

SmartInsulin User Study Protocol

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I. Introduction :

Hello! Thank you for taking the time to join me today.

My team is working on a mobile app designed to help people with Type 2 diabetes manage their insulin delivery.

Our goal today is to see how you interact with the app and gather your feedback. This is not a test of your abilities. There are no right or wrong answers.

I'll be taking notes of your interactions with the app to help me and my team review your feedback later. Any notes will be kept confidential and destroyed after the class's completion.

As you use the app, please share your thoughts out loud. Tell me what is clear, what is confusing, and any suggestions you have.

Do you have any questions before we begin?

II. Background:

Before we dive in, I would like to understand a little more about your experience managing diabetes, either personally or as a caregiver.

1. Are you currently managing diabetes for yourself or someone else?

2. If **NO**,

- a. How familiar are you with Type 2 diabetes and how it is typically managed?
- b. Have you ever seen or heard about devices or apps that help people manage their diabetes?
- c. What do you think are some of the challenges people with Type 2 diabetes might face when managing their blood sugar levels?
- d. Have you ever had a family member, friend, or colleague who uses an insulin pump or diabetes management app?
- e. What features do you think would be important for an app designed to help manage insulin delivery? For example, automatic tracking, dosage suggestions, alerts, etc.
- f. When thinking about health apps in general, what makes an app feel trustworthy and easy to use?

3. If **YES**,
 - a. What methods or tools do you use to track glucose levels or insulin? (apps, paper log, insulin pumps, etc.)
 - b. What challenges or frustrations do you face when managing your insulin or glucose levels?
 - c. Do you currently use any mobile apps or digital tools to help with diabetes management? Or have you in the past? If **YES**, what have you liked or disliked about those tools? If **NO**, why not?
 - d. What features would you find most helpful in a smart insulin system? For example, automatic tracking, dosage suggestions, alerts, etc.

III. Tasks (several) - set up a problem and observe their behavior

Task 1:

Imagine you've just received your new smart insulin pump and are eager to start using it. Your goal is to set up the mobile app to begin managing your insulin delivery. This includes pairing the app with your pump, entering your personal information, and configuring your insulin delivery preferences. Please go through the initial setup process as you would at home.

Task completed successfully ☐ Yes ☐ No

On a scale from 1 to 5, where 1 is "Very Difficult" and 5 is "Very Easy", how would you rate completing this task on this prototype? Why?

Task 2:

You're preparing for an upcoming appointment with your doctor and want to share your recent blood sugar readings and glucose levels. Use the app's export feature to generate a report of your blood sugar levels from the past weeks and save it as a PDF to share with your healthcare provider.

Task completed successfully ☐ Yes ☐ No

On a scale from 1 to 5, where 1 is "Very Difficult" and 5 is "Very Easy", how would you rate completing this task on this prototype? Why?

Task 3:

You just experienced an unusual blood sugar reading and want to make a quick note in the app so you can remember what might have caused it (e.g., high-carb meal, exercise, stress).

Use the app to add to the log notes explaining the situation.

Task completed successfully ☐ Yes ☐ No

On a scale from 1 to 5, where 1 is "Very Difficult" and 5 is "Very Easy", how would you rate completing this task on this prototype? Why?

Task 4:

Imagine you're about to have a meal and want to understand how it might affect your blood sugar levels. Use the app's chat feature to ask a general question, such as: "How many carbs are typically in a medium-sized banana?"

Task completed successfully ☐ Yes ☐ No

On a scale from 1 to 5, where 1 is "Very Difficult" and 5 is "Very Easy", how would you rate completing this task on this prototype? Why?

Task 5:

You want to check how your glucose levels have been trending this week, along with your insulin delivery history.

Navigate the app to view your recent glucose and insulin activity, and explore what insights or summaries are available.

Task completed successfully ☐ Yes ☐ No

On a scale from 1 to 5, where 1 is "Very Difficult" and 5 is "Very Easy", how would you rate completing this task on this prototype? Why?

Task 6:

You are monitoring the health of a loved one (such as your child, spouse, or aging parent) who uses this app to manage their Type 2 diabetes.

Your goal is to review their recent glucose trends, insulin usage, and any alerts to make sure everything looks okay.

Please navigate through the app as you would if checking in on them from home or work.

Task completed successfully ☐ Yes ☐ No

On a scale from 1 to 5, where 1 is "Very Difficult" and 5 is "Very Easy", how would you rate completing this task on this prototype? Why?

IV. Debrief :

Thank you for participating! We are almost done; just a few final questions -

1. What did you like most about the interface or experience?
2. What did you find confusing or difficult?
3. Were there any features that you expected, but weren't available?
4. How confident would you feel using this app for yourself or someone else?
5. Is there anything you would change to make it better?
6. Would you be interested in participating in future usability tests or providing feedback during later stages of development?