

# Patient-Centered Computing: Can It Curb Malpractice Risk?

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## Abstract

The threat of a medical malpractice suit represents a major cause of career dissatisfaction for American physicians. Patient-centered computing may improve physician-patient communications, thereby reducing liability risk. This review describes programs that have sought to enhance patient education and involvement pertaining to 5 major categories of malpractice lawsuits: Diagnosis, medications, obstetrics, surgery, and treatment errors.

## Introduction

The specter of medical malpractice suits has increased medical costs [1] and contributed to physician career dissatisfaction [2]. A breakdown in doctor-patient communications is known to be a common predisposing factor in the patient's decision to file a lawsuit [3], and is believed to be a more important motivating factor than the iatrogenic injury itself [4,5].

For example, the Harvard Medical Practice Study analyzed adverse outcomes and subsequent litigation actions among 30,121 randomly-selected patients admitted to 51 randomly-selected hospitals in New York state. Among 280 adverse outcomes caused by medical negligence, only 8 gave rise to a malpractice claim [6]. This suggests that most patients are willing to "forgive and forget," if they perceive the physician is acting in a conscientious and caring manner.

The concept of patient-centered care implies more open communications between patients and physicians, and a more trusting doctor-patient relationship. It follows that a patient-

centered approach to medical care will help reduce liability risk.

Wider use of computers may improve a physician's diagnostic accuracy, reduce adverse drug reactions, and improve patient management. Computers also may offer the prospect of wider dissemination of health information, greater participation of patients in health care decisions, and a stronger doctor-patient relationship.

This paper discusses examples of patient-centered computing that apply to the most common sources of liability claims: Diagnostic errors, medications, obstetrics, surgery, and treatment. These categories represent 83.0% of all malpractice claims and 90.1% of all indemnity payments [7].

Many of the software programs described in this article were originally developed for use by physicians. However, the simplicity of use of these programs, coupled with patients' desire to gain access to the information, has resulted in growing use by patients seeking medical attention [8].

## Diagnosis

Diagnostic errors represent 24.1% of all malpractice claims, and thus represent the largest claim category [7]. A number of computer-based diagnostic aids exist. Most commonly, the patient responds to a series of questions about symptoms and personal health history. This results in a listing of the differential diagnosis.

Some diagnostic-screening programs are intended for use by patients in community pharmacies. The patient, wondering which OTC medications work best for a given symptom (such as upper

abdominal pain), responds to a series of questions. If the responses suggest a potentially serious condition (such as myocardial infarction), the program flashes an alert to the patient and pharmacist.

### Medications

Claims arising from errors in the ordering or administration of medication comprise 8.5% of all claims [7]. Several medication databases, listing 3,000-5,000 drugs, can be accessed via computer. These databases allow the patient to confirm medication dosages and obtain information about side effects.

Since their introduction in the 1970s, self-glucose monitors are now widely used in managing patients taking insulin [9]. Some glucose monitors include a memory chip that stores readings over several days. These readings are downloaded in the physician's office, allowing accurate tracking of insulin values over an extended period. Two studies have found that such devices can improve patient adherence [10] and blood hemoglobin and fructosamine levels [11].

### Obstetrics

Obstetrical lawsuits represent 10.0% of claims [7], and have resulted in decreased access of women to maternity care services, especially in rural areas [12]. Some OB claims involve women with preterm labor. Pennsylvania Hospital, Philadelphia, has devised an innovative approach to home monitoring of women at risk for preterm labor. The system automatically calls the patient at a predetermined time each day, and leads her through a series of questions [13]. Patients respond to the questions by pushing buttons on the telephone.

At least one obstetrical malpractice case arose from the physician's failure to accomplish a computer search and provide correct information. In this case, Jean Harbeson was diagnosed with epilepsy and was prescribed Dilantin and

phenobarbital. When she specifically asked about the risks of these medications during pregnancy, she was not told about the possibility of fetal hydantoin syndrome.

During the following 2 years, the couple had 2 daughters, both of whom were diagnosed with this debilitating condition. The couple sued, and the court eventually found in favor of plaintiffs. Commentary on this case noted, "To justify ignorance of this type of risk (as in Harbeson) would insulate the medical profession beyond what is legally acceptable...it would be 'just good medicine' to conduct a literature search...in response to a direct question to a physician." [14].

### Surgery

On a national basis, 22.8% of malpractice claims arise from surgical incidents [7]. Improved informed consent represent one arena where computer-based information can help patients gain appropriate expectations about the procedure, and several software programs currently offer this capability.

For example, one program was developed for patients considering a transurethral prostatectomy. The program presents the benefits and risks of the 3 therapeutic options: surgery, medications, and "watchful waiting." Use of the interactive system by Colorado Kaiser Permanente reduced TURP surgery by 44% and saved \$170,000 in 1990 [15]. The program also reportedly shaves 15-20 minutes from the typical urological consultation visit.

### Treatment

Treatment-related lawsuits, constituting 16.6% of the total [7], are triggered by a number of causes, including failure to select the correct treatment and failure to monitor or follow-up. A growing number of databases are available to assist patients to participate in treatment and management decisions.

At the University of Wisconsin Hospitals, Madison, women diagnosed with breast cancer are provided a take-home computer that enables them to write letters to other cancer patients, access a library of articles, or consult a list of 250 commonly asked questions [16].

Harvard Community Health Plan, Burlington, MA, has established the first system in the US that links physicians, patients, administrators, and payors [17]. Plan members use their home terminal to obtain management advice for minor symptoms and access general health information.

At Children's Hospital, Boston, young bone-marrow transplant patients are required to stay in isolation for 35-45 days. To overcome their physical and social isolation, the hospital installed KidBits, a computer network that allows patients to do school work, entertain themselves, and communicate with other patients. Hospital staff have commented that the children seem to be more empowered with the system.

The Department of Family Medicine, Case Western Reserve University, established an electronic bulletin board. Originally intended for physician use, patients began to dial up the bulletin board, leading to the service to be dubbed, St. Silicon Hospital and Information Dispensary. The system reportedly was receiving an average of 233 inquiries a week [18].

A number of electronic bulletin boards and computer networks, such as CompuServe, include disease-specific discussion groups that meet on a regular basis. These computer-mediated groups are especially valuable to the homebound [19]. France's Minitel computer network is being used for the same purpose.

Pediatricians at Yale University developed Asthma Command, a computer game that asthmatic children used over six 45-minute sessions to learn self-

management skills. An evaluation of the game showed the experimental children did significantly better in learning about asthma and in their asthma self-management practices [20].

Two studies have demonstrated changes in self-care behaviors among patients with rheumatoid arthritis [21] and osteoarthritis [22].

### **Computerized Health Information**

In addition to the categories described above, computers may reduce liability claims by providing health information and supporting informed consent activities. This information can help alert the patient to therapeutic alternatives, recommend self-management strategies in case of a medical complication, and promote more realistic expectations about the benefits of a recommended medical treatment.

A host of programs are available to provide patients and family members key information about pregnancy [23], plastic surgery [24], diabetes [25-27], discharge instructions [28], peritoneal dialysis [29], and medications [30]. A few programs allow the clinician to adapt or update the information to reflect recent research findings.

### **Health Promotion**

Patients who get sick less often are less likely to be exposed to the armamentarium of diagnostic and management procedures that carry an inherent risk of maloccurrence. A number of health hazard appraisal programs calculate the risk of death and serve as a basis for health promotion counseling. Existing health hazard appraisal programs specialize in nutritional assessment [31, 32] or address the full scope of behavioral risk factors [33].

### **Redefining the Doctor-Patient Relationship?**

Widespread use of computers may eventually redefine the basic patient-physician relationship. For example, advocates of computerized health

records prefer the term "patient record," implying a document that is patient-focused and accessed more often by the patient than is the current practice [34]. Patient access to this information will reduce the power asymmetry in the clinical encounter [35]. Anecdotal reports from physicians indicate that use of the device demystifies the diagnostic process, and thus helps shape a mutual partnership relationship [36].

The stated intention of many software program developers is to promote a stronger partnership between doctor and patient. For example, the Interactive Individual Cardiovascular Risk Assessment Program (Robert Wood Johnson Medical School, New Brunswick, NJ) calculates the risks of a cardiovascular event for risk counseling purposes. According to the program's author, "The program allows the physician and patient to calculate and visualize risk together." One cardiac rehabilitation program, HeartWatchers (Rehabilitation Management Software, Westminster, CO), "encourages patients' use of the computer for posting of exercise data and improves communication between staff, patients, and physicians."

### Conclusion

Computers have been touted for their potential to improve quality of care, enhance the efficiency of clinical processes, reduce medical expenses, and strengthen patient education [37]. The findings from this review suggest another reason: promoting patient-centered care, thereby offering physicians a measure of protection from a disruptive and costly malpractice suit.

Counterbalancing these benefits is the potential problem of breach of confidentiality—how do you maintain the security of sensitive computer-based information? Clinical information needs to be accessible to a wide range of caregivers, insurers, and others, without unduly compromising the essential right of confidentiality.

More work is needed to conceptualize, define, and validate measurable indicators of patient-centered care. Further research is needed to analyze, specify, and replicate the effects of computers on patient-centered care. The programs described in this paper point the way to a fruitful and exciting line of investigation.

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