Critiquing Research Literature for Use in Practice

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Course Objectives

- Describe the steps involved in applying research literature in practice.
- Discuss the process of retrieving and reviewing research evidence, including evaluating clinical practice guidelines.
- Describe the process of incorporating research evidence into practice.

Steps in Literature Review

- Identify a relevant clinical topic.
- Search literature databases.
- Select relevant literature
  - research/other sources of evidence
- Critique the quality of the literature.
- Determine pilot project to apply evidence to practice setting.

Identifying a Clinical Topic

- Think about your practice, often!
- Clinical issues that make you question your practice arise frequently.
- Are we doing the right thing, the right way, the right time, with every patient?
- Are there gaps in our practice and/or gaps in achieving optimal outcomes?
Improving Quality of Patient Care and Outcomes

- Emphasis on:
  - Safety
  - Timeliness
  - Effectiveness
  - Efficiency
  - Equitable
  - Patient-Centeredness

**BEST PRACTICES**
- Research (evidence) based

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**Evidence Based Practice...What is it?**

“The integration of best research evidence with clinical expertise and patient values”
- Sackett et al., 2000, p.1

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**Evidence based practice AKA.... nursing excellence and life long learning**

- Identify meaningful clinical questions.
- Search and critique research literature.
- Draw conclusions based on evidence.
- Determine appropriateness of applying evidence to practice.

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**Best Research Evidence**

- Clinically relevant.
- Patient-centered.
- Conducted in clinical settings.
- Scientifically rigorous.

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**Process of Applying Research to Practice**

- Ask a focused clinical question.
- Find best research evidence to answer it.
- Critically evaluate the evidence.
- Apply useful evidence to practice setting.
- Evaluate outcome of EBP project.

- Sackett et al., 2000

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**Searching for Best Research Evidence: What do I look for?**

- Applying research to practice process starts with a question.
- The more explicit the higher potential for finding relevant research
  - PICO format

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**P.I.C.O.**

1. **Patient or Problem**
   - Define who or what the question is about – similar to your patients.

2. **Intervention**
   - Define which intervention you are interested in – what are you considering doing, or what has happened to the patient?

3. **Comparison intervention (if any)**
   - Describe alternative that can be compared with the intervention.

4. **Outcomes**
   - Define what you want to achieve or avoid.

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In **elder patients with dementia**, is the use of **low beds** more effective than regular height hospital beds in reducing the incidence of falls with injury?

**P:** elder patients with dementia  
**I:** low beds  
**C:** regular height hospital beds  
**O:** falls with injury

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**Reviewing Sources of Research Evidence**

- Hierarchy of research and other sources of evidence.  
- Sources of research literature.  
  - Databases.  
  - Searching the literature.  
  - Reviewing and critiquing the literature for best evidence.  
  - Clinical practice guidelines.

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**Evaluating “Best Research Evidence” (not all evidence is created equally)**

- Systematic reviews / meta analyses  
- Randomized controlled trial  
- Quasi-experimental studies (non-randomized controlled trials)  
- Correlational studies: Case-control or Cohort  
- Descriptive studies  
- Qualitative studies  
- Expert opinion  
- Textbooks

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**Systematic Reviews and Meta Analyses**

- Systematic reviews summarize evidence by selecting, critically appraising, and synthesizing research evidence.  
- Saves you the work of appraising and assimilating these numerous studies.  
- Meta analysis is similar to a systematic review. Appraises multiple studies focused on a clinical issue.  
- Uses statistical methods to summarize results of multiple studies focusing on same issue.  
- Overall summary statistic that represents the effects of the intervention across all the studies reviewed.

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**Randomized Controlled Trials**

- Gold standard.  
- Experimental design.  
- Patients randomized into treatment (experimental) and control groups.  
  - Subjects have same probability of group assignment.  
  - Randomization ‘equals’ the distribution of variables that could affect study outcomes (age, diagnosis, gender).  
- Variables controlled as much as possible to make claim that the intervention (experimental drug, device) was what made the difference in outcomes.
Quasi-experimental Studies

- Non-randomized Controlled Trial.
  - Less rigorous than random assignment.
  - Less generalizable.

- Non-equivalent Group Designs.
  - Pre/post test methods.
  - Outcome measured before and after a specified time has passed from when an intervention/action occurs.

Case-control Studies

- Compares individuals with a certain condition or characteristic with someone who does not have that condition but who is matched in age, gender, etc.

- Purpose is to identify variables that can predict exacerbations of the condition, or the occurrence of the condition.

Cohort Studies

- Longitudinal study to observe individuals in two groups:
  - One group has condition/characteristic or is receiving a specific treatment, other does not.
  - Measurements taken over time to examine the disease progression.
  - Nurse study to examine heart disease, mortality, etc.

Descriptive Studies

- Describes data and characteristics about the population or phenomenon being studied.

- Descriptive research answers the questions who, what, where, when and how.

- Although the data description is factual, accurate and systematic, the research cannot describe what caused a situation.

- Often describes findings from survey investigations.

Qualitative Studies

- Researchers use qualitative methods when little is known about a phenomenon.

- Qualitative research examines lived experiences, with the aim of uncovering experiences and describing them in a way for the reader to understand the subjects’ reality.

- Researchers may follow-up with examinations of why the observations exist and what the implications of the findings have on practice.

Finding Relevant Literature

Reference librarians
Electronic Databases

- Free
  - Medline [www.medline.gov](http://www.medline.gov)
  - Google Scholar [www.scholar.google.com](http://www.scholar.google.com)

- Subscription access
  - Cumulative Index of Nursing and Allied Health Literature (CINAHL)
  - Cochrane Library
  - SCOPUS
Resources for Evidence to Support Practice

- Reference librarians.
- Great resources!
- Electronic databases of healthcare publications.
  - Cumulative Index of Nursing and Allied Health Literature (CINAHL)

https://scholar.google.com/

Electronic Databases

Google Scholar
- Searches global catalog of library collections.
- Covers many disciplines and sources:
  - Articles, theses, books, abstracts
  - Academic publishers, professional societies, online repositories, universities and other web sites.
- Customize to libraries of your choice.

Electronic Databases

www.nlm.nih.gov
- National Library of Medicine Library Catalog gives access to Medline, PubMed, bibliographic information

https://www.tripdatabase.com/
- Turning Research into Practice (Trip) is a clinical search engine to find research evidence.

http://www.cochranelibrary.com
- The Cochrane Database of Systematic Reviews is a resource for systematic reviews in health care.

- PubMed has more than 27 million citations for biomedical literature.

Record your Searches

- Record key words/databases searched.
- Years/dates parameters searched.
- Efficient use of time.
- Did you find what you were looking for?
  - Re-examine/refine search terms.

Critique the Quality of the Research

- Is the study applicable to your clinical question? (PICO)
- Where on hierarchy does the study design fall?
- Did the study design match the research question(s)?
  - Did the findings answer the research question(s)?

Critique the Quality of the Research

- Was the study done with minimal bias?
- If an intervention, was a power analysis done to ensure adequate sample size?
- How were data collected and analyzed?
- Were results statistically significant (if quantitative)?
Applicability of the Research

✓ Who was the study sample, and how was it obtained?
  ✓ Was sample/study population similar to your patient?
  ✓ Patient demographics.

✓ Was the setting similar to your clinical setting?

✓ How practical would it be to apply the findings to your clinical setting?
  ✓ Costs?
  ✓ Patient values/preferences need to be considered.

Limitations of EBP

✓ Need to develop skills in articulating focused clinical-based questions.

✓ Need to develop skills in searching and critically appraising research literature.

✓ Limited time in work life to master these skills.

Clinical Practice Guidelines

✓ Gather, appraise and combine evidence in systematic fashion.

✓ Designed to assist provider and patient decisions and to standardize care.

✓ Developed by professional groups, government agencies, practice groups.

✓ Provides rationale/basis for making practice change.

✓ National Guideline Clearinghouse: www.guideline.gov

Assessing Clinical Practice Guidelines

✓ Appraisal of Guidelines for Research & Evaluation (AGREE II). (Brouwers et al., 2010)

www.agreecollaboration.org

✓ Provides framework for assessing guideline.
  ✓ Scope and purpose
  ✓ Stakeholders involved
  ✓ Rigor of guideline development (levels of evidence)
  ✓ Clarity
  ✓ Applicability

Critiquing Practice Guidelines

  ✓ Assesses quality of guidelines.

✓ Assesses methodological rigor and transparency of development.
  ✓ Does not assess validity of recommendations.

✓ Provides framework to understand what information should be reported and how information should be reported in guidelines.
Incorporating Best Evidence into Practice

- Hierarchy of evidence.
- Critical appraisal of evidence.
- Evidence based practice pilot.
- Outcomes measurement.

Application of Evidence to Practice

- EBP pilot project to determine if same outcomes can be achieved in your clinical setting.
- Research evidence must be integrated appropriately.
- Clinical expertise + patient preference/values.
- Evaluation/outcome measures influenced by project purpose(s).

The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Healthcare

- Form a team
- Agenda: Assemble, Appraise, Synthesize, and Synthesize Body of Evidence
- Conduct systematic search
- Weight quality, quantity, consistency, and risk
- Rate the question or purpose
- Is this topic a priority?
- Form another issue or opportunity
- Consider another issue or opportunity
- Assemble, Appraise, Synthesize Body of Evidence
- Conduct systematic search
- Weight quality, quantity, consistency, and risk
- Design and Pilot the Practice Change
- Engage patients and verify preferences
- Consider resources, constraints, and approval
- Create and disseminate plan
- Collect baseline data
- Develop an implementation plan
- Proceed with change or modifications
- Disseminate
- Collect and report post pilot data
- Is there sufficient evidence?
- No
- Contact research
- Yes
- Consider alternatives
- Redo
- Plan for today

Conclusion

- Evidence based practice is as much about the journey as it is the destination.
- Many resources available to guide evidence based nursing practice.
- Applying research to practice promotes lifelong learning and nursing excellence.
- Enjoy the ride!
Thank you!
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Questions?
… in PICO format, please…
(just kidding)

Thank you!
maiton@nebraskamed.com

References

- The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care. Available at: https://uihc.org/iowa-model-revised-evidence-based-practice-promote-excellence-health-care