
BRIEF COMMUNICATIONS

MEDLINE as a component of the objective structured clinical examination: the next step in curriculum integration

By Susan E. Woods, M.S.*
Area Health Education Center Library Services
Coordinator

Barbara W. Francis, M.S.L.S.
Educational Services Librarian

University of Florida
Health Science Center Library
P.O. Box 100206
Gainesville, Florida 32610-0206

INTRODUCTION

Recent literature has reported a definite correlation between physicians' use of the medical literature and clinical outcomes. Lindberg's study indicated that rapid access to the medical literature favorably influences patient outcome [1]. Klein found that patients for whom MEDLINE searches were performed earlier in their hospitalizations had significantly lower costs, charges, and lengths of stay than did those whose searches were conducted later [2].

Studies such as these provide the data to support a growing movement in medical practice toward evidence-based medicine (EBM). The McMaster University EBM Working Group states that EBM requires the physician to learn new skills, including efficient literature searching and the application of formal rules of evidence in evaluating the clinical literature [3]. In other words, information management is the cornerstone of future medical practice.

Information management is a new direction in medical education, and, to be effective, it must be integrated into the curriculum. Minchow concludes that if information skills were incorporated at "teachable moments" in the four years of medical school, medical students would become sophisticated in managing their information needs and would be prepared to stay abreast of continuing changes in the growth of medical literature [4].

INFORMATION MANAGEMENT CURRICULUM INTEGRATION

At the University of Florida Health Science Center in Gainesville, the College of Medicine Curriculum

Committee has recommended changes that would ensure that the curriculum adequately meets the needs, including information management needs, of its physician graduates.

To address the goals of information management, a Teaching Methodologies/Informatics Subcommittee was appointed. One of its charges was to recommend ways to ensure that all students are competent in accessing the literature through computer-based systems. Two librarians, one responsible for education and the other responsible for the Area Health Education Center, were appointed to the subcommittee. The subcommittee recommended an integrated, longitudinal library informatics curriculum, which required all students to participate at some point in each of the four years.

OBJECTIVES FOR MEDLINE IN OBJECTIVE STRUCTURED CLINICAL EXAMINATION

The fourth-year component of the integrated curriculum specified that MEDLINE be incorporated into the student objective structured clinical examination (OSCE). The OSCE is a multiple-station examination that determines students' mastery of a clinical competency within a specified time. The objectives of the exam were broadened to include assessment of the students' use of MEDLINE. The objectives of the MEDLINE component were to demonstrate the students' ability to find highly relevant articles on a clinical topic and to show their skill at doing a MEDLINE search within a time limit. The senior associate dean for educational affairs of the College of Medicine wanted to implement the OSCE component immediately to get a baseline for comparison with future years, when students would have had three years of course assignments incorporating MEDLINE instruction and usage.

The majority of these students had received MEDLINE instruction only once during their first year, and approximately twenty who had completed their first year of medical school on another campus had received no library instruction at all. Because of these factors, the college decided not to grade the students on their searching skills. Instead, the MEDLINE component was designed to be a learning experience.

The OSCE was administered over a period of eight days to approximately 120 students in small groups of 15. It was administered in the College of Medicine's new assessment center, which has eight small examination rooms equipped with video cameras and

stereo microphones, a staff office from which all rooms can be monitored, and eight computer stations. Each student rotated through eight standardized simulated patients and had a computerized assessment after the first seven. Student time at each station was limited to twelve-minute sessions, with three minutes allowed for proceeding to the next station.

The exam lasted at least four hours, during which a librarian was assigned to the MEDLINE station. (A total of seven librarians participated.) At this station, the last one of the test, a computer with access to the Health Science Center Library's network was set up. Each student was asked to perform a search on the library's CD-ROM MEDLINE system for the standardized patient he or she had just seen. The case problems ranged from management of acute diarrhea in infants to finding a current-practice guideline on depression. Each day, all students searched the same case, and the case changed each day.

The librarian assigned to the MEDLINE station gave the student a search topic and observed the student's search strategy. When the student finished, the librarian pointed out methods that would improve search retrieval. The student then was asked to print a few citations with the search strategy and leave it with the librarian. Students were given a one-page quick reference guide to remind them of what they had learned or reviewed.

RESULTS

The search results revealed an overwhelming lack of understanding of Medical Subject Headings (MeSH). Students demonstrated proficiency at keyword searching but seemed never to have heard of MeSH, although it had been covered in first-year students' library instruction. When given a brief MeSH tutorial as part of the coaching, most students readily grasped the utility of subject headings. Most students expressed appreciation for the MEDLINE refresher and also regretted that MEDLINE use had not been reinforced earlier in their medical training.

Of the 120 students tested, 88 had both search strategies and citations printed. An analysis was done to see what methods students used in their initial search before receiving librarian coaching. Only two students used the thesaurus to select the correct MeSH headings, and only one used the index to select from the list the MeSH heading-subheading combinations relevant to the search. The keyword-searching method was used by all other students except three, who did not know how to begin. Fourteen students who retrieved no articles from their original search were able, with coaching, to retrieve articles that met the stated need. Seventeen students retrieved too many articles and, until coached, did not know how to limit by major heading, publication type, or language.

The OSCE experience gave librarians an opportunity to assess deficiencies in the MEDLINE training, and the exercise served to underscore the need for the four-year integrated information curriculum. Additionally, librarians had the benefit of being involved in a process that was critically important to the student, thus heightening the students' perception of the importance of MEDLINE and information management.

CONCLUSION

As the recommendations of the Teaching Methods/ Informatics Subcommittee are implemented, the MEDLINE component of the OSCE will become more of an assessment tool and not just a learning experience. The OSCE experience demonstrates the need for longitudinal training in information retrieval and management and shows that one library instruction session is not enough to equip students with the needed information-retrieval skills. This first OSCE assessment provides a baseline for comparison with future years, when MEDLINE use and experience will be integrated more fully into the curriculum. Once that training is routine in course assignments, MEDLINE can become a full component of OSCE. The overall goal is for MEDLINE to become a tool that students use during the diagnostic process to assist them in clinical decision making.

REFERENCES

1. LINDBERG DA, SIEGEL ER, RAPP BA, WALLINGFORD KT ET AL. Use of MEDLINE by physicians for clinical problem solving. *JAMA* 1993 Jun 23;269(24):3124-9.
2. KLEIN MS, ROSS FV, ADAMS DL, GILBERT CM. Effect of online literature searching on length of stay and patient care costs. *Acad Med* 1994 Jun;69(6):489-95.
3. MINCHOW RL, PUDLOCK K, LUCAS B, CLANCY S. Breaking new ground in curriculum integrated instruction. *Med Ref Serv Q* 1993 summer;12(2):1-18.
4. Evidence-based medicine. *JAMA* 1992 Nov 4;268(17):2420-5.

*Now Susan E. Woods Publications and Seminars
5111-6 Baymeadows Road, Suite 267
Jacksonville, Florida 32217

Received October 1994; accepted May 1995