**Electronic Health Monitoring System**

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**ABSTRACT**

This chapter introduces the health monitoring system. It presents an overview of health care technologies that enable advanced patient data acquisition and management of medical information in electronic health records. The chapter presents the most important patient data saved. While special focus is placed on the new concept of intelligent healthcare platform (i.e., advanced data mining, agents, and context-aware system) that provide enhanced means of medical data interpretation and manipulation. The chapter is concluded with the areas in which electronic health care system are anticipated to make a difference in the near future.

**Keywords**: Temperature sensors, Pressure sensor, Heart beat sensor, GSM, monitoring proteus8, LCD.

**I. INTRODUCTION**

In this era of ubiquitous and mobile computing vision in biomedical informatics is toward achieving two specific goals; the availability of software applications and medical information anywhere and anytime and invisibility of computing. Both these goals lead to the introduction of electronic health care computing concept and features E-health applications. Applications and interfaces that will be able to automatically process data provide by medical device and sensors, exchange knowledge and make intelligent decisions in a given context are strongly desirable. Natural user interactions with such applications are based on anatomy, avoiding need for the user to control every action, and adaptivity, so that they are contextualized and personalized, delivering the right information and decision at right moment. All the above recently introduced features provide added value in modern electronic healthcare systems.

**II. ELECTRONICS HEALTH MONITORING SYSTEM**

Nowadays, the health care sensor are playing essential role in hospitals. The patient monitoring system is one of the major developments because of its innovative technology. An automatic wireless health monitoring system is used to measure patient’s body temperature and heartbeat by using Embedded Technologies. The proposed system uses both the sensors like heartbeat sensors and temperature sensor. These sensors mainly involves in monitoring the condition of the patient.

**III. SENSOR DISCRITION**

A. **Temperature Sensors** - LM35 sensor is used to measure the temperature of the human body. Body temperature change depend upon the time to time and day to day, but no more than 1.0°C. For
many diseases such as typhoid, viral fever etc, so it needs to monitor continuously the patients. It also used to self monitoring the patients easily. If the temperature level is too low, the patient needs medical emergency. Because too low temperature leads to death occur and also for high level. It is measured in degrees

B. Celsius(°C).

<table>
<thead>
<tr>
<th>Category</th>
<th>Temperature Range (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothermia</td>
<td>&lt;35.0</td>
</tr>
<tr>
<td>Normal</td>
<td>36.5 – 37.5</td>
</tr>
<tr>
<td>Hyperthermia</td>
<td>&gt; 37.5 – 38.3</td>
</tr>
<tr>
<td>Stage 1 hypothermia</td>
<td>35-36</td>
</tr>
<tr>
<td>Stage 2 hypothermia</td>
<td>34 – 33</td>
</tr>
<tr>
<td>Stage 3 hypothermia</td>
<td>32</td>
</tr>
<tr>
<td>Hyperpyrexia</td>
<td>&gt;=40.0 -41.5</td>
</tr>
</tbody>
</table>

Table- 1.1 classification of temperature range

C. Pressure Sensor - The pressure sensor is used to measure systolic and the diastolic pressure level using the device. Systolic is the higher of two number measure the pressure in the arteries when the hearts beat. Diastolic is the lower of the two numbers measure in the arteries between heart beats. It is measured in millimeter mercury (mmHg). Blood pressure changes from minute to minute.

<table>
<thead>
<tr>
<th>Classification of blood pressure category</th>
<th>Systolic/diastolic pressure (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypotension</td>
<td>&lt;90/60</td>
</tr>
<tr>
<td>Desired(Normal)</td>
<td>90-119/60-79</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>120-139/80-89</td>
</tr>
<tr>
<td>Stage 1 hypertension</td>
<td>140-159/90-99</td>
</tr>
<tr>
<td>Stage 2 hypertension</td>
<td>160-179/100-109</td>
</tr>
<tr>
<td>Hypertension</td>
<td>&gt;=180/&gt;=110</td>
</tr>
</tbody>
</table>

Table-1.2 classification of pressure ranges

The symptoms of low blood pressure are dizziness of lightheadedness, fainting (syncope), lack of concentration, Nausea, Depression, Thirst, Cold, Clammy, pale skin, Blurred vision, Rapid, Shallow breathing, Fatigue.

D. Heart Beat Sensor- Hearth beat sensor is used to measure the pulse rate of the hearth in digital output. When a finger is placed on it. Led is used to detect the heart beat of the person is 78 bpm. It is measured based on the beats per minute. If the heart beats more than 100 BPM causes tachycardia. If heart beats less than 60 BPM causes bradycardia. The information about the heart rate of the person with time.

Figure 2. Real time vs Time

IV. METHODS AND MATERIAL

V. RESULTS AND DISCUSSION

VI. CONCLUSION

In our simulation, results are easily obtained using PROTEUS software provide the real time monitoring of the patients. We get the input from sensors and processed using microcontroller. For emergency send the intimation to the caregivers. This system is low cost, self monitoring device and used in remote areas efficiently.

VII. REFERENCES

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