1. Title, Table of Contents
   1. Determining Effective Treatment of Cardiovascular Disease
2. Abstract
3. Acknowledgements
4. Introduction/Background
   1. Cardiovascular disease affectsmillions of american’s a year
   2. Many causes and cures for disease affecting the heart and veins
   3. Treating patients become’s difficult at large scale
   4. We can leverage past treatment history into better patient outcomes
   5. The database will serve as tool to help doctors treat patients
   6. Also for research purposes to check for historical data
5. Literature review
   1. Articles will be linked, will clean up and post full titles/refrences later
   2. ~~Gregory A. Roth, George A. Mensah, Valentin Fuster,~~

~~The Global Burden of Cardiovascular Diseases and Risks: A Compass for Global Action,~~

~~Journal of the American College of Cardiology,~~

~~Volume 76, Issue 25,~~

~~2020,~~

~~Pages 2980-2981,~~

~~ISSN 0735-1097,~~

~~https://doi.org/10.1016/j.jacc.2020.11.021.~~

~~(https://www.sciencedirect.com/science/article/pii/S0735109720378037)Global Burden of CVD, used to determine what the best criteria to measure the progress of the treatment in and the general state of current CVD treatment~~

* 1. Şahin, Bayram, and Gülnur İlgün. "Risk factors of deaths related to cardiovascular diseases in World Health Organization (WHO) member countries." *Health & Social Care in the Community* 30.1 (2022): 73-80. For further information regarding how CVD’s are tracked and treated and what metrics work the best for tracking
  2. Kishore, S, Blank, E, Heller, D. et al. Modernizing the World Health Organization List of Essential Medicines for Preventing and Controlling Cardiovascular Diseases. J Am Coll Cardiol. 2018 Feb, 71 (5) 564–574. <https://doi.org/10.1016/j.jacc.2017.11.056> used to get a list of prescription drugs that would be considered for treatment
  3. ~~Petrella, R. J., Lattanzio, C. N., Demeray, A., Varallo, V., & Blore, R. (2005). Can adoption of regular exercise later in life prevent metabolic risk for cardiovascular disease?~~ *~~Diabetes Care, 28~~*~~(3), 694-701. doi:~~[~~https://doi.org/10.2337/diacare.28.3.694~~](https://doi.org/10.2337/diacare.28.3.694) ~~used to determine proper treatments of excercise in CVD patients~~

1. Problem description and definitions
   1. How can we best store patient data to determine the effectivness of treatment
   2. What treatments work best for what groups and situations
   3. What is the best way to present this information to researchers
2. Methods (Design at every level)
   1. Photo of schema either here or in implementation
   2. Original document and information comes from two places
      1. Patient intake form featuring identifying, demographic, and medical information
      2. Treatment history including info on what treatment was done to what patient for what disease and the results
   3. Input data broken into two main tables, 1 for patient data and one for treatment history
      1. Table patients contains all patient information along with initial medical stats
      2. Table for treatment contains the the treatment, the patient, the length of treatment and the effect
   4. Treatment history decomposed into several different tables with linking foreign keys for each
      1. Treatment history is now 4 columns, patientID, treatmentID, length and Result ID
      2. Instead of a description of the treatment or perscription, a treatment code links to another table that contains all the currently available treatments tied to a code with their name/description, a general category of what kind of treatment, such as excersise, medicine or other procedure, such as a surgical procedure to place a stent
      3. The results were also moved into a separate table featuring an id key and percent change for Systolic, diastolic, cholesterol and glucose.
   5. Database of common CVD’s with associated keys added for convience
      1. Each patient is now listed with the codes related to their current condition
      2. This allows us to pull patient treatment history by the associated disease/condition and see what works
      3. CVd codes link to another table containing the code, the name of the condition, and a column of summon symptoms for reference

E. Very little normalization work had to be done following the initial drafting

1. Implementation
2. Experimental results and/or use cases
   1. Main intended usecases
      1. Small patient clinic tracking effectiveness of treatment
      2. Researchers studying heart data over time
3. Reporting and Analytics
4. Discussion and future work
   1. Further cataloging of patient information such as medical history and
5. Concluding remarks
6. References
   1. Gregory A. Roth, George A. Mensah, Valentin Fuster,

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  3. Şahin, Bayram, and Gülnur İlgün. "Risk factors of deaths related to cardiovascular diseases in World Health Organization (WHO) member countries." *Health & Social Care in the Community* 30.1 (2022): 73-80.

https://my.clevelandclinic.org/health/diseases/21493-cardiovascular-disease

10 CVDS

1. Arrhythmia -abornmal rhythm/rate
2. Valve disease - tightening or leaking heart valves
3. Coronary artery disease - blockage in veins/ reduced pressure
4. Heart failure - fluid buildup, shortness of breath
5. Peripheral artery disease - narrwoing or blockages of vessels in arms, legs or abdomen
6. Aortic disease - dilatation, aneurysm, issue with blood vessel from heart to brain
7. Peridcardial disease - inflamation of the lining of the ehart
8. Cerebrovascular disease - strokes, blockages of brain blood passage
9. Deep vein thrombosis - high blood pressure, issue with blood coming back to the heart
10. Congenital heart disease - issues with the heart from birth

15 Treatments

1. Losartan (antihypertensive) - drugs
2. Spironolactone (heart failure) drugs
3. NDACs (Anticoagulants) drugs
4. Bisoprolol (lots) drugs
5. Amiodarone (Antiarrhythmics drugs
6. Nicotine Replacement Agents (substance dependence)drugs
7. Simvastin (cholesterol lowering) drugs
8. Streptokinase (antithrombotics) drugs
9. Low Cholesterol Diet - diet
10. Low Charbohydrate Diet - diet
11. Light cardiovascular exercise, 2 hours in a day - excersise
12. Moderate Cardiovascular exercise, 1 hour - excersise
13. Intense cardiovascular excersise, 1 hour - excersise
14. Cornonary Stent - surgery
15. Cornoary Angioplasty - surgery

Links to mayo for data generation info

<https://www.mayoclinic.org/diseases-conditions/high-blood-cholesterol/diagnosis-treatment/drc-20350806>

<https://www.mayoclinic.org/diseases-conditions/diabetes/diagnosis-treatment/drc-20371451>

<https://www.mayoclinic.org/diseases-conditions/high-blood-pressure/symptoms-causes/syc-20373410>