Introducing Medical Students To Informatics

Lewis Aronow, Stephen R. Brown, and Leon Moore
Department of Pharmacology and Learning Resource Center
Uniformed Services University of the Health Sciences, Bethesda, MD 20814
E-MAIL: aronow@usuhs.ucc.usuhs.nnmc.navy.mil, brownsr@usuhs.ucc.usuhs.nnmc.navy.mil, moore@usuhs.ucc.usuhs.nnmc.navy.mil

Students arrive in medical school with widely disparate degrees of familiarity with computers, and few of them are aware of the range of medical information resources available to them in medical libraries. It is incumbent upon instructors in the medical sciences to prepare their students both in the sense of equipping them with a knowledge base in the field of interest, and also inculcating a pattern of continual updating and amplification of this data base throughout their medical careers.

We instituted a new problem-based teaching exercise in our Pharmacology course requiring the students to access computer-based information resources. The student is presented with a realistic problem set, which can best be answered by using computer-based information resources (often CD-ROM's) available in the library [1]. It is an information-based application [2] and serves as an introduction to Medline (and several other rich sources), presented in a way that sells itself to the student user as a practical method of solving problems.

We introduce the class to the computer resources with a brief (20 minutes) on-line demonstration using a computer/projection system. The students, working in pairs, are then required to turn in written responses to the problems which are graded. The efficiency of the system is particularly impressive; thanks to user-friendly front ends implemented in our Learning Resource Center, students who are completely computer-naive can nevertheless generate finished reports in two to three hours.

Among the useful commercial resources available on CD-ROM are Dialog-Medline, Micromedex, the PDR, AMA Drug Evaluations, American Hospital Formulary Service Drug Information, USP Drug Information, and the Medical Letter (partial list). The teaching exercise will be demonstrated interactively, accessing the library resource remotely.

Examples of some useful problems include:

Problem 1. A patient says, "I've been suffering from migraine headaches for years, and nothing I've tried has helped very much. I recently heard a news report about a new drug, suma something or other, that is supposed to be very good for migraine headaches. Can you give me the drug?"

Questions: What drug is the patient asking about? Present a brief summary of its pharmacology, the basis of its action, its clinical use, and a summary of clinical trials examining its efficacy. Is it possible this drug is really an improvement on existing therapies?

Comment: This problem is best approached using the large drug information resource, Micromedex. Entering the term "suma" as a search query generates *sumacardan*, *sumasept*, and *sumatriptan* as potential candidates; it is the work of a few minutes to obtain clinically relevant, detailed information on the new anti-migraine drug, sumatriptan.

Problem 8. You get a phone call one afternoon from your broker, someone whose good judgment you've had occasion to question in the past. "Doc," he says, "I've got a hot one. Some big shot scientist at Johns Hopkins has discovered a cure for cancer in broccoli, and a start-up company will be making the drug. Put $10,000 in this company, and you'll be a rich man some day!" You put him off with a polite rejoinder, but that evening, sitting at your terminal, you recall his strange story and begin to wonder what it's all about.

Questions: What chemical agent is the broker talking about? Who is the scientist? Is it really a potential "cure" for cancer, or something a little different? What is the suggested mechanism of action of this novel chemical agent? Should you recommend broccoli to your pediatric clientele?

Comment: This kind of problem can only be solved with Medline. Entering the term *broccoli* in Dialog-Medline generates three reports in 1992. Adding the limiting author affiliation, *Johns Hopkins*, or adding another term, *cancer*, reduces this to just one hit, a report from Paul Talalay's lab at Hopkins describing the identification of sulforaphane from broccoli, an agent which induces anticarcinogenic protective enzymes in mammals.

References

[1]. S.R. Brown, G. Decker and C.J. Pletzke. Bringing the medical library to the office desktop. AMIA Proceedings, 15th Annual SCAMC, 1991.
[2]. W.R. Hersh. Informatics: development and evaluation of information technology in medicine. JAMA 267,167,1992.

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