M6278 Theory & Research in Applied Science and Nursing

Class 1
Spring, 2002
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Objectives
1. Get acquainted
2. Understand expectations of course
3. Understand research competency of an advance practice nurse
4. Sources of knowledge
5. Introduction to evidence-based practice
   1. Asking answerable questions

“Half of what you are taught as medical students will in 10 years have been shown to be wrong. And the trouble is, none of your teachers knows which half.”

Dr. Sydney Burwell, Dean of Harvard Medical School
1956
Information Age

- Explosion in New Knowledge
  - Medline has 11 MILLION citations!
  - Must read 19 journal articles/day/365 days per year.

How Do I Manage It All?

- Systematic Skimming: Is this worth reading?
- Comparative Reading: How does this relate to other information?
- Analytic Reading: Is this valid and relevant?

Essential Features of Contemporary Nursing Practice

- Attention to the full range of human experiences & responses to health & illness.
- Integration of objective data with knowledge gained from understanding of the patient’s subjective experience.
- Application of scientific knowledge to the process of diagnosis and treatment.
- Provision of a caring relationship that facilitates healing.

ANA, 1995
Why do we (or did we) do it that way?

“...because we always do it that way.”

Anonymous

Traditions are....

- Utilitarian
- Associated with a group
- Practiced by the majority
- Passed down through generations
- Hard to change
Ways of knowing in practice

- Trial and error and experience
- Authority and tradition
- Logic and common sense

Rituals and Traditions

Is research a tradition in health care?

Logical reasoning

- Induction, from specific to general
- Deduction, from general to specific
Definition of Evidence Based Medicine/Practice

Conscientious, explicit & judicious use of current best evidence in making decision about care of individual patients

David Sackett

Importance of Evidence-Based Practice to Nursing

Patients can expect a 28% improvement in outcomes with research-based nursing interventions.

Heater 1988

Evidence based nursing
5 stage process (Flemming, 1998)

1. Information needs from practice are converted into focused, structured questions.
2. The focused questions are used as a basis for literature searching in order to identify relevant external evidence from research
3. The research evidence is critically appraised for validity and generalizability
Evidence based nursing
5 stage process

4. The best available evidence is used alongside clinical expertise and the patients' perspective to plan care

5. Performance is evaluated through a process of self reflection, audit or peer assessment

Clinical Decision Making

Clinical Expertise

- Clinical assessment and management
- Separates EBN from "cookbook" nursing
- Mindless application of rules and guidelines
Patient Preferences

- Increased patient access to clinical information
- Advanced directives
- Second opinions

Resources

- Resources for health care are limited
  - increased high cost/high tech care
  - aging population
- Judicious use of resources
  - benefit might outweigh cost
  - more likely, to increase costs
- Willingness of patient and/or society to pay

Critical Features of EBP

- Identifies answerable questions within clinical decisions
- Locates best evidence - valid and applicable
- Evaluates the evidence for its validity and usefulness
- Estimates benefits and harms for individuals
- Evaluates clinical performance
- Identifies gaps in the science
Advantages
- Integrates clinical education with clinical practice
- Can be learned at any career stage
- Reduces uncertainty
- May allow for better use of limited resources through evaluation of treatment effectiveness

Disadvantages
- Takes time to learn and practice
- The evidence is often lacking (lack of generalizable evidence)
- Exposes gaps in the evidence
- Difficulty balancing harms and benefits
- Systematic evaluation of evidence requires interpretation

Controversy
- Cook-book care
  - Lack of individualized care
- Emphasis on randomized controlled trial
  - Lack of respect for qualitative (interpretative) research?
Where do research problems come from?

- Clinical problems and gripes
- Wishes and questions
- Patterns or trends
- Somebody else’s work, literature
- Personal intellectual/scientific interests
- Theories and hunches

Delineating the problem

- Awareness: inconsistencies in practice, unsatisfactory outcomes
- Clarification: is there really a problem?
- Definition: what is known, who is affected, what might be causes?
- Resolution: will it make a difference if problem is solved, how can it be done?

Background questions

- general knowledge
  - who, what, where, when, how, why
  - To understand the epidemiology of a disease
- Examples:
PICO – Defining the Searchable Question

P – Patient or problem of interest
I – Intervention of interest
C – Comparison of interest
O – Outcome of interest

Problem/Patient

- Focus on situation or problem
  - Identify patient population/setting
  - Examples:
    - A single patient (grade 2 pressure sore)
    - A group of patients (pts with HTN)
    - A demographic population (low birth weight infants)
    - As aspect of health care delivery (primary care)
    - Managerial aspects (organization/systems)

Intervention

- Identify the interventions being assessed.
  - What is the comparison?
- Examples:
  - Therapeutic-different wound dressings
  - Preventive-flu vaccine compared to no vaccine
  - Diagnostic-different types of dx tests
  - Managerial-computer reminder systems
  - Health Economics-CEA, CBA
The comparison

- What is the current standard of care?

Outcome

- The result we are interested.
- Clinical responses
- Patient preferences or satisfaction
- Resource utilization (cost of services)

Importance of well-formulated questions

- keywords of question become keywords of search strategy
- By developing focused questions, the time spent searching for research evidence will be used efficiently!
## PICO Example:
**Defining the Searchable Question**

- **P** – Patient Population of interest
  - P-Ventilated patients with suspected pneumonia
- **I** – Intervention of interest
  - I-CXR
- **C** – Comparison of interest
  - C-sputum obtained via bronchoscopy
- **O** – Outcome of interest
  - O-diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Therapy</th>
<th>Prognosis</th>
<th>Harm/Etiology</th>
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<tbody>
<tr>
<td>P</td>
<td>Patient/Population</td>
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<tr>
<td>I</td>
<td>Diagnostic test or sign disease</td>
<td>Intervention/Risk factors/ Proposed cause of harm or characteristics</td>
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<tr>
<td>C</td>
<td>Gold standard/Comparison Intervention</td>
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<tr>
<td>O</td>
<td>Diagnosis/Target Disease</td>
<td>Disease progression/Adverse event of interest</td>
<td>Outcome of interest</td>
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## Barriers

- Time constraints
- Limited access to the literature
- Lack of training in information seeking
- Lack of training in critical appraisal skills
- Ideology in nursing that emphasizes practical rather than intellectual knowledge
- Work environment that does not encourage information seeking
Evidence-Based Practice and Outcomes Research: The Unfinished Agenda

IOM Clinical Research Roundtable: Wide Variations in Practice
Presentation by: John E. Wennberg 12/12/00

Evidence-Based Practice?

- 80 or More (7)
- 60 to < 80 (53)
- 40 to < 60 (139)
- 20 to < 40 (62)
- Less than 20 (7)
- Insufficient Data
- Not Populated

Under-use of Beta Blockers following Heart Attack

Percent of Medicare Enrollees Admitted to ICU During the Terminal Hospitalization (1995-96)

- 30.0
- 25.0
- 20.0
- 15.0
- 10.0
- 5.0
Outcomes Research Doesn’t Keep Abreast of Dynamic Changes in Medical Theory

Overcoming Barriers

- Improve access to systematic reviews of research findings
  - Cochrane collaboration
  - the Evidence-based medicine Working Group
- Critical Appraisal Skills
  - Courses such as this and informatics for EBPI
- Centers for evidence-based practice
- Journals for evidence-based practice

Become a life long learner and base your practice on the best evidence!
YOUR CHARGE FOR TODAY:
Identifying a clinical question & begin the evidence-based process