Overview

Problem Statement

Key entities/roles

Key Issues

http://www.cdc.gov/heartdisease/facts.ht

http://www.cdc.gov/heartdisease/facts.htm

* About **610,000 people** die of heart disease in the United States every year–that’s **1 in every 4 deaths**.1
* Heart disease is the leading cause of death for both men and women. **More than half** of the deaths due to heart disease in 2009 were in men.1
* [Coronary heart disease](http://www.cdc.gov/heartdisease/coronary_ad.htm) (CHD) is the most common type of heart disease, killing over **370,000 people** annually.1
* Every year about **735,000 Americans** have a [heart attack](http://www.cdc.gov/heartdisease/heart_attack.htm). Of these, 525,000 are a first heart attack and 210,000 happen in people who have already had a heart attack.2
* **About 47%** of sudden cardiac deaths occur outside a hospital. This suggests that many people with heart disease don't act on early warning signs.6
* In a 2005 survey, most respondents—92%—recognized chest pain as a symptom of a heart attack. **Only 27%** were aware of all major symptoms and knew to call 9-1-1 when someone was having a heart attack.5
* Heart-attack sufferers fare best when they get to the hospital within one hour after symptoms start. But on average, it takes two to four hours for patients to arrive, and some wait days before seeking medical care. ([Source](http://www.wsj.com/articles/SB10001424052702304432704577347723157872672))

Several other medical conditions and lifestyle choices can also put people at a higher risk for heart disease, including:

* Diabetes
* Overweight and obesity
* Poor diet
* Physical inactivity
* Excessive alcohol use

**Diagnosing a Heart Attack**

The tests commonly used to diagnose a heart attack are

* **electrocardiogram** **(ECG/EKG)**
  + An ECG measures the heart’s electrical activity through electrodes, and a computer translates the heart’s activity into a printed or onscreen readout.
  + An ECG may be performed at rest or during exercise. During the ECG, small, sticky patches (**electrodes**) are placed on different areas of the body. Wires leading from the patches to a computer carry a signal that traces the heart’s electrical activity on paper or on a computer. Doctors analyze the ECG to learn more about the heart’s rhythm and condition.
  + <http://www.secondscount.org/tests/test-detail?cid=68f0db1b-b2d6-49c2-b05e-af6d6cb70738#.VjLnkPmrTIU>
* **blood tests**
* **echocardiogram also called heart ultrasound**
  + Echocardiography uses ultrasound waves to make a picture of structures moving inside the heart. These harmless sound waves travel from an instrument, called a **transducer**, placed on the chest and left rib cage. As the sound waves reflect back from structures in the heart to the transducer, the echocardiogram machine receives and interprets them – and creates a picture of the heart muscles, valves and blood vessels in motion. An echocardiogram is crucial in assessing whether all areas of the heart are contracting well. If one is having a heart attack, generally, the affected area of the heart will not pump as well as the rest of the heart. [More info](http://www.secondscount.org/tests/test-detail?cid=2d24b041-8a80-4ac1-bcb3-dbd26874843e#.VjI7hfmrTIW)
  + <http://www.medpagetoday.com/Cardiology/Arrhythmias/28698>
  + <http://www.eplabdigest.com/articles/Benefits-Smartphone-Based-Application-Viewing-Cardiac-Ultrasound-Images-Interview>
* **cardiac catheterization/angiogram.**
* CT coronary angiogram

currently, 1 American has a heart attack every 34 seconds) - <http://techcrunch.com/2011/05/24/smartheart-turns-your-mobile-phone-into-a-heart-monitor/>

Smartheart is a lightweight personal electrocardiogram (or ECG) that allows you to monitor your heart in realtime.

**Digital ElectroCardioGraph:** <https://www.researchgate.net/publication/51840764_A_Review_on_Digital_ECG_Formats_and_the_Relationships_Between_Them>

<http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=6086625&url=http%3A%2F%2Fieeexplore.ieee.org%2Fiel5%2F4233%2F4358869%2F06086625.pdf%3Farnumber%3D6086625>

<http://circ.ahajournals.org/content/115/10/1306.full>

How to Read ECG: <http://www.southsudanmedicaljournal.com/archive/may-2010/how-to-read-an-electrocardiogram-ecg.-part-one-basic-principles-of-the-ecg.-the-normal-ecg.html>

**Pacemakers:** <http://www.reuters.com/article/2012/09/26/us-more-americans-getting-pacemakers-idUSBRE88P1LN20120926>

In 1993, there were about 121,300 pacemaker implantations in the U.S. By 2009, that number was 188,700 - a 56-percent increase.

Pacemaker Facts : <http://www.medicinenet.com/pacemaker/article.htm>

**Digital EchoCardioGraph:**

**Normal Electro CardioGram Report**

<https://www.ndsu.edu/pubweb/~grier/eheart.html>

<http://www.ecglibrary.com/norm.php>

**How to prevent Heart Attack?**

<http://www.apsfa.org/heartattack.htm#5>

<http://articles.mercola.com/sites/articles/archive/2014/10/06/5-healthy-lifestyle-changes.aspx>

<http://www.healthline.com/health/heart-disease/after-heart-attack>

<http://www.cdc.gov/heartdisease/docs/consumered_heartdisease.pdf>

The `Heart Attack Survival Kit' project: an intervention designed to increase seniors' intentions to respond appropriately to symptoms of acute myocardial Infarction -<http://her.oxfordjournals.org/content/15/3/317.long>

<http://bangordailynews.com/2015/09/02/health/heart-attack-patients-more-likely-to-die-when-ambulance-is-diverted-to-less-crowded-emergency-room-study-finds/>

Can blood test be performed in ambulance?

Ans: Yes. Source: [link](http://www.ncbi.nlm.nih.gov/pubmed/22954226)