Academic Paper

1 Background and Significance

After waking up from an acute care situation, patients may be given too much information regarding their visit. They may have been given information but are too disorientated to fully process the information. Having a display that illustrates their condition and other relevant information can allow for patients to get a better grasp on their situation. They may have questions that do not come to their minds at that time and may want to reach out for better clarification.

The approach we took is a one that is a web based application that is compatible with cell phones. With most of the population having a computer or a phone, this allows for patients to have access to their information about their stay at their fingertips.

2 Problem

While at the hospital in an acute care situation, patients do not have access to as much relevant information as they could in relation to their current visit. Since there is no easily accessible or readable area for them to find this information, patients might not be able to remember some of it and have increased anxiety in an acute situation. Patients could have questions about their stay. Some of these questions might be critical in allowing the patient to make a better decision regarding their care.

3 Solution

Deploy a web application that is accessible by the patient that has information regarding their current visit, such as which doctors are actively involved in their acute situation. This application will also have the ability to show additional information such as which medications are currently being used, and any relevant lab results.

This leads to a more informed patient which can reduce any errors caused by miscommunication, and to reduce their stress levels. The implementation of a page that allows for patients to ask questions through the web application allows for the patient to have a better understanding of their stay (Schnock et al., 2019). This level of transparency allows for the patient to feel more comfortable in making decisions regarding their stay.

4 Complexity or Effort

The technical architecture used is an Angular web-application hosted on GitHub pages and is authenticated using a FHIR Sandbox server using the Smart App Launcher, and a custom authentication method of only allowing certain patientID's access to the website. In a real production implementation, the medical provider would provide the user a login method using a username and password to access the site, and the authentication involving FHIR / medical provider authentication would be done behind the scenes.

This account would only be usable for a couple of days, because it would be about the specific acute visit and the medical provider would not want to keep all of this acute information on their servers. This is because otherwise it would become a little costly to keep storing the new information, but more importantly because one of the key rules in regards to security is that one should not store information that it does not need, for longer than it needs it.

Special code was implemented to allow for ease of local development, such that all expected FHIR API calls are not made locally, instead this data was stored in the repository and will be called from our own repository codebase, thus needing no external calls.

As for the needed information from the medical provider's database, no server with APIs were implemented for this as it seemed out-of-scope for our frontend website. Instead of making real APIs we used the same mock response method for each patient similar to the above scenario. This allows for the website to fully demonstrate what it would be like in a production environment using the three allowed PatientIDs who would be considered "registered" for our application while maintaining itself as a fully front-end application.

Future implementation of this project would be creating an actual server with APIs to respond to these requests, and a database to store those who are registered for use of the application. One key challenge to implementing this project as a whole is that a decent amount of the information presented to the patient would require inputting into the system, which could consume valuable time for the medical staff. For this reason the information was kept light and only included the important aspects of their visit.

5 References

Schnock, Kumiko O, Snyder, Julia E, Fuller, Theresa E, Duckworth, Megan, Grant, Maxwell, Yoon, Catherine, Lipsitz, Stuart, Dalal, Anuj K, Bates, David W, & Dykes, Patricia C. (2019). Acute Care Patient Portal Intervention: Portal Use and Patient Activation. Journal of Medical Internet Research, 21(7), e13336–e13336