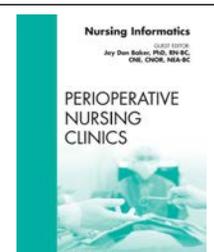


Cyber Diving: Information Searching

Helen Hough, MLS, BS, BA

This manuscript version
is a rendition of
the author's post review copy.
The official version of record
is available at the
Perioperative Nursing Clinics site.



KEYWORDS

- Web pages • Information resource evaluation • Information management • Internet
- Decision making

KEY POINTS

- Formal analysis of a research problem can help structure a literature search.
- Different Internet search engines have many useful features for focusing the search.
- Understanding the provenance of documents also focuses the search.
- Search engines and literature databases use special commands called Boolean operators to combine search terms.
- Using these techniques when searching in Internet search engines, Google Scholar, and specialized databases including PubMed, CINAHL, and PsycInfo yields excellent results.
- In addition to immediate full-text or purchase there are several other options that perioperative nurses can use to obtain discovered resources.

As health care providers, we want to be able to provide the best care to our patients. Occasionally we observe that some caring process may not be the most effective it could or should be. Some of these processes are direct patient interactions, disease prevention, and intervention, but the idea of best care can be related to the timeliness and cost of that care. Best care is based on evidence indicating that the care provided is the best that can be done and that it is done at the most appropriate level. This evidence is derived through research and expert consensus efforts. The evidence is then documented and published so it can be disseminated to the health care providers who need it. Continuing education is one way of renewing our knowledge and discovering some of the most common methods of providing quality care. When questions arise related to a specific local provision of care, a person may need to create the time to investigate these perceived problems. Sharing the solutions through inservice, teaching, and writing for publication can also benefit others outside of an immediate practice and thereby improve care for all.

The author has nothing to disclose.

Science and Engineering Library, University of Texas at Arlington, PO Box 19497, B03 Nedderman Hall, 416 Yates Street, Arlington, TX 76019, USA
E-mail address: hough@uta.edu

Perioperative Nursing Clinics 7 (2012) 177–188
doi:10.1016/j.cpen.2012.02.009
© 2012 Elsevier Inc. All rights reserved.

periopnursing.theclinics.com

A literature search is done when information is needed to properly address a perceived problem. The literature search may be easy because something needs to be confirmed, for example, looking up a laboratory value to confirm that the patient's test result is too high or too low. Sometimes the problem is more complex and finding the answer is not as easy as using a standard reference tool. A simple literature search can occasionally easily find a resource because a more complex problem has already been addressed by the work done by others and has been made freely available.

Sometimes a fee is required to access a discovered resource. Sometimes the information found was developed long enough ago that additional information has rendered the previous response inappropriate. Even if the information is timely something about the study setting or patient group may not be relevant to the current situation. In these cases, we discover that we may have a new or specific question that still needs to be investigated. The literature review can then provide guidance related to the level of knowledge deficit and the amount of new information to be developed. That said, many people find that the discovery process will take much longer than expected. As an example, how long does it really take to confirm the outside levels of a lab value? Whereas it may take a second or two to actually find the value, the real time spent should include the time spent finding the right phone number of the person who might have the data or locating the document or program containing the data. Even the time to walk to where the resource should be considered. Fortunately, time locating the resource may be reduced by asking a colleague who might know the location of the document. For a more complex problem requiring a complex literature review, guess an amount of time you are willing to spend, then assume it will take four times longer. Often how the problem is framed may cause delays, or other issues may arise in the search process. Discuss the problem with a couple of colleagues for ideas on how to frame the question, set up the literature research protocol, and then start searching. If the total search takes less than the projected extended period, feel free to be proud of the skills you exhibited.

A good literature review can be started without detailed analysis of the resources located. Once appropriate and sufficient material is identified, then issues related to obtaining the best subset of these resources can be considering costs associated with access to the discovered materials. The search process itself is also independent of a considered.

HOW TO SEARCH

A high quality literature search requires several kinds of problem-solving behaviors to successfully identify, locate, and use the materials. Searching is a fairly linear sequence of problem solving because the literature is heavily computerized. Computer programs can only retrieve what is related to what is entered; these programs do not guess what the user wants or means. The process begins with the analysis of the problem and developing query terminology that will be understandable to the relevant computer systems. Taking the time at the very beginning to set up the question for the computer will speed the search process. During the search, the search strategy may need to be adjusted based on information discovered during the earlier part of the search. Documenting the search strategy and steps is critical because search reiteration with new or alternate terms is reasonable and should be expected. Documentation of efforts already completed reduces unnecessary duplication.

Initially gather more information than absolutely necessary. After the search is mostly completed, analyze the gathered materials to select the most appropriate. The mechanical process of obtaining the documents can be done partly during the search process and partly after the search is completed. The final, and most fulfilling, part of the literature review should be the how the materials are used.

FRAME THE QUESTION

Most health care problems can be translated into a clinical question and then a research question. I often explain that the research question is similar to a diagnostic investigation. The diagnostician takes a history, which leads to a guess at the reasons for the problem and then proceeds to determine if this guess is correct. The evidence provided by laboratory tests will determine the correct diagnosis. The diagnosis then informs the clinician of appropriate treatments for the problem. The question format allows us to better break the issue into the components needed to be investigated. The patient's health care problem of a fever turns into the common clinical question of, "Why does the patient have this fever," and the associated diagnostic (research) question might be, "Does this patient have the flu." The subsequent tests are a linear process of discovering if there are indications of a viral infection. Some tests may even be done in order to eliminate a bacterial infection. A literature review is similar; there is a clinical question, there is a research question, and there are various investigative tools in order to develop a diagnosis and eventually the correct treatment.

The example used throughout this discussion begins with the problem of the cost of cleaning scrubs. Of course, a quick response could be to simply change the process from having the hospital send the scrubs out to be cleaned to requiring all personnel to provide their own scrubs. As tempting as this thought may be, there may be a clinical problem of infection control. The clinical problem could be, "Is there a difference in cost and efficacy when the scrubs are cleaned at home as opposed to when the scrubs are cleaned by hospital vendors." Breaking this clinical question into its conceptual components is the next step in the analysis of the question.

DIVIDE THE QUESTION

Divide the question into conceptual units. Think about the concepts within the question. The computer systems we use do not understand the meaning of a full sentence; the programs are responding to the sequence of words. Most computer systems will attempt to identify materials that match all of the words used in a query. If too many words or terms are used, the computer system will have difficulty in locating materials. Computer systems do not usually understand prepositions; they only match letters and do not understand the idea of terms like *before*, *under*, and *for*. They often also have difficulty responding to verbs. The most effective response from a query is achieved by forming the query into enough words that correspond to the question but no more. Effective search phrases are not in sentence form but are rather in phrases that describe the concepts within the question. Based on the author's experience, most research questions are composed of at least three concepts. Often these concepts can be in the form of nouns. There are several concepts within the question of cost and efficacy of scrub cleaning methods. The focus of the question is specifically the hospital clothing, the *scrubs*. Another concept is *cleaning*, which can be set as the noun, *clean*. Setting aside the cost of cleaning, perhaps a more important concept within this question is the idea of *efficacy*, or *effective*. Additional concepts are *home* and *vendors*, although if we think about it, who else would be cleaning scrubs? If there are only two alternatives, perhaps it is not necessary to include these concepts in the first round of the search. On initial analysis there are three major concepts: (a) scrubs, (b) clean, and (c) efficacy.

This technique is similar to PICO, a framework in evidence-based health care and used by health care researchers and practitioners.¹ PICO was developed as a method to analyze clinical questions for effective, efficient literature retrieval. PICO emphasizes

Table 1			
PICO documentation			
Clinical Problem: Cost of cleaning scrubs			
Research Question: Is there a difference in cost and efficacy when the scrubs are cleaned at home as opposed to when the scrubs are cleaned by hospital vendors			
	Population	Intervention	Outcome
	<i>Scrubs</i>	<i>Cleaning</i>	<i>Efficacy</i>
Alternative	Clothing	Laundering/laundered	Contamination
Terms/Synonyms	Uniforms	Washing	Microorganisms Infection control

Abbreviation: PICO, population, intervention, comparison, outcome.

patient problem or population (P), intervention (I), comparison (C), and outcome(s) (O) as conceptual units. PICO and PIO (patient, intervention and outcome) have been standards for structuring inquiries for evidence-based practice since the early 1990s. These methods became standards because they work well. Effective, experienced literature searchers tend to incorporate the PICO structure without conscious effort. Additional insights about the PICO method can be found in current books about evidence-based medicine and online from medical libraries.

SYNONYMS WITHIN THE CONCEPTS

Our question does not have a specific patient group but does have a population, scrubs, to which an intervention, cleaning, will be applied. The question is also examining the outcome of efficacy, so PICO/PIO is a reasonable framework (**Table 1**). We can use these three words in an Internet search and there will be Web pages that display. A simple search of “efficacy clean scrubs” in Google yields over 500,000 records; Yahoo, over 130,000; and Bing, over 125,000 records. Many of those Web pages will be about vendors who want the hospital cleaning business. Others are about surgical cleaning methods. Reviewing and discarding all the irrelevant materials is not an effective use of time. In addition, there may be alternative terms that are used by the authors of the preferred type of literature not yet discovered. A little rumination may also lead to the conclusion that scrubs are in the class of clothing. A brief examination of chanced-upon relevant news sources will yield useful synonyms.²

Using an Internet search engine is a fine way to start and may or may not be the best way to end. Testing the discovered synonyms in a preferred search engine will help in determining when to stop. “Clothing laundered contamination” as an alternate search phrase yields interesting results (**Table 2**), and the suggestion of adding a modifier, hospital, is appropriate.

HOW INTERNET SEARCH ENGINES IDENTIFY RESOURCES

When the modifier is added to an Internet search query, the number of search results increases relative to the unmodified search. This is because most Internet search engines first retrieve results that have all the terms most often, then the documents that have the terms near each other, followed by documents that have some of the terms but not all. Consequently, the more words one uses with an Internet search engine, the larger and less focused the retrieval becomes. Examining the search engine’s help pages will provide information about the

Table 2			
Internet search results			
Exact Strategy	Internet Search Engine	Approximate Records	Observations
Is there a difference in cost and efficacy when the scrubs are cleaned at home as opposed to when the scrubs are cleaned by hospital vendors?	Google	<1,000,000	Imprecise: hand scrubs, vacuum cleaners, etc.
	Yahoo	190,000	Imprecise: hospital focused but still imprecise (VBACs, cochlear implants, blogs)
	Bing	171,000	Similar to Yahoo results
Clothing Laundered Contamination	Google	1,500,000	Includes pesticide or asbestos contamination
	Yahoo	103,000	Includes pesticide contamination
	Bing	68,000	Hospital-focused results, many commercial sites
Hospital Clothing Laundered Contamination	Google	2,700,000	Hospital-focused results, many educational and commercial sites
	Yahoo	73,000	Hospital-focused results, many commercial sites
	Bing	70,000	Hospital-focused results, many commercial sites
+Hospital +Clothing +Laundered +Contamination ^a	Google (+)	145,000	Hospital-focused results, many educational and commercial sites
	Yahoo (+)	23,000	Hospital-focused results, many commercial sites
	Bing	22,400	Hospital-focused results, many commercial sites

^a The + immediately before a search term indicates the term MUST be included in each of the retrieved items.

techniques that can be used in that engine to ensure all terms are included and thus focus the results.

ADVANCED SEARCH FEATURES

Using the advanced features of the search engine can help to organize the search so the synonyms are used effectively. The three concepts now have three or four synonyms each and possible setting modifiers of hospital **OR** clinical (**Table 3**).

Table 3		
PIO results		
Population	Intervention	Outcome
(a) Hospital OR Clinical	Cleaning OR Laundering OR	Efficacy OR Contamination OR
(b) Scrubs OR Clothing OR Uniforms	Washing	Microorganisms OR Infection control

Abbreviation: PIO, patient, intervention, outcome.

ORGANIZATIONS DISSEMINATING INFORMATION

Consider the kinds of organizations or agencies that might be addressing parts of the question. If raw data are needed, what agency collects these data, or would the data be likely from a research study? If the question has been studied, then would the results be published in journal literature? If the question is related to a standardized protocol or guideline, which organization or association would be interested in this kind of process? Using search engines' advanced search features to limit to organization or government Web sites is a simple matter of realizing and using the Domain Name System (DNS) conventions. Web addresses are composed of distinct parts and often look something like <http://xxx.yyyyyyy.zzz>. The third section after the two slashes can be used to identify the type of organization with that Web address.³ When the organization is an U.S. government agency, this ending can be .gov. If the Web site is part of a more general organization or association, the last component may be .org. US postsecondary educational institutions may use the ending .edu. Countries other than the United States will have an additional section identifying the country of origin. Use the search engine's advanced search features to search within a site or domain with an appropriate domain name ending, for example, a search in *Google* structured as *cleaning hospital clothing site:.gov* will locate material on US government Web sites that have the three words *cleaning*, *hospital*, and *clothing*.

LOCATING TYPES OF MATERIAL

With the number of Internet retrievals that can occur, also consider the kind of materials needed. Types of literature can include journal articles, reviews, systematic reviews, protocols, guidelines, standards, and many others. Professional associations and government agencies may produce useful reports. Many researchers are affiliated with colleges and universities. If data are needed, consider who collects these data. Some data are collected by government agencies including census, population health, and some health care coverage data. Other data are collected by associations, for example US hospital information may be collected by the American Hospital Association, and the American Nurses Association may aggregate data about nurses. Internet search engines have the ability to limit to government, organization, and educational sites if these sites have the Internet addresses that indicate the type of structure.

QUALITY OF INFORMATION

Another consideration is the quality of information needed. High quality information should to be used in developing a resolution to a high-impact problem. Evaluate online resources in a manner similar to evaluating any other kind of resource. First, determine who wrote it or what agency sponsored it. Reliability of the information

provider is key. Many businesses will include, as part of their marketing, newsletters and information brochures. These newsletters and brochures can be helpful when the information does not need to be well-documented or is used to provide leads to discovering more about how to find what is needed. Depending on the quality of the writing, these types of resources can also provide overviews of the problem under consideration, terminology used when discussing the issues, and names of people and organizations that investigate aspects of the problem.

Infection control is probably foremost when considering our question of the efficacy of different methods of cleaning hospital uniforms. Thinking broadly, various government agencies and associations are associated with quality information, such as The US Center for Medicaid and Medicare, the US Centers for Disease Control and Prevention, European Centre for Disease Prevention and Control, the Association for Professionals in Infection Control and Epidemiology, the UK National Institute for Health and Clinical Excellence, and so forth. Research grants from these organizations also fund studies that are published in reputable journals.

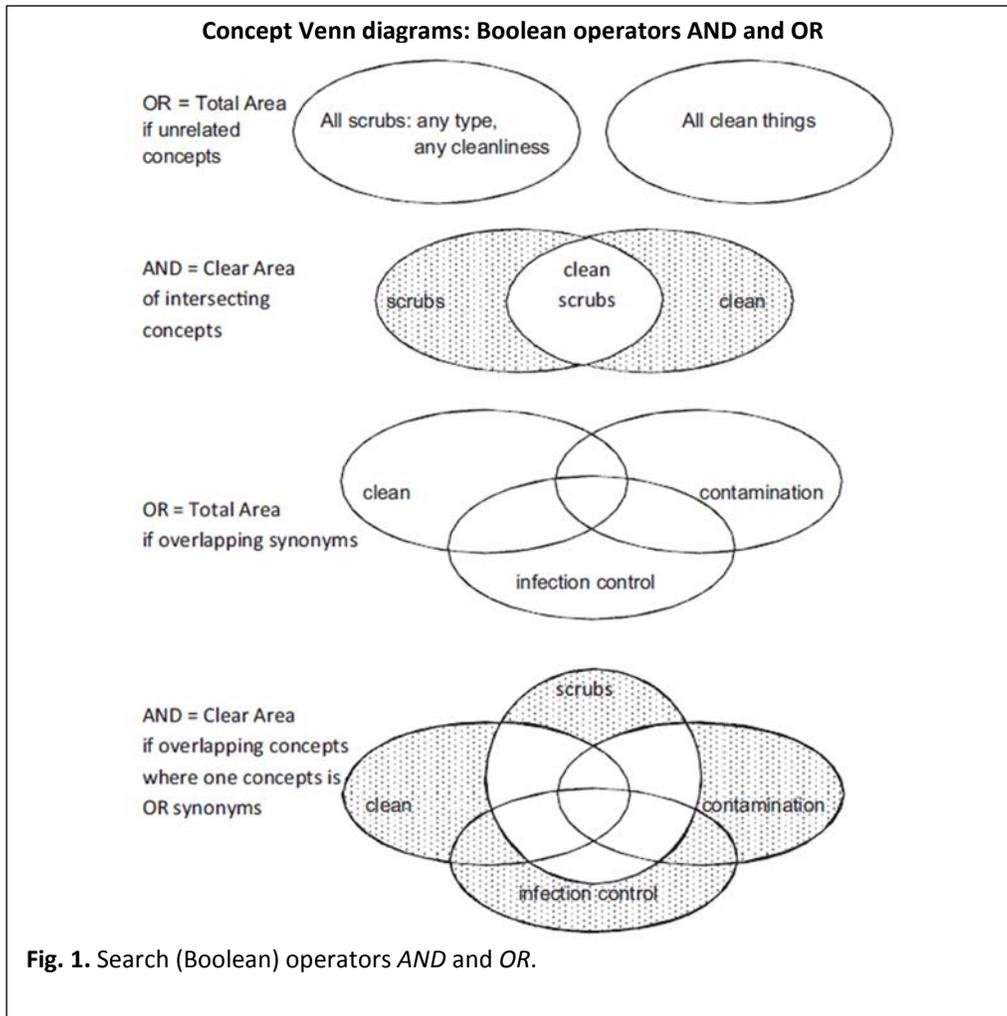
Thinking broadly about where the needed information may be located allows quick review of sources that may not have the precise focus desired but may provide hints on how to proceed. Colleagues may know of approachable experts who are studying a similar issue. Just as colleagues can be consulted, the references used in a highly related work can also be traced. Protocols found via the US National Guideline Clearinghouse⁴ can be used as leads to more focused literature. Systematic reviews from the journal literature, the Cochrane Library, and the Joanna Briggs Institute can be useful for discovering who is publishing within the same topic area.

TOOLS

The Internet can be searched broadly by using one of a variety of freely available search engines. These include *Google*,⁵ *Yahoo*,⁶ and *Bing*,⁷ as well as others. A quick decision on the best search engine to use can be made by repeating the same simple query with a couple of these different Internet search engines and spending a few minutes quickly examining the quantity and quality of the results. Once this decision is made, a quick investigation of the chosen engine's advanced search features will help formulate a precision search. A brief example of how to use a concept's synonyms has already been provided. The search operator **AND** links concepts, and the operator **OR** selects among synonyms. A visual representation of the idea of **AND** and **OR** is shown in **Fig. 1** with the use of Venn diagrams. Most Internet search engines assume an **AND** between any two words unless some other operator is provided.

Using a general search engine may not be efficient if a scholarly review of the literature is needed. If particular types of resources are needed, go immediately to a database that collects information about that kind of resource (books or journal articles). The goal at this point is to discover if an appropriate resource exists. It does not matter if a search engine can provide full text with a click or the database has the resource immediately available. A resource can be obtained if it is known to exist.

Good Web sites for locating books include *Google Books*,⁸ *Amazon*,⁹ the library book locator *WorldCat*,¹⁰ and bookseller sites. *Google Books* and *Amazon* frequently have book chapters or parts of chapters free for viewing on the Internet. Sometimes these chapters provide excellent leads to researchers and research trends. *WorldCat* is particularly useful for people who have access to a variety of libraries and are not willing to purchase the identified materials. Once a resource is identified within *WorldCat*, a list of libraries by distance from a specific zip code can be displayed. Many libraries including public libraries have a service called interlibrary loan, where



one library borrows a book from another library for the benefit of a client. Often this service has a minimal cost or is free. Each library system can provide details about an available interlibrary loan service at a library and who may use it.

Journal literature and other research resources can be located by using databases, which aggregate information about these kinds of resources. A commonly known one is produced and distributed by the US National Library of Medicine, *PubMed*.¹¹ It is one of the most scholarly medical databases, covers all fields of medicine from AIDS to zoology, and includes information about biomedicine, clinical care, research, and health care administration literature. *PubMed* can be easily searched using general keywords, but it also has a standardized vocabulary, which is used to describe its materials. Although not full-text itself, it can provide links to where the full text can be obtained, usually the publisher's site. People associated with many libraries and research institutions have access to additional subscription databases including *CINAHL*, *PsycINFO*, *Biological Abstracts*, and the systematic review databases, among others. *CINAHL*, an abbreviation for what used to be the Cumulative Index to Nursing and Allied Health Literature, is designed for nurses and people in related fields and describes nursing and related literature. *PsycINFO* is a database designed for scholars interested in psychology and psychiatry literature. *Biological Abstracts* covers materials focused on biology, zoology, genetics, and so on. All of these databases describe both unique materials as well as those that may be included in other databases. The question devised by the searcher dictates which

database should be used first. If the question is generally medical, *PubMed* is an excellent first resource. If the question is nursing-focused, *CINAHL* may be a better first choice. Consult the librarian at a specific institution for a selection of appropriate databases available at that institution. If the searcher selects a particular database or search engine simply based on familiarity, it may not be the best tool to use.

These subscription databases often focus on materials related to specific disciplines of study. These specialized databases may include standardized vocabulary useful to people in these disciplines. Searches within databases like *PubMed* and the subscription databases are examining the description of the materials and not the full text of materials, even though the database may include full text or links to the full text. Sometimes searcher-generated keywords are excellent choices to use as search terms. Sometimes these keywords need to be supplemented with the database specific standardized search terms. Good literature databases will have well-structured thesauri, and terms will have been assigned to specific articles by skilled people, called indexers, who have read the articles. These terms may be common across databases or limited to specific databases; in either case, observing, using, and recording these terms can add precision to any given search.

Unlike general Internet search engines, subscription databases usually only identify materials that include all search terms used and only when the search phrase exactly matches those in the database. If a searcher enters a search phrase that includes a term not used within a database, nothing is retrieved. Using an uncommon or nonstandard term or an abbreviation will also reduce the quality of the results. Many people attempt to adjust these poor results by adding an additional term, but even less will then be retrieved because all elements of the search are still unfulfillable. Using operators like **AND** and **OR** and combining searcher keywords with the standardized vocabulary usually yields the most robust results. Planning a search strategy and reading some of the help pages can save time in the long run. Being willing to quickly modify a strategy with terminology, specifically standardized vocabulary, is an effective method of obtaining the best results.

*Google Scholar*¹² is an excellent resource to identify journal articles, books, research reports, and other academic or research-related materials. Its basic search is similar to a general Internet search engine, but the results are limited to relatively scholarly materials. People who are searching *Google Scholar* can also use its advanced search features to limit to specific authors, dates, and broad subject categories, even within specific journals. Its Preferences options include the ability for the searcher to limit to specific languages, limit to types of materials, permit downloading to appropriate bibliographic management software, and identify specific libraries that may have the identified materials. The advantage of *Google Scholar* is that the entire full text can be searched for specific keywords. Its disadvantage is that the keywords may identify material of little relevancy.

As any good searcher knows, checking the references in the back of a resource can lead to additional useful resources. Of course, these resources are older than the item in hand because that author had to read these older works in order to write the article or book. There are tools that can identify resources that have cited a specific document, thereby coming forward in time from the known item. These cited reference searches, based on high quality known works, are much like consulting experts in the field and discovering who else is interested in the same areas and what has been written about them. Most authors of related studies will refer back to a small set of similar or seminal studies, and these studies are commonly cited across the related studies.

Early cited reference searching was done by using the print *Science Citation Index* (SCI) and its related indices.¹³ This set of related citation-focused indexes is now distributed electronically as the subscription database, *ISI Web of Knowledge* (WOK). Many academic libraries have access to some or all the covered years. Among other things, WOK analyzes and identifies the relationship between studies based on the common citations between them. It includes the citation information from articles within a relatively small set of high quality journals.

Many other subscription databases, including *CINAHL* and *PsycINFO*, have a cited reference feature. This feature within each of the databases is limited to the references used in articles also within the database. This limitation can be very good because it results in identifying resources of interest to the database developer's targeted audience. The disadvantage is that only the materials selected by the database developer are identified. If the full text can be searched, reference searching can also be done by key phrase searching. Care has to be taken because there are several different citation styles, and searching for an author's full first name may not yield those items where the author's initials have been used as part of a citation.

Because full text should include the references within the text, cited reference searching is relatively easy to do in the broader digital environment with the aforementioned care. However, *Google Scholar* also has a *Cited By* search feature that allows the searcher more leeway. After a search is completed, below each relevant record is a *Cited By* link. Clicking this link will display those items that include the initial item as a cited reference. Precision can be increased by searching for specific keywords within this list by using the check box labeled "Search within articles citing . . ."

OBTAINING NEEDED DOCUMENTS

The ease of Internet searching when a document displays with a click of a link is wonderful. Care must be taken when looking at these documents. Some free documents do not contain reliable information. The time and effort of developing reliable resources is expensive. Organizations also incur continuing costs when maintaining access to these resources. As a result of these costs, many of the reliable resources will require a purchase fee. Fortunately, many authors and organizations, because of their concern for scholarship and the transmission of knowledge, have adopted the Open Access philosophy and have work posted in their institutional repositories. These repositories are usually associated with educational or government institutions and are Internet-accessible. In an Internet search, checking alternate listings for the same document may be worthwhile. The official form of a published article, together with any online enhancements, may still be the publisher's Web site, but some pre- or postreview manuscripts may be available on other sites. The contract between the author and the publisher determines if an author can post a copy and, when possible, which version.

OPTIONS BESIDES PAYING ONLINE

There are additional options if instant access is not required. Many people are unaware of the various services that exist to support evidence-based health care. Some of these opportunities and services are available through colleagues, professional organizations, and libraries. Research services may include access to collections that already contain needed documents, access to subscription services with full-text resources, or ability to order materials at a lower cost than independent online purchases.

Networking with colleagues is important. The support from peers, from working through ideas to finding materials, is valuable. Professional nurses and scholars will subscribe to professional journals and other services. A hospital nurse can ask colleagues interested in the field of study if they have a specific document. Beyond the hospital, nurses may find useful information from their professional organizations. Many organizations also have libraries and other support services for their members. An examination of these organizations' Web sites or a phone call may lead to many valuable resources.

Just as health care is provided in more places than only hospitals, not all hospitals provide the same services, and more than just nurses and doctors work in hospitals, so also information is available through more than just the Internet. Many hospital networks also have good libraries and library services. These institutional libraries exist to support the efforts of the people who work for the institution. The librarians and other library staff members can provide valuable assistance in the research processes. Many resources may already be available to the perioperative nurse who calls or visits the library. If the hospital is affiliated with a college, university, or other educational institution, the staff and services of the institutional library can be supportive of the nurse. Local public libraries are also very useful. Public libraries exist to support the needs of the members of the community. The members of the community include residents and businesses. Services in these different kinds of libraries can include assistance in the question development and search strategy phases. Different databases and support in using these resources may be available. Collections of useful resources and methods of obtaining additional resources are among the many services libraries provide.

The US National Library of Medicine (NLM) is the largest medical library in the world. The mission of this library is to enable biomedical research, support health care and public health, and promote healthy behavior.¹⁴ Among many other things, the NLM is the creator of *PubMed*, the medical database available worldwide. American health care providers, through the National Network of Libraries of Medicine, have access to NLM resources and more (<http://nml.gov/>). Many other countries have similar national medical libraries and library systems that assist their health care providers and support the health of their citizens.

SUMMARY

The Internet provides easy access to a lot of information. Although access is easy, finding the most appropriate information in a timely fashion can be difficult. Analyzing the research question is the first step in finding information effectively and efficiently. The search process is a discovery process, and one of the last steps may be actually retrieving identified resources. The identified resources may be available online or through a variety of library and other information services.

A complex literature search may require several different combinations of thinking styles and search iterations to retrieve substantive materials. There are many ways to discover appropriate information, from using keywords and standardized terminology to using the references within the documents as part of the discovery process. Understanding the differences between various Internet search engines and being aware of their advanced search features is useful. Specialized techniques can be used to create precise search queries. Search precision can also be increased by using subject-focused databases, some of which are available over the Internet and others through library support services.

As with any skill, practice and familiarity will improve search efficacy. When stumbling through a literature search, it may be comforting to remember that no one

will die from these stumbles, nor will the Internet accidentally break. When asked, colleagues and librarians can help both novice and expert searchers at any point of the literature search processes. This literature provides the opportunities for evidence-based practice. Perioperative registered nurses who engage in evidence-based practice improve the health care provided to many people. Nurses who share their knowledge of searching and locating this evidence empower other providers to improve health care even more.

REFERENCES

1. Richardson WS, Wilson MC, Nishikawa J, et al. The well-built clinical question: a key to evidence-based decisions. *ACP J Club* 1995;123:A12–13.
 2. Hospital scrubs are a dangerous fashion statement. *Infection Control Today* 2008, December 3. Available at: <http://www.infectioncontroltoday.com/news/2008/12/hospital-scrubs-are-a-dangerous-fashion-statement.aspx>. Accessed February 19, 2012.
 3. Internet Corporation for Assigned Names and Numbers. Root Zone Database. Available at: <http://www.iana.org/domains/root/db/>. Accessed February 19, 2012.
 4. Agency for Healthcare Research and Quality. National Guideline Clearinghouse. Available at: <http://www.guideline.gov/>. Accessed February 19, 2012.
 5. Google [search engine]. Available at: <http://www.google.com>. Accessed February 19, 2012.
 6. Yahoo [search engine]. Available at: <http://www.yahoo.com>. Accessed February 19, 2012.
 7. Bing [search engine]. Available at: <http://www.bing.com>. Accessed February 19, 2012.
 8. Google. Google Books [search engine books; includes many excerpts and full text]. Available at: <http://www.google.com/books>. Accessed February 19, 2012.
 9. Amazon [merchandise distributor]. Available at: <http://amazon.com>. Accessed February 19, 2012.
 10. OCLC Online Computer Library Center, Inc. WorldCat [aggregated library catalogs]. Available at: <http://www.worldcat.org>. Accessed February 19, 2012.
 11. US National Library of Medicine. PubMed [biomedical literature database]. Available at: <http://www.pubmed.gov>. Accessed February 19, 2012.
 12. Google. Google Scholar [search engine for scholarly literature; focuses on articles and patents but may identify research reports, books, and more]. Available at: <http://www.google.com/books>. Accessed February 19, 2012.
 13. Thomson Reuters. History of citation indexing. Available at: http://thomsonreuters.com/products_services/science/free/essays/history_of_citation_indexing/. Accessed February 19, 2012.
 14. US National Library of Medicine. The National Library of Medicine (Fact Sheet). Available at: <http://www.nlm.nih.gov/pubs/factsheets/nlm.html>. Accessed February 19, 2012.
-