DEVELOPING YOUR SEARCHING SKILLS

YOUR SEARCHING SKILLS TOOLKIT
CLASS OBJECTIVES

1. Define clinical inquiry.
2. Identify the components of a PICO(T) question.
3. Review basic search principles and strategies.
4. Practice searching literature utilizing bibliographic databases.
CLINICAL INQUIRY

An ongoing curiosity about the best practice, the best evidence to guide clinical decision making.

(Melnyk & Fineout-Overholt, 2011)
CLINICAL INQUIRY DESCRIPTION

- Ongoing process of questioning and evaluating practice, providing informed practice, and innovating through research and experiential learning (AACN, 2003)

- When clinician identifies a question that must be answered to increase professional understanding of a patient care issue (CTEP, 2012)
• Clinicians are accountable to asking questions that reflect:
  • Needs of patients
  • Interaction of environment
  • Health
  • Patient characteristics
(Hardin & Kaplow, 2005)
CLINICAL INQUIRY COMPETENCIES

• Display knowledge seeking behaviors
  • Open to advice
  • Appreciate life-long learning
  • Seek knowledge to answer clinical question
• Identify clinical problems or issues
• Demonstrate ability to search for evidence to validate or change practice
• Participate in research process
  • Member of a team
  • Collect data
  • Evaluate outcomes of studies
  • Bring about change based on evidence

(Hardin & Kaplow, 2005)
PICOT

- A method to break down clinical scenarios to help find the best available evidence to inform clinical decisions or actions
  - Identify key words that will formulate the question
  - Then develop a simple, focused, clinical question
<table>
<thead>
<tr>
<th>P</th>
<th>Patient/Problem/Population – meaning the individual, the condition or group that is the subject of the clinical question</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td><strong>Intervention</strong> – the treatment that might be applied to the patient, problem or population</td>
</tr>
<tr>
<td>C</td>
<td><strong>Comparison</strong> – an alternative treatment that might provide similar if not greater benefits to intervention.</td>
</tr>
<tr>
<td>O</td>
<td><strong>Outcome</strong> – the expected result of the intervention</td>
</tr>
<tr>
<td>T</td>
<td><strong>Time</strong> – the period over which population is observed or outcome is measured</td>
</tr>
</tbody>
</table>
POPULATION/DISEASE

- Define who or what the question is about
- Describe as accurately as possible the group of patients of interest/target population
  - Age
  - Gender
  - Ethnicity
  - Disease type
  - Co-morbidities, etc.

In hospitalized adults...
INTERVENTION

• Define which intervention or risk factor you are interested in considering
  • An intervention is a planned course
  • Risk behavior
  • Innovation in providing care

...a nurse driven protocol
COMPARISON

• Define the alternative that can be compared to the intervention
  • No disease
  • Placebo or no intervention/therapy
  • Absence of risk factor (non-smoking)
  • Current practice

...compared with physician ordered catheter removal
OUTCOMES

• Define the outcome of interest
  • Risk of disease
  • Rate of occurrence of adverse outcome
  • Enhanced work environment
• Very general outcomes may be difficult to measure
• Don’t need to have details of how outcomes can be objectively measured at this time

...affect catheter associated urinary tract infection (CAUTI) rates
TIME

• If a specific time period is relevant for your question, note the period over which population is observed or outcome is measured
  • Within three months
  • Over 2 weeks
  • For 5 days
  • Within 3 hours
• Not mandatory, many PICO questions do not include time

…during hospitalization?
SAMPLE PICOT QUESTION #1

• In hospitalized adults, how does a nurse driven protocol compared to physician ordered catheter removal affect catheter associated urinary tract infection rates during hospitalization?
EXAMPLE #2

- **Population**: people with fear of needles
- **Intervention(s)**: behavioral, relaxation, distraction, hypnotherapy, education
- **Comparison**: one intervention compared with another
- **Outcome**: fear/anxiety reduced

What is the best way to alleviate fear associated with needles and injections?
EXAMPLE #3

- **Population:** people with sickle cell disease and leg ulcers
- **Intervention(s):** oral treatments in conjunction with topical treatments
- **Comparison:** compared with topical treatments alone
- **Outcome:** improvement in ulcer (heals, area is reduced)

*Do oral antibiotics enhance healing or are topical dressings sufficient for treatment of leg ulcers in sickle cell disease?*
TYPES OF PICOT QUESTIONS

• Background
  • Ask for general information about a clinical issue

• Foreground
  • Focus on specific knowledge
  • Can be answered from scientific evidence about diagnosing, treating, or assisting patients with understanding their prognosis

Melnyk, Fineout-Overholt, 2011
TYPES OF PICOT QUESTIONS

• Intervention question/Therapy question
• Meaning question
• Prognosis question
• Diagnosis question
• Etiology question
TYPE OF QUESTION

- Best answered by a specific study design
  - Yields strongest level of evidence for your PICOT question
  - If you cannot find the study with the strongest design then it is acceptable to move to the next level that still answers the PICOT question
Levels of Evidence

- **Level I**: Systematic Reviews or Meta-Analysis of RCTs
- **Level II**: One Randomized Controlled Trial
- **Level III**: Controlled Trials without randomization
- **Level IV**: Case-Control and Cohort Studies
- **Level V**: Systematic Reviews of Descriptive and Qualitative Studies
- **Level VI**: Single Descriptive or Qualitative Study
- **Level VII**: Opinion of Authorities and/or reports from expert committees
INTERVENTION/THERAPY QUESTIONS

• About what clinicians do
• Important to determine what is best intervention to achieve outcomes
• Worth the efforts and costs of using

Melnyk, Fineout-Overholt, 2011
• Synthesis of randomized control trial (RCT) studies (Level 1)
• Single RCT (Level 2)
RANDOMIZED CONTROL TRIAL (RCT)

- Intervention or treatment group that receives the intervention
- Comparison group that has a comparison intervention
- Random assignment to either group

Melnyk, Fineout-Overholt, 2011
MEANING QUESTIONS

- Provide insight into patients or family experience
- No comparison as part of question

Melnyk, Fineout-Overholt, 2011
• Qualitative studies (Level 6)
  • Phenomenology – the lived experience

MEANING QUESTIONS

Evidence required:

Melnyk, Fineout-Overholt, 2011
PROGNOSIS QUESTIONS

• Estimation of a patient’s likely clinical course over time and anticipation of likely complications of disease
• Likelihood that certain outcomes will occur
• Case control study (Level 4)
  • Examines cases (with diagnosis or outcome) and controls (without diagnosis or outcomes)

• Cohort study (Level 4)
  • Examines group of people with identified condition of interest and observes over time to evaluate likelihood of outcome occurring
  • Prospective or retrospective

PROGNOSIS QUESTIONS
Evidence required:

Melnyk, Fineout-Overholt, 2011
DIAGNOSIS QUESTIONS

• Selection and interpretation of diagnostic tests, in order to confirm or exclude a diagnosis, based on considering their precision, accuracy, acceptability, expense, safety

• Benefit of the test to the patients is the overall goal of these kinds of questions

Melnyk, Fineout-Overholt, 2011
• Synthesis of RCTs (Level 1)
  • If question of ethics is involved, cohort or case control will be most likely

Melnyk, Fineout-Overholt, 2011
ETIOLOGY QUESTIONS

- Identification of causes or risk factors for disease
- Address potential causality and harm
  - Important to know harm associated with intervention

Melnyk, Fineout-Overholt, 2011
• Cohort or case control studies (Level 4)
• Multiple longitudinal studies that demonstrate consistent relationships with confidence in causality

Melnyk, Fineout-Overholt, 2011
THINGS TO REMEMBER

• PICOT question drives your search
• Remember, the PICOT question is your search strategy, **NOT** your project
• Use terms that will be in the literature (no local terms)
• Do not use a direction (improve, decrease) in PICOT questions
• Population and outcome must match – the outcome must address the population
BASIC SEARCH PRINCIPLES
SEARCH STRATEGY #1

Analyze the Question

• Match words that describe your question or topic of interest with journals containing the same words

• Think about population, interventions/treatments, any comparison interventions, and specific outcomes covered by the question
PICOT

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*What is the best way to alleviate fear associated with needles and injections?*
SEARCH STRATEGY #2

Generate a Word List
• Having established key components of a question, generate a word list for each component
  • List synonyms and phrases that could be used
  • Be cautious when using abbreviations
WORD LIST EXAMPLE #1: WHAT IS THE BEST WAY TO ALLEVIATE FEAR ASSOCIATED WITH NEEDLES AND INJECTIONS?

- **Population:** fear of needles, fear of syringes, fear of injections, phobia of needles, phobia on syringes, phobia of injections, fear of hypodermic, phobia of hypodermic

- **Intervention:** behavioral, education, relaxation, coping skills, psychological, counseling, hypnotherapy, hypnosis, psychotherapy, distraction, divert attention, diversion
WORD LIST EXAMPLE #1: WHAT IS THE BEST WAY TO ALLEVIATE FEAR ASSOCIATED WITH NEEDLES AND INJECTIONS?

• Comparison: same as intervention

• Outcome: alleviation or reduction of fear/stress/anxiety, stress relief, calm, relaxed
GENERATE YOUR WORD LIST
SEARCH STRATEGY #3

Link Word lists
• Once separated word lists have been generated, link them together to get combination of components needed for a question
• This is done using terms
  • AND, OR, NEAR, WITH
• Also possible to exclude specifics from a search by using NOT
AND

• Combines words/phrases together so both must appear within one article to be found by search

Component 1

and

Component 2

Identifies articles containing both components
• Enables selection of any one of a number of specified words/phrases in an article will be found in a search

Component 1  or  Component 2

Identifies articles containing either components
• Excludes specific words/phrases from a search so articles containing them will not be identified

Component 1

not

Component 2

Identifies articles containing component 1, not component 2
WITH

- Searches for phrases that contain smaller connecting words, such as of, the, by, for, etc.
  - Community WITH1 practice
    - Community of practice
NEAR

- Searches for all words where 2 words appear separated by the number of words matching the number
  - Chronic NEAR3 syndrome
    - Chronic fatigue syndrome
    - Chronic fatigue immune deficiency syndrome
BRACKETS AND QUOTATION MARKS

- Brackets can be used in 2 ways:
  - Combining 2 Boolean operators
  - measles AND (children OR adults)
  - Searching for a phrase
- ( )

- Quotation marks are used to search for words as phrases
- “ ”
STARTING LINKING YOUR WORD LIST

(DON’T FORGET BRACKETS AND QUOTATION MARKS)
SEARCH STRATEGY #4

• Check what search tools are available on a particular site
• Usually located under the HELP information in the database
• Check which words are used for Boolean logic
  • Most often AND, OR, NOT
  • Check whether they are case sensitive
SEARCH TOOLS
FREE TEXT SEARCHING

• Type words/phrases from your word list into search window for database to match records containing same words anywhere within abstract, title, or author fields
• Gives high recall rate (high sensitivity) but low precision rate (low specificity)
PHRASE SEARCHING

• If looking for articles with a phrase of words, be mindful that the search is searching for the words next to one another, not retrieve records where any of the words in your phrase just appear in the article

• Denoted by enclosing phrase in quotes
  • “pressure sores”
CONTROLLED VOCABULARY SEARCHING/INDEX TERMS

• Use of keywords that are tagged by each journal article to reflect main topics covered
• A search that uses just index terms to find articles containing matching index terms
• Usually quite specific so they accurately reflect subject matter
  • Articles containing terms like breast cancer, breast carcinoma, or breast tumor would be assigned the unique index term: ‘breast neoplasm’
CONTROLLED VOCABULARY
SEARCHING/INDEX TERMS

• Can aid in searching so that you don’t have to think of every way a component could be described (as with free text searching)
• Journal article mentioning topic in passing would not be included
• Only those articles with a large part of topic in the record would be included
CONTROLLED VOCABULARY SEARCHING/INDEX TERMS

• Advantage is it is more accurate and limits numbers of irrelevant articles
• Disadvantage is that any records that have not been appropriately indexed might be missed
TRUNCATION

- Shortcut device to include different variations of a word
- Saves time so that not all words have to be typed out in search strategy
- Works by finding beginning of a word with different endings on it
- Denoted by a * or $ in most databases
  - child* would pick up child, children, childhood, etc.
WILDCARD

- Allows the identification of alternative spellings of the same word
- Denoted by a ? in most databases
- Inserted in the middle of a word where an extra letter may appear
  - wom?n would pick up woman and women
  - an?emia would pick up anemia and anaemia
LIBRARY RESOURCE CENTER
FROM BEST EVIDENCE TO BEST PRACTICE
ELECTRONIC DATABASE SYSTEMS

- Cochrane Library
- The Joanna Briggs Institute
- CLINICAL KEY
- OvidSP
- MEDLINE
- OvidSP
- PubMed
- EBSCO
- CINAHL

Available via EBSCOhost
BIBLIOGRAPHIC DATABASES

A organized digital collection of references to published literature, including journal and newspaper articles, conference proceedings, reports, government and legal publications, patents, books, etc.

- Cochrane Library
- Joanna Briggs Institute EBP Database
- ClinicalKey
- CINAHL with Full Text
- OvidSP Full Text Plus
- Ovid MEDLINE
- PubMEd
COCHRANE LIBRARY

• Resource for systematic reviews of primary research in human health care and health policy.
  • Cochrane Central Register of Controlled Trials
  • Database of Abstracts of Reviews of Effects
  • Cochrane Database of Systematic Reviews
  • NHS Economic Evaluation Database
  • Health Technology Assessments
  • Cochrane Methodology Register
JOANNA BRIGGS INSTITUTE EBP DATABASE

A leading provider of evidence-based information in medicine, nursing, and allied health.

- Systematic reviews
- Evidence summaries
- Best practice information sheets
• **Library of systematic reviews**
  • A critical assessment and evaluation of all research studies that address a particular clinical issue.

• **Evidence summaries**
  • Literature reviews that summarize existing international literature on common healthcare interventions and activities

• **Best practice information sheets**
  • Interventions or procedures that describe and/or recommend practice on selected clinical topics
A **clinical search engine** and database tool that helps provide fast, clinically-relevant answers from Elsevier’s library of medical and surgical content.
• **Cumulative Index to Nursing and Allied Health**
• Provides full text covering topics including nursing, biomedicine, complementary medicine, and 17 allied health disciplines.
OVIDSP FULL TEXT PLUS

- Integrated medical, nursing and allied health portal for practice, education, research, and administration with full text resources.
  - Access to 45 full text nursing journals
  - Additional 12 medical/nursing journals
• Subsidiary of the National Library of Medicine’s database/article index.
  • Access to 19 million references to journal articles in life sciences with a concentration in biomedicine
• U.S. National Library of Medicine which comprises more than 23 million citations for biomedical literature, life sciences journals, and online books.
REFERENCES

