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Health info brought to mobile phones

By Kara Rowland
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For two decades, Lori Fales has lived with Type 2 diabetes. Like others with the disease, the Baltimore County third-grade teacher has struggled to monitor it as religiously as she should, writing down her blood-glucose levels and lifestyle habits in a logbook that she handed to her doctor when they met every three months.

“We tend to stray a bit,” admitted Mrs. Fales, 43. “There are times when you just get tired of writing it all down.”

So when she heard about a University of Maryland study of a new diabetes management system, she knew she wanted to participate. All she needed was her cell phone.

Software from Baltimore-based WellDoc Communications Inc. turns any Web-enabled phone into an interactive diabetes monitoring device.

Mrs. Fales enters her blood-glucose levels along with what she’s eaten and her physical activity that day, and the program gives her real-time feedback - praise for normal readings as well as recommendations on how to improve problematic ones. It also links her information with her doctor, who is able to check the data at any time.

“What it’s caused me to do, quite frankly, is to become more accountable,” Mrs. Fales said. “This has put the numbers right there in my face and put me in the driver’s seat.”

WellDoc is one of several innovators taking advantage of mobile penetration in the country - there are more than 255 million wireless subscribers out of a population of 304 million, according to CTIA Wireless - to tackle perennial health care challenges. Among them: rising costs, a shortage of physicians and chronic conditions that require daily monitoring.

“If you look at the cost of administering clinical trials and bringing drugs to market, wireless technology can cut that exponentially - the cost of moving paper and scans and tracking data around a hospital - all that can be done in a paperless manner. You can keep people out of the hospital and in their home, you can monitor body temperature, heart rate, blood pressure, skin temperature, calories,” said Camille Sobrian, president of the Wireless Life Sciences Alliance, a group focused on accelerating the development of mobile health care technology. “The impact is going to be tremendous worldwide.”

Managing disease

Successful disease management is often hampered by a patient’s limited time with the doctor, according to Dr. Suzanne Clough, an endocrinologist and chief medical officer of WellDoc. During her tenure at the University of Maryland’s Joslin Diabetes Center, Dr.

Clough saw firsthand how infrequent appointments weren't doing enough to educate patients.

"We had a first-class setup down there," she said. "And yet despite that, I was still finding that patients weren't learning what I expected they would be learning about their disease, really the management of the disease, so that when they were out on their own, they had the tools to do what they need to do. They were relying too much on coming back maybe one or two times a year for 15 minutes to really learn more about the disease."

But, Dr. Clough said, 90 percent of diabetics are treated by primary-care doctors, who are swamped with cases and have limited time. Moreover, there's no guarantee that more visits will result in patients keeping better track of their diabetes.

So, she decided to tap into her patients' wired habits to improve self-monitoring.

"Regardless of socioeconomic status, most people who walk into the clinic had a cell phone," said Dr. Clough, who co-founded WellDoc in 2005. "The goal of WellDoc is to make this software as ubiquitous as possible and to let people use the device they already use."

After downloading the program, patients register online, listing what medications they take and other diagnostics. WellDoc suggest what times of the day to test blood glucose levels and then gives feedback on the results after the patient enters them into the phone.

Without such interactivity, Dr. Clough said, patients may find extensive data collection burdensome and perhaps even pointless. However, without a full picture, doctors are unable to give helpful suggestions.

"Because they don't know what to do with the numbers, they don't test," she said. "Those numbers are invaluable because at the end of six weeks we can say, "Hey, this is a food issue or maybe this is a medication issue." So we really empower patients to know this isn't data collection for data collection's sake."

WellDoc packages information entered into a patient's cell phone into analyzed reports for doctors. It also gives users specific feedback based on their test results.

"If you have a good reading, it encourages you. It'll say, 'Great job, this is really good,'" said Mrs. Fales. "Say, for instance, I'm a little low. It might say you're a little low and provide you with recommendations - it's really specific - eat half an apple, eat four pieces of glucose candy, have a piece of toast or turkey."

Prior to participating in the study, Mrs. Fales said she struggled to control her diabetes. For the majority of her 20 years with diabetes, she described herself as "unmanaged." But after three months of using WellDoc's mobile software, her glucose level dropped from 11.1 to 9.4. (Someone without diabetes typically has a blood glucose level around 5.)

The American Diabetes Association recommends that diabetics strive for glucose levels below 7. Each one-point drop can reduce the risk of a heart attack, stroke, blindness or kidney failure by up to 40 percent, according to WellDoc.

"My sugars are coming in the normal range, and I would venture to say we're probably at a 7 right now," Mrs. Fales said. "I'm telling you, it's made a difference in my life."

WellDoc is still recruiting 260 Type 2 diabetes patients for a yearlong clinical trial, run by the University of Maryland and co-sponsored by CareFirst, set to commence this summer. This fall, the company will hold test runs with various disease management companies to determine the best way to distribute the product.

Diabetes isn't the only condition well-served by mobile software, Dr. Clough noted, citing patients with obesity or congestive heart failure. The company has already licensed the software to a pharmaceutical company for use in managing asthma.

Mobile videoconferencing

Quebec company Myca describes Hello Health as a "doctor's practice with FedEx efficiency, Amazon simplicity, Whole Foods quality and Apple experience."

The product, which launched in New York City earlier this month, is a cell phone platform with a specialized "dashboard" for each of three elements - nutrition, exercise and any medical conditions. The system links users with doctors in a dedicated clinic that Myca Chief Executive Officer Nat Findlay said provides the human interaction lacking in other mobile monitoring software.

"I think consumers want medical information, they want to be monitored, but they want the care and love that goes with that monitoring," said Mr. Findlay, citing General Motors Corp.'s popular OnStar safety system as an example. "They don't just want a text message; they want the interaction with a real human person."

The nutrition portion of Hello Health lets subscribers take pictures of what they are eating and send those to adietitian who can reply with a text message or even via live video. Myca is also working on adding a digital "patch" with a cell phone emitter that could measure a person's caloric intake so he wouldn't have to manually count calories.

The system provides patients with "actionable items," such as instructions to lay off the french fries or get some exercise, Mr. Findlay noted.

"It'll say, 'Hey, your weight's increasing' or 'Your blood pressure is up,'" he said.

Hello Health also enables patients to schedule mobile videoconferences with its doctors, who manage their patients through a Web interface resembling a social networking site such as Facebook. Doctors, upon signing in, are greeted by pictures of their patients, notifications of those who have sent new data and a schedule of appointments.

"Hello Health has really hit the sweet spot of so many doctors," Mr. Findlay said. "People say health care sucks for the consumer, but it really sucks for the doctor."

The system still provides for in-person appointments - which cost extra - but doctors using the service are able to cut down on the number of unnecessary visits, he said, reducing overhead costs and increasing revenues. For example, a patient might have a quick question that could be answered with a video chat. The company has so far recruited two physicians for its Brooklyn clinic.

Hello Health can be used on any computer and is equipped for instant message and e-mail, but Mr. Findlay emphasized the benefits of using the program over cell phones.

"When you look at the world next year, there might be 350 million to 450 million laptops deployed," he said, "but there will be a little more than 1.5 billion cell phones deployed. The reach of the cell phone is going to quickly eclipse the PC world."

Any Web-enabled phone can download the program, which costs $25 a month.

Pill tracking

As the U.S. population ages, chronic disease is expected to account for a larger share of the nation's health care costs. While pharmaceutical firms develop new drug therapies to deal with conditions like heart disease or diabetes, the pills are beneficial only as long as they are taken, and taken correctly.

Elderly patients especially have difficulty juggling numerous medications. But how to address that challenge?

"Rather than inventing new therapies, one approach was to add intelligence to existing therapies and help make them work better," said Dr. George Savage, chief medical officer of Proteus Biomedical Inc. of Redwood City, Calif.

Instead of using mobile technology to remind patients to take their pills, or to require them to manually type in data - a step Dr. Savage calls a "burden" - Proteus is developing technology to embed wireless chips in the pills themselves. The chip would activate when it is swallowed and send a signal to the doctor or caregiver via cell phone or computer.

"One of the biggest problems in life is grandma or mom may be getting ill, but she no longer lives with you; she lives 500 miles away from you and you really want to help manage her needs as a family caregiver," Dr. Savage said. "There are no real tools being provided right now by either the health care industry or, indeed, the computer industry that help leverage your time to do a better job. The only way to do something for an elderly relative is to go there and show up in person."

The Proteus chip, which the company calls the Raisin system, is about the size of a 1-millimeter grain of sand and would cost less than a penny if it were manufactured in large volumes, he said. Each chip would have a unique serial number.

When swallowed, the chip sends a signal to a receiver located inside or on the patient's body. It then transmits data to a cell phone and eventually onto the Internet.

The Raisin system is well-suited for patients with potentially dangerous conditions such as schizophrenia or bipolar disorder, Dr. Savage said.

"Many of these patients and their families have come up with elaborate rituals such as parents calling the affected son or daughter every day at the same time to check if they've taken their medicine," he said.

Proteus' chip is in clinical testing. Dr. Savage said the goal is to have the first Raisin-enabled pills on the market by 2011.

Emergency medicine

When emergency medical technicians arrive at the scene of an accident or a crime, the first items they check are a person's wallet and cell phone. But neither of those include information, such as blood type or allergies, that could prove vital when paramedics don't have time to call a family member and see whether someone in critical condition shouldn't be injected with penicillin.

"When you are face down, you're a blank slate," said Mark White, president of MyRapidMD Corp., a startup based in Marina Del Rey, Calif.

At that point, an allergy or drug reaction could require minutes to diagnose and treat - the difference between life and death in some cases.

MyRapidMD developed a cell phone application called Emergency Service Profile (ESP) in consultation with first responders. The software, which can be downloaded onto most Web-enabled phones via text message, stores a record of vital information in a format that is readily accessible to emergency medical technicians.

The product captures 15 fields of information that first responders worldwide look for at the scene of an emergency. Known by the acronym SAMPLE, it entails: signs and symptoms; allergies; medications; past history; last intake; and events prior. The profile also has a spot for a patient's home hospital and the location of an electronic health record if he has one. It includes a photograph.

To ensure that EMTs know to look for ESP on a person's phone, members who sign up for the service are given a sticker for the back of their handset as well as a decal for the car. In the event a member is traveling without a phone, an identification number on a keychain card can be used to gain access by dialing an automated call center.

A cell signal is not required because ESP is downloaded onto a phone's hard drive.

MyRapidMD prices the service at $19.95 for the first year with an annual renewal charge of $5.95. Users can change their medical information at any time; the company sends a reminder every 90 days encouraging members to update their profiles.

ESP is free for first responders. Since its launch earlier this year, more than 500 people have signed up.

"If you can't afford this, you can't afford a cell phone," Mr. White said. "Nobody's been able to give us a reason as to why you shouldn't have this on your phone."