

EBM: An Introduction

Jean Sayre, Associate Director

Evidence-Based Medicine (EBM) — Everyone is starting to hear about it. Librarians are being asked to teach EBM classes in their medical schools' curricula and are forming interest groups. Terms relating to the medical literature such as meta-analysis, sensitivity and specificity are becoming part of librarians' vocabularies. Some medical schools in our region are changing their programs to incorporate EBM. Managed care is talking about embracing EBM, and attorneys are getting interested. What is it all about?

Two physicians, David L. Sackett from the University of Oxford in England and Brian Haynes from McMaster University in Canada, currently are the most recognized names in EBM. Sackett, Haynes, and their colleagues define EBM as "the conscientious explicit and judicious use of current best evidence in making decisions about the care of individual patients." A well-

defined process is required to accomplish the goal of EBM—the best care of the patient. The EBM process includes defining a good clinical question, searching the literature for the best evidence to answer the question, critically appraising the evidence, and applying the results to patient care.

EBM is "the conscientious explicit and judicious use of current best advice in making decisions about the care of individual patients."

To many librarians, the EBM process sounds a lot like defining a reference question, searching the literature, and using quality filtering. There are similarities, and therein lies the opportunity for librarians to become important members of an EBM team.

There are growing number of resources on EBM with which librarians should become familiar. The Cochrane Collaboration is a database of systematic reviews available in electronic format. Two new journals on EBM, *ACP Journal Club* and *Evidence-*

Based Medicine, are good resources to consider adding to your library's collection. And there are several books on the topic.

In this issue of *3 Sources*, librarians throughout the region share their experiences with EBM. Lila Pederson reports on the

University of North Dakota's plans to integrate EBM into the Medical School Curriculum; Keir Reavie of Wayne State University describes the library's role in a first-year EBM class; Sharon Kambeitz and Elaine Trzebiatowski of the Allina Health System report on their experiences teaching EBM in a library outreach program; and Jo Dorsch of the University of Illinois at Chicago - Peoria describes EBM initiatives at UIC. You'll also find a list of EBM Web sites and an article describing how to use PubMed for EBM searching. We hope this newsletter will give network members a place to begin building a knowledge base about EBM and building an EBM collection. ♦

... 2 ...

Librarians Support Co-Operative EBM Initiatives at UIC

... Insert ...

Clinical Query Filters in PubMed

Clinical Queries using Research Methodology Filters

... 3 ...

The Library's Role in a First-Year Evidence-Based Practice Class

... 4-5 ...

EBM at North Dakota

... 6 ...

Teaching Evidence-Based Medicine in A Library Outreach Program

... 7 ...

EBM Web Sites

... ..

Newsletter Staff

Managing Editor:
Jean Sayre

Editor:
Cara Wilhelm

GMR Staff

Director: Elaine R. Martin
emartin@uic.edu

Associate Director:
Jean Sayre
jsayre@uic.edu

Administrative Secretary:
Deneen Wynn
deneenw@uic.edu

Budget Analyst:
Rosa Marjalaakso
marjalaa@uic.edu

Communications Coordinator:
Cara Wilhelm
caralw@uic.edu

Internet Coordinator:
Chris Shaffer
shaffer@uic.edu

Network Coordinator:
Charniel McDaniels
mcdaniel@uic.edu

Outreach Coordinator:
Sheila Brown
sheilab@uic.edu

3 Sources

NN/LM Greater Midwest Region
The University of Illinois
at Chicago
Library of the Health Sciences
(M/C 763)
1750 West Polk Street
Chicago, IL 60612-7223

312/996-2464
800/338-RMLS (7657)
312/996-2226 FAX
gmr-info@uic.edu

<http://www.nlm.nih.gov/gmr>

3 Sources is produced under
National Library of Medicine
Contract
NO1-LM-6-3523

Librarians Support Co-Operative EBM Initiatives at UIC

by Jo Dorsch, University of Illinois at Chicago - Peoria

Evidence-Based
Medicine (EBM) is changing
medical practice, medical curric-
ula, and medical librarianship.

To prepare for intensive EBM changes in the medical curricula and faculty research projects at the University of Illinois at Chicago (UIC), Library of the Health Sciences (LHS) librarians participated in a four-week series of seminars developed by medical and library faculty. The series, presented in July 1997, covered components and outcomes of EBM, including advanced search techniques for applying clinical filters, use of specialized EBM databases, and secondary EBM "filtering" journals. EBM as an essential practice model was explored and discussed. An EBM Web page, initially designed for medical students at the Peoria campus, provided course structure

<http://www.uic.edu/depts/lib/health/ebm.html>. Advanced classes are planned for the future and may be offered regionally.

All four UIC medical school campuses have incorporated elements of EBM in cooperation with the libraries. Librarians teach EBM searching principles in various settings: curriculum-integrated instruction, journal clubs, and seminars. Librarians have also been invited to attend Internal Medicine Residents' Journal Club.

In addition, librarians will soon begin attending "Internal Medicine Morning Report," an intensive and "early" time commitment. Residents and students are challenged to find the "best evidence" for

the reported case of the day. No excuses are accepted and neither are review articles— only primary sources based on sound methodological studies. A Web-based class was designed to instruct Internal Medicine residents on library and Internet resources, with an emphasis on EBM <http://www.uic.edu/~helent/classes/internal.html>.

A goal is to create an Electronic Reference Cabinet (ERC) to support Morning Report. This password-protected Web site will contain full text of the articles selected as the best evidence to answer clinical problems from Morning Report cases.

A unique circuit librarian project at the Urbana campus is providing information services to the McKinley Student Health Center. EBM comes into play when the librarian both searches and selects literature to answer clinical questions submitted by McKinley health professionals.

These cooperative efforts and high visibility establish the librarian as an essential player in the EBM team at UIC. EBM extends the librarian's influence in helping health professionals reach evidence-based patient care decisions and involves the librarian in influencing curriculum development.

LHS librarians have formed an EBM Roundtable that meets monthly to discuss EBM projects and support activities. The Roundtable also affords librarians an opportunity to collaborate on research projects and publications. ♦

The Library's Role in a First-Year Evidence-Based Practice Class

by Keir Reavie, Wayne State University

The Shiffman Medical Library of Wayne State University plays an integral part in the mandatory first year Evidence-Based Medicine course in the Wayne State University School of Medicine. This is the second year in which the two-and-a-half-week-long course has been taught in the School of Medicine, and it has been redesigned this year to increase the involvement of the library. The library teaches the first-year medical students to access and use essential evidence-based practice information resources through lectures, demonstrations, and hands-on training.

In the first class, students receive an assignment that presents a series of specific questions that are best answered by four different information sources:

- A textbook;
- The journal literature, accessed by searching the MEDLINE database;
- A structured review of a single research study, found in publications like

the *ACP Journal Club*, and;

- A meta-analysis of the literature available in a resource such as the Cochrane Database of Systematic Reviews.

To prepare students for completing the assignment, in the first week of the course they can attend optional hands-on training facilitated by librarians within the library's computer labs. The session consists of a demonstration on accessing and using key health sciences information resources within the library and on the Internet, as well as hands-on time, in which the students can work on their assignments and ask any questions of the attending librarians. The training provides students with the background to efficiently use MEDLINE and the Cochrane Databases, and obtain additional information from resources on the Internet. Students take the opportunity during the hands-on training to utilize the expertise of the medical librarians for guidance with the assignment. The librarians are also available in the

library for the duration of the evidence-based practice course to assist students one-on-one with the assignment.

Assistance is also provided through a Web site, designed to help students in accessing and using the resources needed to complete their assignment, as well as provide links to the important Internet resources. The Web site is accessible at any time using assigned passwords. The inclusion of this online resource is particularly important because of more than 250 students are in the first-year class at the Wayne State University School of Medicine. Not all will be able to attend the hands-on training, and many will prefer to learn this material via the computer. They also have the option to access the materials at locations other than in the library. Questions they have about the material can be asked of the librarians using electronic mail.

At the end of the course, a team composed of a librarian and a physician present a lecture that includes an interactive demonstration of

information resources available to assist with evidence-based practice, including resources not used by the students to complete the assignment.

Attendance at the optional hands-on training and the frequency of access to the Web resource is recorded and the data used to elucidate the students' preferences for learning this material; either in a personalized one-on-one session, through group training, or Web-based learning on their own time. An online questionnaire is used to assess students' reactions to using the Web resource, and to deduce its utility for learning and doing the assignments. The evidence-based course has been part of the curriculum for only two years, and data on learning preferences will provide important information for the future structure of the class. Evaluations from previous evidence-based medicine courses, which did not include assignments, hands-on training, or the Web resource, can be compared with current course evaluations to assess the impact of the new course design. ♦

EBM at North Dakota

by Lila Pederson, University of North Dakota

Note: Although this article is written until July 1998. At that time the first and fourth year students will continue to be made and there is a lot of

The development of Evidence-Based Medicine (EBM) at the University of North Dakota (UND) is closely tied to the new curriculum of the School of Medicine and Health Sciences (SMHS). The concepts of patient-centered learning (PCL) and EBM have been adopted concurrently, with PCL being the driving principle behind the first two years of medical education, and EBM coming into play more strongly in the third and fourth years and continuing into some of the residency programs, particularly internal medicine.

EBM has been defined as the conscientious, explicit, and judicious use of current best evidence from clinical care research in the management of individual patients.¹ Because EBM is a somewhat advanced concept in clinical practice, it is not an explicit part of the UND curriculum from the beginning, but gradually incorporated starting in the second year. PCL, however, is the pervasive mode in the new curriculum.

The patient-centered principles of the new curriculum at the SMHS are:

- Appropriate physician behavior and decision-making modeled from day one;
- Basic and clinical sciences integrated throughout the curriculum (Biomedical sciences taught in PCL format; biomedical scientists and physicians work as teams; and departmental names avoided in curriculum component titles to stress integration.);
- Patient cases drive the curriculum.

The general layout of the curriculum is as follows: In Year 1, mornings are devoted to patient-centered learning of the biomedical sciences, where subject matter is taught through actual patient cases. Faculty from both the clinical and basic sciences act as facilitators to guide student learning. The first nine-week block in Year 1 covers foundational concepts in the biology of cells and tissues. After that, students progress through particular organ systems of the body. Afternoons are devoted to Introduction to Patient Care (IPC) and Ambulatory Care Experience (ACE). Here the didactic method of teaching is most prominent.

In Year 2, EBM is incorporated in the Introduction to Patient Care component with the description, "Integration

of individual clinical experience with the best available external evidence from systematic research." PCL blocks also continue in Year 2.

In these two years, no more than 13 hours per week are traditional didactic instruction—lectures and labs—and no more than two hours per day are lecture. In any week there are no more than 20 scheduled hours of instruction. Thus students use a lot of their time for independent study, researching the patient cases and preparing presentations to the other students in their group.

The third and fourth year rotating clerkships incorporate the principles of EBM. As such, the skills of independent, career-long learning are molded here and form a foundation for effective professional practice. Because EBM is built upon a specific clinical question about a specific patient, it provides a legitimate framework for the students, who have limited knowledge, to ask a question without feeling embarrassed about their ignorance. Being able to admit gaps in their knowledge, and to effectively take steps to close those gaps, is a trait that can then be carried into their professional careers.²

As residency accreditation standards in some disciplines are incorporating research practices, some of the UND residency programs are adopting EBM principles. The internal medicine residency program, with its headquarters on the Fargo campus, has been on the EBM track for more than a year. Residents are expected to identify one clinical question at rounds at the beginning of the week and resolve the problem by the end of the week. This has placed considerable stress on the librarians, who were not apprised of the new direction from the beginning. Therefore they were placed in a reactive mode, and because of staffing vacancies have not yet been able to take a proactive stance with which they are satisfied. The librarians have been called upon to do and to assist with more literature-searching as well as to tutor residents in information-seeking skills. Interlibrary loan requests have seen a correspondingly steep increase.

What is to be the role of the medical librarian in EBM at the University of North Dakota? Although our role has not been precisely defined in all areas, some activities are emerging. The first, surprisingly, is assisting faculty to find appropriate cases for the first year. Initially several

en in the present tense as if the new curriculum is underway, it actually will not begin first year and third year medical students will be embarking on the curriculum; the second continue with the traditional curriculum. Between now and then a lot of modifications continue development left to do.

cases will be written by faculty, and it is expected that eventually they all will be. The written cases are based on actual patient cases, including the supporting patient records, x-rays, lab reports, etc. While the "live" case file is being developed, librarians are searching for cases to support the first block, which introduces the principles of the functional biology of cells and tissues.

A description of the topics, themes, and cases in the first nine-week block will illustrate the patient-centered learning focus of the curriculum. Learning objectives cover: genes and chromosomes; proteins and enzymes; metabolism; replicative behavior of cells; intracellular and intercellular communications; architecture of cells and tissues; and early development; with an understanding of human anatomy woven throughout. To accomplish the learning objectives, the following patient cases are used: single-gene inheritance, such as phenylketonuria or sickle-cell anemia; spontaneous abortion of chromosomal etiology; multiple myeloma; cystic fibrosis; deep vein thrombosis; hyperthyroidism secondary to thyroid adenoma; familial hypercholesterolemia; and type I diabetes mellitus.

Another way the librarians are lending support initially is by serving on a new Learning Resources Liaison Committee that is dealing with various issues. One is the organization of cases. Should they be maintained in paper files or electronically? Should all cases be retained in both formats, or should some be maintained in each format? How should various parts of the patient record be kept—x-rays, lab reports, pathologic samples? If electronic, should the cases be in a database format or on a graphical interface such as Web pages?

Another concern of the committee is assisting the faculty with the selection of textual and electronic resources in each PCL room. For electronic resources, the number of site licenses needs to be worked out, as well as their maintenance on the student server, and costs. Likewise for print materials, questions, such as their cost and methods of tracking them (e.g., by cataloging), need to be addressed.

A curriculum that relies on small-group, independent learning also needs to be supported with computers and other specialized equipment, which the Learning Resources Liaison Committee will address. Students will be giving presentations

and need access to scanners and photocopiers at no cost to them. Other equipment, such as camcorders, are needed for learning patient interviewing skills; this equipment needs to be centrally stored and tracked.

The library has always had a role in orienting medical students to use of the library. In the new curriculum, this role will be greatly expanded. At this, details are yet to be worked out, but the points in the curriculum where information-seeking skills can be taught include:

- general orientation at the beginning of the first year
- various modules in Introduction to Patient Care, such as:
 - biostatistics
 - clinical epidemiology
 - research techniques

Librarians will also function as facilitators during the PCL modules of Year 2. And at this time, it is anticipated that librarians will have a role toward the beginning of Year 3, when actual clinical training begins at clinical facilities in Grand Forks, Bismarck, and Fargo.

Although the M.D. curriculum at UND is still in the planning stage and will not be implemented until July 1998, the potential for librarian participation at many points is being discussed, and we are planning to propose many ways in which to be integrally involved. Our complaint about library orientation has always been that it is just that—an orientation, an introduction, in anticipation of a need. Students will have a need when they are faced with real-life situations (patient cases) around which to learn. The opportunity is here to teach information-seeking skills at the various points of need throughout the four years of medical education.

References

1. Sackett DL, Richardson WS, Rosenberg W, Haynes RB (1997). Introduction: on the need for evidence-based medicine. In *Evidence-based Medicine: How to Practice and Teach EBM*. New York: Churchill Livingstone, 1997. p. 2
2. Bordley DR, Fagan M, Theige D (1997). Evidence-based medicine: a powerful educational tool for clerkship education. *American Journal of Medicine* 102: 427-432.

Teaching Evidence-Based Medicine in a Library Outreach Program

by Sharon Kambeitz and Elaine Trzebiatowski, Allina Health System

The Library Outreach Program at Allina Health System provides services to more than 20 underserved and rural communities in greater Minnesota and western Wisconsin. In an attempt to further two of our corporate key values, service and innovation, this year a new component was added in addition to library visits, collection development, mediated literature searches, journal articles, book loans, and interlibrary loans. This year, the circuit librarian offered educational lectures, some for CME or CNE credit.

One of topics chosen was evidence-based medicine (EBM). Instructors presented this topic in the outreach program to re-emphasize the concept to those familiar with it, and to introduce EBM concepts to other health care professionals. The lecture covered a definition of EBM, how it is practiced, and how practicing EBM improves health care, with a strong emphasis on nurturing lifelong self-directed learning skills. EBM literature was gathered, analyzed and a presentation developed using presentation software slides. After providing the definition of EBM, we used several key slides to present the main features of EBM. The first key concept outlined the steps used to practice EBM.

They are:

- formulate the patient care question;
- track down the best evidence
- critically appraise that evidence;
- apply the results in clinical practice;
- evaluate one's own performance.

Instructors also suggested questions that health care professionals should ask to help determine the validity of an article. For example, are the results of the article valid? Were all the patients properly accounted for at its conclusion? Were patients analyzed in the groups to which they were randomized? Were patients, their physicians and study personnel "blind" to treatment? Were the groups similar at the start of the trial? Were the groups treated equally? What are the results? Will these results help you in caring for your patients?

The final objective was to promote the rationale that health care professionals who keep up to date and read the current literature critically are able to distinguish strong from weaker evidence. It was pointed out that graduates of medical schools that teach lifelong, self-directed evidence-based medicine are still up to date

as long as 15 years after graduation. [1]

The audiences' evaluations provided feedback to help critique the lecture component added to the outreach program. The following are some of the comments: "Very systematic [presentation]." "Easy to follow slides." "Not sure how I'd use it or how to access it." "Class content not useful." "Too advanced. Would like to know how to access information in this [community] hospital." "[This subject matter is] a complicated procedure." "I would like to know how to use our [community hospital] library." "Good presentation." "I have no idea how to use the computer. This information means nothing." "This is something we're redirecting toward." "When responding to questions the speaker demonstrated a good knowledge base, and very articulate."

Other comments and statistics indicated the audiences felt the class content, pace of class, and length of class was about right; the instructor was well prepared and used time well; and the delivery methods used were effective.

CONCLUSION: This was a learning experience for both outreach services as well as the hospitals. The outreach

librarian became more aware of the knowledge-gathering skills of many of the targeted health care professionals, which appear to be at a basic level. The health care professionals involved were reminded of the importance of evaluating what they read. At this time, none of the hospitals where the presentations were made have computer access to MEDLINE, though some health professionals have access to MEDLINE at home.

Advice and consultation promoting information-gathering skills in the community hospitals is an important aspect of outreach services. In addition, promoting on-site access to information, both local and remote, during orientation would likely emphasize the importance of using the literature for patient care questions. Further, encouraging efficient, effective use of the medical literature as well as keeping up with the current literature is important in providing better health care.

REFERENCES

1. Rosenberg W and Donald A: Evidence based medicine: An approach to clinical problem-solving. *BMJ* 310: 6987: 1122-6, 1995 (April 29).♦

Interested in learning more about Evidence-Based Medicine? The Web sites listed below should help you get started.

Centre for Evidence-Based Medicine <<http://cebmr2.ox.ac.uk/docs/adminpage.html>>

Established in Oxford as the first of several EBM centers, its broad mission is "to promote evidence-based health care and provide support and resources to anyone who wants to make use of them." This site contains teaching materials; a calendar of EBH events; and the EBM Toolbox, a collection of useful analytical tools for Evidence-Based Medicine.

Health Information Research Unit, McMaster University

<<http://hiru.mcmaster.ca/>>

"The Health Information Research Unit studies the phenomenology of health information, develops information tools to support evidence-based medicine and evaluates informational health interventions."

Cochrane Library <<http://www.update.co.uk/>>

"The Cochrane Library is an electronic publication designed to supply high quality evidence to inform health-care decision making. It is published quarterly on CD-ROM, 3.5" diskettes, and over the Internet. It includes: The Cochrane Database of Systematic Reviews - Regularly updated reviews of the effects of health care; Database of Abstracts of Reviews of Effectiveness - Critical assessments and structured abstracts of good systematic reviews published elsewhere; The Cochrane Controlled Trials Register - Bibliographic information on controlled trials; Other sources of information on the science of reviewing research and evidence-based health care."

Cochrane Collaboration <<http://hiru.mcmaster.ca/cochrane/default.htm>>

"The Cochrane Collaboration is an international network of individuals and institutions committed to preparing, maintaining, and disseminating systematic reviews of the effects of health care. In pursuing its aims, the Cochrane collaboration is guided by eight principles: collaboration, building on people's existing enthusiasm and interests, minimizing duplication of effort, avoidance of bias, keeping up to date, ensuring relevance, ensuring access, and continual improvement."

Netting the Evidence <<http://www.shef.ac.uk/uni/academic/r-z/scharr/in/netting.html>>

The site compiled by Andrew Booth at the School of Health and Related Research (SchARR) at the University of Sheffield provides a very comprehensive introduction to evidence based practice on the internet.

ACP Journal Club <<http://www.acponline.org/journals/acpjc/jcmenu.htm>>

Published by monthly by the American College of Physicians, this journal's aim is to "select published articles according to explicit criteria and to abstract those studies and reviews that warrant immediate attention by physicians attempting to keep pace with important advances in the treatment, prevention, diagnosis, cause, prognosis, or economics of the disorders managed by internists. These articles are summarized in "value-added" abstracts and commented on by clinical experts. "Some full text and subscription information is available.

Evidence Based Medicine <<http://www.acponline.org/journals/ebm/ebmmenu.htm>>

A co-publication of the BMJ Publishing Group and the American College of Physicians, this publication is available in part via the Web. The purpose of this journal is "to alert clinicians to important advances in internal medicine, general and family practice, surgery, psychiatry, paediatrics, and obstetrics and gynaecology by selecting

from the biomedical literature those original and review articles whose results are most likely to be both true and useful. These articles are summarized in value-added abstracts and commented on by clinical experts." This site includes the current table of contents and links to archives; includes some full text.

How to Teach Evidence-Based Medicine <<http://hiru.mcmaster.ca/ebm/workshop/default.htm>>

From the Department of Clinical Epidemiology and Biostatistics Faculty of Health Sciences McMaster University, this site features materials from a class on teaching EBM.

Evidence-Based Medicine — Finding the Best Clinical Literature <<http://uic.edu/depts/lib/health/ebm.html>>

Hosted by the UIC Library of the Health Sciences, this site provides an overview of EBM; links to EBM resources and publications; and information on applying EBM principles to MEDLINE searching.

Evidence-Based Medicine on the Internet <<http://www.phypc.med.wayne.edu/jfp/ebmsites.htm>>

Hosted by Wayne State University, this site contains links to sites relevant to EBM.

Evidence-Based Health Care Resources <<http://www.grilib.demon.co.uk/ebm.htm>>

More links to sites relevant to EBM.

Evidence-Based Medicine Data Sources <<http://ruralnet.marshall.edu/ebm/>>

EBM links compiled by Marshall University School of Medicine. ♦

Important Dates...

<http://www.nlm.nlm.nih.gov/gmr/calendar>

April 15-17, 1998

Indiana State Health
Librarian Association
Meeting
Nashville, IN

April 26-28, 1998

Wisconsin Health
Science Libraries
Association (WHSLA)
Annual Conference
Madison, WI

May 22-27, 1998

Medical Library
Association,
Annual Meeting
Philadelphia, PA

September 1998

Midwest Chapter,
Medical Library
Association
(MC/MLA)
Annual Meeting
Lexington, KY

*(Joint meeting with Southern
Chapter/MLA)*

September 1999

Midwest Chapter,
Medical Library
Association
(MC/MLA)
Annual Meeting
Grand Rapids, MI

** To inquire about the Online Training Center classes,
call 800/338-7657 and choose 2 from the menu.*

MLA EBM Course to be Taught in Chicago

Rush University and the GMR are co-sponsoring "Evidence-Based Medicine for Librarians: Planning For Gold," on May 8, 1998 in Chicago. This all-day course, taught by Ann McKibbin of McMaster University, debuted at the annual MLA meeting in Seattle. Attendees will receive 8 contact hours of MLA continuing education credit.

The course will explore the principles of EBM in a clinical setting by investigating research approaches to the therapy, diagnosis, etiology, and prognosis of medical conditions and illnesses. MEDLINE search strategies will be presented.

A \$50 registration fee will be charged to cover the costs of materials. For registration information, contact the GMR office. ♦

3 Sources

UIC University of Illinois
at Chicago

NN/LM GMR
Library of the Health Sciences
(M/C 763)
1750 West Polk Street
Chicago, IL 60612-7223

Non-Profit Org.
U.S. Postage
PAID
Chicago, Illinois
Permit No. 4860

ADDRESS CHANGE REQUESTED