Technology Can Improve Diabetes Compliance

BY JOYCE FRIEDEN

WASHINGTON — It ain't easy being diabetic.

Life is filled with additional responsibilities: the finger sticks, the glucose monitoring, hemoglobin A_{1c} testing, foot and eye exams. So how can things be made easier for diabetes patients and their physicians?

One answer is technology, according to several speakers at a diabetes meeting sponsored by Avalere Health. And for Amand Iyer, president and COO of WellDoc Inc., a Baltimore-based software company, that often means the cell phone.

Cell phone use can help to overcome one of the biggest barriers in the adoption of new technology: cost, said Mr. Iyer, who is a type 2 diabetes patient. "Wireless operators are measured on two things: average revenue per user, and the amount of marketing dollars they invest to [regain] a lost subscriber, which is $343 per lost subscriber per year," he said. "If you can extend the wireless operator's contract for 1 year by providing a 'sticky' health application, they're willing to share that $343 with you."

That's exactly what WellDoc is doing: marketing one program as a "virtual coach" that diabetes patients can load onto their phones. "You register online or on the phone and provide your demographic information, phone number, and the drug regimen you're on, and when you're finished, you get a text message that says, 'Click here to download the software,' " Mr. Iyer explained, noting that it will work on most commercially available cell phones. The software has blood glucose target ranges, high and low alerts, and [information on] what to do for hypoglycemia, and it can be modified for patients with multiple comorbidities such as diabetes and heart failure, he said.

The software also includes a learning library with information on diabetes self-care, and a mobile logbook that users can access on a computer so they can see how well they're meeting their targets. And the cell phone acts as a "nerve center" that communicates with the patient and whomever else he or she chooses, such as a physician, caregiver, or diabetes educator.

Patients can enter useful data for alerting themselves and physicians to preset trends—for example, if the patient is hypoglycemic twice in a 10-day period. Physicians can receive the information in whatever way suits them best, Mr. Iyer said.

One doctor may say, "Send it to me in a fax the day before [the patient] comes in," Mr. Iyer said. "Some doctors have said, 'Hey, can I get the software on my phone? Because I just made this medication change for this brittle patient and I want to see how he is tracking.' "

One program is a 'virtual coach' that diabetes patients can load onto their phones.

MR. IYER

Mr. Iyer's company also is working with a glucose monitor firm on getting a wireless chip installed right on the meter. "Patients would pull their strips as they do normally, get the feedback on the meter, and get all their alerts and reminders right off the meter." His company is developing similar modules for other diseases, including heart failure, hypertension, and dyslipidemia.

At Partners in Health, a group practice affiliated with the University of Pittsburgh Medical Center, one technology application that has gotten a good response is electronic "office visits," according to Dr. Grant Shevchik, the practice's medical director. Patients fill out online questionnaires—"the only physician visit where the patient records the history"—and the messages are sent directly to their physicians for a response. The new service generated 286 "visits" from Aug. 28, 2008, to Jan. 31, 2009, Dr. Shevchik said.

"Our oldest patient who has done this is 82," and many of the others are in the 35- to 44-year-old age group. "These are not the 22-year-olds," he added.

Not only is the service "affordable, convenient, and efficient," it also has a CPT code (99444), he noted. The code can be used only once during a 7-day period and the visit must be patient initiated, it must involve a timely response, and there must be permanent storage of the visit information.

At Johns Hopkins University in Baltimore, employees with chronic illnesses such as diabetes can take advantage of Telewatch, a telephone monitoring program, said Dr. Ines Vigil, associate medical director at Johns Hopkins HealthCare, a health plan that includes 47,000 university employees.

"The employee can call in and type in their blood pressure, last cholesterol-screening results, their symptoms, and their stress levels, and it gets rolled into a system that our nurse case managers and clinical screeners are able to follow over time," Dr. Vigil explained. "The system will red-flag something if it's abnormal." If a patient calls in an abnormally high blood pressure or glucose level, "our clinical screener will inform the case manager to give the member a call," she said. More than 1,000 people are participating in Telewatch, she said, noting that patients with more serious chronic illnesses talk with nurse case managers more regularly. ■

Depression Doubles Risk For Diabetic Foot Ulcers

BY KATE JOHNSON

MONTREAL — Major depression is associated with a twofold increase in the risk of incident diabetic foot ulcers, according to the results of a large, prospective, population-based cohort study.

The findings suggest strong benefits in screening for and treating depression to prevent this complication, said Dr. Lisa Williams, of the department of dermatology at the University of Washington, Seattle.

"Depression is twice as common in patients with diabetes," she said at the annual meeting of the Society for Investigative Dermatology. "At any one time, 11%-12% of patients with diabetes have major depression, and 31% have significant depressive symptoms."

Until now, it has not been known whether depression increases the incidence of diabetic foot ulcers. However, it is known that "depression is associated with more severe and larger diabetic foot ulcers, and poor healing and recurrence. Depression is also associated with a threefold increase in mortality rate among patients with their first foot ulcer," she said.

Her study, funded by the National Institute of Mental Health, included 3,474 patients from the Pathways Epidemiologic Study, a prospective cohort of primary care diabetes patients from nine clinics in western Washington State.

Major and minor depression were assessed using the Patient Health Questionnaire (PHQ-9), and there was a mean follow-up of about 4 years. New-onset foot ulcers were assessed during the course of the study, using ICD-9 codes.

There were 401 diagnoses of major and 290 diagnoses of minor depression in the cohort, and 121 incident foot ulcers, said Dr. Williams, who reported no conflicts of interest.

Compared with patients with no depression, Dr. Williams and her coinvestigators found a significant increase in the risk of foot ulcers in patients with major, but not minor, depression (hazard ratios, 2.0 and 1.3, respectively).

There was no difference between depressed and nondepressed patients in foot self-care. However, previous research has shown that depression in patients with diabetes is associated with poor self-care, as well as hyperglycemia, smoking, and obesity, she said. "In our study, we found that compared with nondepressed patients, depressed patients were older, unmarried, had [a higher BMI], were more likely to smoke, and had more diabetes complications." ■

Depressed Diabetes Patients Have Higher 10-Year Mortality

BY ROBERT FINN

LONG BEACH, CALIF. — People with diabetes have far higher scores on a depression scale than do those without diabetes, according to a large epidemiologic study.

Furthermore, depression is associated with increased 10-year mortality in people with diabetes, but not in those without the condition.

The mortality risk goes up 54% in diabetic patients with clinical depression, compared with those without depression, after adjustment for a large number of covariates, according to Xuanping Zhang, Ph.D., of the Centers for Disease Control and Prevention, and his colleagues. Dr. Zhang presented the results at a conference on diabetes sponsored by the CDC.

The study used data collected between 1982 and 1992 by the National Health and Nutrition Examination Survey I Epidemiologic Follow-Up Survey (NHEFS). The investigators compared 558 people with diabetes to 7,063 people without the disease, and included all individuals for whom they had complete survival data and scores on the Centers for Epidemiologic Studies Depression (CES-D) scale. Scores of 16 and above indicate clinical depression, scores of 16-21 indicate moderate depression, and scores of 22 or greater indicate severe depression.

Among people with diabetes, the mean CES-D score was 26.3, compared with 15.8 among those without diabetes, a statistically significant difference.

In a multivariate analysis that adjusted for age, sex, race, marital status, education, working status, smoking status, physical activity, alcohol consumption, body mass index, self-rated health, and the presence of other serious diseases, people with diabetes who also had a CES-D score of 16 or above were 54% more likely to die over 10 years than were those with lower depression scores, a statistically significant increase in risk.

Among people who did not have diabetes, high depression scores conferred a 3% increase in mortality risk, and that increase was not statistically significant.

In an attempt to avoid the possible bias of including people with very severe disease in the analysis, the investigators also performed the analysis after excluding all those who died within 1 year of the start of the study. In that analysis, people with diabetes experienced a significant increase in the risk of mortality if their CES-D scores were 22 and above, not if they were between 16 and 21.

Dr. Zhang stated that he had no conflicts of interest regarding the study. ■