E-Care: Made Possible by Technologic Convergence

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Abstract

Solutions now exist to extend the management and coordination of clinical care into the home via telecommunications technologies. Telemedicine began with the introduction of the telephone. The telephone has saved lives by enabling access to emergency services, and rapidly transmitting vital information. It has reduced the sense of isolation among homebound individuals, and improved their quality of life. In the midst of technological alienation, the telephone continues to be the ultimate hardware device that brings people together with great ease. It is the vital component of the future of e-care.

The definition of telemedicine has been carefully put forth by the Institute of Medicine; it includes any interaction between a patient and a health care practitioner that is not face-to-face. In its broadest sense, it incorporates text, audio, and video technologies, utilizing computers, biomedical devices, cameras, monitors, telephones, pagers, and the Web for the collection of data and the delivery of services. It can be utilized as a real time tool or in a store and forward mode.

Some 95% of our nation’s homes have telephones. Telephones in the homes of the sickest and costliest patients could be upgraded immediately to Web phones, or if preferred to Web devices sitting alongside existing units. Patients could be better managed before, during, and after visits. They and their caregivers could be encouraged to send “structured” e-mail queries that could be triaged by appropriate healthcare professionals. Health and risk status can be assessed prior to office visits. Significant numbers of needless visits could be avoided. Many practitioner-patient interactions, especially those for minor problems and disease prevention, can be conducted more swiftly and efficiently from the patient’s home or worksite. Payers can evaluate savings that accrue with such connectivity in place. Reasonable co-pays can be established for patients and realistic subsidies offered by health plans, health insurers, and government agencies.

Few people enjoy visits to health care practitioners. The visit interrupts routine schedules and consumes time that could be used for other activities, including work, childcare, and other duties at home. The mobility and transportation issues surrounding such visits add additional burdens to people with chronic diseases and/or physical limitations. Going to practitioners’ offices or emergency departments often produces added anxiety.

On the outcomes and satisfaction side of the equation, patients who are more knowledgeable about their disease or more informed about problematic conditions have experienced better outcomes and satisfaction rates. Practitioners treating these patients have higher satisfaction rates and a decreased incidence of malpractice litigation because patients are better informed.

Telemedicine considerations need not be limited to patients in rural areas. By eliminating the barriers of time and distance, telecare can radically transform health care delivery to busy people anywhere, anytime. Consumers at all socioeconomic levels can benefit from greater access to providers and specialists, more convenient treatment schedules, and reduced travel time and time away from work. Telemedicine is the way health care practitioners will manage care, educate patients, and transfer clinical data electronically — and the Web, with careful attention to security, is the open architectural platform that makes it all more easily accessible and more cost-effective.
There is at present no universal, secure tracking system for what’s being done to patients. Few practitioners use care guidelines regularly, nor are the ones utilized “standardized”. Too many disparate computer systems and software programs exist. It is difficult to understand how particular treatments affect overall costs and quality. Simply put, many health plans, health systems, and clinics are not equipped to manage care and costs in an appropriate and measurable way.

Imagine a Web-based server/thin client solution that provides both transactional and analytical functions for collecting, transmitting, and managing clinical and financial data. Increasingly, health care executives and providers are recognizing the need to expand information management — one of the core competencies for success in the emerging health care delivery system. The transition to managing disease and promoting wellness requires a fundamental shift in current practice behaviors.

Analysts believe that Web phones/devices will occupy a significant niche in the Internet market and offer a huge new advantage to managing care. The use of such smart phones, a technology with which most people are comfortable, is a non-intimidating way of introducing telemedicine into the average home. Encouraging patients to be cared for in their own homes, using such devices, will be the wave of the future. Cyber visits will become more commonplace than office visits. Elderly patients will be treated in the security and comfort of their own homes, and those with chronic disease will perform their own daily checkups — such as checking their vital signs, performing certain blood chemistries, and carrying out certain pulmonary function tests — and transmitting results to practitioners or call centers who monitor and coordinate care as needed 24 x 7.

Comfort and familiarity are crucial to ensuring the effective use of any new technology. True implementation of telemedicine — especially for the home — involves training patients to communicate through technologies. It is unrealistic to assume that this can happen over-night. Partnering between health care practitioners and patients is perhaps the greatest challenge for telemedicine in the home.

Who would have thought that Alexander Graham Bell’s invention in the 1800s would be a primary tool for carrying digital information and delivering care? The telephone can be used in simple ways with patients. For example, telephone reminders are effective for improving patients’ immunization and medication compliance, appointment keeping, and preventive care procedures. Twenty-four-hour access to emergency telephone consultations from home health care practitioners has reduced emergency department visits and hospitalizations. Ongoing support by telephone has proven valuable in improving patients’ emotional status and satisfaction with their care. Interactive voice response (IVR) systems enable users to receive prerecorded messages, mini-lectures, and reminders; make and change medical appointments; and access answers to questions about common symptoms and specific diseases. IVR systems are just as effective as printed questionnaires in obtaining health information and screening, and are used by medical call centers to disseminate information and gather data. Health care practitioners monitor patients with chronic diseases, manage utilization of services, and educate consumers using interactive tools and frequently asked questions (FAQs) applications.

The Web phone makes the aforementioned services and education even more effective. For example, a patient educator can convene a smart phone meeting with newly diagnosed diabetics to discuss nutrition. Patients would call in at a specified time, to a specified number by touching the screen. A two line system permits simultaneous audio-conferencing and screen viewing. The host-educator guides meeting attendees in maneuvering a Web site to download recipes and planned menus as part of the learning experience. Web phones can collect data from patients at home. Longitudinal health records can be stored and dynamically updated. Such records, with patients’ permission could be aggregated, analyzed, sorted and reported to practitioners and payers. Knowledge bases could be created from previously managed information and knowledge sorts, and accessed anytime, anywhere and acted upon by authenticated users. More data can be collected, sorted, stored and studied. Ultimately wisdom bases emerge. Patient and practitioner acceptance of appropriate care “at-a-distance” is the dynamic that will drive the expansion and enhancement of such services.