Cardio-Health Monitor

Problem Statement:

According to Center for disease Control (CDC) about 610,000 people die of heart disease in the US every year. That is 1 in every 4 deaths. Every Year about 735,000(525,000 – first heart attack, 210,000 – people who have already had a heart attack) Americans have a heart attack. About 47% of sudden cardiac deaths occur outside a hospital which means that people with heart disease don’t act on early warning signs.

Solution:

Tracking the health of heart and other vital signs of a patient through wearable devices (which will track the heart activity for whole day) and analyzing the records with the normal values in real time will help the patient and the doctor keep track of the health of the patient.

An ECG measures the heart’s electrical activity through electrodes. The solution here is to get the real time values of the heart’s electrical activity through a wearable device and connecting it with the network so that any unusual activity can be notified to the patient and his doctor. Also, in case of emergency, the device can connect to the emergency services. The records of ECG and other vital signs can be used to notify the patient and suggest what he needs to do if there is any abnormality.

Key Roles:

1. Doctor
2. Emergency Services: Emergency Room, Ambulance, Doctor, Nurse
3. Hospital – specialized doctor/ team for further treatment.
4. Patient
5. Patient’s Emergency Contact
6. Wearable Devices
7. Doctors/ Paramedics in the proximity

Vital Signs to monitor:

1. Electro Cardio Graph
2. Heart Rate
3. Daily Activity – walk/ run/ exercise
4. Body Temperature
5. Blood Pressure
6. Respiratory Rate

Other Data to monitor:

1. Location

Use Case:

1. Patient’s vital signs including the ECG and electrocardiogram are recorded.
2. The data is processed in real time and compared to the normal values.
3. If there are slight abnormalities, the patient is notified to take suitable measures to bring his heart activity to normal.
4. If the problem can solved with some medication the doctor can provide prescription through the system.
5. If there is risk to the patient then the regular doctor is notified of the patient’s condition. In addition to the regular doctor, nearby doctor/paramedic is notified so that they can provide the emergency help to the patient.
6. Also the emergency services are notified about the patient’s condition and the location of the patient, so that the ambulance can arrive and pick up the patient. The Emergency room, doctors, nurse are notified of the arriving patient’s condition, so that everything can be prepared well as per the condition of the patient.
7. The patient’s records will also be sent to the pharmacies. Pharmacies can provide the drug catalog to the patient and of the patient has the prescription from the doctor, he can buy drugs from the pharmacy.
8. The patient’s records will be sent to grocery. The stores can offer the patient and his family members the products that the heart patient should use to reduce the risk of a heart attack.
9. The patient’s records will be sent to the Gym.
10. Travel Company - vacation
11. Medication Reminder, Medicine tracker so that patient never runs out of medicine.
12. Bookstore: Because people like to read about the disease and find the preventive measures themselves.
13. Finances: Patient is billed for the services (doctor, emergency etc.)
14. Insurance company.
15. The patient will be taken to the nearest hospital based on the location and the availability of the doctors/team at the emergency room.
16. Heart attack treatment: <http://www.nhlbi.nih.gov/health/health-topics/topics/heartattack/treatment>

* Use google maps api to embed google maps in application – to calculate distances.