Patient Perspectives on Computer-Based Medical Records

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Background. Despite emerging interest in computer-based patient records (CPRs), less than 1% of medical records in the United States are stored electronically. Some physicians may be reluctant to implement CPR systems because of fear that the physician-patient relationship would be adversely affected. This study ascertained the attitudes of patients regarding the use of CPR systems.

Methods. This study was an in-depth interview survey of 16 patients concerning the CPR system used at the family medicine department at the Medical University of South Carolina. Interview topics included patient knowledge, perceived advantages and disadvantages, and the impact of the CPR system on their relationship with their physician.

Results. Most patients were informed about the nature of the CPR system and had positive attitudes toward it. Common perceptions were that CPR provides physicians with easy access to information, facilitates clinical encounters, and improves physician-patient relationship and the quality of care delivered. Although confidentiality was the major concern expressed about the CPR system, only one respondent indicated that this factor limited his interaction with his physician.

Conclusions. This study demonstrated patient acceptance and support for the CPR system in use at the study site. These findings should encourage physicians to use CPRs.

Key words. Medical records systems, computerized; physician-patient relations; patient satisfaction.
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Despite emerging interest in computer-based patient records (CPRs),[1-4] less than 1% of medical records in the United States are stored electronically. There are numerous barriers to wider dissemination of CPR systems, one of which is physician reluctance. This barrier to the implementation of CPR systems may stem from physicians' fear that their relationships with their patients would be adversely affected. In view of this concern, it is necessary to ascertain the attitudes of patients toward the use of CPR systems.

The available literature on patient perspectives about CPR systems[5-13] is limited, inconsistent, and may represent societal attitudes toward computers in general. There seems to be a tendency toward greater patient acceptance of CPRs in recent years, a trend anticipated by Cruickshank[8] in 1984. The increase in personal and occupational use of computers over time may have played a large role in this attitude change. Another major theme present in this body of research is that patients actually exposed to CPR systems have more favorable attitudes toward them[6,7] than do those who are asked for their theoretical opinion about CPRs.[8] Confidentiality is another aspect of CPR systems that affects patient attitudes about them. This concern is shared by patients contemplating CPR use by their physicians[9,10] and those who have actual experience with the systems.[7]

There are several limitations to the studies published to date. Only three have reported on the perspectives of patients who have had actual experience with comprehensive CPR systems.[6,7,11] With one exception,[11] which reported the opinions of patients of only one American physician, the published studies are all from Europe. In addition, all published studies to date have used traditional quantitative survey techniques, which may have limited the scope of the findings.

This study expands on the CPR systems research

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base by reporting the results of an in-depth interview survey among patients at a medical university family medicine department. The site chosen for this study is ideal for studying patient perspectives in CPR systems because a computerized patient record system has been in place for more than 20 years and computers have been located in each examination room for more than 2 years. The CPR system used at the study site is a fully automated, paperless patient record, which has been described extensively elsewhere.[3,14]

Methods

This study included an in-depth interview survey of 16 patients of the 8 faculty physicians at the medical university where the study took place. Purposeful random sampling was used in the recruitment process to ensure participation by patients of all 8 faculty physicians. Eligible patients included those 18 to 65 years of age whose appointments with their primary physician took place between April 1, 1993, and July 7, 1993, and were coded "medical exam." Patients of faculty physicians were chosen to minimize the effect of clinical and computer inexperience among residents that might have influenced responses to the survey. The code "medical exam" was chosen because this type of visit would give physicians an opportunity to use many features of the CPR system. Only patients with recent visits were eligible, so that the experience would be relatively fresh in their minds. Random sampling of every 5th eligible patient was employed to derive a final sample of 16 patients. Patients were excluded if they were an employee of the medical university, if they could not be contacted, if they refused to be interviewed, or if two of their physician's patients had already been interviewed.

Patients were contacted by telephone and asked to participate in the study. Those who could not be reached on the initial call were called back as many as five times, including during evenings and weekends. Individual interviews were conducted at the location preferred by the patient (home, office, or study site). All interviews were conducted by one of the coauthors.

Interviews were semistructured. Patients were asked open-ended questions and any further questions necessary to clarify a response or to encourage elaboration. Topics covered in the interview included the following: patient observations of the functions of the CPR system, perceived advantages and disadvantages of the CPR system, impact of the CPR system on the physician-patient relationship, and how the CPR system could be improved upon. At the completion of each interview, an open-ended request for additional comments was made and basic demographic information obtained.

Each interview was tape recorded and transcribed verbatim. After all interviews were completed, the transcripts were examined by the coauthors and a group of colleagues for common themes and ideas. This approach, known as "analyst triangulation"[15] reduces the potential for bias that could arise from a single individual reviewing and interpreting the data.

Results

Sixteen interviews were completed: seven with black women, six with white women, two with white men, and one with a black man. Interviews ranged from 8 to 22 minutes in length. Subjects' ages ranged from 24 to 61 years, with a mean of 43 years. Almost all had long-term relationships with their primary physician at the family medicine center. Fourteen of the subjects were employed. Seven used a computer daily, either at work or at home. Three had some occupational use and four had little home or occupational use of a computer. Two of the subjects had no computer experience.

Functions Present in CPR Systems

Patients had a high level of understanding of the types of information stored in the CPR system, as demonstrated by each respondent mentioning at least one part of the medical record. Common responses included demographic information, visit notes, diagnostic codes, prior hospitalization or other medical history, social history, family history, vital signs, immunizations, medications, and test results. Illustrative patient comments included the following:

> "[The computer is used] to put all the information of all the illnesses, your past history, your health and anything you talk about on there."

> "Any tests she [the doctor] does, any question that she asks me. It seems that just about everything instead of being written down goes in the computer."

> "You know I've never really seen a file folder. It's all on the computer."

Several patients incorrectly thought that billing information was present in the CPR.

Advantages of CPR Systems

Respondents most commonly mentioned easy access to information as the major advantage of CPR systems.

Several noted that the CPR seemed to make the physician's job easier:

> "All you have to do is mash a button and it's right there in front of you."

> "[The CPR system is] having information at your fingertips if they want to go look at records. . . ."

Patients also mentioned repeatedly that the presence of the computer saved time for them, their physicians, and the office staff:

> "It's more convenient for me because . . . I don't have the time to . . . wait . . . for him to . . . leave the room to try to find whatever it is he needs to find."

> ". . . if it's quicker for him [the doctor], it's quicker for me."

> ". . . if you got everything right there at your fingertips, you won't have to be calling the nurses in there. Nurse, I need this. Nurse, I need that. Nurse, this is not in the file. Nurse, that's not in the file. Everything's right there on the computer. . . ."

Another response noted by several patients was that the CPR system indicated that the physicians cared enough about their patients to use state-of-the-art technology:

> "I guess it lets the patient know that we are in the now age. We're not back in—you know—the chisel and mallet [age] . . . we're up to date. We're using state-of-the-art information here . . . I like it."

Similarly, another patient recognized that the CPR system could improve physician prescribing habits and prevent medication errors:

> "I think the computer could be really helpful to keep people from overloading and mixing medicines . . . I think it's hard sometimes for a doctor to keep straight what their [patient is] taking. . . ."

Other patients acknowledged the durability of electronic records:

> "Well, I would think it's good because you can keep it on a disk. It wouldn't get lost. If you have a file written in pencil and someone spills coffee on it, your file's going to be destroyed."

> "Paperwork gets lost . . . I've had that happen to me before. And usually with a computer, you can have backups and if it goes down you usually have a way of getting it back up . . . you can't really lose it on the computer."

Other advantages of CPR systems that were mentioned included legibility of the record for both the health care providers and patients, better organization of the record, and decreased paperwork and storage space.

Disadvantages of CPR Systems

Three patients had experienced problems with the CPR system. One indicated that information about a patient with a similar name had been inadvertently filed in her record. A second found that test information about her children was not present on the system. A third noted that her physician became frustrated when the system malfunctioned:

> "When I was in recently, the doctor was having some problems getting what he wanted on the computer . . . and it completely dumped him out of the system and he had to start all over and he was aggravated."

Most patients had not personally experienced any problems with the CPR system and answered this question theoretically. Confidentiality, which was discussed by five patients, was the most commonly cited disadvantage of the CPR system. Only two, however, indicated that they did not want their records widely accessible. When comparing the paper record with the computer record, one of the two stated:

> "It [the paper record] is more secure because it is in one physical location. Only one person can access it a time and that limits who has access to it."

Another patient, although acknowledging the relative safety of CPR systems as compared with paper records, still expressed concern about a record:

> ". . . getting into the wrong hands and then using it maliciously against somebody."

The others indicated that, if appropriate security systems were in place, they were not bothered by the accessibility of their records:

> "I have confidence in the people who are taking care of the records."

> "Paper is always safer . . . [but] as long as they have the right security systems in place, I don't have a problem with [the CPR]."

One patient noted the financial implications of the CPR:

> "Probably in the long run it will save money. In the short run, it's probably a big expense."

Other disadvantages of CPR systems mentioned included downtime, the need for backup systems, and user training.

Impact of CPR Systems on the Physician-Patient Relationship

Fourteen patients indicated that their relationship with their physician had not changed with the introduction of the CPR system. Some were so unconcerned with the

CPR that they had difficulty understanding the intent of the interviewer in addressing this subject:

"If anything, it made it [the relationship] better because, before the computers, we had to go look for files. I had to sit in the office and wait for the files."

"I thought it was great. I thought it was a great idea just to be able to punch a couple buttons and 'poof'—you know—here's your records. I think it's wonderful . . . he just . . . pulled the data up and talked to me at the same time. I don't feel like I was ignored or anything."

"I haven't seen any difference . . . when he comes in . . . the computer is set up for him, all he has to do is put his code in and the record comes up . . . with him toward me . . . he acts the same."

One patient mentioned having to wait while the doctor typed on the computer keyboard but added:

"I'm used to sitting there when you go, I mean that's a part of being there that you sit for a time and wait. No, it wasn't excessive."

Another reflected positive feelings on how the physician had used the CPR to facilitate their relationship:

". . . once he was through . . . updating that information in there . . . he turned to me and then specifically indicated things that he wanted me to do . . . after . . . that he still came over—actually he got closer to me, away from the machine and spoke to me. And said, OK this is what I want you to do . . . about weight control and stuff like that. So the computer was taking complete data. It was just a tool used just like his tongue depressor or to look in my ear."

Two patients mentioned that their relationship with their physician had changed. One indicated:

"He talks to the computer, he don't talk to me."

This individual added, however, that she was not bothered by her physician's change in behavior. The other patient expressed reluctance to share sensitive information with his physician. He stated:

"Anyone with an access password can pull up those records across the whole system and that does concern me . . . and it limits what I say to my doctor."

Suggested Additions to the CPR System

Patient ideas for enhancements to the CPR system included diagnostic decision support aids, physician prompts to follow up abnormal findings, and the ability to provide dietary and other health education advice, thus saving physician time. One patient suggested that the CPR system should provide:

". . . a printout of the diagnosis, an explanation . . . [in lay] terms. . . . I guess if I had a question about . . . my child or about anything, maybe there's a program that could just print out that information for me. So it would be a good educational tool."

The patient concerned about confidentiality of his record suggested the system be revised to:

". . . tie each patient's case history to a specific physician or have some control within the health care provider group that only someone in that group can access [the record] with their group password."

Discussion

The results of this study support past findings that experience is a key factor in patient acceptance of CPR systems.[6,7] Most patients interviewed were informed about the nature of the CPR system and had positive attitudes toward it. They recognized that the system provided their physician with easy access to information and facilitated the clinical encounter. A common perception was that incorporation of a CPR system indicated that physicians at the family medicine center where the study was conducted cared enough about their patients to use state-of-the-art technology. In addition, the prevailing view was that the CPR system was used to improve the physician-patient relationship and the quality of care delivered.

The major concern about the CPR system expressed by patients in this study, as in previous studies,[7,9,10] is the issue of confidentiality. It is reassuring, however, that although this issue was mentioned by several patients, most had confidence that mechanisms were in place to protect the confidentiality of their records. Several patients expressed their belief that CPR systems could be more secure than paper records. Only one respondent indicated that concern about confidentiality limited his interaction with his physician.

The findings of this study must be interpreted cautiously because of the small sample size, single site, and the recruitment process, which was limited to patients who had recent routine medical examinations. Additional patients, those from other clinical sites, and patients who do not visit their physician for medical examinations might have had other perspectives about CPR systems. In addition, patients who participated in this study were aware of the nature of the interview at the time they agreed to participate. Patients were intentionally informed about the purpose of the study in order to recruit information-rich cases, but doing so may have caused patients with negative views to refuse participation. Finally, patients with long-term relationships with their physicians, which was the norm in this study, tend to have positive opinions about their physicians. This

tendency may have caused study participants to consciously or unconsciously withhold critical comments.

Despite these limitations, this study provides an illustrative example of a successful CPR implementation site, one in which there is good patient understanding and acceptance of the system used. The findings should encourage physicians who have been reluctant to use CPRs because of concerns about patient acceptance. Given the growing interest in wider dissemination of CPR systems, additional studies in other populations would be beneficial.

References

1. McDonald CJ, Tierney WM. Computer-stored medical records: their future role in medical practice. JAMA 1988; 259:3433–40.
2. Spann SJ. Should the complete medical record be computerized in family practice? J Fam Pract 1990; 30:457–60.
3. Ornstein SM, Oates RB, Fox GN. The comupter-based medical record: current status. J Fam Pract 1992; 35:556–65.
4. Dick RS, Steen EB, eds. The computer-based patient record: an essential technology for health care. Washington, DC: National Academy Press, 1991.
5. Cruickshank PJ. Patient stress and the computer in the consulting room. Soc Sci Med 1982; 16:1371–6.
6. Brownbridge G, Herzmark GA, Wall TD. Patient reactions to doctors' computer use in general practice consultations. Soc Sci Med 1985; 20:47–52.
7. Rethan JJ, Hoppener P, Wolfs G, Diederiks J. Do personal computers make doctors less personal? BMJ 1988; 296:1446–8.
8. Cruickshank PJ. Computers in medicine: patients' attitudes. J R Coll Gen Pract 1984; 34:77–80.
9. Potter AR. Computers in general practice: the patient's voice. J R Coll Gen Pract 1981; 31:683–5.
10. Pringle M, Robins S, Brown G. Computers in the surgery: the patient's view. BMJ 1984; 288:289–91.
11. Legler JD, Oates R. Patient reactions to physician use of a computerized medical record system during clinical encounters. J Fam Pract 1993; 37:241–4.
12. Fitter MJ, Cruickshank PJ. The computer in the consulting room: a psychologial framework. Behav Inform Technol 1982; 1(1):81–92.
13. Cruickshank PJ. Patient rating of doctors rating computers. Soc Sci Med 1985; 21:615–22.
14. Ornstein SM, Garr DR, Jenkins RG. A comprehensive microcomputer-based preventive services system for the family physician. J Am Board Fam Pract 1993; 6:1–6.
15. Patton MP. Qualitative evaluation and research methods. Newbury Park, Calif: Sage Publications, 1990.