Evidence-Based Practice:
Blending the Art & Science

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Disclosures:

None relevant to this presentation
Objectives

The attendee will:

1. Describe Evidence-Based Practice

2. Describe how to integrate EBP into their professional practice.
EBP is a problem solving approach to clinical practice that integrates:

- A systematic search for & critical appraisal of the most relevant evidence.
- One’s own clinical expertise.
- Patient preferences and values.

Melynk & Fineout-Overholt, 2005
Research

Research is:

- A scientific process of diligent, systematic inquiry that validates and refines existing knowledge and develops new knowledge.

- With the ultimate goal of development of an empirical body of knowledge for a discipline or profession.

Grove, Gray, & Burns, 2015
<table>
<thead>
<tr>
<th>QI/PI</th>
<th>EBP</th>
<th>Research</th>
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</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>Systematic, data-guided activities and/or processes designed to bring about immediate improvement in healthcare delivery in particular settings (Lynn et al., 2007, p. 667)</td>
<td>A problem-solving approach to clinical decision-making within a health care organization that integrates the best available scientific evidence with the best available experiential (patient and practitioner) evidence, considers internal and external influences on practice, and encourages critical thinking in the judicious application of such evidence to care of the individual patient, patient population, or system (Newhouse et al., 2005).</td>
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<td><strong>Purpose</strong></td>
<td>-Improve internal processes quickly to improve care -Uses standards or benchmarks to compare organizational data -Increase cost effectiveness</td>
<td>-Translate research into practice, versus tradition “this is how we have always done it” -Promotes questioning of practice -Supports spirit of inquiry -Implements “best evidence “ into nursing practice -Increases consistency and effectiveness using best evidence through standardization of care</td>
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<td><strong>IRB</strong></td>
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<td><strong>Methods</strong></td>
<td>-Plan-Do-Check-Act (PDCA) -Plan-Do-Study-Act (PDSA) - Lean Six Sigma</td>
<td>-Uses an EBP model to guide process -Ask clinical questions using PICO or PICOT -Search for the best clinical evidence -Critique/synthesize evidence -Integrate evidence, clinical expertise and patient preferences in practice change -Measure/Evaluate outcomes</td>
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<td><strong>Duration</strong></td>
<td>Short/Quick cycles, ongoing Defined timeframe</td>
<td>Short to Moderate Defined timeframe</td>
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<tr>
<td><strong>Results</strong></td>
<td>Improve processes specific to unit or organization</td>
<td>Translate/implement research/best evidence into clinical practice</td>
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<td><strong>Implications</strong></td>
<td>Process change</td>
<td>Practice change</td>
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<tr>
<td><strong>Dissemination</strong></td>
<td>Internal- unit/organizational External- benchmark</td>
<td>Internal- unit/organizational External- to similar contextual practice Standards of care Policies/Protocols Guidelines</td>
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Research Designs

- Quantitative
  - Descriptive: explores new areas and describes situations
  - Correlational: examines relationships
  - Quasi-experimental
  - Experimental
Research Designs

Qualitative
- Phenomenological
- Grounded Theory
- Ethnographic
- Exploratory-descriptive
- Historical
Blending the Art of WOC Nursing

But what about the art?
How do you express WOC Art in your practice?

- Clinical practice- fistula, complex ostomies, complex wounds, innovative continence interventions
- Education- staff and/or patient
- Patient interactions- holistic care
Blending the Art & the Science

WOC Nursing development over the years.
Blend of WOC Art & Science = Evidence-based Practice

What the clinician knows.

Best Research Evidence

What’s in the literature.

Clinical Expertise

EBM

Patient Values

What the patient wants.
Barriers to EB Nursing

• Individual level:
  
  o Lack of confidence & skill in evaluating the quality of research.
  
  o Isolated from knowledgeable colleagues with whom to discuss research.
  
  o Lack of confidence to implement change.
Barriers to EBP Nursing

Organizational level:

- Organizational infrastructure:
  - Culture
  - Leadership- Emotional Intelligence
  - Social capital- connections to people bridging, bonding,
  - Evaluation- Feedback
- Organizational Slack
- Formal/informal interactions- Mentors, nursing research committees
- Structural resources- library, computers, space, staffing
To organize your thinking and implementation, it is helpful to identify a EBP Conceptual Model.

A model guides the design and implementation approaches. It provides a realistic and practical application of research findings to practice.
EVP Models - Examples

- Iowa Model of EBP to promote Quality of Care
- Stetler Model of EBP
- The Model for EBP Change
- John Hopkins Nursing EBP Model
- ARCC Model
- The Clinical Scholar Model
Iowa Model for EBP to Promote Quality Care
Titler & Everett, 2001

- Triggers identified
  - Problem or knowledge?
- Priority for organization?
- Form a team
- Search/critique/synthesize the literature
- Evidence?
  - Yes? ➔ Design the project
  - No? ➔ Research
- Select outcomes
- Collect baseline data (current state, HAPI rates, risk management data, etc.)
- Institute the change - monitor and analyze process and outcome data
- Disseminate results
Model for EBP Change
Rosswurm & Larrabee, 1999 (WVU)

- Step 1- Assess the need for change
- Step 2- Locate best evidence
- Step 3- Critically analyze the evidence
- Step 4- Design the Change
- Step 5- Implement and evaluate the change in practice
- Step 6- Integrate and maintain the change in practice

Their handbook includes forms and examples of their use
Five Steps of Evidence-based Practice

1. Ask the burning question.
2. Collect the most relevant and best evidence.
3. Critically appraise the evidence.
4. Integrate all evidence with one’s clinical expertise, patient preferences, and values in making a practice decision or change.
5. Evaluate the practice decision or change.

Melnyk & Fineout-Overholt, 2005
Five Steps of Evidence-based Practice

1. Ask
2. Acquire
3. Appraise
4. Apply
5. Analyze
Asking the Burning Question

Where do you start?
1. Establish clinical relevance of the problem

2. Identify gaps in the literature and naming of important variables

3. Identifying the purpose of the study (review of literature)

4. Writing the research question/problem

Buelow, 2006
Asking the Burning Question

Exercise:
Asking the Burning Question

Questions that are searchable tend to:

- Be specific
- Designate the intervention or area of interest
- Delineate the intervention or area of interest
- Identify the comparison intervention if applicable or the comparison status
- Designate measurable outcomes
Ask the Question

Using a format called “PICO” makes the process of asking an answerable question easier.

**P** - Population

**I** - Intervention of interest (interest area)

**C** - Comparison intervention or status

**O** - Outcome

Using the PICO format:
- Results in an effective search
- Yields the most relevant evidence
- Identifies key search words
Ask the Question

**Why PICO?**

- To get the question clear in your mind
- To identify the information you need to answer the question
- To translate the question into searchable terms
- To develop and refine your search approach
Asking the Burning Question

• How would you describe your Patient or Patient group?

• What Intervention or Indicator (therapy, diagnostic test or exposure) are you interested in?

• What alternative or different option do you want to Compare your intervention to?

• What measurable Outcome/s are you interested in?
Alternate Template for Searching

What is the effect of ______________________________
Intervention (Predictor Variable)
On ______________________________
Given Characteristic (Outcome)
For ______________________________
Specific group of patients (Patient Characteristics)

Searching the Evidence
Why is the review of literature so important?

- Review of the Literature
- Clinical Experience
- Patient Values & Preferences
“Wide variety of data or information that ranges from randomized clinical trials as the highest level of research evidence to expert opinion as the lowest level of non-research evidence.”

Search Strategy Planning

- Develop your searchable question - PICO
- Select search tools/databases.
- Design search strategy that optimizes value of selected databases & their features.
  - Select subject headings
  - Select limits - inclusion, exclusion, dates, study design
- Review results; modify your search.
- Find and appraise literature.

http://iupui.campusguides.com/nursing?hs=a
Search Strategy Planning

Know your resources

http://iupui.campusguides.com/nursing?hs=a

http://www.iuhealthlib.org/
Common Databases

• **CINAHL Complete (EBSCO)** CINAHL is the authoritative resource for nursing and allied health professionals, students, educators and researchers.

• **EMBASE** EMBASE is a European-based biomedical and pharmacological database.

• **Google Scholar** Google Scholar provides a simple way to broadly search for scholarly literature.

• **PubMed** The most comprehensive U.S.-based medical database.

• **Scopus** General science database; useful for seeing what papers an article has been cited in.

• **Web of Science** General science database; useful for seeing what papers an article has been cited in.

• **Cochrane library** Useful for systematic reviews and clinical trial data.

• **JBI COnNECT+** Useful for systematic reviews and data analysis.
Searching tools

To combine search terms we can use the Boolean operators “AND” and “OR”. These terms affect the way that the database retrieves records.

**OR** will broaden your search by returning any records that contain either one of your terms e.g. cancer OR neoplasm.

**AND** will restrict your search by only returning records that contain both terms e.g. stroke AND aspirin.

Truncation: In The Cochrane Library and PubMed you can use an asterisk * to truncate search terms, eg the search term “arter*” will retrieve artery, arteries, arterial, etc.

In other databases you use different symbols ($ in Ovid, etc)
Critiquing the Evidence

I have found it, now what?
Become a Critical Reviewer

- Don’t believe everything you read
- Know that not all studies are equal
- Learn basic appraisal skills
Appraising the Evidence

- Practice Question
- Evidence
- Translation

1. Determine type of evidence (research or non-research)
2. Evaluate Strength of Evidence
3. Evaluate Quality of Evidence
Sources of Evidence

• Peer-reviewed journals
• Textbooks
• Internet
  • Government
  • Professional organizations
  • Search databases
    • Cochrane
    • Ovid/PubMed
    • CINAHL
    • Web of Science, etc.
Evidence-based clinical decisions are based on:

- Valid research evidence as the primary basis.
- Clinical expertise which guides the use of evidence tailored to the individual patient needs.
- Patient preferences

Certainty:

- Clinical action will produce desired outcome.
Critiquing the Evidence: Where do we begin?

- Identify the type of evidence.
- Identify the level of evidence.
- Evaluate the strength of evidence.
- Decide whether recommendations for practice can be made based on the evidence.
Synthesizing the Evidence

The process you use to determine if the research you have identified is accurate, reliable and relevant is called critical appraisal.

There are three basic aspects to appraising an article:

- Is it worth looking at the results of this study?
- What are the results?
- Are the results relevant for my patients?
Level of Evidence

- Level of evidence is determined by study design and scientific rigor
- Level of evidence is important in determining appropriateness of study for implementation into practice
“Evidence Pyramid”

Systematic Reviews and Meta-analyses

Randomized Controlled Double Blind Studies

Cohort Studies

Case Control Studies

Case Series

Case Reports

Ideas, Editorials, Opinions

Source: http://www.umdnj.edu/librweb/newarklib/images/evidence_pyramid.gif
Levels of Evidence

JHNEBP Model: Levels of Evidence

LEVEL I:
- Experimental Study
- Randomized Controlled Trial (RCT)
- Systematic review of RCTs with or without meta-analysis
• The level of evidence is not necessarily indicative of a high quality study

• The strength of a body of evidence is assessed through three domains – quality, quantity, and consistency
Questions to Ask in Critiquing the Evidence

- Why was the study done? (purpose)
- What was the study design (type of evidence)
- Who participated? (sample)
- What was the sample size & how was that decided (eligibility; inclusion & exclusion)
- What measures were used? (valid and reliable)
- Were the intervention & procedures described (sufficient detail to repeat)
Questions to Ask in Critiquing the Evidence

- How was data collected and what side effects were assessed?

- What were the limitations of the study? (small sample; high drop outs; selection bias).

- How do the results compare to previous research in the area? (consistent, inconsistent)

- What does the research mean for clinical practice (merit, feasibility, utility, sufficient evidence for practice recommendations).
Did the study have a high level of evidence and quality rating?

Was bias minimized by study design?

Are the conclusions reasonable and logical?

Are there risks to implementing the intervention into practice?

Are the results useful in clinical practice?
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample/Setting</th>
<th>Purpose</th>
<th>Findings</th>
<th>Limitations</th>
<th>Barriers Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micek et al., (2006).</td>
<td>Patients N=60 pre-order set N=60 post-order set Setting: Academic medical center 1,200 beds. Barnes-Jewish Hospital, St. Louis, MO. Age of patient 68.0</td>
<td>Purpose: To evaluate a standardized hospital order set for the management of septic shock in the ED</td>
<td>All pt’s in after group had central venous lines placed • CVP measured 100% • SV02 assessment 48.3% • MAP monitored • Hourly U.O was not discussed • Blood Cultures obtained before antibiotics 85% • Antibiotic administration w/in 3 hrs 86.7% • Lactate levels increased after bundle implementation 78.3%</td>
<td>One ED-not generalizable Small sample size 5 patients with refractory septic shock &amp; who were dying were excluded Training of all physicians, nurses and technicians in ED before initiation of the bundle</td>
<td>ED LOS increased with bundle implementation. LOS was 5.8 hours in before group and 7.3 hours in after group. Authors identified the requirement of extra resources, time and equipment to implement the order set but there were no discussion as to how to address these barriers.</td>
</tr>
<tr>
<td>2 De Miguel-Yanes, et al., (2006).</td>
<td>Patients N=53 Setting: Tertiary care university hospital in Madrid</td>
<td>Purpose: Evaluate if bundle measures to optimize the treatment of sepsis have been integrated in routine practice and identify variables significant to mortality.</td>
<td>Percentage of time intervention implemented: • CVP 0% • MAP not discussed • Hourly U.O was measure in 22.6% of the</td>
<td>Any patient that died or went to ICU w/in 6 hours was not included in the study. One ED-not generalizable</td>
<td>Lack of ICU consultations Overcrowded ED Lack of recognition of severity of pt. condition Residents working in ED.</td>
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</table>
Design an EBP Project

Now what?
Design your Project

Select process and outcome measures:
- Pre intervention (Baseline)
- Post intervention

Identify practice change
- Develop protocol, practice guideline, policy, procedure, care map, algorithm

Implement practice change on pilot units
- Staff education of change, dissemination, process steps clearly identified.

Evaluate process and outcomes

Modify practice change
Blending the Art & the Science
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Next Steps:

• What is your *Burning* question? Write it down.
• Develop an inquiring mind
• Develop an EBP project
• Volunteer in your professional organization
• Become a JWOCN Reviewer
• JUST DO IT!
Art is the expression or application of human creative skill and imagination.

Science is the intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural world through observation and experiment.

Art + Science = WOC Nursing
References:


Indiana University R590 Course materials. 2015. Faculty- Pittman, J.

Iowa Model Collaborative. (in press). Iowa Model of Evidence-Based Practice: Revisions and validation. Worldviews on Evidence-Based Nursing.

Questions?

Thank you!
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