

# **JollyPod**

## **Team**

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Development/Documentation - Henry Tran

Design - Janette Cheng

## **Value Proposition**

Helping children manage diabetes in a fun and stress-free way.

## **Problem and Solution**

For many children with diabetes, managing their condition is very scary and daunting. Diabetes care can be a flurry of self-administering insulin shots, pricking and testing blood, visiting the doctor, etc. Our hope is that by minimizing these fears and simplifying these processes, children can be more relaxed and learn more in depth on how to manage their health better. Currently, many children manage their diabetes through a Personal Diabetes Manager (PDM), which is a device that tests blood glucose, communicates to an insulin reservoir, and visualizes blood glucose data. Currently PDMs are not user-friendly, and definitely not kid-friendly as the interface is not intuitive. We are improving the Personal Diabetes Manager by designing a kid-friendly interface that integrates reminders, metrics, educational games, and positive reinforcement.

# UI Sketches

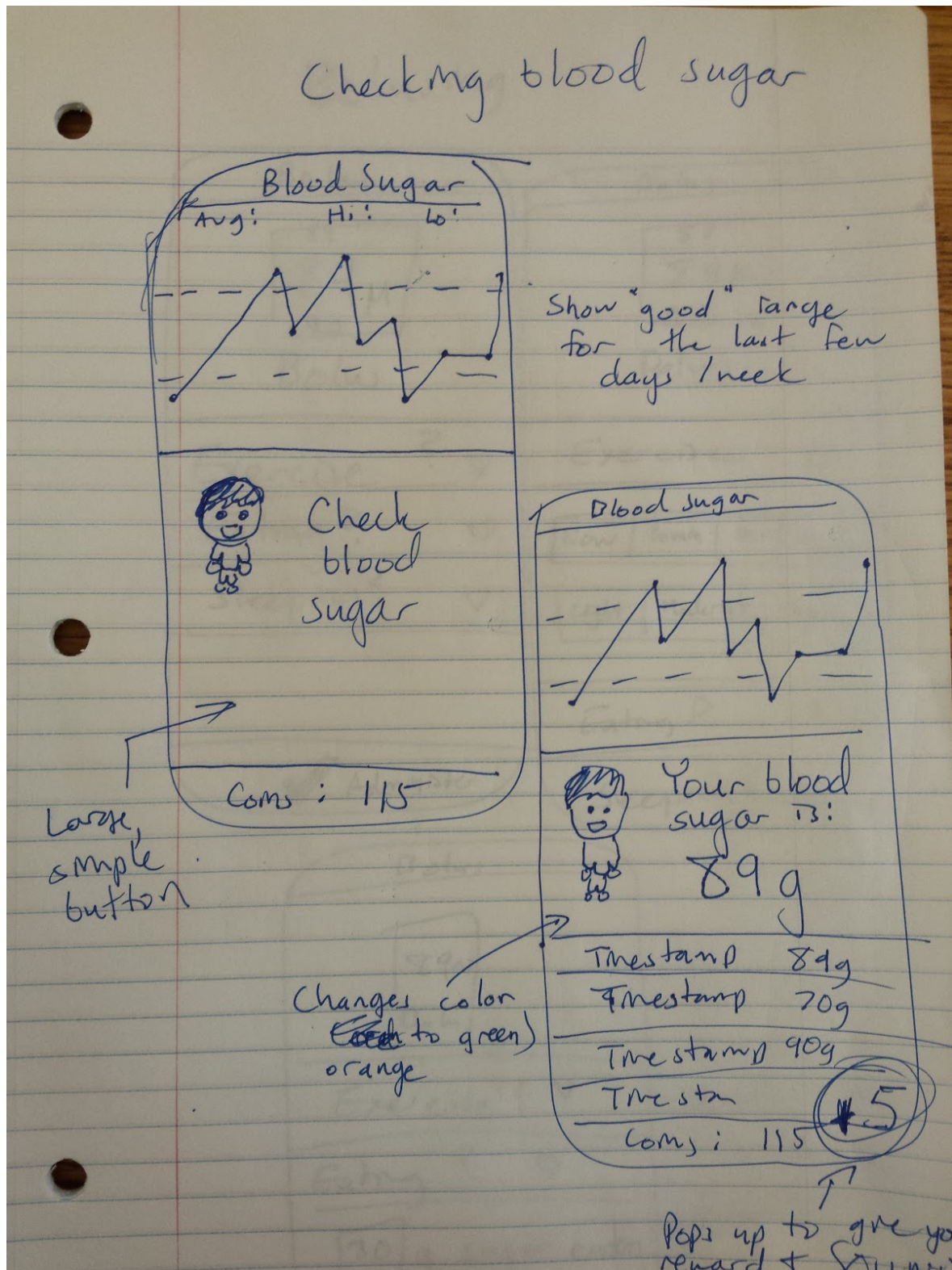
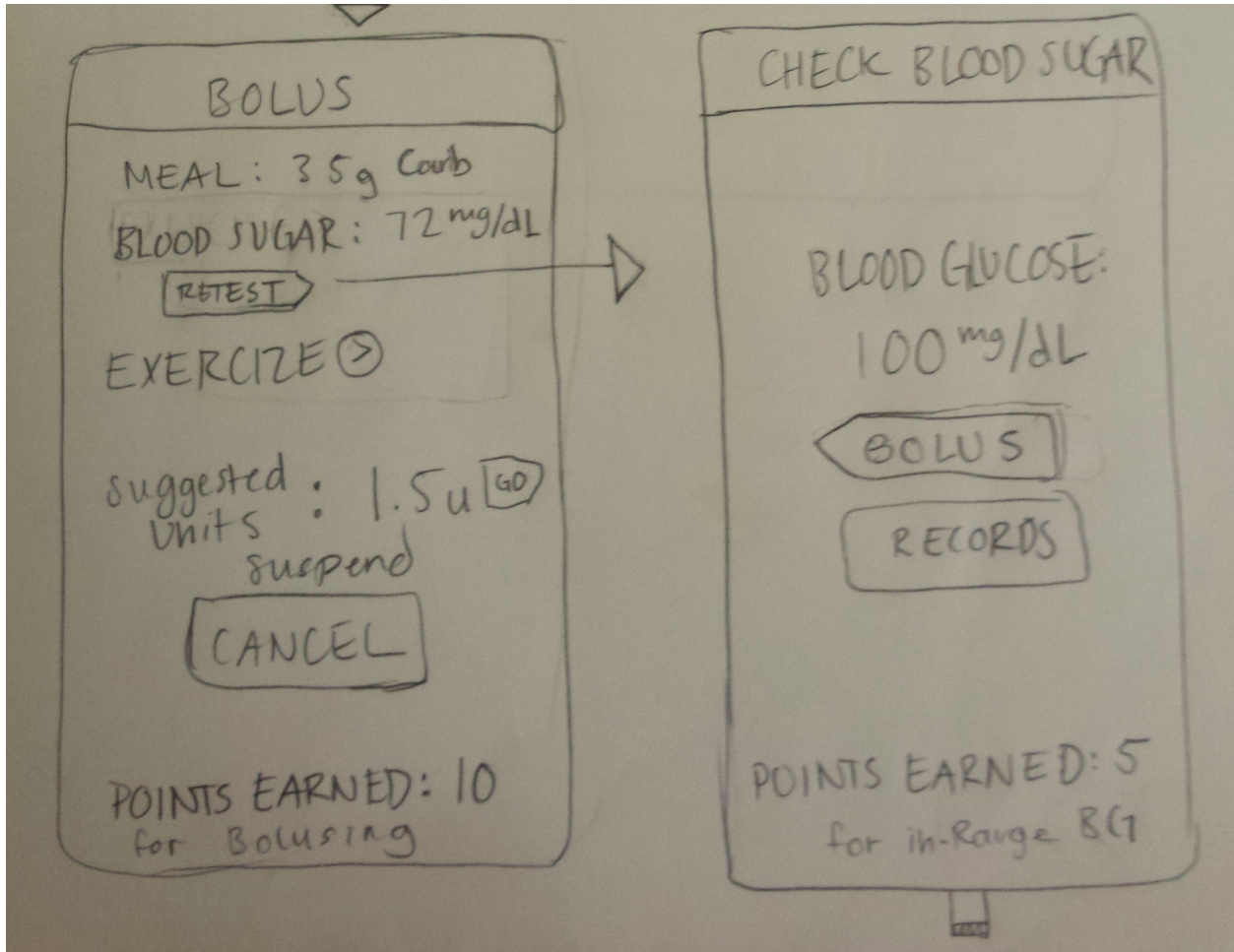


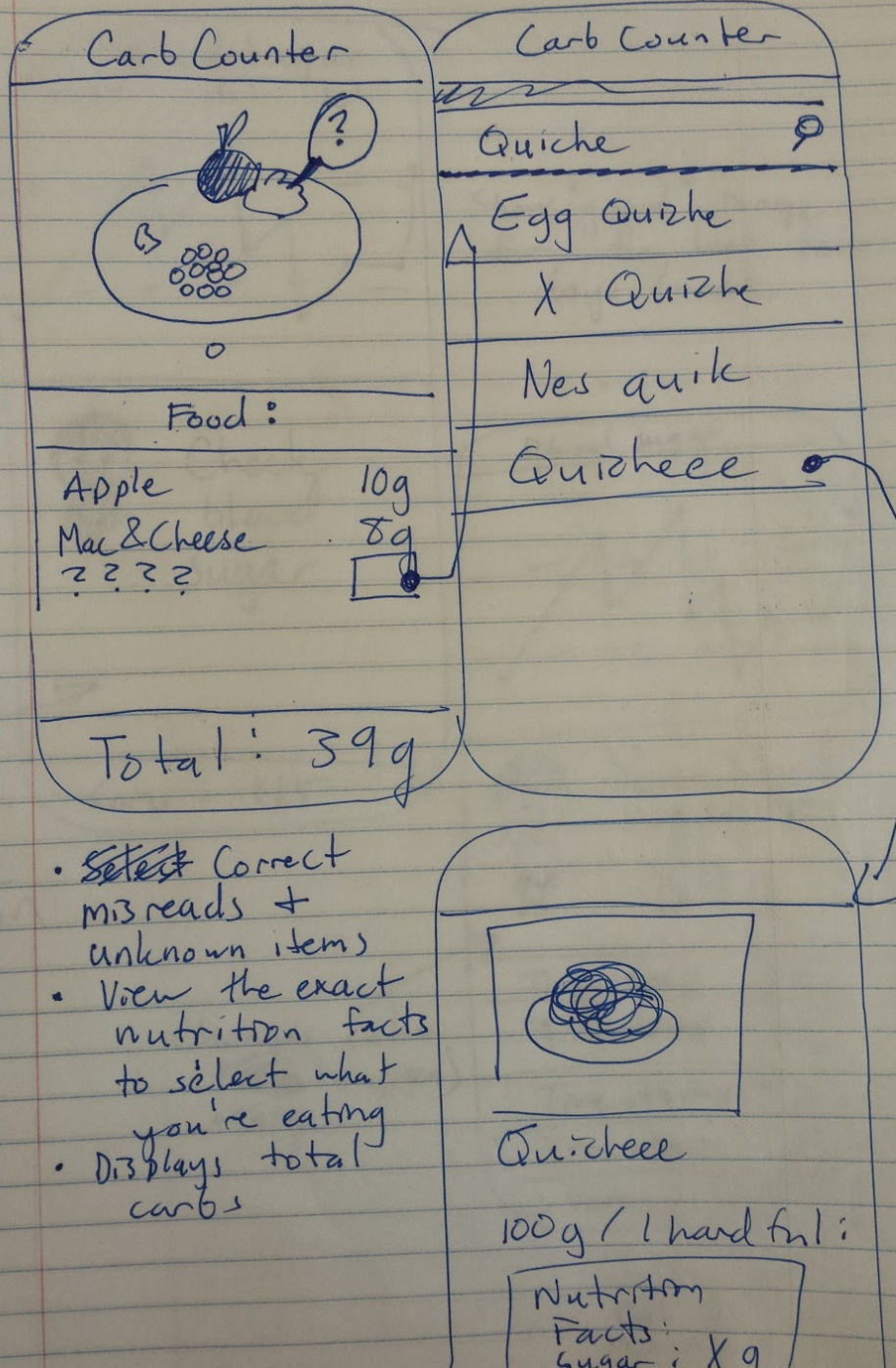
Figure 1 Works with continuous glucose monitor and graphs BG trends.



**Figure 2** UI that works with traditional blood testing strips. There are fewer steps to bolus in this interface and the blood sugar trends are located on a separate application page.

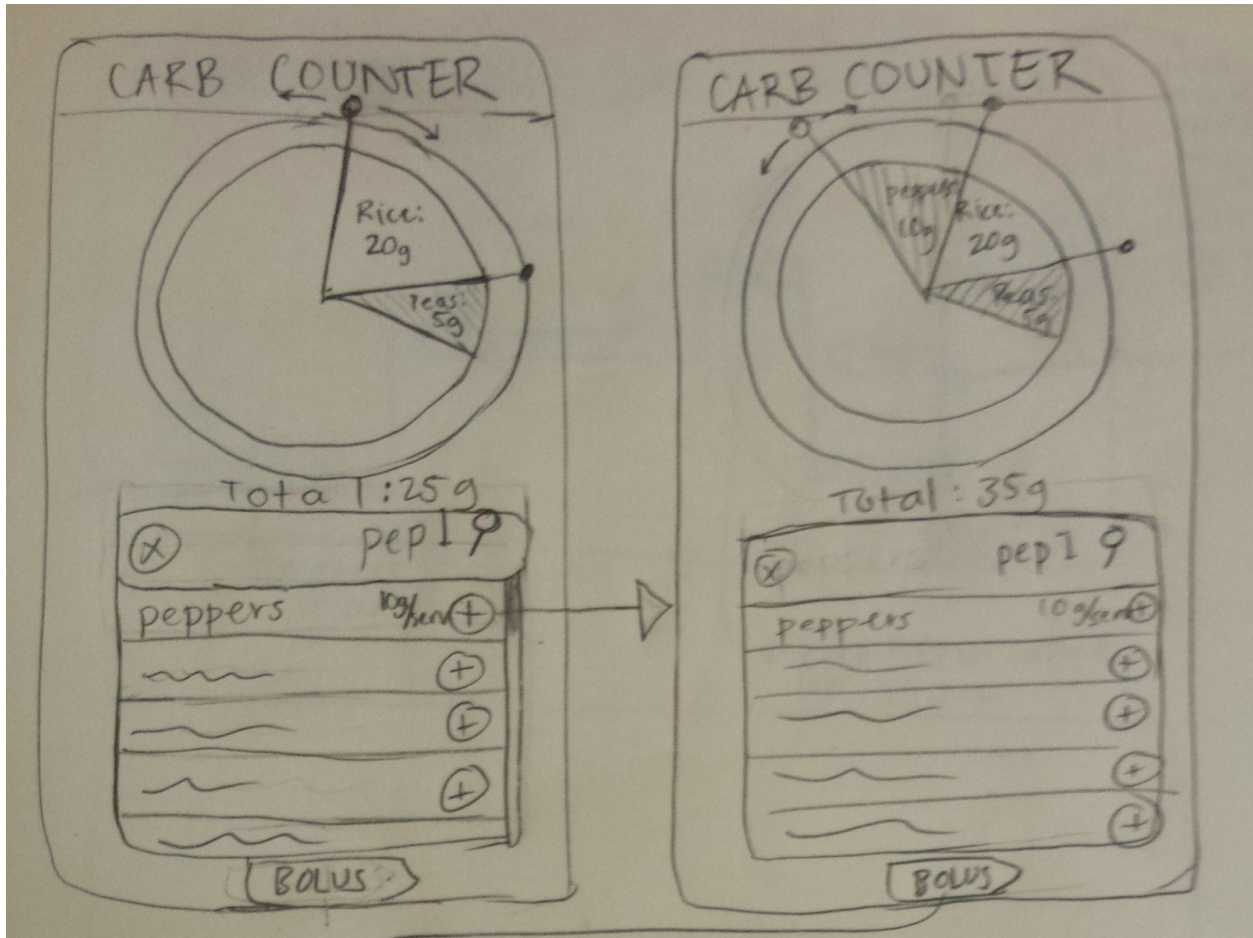


# Counting carbs



**Figure 3** UI that uses photos to count carbs. This UI would give users an instant carb count that they can adjust manually if they wish to do so.





**Figure 4** Carb counter that asks user to search for and add foods they are eating. Works with a database that contains carb counts. Displays meal as an adjustable pie chart.

# Bolusing

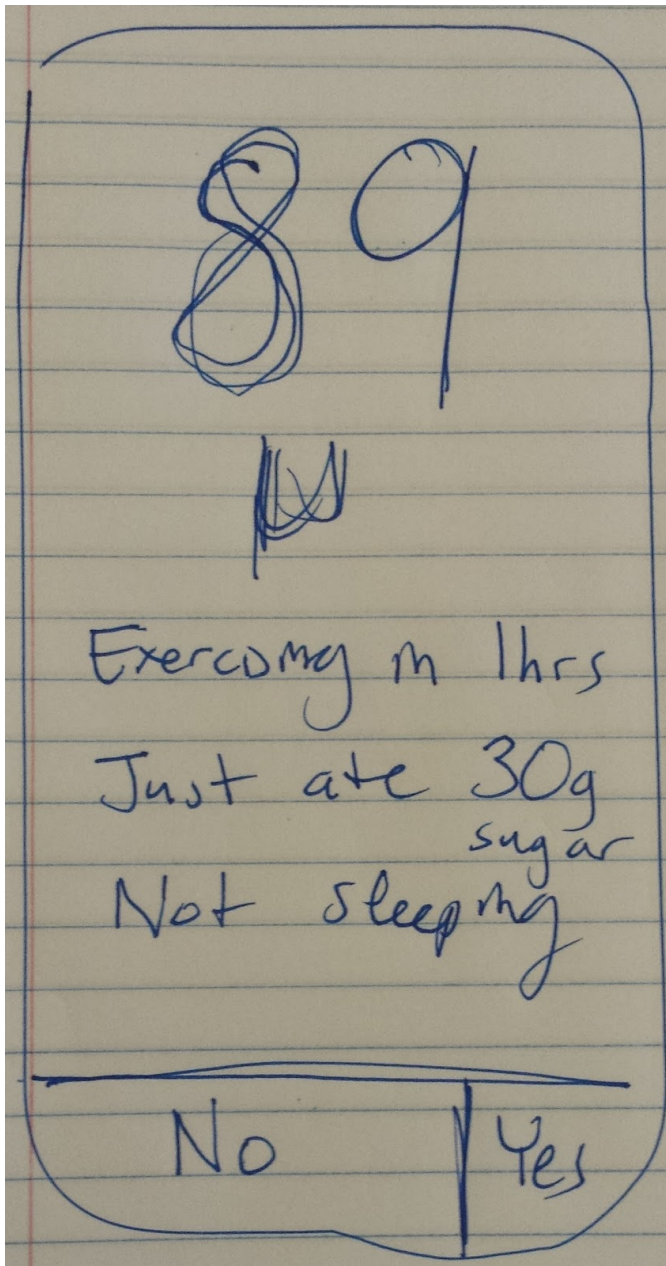
Bolus	Bolus						
<table border="1"><tr><td>88</td></tr><tr><td>89M</td></tr><tr><td>90</td></tr></table>	88	89M	90	<table border="1"><tr><td>88</td></tr><tr><td>89M</td></tr><tr><td>90</td></tr></table>	88	89M	90
88							
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88							
89M							
90							
Bolus	Bolus						
Exercise ? ▾	Exercise ▾						
Eating ? ▾	<table border="1"><tr><td>Now</td><td>30mm</td><td>1hr</td><td>2hr etc</td></tr></table>	Now	30mm	1hr	2hr etc		
Now	30mm	1hr	2hr etc				
Sleeping ? ▾	<table border="1"><tr><td>Light</td><td>Moderate</td><td>Heavy</td></tr></table>	Light	Moderate	Heavy			
Light	Moderate	Heavy					
	Eating ? ▾						
✓ Administer	Sleeping ? ▾						

Bolus	
<table border="1"><tr><td>89M</td></tr></table>	89M
89M	
Bolus	
Exercise ? ▾	
Eating ? ▾	
120g sugar eaten	

auto-fill,  
what you  
just ate

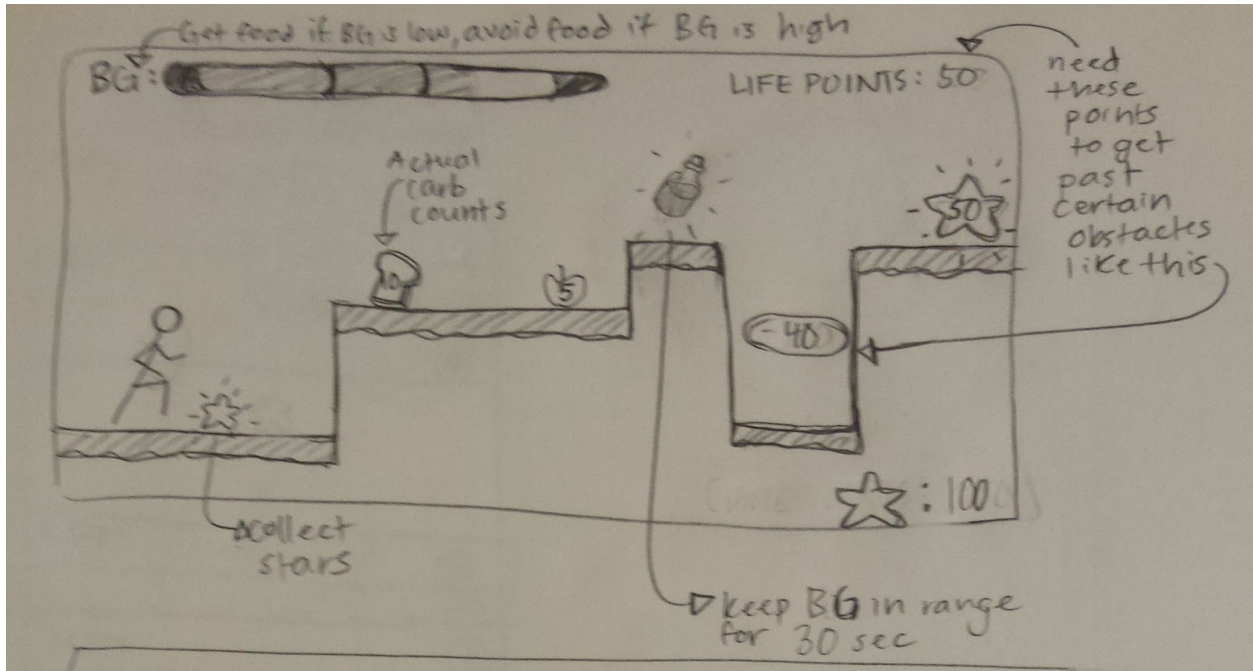
Figure 5 Bolusing screens with multiple steps for verification.





**Figure 6** Final screen for a bolus with summary of entered data and option to cancel.





**Figure 7** Game where the points you earn in real life can help you get through challenges in the game.

### Selected Interface Design

For checking blood sugar, we chose a UI that works with a continuous glucose monitoring device (instead of test strips) to give diabetics a constant read of their blood glucose (Figure 1). We chose to incorporate constant monitoring because checking blood sugar is the task that needs to be done the most, and the results determine which tasks need to be carried out. To effectively communicate the results of constant glucose monitoring, we chose a UI that highlights the user's current blood sugar, but also gives a visual representation of long term blood sugar trends. We would also like to include buttons that link directly to the bolusing and carb counting portions of the app. This way the user can look at their blood sugar, see what they need to do, and then do it.

For counting carbohydrates, we decided that the user should be able to simply take a photo of their meal and have the device recognize and estimate the number of carbs on their plate for them (Figure 3). This takes much of the stress out of manually looking up and memorizing the carb counts for individual food items and adding them separately. In this UI, the user is also able to fill out the carb counts for foods the device does not recognize or to adjust carb counts they feel are inaccurate.

For bolusing, we wanted to make sure the user went through several steps of verification before administering insulin. To do this, we chose an interface that requires the user to tap an "administer button" and a "yes" button before anything happens (Figure 5 and Figure 6). This

gives the user a chance to change his or her mind. The bolusing UI also incorporates information from the carb counting portion of the application, allowing you to calculate how much insulin you should administer before your meal.

Throughout the day, the UI will alert the user when they earn points (i.e. when their blood sugar is in range, when they bolus, etc.) that they can use in a Mario Brothers style game (Figure 7). These points will allow the user to accomplish certain challenges within the game. Throughout the UI, there is also an avatar that is the same as the character in the game. This avatar's expression corresponds to how the user is doing blood-sugar wise. We decided to have a game that is somewhat separate from the rest of the app, but brings in points earned in real life. This decision was made because we did not want the user to have to play a game to accomplish daily practical tasks (could cause irritation if they want to complete a task quickly).

### Functionality Summary Table


Continuous glucose monitoring	<ul style="list-style-type: none"> <li>-User can check their blood glucose at any time without pricking their finger.</li> <li>-With the tap of a button, their current blood sugar as well as their blood sugar records will be visually displayed.</li> </ul>
Photo-based Carb Counting	<ul style="list-style-type: none"> <li>- User can take a picture of their meal and have the application/device autofill the number of carbohydrates in their meal.</li> <li>-Allows user to override carb counts if they are inaccurate, as well as to fill in carb counts the application is unable to find.</li> </ul>
Integrated Bolusing	<ul style="list-style-type: none"> <li>-User can use the carb count of their meal as one of the factors that determines how much insulin they should administer</li> <li>-Allows user to change mind and go back if they decide they do not want to bolus</li> </ul>

### UI Storyboards for 3 Scenarios

This is a storyboard of a user checking their blood sugar, counting carbs, and then bolusing. Things colored in with turquoise represent buttons the user pushes. Annotations are in purple.

### Jolly Pod

Current BG: 80 mg/dl ← avatar



Blood Glucose Trends

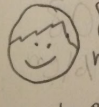
Carb Counter

Bolus

Game

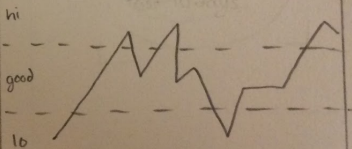
### Jolly Pod

Current BG: 80 mg/dl carb counter



In Range! points for game 5pts

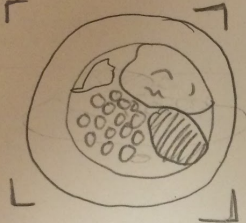
Trends: 24 hrs change time range




Avg:	100	Hi:	250	Lo:	55
12:00			88		
1:00			100		
2:00			102		
3:00			70		
			!		

### Jolly Pod

#### Carb Counter

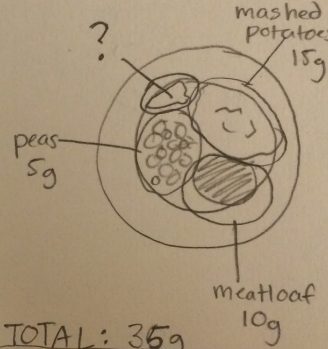




press to take picture

### Jolly Pod

#### Carb Counter



TOTAL: 35g

mashed potatoes	15g
meat loaf	10g
peas	5g

? 9 or 5g

lookup in database Bolus manually enter carb value



↑  
Jolly Pod

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BOLUS

Meal: 35g ← from carb counter

Exercise?  Y  N

now |  30m |  1hr |  2hr+

light |  moderate |  heavy

---

Sleeping?  Y  N

---

Current BG: 80 mg/dl

Go

↑  
Jolly Pod

---

BOLUS

Suggested:

1.5 u

Meal: 35g  
light exercise in 1hr  
sleep: No  
Current BG: 80 mg/dl

Go

Cancel

↑  
Jolly Pod

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Bolus Complete!

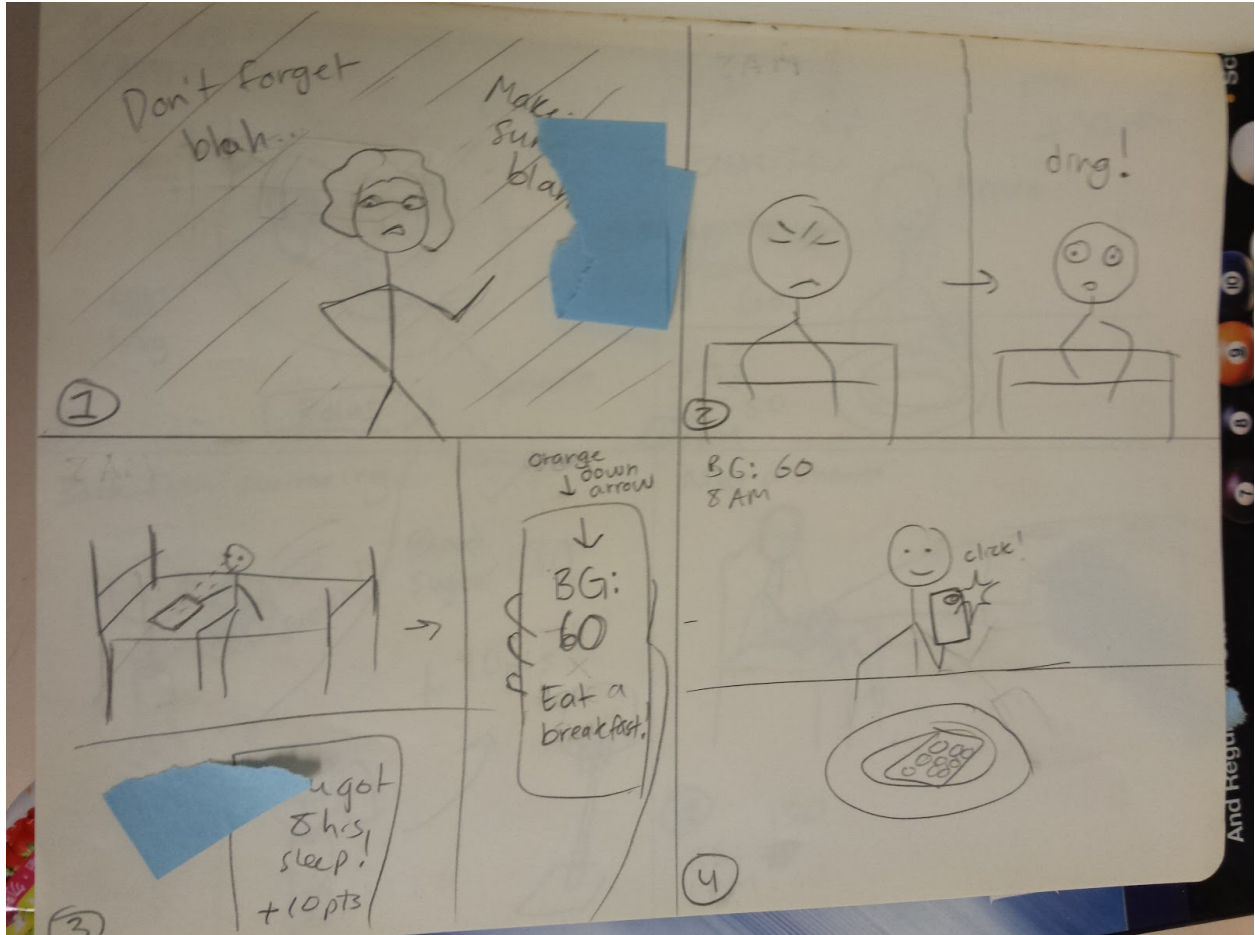
1.5u administered

+ Sp + s

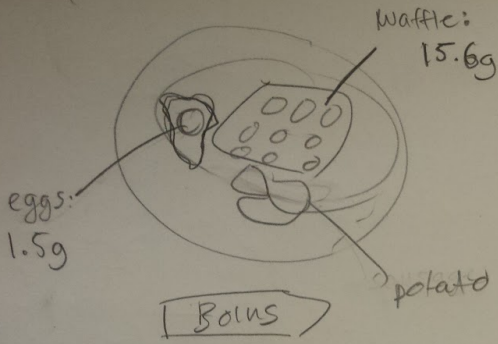
↑  
points for game

# Video Planning Storyboards for 3 Scenarios for shooting video

(See numbers for the order of the scenes)



BG: 60  
8 AM



Meal: 30g

ping!  
+ 10 pts!

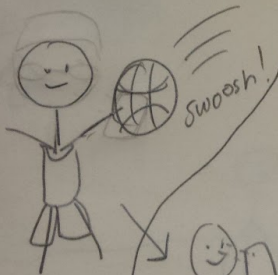
Exercise:

Suggested: ~~insulin~~  
insulin  
Go!



5

Back from swimming. green check ✓



Blood Sugar: 89

+ 10 pts!

7

BG: 100  
11 AM



BG: 70

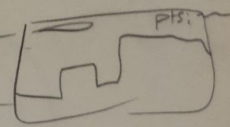


12

130

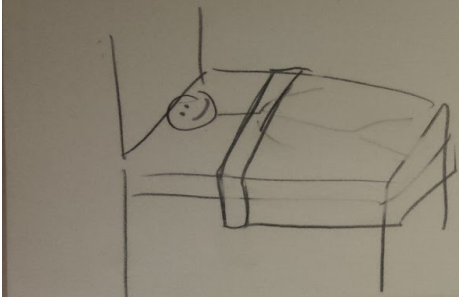
BG: ~~70~~  
1 PM

After a shower:



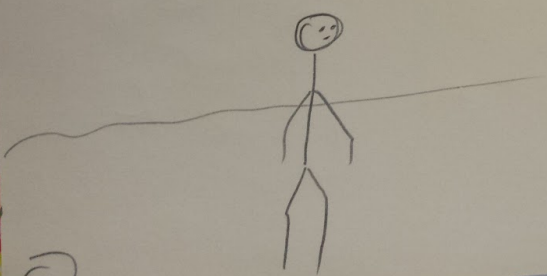
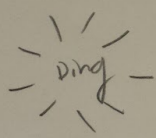
And Regulation



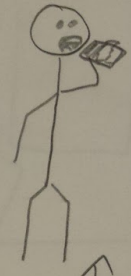


14

7:30 PM  
BG: 330



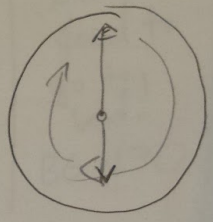
7 PM  
Blood sugar: 75



9

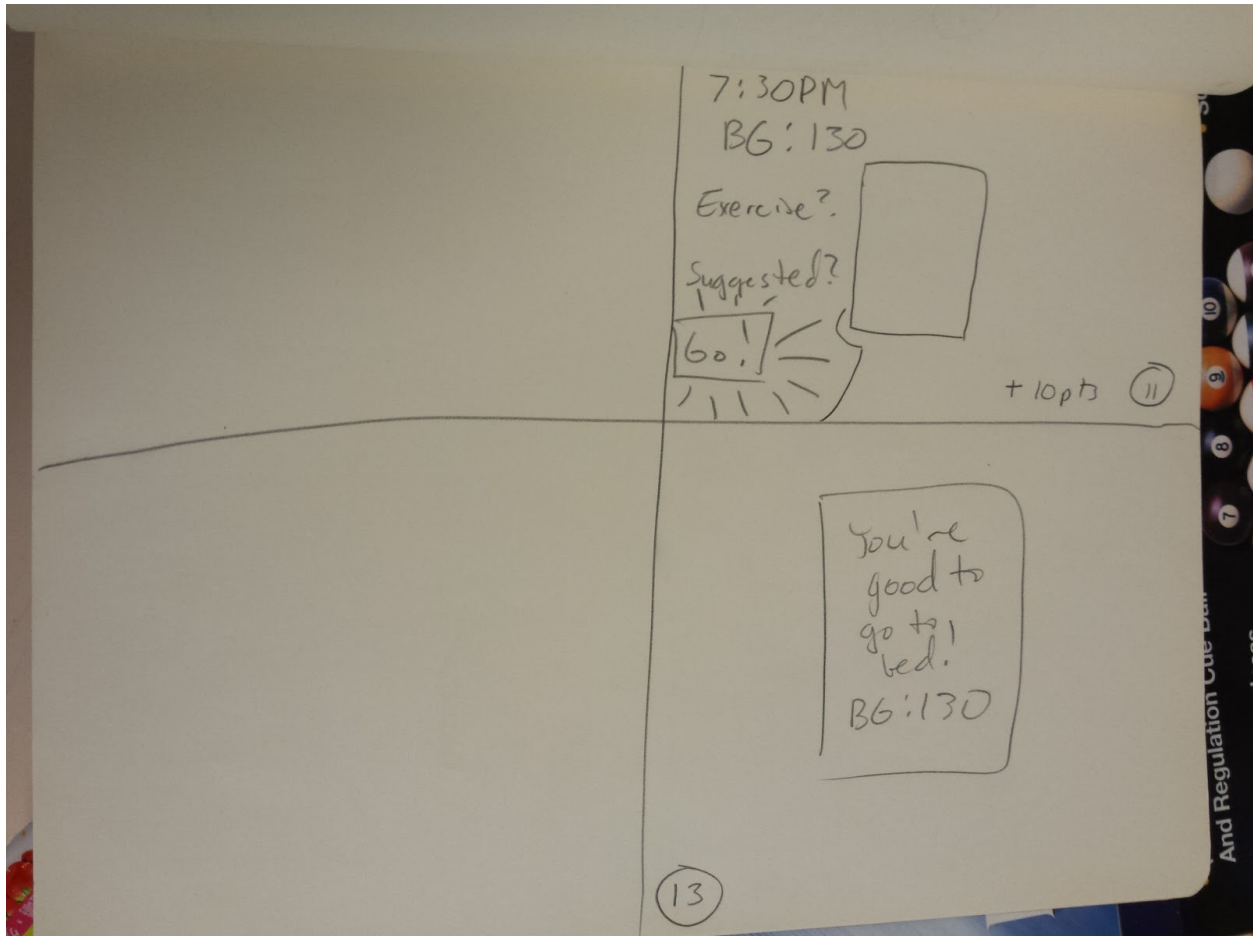
7 PM

Time passing



8

10  
9  
8  
7  
And Regulation



### Concept Video Description

The most difficult part was making sure that the diabetic character in our video looked and acted like a younger teen. The actress wore pigtails in her hair and bright pink colored clothing and ate Frosted Flakes. However, it is very hard to look 10 years younger. Furthermore, the actress had not been around teenagers in a while so she was not sure what her body movements were supposed to be like. The actress tried her best to depict a typical going about her daily routine, which included activities like eating breakfast, playing basketball, doing homework, etc.

What really worked was having the character emulate activities that teenagers would typically do such as playing with an electronic device before going to bed. This really conveys that we want our users to want to engage with the system rather than dread using it. In addition, we showcased the importance of having a blood sugar that is in range when the main character immediately jumped out bed despite sleepiness to eat breakfast.

Storyboarding the video did not take us long because we already knew what main tasks we wanted to emphasize. We spent 2 hours one evening this week sketching out the scenes. Shooting the actual scenes took about an hour early one morning, and each scene took about 2 tries. Editing the video took a little bit longer as we wanted to make sure each of the scenes had a seamless transition and the appropriate music to set an energetic tone.