Computers in Family Practice

Computer Literacy for Physicians

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Medicine is one of the few remaining professions requiring little or no training in the use of computers. In fact, it may still be possible for a student of medicine to complete residency training without being exposed to a computer. In contrast to this situation, American society is becoming more automated with every passing day, and the practicing physician is finding it increasingly difficult to resist the forces of automation. Therefore, when a physician establishes or joins a practice and is faced with the need for a computer system, feelings of ignorance and frustration may result from inadequate knowledge.

A Computer Literacy Program

A computer literacy program has been introduced into the practice management curriculum at Moses H. Cone Memorial Hospital in Greensboro, North Carolina. The purpose of this program is to acquaint resident physicians with the functions and applications of computers within medical practice. Objectives are as follows: (1) to recognize the basic components of a computer system, (2) to identify areas in which patient care could be improved through the use of an automated system, (3) to distinguish the business and clinical tasks that could best be performed by a computerized system, (4) to compare cost effectiveness of an automated operation with that of a manual system, and (5) to identify the steps involved in conversion, installation, and maintenance of a computer

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system. The curriculum is designed for senior family practice residents.

At Moses H. Cone Memorial Hospital, each of the senior residents completes a two-month split rotation in the Family Practice Center, with the first rotation occurring in the first six months of the academic year and the second occurring in the latter half of the year. A general introduction to computers is provided during the first month, followed by a program tailored to specific needs during the second month. The education methods include lectures, seminars, demonstrations, individual training sessions, consultation sessions, and site visits to practices with computers. The Moses H. Cone Family Practice Center is equipped with two Apple II+ computer systems and various software packages that are used as instructional aids.

Computer literacy is introduced to all senior residents by means of a one-hour lecture that provides a basic understanding of computer components, operations, and functions. The Apple microcomputer system is used to demonstrate the various computer components. The initial session also includes an overview of the role of the computer in medicine, the types of commercial systems available, and basic guidelines toward implementation of an in-house system.

During the first rotation, each resident works with the Apple system in two 2-hour sessions. The first session is designed to allow the resident to become comfortable with the computer and to teach two applications—word processing and networking. After the advantages and applicability of word processing are discussed, the resident is instructed on the use of the computer as a word processor and is given the assignment of creating

and producing a letter. To demonstrate the concept of networking, the microcomputer system is connected through a modem to a local mail and news network. The resident reads the news bulletin and sends and receives "mail." The available medical networks and their applicability to practicing physicians are discussed in detail.

The second individual session provides an opportunity for the resident to work with the system in data management. The resident creates a mock drug file including patient name, drug name, disease, side effects, and drug dosage. The resident is then asked to answer hypothetical patient inquiries using the computer. Time sharing is demonstrated by connecting the microcomputer to a mainframe computer via a modem. By using the microcomputer as a "dumb terminal," the resident can access and manipulate files stored on the mainframe computer.

The third individual session is held during the second month of the rotation. This session is designed to enable the resident to use the computer in making financial decisions about future practice. Assistance is given in establishing practice budgets, computing amortization schedules, and calculating interest on loans.

Each of these individual sessions is supplemented by consultations with a faculty member regarding the resident's future plans for practice. Discussion topics include contacting vendors, cost comparison of various computer options, leasing vs buying a computer, and the advantages of installing a computer.

The final individual session is a site visit to a local practice that utilizes a computer. The practice chosen emulates the future practice needs of the resident so that pertinent information can be gathered concerning hardware and software needs, costs, applications, implementation, physical layout of the office and system, patient flow, and physician productivity.

In addition to individual sessions, there are seminars and demonstrations held throughout the academic year. In the first year of the curriculum, these sessions included a lecture by a local physician who made numerous and costly mistakes when purchasing his computer, a computer exhibition with 12 local vendors demonstrating their medical software packages, a seminar conducted by a local computer company, and a two-day seminar on computers in medical practice.

These sessions are attended by residents, practicing physicians, and office personnel in medical practices.

At the end of the curriculum all residents are provided with a reference manual to assist and guide them through the process of automation. A one-year follow-up is planned to assess the progress of each resident and evaluate the impact of the computer literacy education.

Residents who have completed the computer literacy program responded favorably to its content and stated that the program would be beneficial in making decisions about office systems for their medical practices. Residents also indicated that the course changed their attitudes about computers from negative (one resident indicated that he was even antagonistic toward computers) to positive. Most of the residents indicated that prior to the course they were not considering automating their practice. After completing the curriculum, however, all of the residents indicated that they would probably automate their practices and that the information obtained from the course would enable them to make more intelligent decisions regarding the purchase of a computer system. Future curriculum plans involve more training in computer applications directly related to office functions. The Apple II computer will be used to simulate an office computer, and the resident will get "hands-on" experience completing such tasks as filing insurance forms, billing patients, aging accounts, and other clerical tasks. This addition to the program will increase residents' understanding of how a computer functions in a medical office environment.

Summary

Medical schools and residency programs can help physicians acquire a basic knowledge of computers by offering education in computer literacy. The program currently being offered in the Family Practice Residency Program at Moses H. Cone Memorial Hospital has been integrated into the practice management curriculum and has proven very successful in its initial year. It has served to broaden the residents' knowledge of automation systems and has prepared them for the future automation of their offices. It is hoped this knowledge base will help physicians make sound decisions concerning the purchase of a computer system.