Cloud-Based Diabetes Coaching Platform for Diabetes Management

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Abstract—Diabetes, and its expensive, life-threatening consequences has become a global chronic disease crisis. Management of the disease is well understood, but poor patient compliance is very common. Wireless diabetes monitoring can engage physicians, but the cost and burden of such intervention is prohibitive. This paper describes an innovative, low-cost, cloud-based diabetes coaching support system being piloted in several countries. Many nations are using diabetes coaches, but those coaches rely on phone calls, patient self-reporting, and time-consuming home visits. This new method leverages ubiquitous, low-cost cloud-based diabetes monitoring to empower trained diabetes coaches to implement interventions escalated by clinical protocol.

I. INTRODUCTION

The worldwide prevalence of diabetes has grown to be one of the world’s most challenging and pervasive chronic diseases. The International Diabetes Federation analyzes diabetes prevalence in several ways, and the 2013 graph shown in Figure 1 shows the magnitude of the problem. [1]

Although research is being done on artificial pancreas implants, currently, diabetes can only be managed by combining lifestyle management (exercise, diet, and alcohol consumption, for example) with technologies. For many, individuals, safe clinical management also requires an electronic blood sugar monitor and correct insulin (or other medication) administration. Patients’ compliance with diabetes prevention and management regimens is often poor, however, despite the many serious, expensive, and life-threatening risks of the disease.[2]

II. USING WIRELESS TO IMPROVE DIABETES CARE

Wireless, cloud-based diabetes management is now being carefully explored, because it allows the clinician to receive regular, timely information on patient blood sugar testing. Growing cell phone and cloud-based adoption worldwide is creating a new opportunity to intervene and help patients successfully manage their diabetes. On such series of studies, called the Diabetes Monitoring Device (DiaMonD) program, has shown great promise.[3] Unfortunately, sending the data to the primary care physician creates additional costs and communication obligations on physicians at the same time that physician shortages are occurring. Also, nations are putting harsh constraints on healthcare expenditures, so physicians may only be able or willing to intervene in extreme situations, or ones that impact their managed-care income.[2]

III. CLOUD-BASED DIABETES COACH EMPOWERMENT

This paper illustrates a new, multi-nation project using cloud-based technology to empower lower-cost diabetes coaching professionals to support patients’ diabetes management compliance more successfully. The program, shown in Figure 2, has several key elements, including: 1) Consistent diabetes coach training; 2) Consistent patient compliance communications; and 3) Pre-planned, clinically approved escalation of coach intervention to reduce patient hospitalization, serious injury, or death.

REFERENCES


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