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Provide feedback, reinforcement online

High-tech alternatives help providers manage chronically ill seniors

One of the biggest challenges facing health care providers is managing the more than 90 million Americans who live with chronic disease. Caring for such individuals -- the majority of whom are seniors -- is estimated to cost as much as $400 billion per year, more than half of the total health care tab. Yet, even with sizeable investments in sophisticated DM programs, many senior patients fall through the cracks.

The problem is the continuous monitoring required for many chronically ill patients who remain at home. Home health visits, daily phone calls, effective patient education, and active family involvement are all needed in order to pick up sudden health declines or lapses in patient compliance before they deteriorate into larger problems.

To shore up -- and in some cases replace -- traditional modes of patient management, a flurry of computer-age tools have been developed. Specially designed pagers, electronic pillboxes, and interactive television are among the new options available to providers to help keep tabs on chronically ill seniors. While many of these high-tech approaches come with a high price tag, there is evidence that some information technology improves efficiency and, in some cases, actually lowers management costs.

Online service developed for seniors

Rather than reinventing traditional DM programs, one new tool seeks to revolutionize and therefore improve the communications component. By providing an online infrastructure through which providers can communicate daily with senior patients, Mountain View, CA-based Health Hero Network (HHN) believes it can streamline the monitoring process required for optimal care of the chronically ill.

While HHN's approach can be used with patients of all ages, the company's founder and CEO, **Steve Brown**, developed the system with senior patients in mind. "We learned that the last people computer companies, cable companies, and interactive TV companies were going to

serve were the seniors. So we decided it was worth it to turn everything on its head and focus on technology that works with seniors," explains Brown.

More than anything else, Brown believes seniors want a system that fits into their daily routine. "They don't want a bunch of complicated technology that gets in their way. They want something that is convenient, simple, and focused . . . where the technology is almost invisible," he notes.

To fit the bill, HHN developed the Health Buddy -- a simple appliance with a screen and four buttons that can be placed on a night stand, a kitchen counter top, or just about anywhere the patient finds convenient. Depending on the DM program involved, patients use the device to answer a series of questions daily. For example, a CHF patient might be asked the following questions:

- How are you feeling today?
- Did you gain any weight?
- Did you take your medicine?
- Do you have any difficulty breathing?

Using the four buttons on the device, the patient answers the questions. Depending on the answers, additional questions may be asked. The device also can be used to provide patient education in the form of dietary recommendations or other reminders, and it can offer feedback such as "good job."

Ideally, patients are instructed to answer the questions at the same time every day, most often in the morning or the evening. The information is then downloaded via the Internet to HHN's web server so it can be accessed by an assigned nurse or care manager who reviews the data daily. "When the data comes back, it is automatically risk-stratified, so the nurse can see who is in the 'red zone,' the 'yellow zone,' and the 'green zone,'" stresses Brown, explaining that these parameters are determined by the provider and the DM program being used. "The medical director usually decides what the three zones mean. We provide the structure and basically the operating system for someone to create that kind of program."

Pilot targets noncompliant CHF patients

One of the first groups to implement the HHN service was Santa Clara County Individual Practice Association (SCCIPA), a San Jose-based medical group with more than 800 physicians, serving approximately 125,000 members enrolled in 12 HMOs. The group had been outsourcing disease management for CHF patients to another company. "We identified the patients, and [the DM company] essentially did case management by calling patients and doing follow-up," explains **Lawrence Bonham**, MD, president and CEO of SCCIPA. "That program wasn't a computerized system like HHN. The new approach actually brings everything back in-house, which was one of my goals."

Before implementing the HHN program, SCIPPA had to develop protocols and questions to be employed in the project. To accomplish that task, a medical director assigned to disease management worked with nursing staff and cardiology consultants who are part of the SCIPPA network.

Once the protocols were established, patients and physicians needed to be informed about the upcoming changes in procedure. During a series of meetings patients were informed about the HHN program and were given opportunities to see and use the Healthy Buddy device. "It is not just something you would hand out in a box," says Bonham. "It needs careful explanation, and with any kind of new technology for seniors, they have to be convinced that there is a reason they should learn this and understand it. We are already targeting noncompliant people with the devices, and it is always risky to leave them on their own to manage a new device. A hands-on training program is always better."

Alerts help managers respond, intervene

Instrumental in the development of protocols for the CHF program, **Julie Wahlig**, RN, MA, quality improvement disease case manager for SCCIPA, now manages the program, which includes 50 patients involved in a six-month data test. "I go in every morning and check the patients and see what lights correspond to their names, and then I follow up patient by patient, beginning with the red lights first," explains Wahlig.

SCIPPA set up its program so that a red light indicates a high-risk response. For example, if a patient indicated through the Health Buddy that he had gained four pounds overnight, that would show up on Wahlig's computer screen as a red light. If a patient gained two pounds in the last day, that would show up as a yellow warning light. A green light indicates a smaller risk, such as a one-pound weight gain. If there is no problem with the patient's responses via the Health Buddy, then no light appears.

Beginning with the highest-risk responders, Wahlig calls each patient to get details and gather data. She then prepares a message that explains her assessment and faxes it to the patient's physician. SCCIPA developed three categories of faxes that are not officially part of the HHN program,

but that have been devised to work with it: an FYI, or information-only fax, a possibly urgent fax, and an urgent fax. That way, the physician can tell whether the faxed message needs immediate attention.

Once the physician has reviewed the fax, he notes what action he wants Wahlig to take and returns the form to her. For example, he may prescribe a change in medication and ask that an appointment be made for the patient in the next couple of days. Wahlig then calls the patient and explains the new instructions. "I am a link between the physician and the patient, and when I see that the physician responds to my original fax, I am satisfied, because I see the system working," she says. "My goal is to prevent a crisis, and CHF is such a sensitive disease that someone could gain weight gradually, and if you don't catch that trend, they can end up in the hospital within three or four days."

Personal interaction still important

Having worked in traditional disease management programs, Wahlig was concerned that the personal approach to care she preferred would be compromised with the HHN system. "My model has always been hands-on, she says. "I like to meet with the person. In the program I was doing previously, people came in for appointments every three months. I didn't know how receptive seniors would be to the phone/computer interaction, because I know seniors like to communicate in person." However, Wahlig found that she still could make a personal connection during the initial informational sessions. She also connects with patients during regular CHF classes.

"Consequently, the phone and the computer have not been a real barrier to developing a nurse-patient relationship," stresses Wahlig. "In fact, with our daily conversations, I feel like I am getting to know these people intimately."

Wahlig also was concerned that seniors might be intimidated by the technical nature of the program. "Even getting a phone answering machine can be intimidating to some people, but the Health Buddy is so simple to hook up . . . that I only had to visit two people in person because they couldn't operate it," says Wahlig, adding that a handful of seniors elected not to participate by simply failing to hook up the Health Buddy appliance.

With the HHN system, what is lost in face-to-face contact may be more than made up for in *regular* contact. "The seniors have interaction, and they see that someone cares about them. Also, I have noticed that the approach makes them more accountable. The Health Buddy asks them to check their weight and check their blood pressure, so I have lots of positive feedback," notes Wahlig. "Seniors like to know they are not alone. They like to know that someone is watching over them, but we make it real clear not to use the Health Buddy as a 911."

Positive survey results

About three months into the pilot program, a patient satisfaction survey produced positive results, indicating that patients better understood how to manage their disease, and they felt more confident about their ability to care for themselves as a result of the HHN program. **(See Figure 1 on page 158.)**

Another plus with the HHN program is it that can dramatically improve efficiency over traditional DM programs. Only the people in need of contact are highlighted, and much of the information needed is gathered electronically before the nurse manager ever picks up the phone.

How well the system works in terms of outcomes is still being analyzed. However, Wahlig points to several incidents where hospitalizations were prevented. In one case, a woman who had endured frequent hospitalizations reported severe shortness of breath over a three- to four-day period. Wahlig notified the physician by fax, and he prescribed a new medicine. The next day the woman felt much better, and she hasn't been hospitalized since.

In another case, a woman who reported high blood pressure received immediate treatment as a result of the HHN approach. "She now says that she has never felt better, and I attribute that to the physician seeing a day-to-day trend in her blood pressure. Usually physicians only see blood pressure when the patient comes in to visit, which is once every few weeks or few months, so I think being able to see the trend on a day-to-day basis was important," says Wahlig.

New patients being recruited

While SCCIPA's initial pilot project is nearing completion, the HHN/CHF program is already being expanded to include many more patients. The patients at highest risk -- the phase 3 and phase 4 CHF patients -- are the key targets for the program, particularly patients who are not compliant. "We search our database for information relative to multiple hospital admissions or multiple ER visits," explains Bonham. "We also get information from PCPs and cardiologists, and we ask them to identify high-risk, noncomplaint patients. We don't want to enroll someone who has never been to the ER, who is very com-

pliant, and who always takes his medications. We want to capture patients who don't manage things very well, or at least have had some problems managing themselves and would be helped by an educational intervention."

There are significant costs associated with implementing an HHN/DM program, including the cost of the nurse manager, regular online fees, protocol development costs, and the cost of a consulting cardiologist to help manage patients during emergencies and other urgent situations. However, Bonham stresses that it is still less expensive than outsourcing DM. "It is enormously more beneficial to have the flexibility to have a real-time view of what is happening and real-time assessment of patients' responses rather than waiting for a report and having to ask somebody else to modify the program."

Study looks at effectiveness

While it is clear that an online approach, such as HHN's service, offers an efficient alternative to more traditional modes of monitoring, clinicians are eager for scientific proof that such an approach can be as effective or more effective than typical DM programs that rely solely on telephone and in-person contact.

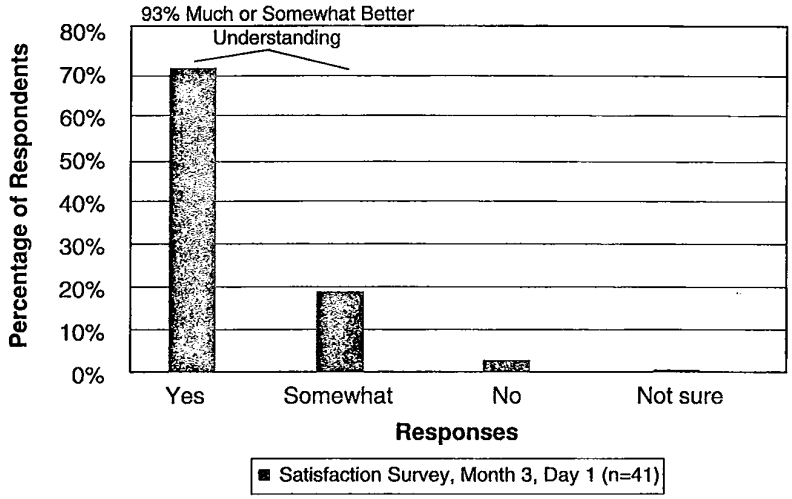
That is one issue being looked at by researchers at the University of Nebraska Medical Center in Lincoln, NE. They are evaluating how patients using the Health Buddy compare with patients who are being monitored in more traditional ways.

For the study, researchers are working with a population of seniors who have undergone coronary bypass surgery. "It has become apparent over the years that these patients are going home earlier and earlier, and basically sicker, from the hospital," explains **Lani Zimmerman**, PhD, RN, the principal investigator on the study and an associate professor at the University of Nebraska Medical School. "We were studying symptom management in these patients, looking for complications on follow-up telephone calls at two weeks, four weeks, six weeks, three months, and six months post discharge. We had set up a care management program for anyone in the group requiring home health. That program was pretty much in place, so it seemed like a logical testing site [for the Health Buddy.]"

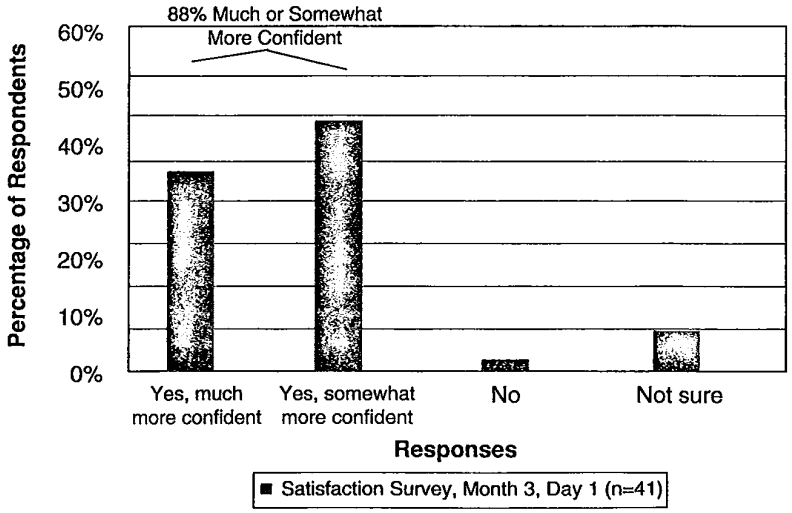
To implement the study, researchers first needed to develop the questions and protocols that the Health Buddy would use, based on the care management program already in place. The system focuses on 10 of the most common symptoms these patients typically experience in the weeks following surgery, including shortness of

Figure 1: Patient Satisfaction Survey Results

Do you believe you have a better understanding of heart failure and how to manage your condition based on this program?



Do you feel more confident in taking care of your condition as a result of this program?



Source: Santa Clara County Individual Practice Association, San Jose, CA.

breath, incision pain, fatigue, sleep disruption, angina, swelling in the legs, rapid heart rate, appetite problems, anxiety, and depression.

Answers prompt more questions

Blocks of questions were built around those symptoms and then programmed into the Health Buddy at appropriate intervals. For example, if a patient indicated that he was experiencing shortness of breath, the Health Buddy would then present another series of questions probing how frequent and how severe the problem was. There might be some health tips programmed into the sequence. For example, The Health Buddy might remind the patient to take frequent rest periods or to watch the sodium in his diet.

With the first group of patients using the Health Buddy, researchers mainly worked to refine and improve the questions and information provided by the appliance. Clinicians were trained by HHN to handle the programming aspect of the service so that it could be done in-house; however, Zimmerman emphasizes that the "scripting" phase was a huge task. "It is very labor-intensive to write these algorithms, because you have to think ahead," she says. "If the patient replies 'yes' to a question, then you have to establish what the next logical questions are, so it is an algorithm of drop-down questions."

With revisions in the program completed, researchers are now enrolling patients for the formal study. Patients in the control group will be asked the same questions at the same intervals as patients using the Health Buddy, but the control group will be contacted by phone at the standard 2-, 4-, and 6-week intervals, plus at three months and six months. The patients using Health Buddy will have daily reinforcement of the information from the appliance.

Expansion planned

Data from the study will not be available for some time. However, Zimmerman notes that patients have been receptive to the appliance, and researchers already are developing programs where the appliance will be used to monitor patients with other chronic diseases, such as diabetes.

"The majority of physicians have been impressed with the system, and the home health people have responded favorably as well," notes Zimmerman. "They absolutely want the data. It has major implications for them on resource allocation."

HHN primarily is being used to monitor chronic diseases. However, Brown notes that two groups are using the service in a more general way to monitor frail elderly individuals. Also, while most users of the service are currently large provider groups, Brown suggests that the service is a viable option for smaller providers as well. "Since this is an Internet-based program, anyone on the provider side should be able to go to the Internet and get access to it, and get a Health Buddy to someone who needs it," says Brown. "Ultimately, we would like for family members to be able to monitor and essentially case-manage elderly parents as well."

Editor's Note: For more information on the Health Hero Network, access the company's website at www.healthhero.com.