Effective physicians must listen to their patient’s concerns, take accurate and complete medical histories, and earn patient trust and confidence. Physicians must help patients better understand their problems, and clearly communicate treatment recommendations and medical advice. Communication is a cornerstone of medical practice, while poor communication is a major cause of misdiagnosis, poor compliance of therapy, and malpractice claims (Mechanic, 1998).

Telecommunication technology has created new lines of communication for patient-physician interaction. Most recently, the global computer network of the Internet has provided electronic mail (email) and the World Wide Web (Web). Email allows for a direct one-to-one communication, and the Web is used mainly as a broadcast medium for dissemination of information in a one-to-many form. Just like the Internet’s predecessor, the telephone, application and research must be done to determine how this new technology can best be used to enhance the patient-physician relationship (Mandl, 1998).

The Internet provides an unprecedented level of near instantaneous lines of intercommunication. Web browser technologies provide an interface to the Internet that makes this communication accessible even to novice computer users. The combination of communication and interface technology is an opportunity to explore ways of improving patient healthcare by breaking down current barriers to quality healthcare management. Web-based
communications enable a continuous interaction between physician and patients where patients can freely enter data and concerns, and physicians can address these asynchronously. With the resulting additional patient data, physicians get a more complete clinical picture, and, with the aid of trending and decision support tools, the computer can help organize and present data in meaningful ways. Patients gain a sense of partnership in their healthcare through the continuous reporting of data and more immediate feedback.

This chapter discusses the design and implementation of a working healthcare management system called “Hypertension Decision Aide” or “HDA”. HDA is a World Wide Web system that provides chronic hypertension patients with data reporting, monitoring, decision support tools, and educational material. HDA provides physicians with the ability to monitor a patient’s progress between visits, view summary data, and review suggestions from decision support tools. Issues of system design, data integrity, patient confidentiality, and security will be discussed in the context of HDA.

BACKGROUND

Successful healthcare management requires that a number of elements come together for each patient. These include access to healthcare, patient compliance and motivation, and sufficient patient monitoring. A variety of barriers exist that can cause a breakdown in these requirements and reduce the quality of care. Examples of such barriers include:

1. Distances that reduce contact between patient and physician, particularly in rural areas where contact requires some means of transportation and costs patients missed work time.
2. Physician shortages that reduce access to healthcare.
3. Patient’s lack of understanding of their condition or their treatments.
4. Patient’s loss of self-determination in managing their own care resulting in noncompliance to treatment and lack of motivation to monitor health status indicators.
5. Physician’s lack of data about a patient’s condition or response to a treatment.

Telecommunication technologies and Internet technologies are a useful tool for the dissemination of medical information, the sharing of medical records, and physician intercommunication (Mandl, 1998). To overcome some of the barriers listed above, recent work applies these new technologies to patient-physician intercommunication (Balas, 1997, Bader, 1998). For example, there has been some exploration into the use of e-mail as a way of linking patients to physicians and clinicians (Neill, 1994). E-mail is a “push medium”; the only activity required by the message receiver is to check his/her e-mail account. In this sense it is much like voice mail. Yet, it differs from telephone and voice mail technology in ways that require special considerations of its use in communicating messages that may be critical, such as treatment changes or sensitive messages (Mandl, 1998). Policy statements are being drafted to address the proper use of e-mail communication with patients in the clinical setting (Kane, 1998). The Web is a “pull medium”; the message receiver must actively send a request for the message. The use of the Web as a mass communication tool for the delivery of medical information is an ongoing topic (Glowniak, 1994, Gentile, 1998, LaPerri’ere, 1998). The Web provides the ability to deliver up-to-date information to patients on medical conditions, treatments, and research results. Web systems have also been developed to provide educational opportunities to patients. These can improve patients’ understanding and, subsequently, their compliance to treatment (Consoli, 1995).
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