

### **Description of Design:**

Group 10 has chosen health management as the problem space, and specifically focused on serving seniors who must manage their diabetic condition. Through the user research, we have come to appreciate the needs of our targeted audience. Chief among them is the need to effectively manage the users' blood glucose (BG) levels throughout the day. From this come the need for good data about current BG, and the need to also consider food intake, exercise, and their effects on BG.

A secondary set of needs stems from the fact that most people in our targeted audience are quite comfortable with and capable of using the basic single function BG monitors, but are less so with using devices intended to interactively deliver information, such as computers, tablets, and smartphones.

The seniors we interviewed did become effective and sometimes quite sophisticated in the management of their condition, but initially faced a tough learning curve with little to help them understand the equilibrium that they must achieve. Of course, the factors that create this equilibrium are food intake, physical activity, and insulin boost. (An insulin boost will augment the body's own insulin and will metabolize blood glucose, thereby reducing it; exercise will also metabolize blood glucose; food will increase blood glucose).

Therefore, the main objective of this design is to facilitate learning of the management of this equilibrium. It especially targets seniors recently diagnosed with diabetes. Further, this equilibrium will become the design's most important conceptual model.

For this prototype, two of the application views have been developed.

The data transfer view is shown to illustrate how a technically complex process can be run without the user's input while clearly indicating to them what is happening. The purpose of this view is to inform the user of the process of data transfer from the BG measuring device to the tablet/phone/desktop application. No interactivity is required from the user, but as they must wait for the process to complete, it clearly indicates to them what is happening including the successful conclusion of the data transfer. No text is used, only very literal symbols are used to communicate to the user what is happening

The blood glucose prediction view provides the user with the data that they need and also provides them the opportunity to input data as well. The use of a prediction view implies the idea that there is a cause-and-effect relationship between the three factors of insulin boost, food intake, and exercise, on blood glucose levels.

The view has a horizontal timeline from left to right that plots a prediction of blood glucose levels through the day. Colored dots that correspond to events of that color type are then added to the chart, thereby affecting the plot of likely blood glucose levels through the day. The actual icons next to the addition (+) and subtraction (-) signs lead to data input fields for the user to add events that would affect blood glucose levels. As the app will store data such as the patient instructions for the prescribed insulin boost and recommended meal plans, part of the chart will be pre-populated.

#### **One future scenario of use:**

There are days when the established routine cannot be followed. When traveling, one does not have the same control over food options, and activity levels are likely to be greater than normal. Without an intuitive and deep familiarity of managing one's BG equilibrium, a break from routine can upset the equilibrium and cause some crisis of hypo- or hyperglycemia. It is in this situation that the app really proves its utility. It provides a prediction of BG levels through the day that can be adjusted by the user making changes to the planned meals and activities. The app will provide the prediction and make suggestions helpful to maintaining equilibrium. With this prediction, the user can make informed management decisions and ensure their enjoyment of an unusual day.

#### **Critical assessment:**

This design does fully conform to the group's design principles, the most important of which is that it not be reliant on the user's technical aptitude. The app will report current blood glucose level, which matches the current dumb device functionality, and will provide a prediction of blood glucose levels through the day based on a generalization of user habits. This is all delivered with the need for the user to provide any input.

This design will address the needs of users for whom information is a sufficient call to action. While easily incorporated, notifications and reminders have not been elaborated upon in this design.