MEDLINE is a bibliographic database containing nearly eight million citations, most of which include abstracts. The database, spanning 1966 to the present, currently indexes over 3,700 biomedical journals. Provided by the National Library of Medicine (NLM), MEDLINE is arguably the single most important citation file for the health care professions.

MEDLINE has long been appreciated as a major resource for those with academic or research questions. More recently, it has been recognized that MEDLINE supports informed clinical practice as well. A number of published studies report that MEDLINE literature searches have a significant positive effect on clinical problem-solving and patient outcomes.

IMPORTANCE OF MEDLINE

In what ways is MEDLINE used, and what effects does it have on research and clinical practice? Recent surveys demonstrate a wide diversity of information needs met by online access to the biomedical literature via MEDLINE. The National Library of Medicine undertook a large study with the objective of identifying the full range of situations in which physicians, biomedical researchers, and other health professionals make use of MEDLINE. (See JAMA, vol. 269 (#24) June 23/30, 1993.)

In brief, the results document the following specific aspects of clinical problem-solving: choosing the most appropriate diagnostic test, making the diagnosis, developing and implementing an appropriate treatment plan, maintaining an effective physician-patient relationship, modifying patients’ behaviors, and discharging responsibilities to third-party payers.

Dramatic cases are cited to illustrate the effects of information obtained from MEDLINE. For example, there are instances reported in which the information prolonged a life, saved a limb, avoided the loss of an eye, or led directly to a cure or complete recovery. Even where evidence that MEDLINE “makes a difference” is less vivid and compelling, it is still fair to say that information obtained via MEDLINE plays a role in determining the quality of care and may have other indirect benefits as well, including a variety of economic effects.

Why is MEDLINE so important? Why do practitioners turn to MEDLINE rather than textbooks or journals? Many report that textbooks can’t be specific enough to answer questions about rare diseases or rare combinations of common conditions, or specific enough to reflect the most recent developments in diagnosis and therapy. If the needed information is available to them from journals, MEDLINE is an effective way to locate such articles. Physicians also report use of MEDLINE specifically to resolve conflicting opinions among colleagues or to find answers to questions that colleagues were unable to answer. In summary, among those who perform MEDLINE searches there is apparently no doubt that the information obtained has important beneficial consequences.

THE DOWNSIDE OF MEDLINE

On the flip side however, there are instances when the MEDLINE search fails to provide sought-for information. Sometimes, of course, the information simply does not exist anywhere in the published literature. But in many cases the search was ineffective because the searcher did
not understand how to use the Medical Subject Headings (MeSH) vocabulary that NLM uses to index journal articles. Of particular concern are inadequate searches in which the needed information does exist in the file but is not retrieved. In such cases it must be acknowledged that “consulting” MEDLINE can be misleading and could actually cause harm.

**ADVANTAGES OF OVID MEDLINE**

OVID MEDLINE was recently introduced by the Penn Libraries to provide search software that allows sophisticated and unsophisticated MEDLINE users alike enhanced access to important medical information.

A major improvement achieved by the OVID search system, produced by CDP Technologies, Inc., is the ability to “map” natural language to appropriate MeSH terms. Mapping automatically finds the correct NLM index terms and provides a list of subheadings for search refinement. For example, if someone is searching for information on “Batten’s disease,” the system automatically translates this eponym into MeSH language: “neuronal ceroid-lipofuscinosis.” Through the use of appropriate subheadings, the search can be more narrowly focused on only those articles specifically dealing with brain pathology or retinal abnormalities, for example. This is “precision” in searching. Precision achieves the highest proportion of relevant to irrelevant citations.

Once a MeSH heading is identified, the system displays broader and narrower subject headings taken from NLM’s hierarchically arranged thesaurus of indexing language—allowing a user to see all MeSH terms that will be retrieved through an “explosion” command. Thus, in addition to precision, OVID software leads a searcher to the appropriate expansion of search terms to achieve a comprehensive result that maximizes the retrieval of all, or nearly all, relevant citations. To follow through with our earlier example of a search on “Batten’s disease,” the more inclusive MeSH term is “lipoidosis,” which yields many more citations than “neuronal ceroid-lipofuscinosis.” This broad approach would be useful to anyone interested in a comprehensive review of all related conditions that share the characteristic of some disturbance of lipid metabolism with an abnormal deposit of lipids in the cells.

From such examples it should be evident that OVID software includes features designed to help even the novice user retrieve information matching the specific need, whether that need is for a few tightly focused citations or a comprehensive yield of “all there is” on a given topic. The level of assistance provided by the OVID system means that the searcher need not be an expert on MeSH to retrieve appropriate citations. This is critically important to meet the professional requirements of medical practitioners and researchers. It is no less important to the undergraduate student pulling together an A+ term paper,

but at least neither life nor limb depends on the result!

**THE TRADEOFF**

It may be clear at this point why the Library decided to change to the new OVID version of MEDLINE. From all those who previewed our new system we heard but one comment: “Hallelujah! When will we have it?” Indeed, OVID is widely judged to be a superior interface for both clinicians and researchers, and is preferred increasingly by academic medical centers across the nation.

It should be obvious that, while easy, the previous search system was seriously inadequate. Moving away from it we lose the convenience of one search protocol across all the Library’s datafiles, but we gain significantly in this tradeoff. The strength of the large MEDLINE database is achieved principally through its hierarchically arranged, controlled MeSH vocabulary. OVID software builds on that strength. Our previous MEDLINE search software threw it away, depending instead exclusively on simple keyword/boolean searches.

Nevertheless, for those who prefer the familiar it is still an option to enter a boolean search phrase (e.g., nursing and canada and ethics) in the subject line. OVID software automatically recognizes such a phrase as a text word search and provides the searcher with the results. This should meet the needs of the occasional MEDLINE user who is used to searching Franklin and other PennData files; however, it is not the preferred MEDLINE strategy for any purpose.
SELECTED TITLES FROM THE OVID DATABASE

The new OVID allows multiple options for displaying, printing, and downloading searches.

In addition to precision and comprehensiveness in searching MEDLINE, with the move to OVID we are gaining access to the CINAHL/Nursing database, which has been made available to the Penn community online for the first time. For a more complete treatment of this unique information resource, see the brief introductory piece on CINAHL in the March issue of Penn Printout, pages 16-18. In that article the Library promised to deliver CINAHL in Fall '94, and we stayed on schedule. However, examples presented in March are based on the previous search software and do not represent the comprehensive search capabilities of OVID CINAHL.

For both MEDLINE and CINAHL we are now offering access to the full chronological span of the files, 1966 and 1983 forward, respectively. Our earlier version of MEDLINE was limited to citations from 1985 on and included only English language citations. With UNIX-based OVID, hardware capacity is no longer a constraint, and we are able to add citations to foreign-language literature—many of which include abstracts in English. CINAHL/Nursing, too, will include citations to foreign-language literature as articles are indexed for the file by the producers.

Those of you who suffered with us when we introduced our earlier MEDLINE will be relieved to know that OVID allows multiple options for displaying, printing, and downloading searches. For example, all citation fields can be searched and displayed, printed, and downloaded selectively. Downloading options include e-mail, FTP (for some users), screen capture, and Kermit.

One temporary loss is the link-to-holdings feature of our earlier version of MEDLINE that, as part of an integrated system with our catalog, linked directly to Franklin and allowed a searcher not only to determine whether or not we held a given title but also where it was held and whether or not it was available or signed out. In the case of medical journals, which must be used in the Library, circulation information is of little value. But it was useful to know whether or not a needed journal issue would be found on the shelf, was out to the bindery, or was known to be missing. Early on in the implementation of OVID we expect to provide users with title-level information linked to citations; that is, it will be easy to check whether or not we subscribe to a given title indexed in MEDLINE and identified in your search results. It is expected that with current technical developments we will soon be able to reestablish the direct link between the MEDLINE and CINAHL datafiles and our online catalog.

Taken altogether, the unique features of OVID search software allow literature searches that are significantly improved—at once allowing for more comprehensive and better focused results. The full power of the databases is utilized through the online subject thesauri that allow automatic mapping from common language terms to preferred subject headings specific to each database. Hierarchical “trees” suggest broader and narrower subject headings, and permuted term indexes show all occurrences of words or phrases within specific subject headings. There are also extensive, context-sensitive help features available online. This allows searchers the confidence that they are working with a precision tool designed to deliver exactly what is needed. For clinicians this means less worry that a new treatment protocol will be missed or that diagnosis of a rarely seen condition will be misdirected. For any researcher OVID provides a better result.

Training opportunities

To take full advantage of the new potentials, everyone is encouraged to sign up for training offered in the Library (see page 20). At the very least plan to pick up new brochures prepared by Library staff as aids to your searching strategies. It might be argued that OVID is so user-friendly that no instruction is necessary, but we all know better. One can also argue that the best way to learn any language is to visit the country where it is spoken, but those who’ve tried this will report that even rudimentary instruction in the grammar and vocabulary always provides a head start. So sign up for our classes, and be prepared for a new and better MEDLINE experience!

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