Virtual Managed Care Organizations: The Implications of Technology-Based Patient Management

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Technology-based patient management services are growing rapidly, and they can radically change the cost, quality, and/or accessibility of healthcare services. Healthcare organizations such as Kaiser of North California, Blue Cross and Blue Shield of California, and Pilgrim Harvard Community Health Plan are aggressively pursuing on-line services for their members. In addition, providers and patients are using computers to educate patients,[1-11] triage them, take medical histories,[12] conduct electronic support groups,[13-16] and perform many other activities. For example, on-line health education, support groups, and decision aids have been used to enhance the care of HIV/AIDS patients, resulting in a reduced cost of care.[17] Interactive voice computers have also been shown to improve antihypertensive compliance by 6%,[18] computer reminders have been shown to motivate parents to obtain on-time infant immunizations,[19] and electronic support groups have also been shown to significantly reduce the use of general health services by recovering mothers.[20] Voice mail has also been shown to improve healthcare; in one study, cocaine-addicted pregnant patients who frequently used voice mail to receive messages of hope were 1.5 times more likely to be in treatment.[21]

This rapid growth raises questions about how the integration of this technology into healthcare will affect managed care organizations (MCOs). Every technological innovation, no matter how benign, has the potential to generate many unanticipated changes. Often, although some healthcare organizations adopt these new technologies simply to increase efficiency, such technological changes produce a catharsis of sorts. With time, technological change can drive the organizations to overhaul their practices completely.

In this paper, I speculate on how technology-based patient management may change the health maintenance organization (HMO) of today.

The Marriage of Culture and Technology

Organizational culture and technology are inextricably linked; you cannot change one without altering the other. As such, technology must be strategically implemented. The recent failure of numerous healthcare technology companies lends further insight into the link between technology and organizational culture. Ameritech spent millions of dollars to create a community-wide health database, only to close its healthcare operations a few years later. Time-Life Books spent $40 million to create and distribute health education video programs through pharmacies, without success. AT&T closed its healthcare group, and Harvard Community Health Plan and Electronic Data Systems spent $15 million creating on-line services for patients, to no avail. CHESS, the interactive service that had demonstrated major cost savings for AIDS patients mentioned earlier, was marketed only for a short period due to little demand.

Why did these business operations fail? While many reasons have been offered—including undercapitalization, poor management, and/or unstable products—I believe the organizational culture and clinicians were simply not ready to adopt the concept of technology-based patient management. These firms were faced with the challenge of selling not only the product, but creating the market as well. Without a fundamental, cultural acceptance of online technology within healthcare organizations, these firms could not sell their innovations. In the following, I speculate on what some of these organizational changes will be.

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Increasing Focus on a Single Disease

The MCO of the future may focus on one disease. Today's HMOs serve a very varied population, and while we may imagine their members to be healthy adults who occasionally need healthcare services, the reality is very different. A 1996 study asserted that chronic conditions account for three of every four deaths in the United States.[22]

It is clear that one delivery system cannot effectively meet the varied needs of such a population. For example, no uniform drug coverage policy could be effective, since some patients need liberal coverage for medications while others do not. Further, while some chronically ill patients can be encouraged to participate in self-care via monitoring equipment lending programs, others cannot benefit from such policies.

When large HMOs tailor policies and operations to specific illnesses, they lose the economies of scale that result from uniform management practices. One way to ensure HMO viability will be to create smaller, more specialized companies. As HMOs grow, they will have large enough subgroups of people within their overall membership to validate such a move.

I believe that disease-specific contractors will arise to provide services to these HMOs and to specific subgroups. These contractors may further combine patients of one HMO with another, leading to even larger populations of patients with the same disease. Eventually, these "virtual" MCOs (VMCOs) will enter into capitated case management arrangements that will force the contractors to share risk.

Under this scenario, technology will play a crucial role in enabling these VMCOs to operate economically. On-line services, for example, could allow the remote management of patients and, as such, radically increase the VMCO's ability to include patients from different geographic areas into one specialized care arrangement. With a large number of enrollees, specialized MCOs can have a stable risk pool.

As information technologies have improved, we have already begun to see growth in specialized MCOs. For example, there are at least five projects in which AIDS patients have been managed under risk-sharing arrangements. These projects include: the AIDS Healthcare Foundation in the Los Angeles area, the Johns Hopkins University School of Medicine, the New York State Department of Health AIDS Institute, the East Boston Neighborhood Health Center, and the Visiting Nurse Association of Los Angeles.

VMCOs will Emerge in Mature HMO Markets

HMOs have penetrated most major cities in the United States, and in some cities, market penetration is so great that the possibility of a new firm entering the market is remote. Yet, I believe VMCOs will emerge in these mature markets. Since they will be small and specialized, serving about 500 to 1,000 patients per locality, staffing requirements will be minimal, making market entry relatively easy. The Johns Hopkins capitated managed care program for AIDS, mentioned above, is set up to serve fewer than 1,000 patients.

Even with the relative ease of market entry, both revenues and profit margins will be large. Patient premiums will be high, as the VMCO will charge premiums to the current insurer that reflect the patient's known chronic illness. For example, the premium for an average AIDS patient may be set at roughly $40,000 per patient per year. Specialized MCOs can also take advantage of economies of scale when setting benefit packages and services for a single disease. Patients will share similar information and support needs and can therefore use on-line services to share information. Further, remote patient management will reduce the need for investment in real estate. The net effect is that the cost of care will be radically reduced. In one study mentioned earlier, on-line services reduced cost of AIDS care by 33% while improving patients' mental health status.[17]

Remote Patient Management: Better or Worse?

In the future, clinicians, especially physicians, may be more involved in remote patient management. While this may seem undesirable at first, remote management of patients is not new. Clinicians have used telephones to refill prescriptions, perform assessments, and conduct triage for years.

Under the VMCO scenario, remote patient management could include numerous additional tasks, including:

- Computer-assisted collection of history, signs, and symptoms from patients at the time of making appointments.
- Distributed medical record system available to the visiting nurses and laboratory technicians in the community and institutional clinicians.
- Computer-assisted triage of patients to appropriate laboratories for needed tests before final meeting with the clinicians.
- Advisement of patients over the telephone and via electronic communications.
- Prescribing of medicine over the telephone.
- Computer-assisted and automated follow-up with the patient.
- Mobile test units that visit the patient.
- Automated home monitoring and assessment.

Under the new practice model, clinicians will direct a host of services in the community including mobile test units, home test kits, pharmacy services, triage decisions, and visiting nurses. While many clinicians will contact the patient and some will meet with the patient, the primary role of the patient's physician will be to orchestrate these services and analyze data, rather than directly deliver services. In the end, the physician may spend most of his/her time in a communications center and not with the patient.

While physicians are not yet ready for this drastic change, there are too many benefits of a remote management for it to be ignored. It promises to reduce the cost of care by reducing capital costs; ie, fewer visits mean smaller and more geographically distributed clinics. Remote management also promises to improve efficiency of services through better triage decisions; ie, the computer will help the patient see the physician after and not before a laboratory test is done, avoiding unnecessary visits. For some diseases, remote management may even reduce infection rates, since patients will not wait together in a common area. Additionally, patients can remain at home where they are most comfortable, and satisfaction with care may increase. Moreover, if remote management is more protocol-based (especially the collection of medical history, signs and symptoms), it will be more standardized and possibly provide better quality of care.

Obviously, the benefits of remote management must be investigated further, but data suggest that there may be great benefits. In a study in which physicians were asked to call patients instead of scheduling a follow-up visit, the cost of care dropped by roughly 25% and the patients' health status was not compromised.[23] In today's environment, a 25% reduction in healthcare costs cannot be ignored.

Physicians may find it difficult to accept the fact that, under this scenario, they are held accountable for the health of a patient he or she may never see in person. During patient visits, the patient and physician typically make decisions about care. Ironically, however, while the new system increases the physical distance between patient and physician, the physicians advice and care remains accessible to the patient. With time, this may strengthen the physician-patient relationship. This will be especially the case if online technology will allow patients who move to continue to have contact with their trusted clinician.

All of these changes in physician's roles lead me to one obvious observation: VMCOs should be staff-model organizations, in which physicians receive a salary for services.

Who Is the Gatekeeper?

Once the patient enters into the VMCO, the role of gatekeeper may be assigned to specialists rather than primary care physicians—reversing the current referral pattern. An infection specialist may decide, for example, that the patients' complaint can be addressed by a family physician. Since patients will be under the care of a specialist who is most knowledgeable about their illness, they may receive better care.

Medical Records Must Change

As more care is managed remotely, care will be more fragmented. Thus, coordination of care through medical records will become more important. Fortunately, on-line technology will enable us to make medical records immediately available. When patients are on-line, much of the data entry is automated and collected directly from the patient. This has the potential to eliminate the lag in transferring data from paper to computer record.

More importantly, the medical record will belong to the patient. As a result, although the record will be kept by the insurance company, the record will cut across various health delivery organizations and providers. Patients will control who puts in information in their record, what information is made public, and to whom the information is released.

Patients Will Change

In the VMCO, patient expectations of the healthcare system may also change. Consider the effect of the automatic teller machine on consumer expectations. Today, we expect access to money any time of day or night. We transfer funds by telephone and think little of it. Likewise, as VMCOs grow, consumers are likely to demand more and more services that we have yet to consider.

Healthcare consumers will also be more organized, as a result of electronic support groups. Although only a small portion of patients currently participate in support groups, our data show that, under a VMCO, 96% of patients may participate in electronic support groups.[24] Consequently, patients will be more informed, motivated, and articulate. Patient advocacy groups, such as Act Up for AIDS/HIV illness, will become more common in other disease categories. These groups will insist on participating in funding decisions about research issues, encourage quality care, share medical decisions with their physicians, and demand a host of other patient rights.

The fact that patients will be more knowledgeable will have a tremendous impact on the healthcare system.

Imagine a day when, as a consequence of intensive education, some patients with chronic illness know more about their illness than a primary care provider, who sees patients with a variety of problems. Even now, patients visit their primary care physicians with copies of articles and ask for modification of their care plans.

··· CONCLUSIONS ···

We are all familiar with computers in their current capacity, but we need to become aware of the potential they hold for the future—specifically, the future of healthcare. Data show that on-line computer services can improve patient care. A lot has been left unanswered about the potential impact of these technologies, however, and continued research will shed more light on this issue. Nevertheless, innovations are occurring faster than careful evaluations; by the time a study is completed, the technology often changes. For better or for worse, we as a society will begin to implement many of these elements before fully evaluating the impact of these services. Therefore, it is important to explore scenarios of what will happen if these services become commonplace.

Some may consider the VMCO model described in this paper as science fiction. Others may disagree about its potential impact on our society and its impact on relationships between patients and clinicians. Still others may point out consequences that I have not articulated. No matter what the conclusion, this is the time to address these issues. Otherwise, technology will advance and, whether we like it or not, major changes in our healthcare system will follow.

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