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# Getting it Straight to Advance Care of Hospitalized Children: When to Choose Research, Evidence-based Practice or Quality Improvement

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Getting it Straight to Advance Care of Hospitalized Children:  
When to Choose Research, Evidence-based Practice or Quality  
Improvement

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Lisa English Long, MSN, RN, CNS, PhD Candidate




## Disclosures

- ▶ The following members of the Planning Committee report no conflict of interest:
  - ▶ Mary G. Harper, PhD, RN-BC, Lead Nurse Planner,
  - ▶ Zepure Samawi PhD, RN. Fulbright Scholar
  - ▶ Lauri J. Ledbeter, MSN, RN-BC, CNE
- ▶ The following faculty report no conflict of interest
  - ▶ Tracy L. Brewer, DNP, RNC-OB, CLC
  - ▶ Lisa English Long, MSN, RN, CNS, PhD Candidate



## Successful Completion

- ▶ View Webinar
- ▶ Sign online attestation statement verifying completion
- ▶ Complete online evaluation




## Continuing Nursing Education

**This continuing nursing education activity was approved by the Georgia Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission On Accreditation.**

**Activity ID: 31721**


**Contact Hours Awarded: 1.0**

**Expiration Date: Jan. 12, 2017**



## Objectives

- ▶ Differentiate evidence-based practice (EBP), research and quality improvement (QI).
- ▶ Identify resources to support EBP, research, and QI in the clinical setting.



## Getting to Know our Audience

- A. Staff Nurse
- B. Advance Practice Nurse
- C. Nurse Educator
- D. Administrator

## Experience with Research, EBP, & or QI



- A. Research
- B. Evidence-based Practice
- C. Quality Improvement
- D. All of the above

## Nurses' Confusion



- ▶ Much confusion exists in distinguishing the differences and commonalities between research, evidence-based practice [EBP], and quality improvement [QI].
  - ▶ Purpose
  - ▶ Methodology
  - ▶ Tools and instruments used
  - ▶ Theoretical and historical underpinnings
  - ▶ Requirement of IRB

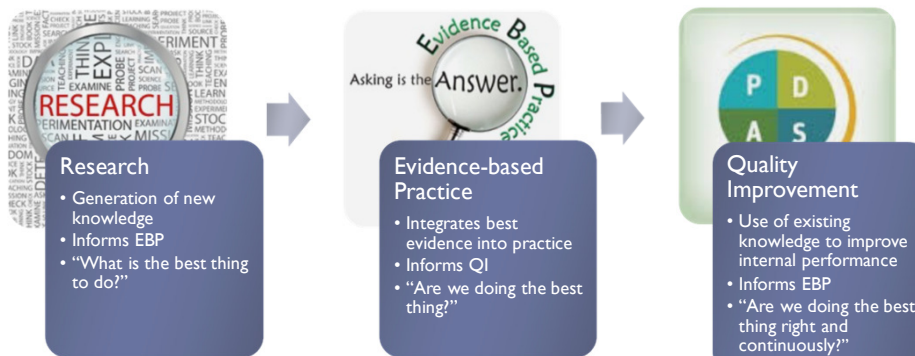
Shirey et al. (2011)

## How Do We Know?



**Determining the purpose of a study or project is what guides whether to undertake a QI, EBP, or research project.**

## How Do We Decide?



Shirey et al. (2011)  
Gallagher-Ford (2013)

## Research-When we don't have the evidence we generate it!



### ▶ Two common elements in definition of research:

1. careful and systematic investigation of some phenomenon
2. contribute to the advancement of knowledge

***Therefore, research is an investigative activity with a goal of advancement of knowledge***

*Knapp, T.R. (1998). Quantitative Nursing Research*



## Purpose of Research



- ▶ Answer questions
  - ▶ Particular need
  - ▶ Simple curiosity
- ▶ By answering question
  - ▶ Add to our general knowledge
  - ▶ Provides new knowledge
- ▶ New knowledge is generalizable
- ▶ Adds to existing knowledge

Wood M.J. & Ross-Kerr, J. C. (2006).  
Basic Steps in Planning Nursing Research. 6<sup>th</sup> ed.



## Purpose of Research



- ▶ May address problem that informs decision making
  - ▶ Clinical
  - ▶ Administrative
  - ▶ Education
- ▶ Critical feature of research findings
  - ▶ **Facts** not opinions

Shirey, et.al. (2011)

## Nursing Research



- ▶ Evolution of Research in Nursing
  - ▶ Nursing education became part of higher education
    - ▶ Seeking its own body of knowledge different from medicine
  - ▶ First researchers prepared in fields other than nursing
    - ▶ Brought to nursing various paradigms from those fields

Munhall, R. (2012) Nursing Research. A Qualitative Perspective (5<sup>th</sup> ed.)



## Evolution of Nursing Research



- ▶ Credited to Florence Nightingale
- ▶ Conduct of Nursing Research
  - ▶ Validates and refines existing data
  - ▶ Generates new knowledge to influence nursing
    - ▶ Practice
    - ▶ Systems
    - ▶ Policies

## Research as a Systematic Approach



***Influences outcomes through a rigorous scientific process that generates new knowledge***  
***Establishes cause and effect***

## Research Protocol



- ▶ **Tight controls for extraneous variables**
  - ▶ Provides confidence that the outcomes of the study occur as a result of defined interventions and not by chance.
- ▶ **Institutional Review Board (IRB)**
  - ▶ Must approve original protocol of any research activity
  - ▶ If changes need to be made to the original protocol
    - ▶ a new IRB approval must be awarded thru the submission of a formal amended protocol.

## Research Processes



- ▶ **Data Collection**
  - ▶ Rigorous
  - ▶ Time intensive
  - ▶ Not rapid cycle
- ▶ **Funding**
  - ▶ Internal or external to institution
- ▶ **Oversight**
  - ▶ Institution
  - ▶ External to institution: compliance with local , state and federal laws.

## Implications



- ▶ Magnet designation/recognition
- ▶ Competencies that include staff ability to distinguish between research, EBP and QI
- ▶ Job/position description



## Important to Understand Differences

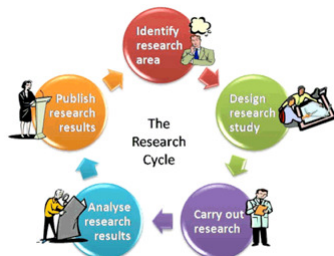


### Research

### EBP

- ▶ Ability to conduct research

- ▶ Ability to read to appraise research



▶ <http://www.drn.nih.ac.uk/lrn/nec/public.aspx>

▶ <http://news.nurse.com/article/20120903/NATIONAL01/309030023#.V NDC3XZcTBE>

## Clinical Problem



- ▶ Sunnyville Children's Hospital has noted a high number of CLABSI's over the past 6 months. The clinical nurse specialist (CNS) in the *pediatric intensive care unit* notes that there has been 5 CLABSI's in the past 886 line days. Based on the average number of infections in all the hospitals in the state in which Sunnyville is located there should be a rate of no more than 1.91 CLABSI's, however Sunnyville's rate is 5.64! Based on this information the CNS is interested in learning how to reduce the number of CLABSI's on the unit. She noted on the AHRQ web site the following evidence-based interventions can have an effect on CLABSI rates:
  - ▶ Appropriate use of hand hygiene.
  - ▶ Chlorhexidine skin preparation.
  - ▶ Full-barrier precautions during central venous catheter insertion.
  - ▶ Avoiding the femoral site when possible.
  - ▶ Maintaining a sterile field while inserting the line

## Research Example



- ▶ Miller et al. (2011) Reducing PICU central line associated bloodstream infections: 3-year results. *Pediatrics*, 128(5), e1077-e1083.
- ▶ Study Purpose:
  - ▶ To evaluate the long-term impact of pediatric central line care practices in reducing PICU central line-associated bloodstream infection (CLA-BSI) rates and to evaluate the added impact of chlorhexidine scrub and chlorhexidine-impregnated sponges.



### ▶ Design

- ▶ A 3-year, multi-institutional, interrupted time-series design (October 2006 to September 2009), with historical control data. A nested, 18-month, nonrandomized, factorial design was used to evaluate 2 additional interventions. **(Systematic scientific process and methods)**
  - ▶ Two central line care bundles (insertion and maintenance)
  - ▶ 2 additional interventions (chlorhexidine scrub and chlorhexidine impregnated sponges)

### In Summary

- ▶ Research is a scientific process that generates new knowledge for the discipline of nursing.
- ▶ The scientific process is systematic and methodical
- ▶ The most rigorous process compared to EBP & QI for providing the highest level of evidence.
- ▶ Research informs EBP, QI, and may result in EBP or QI projects that are not working or lacking adequate evidence.
  - ▶ “What is the best thing to do?”

Shirey et al. (2011)  
Gallagher-Ford (2013)

## Test Your Knowledge



- ▶ The definitive dimension that distinguishes between quality improvement (QI), evidence-based practice, and research is?
  - a. Historical evolution
  - b. Definition
  - c. Rigor of the process
  - d. Purpose of the study or project

Shirey, et al. (2011)

## Definitions



### Evidence-based Practice

- ▶ A problem-solving approach to clinical decision making w/in a healthcare organization that integrates:
  - ▶ Best available scientific evidence (research)
  - ▶ Best available experiential (patient & practitioner) evidence
    - ▶ Newhouse, et al. (2005)

### Evidence-based Nursing

- ▶ “Integration of best clinical practice, research evidence, clinical expertise, and the values and preferences of the individuals, families, and communities who are served.”
 

(Adapted from Sigma Theta Tau, 2002)

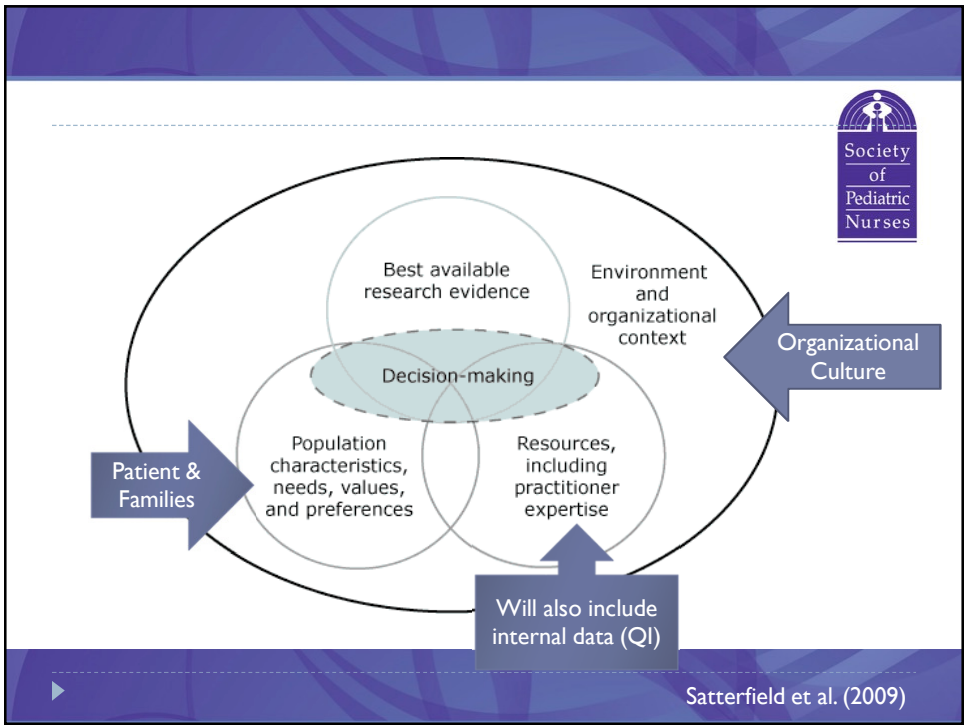
## History of EBP

**Founded by Archie Cochrane in 1972**

- *Exemplar case with low-birth weight preemies and effectiveness of corticosteroids to halt premature labor*

**Cochrane Center begun in 1992, Cochrane Collaboration in 1993**

- *Purpose: assist individuals in making well-informed decisions about healthcare by developing, maintaining and updating systematic reviews of healthcare interventions and assuring they are accessible to the public.*



Satterfield et al. (2009)



## Why Evidence-Based Practice? Bottom line: Improving Outcomes



### ▶ Patient outcomes

- ▶ Decreased morbidity/mortality
- ▶ Decreased LOS
- ▶ Effective discharge
- ▶ Reduced re-admission

### ▶ Staff outcomes

- ▶ Increased satisfaction
- ▶ Decreased turnover
- ▶ Increased autonomy
- ▶ Increased advocacy skills
- ▶ Increased collaboration

### ▶ Patient & Family outcomes

- ▶ Increased satisfaction
- ▶ Decreased patient and family stress

### ▶ Organizational outcomes

- ▶ Decreased turnover
- ▶ Cost savings
- ▶ Improved workflow

## Elaborate on our clinical problem...



- ▶ Currently the practice of povidone-iodine scrub prior to insertion and during dressing changes is utilized. The CNS decides she would like to know more about the use of chlorhexidine scrubs compared to povidone-iodine scrub. The CNS brings together a team of nurses, physicians and the unit manager to begin the EBP process.
  - ▶ A PICOT question needs to be developed.....



## Steps of the EBP Process



- ▶ **0.** Cultivate a spirit of inquiry.
- ▶ **1.** Ask the burning clinical question in PICOT format.
- ▶ **2.** Search for and collect the most relevant best evidence.
- ▶ **3.** Critically appraise the evidence (i.e., rapid critical appraisal, evaluation, and synthesis).★

Melnyk & Fineout-Overholt, 2015

## Steps of the EBP Process (cont'd)



- ▶ **4.** Integrate the best evidence with one's clinical expertise and patient preferences and values in making a practice decision or change.
- ▶ **5.** Evaluate outcomes of the practice decision or change based on evidence.
- ▶ **6.** Disseminate the outcomes of the EBP decision or change.

Melnyk & Fineout-Overholt, 2015

## EBP Models & Frameworks



- ▶ Iowa Model-*Titler*
- ▶ Advancing Research and Clinical Practice through Close Collaboration Model (ARCC)-*Melynk & Fineout-Overholt*
- ▶ Johns Hopkins Nursing Evidence-based Practice-*Newhouse et al.*
- ▶ Promoting Action on Research in Health Services Framework-(PARIHS)-*Rycroft-Malone*
- ▶ Evidence-Based Practice Improvement (EBPI)-*Levin*

Based on the EBP model/framework used, there are varying tools and instruments

## PICOT Question Development



- ▶ **Population:** Pediatric patients in an intensive care unit
- ▶ **Intervention:** Use of chlorhexidine gluconate cleansing solution during central line insertion and dressing changes
- ▶ **Comparison:** Use of povidone-iodine cleansing solution during central line insertion and dressing changes
- ▶ **Outcome:** CLABSI rates
- ▶ **Time:** Over 6 months

## Final PICOT Question



- ▶ In pediatric intensive care patients with a central line, how does **chlorhexadine gluconate** cleansing compared to **povidone-iodine cleansing** during insertion and dressing changes affect **CLABSI rates** over a **6 month** period?
- ▶ Compare to a research question....
  - ▶ What are the differences in CLABSI rates between chlorhexidine gluconate and povidone-iodine cleansing during insertion and dressing changes?

Cause & effect!

## Applying recommendations to practice



- ▶ Skin preparation with a solution of >0.5% chlorhexidine with alcohol (70% alcohol, tincture of iodine, or iodophor can be used if chlorhexidine is contraindicated). (IA)
- ▶ Use a chlorhexidine-impregnated sponge dressing for short-term CVCs in patients older than 2 months if the CLABSI rate isn't decreasing despite adherence to basic prevention measures. (IB)
- ▶ Before accessing a CVC port, scrub it with an appropriate antiseptic (chlorhexidine, povidone iodine, an iodophor, or 70% alcohol). (IA)

Dumont, C. & Nesselrodt, D. (2011). Preventing CLABSI. *Nursing* 2012, 41-46



## Strength of Recommendation


**How the CDC categorizes recommendations<sup>7</sup>**

Category IA	A strong recommendation strongly supported by well-designed experimental, clinical, or epidemiologic studies.
Category IB	A strong recommendation supported by experimental, clinical, or epidemiologic studies and a strong theoretical rationale; or an accepted practice (for example, sterile technique) supported by limited evidence.
Category IC	Required by state or federal regulations, rules, or standards.
Category II	Suggested for implementation and supported by suggestive clinical or epidemiologic evidence or a theoretical rationale.
Unresolved issue	An issue for which evidence is insufficient or no consensus regarding efficacy exists.

42 | Nursing 2012 | June

\*Remember different methods for assigning leveling, quality, grading, & strength of recommendations.

► Dumont, C. & Nesselrodt, D. (2011). Preventing CLABSI. *Nursing 2012*, 41-46



## In summary

- ▶ EBP is a “problem-solving” approach that integrates the most relevant evidence (a “body” of evidence), clinical expertise, and patient preferences and values to answer a “burning” clinical, educational, or administrative question that is “evidence” driven.
- ▶ Provides the foundation for best quality patient care.
- ▶ IRB required if publication or presentation outside institution or potential patient harm
- ▶ Informs QI, opportunity for research if gaps in evidence are noted.
  - ▶ “Are we doing the right thing?”

► Shirey et al. (2011)  
Gallagher-Ford (2013)

## Test Your Knowledge

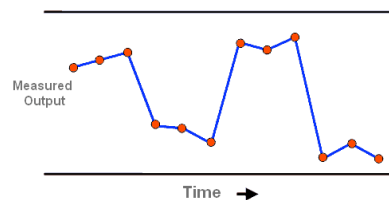


- ▶ Which of the following factors provides the **most** important rationale for the consistent implementation of EBP?
  - a. EBP is accessible to all healthcare clinicians.
  - b. EBP improves patient outcomes.
  - c. EBP provides for the most cost-effective patient care.
  - d. EBP provides consistency in care across healthcare settings.

## Quality Improvement (QI)



- ▶ “A process by which individuals work together to improve systems and processes with the intention to improve outcomes” *Newhouse (2007)*
  - ▶ QI uses existing knowledge to address **internal** systems and improve performance benchmarks
    - ▶ Started in industry/business
    - ▶ “Six-sigma lean”
      - Toyota
- ▶ Model for Improvement
  - ▶ PDSA



## Quality Improvement



- ▶ Analyzes the existing data within a system to improve internal processes and outcomes
  - ▶ Cost
  - ▶ Productivity
  - ▶ Quality
  - ▶ Safety
- ▶ IRB not usually necessary, unless outcomes are reported through publication or presentation outside the organization and or if there is potential patient harm.

Shirey et al. (2011)  
ihi.org

## Model for Improvement



### Model for Improvement



## PDSA Example

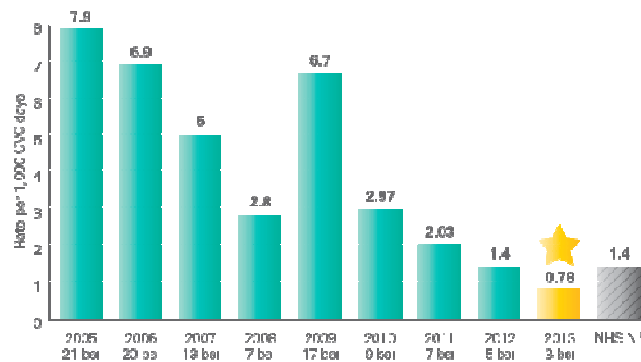


- ▶ Testing rapid changes on a small scale using Plan-Do-Study-Act (PDSA) cycles.
- ▶ Implementation of CLABSI guidelines-(chlorhexadine scrub)
  - ▶ Development of an aim statement
    - ▶ Reduce incidence of CLABSI by 25 percent in 12 months
    - ▶ Achieve > 95 percent compliance with chlorhexadine scrub protocol administration within 1 year.
  - ▶ Outcome Measures
    - ▶ Days between infections
    - ▶ PICU CLABSI rate per 1,000 central line days (CLABSI events will be defined as per CDC definitions).

## Example.....trending of data

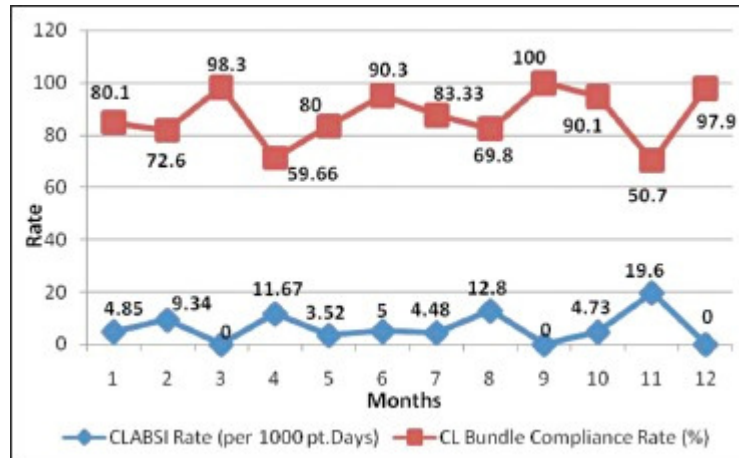


**CHM PICU Central line-associated Bloodstream Infections (CLABSI)**



\* CDC NHSN PICU (inpatient) CLABSI pooled mean 2012

## Example.....trending of data




## In Summary



- ▶ Quality improvement uses a data-driven systematic approach in which teams work together to improve specific **internal** systems, processes, costs, productivity, and quality outcomes within an organization.
- ▶ QI informs evidence based practice & opportunity for research
  - ▶ “Are we doing the best thing right and continuously?”

Shirey et al. (2011)  
Gallagher-Ford (2013)






## Test your knowledge

- ▶ When comparing data on costs, length of stay, and various wound care protocol outcomes, which of the following processes would most likely be used?
  - a. EBP
  - b. QI
  - c. Research
  - d. Combination of clinical expertise and research

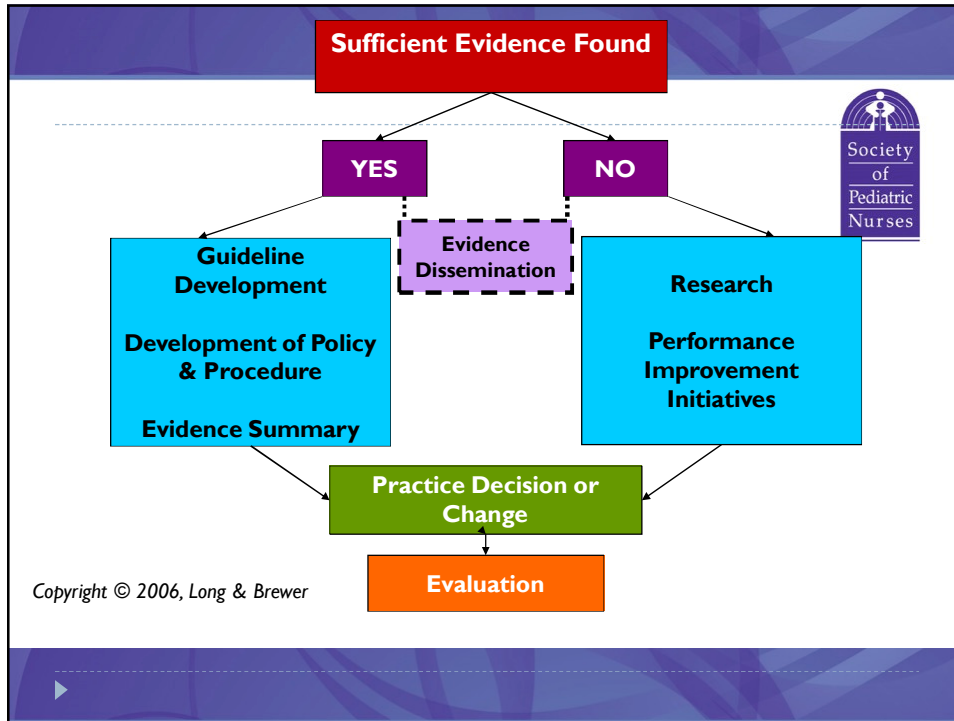
*Shirey et al. (2011)*



## Comparison

Research	EBP	QI
<b>GOAL:</b> To generate new knowledge	<b>GOAL:</b> To access & use the newest knowledge at the point of care	<b>GOAL:</b> To improve processes within a clinical system (e.g., a unit or a hospital)
<b>PURPOSE: Create new knowledge</b>  Study something new Evaluate an innovation	<b>PURPOSE: Application of new knowledge</b>  Practice change Outcomes research Effectiveness study	<b>PURPOSE: Test an existing process</b>  Small test of change "What do we think will work?"
<b>PROCESS: Research</b> Systematic Generalizable Rigorous	<b>PROCESS: 7 Steps of EBP</b> Systematic, rigorous problem-solving approach for clinicians and patients/families	<b>PROCESS: PDSA</b> Plan, Do, Study, Act Rapid cycle Short evaluation

© CCHMC EBP Mentors, 2008



## Resources-Research

- ▶ American Nurses Association-  
<http://www.nursingworld.org/EspeciallyForYou/Nurse-Researchers>
- ▶ National Institute of Nursing Research-  
<http://www.ninr.nih.gov/>
- ▶ American Association of Colleges of Nursing-  
<http://www.aacn.nche.edu/publications/position/nursing-research>
- ▶ Sigma Theta Tau International-  
[http://www.nursingsociety.org/Research/Pages/Research\\_Resources.aspx](http://www.nursingsociety.org/Research/Pages/Research_Resources.aspx)

## Resources-EBP



- ▶ Society of Pediatric Nurses Toolkit-  
<http://www.pedsnurses.org/p/cm/ld/fid=108>
- ▶ AJN's Evidence-Based Practice Series: Step by Step-  
<http://www.nursingcenter.com/evidencebasedpracticenetwork/Home/Tools-Resources/Collections/AJN-EBP-Series.aspx>
- ▶ Johns Hopkins Nursing EBP Model-  
[http://www.hopkinsmedicine.org/institute\\_nursing/continuing\\_education/evidence\\_based\\_practice.html](http://www.hopkinsmedicine.org/institute_nursing/continuing_education/evidence_based_practice.html)
- ▶ National Guidelines Clearinghouse-  
<http://www.guideline.gov/>

## Resources-Quality Improvement



- ▶ Institute for Healthcare Improvement-  
<http://www.ihl.org/resources/Pages/HowtoImprove/default.aspx>
- ▶ Agency for Healthcare Research and Quality (AHRQ)-  
<http://www.ahrq.gov/>
- ▶ Health Resources and Services Administration-  
<http://www.hrsa.gov/quality/toolsresources.html>

Never doubt that a small group of thoughtful committed people can **change** the world; indeed, it is the only thing that ever has. ~Margaret Mead



Questions

