Weight Tracking to Prevent Heart Failure Readmission Vision Document

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1. Motivations

Patients that have heart failure often have symptoms such as shortness of breath, decreased energy, and leg swelling due to their heart's decreased performance in pumping blood. These patients require diuretic medications to avoid fluid buildup in their body. However, sometimes, the dosage for the medication is not right, which leads to weight gain in these patients and eventually requires them to get readmitted. This puts a strain on the US healthcare system as there is a limited number of medical staff that can attend to patients. Our goal is to develop an app that automatically tracks the weight of these patients and reports any anomalies to the medical team. Table 1 below shows our problem statement and how we aim to address it.

Table 1. Problem Statement

The problem of	Patients that have heart failure often see weight gain due to their medicine not having the correct dose.
affects	Weight gain in these patients could eventually lead to them being readmitted to the hospital.
the impact of which is	The US healthcare system is strained by these patients returning to get readmitted.
A successful solution would be	An app that automatically keeps track of patient weights at regular intervals and reports anomalies to doctors and allows doctors and clinicians to contact patients at risk before they need to get readmitted to the hospitals.

Our product is backed by the Emory University School of Medicine and will consider several factors to evaluate if a patient is at risk for readmission due to weight gain. There are a few heart failure apps available on the App Store such as Heart Failure Storylines, Heart Failure Manager/Point of Care, HF Star, and HF Log. However, most of these apps are driven by user participation and do not automatically collect the weight of the user. They are more like a journal for users to keep track of their health, medications, and vitals. Our app, on the other hand, will automatically collect weight from an automated scale. It also allows medical staff to view their patients to identify any anomalies. We also want to have additional features such as tips for maintaining a healthy lifestyle for these patients. Table 2 below shows our product position.

Table 2. Product Position

For	Clinicians
Who	Track the weight of patients that have heart failure
Our System	Cross platform mobile app
That	Allows doctors to intervene before patient needs to get readmitted for weight gain.
Unlike	Heart Failure Storylines, Heart Failure Manager/Point of Care, HF Star, HF Log
Our Product	Allows automatic tracking of weight from an automated scale and allows doctors to monitor the weights of patients for outliers.

2. Users

The primary user of the mobile application will be heart-attack patients, who are likely over the age of 65 and retired. Patients are likely to have more modest technological literacy, therefore requiring a guided understanding of the application. Equally, older patients might not remember to do all the necessary tasks, so the application must implement an accountability system.

The other user of our system will be the medical professionals assisting the patient. Doctors and nurses have extremely complex schedules and will need to have ample time to respond to any anomalies detected. A reliable and redundant notification system will ensure accountability with the respective medical professionals.

The system will be administered by a systems administrator or information technology specialist. Due to the sensitive nature of the information being processed, administrators need monitoring solutions for the system. The diversity of systems monitoring tools and setups will require a modular interface with the database. All systems should adhere to industry standards for responsive and accessible administration from a variety of professionals.

3. Constraints

Firstly, this application must adhere to secure computing principles due to the potentially sensitive nature of the patient information that will be processed by the application.

Secondly, this application must adhere to good user-friendly design principles to ensure the application can be effectively and accurately used by patients of all ages to prevent false medical alerts.

With the current knowledge our team has of the project, the only data that will be directly recorded will be weight data through the digital scale that will be wirelessly connected to the application. However, this data must be matched to the file of a given patient to ensure the medical staff that is alerted of weight anomalies knows which patient is specifically at risk. The means to do this will be discussed with Dr. Lin, but in general the project will adhere to secure computing principles by only dealing with the bare minimum of sensitive data and will use secure design principles to prevent breaches of any sort.

So far, it is our understanding that Dr. Lin expects a mobile application for patients that is capable of interfacing with the digital scale in a user-friendly manner as well as a mobile application interface specifically for the appropriate medical staff to receive patient alerts.

Because most of the patients that will use this application will be of late age, the application interface must put ease of use just below secure data principles. This means the patient should feel informed with the reasons for using the application and of the proper protocol to ensure their weight data is recorded, processed, and properly sent to medical staff for review if needed.

The details of implementation such as the frameworks that will be used and backend services will be determined in the first meeting with the client, which will occur this upcoming Friday. During this meeting additional project constraints will inevitably be discussed.