

Going Mobile with a Multiaccess Service for the Management of Diabetic Patients

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Abstract

Background:

Diabetes mellitus is one of the chronic diseases exploiting the largest number of telemedicine systems. Our research group has been involved since 1996 in two projects funded by the European Union proposing innovative architectures and services according to the best current medical practices and advances in the information technology area.

Method:

We propose an enhanced architecture for telemedicine giving rise to a multitier application. The lower tier is represented by a mobile phone hosting the patient unit able to acquire data and provide first-level advice to the patient. The patient unit also facilitates interaction with the health care center, representing the higher tier, by automatically uploading data and receiving back any therapeutic plan supplied by the physician. On the patient's side the mobile phone exploits Bluetooth technology and therefore acts as a hub for a wireless network, possibly including several devices in addition to the glucometer.

Results:

A new system architecture based on mobile technology is being used to implement several prototypes for assessing its functionality. A subsequent effort will be undertaken to exploit the new system within a pilot study for the follow-up of patients cared at a major hospital located in northern Italy.

Conclusion:

We expect that the new architecture will enhance the interaction between patient and caring physician, simplifying and improving metabolic control. In addition to sending glycemic data to the caring center, we also plan to automatically download the therapeutic protocols provided by the physician to the insulin pump and collect data from multiple sensors.

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Abbreviations: (BGL) blood glucose levels, (DM) diabetes mellitus, (FSM) Fondazione S. Maugeri, (HCC) health care center, (IVR) interactive voice responder, (MU) medical unit, (PC) personal computer, (PSM) Policlinico San Matteo, (PSTN) public switched telephone network, (PU) patient unit, (SMS) short message service

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