

Evaluating Information Sources for Complementary & Alternative Health Care

Widespread use of complementary and alternative health care in the United States presents the clinician with a new—and perhaps daunting—responsibility: to become informed about the appropriateness, effectiveness, and safety of a staggering number of healing practices that are largely unfamiliar. While research data on complementary and alternative therapies are plentiful, they are not always found in the established American medical journals, nor is evidence necessarily presented according to the conventions of standard medical research.

Conventional practitioners must not only familiarize themselves with new treatments but with new information sources as well. Significantly, many of their patients use these same sources to research their own illnesses and treatment options and rely on their conventional providers to assess and interpret the information gathered. To address the growing need, this publication offers both general and specific guidelines for identifying and evaluating information with a focus on complementary and alternative health care.

sources of information on CAM products & modalities

The volume of medical information published annually is overwhelming for any individual. Every year, 2 million or more new articles and over 17,000 books appear. The rate of growth of this body of literature continues to escalate (Barnes, Abbot, Harkness, & Ernst, 1999). While the number of research articles about conventional medicine has grown steadily in the conventional literature, the number concerning CAM research has not. The outlets for information about CAM research—many of them published in languages other than English—are generally less familiar and accessible to the average conventional clinician. (See Table

WHAT'S IN A NAME? UNDERSTANDING "CAM"

The National Center for Complementary and Alternative Medicine (NCCAM), at the National Institutes of Health, defines CAM as “a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine.” The list of what is considered to be CAM changes continually, as some practices are adopted into conventional care and as new approaches and therapies emerge.

For the purposes of this publication, it may be helpful to review NCCAM's current definitions for commonly used terms:

- *Complementary therapies* are used as an *adjunct to* conventional therapies. An example of a complementary therapy is the use of therapeutic touch by nursing staff to lessen a patient's discomfort after surgery.
- *Alternative therapies* are used *in place of* conventional therapies. Examples include the use of diet rather than surgery or chemotherapy for cancer; and the use of saw palmetto instead of surgery for prostatic hypertrophy.
- *Integrative health care* combines conventional and CAM therapies for which there is some high-quality, scientific evidence of safety and effectiveness.

TABLE 1
ENGLISH LANGUAGE CAM JOURNALS

Prior to publication of study results, the review process by experts or peers is imperative and is becoming more frequent in the CAM arena. Peer-reviewed journals and non-peer-reviewed journals on CAM include:

PEER-REVIEWED JOURNALS IN ENGLISH:

Alternative Medicine Review †(P,O)
 Alternative Therapies in Health and Medicine †(P)
 American Journal of Chinese Medicine †(O)
 Australian Journal of Medical Herbalism
 Australian Traditional-Medicine Society Journal
 British Journal of Phytotherapy
 Complementary Health Practice Review † (P,O)
 Complementary Therapies in Medicine (UK)
 Complementary Therapies in Nursing and Midwifery † (P)
 European Journal of Herbal Medicine
 Fitoterapia
 FACT (Focus on Alternative & Complementary Therapies)
 Forschende Komplementaermedizin und Klassische Naturheilkunde/Research in Complementary and Natural Classical Medicine
 Journal of Alternative and Complementary Medicine † (P,O)
 Journal of Ethnopharmacology † (P,O)
 Journal of Herbal Pharmacotherapy
 Journal of Interprofessional Care † (O)
 Journal of Manipulative and Physiological Therapeutics † (P)
 Journal of the American Osteopathic Association † (P)
 Phytomedicine: International Journal of Phytotherapy and Phytopharmacology † (O)
 Planta Medica Journal of Medicinal Plant Research † (P)

NON-PEER-REVIEWED JOURNALS IN ENGLISH:

Alternative and Complementary Therapies
 HealthInform: Essential Information on Alternative Health Care
 HerbalGram † (P)

† Available in UNC Libraries
 (P = available in print; O = available on-line.)

1 for a list of English-language journals devoted to CAM.)

Beyond print materials, the Internet has made available a rapidly growing and ever-changing array of information sources of varying reliability. The consumer—both lay and professional—must be able to evaluate the validity and value of the data presented—whether in conventional medicine or complementary and alternative care.

multiple sources of information

There are many good sources of information on complementary and alternative therapies, including journals, websites, databases, compendia, and books. Some resources are available in multiple formats; for example, the *Natural Medicines Comprehensive Database* is both a web-based database and a print compendium. Some resources are directed to the professional health care provider, such as the American Health Consultants' *Alternative Medicine Alert*, while others are meant for the consumer, including such newsletters as Andrew Weil's *Self Healing*. Websites often are divided into sections to address the respective needs of consumers and health professionals.

journal articles

Evidence reported in the journal literature comes in many forms, including case control studies, outcome studies, observational studies, and qualitative research. Randomized, double-blind, placebo-controlled trials—RCTs—are regarded as the most rigorous method of acquiring evidence of efficacy of treatment. Conventional medicine relies on the RCT to establish efficacy of pharmaceutical products and, increasingly, surgery. Such is not always the case with many complementary and alternative therapies. However, the relative lack of RCT evidence in complementary and alternative health care research should not be understood to mean that the CAM intervention is not effective. Nor is non-RCT evidence necessarily less credible.

Often, the case is simply that the research has not yet been done. In other instances, RCTs are not the most scientifically appropriate method for study-

ing a particular therapy or treatment protocol. This can be particularly true of many CAM therapies, which often involve individualized treatment protocols and multiple, interacting treatments. Studies of such therapies or assessments of quality-of-life outcomes do not lend themselves easily to RCT design. Other forms of research—such as case control studies, other outcome studies, and qualitative research—may provide more appropriately useful evidence of effectiveness of complementary and alternative therapies.

Further, RCTs are typically conducted in very controlled settings, so findings need to be interpreted through outcomes and post-market surveillance studies for clinical decision-making. In some cases, a perfectly sound study in terms of *internal* validity (i.e., rigor of the experiment) might have little relevance from a clinician's point of view in terms of real-world practice.

This applies equally to research on complementary and alternative therapies. A carefully controlled study of the efficacy of an herbal remedy might have little practical relevance for a practitioner who uses that herb only in conjunction with several other therapies, and who views the synergy of these therapies as a vital part of the treatment. Furthermore, it is likely that the CAM practitioner would use the herb differently with each individual patient—that is, in different amounts, with varying frequency, and in different combinations with other therapies. Thus, in some instances, a well-designed RCT study—which isolates and standardizes the herb's use—may be of little value in clinical practice.

evaluating CAM journal articles

In general, methods for assessing effectiveness are fundamentally no different for complementary and alternative therapies than for conventional treatments. The guidelines, summarized in Table 2 (*on page 3*), apply to reviewing any journal article.

However, there are specific CAM practices in which study design and interpretation of results may differ from that of conventional practice. For example, from the point of view of many CAM practices, conventional medical diagnosis does not yield a sufficiently

TABLE 2 EVALUATING THE QUALITY OF AN ARTICLE ON EFFECTIVENESS OF TREATMENT

Adapted from the *British Columbia Office of Health Technology Study Appraisal Form* (Guyatt, Sackett, & Cook, 1993)

Step One: Assess Its Relevance (to you)

- Is this a therapy you would use in practice?
- Would it be helpful to your patients?
- Are the subjects similar to those you see in practice?

Step Two: Assess Its Quality

Determine the quality of the research presented in an article using a systematic approach. Consider:

- Is there a clear statement of purpose?
- Is the research about “efficacy” (biological effect) or “effectiveness” (does it work in clinical practice)?
- Is the subject recruitment well defined?
- Is the research design
 - a controlled study?
 - randomized?
 - controlled for participant bias?
- Are the interventions
 - clearly described and replicable?
 - masked? Are outcomes also masked?
 - appropriate in terms of doses and regimens?
 - side effects clearly reported?
- Are the measures
 - valid?
 - practical?
 - well-described?
 - appropriate to the research question?
- Do the analyses
 - have sample size appropriate to show effect?
 - use statistical tests appropriately?
 - show clearly significant results?
- Are the outcomes
 - suitable to show treatment effects?
 - clinically relevant?

TABLE 3
QUESTIONS TO ASK IN IDENTIFYING A VALID ARTICLE
USING QUALITATIVE METHODS

- Was there a clear statement of the purpose of the research?
- Was the research adequately explained to the participants? Was their consent obtained?
- Was a qualitative method appropriate? (This method seeks to understand—usually in words rather than numbers—the experiences, interpretations, or motivations of individuals, usually involving direct observation and/or interaction with the subject(s).)
- Was sampling strategy appropriate to accomplish the purpose? Where did subjects come from? Who was selected and why? Was there an adequate sample? Why did some refuse to participate?
- Were data collected in a way that addressed the research issue? What setting was chosen and why? What data collection method was used and why? How were data recorded and why was a specific method chosen? Are rationales given for modifications during study?
- Was analysis repeated to ensure reliability? Was the data analysis sufficiently rigorous? How were themes/categories developed? Were the credibility and validity of the findings tested?
- Was there a clear statement of the findings?
- Did the researchers effectively link their findings to their conclusions? Was there adequate discussion of evidence for and against the authors' arguments?
- Were different sources of data within the study on the same issue/question compared (triangulation)?
- Were relationship effects between researchers and subjects adequately considered (e.g., bias, roles, influence over responses)?
- How relevant are the findings to clinical practice? Can the findings be generalized to a wider population?

*(adapted from Faculty Development Fellowship educational materials.
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homogeneous group of patients, so different diagnostic taxonomies should be considered. Patients classified by the conventional western diagnosis of “osteoarthritis,” for example, might be classified in over a dozen syndrome patterns by Traditional Chinese Medicine (TCM) physicians (e.g., “spleen deficiency with excessive dampness,” or “kidney deficiency with blood stagnation”).

A solution for this problem might involve a double-selection study design that would select patients according to both the western diagnosis and the alternative system being studied; thus, a selected group of osteoarthritis patients could be further subdivided into the different diagnostic subgroups from TCM's point of view.

Furthermore, CAM diagnostic and treatment typologies may be more idiosyncratic and far less standardized than conventional medicine. Because there are often considerable differences in training and conceptual models among CAM practitioners, the providers' practice styles should be well described in the research methods.

Evaluations of complementary and alternative care studies also should consider the adequacy and nature of the treatments used. Length of treatment can be an important consideration, as many complementary and alternative healing practices require more time than conventional

drug therapies to achieve benefits. And some—such as biofeedback, meditation, and hypnotherapy—involve a learning process by the patient and thus produce progressive improvements over time.

One also must take into account the complex, interactive nature of many complementary and alternative interventions. Often, treatments are so highly individualized as to result in unique treatment programs for each patient. In addition, multiple therapies are often employed, with the intent of influencing the human biological system as a whole. The success of these treatments is credited, at least in part, to the synergy of the components. Meditation and diet changes, for ex-

ample, work together with acupuncture and herbal remedies. The research should reflect these interrelationships when assessing treatment effectiveness (Lewith, Jonas, & Walach, 2002). Because it is neither possible nor desirable to use RCT methods to test every single component and combination of components, RCTs may not provide the best evidence needed to make clinical decisions about low-cost and low-risk interventions such as mind-body therapies (Lewith, et al., 2002).

evaluating articles on prognosis

The natural history of an illness or disease can be modified by treatment and the clinician can observe this progression to decide whether intervention is useful, cost-effective, or needlessly risky. Studies on prognosis generally watch the trajectory of illness or symptoms over time. Well-designed prognosis studies should yield a positive response to five questions about methodology:

- Is there an “inception” cohort—a group of subjects with well-defined symptoms or diagnosis?
- Where did the population come from? Community or specialist referral?
- Were the standards of entry of subjects into the study well-defined?
- How complete was the follow-up? (It should be greater than 80 percent.)
- Were the subjects similar to the patients seen in clinical practice?

evaluating qualitative articles

Qualitative research in medicine usually involves descriptive, observational, and often interactive investigation that explores attitudes, feelings, opinions, and the psychological, spiritual, social, and emotional aspects of illness, health, and healing. Methodologies include interviews, focus groups, audiotape or video analysis, or simple observation, rather than using laboratory tests or other quantitative measures. Often, qualitative research methods are needed to generate hypotheses. The results may lead to new insights into the patient-provider relationship and behavioral aspects of medical care, such as the placebo effect or the psychosocial aspects of pregnancy. Because of the interactive process in this type of research, neither the subject nor the investigator is blinded to the nature of the study.

It is not unusual to encounter multi-method research involving a mixture of quantitative (i.e., RCT) and qualitative methods. This may be more suited to evaluating CAM research because it takes into account more factors of human experience and health care outcomes (Verhoef, Casebeer, & Hilsden, 2002).

useful articles on evaluating CAM research

One of the world’s foremost groups of clinicians committed to evidence-based medicine has formed a working group with a specific focus on CAM—EBCAM (Evidence-Based Complementary and Alternative Medicine). Members of EBCAM are authors of a continuing series of articles in the *Journal of Alternative and Complementary Medicine*. These and other articles shown in Table 4

FROM RESEARCH TO PRACTICE

Even with the publication of scientifically valid studies, it can still take many years from the time of publication until clinical application occurs. A good example of this is the delay between the reporting of efficacy and effectiveness and the general use of low-dose aspirin to prevent myocardial infarction. This lag may result from the inability of providers to keep up with all the new information due to time constraints, difficulty in accessing current literature at the time of clinical decision-making, the amount of attention the topic receives from the popular media, and resistance to changing personal behaviors or practices (Helwig, 2000; Jackson & Kanmaz, 2001).

TABLE 4
USEFUL ARTICLES ON EVALUATING CAM RESEARCH

- “Teaching evidence-based complementary and alternative medicine: 1—A learning structure for clinical decision changes.” (Mills, E. J., Hollyer, T., Guyatt, G., Ross, C. P., Saranchuk, R., Wilson, K. (2002). *Journal of Alternative and Complementary Medicine*, 8(2), 207-214.)
- “Teaching evidence-based complementary and alternative medicine: 2—A conceptual approach to causation—part 1.” (Wilson, K., Mills, E. J., Hollyer, T., Vohra, S., Guyatt, G. (2002). *Journal of Alternative and Complementary Medicine*, 8(3), 379-383.)
- “Teaching evidence-based complementary and alternative medicine: 2—A conceptual approach to causation—part 2.” (Wilson, K., Mills, E. J., Hollyer, T., Vohra, S., Guyatt, G. (2002). *Journal of Alternative and Complementary Medicine*, 8(3), 385-389.)
- “Teaching evidence-based complementary and alternative medicine: 3—Asking questions and identifying the information.” (Wilson, K., McGowan, J., Guyatt, G., Mills, E. J. (2002). *Journal of Alternative and Complementary Medicine*, 8(4), 499-506.)
- “Teaching evidence-based complementary and alternative medicine: 4—Appraising the evidence for papers on therapy.” (Wilson, K., Mills, E. J., Ross, C., Guyatt, G. (2002). *Journal of Alternative and Complementary Medicine*, 8(5), 673-679.)
- “Teaching evidence-based complementary and alternative medicine: 5—Interpreting the results of a study on therapy and applying them to a patient.” (Wilson, K., Mills, E. J., McGowan, J., Guyatt, G. (2002). *Journal of Alternative and Complementary Medicine*, 8(6), 867-873.)
- “Assessing efficacy of complementary medicine: adding qualitative research methods to the ‘gold standard’.” (Verhoef, M. J., Casebeer, A. L., Hilsden, R. J. (2002). *Journal of Alternative and Complementary Medicine*, 8(3), 275-281.)
- “Use of the Cochrane electronic library in complementary and alternative medicine courses in medical schools: is the giant lost in cyberspace?” (Ezzo, J., Wright, K., Hadhazy, V., Bahr-Robertson, M., Beckner, W. M., Covington, M., Berman, B. (2002). *Journal of Alternative and Complementary Medicine*, 8(5), 681-686.)

offer practical strategies for evaluating research and studies in CAM, using examples of CAM-specific modalities.

CAM websites & databases: evaluating the quality of information

Because of the ease of access, immediacy, and scope, the rapidly growing body of informational websites is an especially attractive source of information about complementary and alternative therapies (Helwig, 2000). These websites may include primary (journal articles), secondary (indexing and abstracting services), and tertiary (reviews and databases) literature. However, the ballooning number of sites and the ever-changing nature of the web also make reliability an issue. Users must take precautions to assess the quality of the sites used. Health information on the Internet should invoke the same hierarchy of evidence and standards as print sources do, including the current principles of evidence-based medicine (Garrison, 1998; Lockett, 1997). These can be summarized as follows:

- Although clinical experience and intuition are vital to the practice of medicine, information gathered in clinical work should be recorded accurately and without bias.
- The understanding of illness and disease is based on the integration of evidence gathered from many sources and disciplines.
- Clinical information should be subject to rules of evidence to accurately refine diagnosis and treatment.

website evaluation resources

Several websites and articles offer guidelines for evaluating the quality of the material presented on a given site. The Darmoni Criteria are a set of 22 guidelines developed to use in evaluating websites (Rolland, Bousquet, Pouliquen, Le Beux, Fresnel, & Duvauferrier, 2000). These criteria actually focus on the architecture of the website itself and the resources used to find the information presented. The following three websites also offer site evaluation guidelines: the Internet Healthcare Coalition, Hi-Ethics, Inc. (Health Internet Ethics), and HON (Health On the Net).

The mission of the *Internet Healthcare Coalition* (<http://www.ihealthcoalition.org>) is to promote quality health care resources on the Internet. It is a coalition of for-profit and not-for-profit businesses that provides quality-assurance methodologies for websites. Its goal is to ensure that accurate, unbiased, ethical information prevails on the Internet. Participating providers of health information are asked to uphold eight guiding principles (accessed December 31, 2004).

Hi-Ethics, Inc., or Health Internet Ethics (<http://www.hiethics.com>), claims to promote the highest ethical web standards. Participating companies have the common goal of establishing and complying with high standards for privacy, security, credibility, and reliability of their web-based information. Fourteen operating principles are outlined (accessed December 31, 2004).

HON, or Health On the Net, (<http://www.hon.ch>) is a not-for-profit international organization whose mission is to guide users to useful and reliable on-line medical and health information. HON has eight guiding principles and has identified 186 out of 1810 CAM sites that subscribe to the HON code of conduct (accessed December 31, 2004).

evaluating a website: when you hit “enter,” ask questions

As when evaluating a journal article, the right questions reveal a great deal about the validity and usefulness of a website. Users should consider the following queries in assessing web-based information sources (<http://www.ihealthcoalition.org>, accessed December 31, 2004; <http://www.hon.ch>, accessed December 31, 2004; Winker, et al., 2000; Garrison, 1998).

- ***Is the site current and are its links up-to-date?*** How old are the references? Are the latest studies on a topic included? Is each page on the site dated, indicating when it was last updated?
- ***Who sponsors or owns the site?*** Is it a for-profit commercial site or sponsored by a not-for-profit organization? Could the sponsorship bias the data and conclusions presented?
- ***What are the financial interests of the site?*** Is the site designed to sell a product or is it providing information? Is the site marketing information as a service or is the information provided to entice the purchase of a product?

- ***Who are the advisors and writers for the site?*** Are the names and credentials of writers and advisors provided? Are they affiliated with reputable institutions? Are web writers identified? Do their credentials and affiliations provide evidence of independent thinking?
- ***Does the site have an editorial board or is it professionally managed?*** Are the names of the board members provided with credentials and affiliations? Are the credentials and affiliations reputable?
- ***Can one communicate with the writers, sponsors, and editors?*** Are email addresses and other contact information provided?
- ***Is the site's information valid?*** Is the information supported by references and links to external sources? Are primary literature sources identified so that the reader can draw his or her own conclusions?
- ***Does the site present a balanced viewpoint?*** Do the authors provide information describing both favorable and unfavorable issues on a topic?
- ***What is the nature of the information presented?*** Does the site offer general information or specific treatment strategies? Is there a disclaimer that this information is to support and not replace the patient/provider relationship? Does the site encourage readers to work with their health care providers for treatment of illness?
- ***Is the site secure?*** If personal information is requested, does the site explicitly state that the information is confidential and secure?

searching for articles & information on CAM

Some excellent databases are open to the general public while others are accessed through subscription services of health sciences libraries (Winker, et al., 2000). Health sciences libraries in hospitals and health profession schools—including those at the University of North Carolina at Chapel Hill (UNC-CH)—usually provide free access to databases that include CAM information. A selection of databases available through the UNC-CH Health Sciences Library and the North Carolina AHEC Digital Library are listed in Table 5 (*on page 9*). These and many others are included in another publication in this series, *Information Sources for Complementary & Alternative Therapies*.

many sites provide information & research on CAM

The variety and scope of information available on the web is tremendous; a number of excellent sites are free and may be accessed from any location. These include sites such as the American Botanical Council, the National Center for Complementary and Alternative Medicine (NCCAM), the Rosenthal Center for Alternative and Complementary Medicine, and the Alternative Medicine Foundation. Many organizations, foundations, and universities also offer excellent information resources on the web, including the University of Pittsburgh, *British Medical Journal*, the Cochrane Registry at the University of Maryland, The Memorial Sloan-Kettering Cancer Center, and Chiropractic Literature Bibliography. Sites such as Natural Products Alert and Consumer Labs provide product information and research reports on a subscription or fee-for-service basis. Detailed information about these and other sites is included in *Information Sources for Complementary & Alternative Therapies* (Curtis, McDermott, & McKenzie, 2003).

TABLE 5
SELECTED DATABASES WITH CAM INFORMATION AVAILABLE THROUGH THE
UNC-CH HEALTH SCIENCES LIBRARY & NC AHEC DIGITAL LIBRARY

AMED, CINAHL, Cochrane, and IPA are available at <http://www.hsl.unc.edu/Databases/EIDSearch.cfm>. UNC-CH affiliates who use the NC AHEC Digital Library will find sources at: <http://library.ncahec.net/Login.cfm>. Other health sciences libraries offer similar access.

- **Alt-Health Watch** (Ebsco Publishing). Provides access to full-text journal articles, newsletters, pamphlets, and special reports on complementary and alternative medicine from 1990 to the present. For health care professionals and consumers. (Must be affiliated with UNC.) <http://eresources.lib.unc.edu/eid/>
- **AMED – Allied and Complementary Medicine Database** (British Library Health Care Information Service). An index to articles on complementary and alternative therapies in the journal literature from 1985 to the present. Provides citations and abstracts (not full-text). For health professionals.
- **CINAHL** (Cumulated Index to Nursing and Allied Health Literature). Provides access to citations and abstracts and some full-text of a broad scope of nursing and allied health journals and newsletters. Covers many alternative therapies and herbal medicines. For health professionals.
- **Cochrane Library** (Cochrane Collaboration). Provides rigorous, full-text, systematic reviews and meta-analyses and lists controlled trials that may not be referenced in MEDLINE. There is a special section on complementary and alternative medicine. For health professionals.
- **International Pharmaceutical Abstracts (IPA)** (American Society of Health-System Pharmacists). An index to the pharmaceutical literature. Includes citations and abstracts. Provides access to a wide spectrum of journal articles not indexed elsewhere, especially in the area of biopharmaceuticals and pharmacognosy. For health professionals.
- **MEDLINEplus** (National Library of Medicine, NLM). Provides free, full-text, authoritative information from the National Library of Medicine (NLM), National Institutes of Health (NIH), and other health-related organizations. Includes sections on alternative medicine (<http://www.nlm.nih.gov/medlineplus/alternativemedicine.html>) and on herbal medicine (<http://www.nlm.nih.gov/medlineplus/herbalmedicine.html>). Go Local feature provides links to state, county, and city level information in North Carolina. For consumers. <http://www.nlm.nih.gov/medlineplus> (free access).
- **Natural Medicines Comprehensive Databases (NMCD)** (Therapeutic Research Facility). Provides reliable, evidence-based, full-text information on many natural products, both herbal and non-herbal. Includes information on use, interactions, safety, and efficacy. Arranged to answer clinicians' questions on uses, interactions, and efficacy. For health professionals. www.naturaldatabase.com.
- **PUBMED** (National Library of Medicine). Provides free access to MEDLINE, the major index to the health sciences literature for health professionals and researchers. Includes indexing of randomized controlled trials and other evidence-based approaches, indexing for many complementary and alternative medicine articles and a special Alternative Medicine subset. UNC provides links to the full-text of many articles. For health professionals. <http://www.pubmed.org> (free access).

other computer-based information sources

Because of its immediacy and accessibility, computer-based information makes possible a number of important new resources for clinicians.

CD-ROM programs & databases

CD-ROM databases hold information similar to web-based sites. Their major disadvantage is their relatively short “shelf-life,” so they are less useful for the kinds of information that must be up-dated regularly or is subject to frequent change. However, for reference information that does not change often, their portability and rapid search capabilities make CDs invaluable for certain applications.

clinical decision resources for CAM: PDA

Accessing scientific information in a busy clinical practice is always a challenge. New technology at the point of service (the bedside or clinic exam room) comes in the form of a laptop or desktop computer or a PDA (personal digital assistant). A hand-held PalmPilot® or pocket PC unit can store a wide range of software and databases. Recently, medical software companies have been developing CAM databases and decision tools in this format. A brief summary of some of the products now available is provided in Fischer, Crowell, & Curtis (2005).

resources for teaching about CAM

A majority of health-professions schools in the United States now have elective or required curricula in complementary and alternative medicine. A number of health sciences schools house CAM centers of research or programs on integrative or holistic medicine. Many of these programs have websites containing educational materials such as PowerPoint presentations or course outlines, and offer information on completed or in-progress research projects. Several government websites also provide such information. A description of selected CAM information resources follows:

websites

Many public and private institutions host websites providing information on complementary and alternative medicine and research.

government websites

- **National Institutes of Health. Office of Cancer Complementary and Alternative Medicine (<http://www.cancer.gov/cam>).** Provides fact sheets, FDA alerts, information on clinical trials and education resources.
- **NCCAM (National Center for Complementary and Alternative Medicine) (<http://nccam.nih.gov/>).** Provides general information on complementary and alternative therapies as well as information on clinical trials, news, research opportunities, and events.
- **Office of Dietary Supplements (ODS) (<http://dietary-supplements.info.nih.gov>).** Federal database with over 400,000 citations. Provides regular updates.
- **White House Commission on Complementary and Alternative Medicine (<http://www.whccamp.hhs.gov/finalreport.html>).** Of particular interest for education are the published reports with recommendations for research education, licensure, insurance, and training.

selected health sciences schools websites

- **Bandolier** (<http://www.jr2.ox.ac.uk/Bandolier>). Maintained by the Oxford University Pain Research Group. Provides independent evaluations and summaries of evidence-based articles; arranged by topic (including CAM topics). Goal is to provide guidance to consumers and health professionals.
- **Beth Israel Medical Center, The Continuum Center for Health and Healing** (<http://www.healthandhealingny.org>). Well-designed, comprehensive information source on CAM modalities and their histories, applications, treatment approaches, and training and licensing. Database is searchable by modality and health condition.
- **Harvard Medical School** (<http://www.mcp.edu/herbal/> or <http://www.holistickids.org>). Maintained by Boston Children's Hospital Center for Holistic Pediatric Education and Research (CHPER). Provides on-line, self-instructional curriculum in holistic pediatrics and links to Longwood Herbal website.
- **Rush University College of Nursing** (<http://www.rushu.rush.edu/nursing/CAM>). Provides a nursing perspective on CAM, including information on research, CAM nursing competencies, and on-line mini-courses.
- **The University of Texas Medical Branch** (<http://cam.utmb.edu>). Provides well-designed links to and reviews of 28 other CAM-related websites, including a rating scale and the pros/cons of the site. Also provides some content of CAM curricula in use at the University of Texas program.

other organizational websites

- **American Medical Student Association** (<http://www.amsa.org/humed/CAM>). Presents information on the AMSA foundation and the Humanistic Medicine Action Committee educational core curriculum for medical schools, including modules on stress reduction and wellness, evidence-based CAM, and 10 CAM modalities. Provides text, references, some audiovisuals, and web-links to other CAM resources.
- **British Medical Journal: "ABC of Complementary Medicine"** (http://bmjournals.com/cgi/collection/complementary_medicine). Series of full-text, succinct articles in the *British Medical Journal* series. Provides good overview, useful for educational handouts.
- **Centre for Evidence-Based Medicine, University Health Network, Mount Sinai Hospital**. (www.cebm.utoronto.ca/resources/websites.htm). Excellent index of 30 EBM sites by health care discipline and other categories—each described in-depth.

articles & books

The articles listed below may be helpful to educators who are teaching about CAM.

- Astin, J. A. (2002). Complementary and alternative medicine and the need for evidence-based criticism. *Academic Medicine*, 77(9), 864-868.
- Beckner, W. M., & Berman, B. M. (2003). Appendix II. *Complementary Therapies on the Internet, with CD-ROM*. Edinburgh: Churchill Livingstone.

- Brokaw, J. J., Tunnicliff, G., Raess, B. U., & Saxon, D. W. (2002). The teaching of complementary and alternative medicine in U.S. medical schools: a survey of course directors. *Academic Medicine*, 77(9), 876-881.
- Curtis, P., McDermott, J., Gaylord, S., Mann, D., Norton, S. K., Motyka, T. (2002). Preparing complementary and alternative practitioners to teach learners in conventional health professions. *Alternative Therapies in Health and Medicine*, 8(6), 54-59.
- Fenton, M. (2002). Preparing teachers of CAM therapies in conventional healthcare settings. *Alternative Therapies in Health and Medicine*, 8(6), 32-33.
- Greenfield, S. M., Innes, M. A., Allan, T. F., & Wearn, A. M. (2002). First-year medical students' perceptions and use of complementary and alternative medicine. *Complementary Therapies in Medicine*, 10(1), 27-32.
- Hui, K. K., Zylovska, L., Hui, E. K., Yu, J. L., & Li, J. J. (2002). Introducing East-West medicine to medical students and residents. *Journal of Alternative and Complementary Medicine*, 8(4), 507-515.
- Jackson, E. A., & Kanmaz, T. (2001). An overview of information resources for herbal medicinals and dietary supplements. *Journal of Herbal Pharmacotherapy*, 1, 35-61.
- Kemper, K. J., Highfield, E. S., McLellan, M., Ott, M. J., Dvorkin, L., & Whelan, J. S. (2002). Pediatric faculty development in integrative medicine. *Alternative Therapies in Health and Medicine*, 8(6), 70-73.
- Kligler, B., Gordon, A., Stuart, M., & Sierpina, V. (2000). Suggested curriculum guidelines on complementary and alternative medicine: recommendations of the Society of Teachers of Family Medicine Group on Alternative Medicine. *Family Medicine*, 32(1), 30-33.
- Konefal, J. (2002). The challenge of educating physicians about complementary and alternative medicine. *Academic Medicine*, 77(9), 847-850.
- Kreitzer, M. J., Mitten, D., Harris, I., & Shandeling, J. (2002). Attitudes toward CAM among medical, nursing, and pharmacy faculty and students: a comparative analysis. *Alternative Therapies in Health and Medicine*, 8(6), 44-47, 50-53.
- Park, C. M. (2002). Diversity, the individual, and proof of efficacy: complementary and alternative medicine in medical education. *American Journal of Public Health*, 92, 1568-1572.
- Sampson, W. (2001). The need for educational reform in teaching about alternative therapies. *Academic Medicine*, 76(3), 248-250.
- Sierpina, V. S. (2002). Progress Notes: A review of educational developments in CAM. *Alternative Therapies in Health and Medicine*, 8(6), 104-106.

newsletters

Newsletters (tertiary literature) are useful for up-to-date information in print and electronic formats, and are available both free and by subscription. Again, the same criteria used to evaluate journal articles and website quality can be applied to determine the quality of information provided through this medium.

For health-care providers *Alternative Medicine Alert* (Russell H. Greenfield, MD, Editor) provides a balanced and evidence-based review of systems, modalities, and herbal/nutritional supplements. *Health and Healing* by Julian Whitaker, MD, is well referenced, but commercial (<http://www.drwhitaker.com>). Dr. Andrew Weil's *Self Healing* is for the public and is not referenced. The information represents his synthesis of facts and opinions (<http://www.drweilselfhealing.com>).

The on-line resource **Alt-Health Watch** (available by subscription) includes articles from the popular press, written for lay audiences, as well as articles from professional journals. It provides citations and abstracts of journals, reports, newsletters, and pamphlets; many are full-text (http://www.lib.ohio-state.edu/find/siteinfo/eb_alt_health.html).

books & compendia

Excellent options for an introduction to CAM include:

- ***Clinical Research in Complementary Therapies***, George Lewith, Wayne B. Jonas, and Harald Walach. (Edinburgh: Churchill Livingstone, 2002) A good, readable introduction to CAM research. Excellent research handbook on a wide range of topics.
- ***Complementary Therapies on the Internet With CD-ROM***, Mac Beckner and Brian Berman. (Edinburgh: Churchill Livingstone, 2003) Excellent guide (including a CD) to searching for CAM information on the web. It covers searching techniques, describes databases in detail, and identifies CAM resources and organizations by modality and addresses. It also lists and discusses regulatory agencies and CAM research centers, and identifies training and educational programs.
- ***Complete Reference to Complementary and Alternative Medicine***, Donald W. Novey. (St. Louis: Mosby, 2000) An excellent and very readable overview of the fields of complementary and alternative practice using a standard template which includes history, mechanism of action, research base, forms of therapy, referrals, what the patient can expect, training and credentialing, and information on national associations.
- ***The Desktop Guide to Complementary and Alternative Medicine: An Evidence-Based Approach***, Edzard Ernst. (Edinburgh: Mosby, 2001) Succinct, rigorous; easy to use; ideal for clinical practice.
- ***Essentials of Complementary and Alternative Medicine***, Wayne B. Jonas and Jeffrey S. Levin. (Philadelphia: Lippincott, Williams & Wilkins, 1999) Excellent overview of the field.
- ***Fundamentals of Complementary and Alternative Medicine, 2nd edition***. Marc S. Micozzi. (St. Louis: Mosby, 2001) Comprehensive overview for both students and practitioners working in medicine, health, and science. Offers descriptions of the development and key ideas and approaches of a broad range of CAM systems and therapies.
- ***Integrative Health Care: Complementary and Alternative Therapies for the Whole Person***, V. S. Sierpina. (Philadelphia: F.A. Davis Company, 2001) Patient-centered approach with many case studies to illustrate the management of common problems.
- ***Natural Medicines Comprehensive Database***. (Therapeutic Research Facility: Stockton, CA: updated annually) Detailed, research-based information on natural products, both herbal and non-herbal. Also available on-line.

summary

There are many excellent sources of information on CAM, including journals, websites, databases, compendia, and books. As with conventional medicine, the amount of information on CAM is expanding and changing rapidly, so facts and evidence of effectiveness may quickly become dated. Textbooks are more useful as overview reading to develop an understanding of the history and rationale of CAM therapies. Evidence-based research is increasingly funded and published in U.S. medical, pharmacy, and nursing journals—which provides an exciting opportunity for clinicians and patients to learn and explore the potential of integrating CAM therapies into conventional practice. The best approach for the busy clinician is to select one or two journals/websites/newsletters that are reliable and to become comfortable and efficient at using them. As with all scientific and medical exploration, an open and critical mind is needed to evaluate and properly utilize the available information.

references

- Astin, J. A. (2002). Complementary and alternative medicine and the need for evidence-based criticism. *Academic Medicine*, 77(9), 864-868.
- Barnes, J., Abbot, N.C., Harkness, E.F., & Ernst, E. (1999). Articles on complementary medicine in the mainstream medical literature: an investigation of MEDLINE, 1966 through 1996. *Archives of Internal Medicine*, 159, 1721-1725.
- Beckner, W. M., & Berman, B. M. (2003). *Complementary therapies on the internet, with CD-ROM*. Edinburgh: Churchill Livingstone.
- Brokaw, J. J., Tunnicliff, G., Raess, B. U., & Saxon, D. W. (2002). The teaching of complementary and alternative medicine in U.S. medical schools: A survey of course directors. *Academic Medicine*, 77(9), 876-881.
- Curtis, P., McDermott, J., Gaylord, S., Mann, D., Norton, S. K., & Motyka, T. (2002). Preparing complementary and alternative practitioners to teach learners in conventional health professions. *Alternative Therapies in Health and Medicine*, 8(6), 54-59.
- Curtis, P.C., McDermott, J., & McKenzie, D. (2003). *Information sources for complementary and alternative health care*. In S. Gaylord, S. Norton, P. Curtis (Eds.), *The convergence of complementary, alternative & conventional health care: Educational resources for health professionals*. Chapel Hill, NC: University of North Carolina.
- Ernst, E. (2001). *The desktop guide to complementary and alternative medicine: An evidence-based approach*. Edinburgh: Mosby.
- Ezzo, J., Wright, K., Hadhazy, V., Bahr-Robertson, M., Beckner, W. M., Covington, M., & et al. (2002). Use of the Cochrane electronic library in complementary and alternative medicine courses in medical schools: Is the giant lost in cyberspace? *Journal of Alternative and Complementary Medicine*, 8(5), 681-686.
- Fenton, M. (2002). Preparing teachers of CAM therapies in conventional healthcare settings. *Alternative Therapies in Health and Medicine*, 8(6), 32-33.

- Fischer, J. E., Crowell, K., & Curtis, P. (2005). Complementary and alternative medical reference software for personal digital assistants: Evidence of clinical applicability. *Complementary Health Practice Review*, 10(1), 57-72.
- Garrison, S. (1998). Evaluating health Internet sites: a white paper's criteria. *Medical Reference Services Quarterly*, 17(3), 41-47.
- Greenfield, S. M., Innes, M. A., Allan, T. F., & Wearn, A. M. (2002). First-year medical students' perceptions and use of complementary and alternative medicine. *Complementary Therapies in Medicine*, 10(1), 27-32.
- Guyatt, G. H., Sackett, D. L., & Cook, D. J. (1993). Users' guide to the medical literature. II. How to use an article about therapy or prevention: Are the results of the study valid? *JAMA*, 270, 2598-2601.
- Helwig, A. (2000). Using the internet to bring evidence-based medicine into your practice. *MD Net Guide* 2, No. 2 (2000 Feb), 20-23.
- <http://www.hiethics.com>, retrieved December 31, 2004.
- <http://www.hon.ch>, retrieved December 31, 2004.
- <http://www.ihealthcoalition.org>, retrieved December 31, 2004.
- http://www.lib.ohio-state.edu/find/siteinfo/eb_alt_health.html. Accessed December, 2004.
- Hui, K. K., Zylowska, L., Hui, E. K., Yu, J. L., & Li, J. J. (2002). Introducing East-West medicine to medical students and residents. *Journal of Alternative and Complementary Medicine*, 8(4), 507-515.
- Jackson, E. A., & Kanmaz, T. (2001). An overview of information resources for herbal medicinals and dietary supplements. *Journal of Herbal Pharmacotherapy*, 1, 35-61.
- Jonas, W. B., & Levin, J. S. (1999). *Essentials of complementary and alternative medicine*. Philadelphia: Lippincott, Williams & Wilkins.
- Kemper, K. J., Highfield, E. S., McLellan, M., Ott, M. J., Dvorkin, L., & Whelan, J. S. (2002). Pediatric faculty development in integrative medicine. *Alternative Therapies in Health and Medicine*, 8(6), 70-73.
- Kligler, B., Gordon, A., Stuart, M., & Sierpina, V. (2000). Suggested curriculum guidelines on complementary and alternative medicine: recommendations of the Society of Teachers of Family Medicine Group on Alternative Medicine. *Family Medicine*, 32(1), 30-33.
- Konefal, J. (2002). The challenge of educating physicians about complementary and alternative medicine. *Academic Medicine*, 77(9), 847-850.
- Kreitzer, M. J., Mitten, D., Harris, I., & Shandeling, J. (2002). Attitudes toward CAM among medical, nursing, and pharmacy faculty and students: a comparative analysis. *Alternative Therapies in Health and Medicine*, 8(6), 44-47, 50-53.
- Lewith, G., Jonas, W. B., & Walach, H. (Eds.). (2002). *Clinical research in complementary therapies: principles, problems and solutions*. Edinburgh: Churchill Livingstone.
- Lockett, T. (1997). *Evidence-based and cost-effective medicine for the uninitiated*. Oxford; New York: Radcliffe Medical Press.
- Micozzi, M. S. (2001). *Fundamentals of complementary and alternative medicine, 2nd edition*. St. Louis: Mosby.

- Mills, E. J., Hollyer, T., Guyatt, G., Ross, C. P., Saranchuk, R., Wilson, K. (2002). Teaching evidence-based complementary and alternative medicine: 1—A learning structure for clinical decision changes. *Journal of Alternative and Complementary Medicine*, 8(2), 207-214.
- Natural medicines comprehensive database. (updated annually). Therapeutic Research Facility: Stockton, CA.
- Novey, D. W. (2000). *Complete reference to complementary and alternative medicine*. St. Louis: Mosby.
- Park, C. M. (2002). Diversity, the individual, and proof of efficacy: complementary and alternative medicine in medical education. *American Journal of Public Health*, 92, 1568-1572.
- Rolland, Y., Bousquet, C., Pouliquen, B., Le Beux, P., Fresnel, A., Duvauferrier, R. (2000). Radiology on Internet: advice in consulting websites and evaluating their quality. *European Radiology*, 10, 859-866.
- Sampson, W. (2001). The need for educational reform in teaching about alternative therapies. *Academic Medicine*. 76(3), 248-250.
- Sierpina, V. S. (2001). *Integrative health care: Complementary and alternative therapies for the whole person*. Philadelphia: F.A. Davis Company.
- Sierpina, V. S. (2002). Progress Notes: A review of educational developments in CAM. *Alternative Therapies in Health and Medicine*, 8(6), 104-106.
- Verhoef, M. J., Casebeer, A. L., & Hilsden, R. J. (2002). Assessing efficacy of complementary medicine: adding qualitative research methods to the 'gold standard'. *Journal of Alternative and Complementary Medicine*, 8(3), 275-281.
- Wilson, K., McGowan, J., Guyatt, G., & Mills, E. J. (2002). Teaching evidence-based complementary and alternative medicine: 3—Asking questions and identifying the information. *Journal of Alternative and Complementary Medicine*, 8(4), 499-506.
- Wilson, K., Mills, E. J., Hollyer, T., Vohra, S., & Guyatt, G. (2002). Teaching evidence-based complementary and alternative medicine: 2—A conceptual approach to causation—part 1. *Journal of Alternative and Complementary Medicine*, 8(3), 379-383.
- Wilson, K., Mills, E. J., Hollyer, T., Vohra, S., & Guyatt, G. (2002). Teaching evidence-based complementary and alternative medicine: 2—A conceptual approach to causation—part 2. *Journal of Alternative and Complementary Medicine*, 8(3), 385-389.
- Wilson, K., Mills, E. J., McGowan, J., & Guyatt, G. (2002). Teaching evidence-based complementary and alternative medicine: 5—Interpreting the results of a study on therapy and applying them to a patient. *Journal of Alternative and Complementary Medicine*, 8(6), 867-873.
- Wilson, K., Mills, E. J., Ross, C., & Guyatt, G. (2002). Teaching evidence-based complementary and alternative medicine: 4—Appraising the evidence for papers on therapy. *Journal of Alternative and Complementary Medicine*, 8(5), 673-679.
- Winker, M.A., Flanagan, A., Chi-Lum, B., White, J., Andrews, K., Kennett, R. L., et al. (2000). Guidelines for medical and health information sites on the Internet. Principles governing AMA web sites. American Medical Association. *JAMA*, 283, 1600-1606.