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LifeBrace: The Advanced Health Tracking Wristband

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LifeBrace: the Advanced Health Tracking Wristband

Jefferson High School Steampunks

Jeremy Ferrando, Dylan O'Brien, Daniel Ortiz, Jonah Paivarinta

PROBLEM/OPPORTUNITY

Over 28 million Americans have diabetes or pre-diabetes. Every 33 seconds someone dies of heart disease, claiming more lives than AIDS and all forms of cancer combined. Falls are the leading cause of fatal and non fatal injuries to elderly people.

These problems require constant supervision and frequent treatments to keep a patient stable, and they all become more serious with age. People with diabetes, heart conditions, or other debilitating conditions need frequent check-ups, and are always in danger of accidents. They also often need frequent doses of medicine.

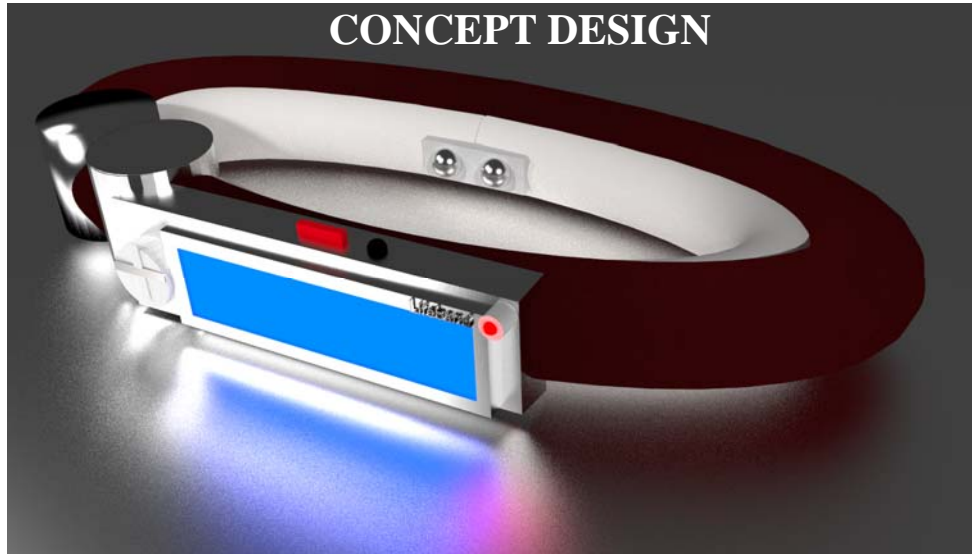
The only way that these conditions can be monitored properly is to have frequent visits with doctors. In a perfect world lots of people could be taken care of in an efficient manner. But people often don't have cars, or access to public transportation. They don't want to pay or can't pay at all. Elderly people often require help even getting out of the house.

What is needed is a product that allows the patient and their doctor to know their current condition at all times, prevent emergencies, and call for help.

Existing Sensor Technology: Glucose and Pulse Monitor.



CONCEPT DESIGN



HUMAN IMPACT

High blood pressure contributes to higher risk for heart attack, chest pain, irregular heart rhythms, and in the worst case, sudden cardiac arrest. The LifeBrace would alert the wearer to dangerous changes in blood pressure, potentially preventing these dangerous outcomes.

Uncontrolled blood sugar levels can lead to heart disease, stroke, high blood pressure, kidney disease, blindness, nerve damage, seizure, coma, or loss of consciousness. Constant simple monitoring would of blood sugar would allow the user to focus on maintaining a healthy lifestyle, rather than having to do frequent manual blood sugar tests.

Sudden changes in heart rate can be dangerous and even fatal; elevated heart rate can cause dizziness/lightheadedness, chest pain, shortness of breath, unconsciousness, and cardiac arrest. Slowed heart rate can damage the heart's electrical system and lead to coronary artery disease (narrowing of blood vessels) and heart attacks. Heart rate monitoring will notify both patient and doctor that the heart rate is too high or low, allowing a quick response with medication, or emergency hospital care.

SOLUTION

A sophisticated, health-monitoring wristband that constantly monitors the patients health while updating doctors on the patients current condition.

The LifeBrace would monitor blood pressure, heart rate, and even glucose using an optional subcutaneous chip. The LifeBrace sends the results either to a secure private cloud or a tethered smart phone app for real-time monitoring and/or later access by patient and doctor. It would also have a small LED screen to show health readouts, and to alert the user of important information, such as falling vital signs, or that it is time to take medication.

In case of emergency it would have a small button that could be pressed to call for help, or otherwise do so automatically if the wearer's vital signs reach dangerous levels.

The companion web and smartphone apps would allow the wearer to track their health, and provide their doctor with important medical history. The LifeBrace would significantly lower the amount of checkups every year and allows people to know how they really feel about their health.

Design Inspiration: The Nike Fuel Band

