

How to Answer Your CLINICAL QUESTIONS More Efficiently

Asking focused questions and knowing where to look can lead to quicker answers.

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It's a busy Wednesday afternoon, and one of your longtime patients with chronic osteoarthritis of the knee brings in a bottle of glucosamine and chondroitin tablets. She has been

buying them for the last few months and asks if it would be helpful for her to keep taking them. You wonder the same thing. Other questions pop into your mind too: How do these substances work? Are they better than the nonsteroidal anti-inflammatory drugs (NSAIDs) she has been taking?

Physicians have many questions pass through their minds when seeing patients. One study indicated that about three clinical questions occur to family physicians for every 10 patients they see.¹ In the study, doctors did not pursue most of their questions but would have been able to find answers if they had attempted to do so. Paying attention to clinical questions and answering them



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July/August 2005 ■ www.aafp.org/fpm ■ FAMILY PRACTICE MANAGEMENT ■ 37

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Paying attention to your clinical questions and seeking answers can improve patient care and help identify CME needs.



The most useful studies involve patient-oriented outcomes such as mortality, morbidity and quality of life.



Most background questions involve a single disease, drug or intervention.



Foreground questions are more complex and usually compare two drugs or treatments, or the prognosis of two groups of patients.

is important, as it can improve patient care, help identify CME needs and improve your satisfaction with the care you deliver. In this article we'll outline how to answer clinical questions more efficiently.

Evidence-based medicine gets easier

In the evidence-based medicine (EBM) process, a physician asks a clinical question, searches the medical literature, evaluates the answers found and applies the information to the patient.^{2,3} Although the EBM process seems cumbersome, several advances have made it much simpler than it has been in the past. First, the Internet has improved access to journal articles and other medical references and has sped up bibliographic searches. Personal digital assistants (PDAs) also decrease the time and work required to access drug and medical information.

In addition, we now know which kinds of evidence provide the most value. For questions of therapy, most experts agree that randomized clinical trials, preferably analyzed together in a meta-analysis, provide the strongest data. Similarly, studies of patient-oriented outcomes such as mortality, morbidity and quality of life are the most relevant for our patients. Family physicians have made these important modifications of EBM, called information mastery.⁴

Finally, the "secondary literature," which includes InfoPOEMs, ACP Journal Club

and collected review articles, has evolved to include an interpretation of the evidence, which helps busy clinicians validate the medical literature and reduce the time required for the EBM process.

Asking better clinical questions

Asking a focused clinical question is the first step in getting to an evidence-based answer quickly. The framers of EBM divided clinical questions into two general types: background and foreground questions.

Background questions generally ask "who, what, when, why, where or how" about a single disease, drug, intervention or concept. For example, in the case of the patient

KEY POINTS

- Practicing evidence-based medicine has become much simpler thanks to advances such as Internet resources and personal digital assistants.
- To ask more focused clinical questions, use the "PICO" acronym: patient (or disease), intervention (a drug or test), comparison (another drug, placebo or test) and outcome.
- By having access to just a few evidence-based resources, you can find answers to your clinical questions with little time or effort.

taking glucosamine and chondroitin, we might ask background questions such as these: "What are the side effects of taking this medicine?" or "How do glucosamine and chondroitin work to treat osteoarthritis?"

As physicians gain experience, they master the background knowledge they need and shift toward asking more complex questions.

Foreground questions always compare two things: two drugs or treatments, the prognosis of two groups, two diagnostic tests, or the harms or benefits of two approaches. To format foreground questions clearly, use the "PICO" format, which stands for patient (or disease), intervention (such as a drug or test), comparison (another drug, placebo or test) and outcome. In the case of our fictitious patient, one of our

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initial questions about glucosamine and chondroitin was whether it is better than NSAIDs. In the PICO format, that foreground question looks like this:

P – In patients with osteoarthritis of the knee,

I – are glucosamine and chondroitin

C – as good as or better than NSAIDs

O – for relief of pain?

The foreground question is the darling of the EBM world because it looks for knowledge you can apply to a specific patient or problem. By asking more foreground questions and rephrasing background questions into foreground questions where appropriate using the PICO format, you can gain

knowledge about current therapies and improve patient care.

Knowing where to look

Formatting your question as either a background or foreground question does more than clarify your knowledge gap. It also helps you determine which sources will most likely have the answers you need.

Answering background questions.

Since background questions ask for general knowledge of disease processes or clinical circumstances, textbooks and review articles are the quickest places to find direct and reliable answers. Most of the standard medical textbooks are now available online, which makes searching for answers quicker than ever. Individual subscriptions to online textbooks can cost less per year than the price of buying the textbook in print. Although you must renew the subscription annually, the convenience of accessing the material from any Internet connection and the speed of electronic search results may be worth the cost. Harrison's Principles of Internal Medicine (<http://www.accessmedicine.com>) may be appropriate for many of your questions, but you may also want to consult a more specialized text.

American Family Physician (AFP) and UpToDate are two of the most widely referenced sources for review articles. We consider these two references background sources because they provide a good first stop for understanding a disease; however, you'll likely find answers to some foreground questions there as well. While not all of the content in *AFP* is evidence-based, the journal provides succinct, practical clinical reviews that are written to assist family physicians in patient care. You can search *AFP* by keyword, and the full text of articles is available for free online at <http://www.aafp.org/afp>. UpToDate, <http://uptodate.com>, also provides review articles including specific diagnostic and treatment recommendations for patient care. Subscriptions to UpToDate are available at a variety of levels.

Although you can answer most background questions via these sources, occasionally you may need to search MEDLINE to find an appropriate review article from another source. (You can search MEDLINE via PubMed, which is discussed below.) Also, don't forget your PDA. Many background questions about drugs might be best answered by a handheld drug reference such as Epocrates, <http://www.epocrates.com>. ➤

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The "PICO" format can help you focus your clinical questions quickly and easily.



Textbooks and review articles are usually sufficient for answering basic background questions.

USING PUBMED CLINICAL QUERIES

One of the most efficient tools on the PubMed Web site is the "Search by Clinical Study Category" on the Clinical Queries page (<http://www.ncbi.nlm.nih.gov/entrez/query/static/clinical.shtml>). This tool automatically creates a search strategy for you based on the search terms that you enter and the settings you choose. Let's say your clinical question is, "In patients with osteoarthritis of the knee, are glucosamine and chondroitin as good as or better than NSAIDs for relief of pain?" Your search terms are "osteoarthritis AND glucosamine AND chondroitin," and you select "therapy" as the question category and "narrow, specific search" for the scope. (The narrow therapy search limits results to randomized controlled trials.) In the search results,



you find information about using a topical preparation, which seems effective. (Cohen M, Wolfe R, Mai T, Lewis D. A randomized, double blind, placebo controlled trial of a topical cream containing glucosamine sulfate, chondroitin sulfate, and camphor for osteoarthritis of the knee. *J Rheumatol*. 2003;30(3):523-528.)

Digging deeper, you find a systematic review that shows possible effectiveness of the oral combination. (McAlindon TE, LaValley MP, Gulin JP, Felson DT. Glucosamine and chondroitin for treatment of osteoarthritis: a systematic quality assessment and meta-analysis. *JAMA*. 2000;283(11):1469-1475.) If you use the "broad" scope, you'll find many more review articles that directly address the question.

Your search provides evidence to support the use of glucosamine and chondroitin in your patient's situation.



Foreground questions are complex and require a source that synthesizes a wide range of knowledge.



Some helpful resources include PubMed, InfoPOEMs and the ACP Journal Club.



If a resource does not evaluate the evidence for you, you'll need to determine whether the study is valid and relevant.



Using simple search terms will yield broader results, which can be helpful in a small database.

You can even download clinical guidelines to your PDA. (See "PDA Resources," page 41.)

Answering foreground questions. Foreground questions can be more difficult to answer than background questions because they require a source that synthesizes a wide range of knowledge. Here are some of the best places to look:

for information on medical genetics. (See "Using PubMed Clinical Queries," page 39.)

InfoPOEMs (<http://www.infopoems.com>) provides quick keyword look-up of evidence from journal articles, practice guidelines, Cochrane database abstracts, clinical decision rules, the complete *Griffith's 5-Minute Clinical Consult* text-

When searching a small database, you'll get answers quickest when you search for the disease itself.

PubMed (<http://www.pubmed.gov>) is an easy and free place to search for answers to foreground questions, and it offers links to a growing number of free full-text articles. PubMed Clinical Queries is a relatively new feature of PubMed that allows clinicians to search MEDLINE by clinical studies category (etiology, diagnosis, therapy and prognosis), to locate systematic reviews or to search

book and other sources of information. The POEM approach (Patient-Oriented Evidence that Matters), combined with quick searching on either the desktop or PDA, makes InfoPOEMs a versatile and convenient source. Subscriptions for individuals or entire practices are available.

The ACP Journal Club (<http://www.acpj.org>) reviews articles from 150 journals

and provides succinct reviews and commentary on the most important articles. Because the ACP Journal Club purposely limits its content, you will be able to search for answers without having to wade through too many irrelevant results. Subscriptions to ACP Journal Club include online access.

If you find a study that seems to answer your question but the resource does not evaluate the evidence for you, you'll need to evaluate the study to determine whether it is valid and relevant. Evaluating the literature is beyond the scope of this article, but a useful model is available elsewhere.⁵

Better search strategies

When searching an online textbook or small database (such as UpToDate or *AFP*) to answer background questions, you'll get answers quickest when you search for the disease itself. Searching for the disease term alone will return more search results and will be less likely

SEARCH TIPS FOR EFFICIENT RESULTS

Check your spelling. Most search engines can't interpret your typos or spelling mistakes. If the material is published outside of the United States, consider alternate spellings (e.g., "oestrogen" vs. "estrogen").

Use simple search terms. Using more search terms yields fewer results, which may be a problem in a small database. For example, a search for "osteoarthritis" will yield broader results than searching for "osteoarthritis prognosis in women over the age of 65."

Use quotation marks around phrases. "Exercise induced asthma" tells the search engine to find all of those words in a row, exactly as you typed them, rather than looking for those words separately in the document.

Use the generic name of drugs when possible. PubMed and many other online resources index drugs by their U.S. generic names. However, when trying to verify information about a specific formulation of a drug, search by its trade name and be careful to spell it correctly.

Use AND to combine search terms. Most search engines interpret the capitalized word "AND" as a command to find only pages that mention both terms it joins.

Use search limits to get more relevant articles. For example, "publication date" and "language" are the two most efficient limits in PubMed. PubMed contains citations from articles as old as the 1950s, so you will likely want to limit your searches to more recent literature. PubMed also indexes articles from more than 70 countries, so limiting results to one or two languages will also reduce the number of irrelevant citations.

to miss relevant passages. You may have to scroll through a few results to find the section that answers your question, but since the data in these resources is small compared to searching Google or MEDLINE, the number of results should be easy to manage.

In constructing more complex searches, using the PICO format can help you identify your search terms. This works well for MEDLINE searching. Start by combining your most significant patient characteristic (the P in PICO) with the intervention therapy (the I). If you get too many results from that search or don't find your answer, then add the comparison intervention (C) to your list of terms. For example, to find studies that compare the efficacy of glucosamine and chondroitin versus NSAIDs for osteoarthritis, your initial search terms could be "osteoarthritis AND glucosamine AND chondroitin." If that search didn't retrieve articles that answer the question, the next search should be "osteoarthritis AND glucosamine AND chondroitin AND NSAIDs."

If your first attempts to answer a specific question don't yield usable results, modify your approach (after checking your spelling; even a single typo can throw off your search). You can also try performing the same search but without any search limits (e.g., publication date or article title). Sometimes you may find the answer to your question in the abstract of an article or in a slightly older piece of evidence. Finally, consider a different source. It's possible that a different textbook or database contains the answer to your question.

If you have exhausted your access to peer-reviewed and commercially unbiased sources such as those mentioned in this article, try a search on Google (<http://www.google.com>) or some other Internet search engine. The search tips listed on page 40 will work on general search engines and will reduce the clutter in your searches. However, be sure to carefully evaluate any information you retrieve from a general Internet search.

PDA RESOURCES

The following resources for personal digital assistants can help provide you with important clinical information at the point of care.

Decision support

MedRules: Clinical prediction rules for determining the probability of acute sinusitis, appendicitis, breast cancer, coronary disease, strep pharyngitis, urinary tract infection and more

➤ <http://pbrain.hypermart.net/medrules.html>

Interactive guidelines

StatCoder: Guidelines on hypertension (Joint National Committee-7), cholesterol (ATP3), cardiac clearance and more

➤ <http://www.statcoder.com/>

United States Preventive Services Task Force: Interactive Preventive Services Selector

➤ <http://198.76.191.14/ipss/ipss.htm>

General reference

InfoPOEMs: Evidence summaries and clinical tools

➤ <http://www.infopoems.com/>

Epocrates: Drug and formulary reference

➤ <http://www.epocrates.com/>

Bottom line

As the clinical literature grows exponentially, physicians must learn the critical skills of formulating clear clinical questions and knowing where to look for the answers. These skills make evidence-based medicine doable and will result in improved patient care. **FPM**

Send comments to fpmedit@aafp.org.

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The "PICO" format can help you identify your search terms for complex questions.



If your search isn't panning out, check your spelling, modify your approach or consider other sources.



A personal digital assistant can provide you easy access to key clinical information at the point of care.



Knowing how to formulate clearer clinical questions and where to look for the answers can make evidence-based medicine doable.