Study: Mobile technology helps patients with diabetes

August 4, 2011

An interactive computer software program appears to be effective in helping patients manage their Type 2 diabetes using their mobile phones, according to a new study by University of Maryland School of Medicine researchers.

The study, to be published in the September issue of Diabetes Care, found the amount of hemoglobin A1c in a person's blood was lowered by an average of 1.9% during a period of one year in patients using the mobile health software. The researchers say the findings support the further exploration of mobile health approaches to manage many chronic conditions, including diabetes.

"These results are very encouraging," said lead investigator Charlene C. Quinn, RN, PhD, assistant professor of epidemiology and public health at the University of Maryland School of Nursing. "The 1.9% decrease in A1c that we saw in this research is significant. Previous randomized clinical trials have suggested that just a 1% decrease in A1c will prevent complications of diabetes, including heart disease, stroke, blindness and kidney failure."

The study indicates using mobile phones, the Internet and other mobile communications technology to keep patients healthy may have broad applications for helping patients and their physicians manage many health conditions.

"Mobile health has the potential to help patients better self-manage any chronic disease, not just diabetes," Quinn said. "This is one of the first large, reported, randomized clinical studies examining the mobile health industry, which is rapidly growing. The U.S. Food and Drug Administration just last month released draft guidance on how it intends to regulate the field (http://news.nurse.com/apps/pbcs.dll/article?AID=2011108010007). Our results can help define the science behind this new strategy for disease management."

An A1c test provides a snapshot of a patient's average daily blood glucose levels over the previous two to three months. The American Diabetes Association recommends a person's A1c be less than 7%. Most Americans with Type 2 diabetes have an average level of more than 9%, which greatly increases their risk for complications.

"We tell patients that they can meet these goals if they eat a healthy diet, exercise daily and take their medication as directed, but we don't really give them the tools to do that," Quinn said.

The yearlong study enrolled 163 patients with the help of 39 primary care doctors in Baltimore and three Maryland counties. Patients were divided into four groups based on the research assignment of their physician. Three patient groups received mobile phones loaded with the diabetes management software, and the fourth group served as a control group. All patients in the study received a free blood glucose meter and testing supplies.

The software examined in the research provided real-time feedback on patients' blood sugar levels, displayed medication regimens and served as a "virtual coach." A patient's blood sugar test results were sent wirelessly from a blood glucose monitor to the mobile phone. If the level was too low or too high, the software on the phone prompted the person to take steps to correct it.

The system also analyzed blood sugar levels and other patient information and sent computer-generated logbooks and suggested treatment plans to the patients' primary care doctors.