HealthData Management

Is Telehealth Finally Ready to Answer the Call?

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The test group was small, and more research is called for, but Gail Nunlee-Bland, M.D., and Ernest Carter, M.D., are now sold on the idea of remote patient monitoring via the Web.

Affiliated with Howard University Hospital, Washington, D.C., the two physicians conducted an 18-month research project to determine if a provider-assisted, telehealth self-management application could be an effective intervention tool for diabetic urban minorities. In short, the answer was yes. A group of patients equipped with camera-enabled laptops that could download data directly from blood pressure cuffs, glucometers and weight scales got key diabetic measures under control. In fact, the online patients-who conducted Web cam visits with a nurse-did a better job of health maintenance than a control group who relied on traditional face-to-face encounters.

For Carter, an adjunct professor of pediatrics at Howard, the interactive technology replicates the type of environment found in a hospital. "If you're monitored closely, and working with a trusted source who's an extension of your physician, you tend to get better," says Carter, whose work was detailed in the Winter 2011 edition of Perspectives in Health Information Management (published by AHIMA). "It's the sense of relationship that helps the patient along. If you go to the physician office, and go home, you can lose that sense of relationship. You have an episodic relationship with the physician. If you make it more continuous by introducing a doctor's nurse online, you help people manage their disease better."

Nunlee-Bland, an associate professor of pediatrics and medicine at Howard, believes the technology is sorely needed: she runs a diabetes clinic in Washington where the diabetes rate is 14 percent, or almost twice the overall national rate. It's a burgeoning health issue that is crying for consumer-oriented technological intervention. "We would like to expand this technology," she says. "We saw the benefit. But the issue is, who will pay? What are the economics behind it? That's the real question and it is something we grapple with."

Carter and Nunlee-Bland are not alone in their musings. Throughout the industry, a group of telehealth proponents have been quietly assembling networks and online access tools to enable a variety of health care encounters.

Traditional telehealth programs-proponents often use the term interchangeably with "telemedicine"-were once the domain of store-and-forward radiology consults, in which digital images were captured at point A, then shipped to point B, where specialist C would interpret the findings. In recent years, these programs-particularly in remote rural areas-have expanded into live, real-time patient visits, in which primary care physician A refers patient B in city C to specialist D whose office in is city E. Only the patient and the specialist stay put, connecting with each via video conferencing.

These programs are often housed in academic medical centers, whose budgets can support the private networks and workstations needed. But states are getting into the act, with such notables as Nebraska, Georgia, and Michigan's Upper Peninsula running telehealth programs dispersed across hundreds of miles.

Facing many of the same regulatory and reimbursement issues as traditional telehealth efforts, Web-based home monitoring efforts like Carter's and Nunlee-Bland's are in their infancy. But the rapid rise of chronic conditions such as diabetes and congestive heart failure compels many to believe that the online, Webcam visit is not so futuristic any more. Emerging payment models, which reward outcomes more than productivity, will likely push telehealth programs-and community hospitals and medical groups-into more

direct-to-consumer connectivity. What remains unclear, however, is exactly how the pieces will fit together and rightful roles of electronic and personal health records.

Redefining care delivery

Such uncertainties are not lost on telehealth proponents. Yet, having nurtured their projects through immature technology and physician reluctance, project leaders are buoyed by the burgeoning interest in telehealth and the corresponding boom in consumer-oriented health applications and devices.

"We are redefining the point of care," says Scott Simmons, director of telehealth at the University of Miami Leonard Miller School of Medicine. "We're moving it from what's convenient for the physician to what's convenient for the patient. Health care is a service business. And what other business could stay open with the customer service health care offers, without weekend and evening hours?"

Launched in 1973, the U-Miami telehealth program is one of the industry's oldest. But it really took off four years ago, when a new medical school dean championed the concept, says Simmons, himself a 17-year telehealth veteran who began his career designing telemedicine tools for the space program. The university has a long history of store-and-forward telehealth initiatives that include cardiology and dermatology, and provides teledermatology consults to the federal Indian Health Services. Headquartered in Albuquerque, N.M., the program is expanding to 75 locations in 29 states, Simmons adds. Digital images of skin problems are captured locally then shipped to U-Miami specialists for interpretation. And U-Miami announced earlier this year it would provide store-and-forward teledermatology consults for employees of Royal Caribbean Cruises. "There are a lot of skin issues working at sea," he notes.

But U-Miami is expanding its real-time video conferencing as well. In one effort, the university will offer telehealth consults to its own employees, who sometimes face long commutes to see a health system physician. Now, instead of driving eight miles across campus, an employee will be able to see a specialist via video conferencing. The effort launches later this summer, Simmons says.

U-Miami's also expanding a program for local school children. For the past four years, the academic medical center has been providing primary care to Children's Medical Services, a health safety net program run by the state. U-Miami physicians staff pediatric clinics around the state, where pediatric sub-specialists are in short supply.

Now, the center is expanding the service by adding teleconferencing hook-ups at school clinics. That will avert lengthy bus or car rides to the nearest in-person physician, Simmons says. "We're using the telehealth connection to broaden the reach," he says. "Parents often have difficulties with transportation. They will no longer have to take their child in person."

In neighboring Georgia, a statewide telehealth network has seen increased demand for its services since it was launched in 2005. In 2010, the Georgia Partnership for TeleHealth facilitated 31,000 encounters. About 11,000 were store-and-forward consults, with the remainder comprising real-time visits, says Paula Guy, executive director of the group, which is based in Waycross.

The Georgia network's reach is vast, encompassing some 201 sites that are located in such disparate locales as schools, rural health centers, nursing homes, group practices, hospitals, community mental health centers, and even jails, says Guy. More than 160 physicians in 40 specialties participate in the network, with the most highly utilized specialty being psychiatry.

"Access to care is the top benefit," Guy says. "It's so difficult to get primary care to come to rural Georgia. We have some locations that have only a nurse practitioner or a physician assistant. They use telemedicine to connect to primary care physicians. And it's tough for patients to drive three hours to see a specialist."

According to Guy, one reason for the growth of the telehealth network has been payer support. The year the network launched, the state passed legislation mandating that payers reimburse for telemedicine the

same as a live office visit. "That is the biggest hurdle for any state telehealth program," Guy says, adding that only 11 other states have similar mandates.

Real-time video exchanges between patient and physician offer clinical benefits to the specialists, she adds. Georgia's telehealth workstations-which cost about $34,000 each-can connect with several widely used medical devices, including stethoscopes, otoscopes, and ophthalmology scopes, she says.

Get the picture?

While a scope is being held by a nurse or assistant at the patient's end, the system produces a high-resolution image which enables physicians to clearly see any problems. And on the specialist's end, the images are presented on a flat-panel monitor. "The images are much better than the physician would get in person with the naked eye," Guy says.

Telehealth networks support functions other than clinical visits. U-Miami's infrastructure, for example, has long been used for educational purposes, such as remote meetings. And telehealth offers advantages in delicate clinical situations, adds Simmons, the program director. For example, U-Miami uses the network to support bedside trauma rounds with a robot. It's part of a training project underway at the university's trauma center with the U.S. military. "We have similar injuries, like gunshot wounds and vehicular accidents," Simmons says.

For the bedside rounds, the attending physician, residents and fellows are together in a conference room. They use remote controls to maneuver a robot with a camera attached around the bed of the patient. The data flows across U-Miami's telehealth network. "It helps with infection control, since we're limited to two people at the bedside in the ICU," Simmons says.

U-Miami has another video conferencing pilot underway in which an attending physician could conduct rounds in the ICU via an iPhone held by a nurse. That would give busy specialists a break from face-to-face rounds, or from coming in during the weekend, Simmons says. "Physicians can be more effective, especially in areas of health care personnel shortages."

Personnel shortage is a topic that Susan Makela knows well. She's the director of educational services at the Upper Peninsula Telehealth Network, an organization housed within Marquette (Mich.) General Health System. Michigan's entire U.P. is a federally designated health professional shortage area. As such, it qualifies for Medicare reimbursement for telehealth consults, which otherwise are not payable by the Centers for Medicare and Medicaid Services.

Formed in 1995, the U.P. Network spans more than two dozen sites, and includes connections to the Veteran's Administration, a longtime user of telehealth technology. The network helps patients avoid driving across the peninsula for follow-up visits to specialists. That convenience has been one of the principal drivers behind the network's expansion into purely clinical encounters.

In 2010, the network facilitated a total of more than 9,000 encounters, with just over half being educational meetings. About one-fourth of the encounters were remote telemedicine visits between physicians and patients, Makela says. "The value to the patient is very high, in terms of savings of time and travel," she says. "It can take up to six hours to drive across the U.P. from east to west."

The long drives have spurred more and more specialists to request telehealth follow-ups with their patients, Makela notes. "Specialists still travel to remote clinics, but this service can cut down on the load. And when gas prices went up, we saw a huge push from the communities for more telehealth appointments."

Like the U.P. and Georgia, Nebraska has a widespread telehealth network. Its infrastructure is a hub-and-spoke model that enables connectivity among 21 statewide hospitals, says Dale Gibbs, director of outreach and telehealth services at Kearney-based Good Samaritan Hospital, a 287-bed hospital that is one of the largest users of the network. "We treat 1,500 patients a year through the network," says Gibbs,

who also serves as co-chair of the Nebraska Telehealth Network. "We have done ortho, oncology, behavioral and cardiac visits. Our volume goes up every year. We are just scratching the surface."

The main impediment to the growth of remote telehealth visits is physician reluctance, Gibbs says. "Physicians like to see and touch patients," he says. "With telehealth, they can see the patients, but they can't touch them. Some physicians feel telehealth is not the best care."

Middle of nowhere

For some hospitals on the Nebraska network, the telehealth infrastructure represents a portal to a world that otherwise can be difficult to access. Thayer County Health Services, a 19-bed critical access hospital in Hebron, population 1,700, joined the Nebraska network six years ago to try to close the gap. "We are 90 miles from the nearest tertiary hospital, in Lincoln," explains Joyce Beck, CEO. "We have no specialists here, especially in the emergency department. That's what started it."

But gaining traction for telehealth services can be difficult. Despite having five telehealth workstations, each equipped with high-end video monitoring and device attachment capabilities, Thayer County Health Services only conducts one or two real-time telehealth visits a month, says CIO Dan Engel. "What we could do is limitless, but the service is under-utilized," Beck sighs. "If I were in charge of the world, I'd have every physician using the technology."

One problem Beck cites is recruiting physician specialists to see patients at Thayer County. "I would like to offer telestroke services, but that would require a neurologist," she says. "I have talked to several, but haven't convinced anyone yet. It's something new." Thayer County did launch teleburn and teletrauma services last summer, Beck says. They connect to specialists whom she recruited at two Lincoln hospitals.

For Beck, the telehealth service is partly a matter of community pride. "People in the city don't know why we put this much technology effort into a county with only 5,000 people," she says. "But people in rural America deserve the same health care as people in urban America. The best way to do that is to tap into technology."

For a tiny hospital, Thayer County Health Services is a technology showcase. It's a demonstration site for the federal National Health Information Network, designed to showcase nationwide interoperability. And it maintains its clinical documentation on an EHR, from CPSI, giving patients a copy of their health record on a small portable thumb drive attached to a bracelet.

"Our patients go to specialists all over the country," Beck says. "So we have elderly patients explaining to young nurses where the USB is on their computer." Such services have whetted patients' appetites for a wider variety of telehealth services, the CEO adds. "Some of our patients would like home monitoring," Beck says. "But the technology is so new, I don't know if we can bill for that. We haven't investigated it yet."

Some experts predict that remote patient monitoring could be the next big growth area in telehealth applications. With some 133 million Americans managing one or more chronic conditions, the technology offers a way to control costs and reduce hospitalizations, says Gregg Malkary, principal of Spyglass Consulting, a market research firm.

Although a number of home health agencies use remote patient monitoring, the technology has not yet accelerated in the greater population, he says, with device cost being one obstacle.

"The challenge for providers is the business model," Malkary says. "What products and services should they offer? How much should they charge? How should they distribute the devices? Who is responsible for monitoring and triage? And who is responsible for payment?"

Disgruntled physician

Malkary's caveats are not lost on software vendors, who are still sorting out the vastly expanding arena of consumer-oriented technology. For Suzanne Sysko Clough, M.D., telehealth applications can fill a void that conventional health care delivery has helped create. Trained as an endocrinologist, Clough gave up her private practice to launch WellDoc, a software company that offers remote monitoring tools for diabetics. "Currently the health care system is not equipped to do anything other than sick care and acute care office visits that last six to 10 minutes," she contends. "The key is equipping people with skills. They should understand the treatment plan."

WellDoc just wrapped up its first clinical trial, an effort undertaken with the University of Maryland School of Medicine. In it, participants downloaded their blood sugar scores via smartphone to a secure Web site accessible by patients and clinicians. If their scores suggested something amiss, the program would dispatch an immediate alert to the patient. "If my reading was high, the program would help me remember what I ate to spike the number," recalls Joseph Rihel, a retired fireman who participated in the trial. Rihel says the program encouraged him to be fastidious about recording his sugar levels. "There were only three times during the year I didn't enter the data," he recalls. "I went to a party and didn't want WellDoc upset with me."

WellDoc has four organizations, including disease management companies, lined up to test the software with their employees. Clough says her company's ultimate success rests in its ability to provide consumers like Rihel meaningful-and actionable-data. "The industry has got to get smarter," she says. "Successful telehealth is not just collecting reams of data and moving it from point A to B. We need to transfer data into knowledge. If we don't, we're going to give telehealth a bad name."

Many traditional telehealth programs-and a few hospitals-are beginning to dabble in remote monitoring and even virtual visits (see sidebar, page 34). To do so they've set the economic equation aside while examining the merits of the concept, which turns traditional health care workflows on their head. U-Miami is in the early stages of a remote patient monitoring pilot, which is being funded by an NIH grant, says Simmons, the telehealth director. "Remote patient monitoring will be a growth area," he says. "We see it exploding."

In the pilot, U-Miami will monitor the blood pressure of elderly hypertension patients in conjunction with a local disease management company. Patients participating in the study will receive a technology kit that includes weight and blood pressure cuffs that will wirelessly transmit data to a device, which will forward the information to a secure Web site.

U-Miami is recruiting patients now, looking for 50 patients in the intervention group and 50 in the control group, says Simmons, who describes the technology as a natural extension of the program's time-honored telehealth consults.

"Remote patient monitoring and teleconsults are part of the same continuum," he says. "A nurse practitioner can manage patients with a chronic disease, so physicians can be more effective."

That was exactly the model that Drs. Carter and Nunlee-Bland used in their research project with diabetic patients in Washington, D.C. The set-up's ability to graphically chart changes in blood pressure and blood sugar levels provided a tremendous patient education tool, says Nunlee-Bland.

During their research project, patients would upload the data to a PHR, from NoMoreClipBoard, which is integrated with a diabetes disease management EHR, called CliniPro (from NuMedics). During online virtual visits, in which the patient and nurse would converse via Webcam, the nurse would discuss trends in the patient's vital signs.

"The nurse would point out that the blood sugars were trending upward," Nunlee-Bland recalls. "That allowed the patient to reflect on what they were doing. They would think about what they had eaten. Just seeing the data trended improved compliance with therapy."

Carter sees remote patient monitoring as keeping with the so-called "medical home" model, in which care is coordinated by a primary care physician and referrals are managed via an EHR.

"Everything is trending to coordinated care and the medical home," he says. In Carter's next study, data will be ported into an ambulatory EHR maintained by a primary care physician. "These applications would lend themselves to cost-savings for insurance companies and increase physician satisfaction with how they manage patients. But we have to show that through research."

Such a research effort is just getting underway at the U.P. Telehealth Network, which is forming a demonstration project to become an accountable care organization for CMS (for more on ACOs, see the cover story, page 20). It's a newly emerging model, one called for in federal health reform legislation.

The cornerstone, says Makela, the telehealth network's education director, is chronic disease management across a region. "The diabetes and obesity rates are high here," she says. "We would go after these diseases in home monitoring."

In the early stages of the demonstration, a local primary care group practice will monitor a group of patients who, in theory, will funnel vital signs from Web-enabled devices directly into their EHR. The first step is a feasibility study with the vendor, McKesson, to see if the EHR can accept the data.

The ACO will include elements of the medical home model, adds Makela. "It makes sense if you're the primary care physician to see all the data."

Telehealth Projects Dots the Mat

A variety of health care organizations have launched telehealth projects in the past year. Below are highlights.

Provider: Scottsdale (Ariz.) Healthcare

Type of Service: Virtual house call

Target Audience: Hospital employees

The three-hospital organization employs 6,500 staff and runs its own self-funded health plan. Last December, it launched an online virtual visit service in conjunction with a local firm, Stat Doctors. The company was founded by Alan Roga, M.D., a member of the medical staff at Scottsdale Healthcare. Offered as a benefit to the staff, the service targets employees with minor complaints, such as coughs, earaches and sore throats, says Carol Henderson, senior vice president and chief talent officer.

By offering virtual visits, the health system hopes to reduce the number of trips its employees make to the emergency department-which an analysis showed was higher than the industry norm. "This is not intended to replace the family doctor and the family doctor relationship," cautions Henderson, who adds that the service requires a $35 co-pay for staff-compared with a $150 co-pay for an ED visit.

To use the service, an employee logs on to a secure Web site and fills out a form highlighting the nature of their problem. Using a Webcam (or a telephone), they are connected with a physician at the other end, who can prescribe medications as needed. In the service's first month of operations, Stat Doctors hosted 38 patient encounters, primarily for upper respiratory conditions.

The sessions usually took place in the off-hours, or evenings and weekends, says Henderson. Users are connected with a physician in as few as two minutes, and never more than 27 minutes, she adds. The encounter's total time-from appointment request to eventual discharge-did not exceed 69 minutes.

The Stat Doctors Web site steers some patients straight to the ED. "People with chest pain or a sharp headache are in one portion of the head are directed to call 911," she says. "If you have a broken limb, this isn't going to work."

Scottsdale is in the early stages of rolling out a system-wide EHR. The plan is to feed data from any Stat Doctor encounter directly into the chart of the patient's primary care provider, says Henderson. "The staff likes the fact that they don't have to get dressed to go to the doctor when they're feeling bad," she says. "The convenience factor is huge."

Provider: Meridian Health, Neptune, N.J.

Type of Service: Remote CHF patient monitoring

Target Audience: Heart failure patientsFor the past year, Meridian Health, a five-hospital delivery system, has been monitoring a select group of congestive heart failure patients after discharge. "The focus is on reducing the readmission rate," says Sandra Elliott, director for consumer technology and service development. Using software from MedApps, Meridian equips CHF patients with a home monitoring kit that includes a wireless scale. "Weight is the key vital sign," Elliott explains.

In the set-up, patients record their weight on the scale, which transmits the data to a MedApps device in the home. The device collects the data and ships it to a Web site, which is monitored by a telemonitoring nurse, Elliott says. In conjunction with the MedApps device, Meridian has set up an interactive voice response system, which generates phone calls to the patients each day, soliciting answers to key questions. The patient provides answers via the touch-tone key pad. Both systems are programmed to provide the nurse alerts, for example, if the patient experiences sudden weight gain, or had shortness of breath.

Hight-Tech Consults, Low-Tech Records

The video conferencing capabilities of telehealth networks can provide a clinical encounter that advocates say is almost as good as the face-to-face kind. And with medical devices attached, physicians can analyze images on a large display monitor that beats what they can see with the naked eye, peering through a scope. But when it comes to sharing clinical records related to a visit, telehealth encounters are often very low-tech, even when the physicians have electronic health records on hand. "There is a gap between EHR vendors and telemedicine," says Scott Simmons, director of telehealth at the Leonard Miller School of Medicine, University of Miami. "The fax machine is used a lot to move patient histories."

For many telehealth consults, any patient background needed by the specialist must be reviewed by fax. For programs like the Upper Peninsula Telehealth Network, that means being judicious about what patient information is put on the transform, says Susan Makela, director of educational services. The program only sends information to secure fax machines which offer limited access, she points out.

Some telehealth champions see the documentation gap being filled by personal health records maintained by patients themselves. Others favor direct integration with physician EHRs.

The Georgia Partnership for Telehealth found a way around the dilemma by incorporating a service that functions similarly to a health information exchange, says Paula Guy, executive director. The network, which links 201 far-flung sites across Georgia, enables the exchange of Microsoft Word-based forms that include patient histories, says Guy. Other documents, such as lab values, can be scanned and appended to the online transaction as well, by uploading the file to a forms function that works in conjunction with the partnership's Web-based scheduling tool, from Microsoft. "It is the only way we can do it at the moment," Guy says.

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