

CHAPTER 1

INTRODUCTION

Care of critically ill patient, requires spontaneous and accurate decisions so that life-protecting and lifesaving therapy can be properly applied. Statistics reveal that every minute a human is losing his/her life across the globe. More close in India, every day many lives are affected by heart attacks and more importantly because the patients did not get timely and proper help. This project is based on monitoring of patients.

The objective of patient monitoring system is to have a quantitative assessment of various physiological parameters of the patient. Usually, the parameters like heart rate, SpO₂, body temperature, saline level is performed by the doctor visiting the Patients and conducting check-up. Since these parameters give the doctor a fair idea about the patient conditions known as the vital parameters. However if these parameters are transmitted directly to doctor's location, it saves time and imparts comfort to both patient and doctor.

This project supports for two ways communication that is even the doctor can assure his concern to the patient at any instant by just giving a call. As the name cumulative parameters, the displayed results on command window can be retrieved from the database at any time. This system will be a low cost health monitoring system available to every hospital in the days to come and can be used as a formal care for the elderly persons.

It serves as wellness and disease management model where clinical personnel plays a supportive role in monitoring patient, and the independent living and remote monitoring model, where the medical personnel monitor health status. It is able to send parameters of patients in real time. It enables the doctors to monitor patient's health parameters (temp, spo2, heart rate, saline level) in real time. Here the parameters of patient are measured continuously and wirelessly transmitted using GSM.

This project provides a solution for enhancing the reliability and flexibility by improving the performance and power management of the patient monitoring system. In the current proposed system the patient health is continuously monitored and the acquired data is analyzed at a centralized Arduino mega2560.

If a particular patient's health parameter falls below the threshold value, an automated SMS is sent to the pre-configured doctor's mobile number using a standard GSM module interface to the Arduino mega2560. This project is a two way

communication that is even the doctor can assure his concern to the patient at any instant by just giving a call. It is also capable of helping patients to call nurse or attendants in case of requirement of water, food, washroom, emergencies etc. through touch. As it is touch screen there is no need of applying any strength, patient can just touch the screen. This reduces the time consumption and helps the nurse to attend the patient in time, So that the patient can get the treatment within time at the time of emergencies.

Touch screens provides fast access to any and all types of digital media, with no text-bound interface getting in the way. Faster input can mean better service. Using a touch interface can effectively increase operator accuracy, reduce training time, and improve overall operational efficiencies, a properly designed touch interface can improve each operator's accuracy. Touch screens are practical in automation, which has become even simpler with touch screen technology.

The input module is nothing but a touch screen sensor, which takes the input from the patient and provides the same to the microcontroller. The microcontroller can transmit this information through RF Tx to the nurse or attendant table. The nurse or attendant table consists of an RF Rx and a microcontroller that decodes the information and informs him in voice message, about the requirements of patient like "I need water", "I am hungry", "I need to go to washroom", "It's an emergency".

In spite of the improvement of communication link and despite all the progress in advanced communication technologies, there are still very few functioning commercial wireless monitoring systems, which are most off-line, and there are still a number of issues to deal with. The conventional methods to monitor the heart beat have number of issues to deal with. In this project, a generic real-time GSM based communication system has been designed and developed for long term remote patient-monitoring applying GSM protocol.