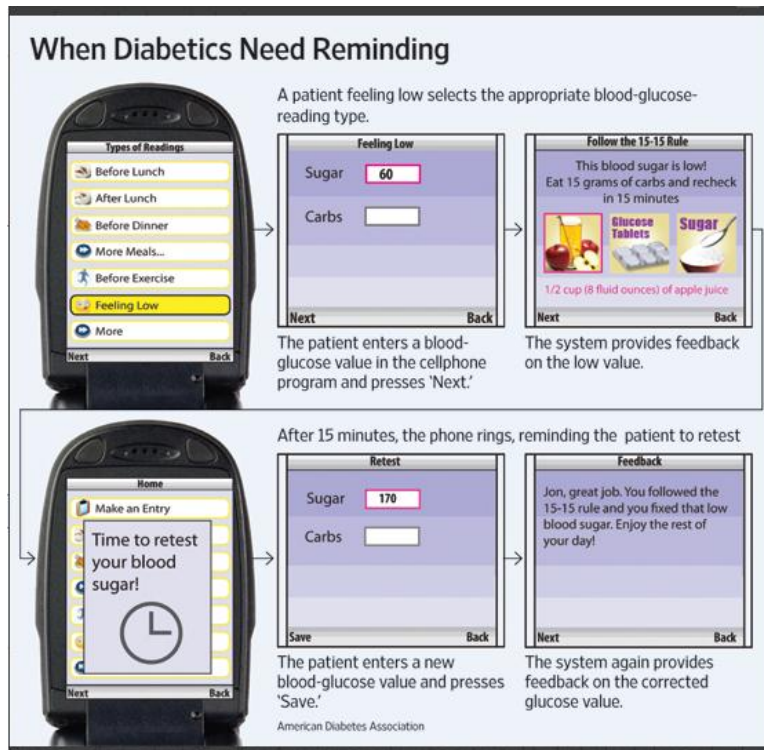


Ring! Time for Blood Test

By Jennifer Corbett Dooren
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Software added to basic cellphones helped people with diabetes significantly reduce a key measure of blood sugar over a year, according to one of the largest clinical studies of medical uses for mobile-phone technology.

The software is designed to be a virtual coach to help patients manage their disease. It instructs them how to address daily blood-sugar readings and asks whether they've exercised. It also lets doctors and nurses access the information through a secure website to help make treatment decisions.



"Mobile health has the potential to help patients better self-manage any chronic disease, not just diabetes," said Charlene Quinn, the study's lead researcher and an assistant professor of epidemiology and public health at the University of Maryland School of Medicine.

Mobile medical technology is a rapidly growing field. The Food and Drug Administration last month outlined how it planned to regulate it by focusing on mobile applications that could present a risk to patients if they don't work as intended. The technology used in the diabetes study was developed by WellDoc, a Baltimore-based firm and was cleared for use last year by the FDA. Sanofi-Aventis has developed a mobile diabetes management system under FDA review. Other companies including Medtronic Inc. and Johnson & Johnson's LifeScan unit are also

developing mobile diabetes-management systems.

The study, which involved people with Type 2 diabetes, was released online and will be in the September edition of *Diabetes Care*, a medical journal published by the American Diabetes Association.

Diabetes affects about 26 million Americans and is characterized by high blood glucose levels caused by the body's inability to either make or properly use insulin. Type 2 diabetes is the most common form of the disease. Type 1 is an autoimmune disease often diagnosed in children in which the body's immune system destroys pancreatic beta cells that produce insulin.

The study involved 163 patients and 26 primary-care practices in Baltimore and areas outside of Washington, D.C., who were being treated with various diabetes medications. Three groups of patients received mobile phones loaded with the diabetes management software, some with the most basic features and others with the most sophisticated features, and the fourth group served as the usual care group.

Patients with the cellphones would enter blood glucose readings and would receive a text message back in cases when the reading was considered too high or low. If a reading was high, the system might ask if medication was taken. In the case of a low reading, a patient was told to eat and then retest blood sugar levels. The phone could be set to send a retest reminder.

The main study goal was to compare changes in hemoglobin A1C, which is a measure of long-term blood sugar control. The American Diabetes Association recommends that 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 of complications that include heart, kidney and eye problems that can lead to blindness.

Patients in the study had average A1C readings above 9%. At the end of a year, patients using the mobile management system had an average decline in hemoglobin A1C of 1.9 percentage points compared to a 0.7-percentage-point decline seen among patients not using the system. A drop in A1C readings by an average of one percentage point is considered significant and has been shown to cut the risk of developing complications.

The study was funded by WellDoc, CareFirst Blue Cross/Blue Shield of Maryland, Sprint, LifeScan and the University of Maryland.