Patient-Computer Dialogue: A Hope for the Future

Although controversial when first reported during the 1960s, patient-computer dialogue has been studied with increasing interest as our societal comfort with computers in general has increased. In a recent, comprehensive review of the literature, Bachman reported that a number of studies over the years have demonstrated the potential of dialogue between patient and computer for obtaining accurate, comprehensive medical histories on a wide variety of medical problems and in a manner that is well received by both physician and patient.

However, despite favorable reports, the computer-based medical interview has yet to be widely adopted in clinical practice. Before the advent of the Internet, one limiting factor was space. More often than not, the physician’s office was too crowded and too busy to have a computer available for each new patient. The Internet offers a new opportunity as a medium to deliver computer-based medical interviews to the patient in the privacy and comfort of the home at a time and place of convenience.

A small but growing number of patients already use the Internet to obtain information from their electronic medical records located in their medical centers. Although the idea of sharing the medical record was controversial when first suggested, there is now an increasing interest in providing patients with ready access to their medical records; in places where electronic medical records are available, clinical facilities have begun to implement secure patient portals to enable access to these records. With Web-based portal systems such as PatientSite at Beth Israel Deaconess Medical Center in Boston, patients with access to the Internet can view results of laboratory tests, interpretations of radiographs, and lists of medications, as well as view upcoming appointments, request new appointments, request prescription refills, and, by means of a secure electronic messaging system, ask questions and receive explanations about their medical care. Furthermore, such portals can be
used to conduct computer-based medical interviews over the Internet.4,11

In this issue of Mayo Clinic Proceedings, Adamson and Bachman14 present the results of a pilot study with a commercially available patient portal and clinical office management system, programmed in turn with a link to a commercially available, computer-based medical history system and designed to function as an electronic office visit (e-visit).

With each e-visit, patients first enter their primary problems in free text, together with their vital signs and any medications currently being taken. Patients then respond to a series of structured medical history questions to qualify the presenting problems in detail. The e-visit program then applies diagnostic codes to the presenting problems, initiates procedures for billing, and sends a message to inform the responsible physician that a summary of the patient’s history is available for clinical assessment. Within 24 hours, the physician reviews the e-visit summary and responds in both free text and preformatted statements, with medical recommendations as well as prescriptions that may be indicated.

During their 2-year study period, Adamson and Bachman offered their e-visit program to 4282 patients under the care of physicians in the Department of Family Medicine at Mayo Clinic. Of these, 1159 signed on for a total of 2531 e-visits. The results of this study are impressive, both for the quality of care provided and for the cost-effectiveness of the approach. The results are particularly encouraging as we look for solutions to the problems of health care delivery.

As with all clinical trials of this type, Adamson and Bachman faced a selection bias. Physicians and patients who were already favorably inclined toward computers were more likely to volunteer and to respond favorably to the e-visits. However, experience thus far with computers in medicine indicates strongly that clinicians and patients alike will use computing regardless of preconceived aversion, if the computing is helpful to them.3,15,16, it seems clear from the results of this pilot study that the e-visit protocol was sufficiently helpful to the participants to diminish the importance of selection bias.

The study had no control group with which the investigators could compare the results. Nonetheless, the physicians and patients participating in the study had a wealth of experience with ambulatory care visits in the traditional setting, and therefore they had a basis for comparison with their new experience with the e-visits.

Effect modifiers, such as the “Hawthorne effect,” might also have influenced the results. The physicians and patients were informed participants, and their enthusiasm for the study may have favored the successful outcome. However, the physicians (like most) were pressed for time, and the patients (like most) wanted the best possible care. It seems unlikely that they would offer favorable reviews of an experience that offered little or no benefit.

The study is limited to people with access to the Internet and, as with all Internet-based studies, is subject to the criticism of fostering a “digital divide.” However, the number of people with access to the Internet is growing at a rapid rate; according to a recent survey, more than 150 million Americans go online for health-related information.17 If e-visits such as these can be demonstrated to be helpful to patients and physicians, this will be another good reason that the Internet should be made even more widely available for health-related purposes.

In the early days of digital computers, thoughtful observers had considerable concern about the appropriateness of the computer in medicine in any circumstances.3,15 Would the computer dehumanize the clinical encounter? Would the computer destroy the art of medicine? Today, of course, the computer and the physician coexist, although in an often uneasy relationship, and the current concern has less to do with whether the computer will replace the physician than with whether the computer will fulfill its potential to help both the physician and the patient in the practice of medicine.16 With such widespread use of the computer by the general public, there are of course real dangers with misuse and overuse, such as depersonalization, true dehumanization, and breach of privacy, and we must be vigilant. With the computer in medicine, however, the problem is not so much overuse as underuse—or, at least, too little good use. In medicine, the computer is still only slowly finding its way, and doing so often along disparate and competing paths.

The results of Adamson and Bachman’s study are foremost most heartening. If e-visits such as theirs can be demonstrated to be generally applicable and cost-effective, and if they can be demonstrated to improve the efficiency and, most importantly, the quality of the services provided, this will be an important step forward as we move to improve the quality of medical care. Furthermore, the availability of such e-visits could actually increase the likelihood that a patient would seek medical care. A patient busy with work and family-related activities might go online for help with a medical problem that he or she might otherwise have left untreated if treatment involved a costly, time-consuming, and routine-disrupting office visit. The idea is not to replace the physician; the idea is to fill a void.

Warner V. Slack, MD
Division of Clinical Informatics, Department of Medicine
Harvard Medical School and Beth Israel Deaconess Medical Center
Boston, MA