



***NURSES...***  
***A Crucial Part of the Triple Aim Puzzle in  
Transforming Healthcare***

***South Texas Annual Joint Healthcare Conference***



**KATHLEEN R. STEVENS, RN, EdD, ANEF, FAAN**  
Professor and Director  
Academic Center for Evidence-Based Practice  
Improvement Science Research Network

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**Points**

1. Key force in healthcare transformation:  
EB-QI
2. Initiatives and opportunities to advance quality and patient safety

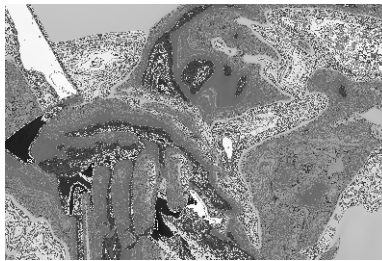


## Evidence-Based Quality Improvement

### Bench Research Results

$$t = \frac{\text{Signal}}{\text{Noise}} = \frac{\bar{y}_1 - \bar{y}_2}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad V_{sh} = \frac{\left( \frac{\sum_d v_{shd} y_{shd} - \frac{\sum_d v_{shd} y_{shd}}{n_{sh}}}{n_{sh} - 1} \right)^2}{s_p^2}$$

### Bedside Care



## Systems Context

Quality is a system property.

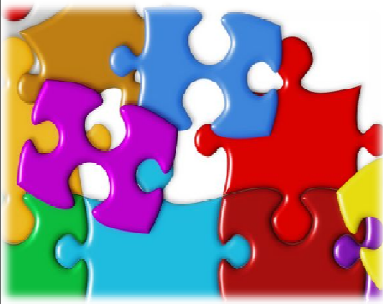
Safety is a system property.





## Systems Context

Every system is perfectly designed to get exactly the results it gets.



## Systems Context

All care of individual patients by individual clinicians is embedded in a complex, nested set of human organizations

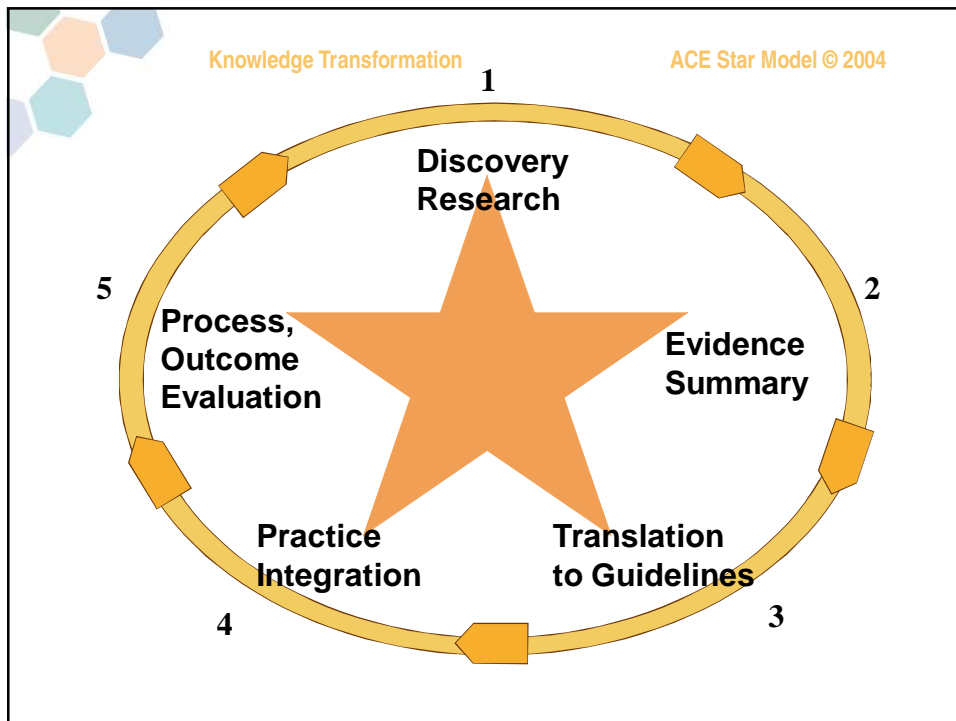
- Meta systems
- Microsystems
- Political systems
- Economic systems



# Evidence for Clinical Decision Making



What intervention will most likely diminish the health problem?





## **Evidence-Based Clinical Decision Making**



**A prescriptive approach to making choices based on the idea that research-based care improves outcomes.**

**Clinical knowledge is the basis.**



## **Impetus**

***Quality of care lags behind knowledge.***



## Quality of Care

**DEFINED:**

**“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)



## Report Card

**Consistency with current knowledge:**

- ★ **47% of MI patients did not receive beta blockers**
- ★ **50% of children w/ asthma did not receive written instructions**
- ★ **84% of Medicare patients with diabetes were not tested with the A<sub>1</sub>C blood test**


**SOURCE: IOM. (2001). *Crossing the Quality Chasm***



# Impetus

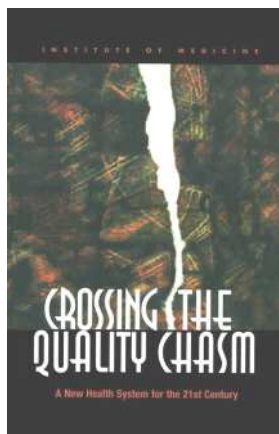
*Quality of care lags behind knowledge.*

***Evidence-based practice is seen as a solution.***



## ***Crossing the Quality Chasm: A New Health System for the 21<sup>st</sup> Century***

(IOM, 2001)



### **Recommendation:**

***Evidence-based decision making--Patients should receive care based on the best available scientific knowledge. Care should not vary illogically from clinician to clinician or from place to place.***

<http://books.nap.edu/catalog/10027.html>

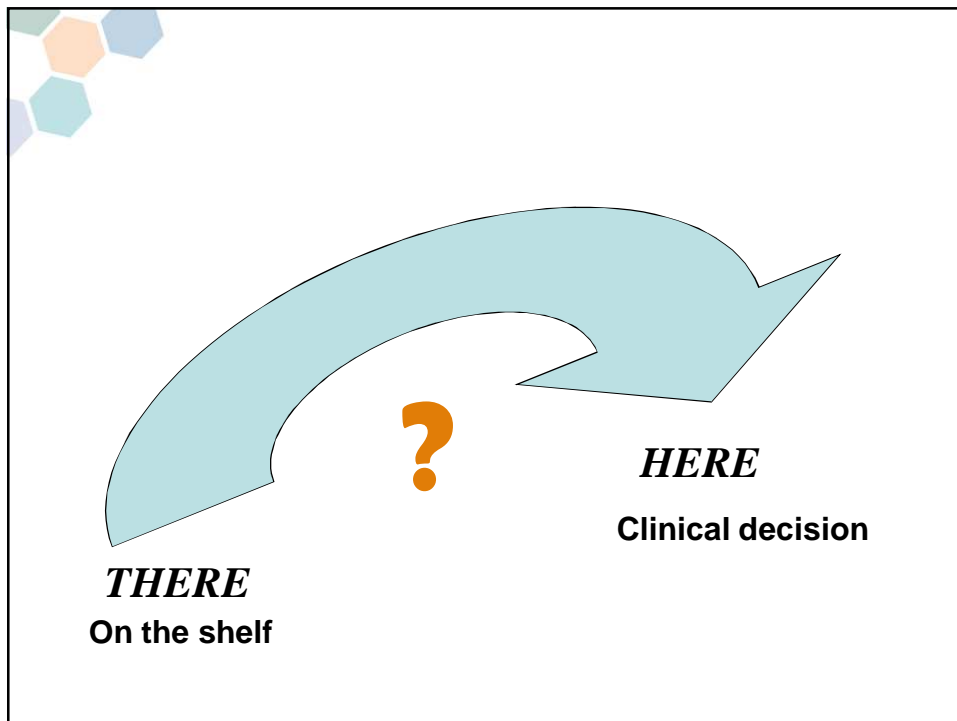


# Impetus

*Quality of care lags behind knowledge.*

*Evidence-based practice is  
seen as a solution.*

***HOW is it a solution?***





## EBP Defined

- Integration of
- best research evidence with
- clinical expertise and
- patient values.

Sackett, et al, 2000



## 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”






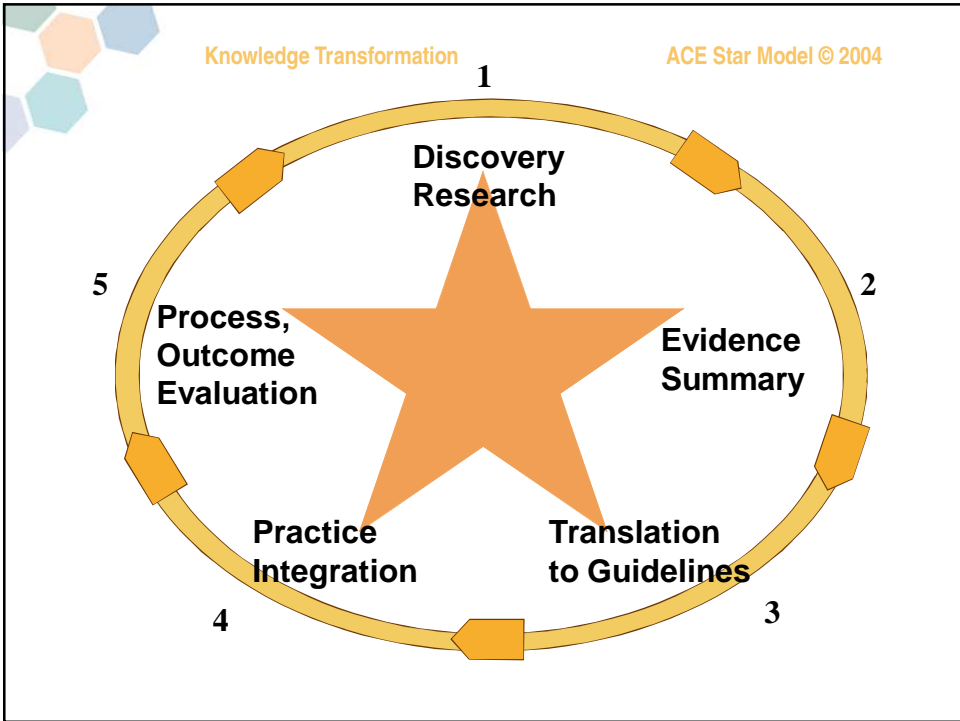
Hurdle	EBP Solution
<p><u>Volume of Literature</u></p> <p>One obstacle in moving research rapidly into patient care is the growing volume and complexity of science and technology. (IOM, 2001, 25).</p>	<p><u>Evidence Summary</u></p> <p>Evidence summaries, systematic reviews reduce <i>volume and complexity</i> of evidence by integrating all research results into a meaningful whole.</p>

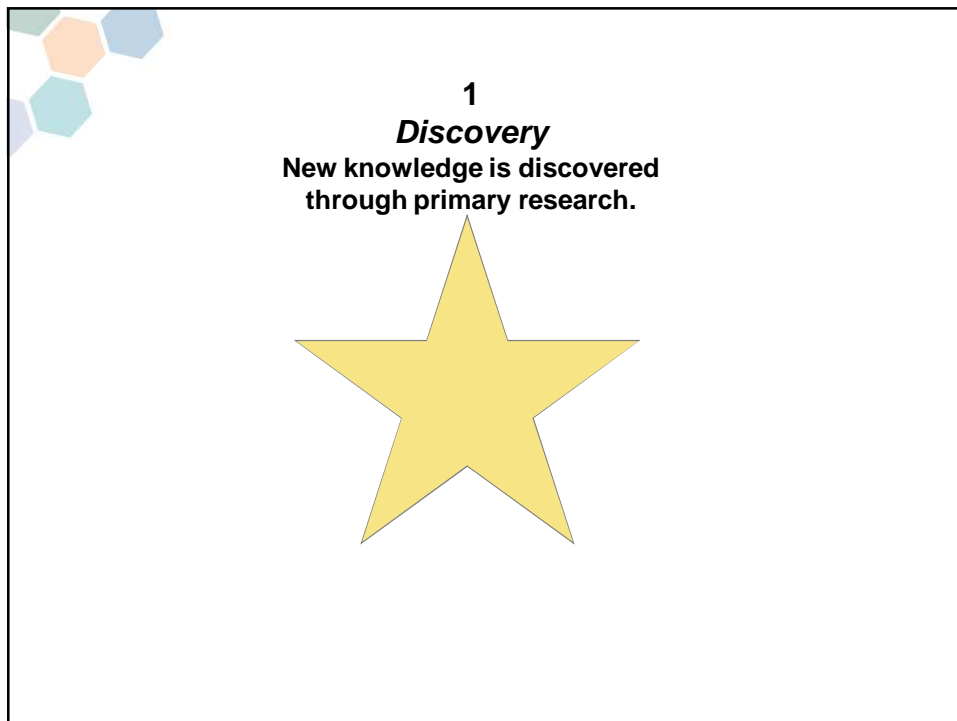


Hurdle	EBP Solution
<p><u>Form of Knowledge</u></p> <p>Literature contains a variety of knowledge <i>FORMS</i>, many of which are NOT suitable for direct practice application.</p>	<p><u>Knowledge Transformation</u></p> <p>Conversion increases meaning to the clinician and utility in clinical decision making. This conversion is explained by the ACE Star Model of Knowledge Transformation.</p>



**STAR MODEL:  
Convert Evidence into  
Clinical Decisions and  
Improved Outcomes**







## CINAHL

**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).**

Lord SR. Castell S. Corcoran J. Dayhew J. Matters B. Shan A. Williams P. (2003). The effect of group exercise on physical functioning and falls in frail older people living in retirement villages: a randomized, controlled trial. Journal of the American Geriatrics Society. 51, 12, 1685-92.


***This step distinguishes EBP from the old paradigm of research utilization.***



**2**


### ***EVIDENCE SUMMARY***

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



**Atrahl CINAHL**  
in Formatted systems

- 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**

Located 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

Gillespie LD. Gillespie WJ. Robertson MC. Lamb SE. Cumming RG. Rowe BH. Interventions for preventing falls in elderly people. *The Cochrane Library (Oxford) 2005.*



## 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.



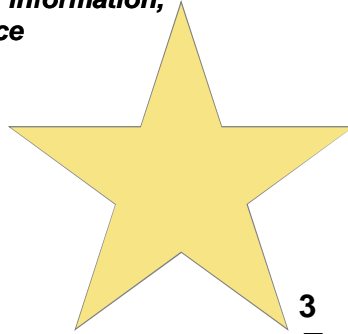
## Advantages of Evidence Synthesis

- ★ **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**

Adapted from Mulrow C. 1994. Rationale for systematic reviews. British Medical Journal, 309, p. 597-599.



***In Translation, the summary of the scientific evidence is considered in context of clinical expertise and other information, to result in a practice recommendation.***



**3  
Translation to  
Guidelines**

Research evidence is translated into clinical recommendations.



## **USPSTF** Colorectal Cancer Screening

The USPSTF strongly recommends that clinicians screen men and women 50 years of age or older for colorectal cancer. **“A” recommendation.**

***Rationale:*** The USPSTF found fair to good evidence that several screening methods are effective in reducing mortality from colorectal cancer. The USPSTF concluded that the benefits from screening substantially outweigh potential harms

The USPSTF found good evidence that periodic fecal occult blood testing (FOBT) reduces mortality from colorectal cancer and fair evidence that sigmoidoscopy alone or in combination with FOBT reduces mortality

<http://www.guideline.gov/content.aspx?id=13133&search=colorectal+cancer+screening>



## National Guideline Clearinghouse

- Sponsored by AHRQ
- Clinical Practice Guidelines

<http://www.guideline.gov>

National Collaborating Centre for Nursing and Supportive Care. CPG for the assessment and prevention of falls in older people. London (UK): National Institute for Clinical Excellence. 2004

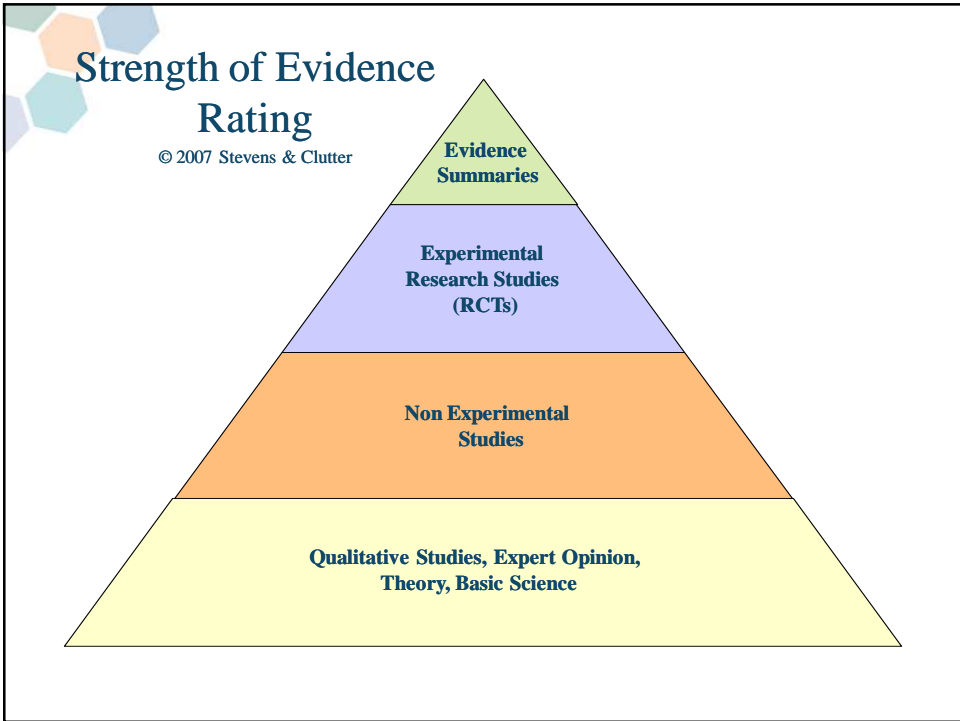
### **Multifactorial Interventions**

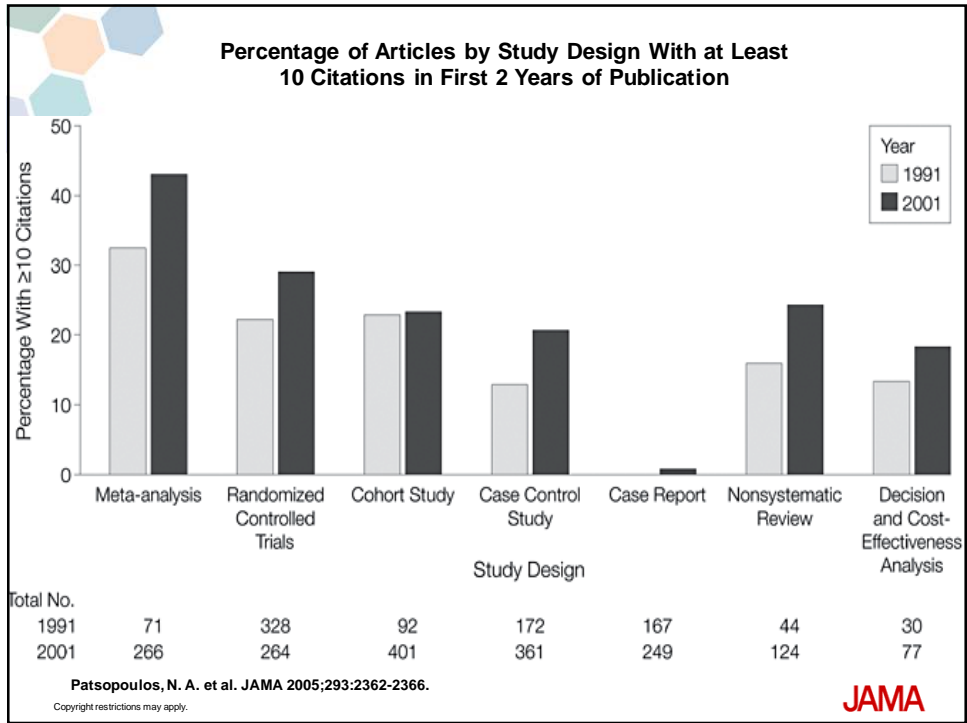
- A** - All older people with recurrent falls or assessed as being at increased risk of falling should be considered for an individualized multifactorial intervention. (**Evidence level I**)
- A** - In successful multifactorial intervention programs the following specific components are common (**Evidence level I**):
  - Strength and balance training
  - Home hazard assessment and intervention
  - Vision assessment and referral
  - Medication review with modification/withdrawal


## Rating Strength of Evidence-NHS

- 1A** SR with homogeneity of RCTs
- 1B** Individual RCT with narrow CI
- 1C** All or none
- 2A** SR with homogeneity of cohort studies
- 2B** Individual cohort study
- 2C** Outcomes research
- 3A** SR with homogeneity of case-control studies
- 3B** Individual case-control study
- 4** Case-series, poor quality cohort & case-control
- 5** Expert opinion, theory, bench research

NHS Levels of Evidence, 2001. Last updated: 12/2007. Web Page Available at: <http://cebm.jr2.ox.ac.uk>








## Guideline Development

- **Explicit process**
- **Explicit evidence**
- **Explicit- no evidence**
- **Rated evidence**
  - Research Evidence
  - Opinion, theory
  - Patient preference
- **Explicit consensus**
- **Explicit patient values**
- **AGREE**
- **IOM, 2008**

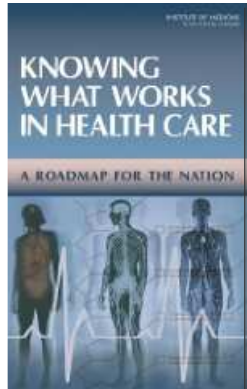


## Guideline Development

**Who is responsible?**

## 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**

***Integration requires a change in professional practice at the individual, organizational, & environmental levels.***

**4**

### ***Integration***

**Individual, organizational, and environmental practices are changed through formal and informal channels**

Agency for Healthcare Research and Quality  
(AHRQ)

Available:

<http://www.ahrq.gov/>

<http://www.innovations.ahrq.gov/>



**AHRQ Health Care Innovations Exchange** -Web-based information and social learning hub for sharing health care service innovations.

**Goal:** improve health care quality and reduce disparities by promoting adoption and implementation of service innovations

- Rich database of **profiles** of innovations
- Wide variety of sources – including unpublished materials
- Editorial assessments and expert commentaries
- Innovators' **stories** and lessons learned
- Search and browse functions
- **Learning Communities**
- Virtual **interactive** and personal opportunities
- Featuring Innovators, experts, and adopters



***SEARCH: Cardiovascular***

**Mailed Reminders to Heart Attack Patients Improve Compliance With Beta-Blocker Medication Regimen**

Two reminder letters to encourage patients to take their beta-blocker medication.

9-month RCT (n = 426 intervention; 410 control group) showed increased compliance with prescribed beta-blocker treatment regimens.

<http://www.innovations.ahrq.gov/content.aspx?id=2216>



**(actual titles)**

**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**



## *Will It Work Here? A Decisionmaker's Guide to Adopting Innovations*

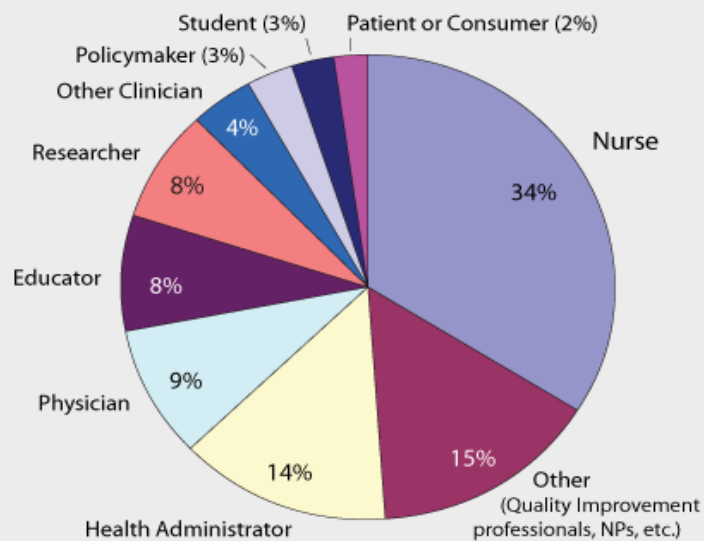
Users will be able to answer the 4 questions

- 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



**N = 579**

Data source: American Customer Satisfaction Survey (ACSI)



***The impact of the change is measured on a number of end points.***

**5 Evaluation**  
Endpoints and outcomes are evaluated.

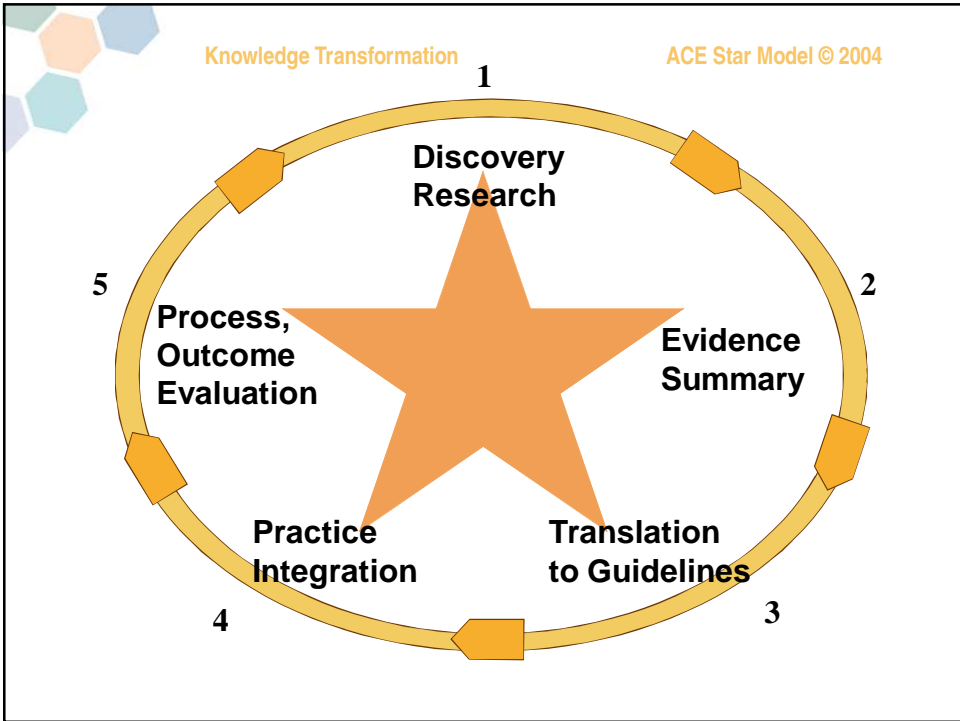
health outcome,  
satisfaction, efficacy,  
efficiency, health  
status impact  
economic analysis



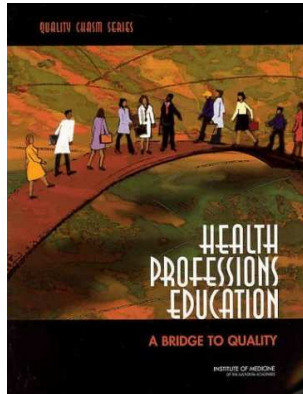
## **Colorectal Cancer Screening**

- **Colon cancer screening: % of patients receiving timely colorectal cancer screening**
- **Measure Availability--published in "FY 2002 VHA Performance Measurement System: Technical Manual"**

<http://www.qualitymeasures.ahrq.gov>



*Health Professions Education:  
A Bridge to Quality* (IOM, 2003)



**Essential Competencies:**

1. Provide patient-centered care
2. Work in interdisciplinary teams
3. **Employ evidence-based practice**
4. Apply quality improvement
5. Utilize informatics

**National Consensus  
EBP Competencies**

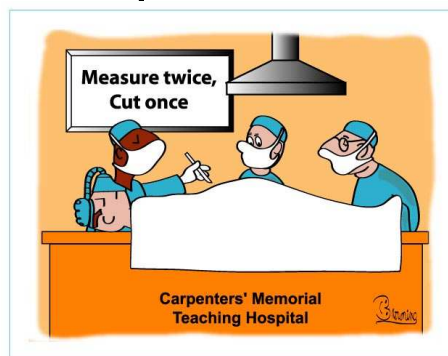
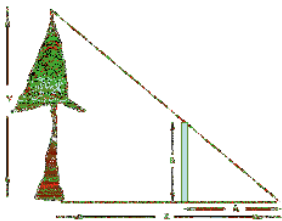
- Minimum of 90% agreement
- 4 levels of nursing preparation
- 5 stages of knowledge transformation
- Detailed
  - 10 ADN statements
  - 20 UG statements
  - 32 Masters statements
  - 31 Doctoral statements

## EBP Performance Competencies Examples for Staff Nurse

STAR POINT	PERFORMANCE COMPETENCY
1 Discovery	“Recognize ratings of strength of evidence when reading literature including web resources”
2 Summary	“List advantages of SRs as strong evidential foundation for clinical decision making”
3 Translation	“Using specified databases, access CPGs on various clinical topics”
4 Integration	“Assist in integrating practice change based on EB CPGs”
5 Evaluation	“Participate in EB quality improvement processes to evaluate outcomes of practice changes”


Source: Stevens, K. (2009). *Essential Competencies for EBP in Nursing*. 2<sup>nd</sup> ed. ACE UTHSCSA, p.6-16 . Contact [acestar@uthscsa.edu](mailto:acestar@uthscsa.edu)

## Assessing EBP Competencies



## Measuring EBP

Tool Development based on competencies

-  - *EBP Readiness Inventory*
- *Measures self-efficacy related to essential EBP competencies*
- *Knowledge test on EBP*

## Self Efficacy...



an individual's estimate or personal judgment of his or her own ability to succeed in reaching a specific goal

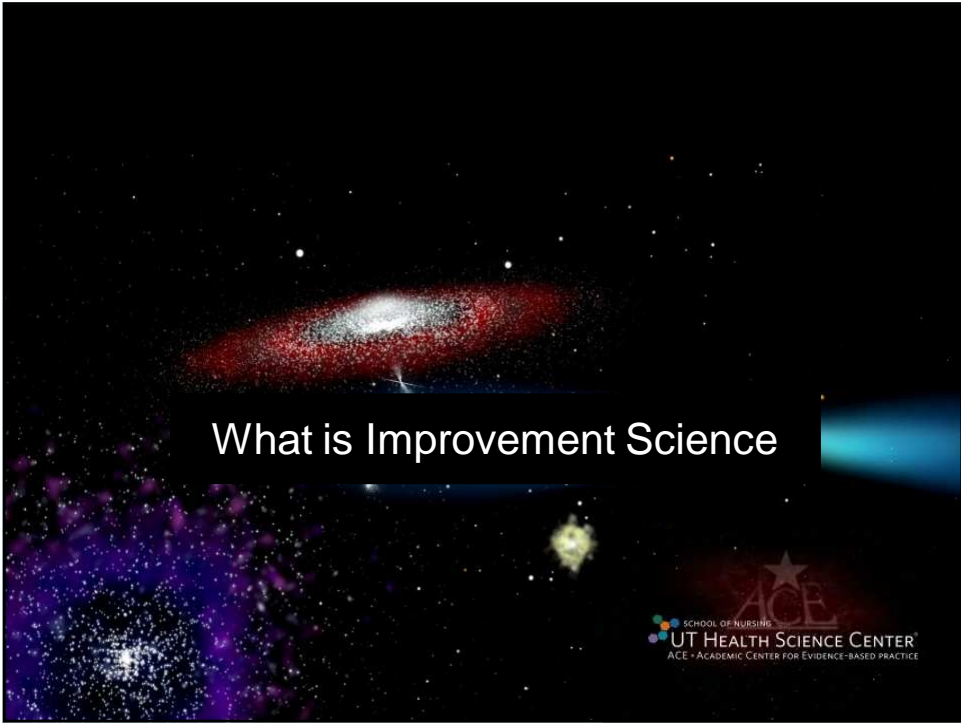
# ACE-EBP Readiness Inventory



	Very little											A great deal
7. From specific evidence summary databases (e.g., Cochrane Database of Systematic Reviews), locate systematic reviews and evidence summaries on clinical topics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Using existing critical appraisal checklists, identify key criteria in well-developed evidence summary reports.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. List advantages of systematic reviews as strong evidential foundation for clinical decision making.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Identify examples of statistics commonly reported in evidence summaries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. With assistance and existing criteria checklist, identify the major facets to be critically appraised in clinical practice guidelines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Using specified databases, access clinical practice guidelines on various clinical topics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Participate on team to develop agency-specific evidence-based clinical practice guidelines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Compare own practice with agency's recommended evidence-based clinical practice guidelines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Describe ethical principles related to variation in practice and EBP.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Participate in the organizational culture of evidence-based quality improvement in care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Deliver care using evidence-based clinical practice guidelines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Utilize agency-adopted clinical practice guidelines while individualizing care to client preferences and needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2000-2012

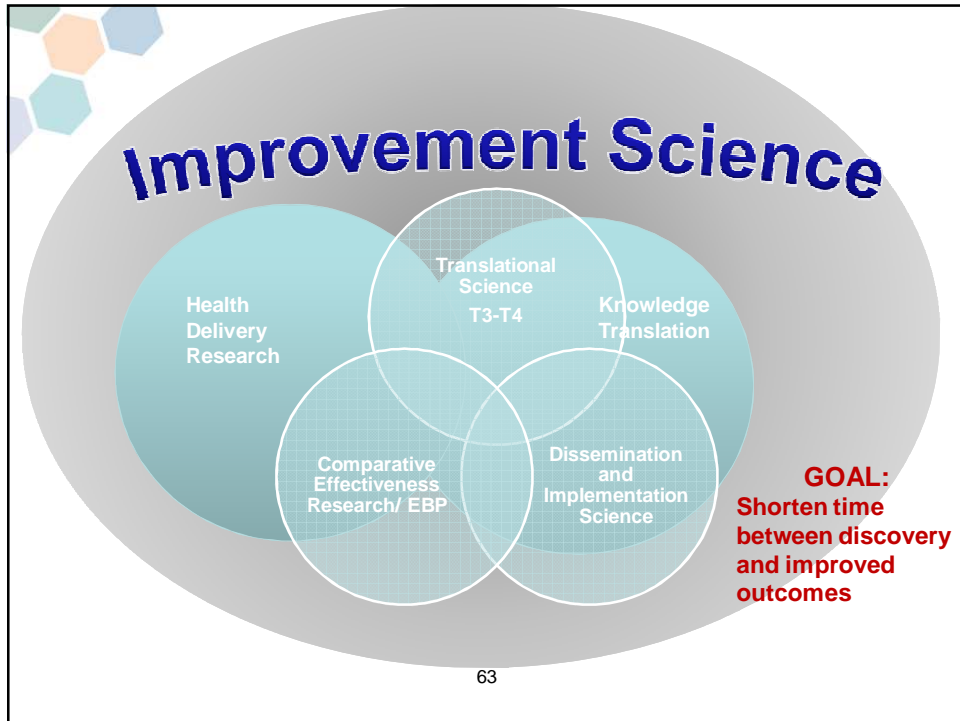




**IMPROVEMENT SCIENCE**  
**RESEARCH NETWORK**  
*...improving patient outcomes*

Sept 2009  
National Institutes of Health  
\$3.1 million

SCHOOL OF NURSING  
**UT HEALTH SCIENCE CENTER**  
ACADEMIC CENTER FOR EVIDENCE-BASED PRACTICE



**IMPROVEMENT SCIENCE**  
RESEARCH NETWORK

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.

The only NIH-supported **Improvement Science Research Network**

## NETWORK Strategies

- Provide cyber infrastructure hub for interprofessional improvement and implementation research
- Support landmark multi-site research studies through the ISRN Coordinating Center
- Accelerate interprofessional improvement and patient safety through science

The screenshot shows the homepage of the Improvement Science Research Network (ISRN). The header includes the ISRN logo and the text "IMPROVEMENT SCIENCE RESEARCH NETWORK ... improving patient outcomes". To the right, it identifies the "SCHOOL OF NURSING UT HEALTH SCIENCE CENTER" and the "ACE - ACADEMIC CENTER FOR EVIDENCE-BASED PRACTICE".

The main content area features a large image of four people and a central text box titled "What is the Improvement Science Research Network?". Below this, there are sections for "Recruiting Hospitals for Landmark Multi-site Study" and "What Is Improvement Science?".

On the left, a navigation menu lists: Home, Mission Statement, About Us, Research Priorities, Improvement Studies, Events, Resources, Newsletter, Website Citation, Join the ISRN, and Contact Us.

On the right, a "Past Events" section lists two events: "10th Annual Summer Institute on Evidence-Based Practice" (May 25, 2011) and "25th Annual Summer Institute on Evidence-Based Practice" (June 28-29, 2011).

A prominent red watermark is overlaid across the center of the page, reading: "A Unique Collaboratory for testing improvement strategies".

# Research Focus and Activities

...more on [www.ISRN.net](http://www.ISRN.net)

## Improvement 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

## Improvement Research **MEMBERS**



## Network **STUDIES**



**Frontline Engagement in QI  
Med Errors  
Team Performance**

1. 250 Members/Agencies
2. Capacity Building AHRQ R13
3. Online Resources
4. Research Study Support via virtual collaboratory

# RESOURCES





SCHOOL OF NURSING  
**UT HEALTH SCIENCE CENTER™**  
ACADEMIC CENTER FOR EVIDENCE-BASED PRACTICE

**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.



***SUMMER INSTITUTE ON EVIDENCE-BASED PRACTICE***

*July 19-21, 2012; Pre-Conferences: July 18, 2012*

***IMPROVEMENT SCIENCE SUMMIT: RESEARCH METHODS***

*July 17-18, 2012*

[www.acestar.uthscsa.edu](http://www.acestar.uthscsa.edu) EMAIL: [acestar@uthscsa.edu](mailto:acestar@uthscsa.edu)