ChiroCredit.com presents
Evidence Based Outcomes 202

By: Dean Smith, DC, PhD

Learning Objectives

- Define Evidence Based Practice (EBP)
- Identify problems/obstacles to EBP
- Outline the “process” of EBP
- Learn how to ask good clinical questions: PICO

Learning Objectives

- Describe how to search PubMed and learn how PubMed ‘translates’ a search query
- Define “MeSH” terms and describe their use
- Illustrate how to limit or broaden your search to find the appropriate content
- Compare the results of boolean operators AND, OR and NOT
Evidence Based Practice

- Integration of clinical expertise with the patient’s values and the best available research evidence to ensure optimal outcomes
- Becoming proficient with this process takes time and consistent practice, but should ultimately lead to improved patient outcomes

The Problems

- In a busy practice, doctors and therapists constantly encounter patient care problems for which they have no immediate answer
- Health practitioners require a large amount of information regarding diagnosis, prognosis, therapy, and prevention on a daily basis

The Problems

- With the exception of using textbooks to answer basic anatomy, physiology, or pathology questions, traditional sources of information are usually inadequate because they are either incorrect, ineffective, outdated, or too voluminous to be practical

The Problems

- With experience, practitioners rely less on their formal training.
- As judgment and diagnostic skills improve, knowledge of current diseases and treatment often declines.
- Busy practitioners, often do not have time to search for up-to-date information.

The Irony

- Many practitioners believe that practicing EBP requires too much time; but, in reality, a purpose of EBP is to improve efficiency in clinical decision making and to assist us in selecting and applying interventions that will maximize positive patient outcomes.

Is Evidence Based Practice Important?

- Chiropractors and massage therapists acknowledge the importance of research to validate their practice but have little confidence in their research skills and overall application of research in practice was limited.
- Neither chiropractors nor massage therapists consistently apply research in practice, which may result from a lack of research education and research skills.

EBP Examples

- Recent example is the management of children who have acute otitis media (AOM)
- There is good evidence from high-quality trials conducted by chiropractic and other research groups that spinal manipulation is as good as or better than a broad range of treatments for the care of LBP, NP, and certain headache types.
The Questions

- In one study, family physicians most often had questions center around treatment (45%), diagnosis or evaluation (22%), etiology (4%), adverse effects of treatments or exposures (4%), epidemiology (4%), screening (3%), prognosis (3%), and prevention (2%)


The EBP Process

1. Formulating an appropriate question
2. Performing an efficient literature search
3. Critically appraising the best available evidence
4. Applying the best evidence to clinical practice
5. Assessing outcomes of care


The EBP Process

- Becoming proficient with this process takes time and consistent practice, but should ultimately lead to improved patient outcomes

Develop a specific answerable question from a clinical problem

- The first and often most difficult step is the development of a well-built clinical question that facilitates a literature search, ultimately leading to the best evidence available to remove or optimally reduce clinical uncertainty

Two Types of Questions: Background and Foreground

- **Background** questions are developed to enhance knowledge relative to a specific disorder. For example, a clinician may ask "What causes carpal tunnel syndrome?" or "Why do patients develop coronary artery disease?"

Two Types of Questions: Background and Foreground

- **Foreground** questions ask for specific information to make clinical decisions or take immediate action
  - Developed in response to the need to identify evidence regarding the use of a specific intervention in the management of a particular patient
Foreground and PICO

- Foreground questions of therapy consist of 4 components:
  1. a patient or problem
  2. an intervention
  3. a comparison intervention (if relevant)
  4. an outcome

P - Patient

- Who is the patient, such as her age and history (eg, Is this her first episode of back pain, or is it chronic?)
- Is the pain caused by trauma (eg whiplash) and what is this specific problem (2 days after MVA or 2 years after MVA)?

I - Intervention

- Should the clinician begin with mobilization of the back immediately after an MVA?
- Passive modalities?
C – Comparison Intervention

- Should the clinician follow an alternate treatment approach such as a wait-and-see approach?
- Is manipulation better than mobilization immediately following an MVA?


O – Outcomes

- What are the outcomes that are considered important for this patient and problem (e.g., reduction in symptoms and restoration of function; preventing chronicity; prevent complications such as disuse/deconditioning)


Putting PICO together

- In a 38-year-old female with carpal tunnel syndrome, what is the efficacy of exercise and ergonomic interventions compared to no treatment for decreasing pain and disability?

Search the best evidence that answers your question

- Once the question has been formulated, the next step is to search for relevant evidence that will help to answer that question
- Searching for the evidence efficiently is important, because practitioners do not have much time

Table 1. PICO7 Question Form

<table>
<thead>
<tr>
<th>Question Form</th>
<th>R: Population/Exposure</th>
<th>I: Interventions</th>
<th>C: Comparison</th>
<th>O: Outcome</th>
<th>T: Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Diagnosis</td>
<td>In patient with major depression</td>
<td>Beck Depression Inventory</td>
<td>Or Zung Depression scale</td>
<td>More accurate</td>
<td>For admission assessment</td>
</tr>
<tr>
<td>2. Therapy</td>
<td>In patients with antidepressants</td>
<td>Antidepressants</td>
<td>Or typical antidepressant</td>
<td>More cost/effective</td>
<td>Over 1 year of treatment</td>
</tr>
<tr>
<td>3. Prognosis</td>
<td>Ages 18-65</td>
<td>Age + sex + race</td>
<td>Or gender</td>
<td>More mortality</td>
<td>Over 1 year of treatment</td>
</tr>
<tr>
<td>4. Side Effects</td>
<td>Ages 65-80</td>
<td>Age + sex + race</td>
<td>Or gender</td>
<td>More side effects</td>
<td>Over 2 years of treatment</td>
</tr>
<tr>
<td>5. Prevention</td>
<td>In patients with schizophrenia</td>
<td>Antipsychotics</td>
<td>Or typical antipsychotic</td>
<td>More hospitalizations</td>
<td>More general population</td>
</tr>
<tr>
<td>6. Meeting</td>
<td>In patients with schizophrenia</td>
<td>Antipsychotics</td>
<td>Or typical antipsychotic</td>
<td>More hospitalizations</td>
<td>Over 2 years of treatment</td>
</tr>
</tbody>
</table>


Consult Primary and Secondary Sources

- Primary sources such as research articles are good to find specific information on a topic and are the 'real' sources of evidence.
- Secondary sources of evidence include reviews on topics and can be extremely useful for the busy clinician (e.g., review articles).

What is PubMed?

- Search interface from the U.S. National Library of Medicine (NLM).
- Covers the fields of medicine, nursing, dentistry, pharmacy, and other areas of the life sciences.
- Provides access to millions of citations in MEDLINE, PreMEDLINE, and other related databases.
- Citations from the 1950s to the present are searchable in PubMed.

Starting a search
1. Go to http://www.pubmed.com

Keyword or phrase searching

- To perform a search, click in the search box and enter a keyword or phrase related to your topic. Multiple terms will automatically be combined with AND. For phrase searching, use quotations (e.g. "chiropractic adjustment"). In this example, type in chiropractic adjustment and press go.
- Press the enter key or click on the Search button to begin and view your results.
Mapping term to subject heading

Automatic term mapping

1. PubMed automatically takes your keywords or phrases and interprets them as subject headings used by the database. These words are matched (in this order) against a MeSH (Medical Subject Headings) Translation Table, a Journals Translation Table, and an Author Index.

2. Click on the Details button to verify how your terms were translated and to edit your search strategy.
This is how PubMed translates your phrase chiropractic adjustment:

**MeSH Database**

1. Click on the MeSH Database link using the dropdown menu under PubMed just left of the search box.
2. To look up the correct MeSH term, enter your first term in the search box.
3. PubMed will check your term against the MeSH mappings and display the associated MeSH term(s).

4. Click on the appropriate MeSH term for your topic; from this screen you can attach subheadings and/or restrict terms to a MeSH Major Topic.
5. PubMed will automatically explode your MeSH term (i.e. pick up all related narrower terms). To deselect, click in the check box provided.
6. To locate citations to articles on your topic, select Search box with AND
7. The MeSH term for your topic will appear in the search box. Then click on Search PubMed.
Combining two or more terms

**Boolean logic**

1. Use **AND** to retrieve all of the terms: e.g. chiropractic and spinal manipulation.
2. Use **OR** to retrieve any of the terms: e.g. chiropractic or spinal manipulation.
3. Use **NOT** to eliminate terms: e.g. chiropractic not spinal manipulation.

The operator ‘AND’ is used to retrieve citations that contain all the search terms. It narrows the search to be more precise.
The operator ‘OR’ is used to retrieve citations that contain all the search terms. Using OR broadens the search.

The operator ‘NOT’ is used to restrict citations containing a particular search term. Using NOT eliminates items.

Combining two or more terms
Boolean logic

4. To search a complex topic, enclose an individual concept in PARENTHESES. The terms inside the parentheses will be processed as a unit and then incorporated into the overall strategy e.g. neck pain and (chiropractic or spinal manipulation)
Filtering (Limiting) a search

Specifying results
1. After entering your search terms, view the options in the left sidebar.
2. Select as many limits as you want by choosing from the show additional filters (e.g. age group, languages, gender, human or animal studies, publication types, etc.).
Limiting a search

Specifying results

3. Click on the items you would like to filter by.
4. A check mark will appear beside the item to indicate that this feature is in use.

Displaying and marking search results

Viewing complete records:
1. PubMed automatically displays your search results in a Summary format (author, title, and journal information). To view the abstract for an individual record, click on the title of the article.
2. To change the format of your search results, choose from the drop-down menu of Format (e.g. abstract, summary, etc.).
3. You can also increase the number of records displayed on each page by choosing Per Page.
Using the clipboard

1. The clipboard allows you to temporarily save or view selected citations from one search or several searches.
2. To place item(s) on the clipboard, click on the check box(es) to the left of the citations.
3. Click on the Send To drop-down menu, and choose Clipboard.

4. Once you have added a citation to the clipboard, the record number colour will change to green.
5. To view the contents of your clipboard, click on the Clipboard items just to the right of Send to.
Printing, saving or emailing citations

- Clipboard items or current search set
  1. You can print, save, or email items from either the clipboard or from the current search set.
  2. Format the clipboard items or current search set using the Format dropdown.
Emailing Your Search Results

- Your PubMed e-mail message displays as a PubMed results page and includes hyperlinks to Related Articles and other PubMed features. But, your e-mail program must be set for HTML view in order to properly view the message.
## Clinical Queries

### PubMed Clinical Queries

<table>
<thead>
<tr>
<th>Category</th>
<th>Therapies</th>
<th>Systemic Factors</th>
<th>Methodological Topics</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Results 1 of 1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Title: Acupuncture and Low Back Pain: A Systematic Review and Meta-analysis of Randomized Controlled Trials</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Title: A Randomized Controlled Trial of Acupuncture for Low Back Pain</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## Index to Chiropractic Literature

### www.chiroindex.org

- [Index To Chiropractic Literature](www.chiroindex.org)
- [Clinical Queries](indexing.html)
- [PubMed Clinical Queries](clinical-queries.html)

### Search Features

- Search by keywords, authors, articles, journals, or conditions.
- Search by specific chiropractic topics.
- View articles by date, relevance, or citation count.

### Journal Index

- Chiropractic Journal
- Journal of Manipulative and Physiological Therapeutics
- Journal of Vertebral Subluxation Research

### More Information

- Contact: info@chiroindex.org
- Visit www.chiroindex.org for full database access.

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