FINDING THE BEST EVIDENCE: 
AN OVERVIEW OF THE RESOURCES 
SPRING 2015
LEARNING OUTCOMES

- Apply PICO to sample clinical question
- Identify MeSH terms in PubMed for sample search query
- Differentiate between databases that contain
  - Background sources
  - Clinical summaries
  - Systematic reviews
  - Guidelines
  - Studies (RCTs, prospective cohort studies, case control studies, and case studies)
- Gain practice using limits in PubMed
Evidence-Based Physical Therapy

Introduction

The EBM process begins when a clinician (You) is presented with a scenario that has some uncertain end or unanswered question. Evidence-based practice uses the PICO model for formulating a searchable question.

Background

(Clinical Summaries, Textbooks, etc)

Background sources are the best place for clinicians to get up to speed on unfamiliar topics and to fill holes in their knowledge base. Several of these resources are (or act as) clinical textbooks with either brief or detailed entries on conditions and interventions. Keep an eye on currency; background resources are often a few years out of date.

Secondary Literature

(Meta-analyses, Systematic Reviews, Evidence-based Guidelines)

Secondary literature sources summarize the medical literature by finding (via explicit, thorough literature search) and appraising relevant individual studies to answer a particular clinical question. In most cases, clinicians should initiate a search for answers to clinical questions with the secondary literature. Please note that we have placed evidence-based guidelines into this category; the best clinical guidelines can provide an answer to a clinical question based on the best evidence. Again, keep an eye on currency.

Primary Literature

(Controlled Trials, Cohort Studies, Case Studies, etc.)

Primary literature is where researchers publish their findings first. In the health field this is usually journal articles outlining methodology, data, results, and conclusions. The evidence based approach emphasizes a hierarchy of evidence based on study types. When searching for single studies on a topic, clinicians should utilize database tools (limits and filters) to obtain the highest level of evidence to answer a clinical question.

EBPT Research Guide http://guides.lib.campbell.edu/ebmdpt
THREE PRONGED APPROACH

EBP!

The Patient

Patient’s characteristics & values

Best Evidence

Clinically relevant research, the literature

Clinical Expertise

Practitioner’s knowledge & experience
USING THE MEDICAL LITERATURE TO PROVIDE OPTIMAL PATIENT CARE

- Identify your problem
- Define a structured question
- Find the best evidence
- How valid is the evidence?
- What are the results?
- How should I apply the results to patient care?
A 30 year old male nurse experienced an onset of lower back pain after lifting a patient in the emergency room 6 weeks ago.
USING THE MEDICAL LITERATURE TO PROVIDE OPTIMAL PATIENT CARE

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EBPT Research Guide [http://guides.lib.campbell.edu/ebmdpt](http://guides.lib.campbell.edu/ebmdpt)
Background vs. Clinical questions

Background questions – general knowledge about a disorder. Look for info in Reference sources

Clinical questions – specific knowledge about managing a patient or disorder. Apply EBP techniques, use EBP resources

In a 30 year old male who has been experiencing lower back pain for six weeks, is SMT an effective intervention for rehabilitation?
BACKGROUND SOURCES

- UpToDate
- Essential Evidence Topics
- Medscape Reference
- Access Physiotherapy
- ClinicalKey
- JAMAevidence
- Specialty texts in Wiggins Memorial Library’s Reference Collection
  - Medical care for children & adults with developmental disabilities
- MICROMEDEX

Link to these resources on the EBPT Research Guide (Background tab)
http://guides.lib.campbell.edu/ebmdpt
EBPT Research Guide [http://guides.lib.campbell.edu/ebmdpt](http://guides.lib.campbell.edu/ebmdpt)
CONVERT THE CLINICAL QUESTION TO PICO

P I C O helps to formulate the question

Patient/Population/Problem
Intervention
Comparison
Outcome
In a 30 year old male who has been experiencing lower back pain for six weeks, is SMT an effective intervention for rehabilitation?

P – Population: In a 30 year old male who has been experiencing lower back pain for six weeks

I – Intervention: SMT

O – Outcome: Rehabilitation

C – Comparison: No comparison/placebo
Creating a search query

P = In a 30 yo male who has been experiencing lower back pain
I = is SMT
C =
O = an effective intervention for rehabilitation?

P  I
30 yo male  SMT
lower back pain
<table>
<thead>
<tr>
<th>Preferred MeSH term</th>
<th>MeSH definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>A person having attained full growth or maturity. Adults are of 19 through 44 years of age. For a person between 19 and 24 years of age, YOUNG ADULT is available. Year introduced: 1966</td>
</tr>
</tbody>
</table>
Preferred MeSH term

Low Back Pain

Acute or chronic pain in the lumbar or sacral regions, which may be associated with musculoligamentous sprains and strains; intervertebral disk displacement; and other conditions.

Year introduced: 1993
CREATING A SEARCH QUERY

P = In a 30 yo male who has been experiencing lower back pain
I = is SMT

P
30 yo male
adult
lower back pain
low back pain

I
SMT
spinal manipulation therapy

ORANGE = MeSH term
Creating a search query

(adult male OR adult)
AND
low back pain
AND
(SMT OR spinal manipulation therapy)

- Place an “OR” between synonyms of the same concept and surround concept terms with parentheses
- Place an “AND” between concepts
CREATING A SEARCH QUERY

(adult male* OR adult*) AND low back pain AND (SMT OR spinal manipulation therapy)

Use truncation character (*) to search multiple endings of a word:
Ex. male*
    adult*
Search here and filter your list of results later.

Or, run a clinical query search.
In Clinical Queries, your results are automatically filtered.
**Which portion of the PICO acronym can be left out when preparing keywords and synonyms for your search query since it is often implied by the author and not found in the abstract?**

A. Patient/Population/Problem
B. Intervention
C. Comparison
D. Outcome
USING THE MEDICAL LITERATURE TO PROVIDE OPTIMAL PATIENT CARE

- Identify your problem
- Define a structured question
- Find the best evidence
- How valid is the evidence?
- What are the results?
- How should I apply the results to patient care?
Evidence Hierarchy

Clinical summaries
Meta analyses/Systematic reviews

Randomized control trials (RCTs)
Prospective cohort studies
Case-control (retrospective cohort) studies
Case studies
Opinion of authorities, editorials
EVIDENCE-BASED CLINICAL SUMMARY

- A compendium of short summaries of the current state of the knowledge (and uncertainty) about clinical conditions (prevention, treatment, and/or diagnosis)

- Entries are explicitly based on thorough searches and appraisals of the literature and created from the best available evidence from systematic reviews, RCTs and observational studies
EVIDENCE-BASED CLINICAL SUMMARIES

Examples:

- UpToDate
- Essential Evidence Plus (Essential Evidence Topics)

Link to these resources on the EBPT Research Guide (Background tab)
http://guides.lib.campbell.edu/ebmdpt
Medical topics in internal medicine (particularly strong), pediatrics, ob/gyn and family medicine

- Designed to provide a quick way to get up to speed
- An updated version of *UpToDate* is released every four months “What’s New” tab highlight changes with each major release.
- For use in EBM is a mixed bag (use cautiously to answer clinical questions (i.e. PICO questions))
- Articles are a mixture of medical conclusions based on data from studies and expert opinions of individual authors...not always clear which statements are evidence-based and which are not
 Evidence-based Clinical Summary

- A medical reference tool providing over 700 highly relevant, easily digestible summaries structured in evidenced-based format.
- Includes best-evidence answers to primary care clinicians’ most important questions concerning symptoms, diseases, and treatment.
- Each topic has a:
  - “Strength of evidence” rating for every recommendation
  - “Bottom-line” summary that introduces each section
  - Broad array of helpful algorithms
EVIDENCE HIERARCHY

Clinical summaries
Meta analyses/Systematic reviews

Randomized control trials (RCTs)
Prospective cohort studies
Case-control (retrospective cohort) studies
Case studies
Opinion of authorities, editorials

Level of Evidence
high

low
SYSTEMATIC REVIEWS

- Summarize a particular topic by using explicit methods to perform a thorough literature search and critical appraisal of individual studies to identify the valid and applicable evidence

- Use appropriate techniques to combine these valid studies

- Published in many journals and found in a variety of other electronic sources
SYSTEMATIC REVIEWS

Examples:

- Cochrane Database of Systematic Reviews
- DARE
- PEDro
- PubMed
- ACP Journal Club

Link to these resources on the EBPT Research Guide (Secondary Literature tab)
http://guides.lib.campbell.edu/ebmdpt
SYSTEMATIC REVIEWS

- 5,600 systematic reviews and meta-analyses
- Rigorous, highly-regarded, reviews
- Focused on therapy/prevention, now covering diagnostic tests
- Database includes protocols -- plans or sets of steps to be followed in creating a systematic review
- When searching within the Cochrane Library: use the “Title, Abstract, Keywords” drop down to reduce irrelevant records

- Contains 15,000 reviews of systematic reviews.
- Complements the CDSR -- quality-assesses and summarizes reviews that have not yet been carried out by Cochrane
- When searching within the Cochrane Library: use the “The full review (Search All Text)” drop down to reduce irrelevant records
SYSTEMATIC REVIEWS

- Includes records/abstracts of journal articles (20 million)
- Very current info (sometimes pre-pub)
- Use MeSH terms for more efficient searching
- Use Boolean operators (AND, OR)
- Searching for systematic reviews:
  - Use the “Find Systematic Reviews” box in Clinical Queries
  - OR Apply the Subsets limit “Systematic Reviews”

- Often overlooked secondary source for evidence on any type of foreground question
- Reviews the best original and review articles from over 100 of the top clinical journals
- If included, it is important!
- Unlike DARE, clinical experts provide commentaries on the context, methods, and clinical applications of the findings of each article
Evidence Hierarchy

Clinical summaries
Meta analyses/Systematic reviews

Randomized control trials (RCTs)
Prospective cohort studies
Case-control (retrospective cohort) studies
Case studies
Opinion of authorities, editorials
INDIVIDUAL STUDIES

Examples:

- MEDLINE (PubMed)
- Google Scholar
- Other health databases
  - CINAHL
  - PsycINFO

Link to these resources on the EBPT Research Guide (Primary Literature Tab)
http://guides.lib.campbell.edu/ebmdpt
**INDIVIDUAL STUDIES**

- Includes only records/abstracts of journal articles (20 million)
- Very current info (sometimes pre-pub)
- Use MeSH terms for more efficient searching
- Use Boolean operators (AND, OR)
- Searching for single studies:
  - Use the “Search by Clinical Study Category” box in CQ
  - OR use the type of article limit: randomized controlled trials or other appropriate level

- Subset of larger *Google*: journal articles, technical reports, preprints, theses, books and other documents and web pages deemed “scholarly”
- Covers a great range of disciplines (strong in sciences and medicine)
- It is particularly helpful for users who want:
  - something good enough for the task at hand (not comprehensive)
  - grey literature--sources outside of published journals
  - info from sources across many disciplines
- Limitations: rudimentary search features, lack of transparency of database content, uneven coverage (time and scope) and a delay in indexing
Which of the following databases would not contain background information?

A. UpToDate  
B. Intervention  
C. Comparison  
D. Outcome
Review of General Search Hints

- Identify synonyms
  - Check MeSH database via PubMed
  - Use generic and trade names for drugs and tests
  - Use full names along with common abbreviations

- OR between synonyms
  - OR between synonyms
  - Surround OR terms with parentheses

- Enter concepts as separate sets AND between P, I, C
  
  common cold AND (vitamin c OR ascorbic acid)
Effectiveness of Reviews Pyramid

There is a range in quality of evidence available in the literature, with systematic reviews being the very highest quality. As you move up the pyramid, the amount of literature decreases but its clinical relevance increases.

Sources of research may be either pre-appraised (summaries), primary literature or...
Evidence-Based Physical Therapy

A. In adults, use of anxiolytic or hypnotic drugs was associated with increased risk for mortality.
B. An "unlikely" Wells rule score (1) plus a negative D-dimer result excluded DVT in noncancer patients.
C. Review: Evidence for the effect of vitamin D supplementation on many patient outcomes was assessed.
D. Review: Vitamin D3 supplementation may reduce mortality in adults; vitamin D2 does not.
E. Review: Preoperative behavioral interventions increase smoking cessation and reduce postoperative complications.

ACP Journal Club

How May I Help You?

Evidence-Based Medicine

- Overenthusiastic stroke risk factor modification in the over-80s: Are we being disingenuous to ourselves, and to our oldest patients?
- Measurement of perceptions of educational environment in evidence-based medicine
- Topical antibiotic therapy is superior to systemic antibiotics for acute tympanostomy tube otitis media, but may not be necessary for all children
- Electronic cigarettes are at least as effective as nicotine
HOW TO GET HELP

If you have a question for a librarian, please:

- Visit the Research Assistance Desk
- Call: (910) 893-1467
- E-mail: reference@campbell.edu
- Skype with us at “Campbell Libraries”
- Schedule a Research Consultation: http://www.lib.campbell.edu/research-consultation
- Chat with us online