WBAN Implementation on Psychiatric Patient Monitoring Using Cloud Computing

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***Abstract*— Today remote patient health monitoring using wireless technology plays a very vigorous role in the society. In this paper we discuss about progress in developing psychiatric patient monitoring using wearable sensors physiological monitoring systems. Active electrodes on nonwoven textile substrates are described for capturing ECG, Blood Pressure, Pulse rate etc. Remotely located healthcare professionals health status and thus be able to initiate appropriate remediation, to allow to the maximum possible extent, these patients to continue their normal daily activities.**

***IndexTerms*— ECG Monitoring, Electrodes, Pulse rate, Wearable sensors.**

I. INTRODUCTION

As the focus of healthcare migrates from centralized hospital based treatment to distribute home based monitoring and health maintenance, reliable and unobtrusive technologies must be found to incorporate sensors and sensing systems into the everyday lives of medical patients. There are many ways to incorporate sensors and electronic components into clothing and garments that patients can wear in the home environment. These electronic garments must be comfortable, durable, washable, and reliable as they measure physiological parameters of patients undergoing home-based healthcare. WBAN is an emerging field of WSN, where different sensors are deployed inside and over the human body for health monitoring purpose. These networks require competitive protocol design to provider obust communication of health parameters for quick diagnosis and treatment. Medical wireless networks can be classified as hospital based applications and distant monitoring. Collecting data for several patients to acentral database system makes it easier to monitor and locate an abnormality in large datasets. Small sensors are incorporated into the structure of the textile garment. These sensors can be bio electrodes, biosensors, microphones, and/or mechanical sensors such as pressure and strain gages. Specific sets of sensors will be selected for each application. The sensors have analog outputs representing physiological parameters from which the health status of particular patent will be determined. Wiring and/or wireless interconnections provide power and control signals as appropriate to the sensors and returns information to an embedded data gathering unit. Here the analog data is converted to digital form and transmitted or transferred to a local information logger, such as a personal data assistant (PDA). From this point, the data can be transferred back to a master database in a physician's office or a remote hospital data network. Smart fabric technology has a great deal to offer patient monitoring. Sensors integrated right into the textile provides the least annoying way to monitor vitals, because you'll notice it about the same as you would notice any other type of clothing. Hopefully taking a cue from my past predictions, Hexoskin has developed a biometric "smart shirt" that allows its users lab-quality analysis just by getting dressed. What's more is the sensors are actually made of textile, with next to no hardware in the shirt. Sensors allow patients to self-monitor, track, and assess human physiological data, while also providing interfaces and a dashboard for healthcare providers. These sensors are easily managed and are becoming increasingly accurate and reliable for patient care.

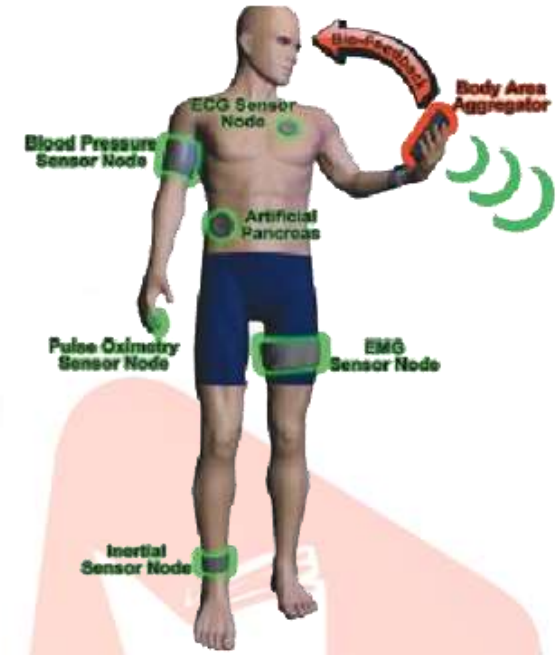
II. PROPOSED METHODOLOGY

Our proposed work is by using fabric sensors monitoring psychiatric patients ECG, Pulse Rate. Blood Pressure etc. Many individuals with chronic diseases could benefit from having constant remote monitoring and the best way to monitor a patient is through understanding their interactions with their daily activities. Giving the patient the opportunity to depart from the hospital and continue to monitor themselves will allow for a more authentic representation and a more accurate assessment of physiological data. If patients could be monitored reliably away from the hospital, this could decrease the cost associated with the length of stay (LOS), which can greatly decrease healthcare costs and unintended consequences. The transducer layer was hand printed with conductive silver ink on the nonwoven fabric. On the back side, a circuit layer, op amp and electrical components were attached to provide a very short path between the electrodes and the amp inputs. There is little difference between the two types of electrodes when ECG, Blood Pressure etc signals are captured during quite activities such as sitting. However, the active electrodes show better performance than the passive electrodes when the ECG, Blood Pressure etc signals are captured during vigorous activities such as jogging, signals captured with the non-woven passive electrodes are not saturated due to the multi-stage scheme to remove DC offset in the frontend circuit. However, we notice repeated negative peaks in the signals captured with the nonwoven passive electrodes. The noise is greatly reduced in the ECG signals captured with nonwoven active electrodes. The work has demonstrated the practicability of incorporating sensors for measuring health-related parameters directly into patient's garments. Textile based sensors for electrode skin contacts and breathing monitoring are being developed. We expect that these sensors and interconnects will be inexpensive to fabricate and very durable. The

sensor skin interface must be comfortable for the patient. Minimizing skin sensitivity to our sensor designs is an important challenge.

Figures

"Fig.1" WBAN technology for Psychiatric patients



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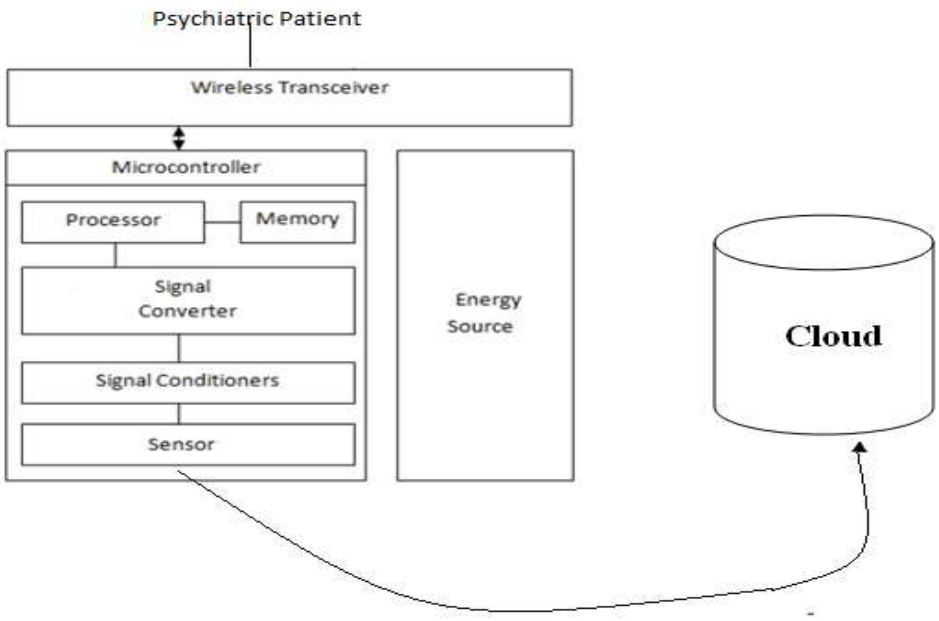
"Fig.2" System Architecture



III. REFERENCES

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