

## Diabetes Education Outreach Improves Quality of Care

BY MITCHEL L. ZOLER

NEW YORK — A concerted effort to bring diabetes educators to rural, primary care practices in the Pittsburgh area led to substantial improvements in the quality of patient care.

In one practice, use of critical monitoring tools rose significantly after a diabetes educator began visiting the patients. Regular use of a dilated eye exam rose from 38% before the educator's visits to 75% during the program. The percentage of diabetic patients who underwent a regular foot examination jumped from 57% before the educator program to 82%, Linda M. Siminerio, Ph.D., said at a meeting sponsored by the American Diabetes Association.

"We saw this in every practice," she said. "When you put an educator in the practice, the staff becomes more aware of diabetes and what patients need, and patients [who have attended educational sessions] ask for more services," said Dr. Siminerio, a health educator and director of the Diabetes Institute at the University of Pittsburgh.

Dr. Siminerio and her associates started the Pittsburgh Regional Initiative for Diabetes Education (PRIDE) with the goal of improving diabetes care and awareness by educating patients, providers, and the regional community through outreach programs in western Pennsylvania. The program included screening events, health fairs, telephone banks, and visits by diabetes educators

to practices in all parts of the region.

The rural practice that Dr. Siminerio used as an example had 104 patients with diabetes, with an average age of 65. Before the program started, seven of these patients had met with a diabetes educator, seven had received nutrition counseling, and three had received exercise instruction.

After weekly visits by a diabetes educator, the level of care received by the patients improved. In addition to the increases in eye and foot exams, the percentage with at least two measures of their hemoglobin A<sub>1c</sub> levels rose from 75% to 95%. The proportion receiving monofilament testing as part of their foot exam rose from 47% to 79%.

In addition, lipid profiling rose from 88% to 99%, and urinalysis increased from 62% to 81%. Certain clinical measures also improved, with the average serum LDL cholesterol falling from 107 mg/dL to 98 mg/dL, and average systolic blood pressure dropping from 140 mm Hg to 135 mm Hg.

The findings also highlighted a shortcoming in the way that the diabetes education was utilized. The patients referred by their physicians to see the visiting educators tended to be those with the highest HbA<sub>1c</sub> and LDL levels; many other patients with diabetes, especially those with better test results, did not meet with educators. "We need to reach the entire diabetes population, not just those who are in bad shape," Dr. Siminerio said. ■

## Glucose Levels Predict Mortality Post Infarction

BY DENISE NAPOLI

Average glucose levels at hospital admission for acute myocardial infarction predict 30-day mortality better than does diabetes history, even though the latter is routinely used as an assessment tool, according to an analysis of two large trials.

"Patients with no diabetes history with elevated in-hospital glucose levels have the same high risk for short-term death after AMI [acute myocardial infarction] as patients with diabetes history," the investigators wrote.

Dr. Abhinav Goya of the Emory Schools of Public Health and Medicine in Atlanta, along with an international team of investigators, conducted a post hoc analysis of two randomized, controlled trials of AMI with ST-segment elevation: the Clinical Trial of Reviparin and Metabolic Modulation in Acute Myocardial Infarction Treatment and Evaluation—Estudios Clinicos Latino America (CREATE-ECLA) and the Organization for the Assessment of Strategies for Ischemic Syndromes-6 (OASIS-6). For the analysis, the investigators looked at glucose measurements taken at hospital admission, at 6 hours post admission, and at 24 hours post admission, and took as "average in-hospital glucose" the mean of the three. They also assessed diabetes history, and then estimated the ability of these to forecast death at 30 days. In cases where there were fewer than all three measurements

available, the average glucose was taken to be the mean of two measures, or the one measure by itself.

A total of 30,536 patients were analyzed. Of them, 13,100 (43%) had an average glucose of at least 144 mg/dL, the cut-off point that was used to predict risk of 30-day mortality. Of these 13,100 patients, 8,388 (64%) did not have a history of diabetes. At 30 days, a total of 2,808 deaths were documented. Average glucose predicted mortality with a highly significant odds ratio of 1.10, and this remained undiminished after adjustment for diabetes history, according to Dr. Goya, also of the Population Health Research Institute, Hamilton, Ont. Diabetes history alone also predicted death at 30 days, with a highly significant odds ratio of 1.63; however, after adjustment for average glucose, the odds ratio fell to a nonsignificant 0.98.

Additionally, nondiabetic patients with glucose levels above 144 mg/dL had an average rate of death that nearly matched that of diabetic patients with similarly high glucose—13.2% versus 13.7%, respectively (Am. Heart J. 2009 Feb. 23 [doi:10.1016/j.ahj.2008.12.007]).

"These hyperglycemic patients with no diabetes history would have been overlooked as high risk if diabetic status alone were used for risk assessment," the authors concluded.

The CREATE-ECLA trial had no external funding; OASIS-6 was funded by Sanofi Aventis, Organon, and Glaxo-SmithKline. ■

## New Technologies Help Streamline Diabetes Self-Care

BY JOYCE FRIEDEN

WASHINGTON — It's tough being diabetic. Life is filled with lots of extra responsibilities: the finger sticks, the hemoglobin A<sub>1c</sub> testing, the 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 to the adoption of new technology: cost, said Mr. Iyer, who is a type 2 diabetes patient. With this in mind, his company is marketing a program that diabetes patients can load into their phones and use as a "virtual coach." 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.

It also includes a learning library with information on diabetes self-care, and a mobile logbook that users can access on a computer to see how well they're meeting their targets.

The cell phone even 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.

Physicians can choose to receive the information in whatever way suits them best, Mr. Iyer said. One doctor may say, "I don't have a computer; send it to me in a fax the day before [the patient] comes in," Mr. Iyer said. "Some doctors with brittle diabetes patients have said, 'Hey, can I actually 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.'"

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



**Cell phone use can help to overcome one of the biggest barriers to the adoption of new technology: cost.**

MR. IYER

off the meter." His company is developing similar modules for other diseases, including 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, said Dr. Shevchik, a family physician.

"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 meet several other criteria: It 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 Health-Care, 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, "then our clinical screener will inform the case manager to give the member a call," she said. The patient is informed about recognizing abnormal values, accessing care, and checking their medications. 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. ■