

IT Helps Manage Patients With Chronic Illness

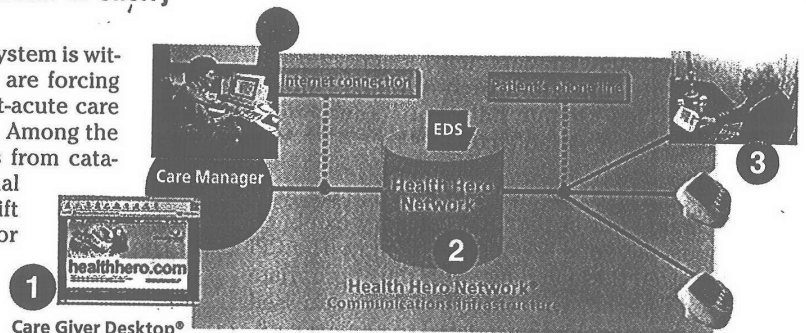
Technologies leverage extensive informatics infrastructures for patients at home.

By Jeremy J. Nobel, M.D., and Julie C. Cherry

The U.S. healthcare delivery system is witnessing several trends that are forcing pro-viders of acute and post-acute care to re-evaluate their care processes. Among the emerging trends is a shift in focus from catastrophic management to longitudinal care management, matched by a shift from management of the critically or catastrophically ill individuals to the management of chronically ill populations.

This new model of care has occurred because of advances in medicine and a corresponding increase in the elderly population. As a result, more than 90 million Americans now live with, and die from, chronic diseases, says the Robert Wood Johnson Foundation.

The cost to the U.S. healthcare system for chronic care is about \$400 billion—a significant component of the overall healthcare expenditure. Furthermore, the financial impact of this rise in the number of persons with chronic conditions on the Medicare system is potentially devastating.



1 Care Giver Desktop® Patient Management Tools

Health Buddy® Personal Information Appliance Patient link to provider at point of self-care

Health Hero® Network is a unique Internet-based communications link between chronically ill patients at home and their healthcare providers. Working from the Health Hero® Network Website, a healthcare provider, (1) is able to send daily, pre-programmed inquiries, (2) to the patient's Health Buddy, (3) which then prompts the patient to respond. The Website's software compiles the information received back from the patient, (4) and focuses the healthcare provider's attention on those patients whose conditions require attention.

Forces Affecting Healthcare

At the same time, three socio-political forces are influencing our healthcare delivery system as well. These are:

- Increased managed care penetration, driven by the desire for cost conscious medical management;

Mercy Healthcare Sacramento, Mercy Heart Institute

Internet-Based Communications Network Links Care

Mitch Brown, a 68-year-old man with congestive heart failure, diabetes, and hypertension, is hospitalized for chest pain and shortness of breath. This happens almost monthly to Mitch, often triggered by poor compliance with his medications, or dietary indiscretions.

During a two-day hospital stay at Mercy Heart Institute, an acute cardiac ischemic event is ruled out, his medication regimen is modified, and he receives additional counseling on the importance of a low-salt diet.

On his way home, however, before Mitch goes home, he receives some training in the use of a personal information appliance that will link him to his care management team via the Internet. The appliance, called the Health Hero® Health Buddy, is simple to use, plugs into a regular phone jack, and has an easy-to-read screen that displays short questions and messages.

Each day, Mitch uses his Health Buddy to receive individualized guidance on software reminders to take his medicine, and reinforcements about how best to manage his three chronic diseases. In addition, he responds

- Growing consumerism among the beneficiaries of the care system;
- Focus on quality improvement, performance measurement, and outcomes assessment.

The convergence of these trends has, among other things, heralded the emergence of care protocols that are being established as essential tools at the patient level, including guided templates to systematize patient participation, their support, and monitoring. We're seeing the impact of these interventions now, as evidenced by the following:

- Focus on self-care in both prevention and management;
- Extensive use of home healthcare;
- Shorter length of hospital stays.

Home Monitoring Needed

Reducing the length of hospital stays is expected to increase the number of re-admissions, unless better care management strategies, including improved monitoring in the home, are in place. One obvious challenge in improving patient monitoring is obtaining timely, relevant clinical patient data to monitor a patient's ambulatory health status.

This is no easy task, however, as an estimated 61 percent of the population between the ages of 70 and 79 will experience two or more chronic conditions and, as a result, have complex clinical data management requirements. Add to this the challenges faced in patient education and compliance, and there is potential for major gaps in both information flow and care management.

Thankfully, recent developments in information technology (IT) have enhanced communication, helping healthcare providers manage patients with chronic illness. Such technology includes the use of information management and decision support tools to identify and

assess sub-populations, and to develop, measure, and track specific strategic interventions.

Leveraging Informatics

Among emerging technologies leveraging extensive informatics infrastructures are Web-database systems, interactive voice response (IVR) systems, nurse call centers utilizing computerized systems, and modem-enabled technologies for transfer of electronic medical data from patients to healthcare providers.

One care provider, Mercy Heart Institute, in Sacramento, CA, has utilized Web-based IT for a disease management program for patients at home suffering from congestive heart failure (see sidebar). Mercy's disease management platform is an example of how IT promises to translate to dollar savings, as well as better patient outcomes, by facilitating better monitoring and intervention to keep patients healthier and out of the hospital.

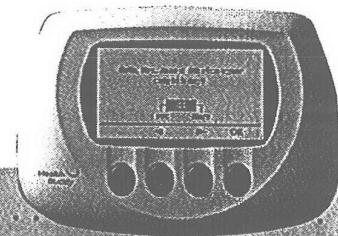
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Emergence of IT Programs

Managed care has increased focus on cost control, forcing participants to become more efficient and trade-off oriented, while also demanding more information and increasing administrative requirements. Performance measurement and quality improvement programs are now common in managed care and hospital settings, and care providers are often benchmarked internally.

Faced with driving efficiencies into healthcare and measuring their performance, a reasonable response from providers and payers bearing risk is to explore interventions that keep patients away from costly

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Provider with Patients at Home

to questions about his symptoms and sends answers via the Health Buddy appliance. His answers are reviewed on a daily basis by the Mercy Heart Institute care management nurse on a secure Website provided by Health Hero Network Inc. Specific alerts and reminders, guided by pre-established protocols, are communicated back to Mitch via the Health Buddy.

In situations that are particularly urgent or complex, the care team can connect with Mitch or schedule a home or office visit.

A year passes. Mitch, who is being supervised by Richard Miller, M.D., director of the Mercy Heart Institute and Mercy's care management programs, completely avoids the monthly hospitalizations. Moreover, he has a greater sense of confidence in his ability to manage his own diseases while still feeling very much in constant contact with his care management team.

The Health Hero Health Buddy, which sits at the point of self-care in the patient's home, provides the patient with a simple and convenient way to automatically receive healthcare information and respond to queries from care managers on a daily basis.

healthcare services while maintaining healthcare quality—a trend known as disease management.

Disease management programs may typically involve the use of a wide array of information management and decision support tools to identify and assess sub-populations and to develop, measure and track specific strategic interventions. They also may rely on technologies that leverage extensive hardware and software infrastructures, that is, Web-database systems and modem-enabled technologies.

Communication Facilitated

Of particular note, Internet-based technology is making it easier for consolidated entities to operate within increasingly large and complex organizations. The Internet creates an ideal platform for disease management applications that improve outcomes and popula-

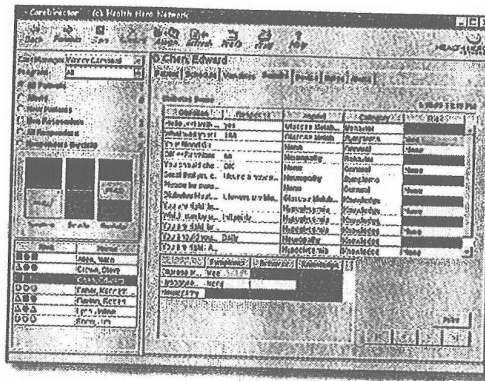
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tion management by facilitating communication between patients and providers.

Active patient monitoring and self-management of chronic conditions have been shown to dramatically affect chronic disease outcomes and provide a basis for the establishment and maturation of case management at the patient level and disease management at the population level.

As a result, there is an active, connected community of disease managers in the U.S., most of whom are recommending a population-based approach in which patients with costly chronic conditions, such as diabetes, congestive heart failure, and asthma, are identified at the time of initial diagnosis or plan enrollment, rather than when the patient's claims data indicate that the patient received treatment for a particular illness.

With consolidation of healthcare services, an increased focus on management of the *chronically ill*, rather than *critically ill* patients, an increased focus on disease management and case management, and the need for measurement of clinical and financial performance, the ben-



Health Hero® Care Director™ enables care managers to view patient responses to the Health Buddy by question and by graphical representation.

efits of using innovative communication technologies are innumerable.

Cost Reduction and Outcomes Improved

The provision of healthcare in the United States is in the process of becoming a more efficient operation as healthcare providers and payers explore new ways to reduce costs while maintaining acceptable clinical outcomes.

Technology-driven disease management and care management systems provide

many key value components, including cost-effective approaches in managing large populations, reliable outcomes assessment and management tools, centralized data management and retrieval, and patient follow-up and case management by exception.

Utilization of technology-driven disease management facilitates a case manager's ability to provide proactive healthcare at a low cost by fostering management by exception; this allows the care manager to concentrate efforts on those patients who are most in need, and identify possible problems before a patient requires expensive intervention.

In the future, the healthcare system will be one in which information flows more quickly, accurately, and cost-effectively through electronic networks.

Along these lines, chronic disease management may include a network approach that affords the patient easy access to all resources necessary to monitor and maintain a healthy lifestyle.

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