DASH
The Diabetic and Societal Health App

Pioneering a new future for Diabetics through artificial intelligence, data analytics, and technological innovation
Our topic space is the massive diabetic population in the world. With an estimated 30.3 million diabetics in the US alone and diagnoses increasing yearly, this space is constantly innovating and has pioneered new technology, and DASH is the next step (diabetesresearch.org). Our goal is to develop a healthy way to reduce the over 450,000 US hospital visits yearly to treat glycemic issues. Hyper and Hypoglycemia both carry severe long term health implications, and we hope to prevent that. We hope that DALE can prevent fluctuating blood sugars that can rise or fall to dangerous levels, but in an emergency, can notify the appropriate parties that the user can set.

**Target Demographic**

Our target demographic is a group that is often underrepresented in popular culture, active diabetics. **Type 1 Diabetes**, a genetic predisposition that prevents the release of insulin, affects over 1.25 million people naturally and can only be treated through consistent insulin injections. These diabetics are often very active people, including professional athletes in a wide array of sports. **Type 2 Diabetes** is caused by the body becoming resistant to insulin over a long period of time, and is treated with infrequent insulin injections. The DASH team hopes to provide active diabetics with a resource to reduce their artificial insulin usage by promoting ways to decrease blood sugar naturally, such as exercise and dietary changes (healthline.com).
According to doctors and patients, spikes in blood glucose levels are dangerous, and the DASH app has a goal in mind to help diabetics regulate blood sugar, but this app can also have financial implications, as insulin is an extremely expensive and controversial drug. In an article published by the American Diabetes Association, William T. Cefalu states "[prices] have nearly tripled between 2002 and 2013", making a life saving drug out of reach of lower income people (Cefalu). One patient said their insulin costed upwards of $7,000 last year, and they are worried about the future of the drug. The reduction of insulin usage through healthy lifestyle changes fueled by artificial intelligence can save money and lives.

Data courtesy of Adam Harband
**Concept**

The DASH method is to use data analysis of watch health data, continuous glucose monitor data, and cell phone data to create a system that encourages healthy lifestyle choices. This could be reminding a user that they haven't moved much on a given day, and should take a walk, or to eat something before they go into a hypoglycemic episode. DASH aims to prevent long term health issues presented by hyper and hypoglycemia such as organ, tissue, and skin damage, as well as reducing insulin costs for users by providing drug free ways to lower blood sugar. We can incentivize users through goals for their average blood sugars, while also giving users a platform to compete with their friends and make new ones within the diabetes community. The design of this app with incorporate apple watch accommodation and will have charts and data that the user can look at in real time as well as a minimalistic interface design in order to not overload the user with information. Because the app incorporates artificial intelligence, we hope to create an innovative AI feature that the user can communicate with in order to seek advice on their diabetes management. Answering a simple question such as "What should I have for lunch today?" but backed with science, DASH may recommend a certain type of food based on your blood sugar and activity level for the day. The DASH app can revolutionize the world of diabetes management by providing users the ability to answer simple questions, and empower diabetics to take control of their health and establish positive habits that can change their life. The DASH app will be free for all users and make an effort to anonymously donate data to research efforts to cure diabetes.

**Future Considerations**

- Preventing Information overload on the user
- Partnerships with insurance companies to reward patients
- Information security/ privacy
- Emergency response
- Failsafes in case of dead phone, malfunction, or extenuating circumstance

**Design**

**Smart watch interface**

**Smart Phone Interface**

**DASH**

**CHAT**

- Great job today! Keep up the good work!
- Your average blood sugar is 124 Mg/dL
- What should I have for lunch?
- Hi DASH, I have a question
- What is your average blood sugar today?
- Your blood glucose levels have been in range all day, and you have a basketball game tonight. Eat some carbs with protein to best prepare.
- Would you like a local restaurant recommendation?
- No, Thanks DASH!
Attributions

Primary Sources

- Figure 1: A graph showing 3 weeks of blood glucose levels. Intended to show little fluctuation (source: Adam Harband @ 1/31/20)
- Figure 2: A graph showing 1 day of blood glucose levels. Intended to show fluctuation and poor management (source: Adam Harband @ 2/3/20)
- Conversation with Leah Chapnick RN, Certified Diabetes Educator. Elaborated upon how sports and activity affect diabetes, and how to lead a healthy diabetic lifestyle. (source: Leah Chapnick RN @ 2/1/20)

Secondary Sources

- Diabetesresearch.org: Provided statistics on how this issue effects a large amount of Americans (source: diabetesresearch.org @ 2/4/20)