Special Feature

Acquiring Evidence—
Tips for Effective Literature Searching

By Sara Pimental, MLIS, AHIP

Effective, evidence-based literature searching is easier if it's kept simple. The basic steps are:

A Clinical Question Arises Out of Care of the Patient

A 60-year-old, postmenopausal woman presents with a diagnosis of arthritis. Can glucosamine be recommended in place of more conventional therapy?

Formulate the Question

Well-built clinical questions are constructed using PICO format. The key is to start with the most basic question. More facets can always be added if necessary. In this example:

P (Patient/Disease)—Arthritis

Are the age, sex and menopausal status of the patient of primary importance? Probably not, so leave it out for now.

I (Intervention)—Glucosamine

C (Comparison)—Conventional Therapy

Many clinical questions such as this one don't have a searchable comparison. It is okay to ignore it.

O (Outcome)—Effectiveness of therapy, side effects, etc

If one particular outcome was of interest, it could be built in the search. In this case, outcome definition is broad enough to leave it out.

Select the Appropriate Resource

There are many resources available. Don't automatically assume that an exhaustive MEDLINE search is needed. Sometimes a book is the best place to look. For example, in searching for the use of a particular drug in pregnancy, it is perfectly reasonable to use *Drugs in Pregnancy and Lactation* by Gerald Briggs.[1]

But most of the time, you will be looking for a systematic review or randomized controlled trial. Cochrane databases (www.cochrane.org) or Clinical Evidence (www.clinicalevidence.com) make a good first pick. These types of resources do the evidence analysis for you. ACP Journal Club (www.acpjc.org) or the Database of Abstracts of Reviews of Effectiveness (DARE) (www.york.ac.uk/inst/crd/darehp.htm) produces critical reviews of systematic reviews and other key studies. If these resources do not answer the question, a literature search will need to be performed.

Develop a Search Strategy

The search strategy will depend on what type of resource is used. But in all cases, try to enter each of the PICO elements as separate concepts. It will be easier to manipulate the search if necessary.

All the evidence-based medicine (EBM) review databases (eg, Cochrane) are not indexed. There are no MESH headings or controlled keywords. All synonyms must be included. The steps of a typical search might be (Figure 1):

1. "Arthritis or osteoarthritis"

   If arthritis is searched alone, synonyms for various types of arthritis need not be added. The fact that the patient has rheumatoid arthritis might be unimportant

2. "Glucosamine"

   The two search statements can now be combined using the Boolean operator "and"

3. "1 and 2"

Adding facets, such as age or sex, can be tricky. Don't

> **The search strategy will depend on what type of resource is used.**

Figure 1. Search Strategy in OVID for Cochrane Systematic Reviews.

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Figure 2. Search Strategy in OVID MEDLINE.

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try to do this unless absolutely necessary. It is easier to browse through 30 citations rather than try to limit the search somehow and potentially miss good references.

MEDLINE is an indexed database. That means that every citation is assigned headings. The indexer does the work so synonyms become less important. The steps of a MEDLINE search might be (Figure 2):

1. "Exp Arthritis"
   Exp stands for explode. This function gathers all the different types of arthritis plus synonyms utilizing the Boolean operator "or."
2. "Glucosamine"
3. "1 and 2"

Sex and age are much easier to search in MEDLINE. Both OVID and PubMed offer not only sex and age limits but also human/animal and subject subsets, such as AIDS.

Evaluate Results and Try the Search Again if Necessary

Did you get the information you need? If not, try different search terms. Was your retrieval too large? Think about adding other facets of the clinical question, such as age or sex. If the results seemed too small, think about taking search terms out. Many times, there really isn't much information on a topic.

Which is Better, OVID or PubMed?

Using OVID or PubMed is largely a matter of personal preference, but there are some key differences:

OVID

- Cochrane Database of Systematic Reviews and ACP Journal Club offered as separate databases. This makes it easier to search.
- Easy to see search history and combined search statements.
- Cochrane Central Register of Controlled Trials available. The RCT limit in PubMed does not guarantee that the trial was truly randomized. Cochrane checks for randomization along with other factors.
- DARE is available.
- Ability to limit to EBM reviews or systematic reviews on the first screen. Remember, review articles are NOT systematic reviews.
- Ability to limit to publication types such as randomized controlled trials or guidelines on second screen.
- Nine clinical query categories, such as therapy, diagnosis, etiology, prognosis, or qualitative studies are offered. Each can be limited by sensitivity or specificity or can be optimized. A sensitive search attempts to retrieve all relevant documents by using a broad search. A specific search attempts to retrieve only relevant documents in a small precise search. Optimized is considered a happy medium between sensitivity and specificity.

PubMed

- Cochrane Database of Systematic Reviews and ACP journal club only available as a journal title limit.
- Search history is available through a link. It's a little tricky to manipulate at first, but it works the same way as OVID MEDLINE.

Useful Web Sites

- For Permanente clinicians, all evidence-based resources are available through the Clinical Library—http://cl.kp.org (Figure 3)

For more detailed training, try these Web sites:

OVID Training
- www.mclibrary.duke.edu/training/ovid
- A KP version of this OVID tutorial is available at //cl.kp.org/pkc/national/clin_ed/ovid/

PubMed Training
- www.nlm.nih.gov/bsd/pubmed_tutorial/m1001.html

EBM Tutorials
- www.hsl.unc.edu/services/tutorials/ebm/index.htm
- www.cebm.utoronto.ca/
- www.poems.msu.edu/infomastery/
- denison.uchsc.edu/sg/index.html

Special Feature

- Cochrane Central Register of Controlled Trials or DARE not available. PubMed does cover heath administration and some life sciences journals that are not in OVID MEDLINE.
- All limits are on a second screen. There is no special EBM review limit. Publication types are available.
- Clinical queries are available. Systematic reviews can be searched. There is no way to use multiple search statements. Specificity or sensitivity available but not optimized. Therapy, diagnosis, etiology and prognosis are the only categories offered.

These basic tools make searching for the evidence much less complicated than it sounds. The last ingredient is practice.

Happy searching! ❖

Figure 3. Clinical Library.

Reference

1. Briggs GG, Freeman RK, Yaffe, SJ. Drugs in pregnancy and lactation. 6th ed. Philadelphia: Lippincott Williams and Wilkins: 2002.
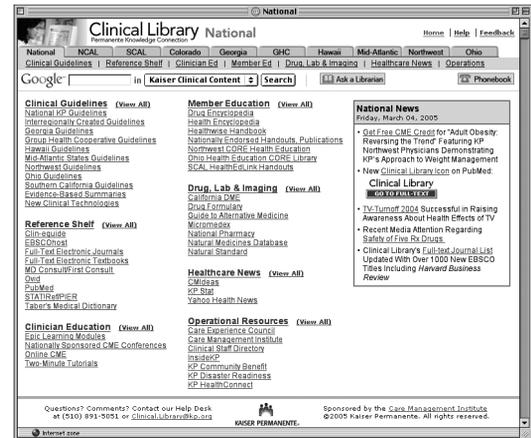

Inspiration

Just as appetite comes by eating, so work brings inspiration,
if inspiration is not discernible at the beginning.

— Igor Stravinsky, 1882-1971, composer