

**Evidence-Based Medicine—How to Practice and Teach EBM.** D. L. Sackett, W. S. Richardson, W. Rosenberg, and R. B. Haynes. New York: Churchill Livingstone, 1997, 250 pp. Paperback, \$24.99. ISBN 0-443-05686-2.

Regular readers of *JAMA* will have noted an on-going series with the catchy title "Users' Guide to the Medical Literature" emanating from the Evidence-Based Medicine Working Group. One article from the series [Jaeschke R, Guyatt GH, Sackett DL. Users guide to the medical literature. III. How to use an article about a diagnostic test. *B. What are the results and will they help me in caring for my patients?* *JAMA* 1994;271:703-7] would be of particular interest to readers of *Clinical Chemistry* and has important implications for all clinical laboratory workers who interface with clinicians. If a Bayesian cardiologist were to inquire about the likelihood ratio for different concentrations of CK-MB or troponin following an infarction, could the laboratory scientist provide this information or know how to seek this information from a review of the medical literature?

Those who search MEDLINE and use one of the many competing MEDLINE systems such as SilverPlatter, Knowledge Index, or PaperChase may not be aware that these systems vary substantially in their performance in regard both to relevance and irrelevance of retrieved citations. Moreover, the National Library of Medicine indexers do not always consistently index terms such as sensitivity, specificity, and likelihood ratios, so searches seeking the most current citations on the diagnostic use of a new test may not retrieve relevant citations. Optimized search strategies through either textword or MeSH headings should be used, but many individuals do not know what these are.

These and many other topics are covered in *Evidence-Based Medicine—How to Practice and Teach EBM*, written by four authors from Oxford, Rochester, and McMaster Universities. *EBM* stresses the examination of evidence from clinical research and its application to a defined clinical problem. Although it does not solve all problems

in the practice of medicine [Naylor C. Grey zones of clinical practice: some limits to evidence-based medicine. *Lancet* 1995;345:840-2; Maynard A. Evidence-based medicine: an incomplete method for informing treatment choices. *Lancet* 1997;349:126-8], *EBM* is an attempt to rigorously examine current evidence and assess its worth. In one sense this new volume is a natural sequel to Sackett and colleagues' very successful *Clinical Epidemiology—a Basic Science for Clinical Medicine*, previously reviewed in *Clinical Chemistry* (1986;32:411-3), and now in its second edition (1991). A companion volume from Oxford is Muir Gray's *Evidence-Based Healthcare—How to Make Health Policy and Management Decisions* (1997), which covers more extensive grounds in healthcare.

The book has five chapters: How to ask clinical questions you can answer; Searching for the best evidence; Critically appraising the evidence; Can you apply this valid, important evidence in caring for your patient?; and Evaluation (of your own performance). It has an Appendix on the calculation of confidence intervals and six, sturdily coated, two-sided crib sheets on such topics as calculating sensitivity and specificity, the five levels of a test result, Fagan's likelihood ratio nomogram, how to do a good MEDLINE search, and many other useful guides. It is a user-friendly book with edge-marked icons on diagnosis, prognosis, therapy, harm, economic analysis, decision analysis, and quality so that one can easily follow a topic throughout the entire book. My one complaint is of the binding, which makes it impossible to lay the book open on your desk unless you break the spine.

While it is largely directed towards physicians, there is much that the laboratory scientists can use. It will tell you things not found in Tietz, such as web sites to the Cochrane Collaboration and the York Centre for Reviews and Dissemination, the use of SpPin and SnNout, the journals *ACP Journal Club* and *Evidence-Based Medicine*, and many other goodies. It is my firm conviction that good clinical chemists have always practiced "evidence-based clinical chemistry." But get the book! Improve your EBCC!

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**All About Albumin: Biochemistry, Genetics, and Medical Applications.** Theodore Peters, Jr. San Diego, CA: Academic Press, 1996, 432 pp, \$85.00. ISBN 0-12-552110-3

Albumin, the most abundant plasma protein, is among the most studied of all proteins, being important from clinical monitoring, physiological, and therapeutic perspectives. This unique primer brings together the full scope of albumin: its history, structure, physical and chemical properties, genetics, metabolism, and practical application, as well as laboratory preparations and clinical uses. The author starts with a concise historical overview and a detailed illustration of the structural information and chemical properties of albumin from human and bovine sources. Immunochemistry of albumin and its ability to bind a large variety of endogenous and exogenous ligands are presented in Chapter 3. Chapter 4 includes the gene sequences of albumin and other members of the albumin superfamily, including  $\alpha$ -fetoprotein,  $\alpha$ -albumin, and vitamin D-binding protein. Chapter 5 focuses on basic aspects of albumin metabolism, including synthesis, distribution, functions, and degradation. The last two chapters will be of particular interest to the laboratorian as they deal with the clinical and practical aspects of albumin, including analysis and the physiological relation and response of this protein to metabolic diseases. Parenteral uses of albumin in circulatory and digestive support, removal of toxins, imaging, drug delivery, and coating of in vivo devices are also presented.

The application of albumin in surgery and shock trauma consumes ~100 000 kg of this protein per year in North America alone, leading to large-scale commercial purification as well as recombinant production. A critical section for researchers using albumin for in vitro systems de-

scribes a list of impurities that are detected in albumin preparations, followed by a section on removal of unwanted components. The author concludes the book by describing albumin products and their in vitro applications, plus procedures for preparation and characterization of albumin solutions, isolation from serum, and modification.

As with any comprehensive text dealing with such an important and extensive topic, an updated edition of this book will be warranted in the near future to summarize the exploding lit-

erature on such topics as comparative studies of recombinant and human serum albumin, mechanisms of biomolecular interaction of negatively charged albumins with the HIV-1 envelope protein gp120, and the use of albumin to prolong circulation of several therapeutic growth factors, including recombinant human granulocyte-colony stimulating factor.

In summary, this book is a must for those who use albumin to restore failing circulation or to promote nutritional functions, as well as for clinical researchers of plasma protein

metabolism and transport of substances in blood. It is highly recommended for physicians, biochemists, clinical investigators, pharmacologists, and protein chemists.

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## Software Review

**Acid Base Disorders—Computer-Aided Learning Software on CD-ROM.** James Hooper, ed. London: Association of Clinical Biochemists, 1996, \$72. ISBN 1-899938-00-1.

*Acid base disorders—computer-aided learning software on CD-ROM* consists of two clinical cases illustrating the use of acid-base analysis in clinical decision making. In an active form of learning, the student must make choices to confirm diagnoses and make management decisions. Tutoring and "consultation" with an expert are available throughout the entire process. Incorrect diagnoses are critiqued, and the user is directed to the "library" for additional study. Multiple-choice questions are presented throughout each scenario, and a record of student performance is displayed. Each case consists of five parts: brief history, clinical assessment, chemical assessment, diagnosis and treatment, and resolution—summary. Following the case, the student is presented with several brief cases and questions. A set of essay questions are part of this final stage.

This learning package is most appropriate for residents or advanced medical students and should be used as a supplement to basic, didactic instruction. It is also an excellent review for the established practitioner. It is unlikely that any user will answer all the questions correctly, as they represent a broad and detailed investigation of salicylate toxicity and Wilson dis-

ease. Differential diagnosis is emphasized throughout the scenarios. Incorrect diagnoses are explored only if the student chooses one of them.

The content of the CD-ROM is excellent and the cases are realistic. The scenarios reflect the British medical system, with junior doctors providing primary care and Consultants overseeing the process. If one overlooks the British spellings and phrasing, the text is succinct and readable for American audiences. Both international and common laboratory values are used throughout the text. Minimal references are provided for most topics and many of these are textbooks. The acid-base calculator tool can be used with "traditional" or SI values. To complete both cases requires ~2 h (without the essays). One annoyance is that it is not possible to backtrack in the case: To repeat a section requires starting the entire program over. The instruction manual describes a "Backup" button but it did not appear on my version of the program.

This is a multimedia presentation, and multiple window overlays present the case and the working tools to the student simultaneously. Despite an attractive interface design, many of the windows (the arterial blood gas browser, for instance) require many key or mouse clicks to use. Also, each window has a different control system (buttons, arrows, dials, and menus are all

used), which creates too many distractions from the case material. However, anyone familiar with "Windows" will quickly feel at home navigating the controls. The only audio in the program are sound effects related to window activities. These are somewhat distracting but can be disabled. The user tools include the ability to place bookmarks in the browser (however, not in the scenarios), a user note pad, and cut-and-paste options for review or printing. The browser can be run independently of the clinical cases and used for study. The program could be improved by adding additional cases to enhance learning opportunities and by adding an instructor module to help track student performance.

The program can be installed on the hard drive (13 megs of disk space) or run from the CD-ROM drive (still requiring 7 megs of space). It will not run with Windows "Large Fonts". This restriction is not identified in the manual or disk information. I ran it successfully under both Windows 95 and Windows 3.1. A double-speed or higher CD-ROM drive provides sufficient speed to run the program; however, to install it to the hard drive is very slow unless a quad speed or higher is used.

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