Finding the gold in MEDLINE: Clinical Queries

MEDLINE is the premier source for access to the broad spectrum of medical literature. With > 15 000 000 references from > 4600 biomedical journals, the MEDLINE treasure trove contains citations for virtually all the gold that biomedical research enterprise has to offer.

But finding exactly what you want in such a huge database has its challenges. First, the indexing is fairly coarsely grained, so it can be difficult to specify exactly what you are seeking. Second, the English language is notorious for synonyms, homonyms, eponyms, and neologisms, making it impossible to include all the possible variants, while at the same time ensuring that you will retrieve many unwanted citations. Third, few physicians have adequate training and competency for searching MEDLINE. Fourth, even if you find something that appears to be what you want, it is impossible to be sure that you have not missed something even better. Finally and worst of all, the concentration of articles that exactly match what you need is so dilute that even the finest search sieve will scoop up mostly silt.

To reduce these problems, over a decade ago we developed and tested search filters for MEDLINE that would sort the gold from the silt. We used the approach of validating diagnostic tests, using proposed search terms as "tests" and a hand-search of 10 clinical journals as the "gold standard." For the hand-search, we used a limited version of the criteria that are currently used for selecting articles for *ACP Journal Club* (www.acpjc.org/shared/purpose_and_procedure.htm), *Evidence-Based Medicine*, and *Evidence-Based Nursing*. For example, for therapy, an article "passed" the methodological screen during the hand-search if there was random allocation of participants to comparison groups. This was the only criterion required for therapy articles. The most specific and sensitive of several hundred single terms and many thousands of combined terms were identified this way. We did this for 4 topic areas: diagnosis, prognosis, treatment, and etiology. The U.S. National Library of Medicine (NLM), which funded this research, then put the best strategies into a special PubMed Web page, Clinical Queries (www.ncbi.nlm.nih.gov/entrez/query/static/clinical.html), so that anyone interested in these topics could conduct searches at a level likely to be beyond even what an experienced librarian could achieve.

Recently, we completed a new study that tackles developing strategies in a much larger database, 170 journals (161 journals of which are indexed by MEDLINE), using the same criteria for selecting articles as used in *ACP Journal Club, Evidence-Based Medicine,* and *Evidence-Based Nursing*, and testing > 5000 single terms and many thousands of combined terms. These search strategies work better than their predecessors and have now replaced them in Clinical Queries (Figure 1). The most sensitive strategies retrieve well over 90% of the relevant studies in MEDLINE, and for therapy, for example, > 99% of studies are retrieved. In addition, they have been incorporated into the Ovid search engine (as "limits" that can be invoked once you have entered one

or more content terms) (Figure 2). Ovid supplies access to MEDLINE for many institutional libraries. The Ovid version of the search strategies has many additional features. Clinical Queries covers just the 4 topics mentioned above and provides only the most sensitive and the most specific search strategies for them, but Ovid provides all these as well as searches that we developed for 5 other topic areas: clinical prediction guides, qualitative studies, review articles, and studies of costs and economics. Further, Ovid includes search strategies that best balance sensitivity and specificity (optimized search strategies). Finally, these optimized strategies have also been incorporated into SKOLAR (www.skolar.com), a clinical database available through Ovid.
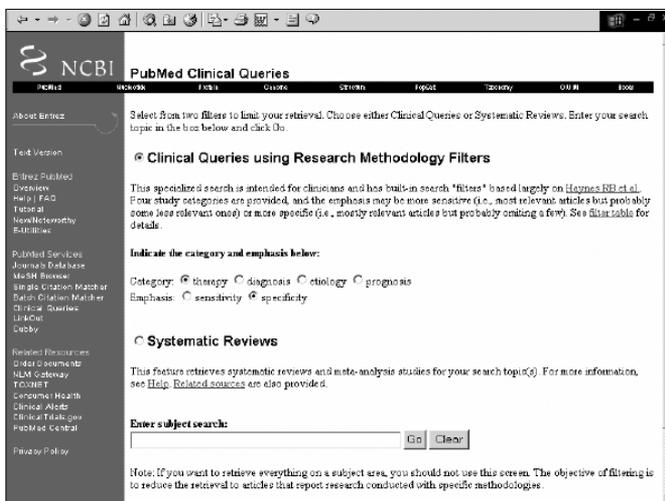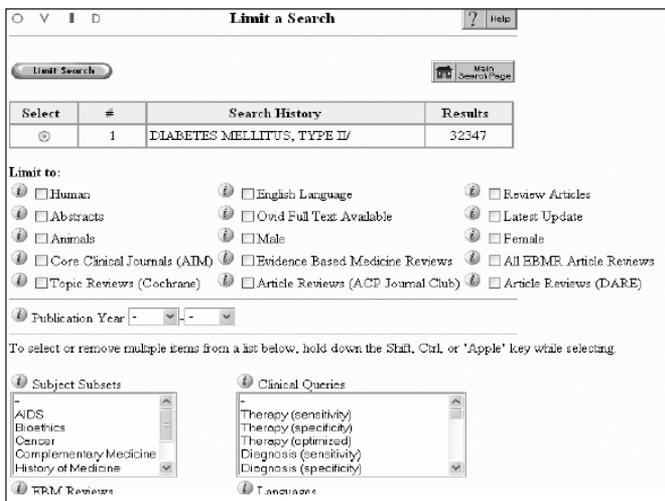

Figure 1.

Figure 2.

In addition to the clinical search strategies, we have developed search strategies for health services research topics addressing the appropriateness, process, and outcomes of care and clinical practice guidelines. These are on another NLM website (www.nlm.nih.gov/nichsr/hedges/search.html) (Figure 3), available for searching MEDLINE through PubMed using these strategies.
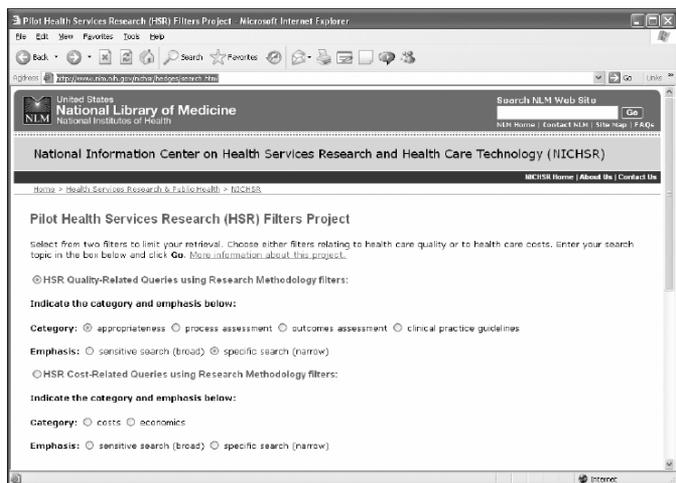

Figure 3.

Altogether, these search strategies can greatly enhance your ability to retrieve original studies and reviews indexed in MED-LINE that are important to clinical practice and delivery of health care. We hope you will make use of them when you cannot find what you need from existing evidence-based resources.

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