
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- ### Methodology
- Large sample sizes
 - New approaches (e.g. orthogonal and stepped-wedge designs)
 - Collaboration and Team Science
 - Virtual laboratory
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- ### Improvement Science Research Priorities
- Coordination and Transitions of Care
 - High Performing Clinical Systems and Microsystems Approaches to Improvement
 - Evidence-Based Quality Improvement and Best Practice
 - Learning Organizations and Culture of Quality and Safety
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Moving QI to Research

- What does this look like in action?

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Frank Puga, PhD
Research Scientist
Improvement Science Research Network

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Conducting Improvement Research as a Project Team



2012 Improvement Science Summit



Darpan Patel, PhD
Linda Sear Leach, PhD, RN, NEA-BC, CNL



Children's National Medical Center
Washington, D. C.

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Why work as a team?

- Collaboration and team science is growing as a methodology to address complex problems (Stokols et al., 2008).
- The current state of healthcare quality improvement lacks scientific rigor and advances to improve care delivery and patient safety.
- Health care quality improvement is a complex process requiring partnerships between scientist and academicians.

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How do you create a successful collaboration to study quality improvement?

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The Science of Team Science

- Provides the evidence base for scientific teams
 - The benefits of collaboration
 - Factors that contribute to success
 - Systematic approaches to building a research collaborative

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Research Network Strategies

- Readiness for Collaboration
- Shared Mental Model
- Project Support and Management
- Virtual Collaboration

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Readiness for Collaboration

- Building Capacity
 - Capacity to write a research proposal, develop expertise in regulatory issues including IRB and data management
- Identifying Resources
 - Getting buy-in from managers for financial and staff support
- Academic-Practice Partnerships
 - Produce relevant research findings
- Technology Infrastructure
 - Use technology to collaborate, manage data, implement protocol training

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A Collaboratory for Improvement Science

- A center without walls (Wulf, 1989)
- Brings together a team of scientists and academic-practice partners
- Physical location is not a barrier

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A Collaboratory for Improvement Science

- Benefits:
 - Address complex scientific problems beyond the realm of single discipline or scientist
 - Increase the quality of research and findings

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What Does a Strong Level of Readiness Look Like?

- Active Engagement and Understanding of Objectives:
 - Focus on regulatory issues
 - Clear picture of the study's goals and the function of the Research Collaborative.

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Shared Mental Model

- Theoretical framework and research objectives
- Common rallying point to focus resources and attract partners to collaborate around common research goals (e.g. ISRN Research Priorities)

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Supporting A Shared Mental Model

- Evaluation:
 - Sample = Site PIs and Site Coordinators from the first ISRN Network Study
 - N = 17
 - 57% response rate

ISRN COORDINATING CENTER SERVICES & RESOURCES	Quality			
	Low	Medium	High	Total
Research Study Design				
Provided theoretical and scientific framework	6%	6%	88%	100%
Designed rigorous improvement research study	0%	12%	88%	100%
Specified study outcomes and measurement tools	0%	12%	88%	100%
Assured scientific rigor of improvement research projects	0%	12%	88%	100%

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Project Support and Management

- Coordinating Center Support
 - Guidance in study implementation
 - Reinforce best practices in collaboration
- Standard operating procedures
 - Detailed protocol initiation
 - Data management
 - Study close out
 - Expectations for each individual's role

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Evaluating Collaboration Success

- Collaboration Success Wizard (Olson et al.)
 - 87% of the respondents predicted that the collaboration would be successful.
 - Individuals participating in the collaborative were all on the same page.
 - Collaborators were actively engaged and ready to work on next steps


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Does using a research network move quality improvement to research with ease?

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ISRN Network Study Example

- Using ISRN's unique research infrastructure, a 14-site investigative team was able to capture a large, national sample across multiple study sites.
- The study was completed in less than a year.
- The amount of data collected allowed for analysis of contextual variables for generalizable solutions.

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The Numbers

- Total # of participants = 716
- Total Shifts represented = 3902
- Total Data points reported = 24,014

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Summary

- The ISRN provided a robust research environment that brought together a network of academic and practice partners to collaborate on a landmark improvement study.
- Strong project management and support from the ISRN's Coordinating Center ensured protocol fidelity.
- A total of ten sites (70%) successfully adhered to study timelines. The remaining four sites had to delay timelines due to IRB approval, staff support, or accreditation visits.
- On average, sites reported six protocol deviations most of which were due to return of data collection materials after the designated sampling period.
- An external evaluation using an evidence-based virtual collaboration assessment tool (the Collaboration Success Wizard) indicated project was well positioned for successful collaboration (Bietz et al., In Press).
- Using ISRN's unique research infrastructure, a 14-site investigative team was able to capture a large, national sample across multiple study sites.

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Resources



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<http://isrn.net/ResearchCollaborativeGuide>

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Resources

The screenshot shows a web page with the following content:

- IMPROVEMENT SCIENCE RESEARCH NETWORK** logo at the top left.
- Page title: **Getting the Most from Research Collaboratives: Applying the Science of Team Science**
- Subtitle: *Applying the Science of Team Science*
- Introduction text: "This module has been developed as a self-paced, interactive learning module for individuals who are interested in applying the science of team science to their research collaborative..."
- Learning Objectives** section:
 1. Identify the science of team science.
 2. Identify the science of team science and its application to research collaborative.
 3. Identify the science of team science and its application to research collaborative.
 4. Identify the science of team science and its application to research collaborative.
- URL: <https://isrn.net/learningmodules>
- Footer: **IMPROVEMENT SCIENCE RESEARCH NETWORK** *improving patient outcomes*

Resources

- Falk-Krzesinski HJ, Börner K, Contractor N, Fiore SM, Hall KL, Keyton J, et al. Advancing the Science of Team Science. *Clinical and Translational Sciences*. 2010;3(5):263-6.
- Green LA, White LL, Barry HC, Nease DE, Jr, Hudson BL. Infrastructure requirements for practice-based research networks. *Ann Fam Med*. 2005 May-Jun;3 Suppl 1:S5-11.
- Northwest University Clinical and Translational Sciences Institute (NUCATS): <http://www.scienceofteamscience.org>
- Olson GM, Olson JS. Distance Matters. *Human-Computer Interaction*. 2000;15:139-78.
- Olson GM, Zimmerman A, Bos N. Scientific collaboration on the Internet. Cambridge, Mass.: MIT Press; 2008.
- Stevens KR, Puga F, Patel D. Building successful research collaboratives for healthcare improvement. San Antonio, TX: Academic Center for Evidence-Based Practice, UT Health Science Center San Antonio; 2012.

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Next ISRN Web Seminar

Systems Engineering Impact on Healthcare Delivery

November 14, 2012
1:00 PM CST

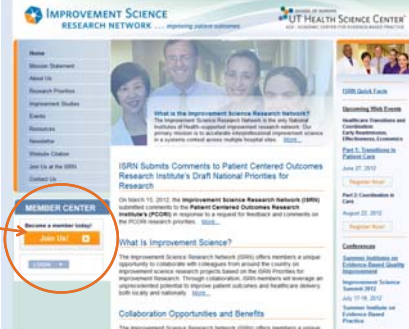
Visit www.ISRN.net to register.

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Closing Remarks

- ISRN Mission
 - To enhance the scientific foundation for quality improvement, safety, and efficiency through transdisciplinary research addressing healthcare delivery, patient-centeredness, and integration of evidence into practice.
- Join Us!
 - For information on the ISRN or to become a member please visit our website: www.ISRN.net



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