PDAs Help Some Patients With Diabetes Self-Care

BY BRUCE K. DIXON  Chicago Bureau

Patients who have diabetes can take more active roles in their care and improve glycemic control by using a personal digital assistant preinstalled with special software, according to Dr. Samuel N. Forjuoh. Dr. Forjuoh is leading a team of researchers who are examining the benefits of personal digital assistant (PDA) use with outpatients, with the goal of leveling the self-care playing field across socioeconomic groups.

However, their recently published pilot study showed although it is feasible to incorporate PDA use in diabetes self-care, it also poses challenges, said Dr. Forjuoh, professor of family and community medicine and director of research at the Scott and White Medical Center Hospital in Temple, Tex.

An initial cohort of 41 subjects was provided with Diabetes Pilot software for Palm handhelds (J. Am. Board Fam. Med. 2007:20:375-84). Diabetes Pilot is made by Digital Altitudes LLC, Arlington Heights, Ill. The system enables users to record glucose measurements, insulin, and other medicines; meals; exercise; blood pressure; test results; and other notes, according to the Diabetes Pilot Web site. Among other things, the software tracks the intake of carbohydrate, calories, fat, protein, fiber, sodium, cholesterol, and other nutrients, and allows users to see trends in blood sugars with various reports and graphs.

Nineteen participants dropped out of the study; 6 more did not return and could not be reached after several attempts. The 18 participants who completed the PDA intervention had a mean drop of 18% in hemoglobin A1c (HbA1c) from 9.7% at baseline to 8% after 6 months, Dr. Forjuoh said in an interview. Further updated results of the study, including data on exercise, foot care, and diet, are contained in a manuscript that has been accepted for online publication this May in Telemedicine and e-Health.

“The more a patient used the PDA, the greater the drop in HbA1c,” he said, noting that other researchers have documented comparable reductions in blood glucose associated with PDAs or similar technology.

The 18 finishers had an average age of 38 years. The group comprised 56% women, 56% Caucasians, and 38% college graduates. Also, 72% had annual family incomes of $30,000 or more, said Dr. Forjuoh. “(Most) of the patients in this pilot study were at the upper end of computer literacy and it’s apparent that only those who are comfortable using a PDA will benefit.”

The researchers are about to launch a larger study of 400 patients drawn from 14 Scott and White Health System clinics. The cohort will be assigned to four arms: a PDA-only group, PDA plus chronic disease self-management classes, usual-care management classes alone, and a usual-care group. In addition, the participants will be representative of the Central Texas population with respect to race, ethnicity, sex, income, location, and insurance status, said coinvestigator Jane N. Bolin, Ph.D.

“Despite our efforts to educate people who don’t read those booklets,” she said. “The project is sponsored by the Centers for Disease Control and Prevention via funding that Texas A&M receives for its prevention research center. The Dell Foundation provided a grant for the computers.

The software also is being developed in Spanish. The word diabetes itself may be confusing to Spanish-speaking patients because it is commonly referred to as “sugar in my blood.” The Tex-Mex blend of English and Spanish that some patients speak in the central part of the state also makes it challenging to translate. For example, it was difficult to translate the phrase “setting goals” into Spanish because the English word has no meaning for many Spanish speakers.

The investigators hope to expand the project to more clinics in the area and in south Texas. If the kiosks generate enough interest and are successful, they could be expanded nationwide.

The hope is that such kiosks may be as commonplace as point-of-care blood pressure monitoring machines at pharmacies and grocery stores, Dr. Bolin said.

Researchers hope PDA use can extend to patients across all socioeconomic levels.

Health Numeracy Brings a Challenge to Diabetes Care

BY JOYCE FRIEDEN  Senior Editor

ST. LOUIS — In addition to problems with health literacy in general, diabetes patients are especially susceptible to problems with a specific aspect of health literacy known as health numeracy. Numeracy is the ability to understand and use numbers and math skills in daily life. Diabetes requires a lot of health numeracy skills—calculating insulin dosages, counting carbohydrates, calculating ratios for combination insulin regimens, and sick day management.

Dr. Rothman said at the annual meeting of the American Association of Diabetes Educators. Dr. Rothman, director of the Effective Health Communication Program at Vanderbilt University, Nashville, Tenn., and his colleagues tested 398 diabetes patients using a 43-item examination. The patient population was 51% female, and the average age was 54 years; 14% of the patients had type 1 diabetes, and 86% had type 2 diabetes. In terms of education, 43% of the participants had no more than a high school education, and 69% had less than ninth-grade math skills as measured by the Wide Range Achievement Test. Every 10-point increase on the numeracy test translated into an average 0.1% decrease in HbA1c, after adjusting for age, gender, race, income, literacy, insulin status, and type of diabetes. Higher test scores were significantly correlated with higher educational status, literacy, math skills, and frequency of blood glucose monitoring.

Many patients aren't good at estimating portion sizes, which causes difficulty when it comes to estimating insulin dosages, Dr. Rothman said. “That brings home the importance of using measuring devices in diabetes education.”