Moving from Evidence to Improvement: Resources to Make It Happen

RESEARCH DAY
April 19, 2013

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Improvement Science Research Network
Academic Center for Evidence-Based Practice
Clinical Excellence

• Employ evidence
• Conduct research
• Improve our work
KEY POINTS

- Evidence-based quality improvement
- Models to structure the EB Improvement enterprise
- New Resources
  - Innovations Exchange
  - National Improvement Science Research Network
Evidence-Based Clinical Decision Making

Choices based on the idea that research-based care improves outcomes.

What intervention will most likely diminish the health problem?
Array of Clinical Evidence

Tradition
Experience
Policy
Trial & Error
Patient Preference
Quality of Care

“degree to which health services to individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge”

(IOM, 1990)
THE CHALLENGE

Bench Research Results

\[ t = \frac{\text{Signal}}{\text{Noise}} = \frac{\bar{y}_1 - \bar{y}_2}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \]

\[ v_{sh} = \left( \frac{\sum_d w_{shd} y_{shd} - \frac{\sum_d w_{shd} y_{shd}}{n_{sh}}}{n_{sh} - 1} \right)^2 \]

Bedside Care
Quality of Care

• Quality of care lags behind knowledge.

• Evidence-based practice is seen as a solution.

• How is it a solution?
Data from 36 databases

Health care quality in America is suboptimal

47% of MI patients did not receive beta blockers
63% of smokers – were not advised to quit smoking

Gap between best possible and routine care is substantial

Small gains are being made
Crossing the Quality Chasm: A New Health System for the 21st Century

(IOM, 2001)

“STEEEP” Redesign:

S safe
T timely
E effective (EBP)
E efficient
E equitable
P patient-centered

National Academies Press
http://books.nap.edu
EBP DEFINED

Integration of research evidence, expertise, and patient preference

Sackett et al
Evidence Hurdles

**VOLUME** of literature:
No unaided human being can read, recall, and act effectively on the volume of clinically relevant scientific literature. (IOM, 2001, 25)

**FORM** of knowledge:
Not every knowledge source is suitable for informing clinical decisions. (ACE Star Model, 2004)
Hurdle

Volume of Literature

One obstacle in moving research rapidly into patient care is the growing volume and complexity of science and technology. (IOM, 2001, 25).

EBP Solution

Evidence Summary

Evidence summaries, systematic reviews reduce volume and complexity of evidence by integrating all research results into a meaningful whole.
Hurdle

Form of Knowledge

Literature contains a variety of knowledge FORMS, many of which are NOT suitable for direct practice application.

EBP Solution

Knowledge Transformation

Conversion increases meaning to the clinician and utility in clinical decision making.

This conversion is explained by the ACE Star Model of Knowledge Transformation.
A MODEL to Structure the EBP Enterprise
ACE Star Model of Knowledge Transformation

Discovery Research

Evidence Summary

Process, Outcome Evaluation

Practice Integration

Translation to Guidelines
Knowledge Transformation

--the conversion of research findings from single research studies, through a series of stages, to impact on health outcomes.
ACE Star Model of Knowledge Transformation

Discovery
Research

5
4
3
2
CINAHL

- Literature search on FALLS PREVENTION
  - 1,076 citations
- Limit search to “research”
  - 414 citations
There were 22% fewer falls during the trial in the group exercise group than in the comparison group (IRR = 0.78, 95% CI = 0.62–0.99).

ACE Star Model of Knowledge Transformation

All research is synthesized into a single, meaningful statement of the state of the knowledge.
CINAHL

- Literature search on FALLS PREVENTION
  - 1,076 citations
- Limit search to “research”
  - 414 citations
- Limit to “systematic reviews”
  - 21 citations
- Focus on “Prevention in Elderly”
  - 1 systematic review
Interventions for Preventing Falls in Elderly People

Systematic Review of 62 trials involving 21,668 people

Interventions likely to be beneficial:
- Multi factor health/environmental risk factor screening/intervention
- Muscle strengthening and balance retraining
- Home hazard assessment and modification
- Withdrawal of psychotropic medication
- Tai Chi group exercise intervention

Smoking Interventions for Pregnant Women

Located 64 randomized and quasi-randomized trials including over 20,000 women:

There was a significant reduction in smoking in the intervention groups of the 48 trials included; the authors concluded that smoking cessation programs in pregnancy reduce the proportion of women who continue to smoke, and reduce low birthweight and preterm birth.

Lumley, J; Oliver, SS; Chamberlain, C; Oakley, L. (2005). Interventions for promoting smoking cessation during pregnancy. Cochrane Pregnancy and Childbirth Group Cochrane Database of Systematic Reviews.
Evidence-based Practice

Sign Up for Evidence-based Practice E-Mail Updates

Evidence-based Practice Program
EPC Program Overview
Participating EPCs
Topic Nomination and Selection
Resource Material

Effective Health Care Program

EPC Evidence Reports

- Topics In Progress
- Completed Reports:
  - Clinical / Health Care Services / Technical
- Topic Index: A-Z
- List of Reports by Number
- Archived Reports
- Related Issues
Advantages of Evidence Synthesis

★ Reduce information into a manageable form
★ Establish generalizability—participants, settings, treatment variations, study designs
★ Assess consistencies across studies
★ Increase power in cause and effect
★ Reduce bias and improves true reflection of reality
★ Integrate information for decisions
★ Reduce time between research and implementation
★ Offer basis for continuous updates

Strength of Evidence Rating

- Evidence Summaries
- Experimental Research Studies (RCTs)
- Non Experimental Studies
- Qualitative Studies, Expert Opinion, Theory, Basic Science

© 2007 Stevens & Clutter
ACE Star Model of Knowledge Transformation

Translation to Guidelines
National Guideline Clearinghouse

- Sponsored by AHRQ
- Clinical Practice Guidelines

http://www.guideline.gov
Multifactorial Interventions

A - All older people with recurrent falls or assessed as being at increased risk of falling should be considered for an individualized multifactorial intervention.  
   (Evidence level I)

A - In successful multifactorial intervention programs the following specific components are common  
   (Evidence level I):
   – Strength and balance training
   – Home hazard assessment and intervention
   – Vision assessment and referral
   – Medication review with modification/withdrawal
Knowing What Works in Health Care: A Roadmap for the Nation

(IOM, 2008)

- Systematic Reviews: Central link between research and clinical decision making
- Guidelines: Guide practice
- Both must be resource-wise and rigorous
ACE Star Model of Knowledge Transformation

Practice Integration
If we continue to do what we’ve always done, we will get the results we have always gotten.

--Plsek 2007
Watermelon Squared
Agency for Healthcare Research and Quality (AHRQ)

Available:
http://www.innovations.ahrq.gov/
Fall Prevention Toolkit Facilitates Customized Risk Assessment and Prevention Strategies, Reducing Inpatient Falls

- **What They Did:**
  - Periodic assessment, specific risk factors, customized interventions
  - Computerized program produces tailored prevention recommendations
  - Individualized care plan, educational handout, bedside alert poster

- **Did It Work?**
  - Significantly reduced falls, particularly in > 65.

- **Evidence Rating**
  - Strong: Cluster randomized study comparing fall rates.

*Patricia Dykes, RN, PhD,*  
*RWJ Interprofessional Nursing Quality Research Initiative*
Patient- and Family-Activated Response Team Averts Potential Problems and Generates High Levels of Patient, Family, and Staff Satisfaction

Team-Developed Care Plan and Ongoing Care Management by Social Workers and Nurse Practitioners Result in Better Outcomes and Fewer Emergency Department Visits for Low-Income Seniors

*What is the evidence rating?*
Multifaceted Program Increases Reporting of Potential Errors, Leads to Action Plans to Enhance Safety

Why has this Innovation Profile been archived?

Innovation  Comments (0)

Jump to: What They Did | Did It Work? | How They Did It | Adoption Considerations

Snapshot

Summary
The University of Texas M.D. Anderson Cancer Center implemented a multifaceted initiative, known as the Good Catch Program, to increase the reporting of events that could potentially harm patients, visitors, and staff (these events are often referred to as "near misses" or "close calls"). Nurses and other frontline providers are positioned to proactively identify, interrupt, and correct these events. Key elements include a change in terminology from negative to positive terms and phrases (e.g., from "close call" or "near miss" to "good catch"); friendly, team-based competition to promote reporting; an end-of-shift safety report; executive leadership-sponsored rounds and incentives; and a multidisciplinary workgroup to promote reporting. The program led to a dramatic initial increase in reporting of near misses and close calls, spurred development of action plans designed to address the common causes of potential errors, and contributed to numerous system changes. As these changes have occurred, the number of events that could potentially cause harm—and hence the number of reports—has declined, but reports still remain well above baseline levels.

Evidence Rating (What is this?)
Moderate: The evidence consists primarily of pre- and post-implementation comparisons of the number of reports submitted about potential errors.

Developing Organizations
Department of Nursing Administration, University of Texas M.D. Anderson Cancer Center, Houston, Texas; Department of Nursing Research and Evidence-Based Practice, University of Texas M.D. Anderson Cancer Center, Houston, Texas; University of Texas Health Science Center School of Nursing, Houston, Texas
University of Texas M.D. Anderson Cancer Center

Date First Implemented
2005
Problem Addressed
Many actual and potential medical errors occur in hospitals on a daily basis, and these events represent significant opportunities to catch, learn from, and correct mistakes before they harm patients. Yet, these occurrences often go unreported, thus negating the opportunity for learning and improvement.

What They Did: “Good Catch”
UT MD Anderson Cancer Center implemented a multifaceted initiative, known as "The Good Catch" Program, to increase the reporting of potential errors related to medication, equipment, and patient care.

- Changed terminology from negative to positive
- Friendly team competition to promote reporting
- End of shift safety report
- Executive leadership rounds and incentives
- Multidisciplinary group reporting

**Did It Work?**
--Increased reporting of potential errors dramatically, by 1,468 %, in the 6-month pilot phase of the program and
--Spurred development of action plans to address common causes of potential errors.

**Evidence Rating**-- Moderate: Evidence consists of before-and-after comparison of number of reports submitted about potential errors.

Innovation Profile:

Real-Time, Resident-Specific Medication Information and Alerts, Supported by Medication Safety Teams, Enhance Efficiency and Reduce Medication Errors in Nursing Homes

Snapshot

Summary
As part of a research study, five nursing homes implemented an electronic medication administration record system that provides real-time, resident-specific medication management information and alerts for those administering medications. The nursing homes also established multidisciplinary medication safety teams to maximize the impact of the new system. The program enhanced the efficiency of medication administration and reduced medication errors significantly.

Evidence Rating (What is this?)
Moderate: The evidence consists of comparisons of key metrics at baseline and at 3, 6, and 9 months after implementation. Data are based on onsite observations of medication administration across multiple shifts and units at all five participating nursing homes.
Will It Work Here? A Decisionmaker's Guide to Adopting Innovations

Users will be able to answer the 4 questions

• Does this innovation fit?
• Should we do it here?
• Can we do it here?
• How can we do it here?

http://www.innovations.ahrq.gov
Innovations Exchange Users By Role

Nurse, 31%
Health Administrator, 15%
Other (Quality Improvement Professionals, NPs, etc.), 15%
Researcher, 9%
Educator, 9%
Other Clinician, 6%
Physician, 6%
Student, 5%
Patient or consumer, 2%
Policy Maker, 3%

N = 654
Data Source: American Customer Satisfaction Index (ACSI)
Based on period April 2011 - March 2012
Updated April 2, 2012
Innovation is the one competence needed in the future

--Peter Drucker
Colorectal Cancer Screening

- Colon cancer screening: % of patients receiving timely colorectal cancer screening


http://www.qualitymeasures.ahrq.gov
Score for
Fall Risk Management

\[
\% = \frac{\text{# of members who indicated they discussed falls or problems with balance or walking with their current provider}}{\text{# of members:}}
\]

- 75 years of age and older as of December 31 of the measurement year who had a visit in the past 12 months
- 65 to 74 years of age and older as of December 31 of the measurement year who had a visit in the past 12 months and who indicated they had a fall or problems with balance or walking in the past 12 months
RESOURCES for Increasing EBP Engagement
EBP Competencies:

- Essential Competencies for EBP in Nursing (2009)
- ACE EBP Readiness Inventory
ACE-EBP Readiness Inventory

Online Survey Available: ACESTAR@uthscsa.edu

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7. From specific evidence summary databases (e.g., Cochrane Database of Systematic Reviews), locate systematic reviews and evidence summaries on clinical topics.

8. Using existing critical appraisal checklists, identify key criteria in well-developed evidence summary reports.

9. List advantages of systematic reviews as strong evidential foundation for clinical decision making.

10. Identify examples of statistics commonly reported in evidence summaries.

11. With assistance and existing criteria checklist, identify the major facets to be critically appraised in clinical practice guidelines.

12. Using specified databases, access clinical practice guidelines on various clinical topics.

13. Participate on team to develop agencyspecific evidence-based clinical practice guidelines.


15. Describe ethical principles related to variation in practice and EBP.

16. Participate in the organizational culture of evidence-based quality improvement in care.


18. Utilize agency-adopted clinical practice guidelines while individualizing care to client preferences and needs.
NEW RESOURCES for CONDUCTING RESEARCH
Mission: To advance the scientific foundation for quality improvement, safety, and efficiency through transdisciplinary research addressing healthcare systems, patient-centeredness, and integration of evidence into practice.

The only NIH-supported Improvement Science Research Network.
Strategies for Implementing EBP
...require an evidence base of their own
(Shojania & Grimshaw. 2005)
Catalysts

- Improving our work is our work.
- *Future of Nursing* calls for “…nurses to lead and manage collaborative efforts with … other members of the health care team to conduct research and to redesign and improve practice environments and health systems.” (IOM, 2011)
- Lead with evidence of ‘what works’
Definitions

IMPROVEMENT SCIENCE—rigorous, multisite, transdisciplinary research that

• Focuses on healthcare improvement (QI, safety)
• Determines improvement strategies that work
• Evaluates improvement strategies in healthcare, systems, and safety (ISRN, 2010)
Challenges of Terminology

GOAL: Shorten time between discovery and full implementation
New Resource: A Unique Research Laboratory

What? What is the Improvement Science Research Network?

The Improvement Science Research Network is the only National Institutes of Health supported improvement research network. Our primary mission is to accelerate the professional improvement science in a systems context across multiple care settings.

Who? Who is involved in the network?

Who holds leadership positions in the Improvement Science Research Network? Is it primarily nurses or other professionals?

Where? Where is the network located?

Where are the network's meetings and events held?

How? How does the network function and support improvement science?

Where to Publish Your Results... What's Your Opinion?

QUESTION: In what journals can articles on translational science, quality improvement initiatives, dissemination and implementation research, delivery systems science and other emerging healthcare fields be published?
R & D Strategies for Developing New Research Resources

• Create a shared vision for the work to be done (agenda of research priorities)

• Provide cyber infrastructure hub for interprofessional improvement and implementation research

• Launch landmark multi-site research studies supported by a ISRN Coordinating Center

• Accelerate interprofessional improvement and patient safety through science
Research Priorities in Improvement Science: setting the national agenda

Stakeholders

RAND Delphi

Survey
Research Focus and Activities

...more on www.ISRN.net

Improvement Research PRIORITYES

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

Network STUDIES

Frontline Engagement in QI
Med Errors
Team Performance

Improvement Research MEMBERS

1. 230 Members/Agencies
2. Capacity Building AHRQ R13
3. Online Resources
4. Research Study Support via virtual collaboratory
ISRN Steering Council

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STUDY 3: System Factors that Facilitate Uptake of Team Performance for Patient Safety (TeamSTEPPS®)
STUDY 2: Impact of Cognitive Load, Interruptions and Distractions on Procedural Failures and Medication Administration Errors
STUDY 1: Small Troubles, Adaptive Responses (STAR-2): Frontline Nurse Engagement in Quality Improvement

Network Studies Launched

"Health care is among the most seriously affected in the world, yet there are serious gaps in safety, effectiveness, efficiency, and costs," says Katalin Karikó, PhD, managing director of the Institute for Health Metrics and Evaluation (IHME). "In general, there are serious gaps in safety, effectiveness, efficiency, and costs." The IHME has identified several areas of concern, including frontline nurse engagement, that are critical to improving patient outcomes. To address these gaps, the IHME has launched two studies to improve frontline nurse engagement in quality improvement.

Network Study: Frontline Nurse Engagement in Quality Improvement

Every day, nurses and other health care professionals face new challenges and work with limited resources. To address these challenges, the IHME is launching a network study to improve frontline nurse engagement in quality improvement. The study will focus on identifying and implementing solutions to improve patient outcomes and reduce healthcare disparities.

The study will involve collaboration between nurses and other health care professionals to develop and test interventions that improve patient outcomes. The study will also involve the use of data and analytics to identify areas for improvement and evaluate the effectiveness of interventions.

The study will be led by Dr. Robert Ferrer, MD, MPH, professor and dean of the University of Texas Health Science Center at San Antonio, and will involve partnerships with organizations across the country.

Network Study: Frontline Nurse Engagement in Quality Improvement

"Early on, the pocket card study put frontline nurses in the central position to identify problems and jump start—or even drive—needed change. We hope that if nurses make changes to address small problems rather than leaving them in place, we can improve the quality and safety of care," says Ferrer.

The Pocket Card for Detecting First-Order Operational Failures

Among the key problems identified in the study was the identification of small problems rather than leaving them in place. The study found that nurses often overlooked small problems, leading to patient harm and increased costs. The study identified several strategies to improve nurse engagement and reduce healthcare disparities.

These strategies include the use of data and analytics to identify areas for improvement, the use of pocket cards and other tools to help nurses identify and address small problems, and the use of partnerships between nurses and other health care professionals to develop and test interventions.

Through the study, the IHME is working to improve frontline nurse engagement and reduce healthcare disparities. The study is expected to have a significant impact on patient outcomes and improve the quality and safety of care.
Small Troubles, Adaptive Responses (STAR-2):
Frontline Nurse Engagement in Quality Improvement

Kathleen R. Stevens, Darpan I. Patel, Frank Puga, Robert L. Ferrer
University of Texas Health Science Center San Antonio
Map of STAR-2 Research Collaborative
Network News

Student Program

The 2012 Improvement Science Summit, the official conference of the Improvement Science Research Network (ISRN), held a student program targeting nearly 25 undergraduate and graduate health science students that were in attendance. “This program was centered around ensuring the future, by increasing the students capacity and knowledge of improvement science. Students from across the country and leading experts in quality improvement met for an interesting dialogue. “Students from across the country and leading experts in quality improvement met for an interesting dialogue. “The student program was an incredible opportunity to discuss cutting-edge topics and research presented by renowned speakers,” says student program attendee Tom Methvin.

“The Summit student program will help create awareness [of improvement science] in students before they graduate and enter the workforce.”

Dr. Patricia Bensm, Professor Emerita at the University of California at San Francisco (UCSF) said, “The Summit student program was a testimony of the commitment to improve healthcare through evidence-based practice.”

2012 Improvement Science Summit Addresses Gaps in Improvement Science

“We’re being pushed to healthcare transformation and [nurses] have the experience and knowledge to lead the way.”

Patricia Bensm, PhD, SARN, Professor Emerita at the University of California at San Francisco

Dr. Patricia Bensm, Professor Emerita at the University of California at San Francisco and inaugural ISRN Steering Council member, kicked off the 2012 Improvement Science Summit with a keynote presentation on “Improvement Science and the Future of Healthcare Transformation.” “We’re being pushed to healthcare transformation and [nurses] have the experience and knowledge to lead the way,” said Dr. Bensm. She went on to say, “We need to promote a culture of excellence and improvement and making excellent practice public and shared.”

The Summit brought a record number of participants to its conference by producing a lineup of international experts on quality improvement and improvement science. Moving into its fourth year, the Improvement Science Research Network (ISRN) aimed to make this year’s Summit agenda challenge the thinking of clinicians and academic researchers, truly building their “IQ for EQ.” “The goal for this year’s Summit was to push the envelope with respect to content and speakers,” says Darpan Patel, PhD, ISRN Project Director. “We wanted to challenge the participants to think outside the box of randomized control trials and look at new ways to improve care.”

Clear to present abstracts were accepted for presentation at the Summit, up 20% from last year.

In this issue:

- 2012 Improvement Science Summit
- Student Program
- SARN 2 Transition to Intervention
- SARN 2 Teams in EQ Research
- New and Noteworthy
- Complexity Science to Redesign Healthcare
- Scalability and Spread
- Network Study Pipeline
- SARN Member Spotlight

UT Health Science Center
ACE - Academic Center for Evidence-based Practice
Summer Institutes on Quality Improvement

A Cluster of Conferences
Practice, Education, Research

Improvement Science Summit
Specialty Workshops
Summer Institute on Evidence-Based Practice

July 9 - 13, 2013
San Antonio, Texas

Grand Hyatt Riverwalk
San Antonio, Texas

Last Updated: 2/26/2013
Quality of care lags behind knowledge

We can do something about it!
PURPOSE: to advance cutting evidence-based nursing practice, research, and education within an interdisciplinary context.

GOAL: to turn research into action, improving health care and patient outcomes through evidence-based practice, research, and education.

www.acestar.uthscsa.edu  EMAIL: acestar@uthscsa.edu
Resources


Stevens, KR. (2009). *Essential competencies for evidence-based practice in nursing* 2nd ed. San Antonio: Academic Center for Evidence-based Practice (ACE) of University of Texas Health Science Center.


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