

The school of the International Summer School (INSISTE) 2023

GLUCO-MIB: DEVELOP AN INTERNET-OF-THING SYSTEM FOR THE MONITORING GLYCEMIA IN HOSPITALIZED PATIENT WITH DIABETES MELLITUS TYPE 2

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Introduction

Diabetes mellitus type 2 (DM2) is the most common type of diabetes in the adult population of Peru. In 2022, more than 12,000 cases of diabetes were reported (1). Hyperglycemia is associated with longer hospital stays and higher mortality rates. Poor glycemic control and complications during the hospitalization of diabetic patients prolong hospital stays. To prevent the problems that patients may experience during their hospitalization, constant monitoring and effective glucose control are required (2).



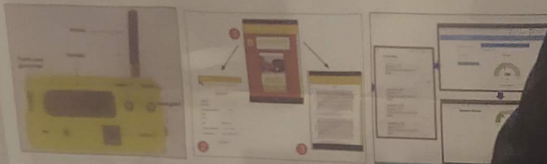
Proposal

An action to reduce hospital stays and mortality rates requires effective glucose control. Glucometers primarily obtain blood glucose values through capillary means and normal values range from 70 mg/dL to 100 mg/dL. Nurses are in charge of recording this data and they use paper to register these values, but this action may cause bias. We propose an IoT system that helps nurses to register data automatically by using RFID technology to identify patients and sending values to a server through MQTT protocol, also with the capability to send alerts using SMS or e-mailings. We pretend to reduce or eliminate bias during the registration process.



Development

An electronic device was developed that works with a One Touch glucose meter, enabling the automation of blood glucose readings and sending alerts when extreme glucose values are detected (Fig1). Glucose values can be monitored through a web page allowing for visualization via temporal graphs (Fig1). Alerts are sent using ZigBee technology through SMS to healthcare personnel. Gluco-mib also includes a mobile application used to assign patients a code established on the RFID wristband that will be placed on their hand.



Next Steps

We want to include a local server using an Electronic Health Record named GNU-HEALTH for being used in rural areas where the internet connection is not possible because of the rural geography.



INSISTE 2023 is a project of the National Council for Scientific Studies and Projects (FINEP), Truckmen Industry and Training (SENAT), Petrobras and Sabesp.

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International Summer School (INSISTE) 2023
Aug/5th 2023

Transmission system to control operation of a radiation unit with electron accelerators



THE INITIAL IDEA

et al. (2020) proposed, in October

ion beam accelerator (20 kV) mobile unit for treating effluents for oil desulfurization and toxic organic compounds in partnership with public use



acquisition and transmission accurate data collection and real-time transmission and real-time means of radio will be researched, so as to have a solution for each location where can be located, facilitating remote control of critical parameters.

in Areocida Parejo Calvo, and to the support from Energy Agency (HAFA), the National Council for Scientific Studies and Projects (FINEP), Truckmen Industry and Training (SENAT), Petrobras and Sabesp.