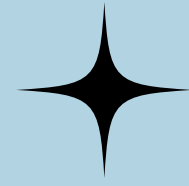


PiIPAL

Your trusted partner in medication management



Today's Agenda



01 Motivation/Market Needs

02 Glossary

03 Overview of PiIPAL

04 Data Management

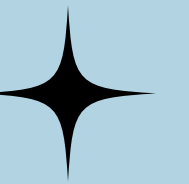
05 Functional Requirements

06 UML Diagrams

07 App/Hardware Mockup

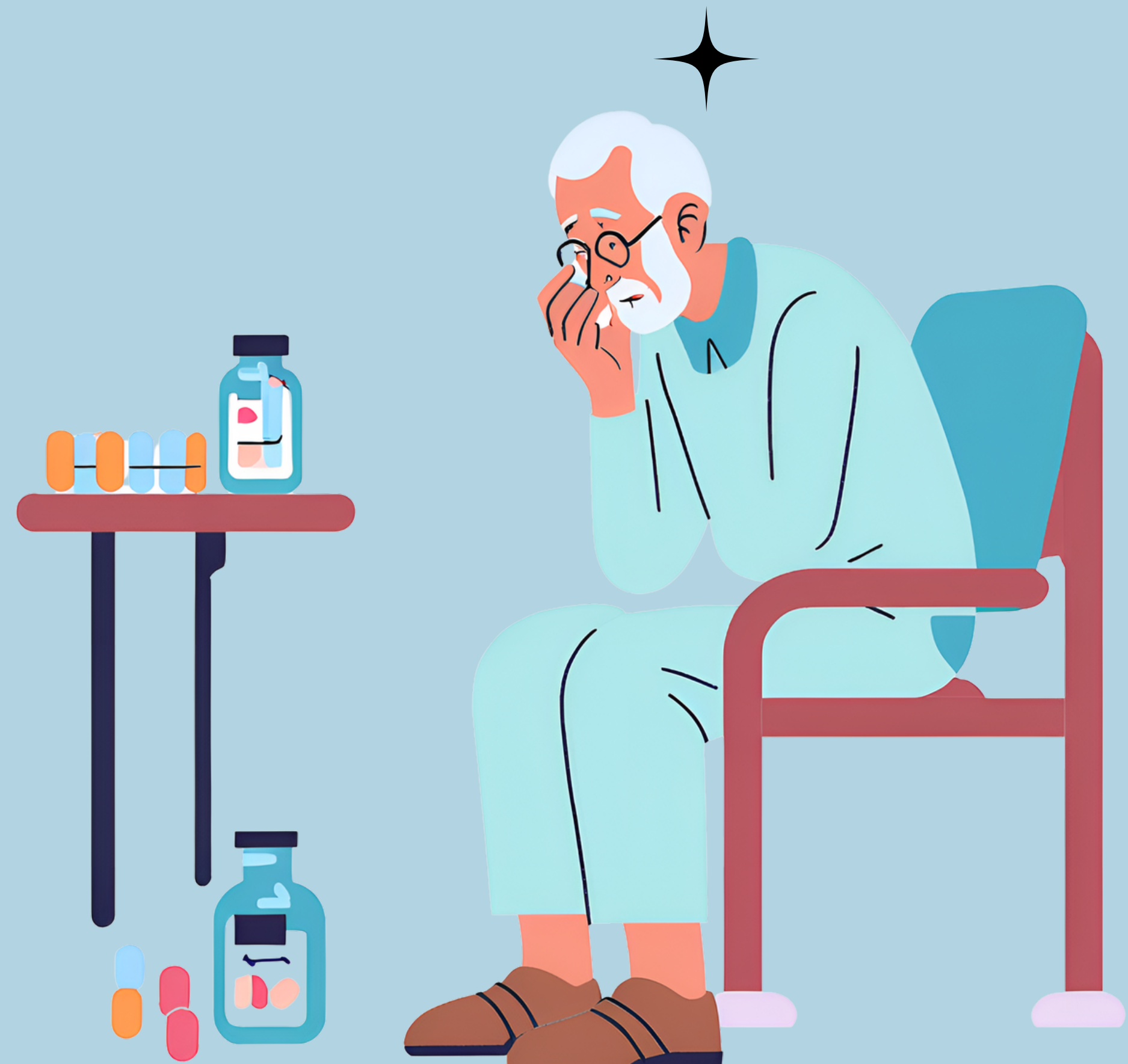
08 Broader Implications

09 Conclusion



Patient Story

My 85-year-old grandfather lives alone with hypertension and Type 2 diabetes, which requires multiple medications. Due to his declining memory, he often forgets to take his medications or accidentally takes extra doses. Once, he took a double dose of his blood pressure medication, causing a severe drop in blood pressure and resulting in a hospital visit.



Product Motivation

Growing Demand

- Canada's aging population
- Rising prevalence of chronic conditions

Market Needs

- Seniors often face challenges to keep up with polypharmacy, which leads to medication non-adherence.
- This issue contributes to hospitalizations and many healthcare costs.



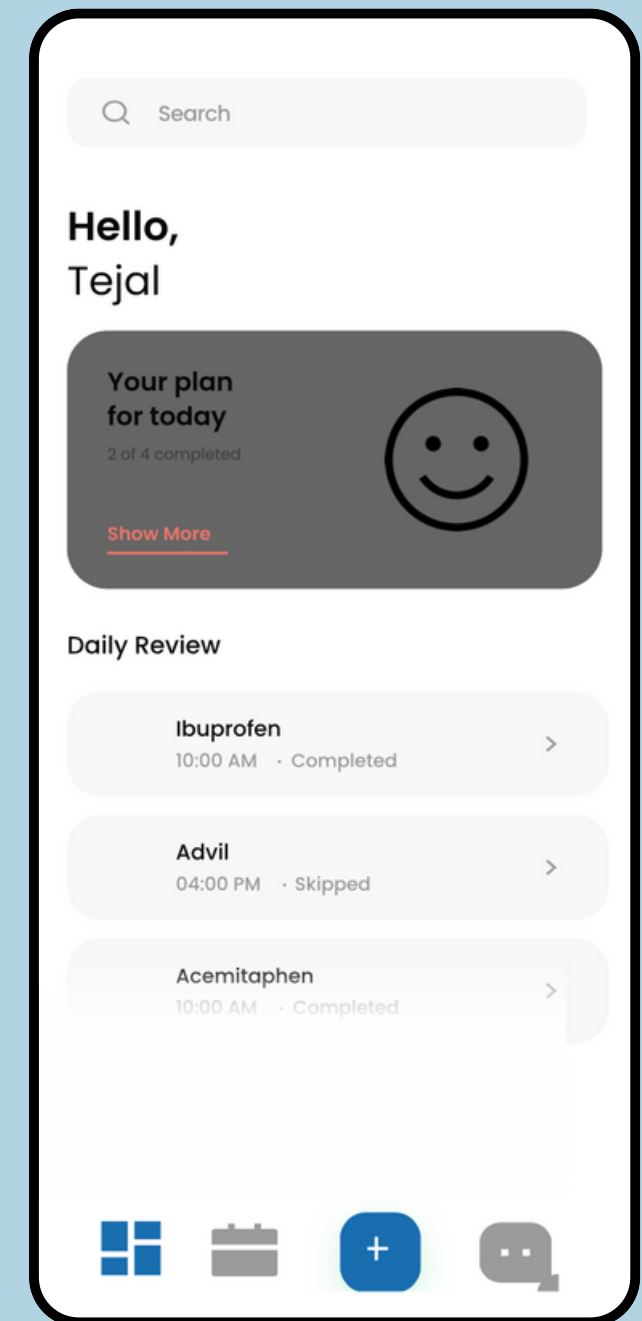
Current Gaps

SOLUTION	LIMITATIONS
MyTherapy	Does not incorporate advanced features like weight-sensor tracking for precise dose confirmation.
CareZone	
EllieGrid	
Pria	

Overview of PillPAL



PillPAL Dispenser



**PillPAL Mobile
Application**

GLOSSARY



User: Patient who has access to the PillPAL app and has a registered account.

Reminder: First message delivered at scheduled medication time.

- Push reminder or Text message

Notification: Subsequent message(s) delivered after the initial reminder for a missed dose.

- Push notification, Text message or Email

Taken: Medication was removed from the dispenser and consumed by the user.

Hardware Device Properties



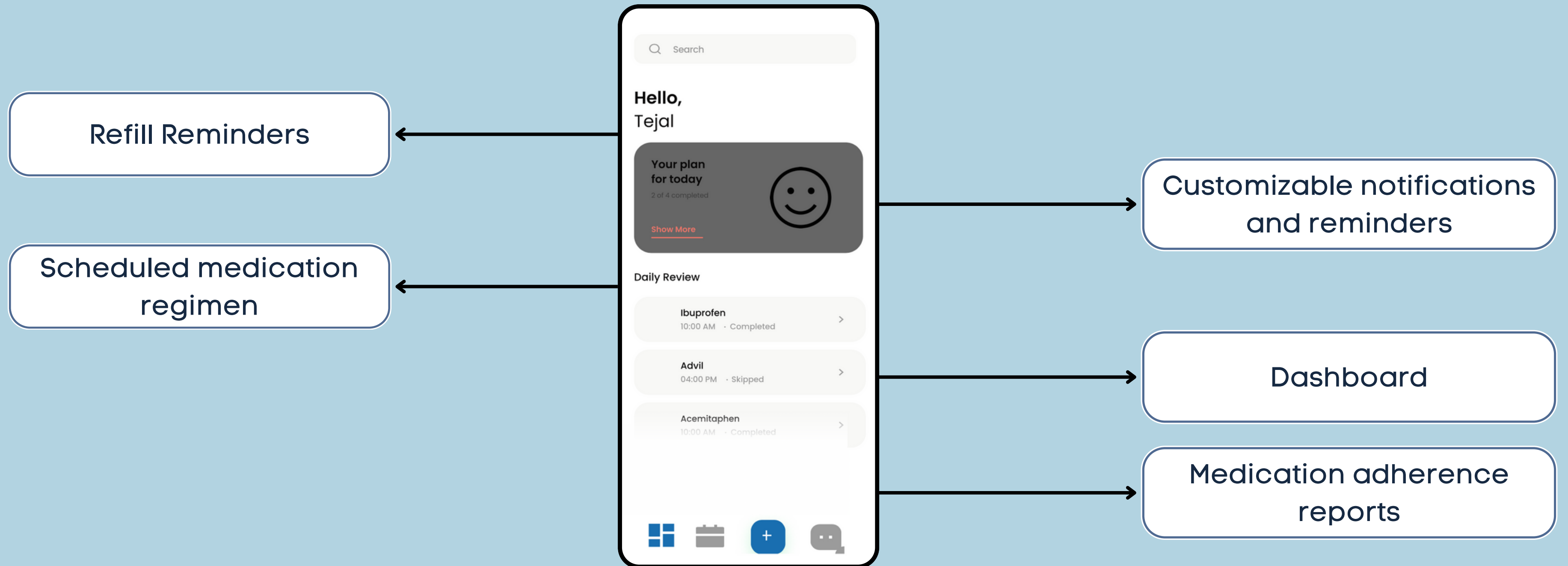
Built-in weight sensors

Labelled compartments for 30 days worth of pills

Medication Weight Tracking

Automatic Dispensing Mechanism

Software properties

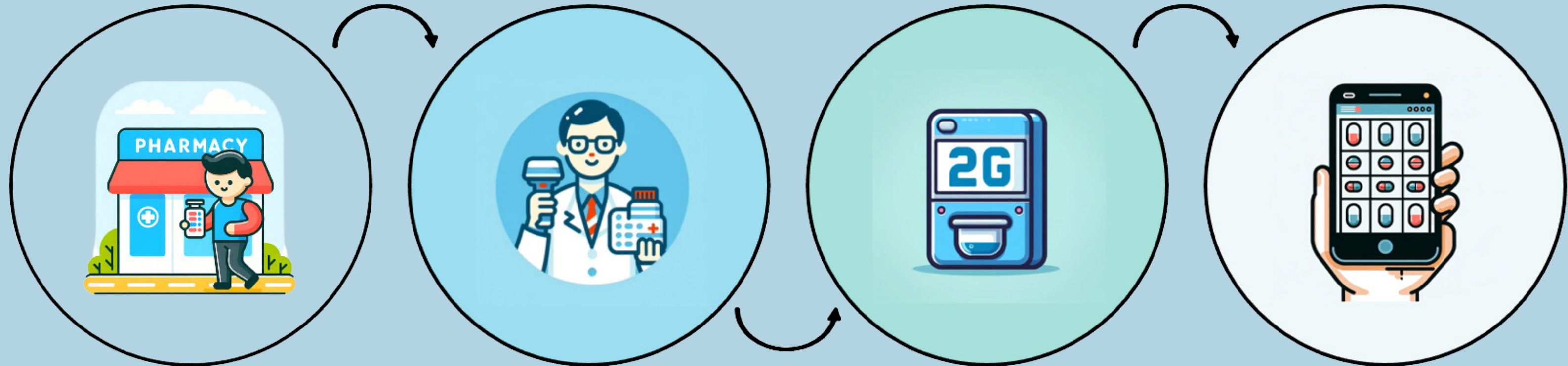


Data Management

- PIPEDA and PHIPA Compliant
- Encrypted Data
- Role-Based Access
- Stored in Canada
- User-Controlled Sharing



Workflow

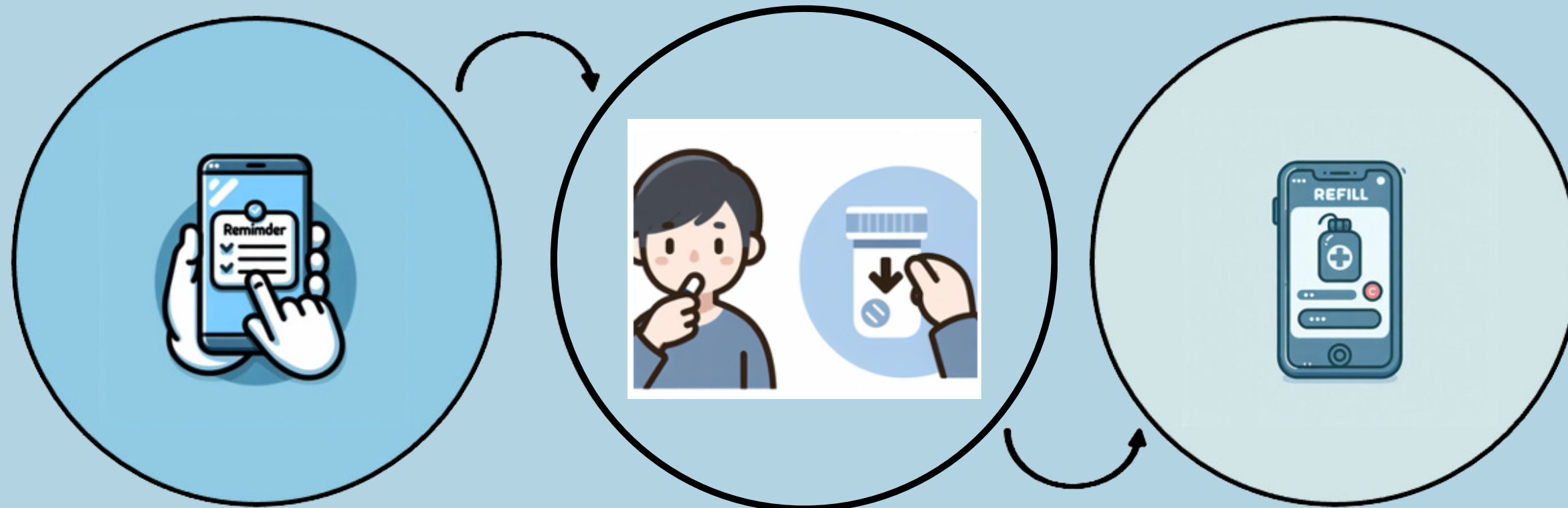


1. Patient takes medication dispenser to pharmacist

2. Pharmacist loads medication in dispenser & registers device

3. Medication dispenser weighs each compartment

4. Medication schedule is updated in the system

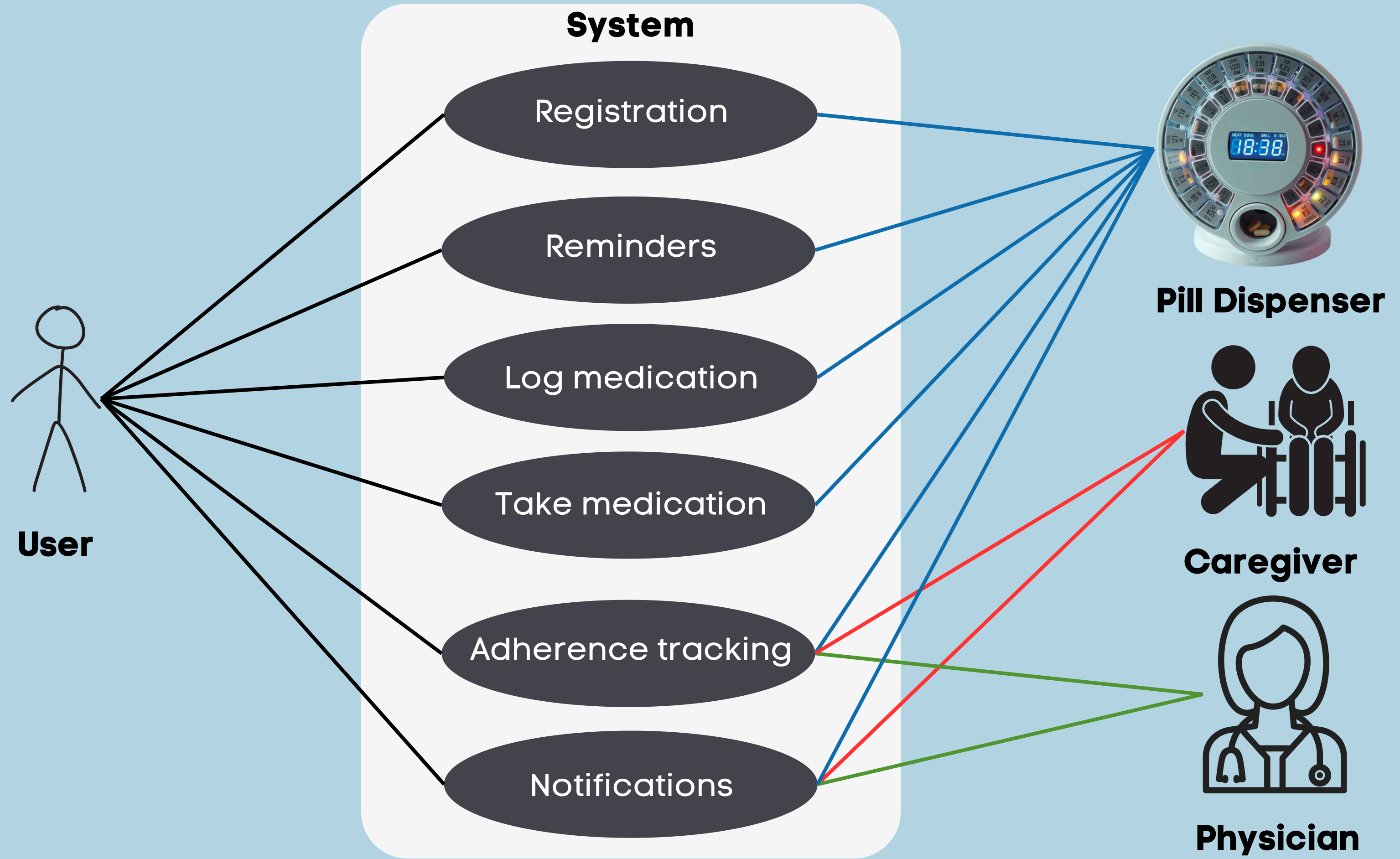


5. App sends medication reminder when it is time

6. Patient takes medication and dispenser senses weight reduction

7. Dispenser sends refill alert when needed

Use Case Diagram



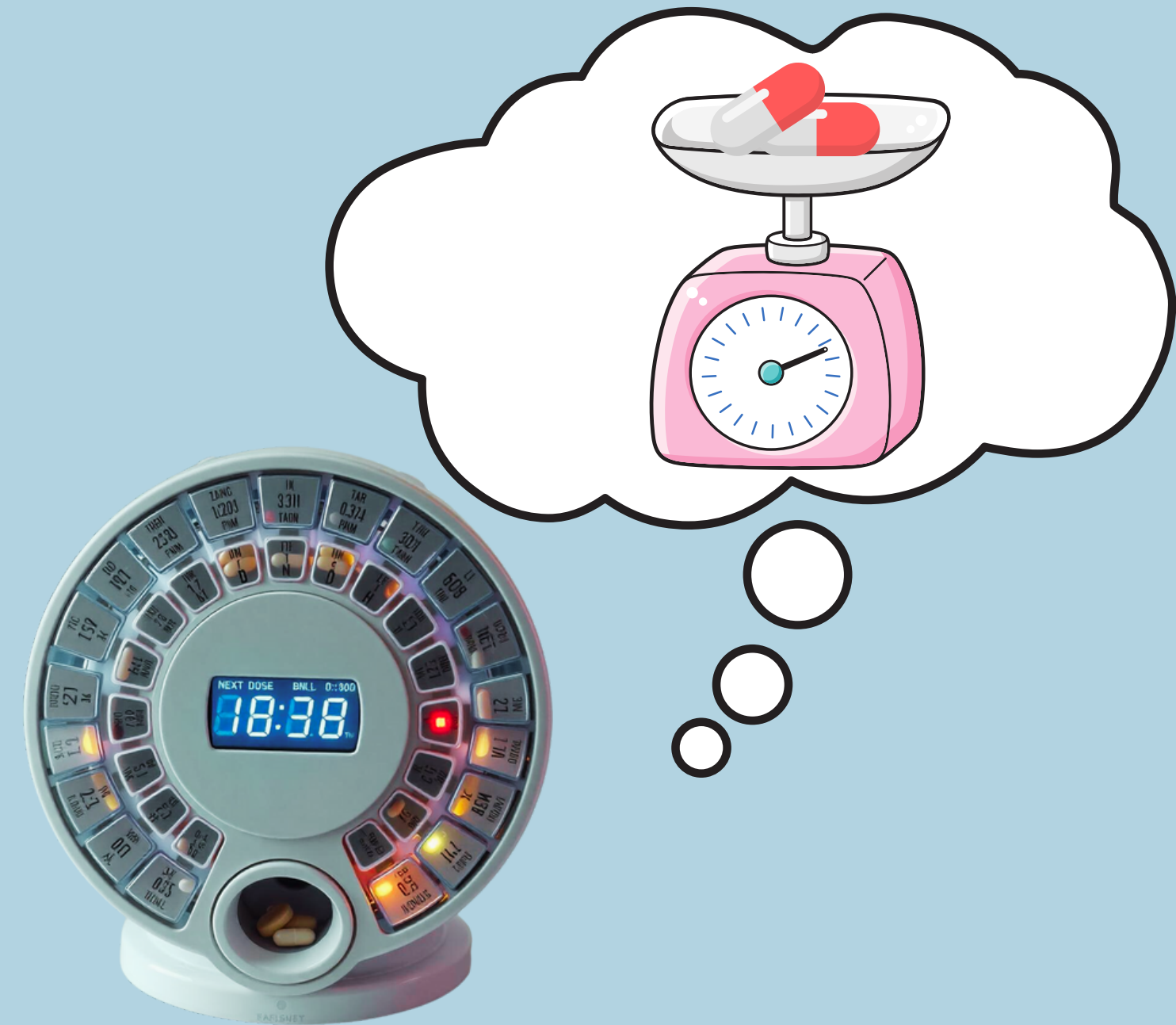
Functional Requirements

1 Functional Requirement

- The system weighs pills within $\pm 0.01\text{g}$
 - **storing the weights of different pills.**

How it works:

Highly sensitive weight sensors are used. When pills are loaded, their weights are stored and assigned to compartments. The system then compares current weights to the stored reference values during operation.



2

Functional Requirement

- The system weighs itself every 60 seconds.

How it works:

Weight sensors measure the weight every 60s.

When weight reduction is detected, the system logs the time and difference, updating the mobile app.

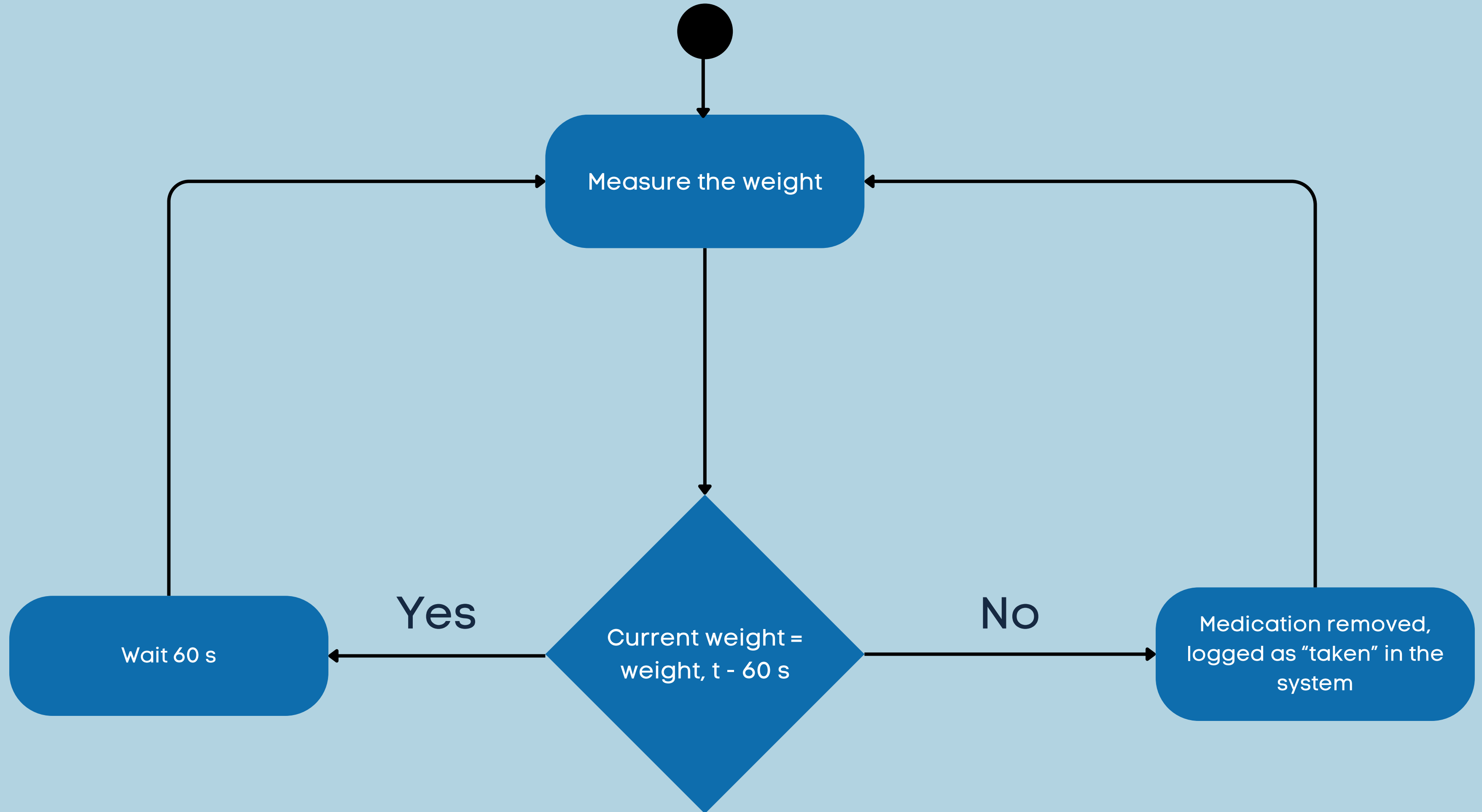
2:00 PM	0.57 g
2:01 PM	0.57 g
2:29 PM	0.57 g
2:30 PM	0.32 g



Medication removed



ACTIVITY DIAGRAM

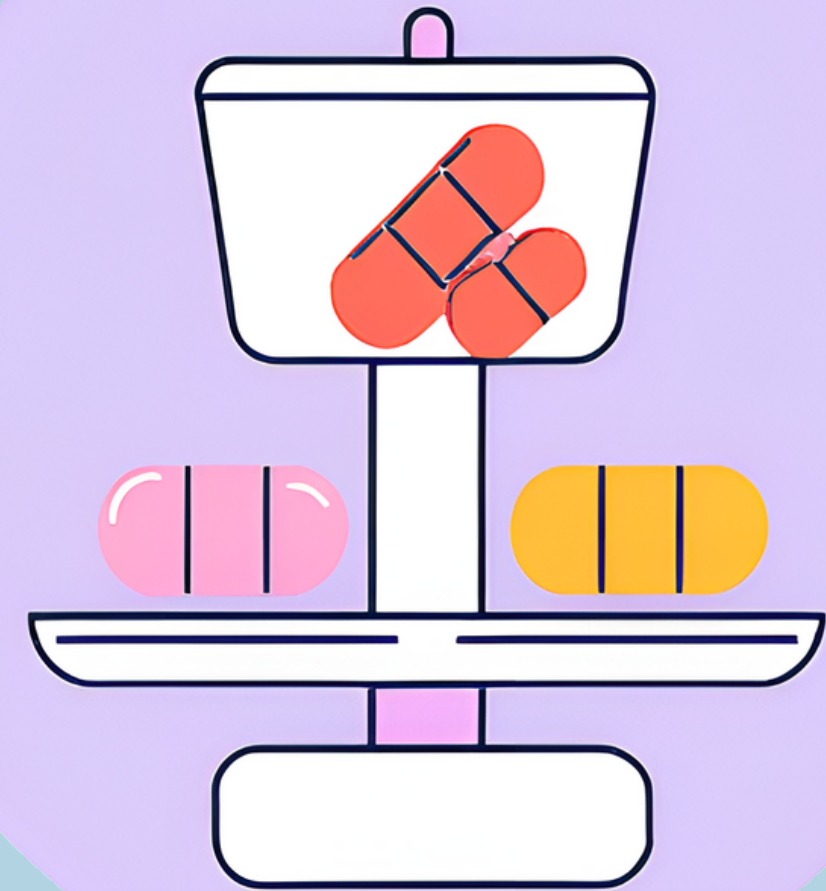


3 Functional Requirement

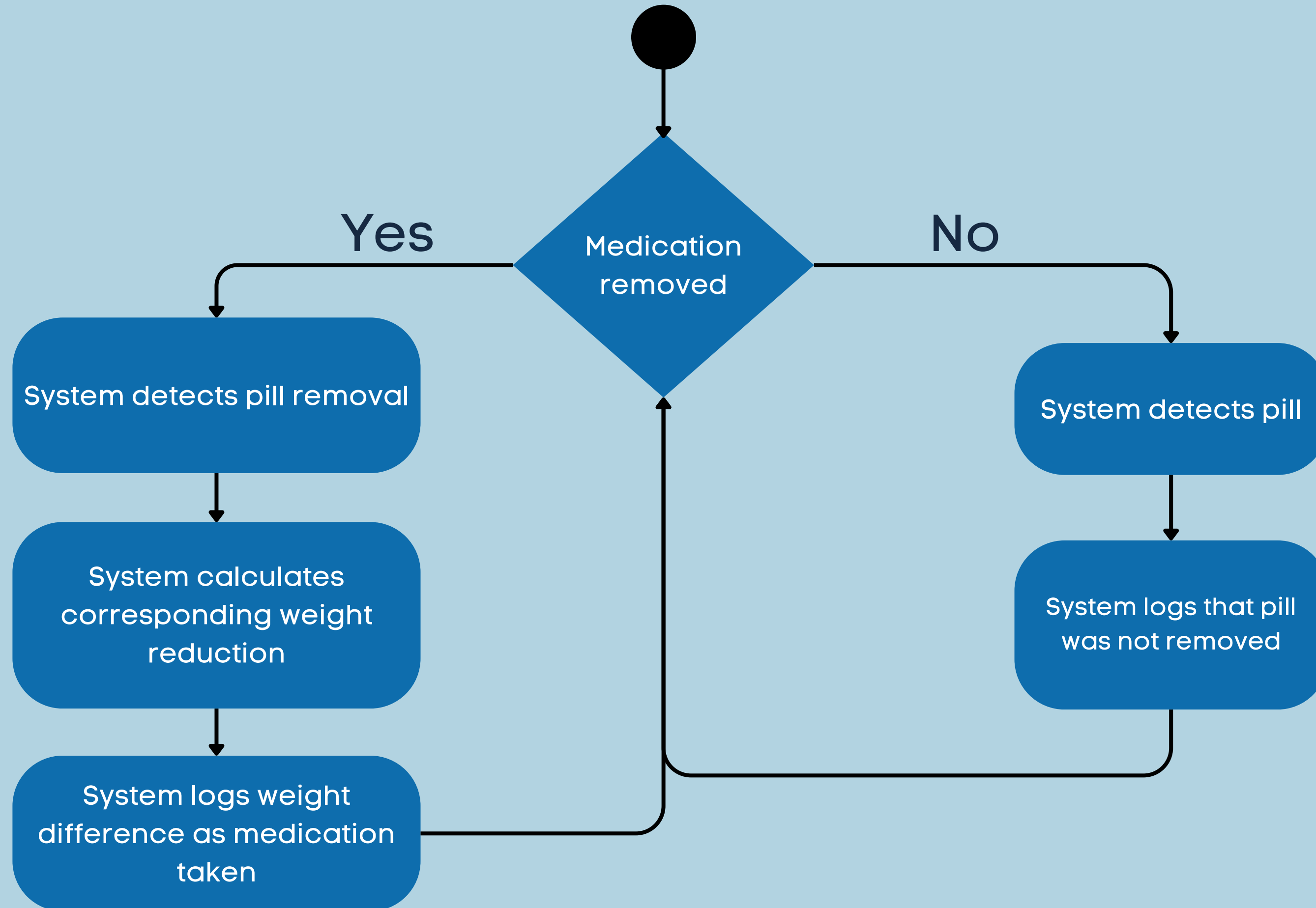
The system logs pill removal through corresponding weight reduction.

How it works:

Weight detection will occur during the system's scheduled interval checks, with the detected weight compared against the preset weight



ACTIVITY DIAGRAM



4 Functional Requirement

The system sends a reminder to the user at the scheduled medication time.

How it works:

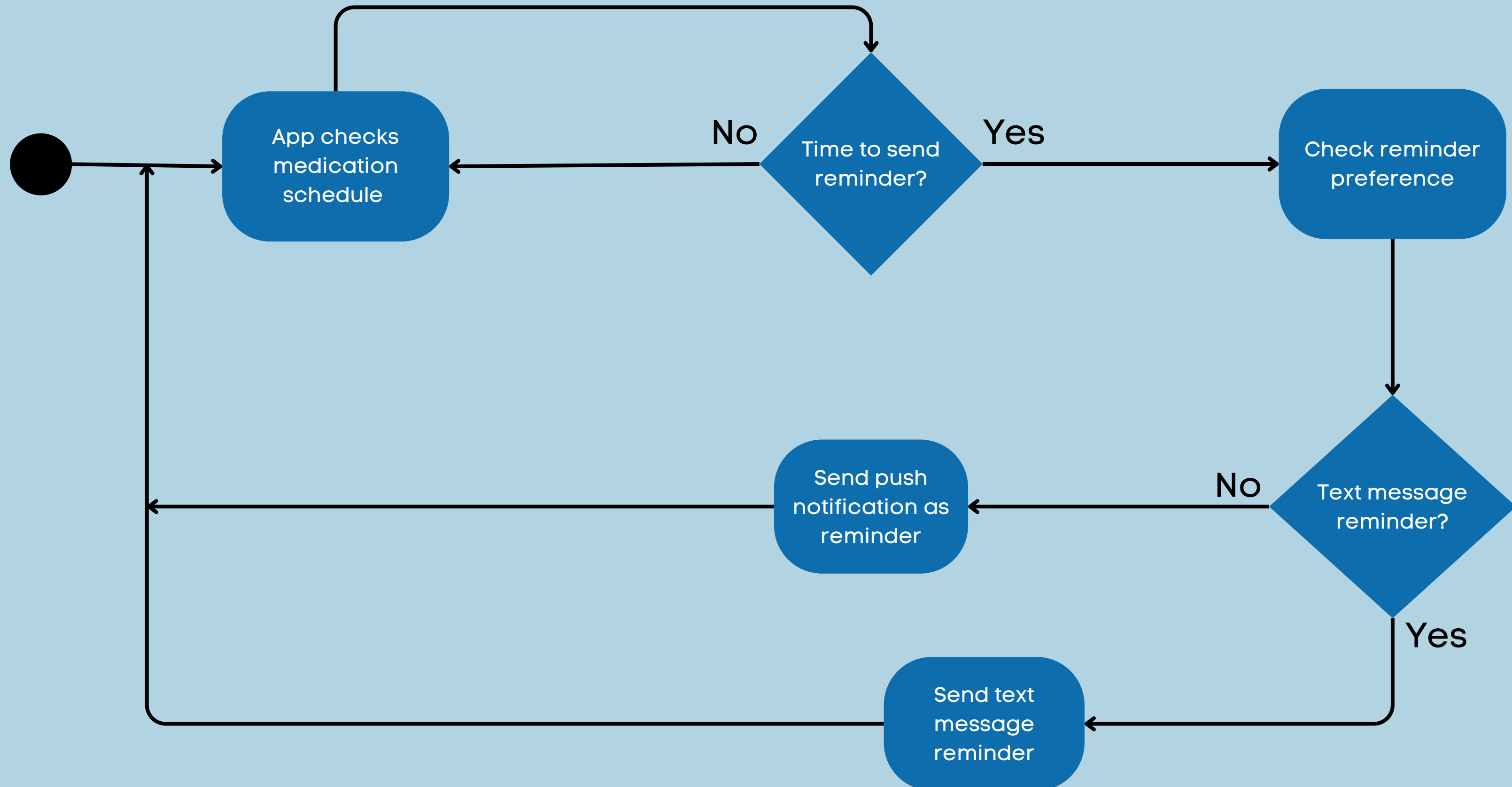
This is the FIRST message the app sends to ONLY the user.

The scheduled medication time triggers the app to send the reminder to the user. It is displayed in the user's preferred format:

- App push-reminder or Text



ACTIVITY DIAGRAM



5 Functional Requirement

The system sends a notification to user(s) 30 minutes after scheduled medication time if there is no logged pill removal.

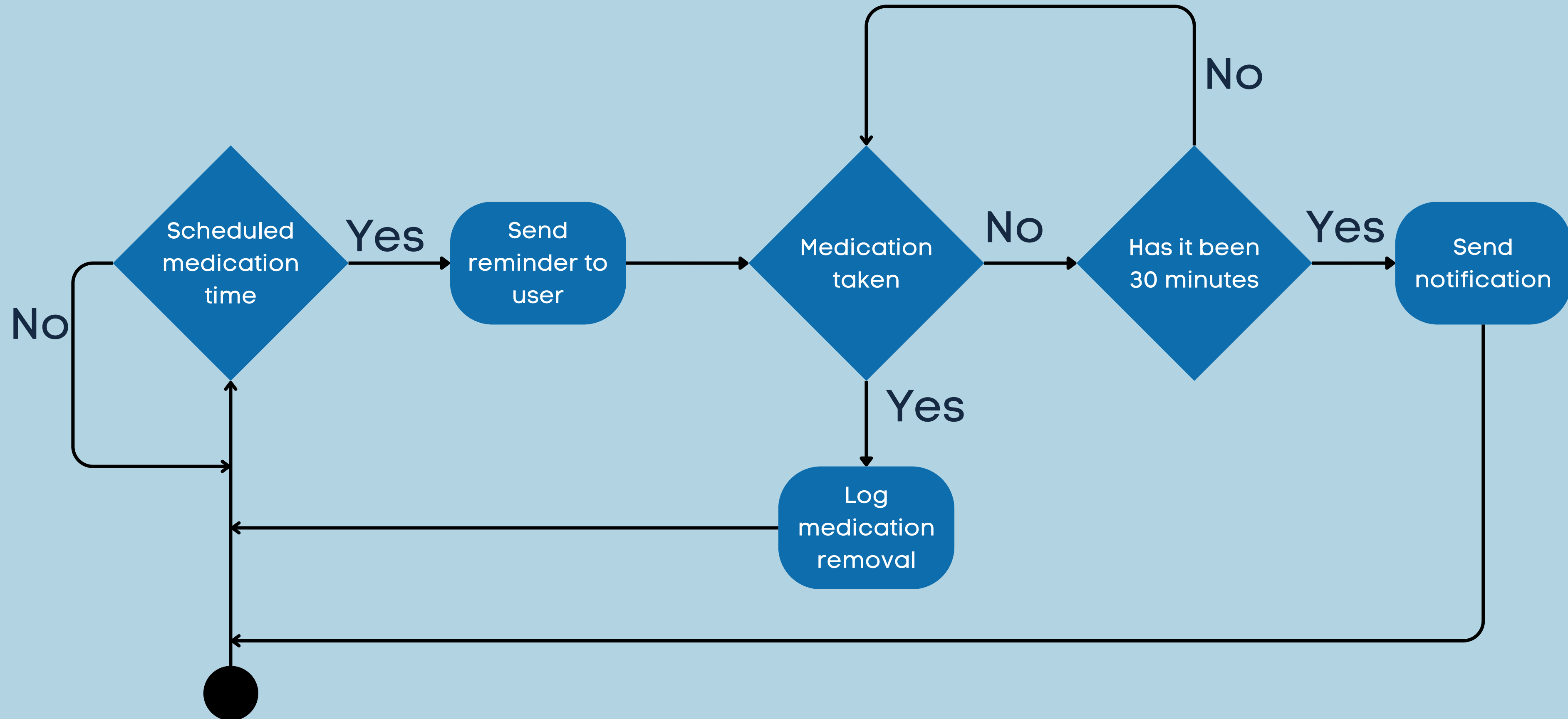
How it works:

The notification is the message sent to the user when they have missed their dose.

Notifications are sent to the user and/or caregiver & provider depending on who has been allowed access.

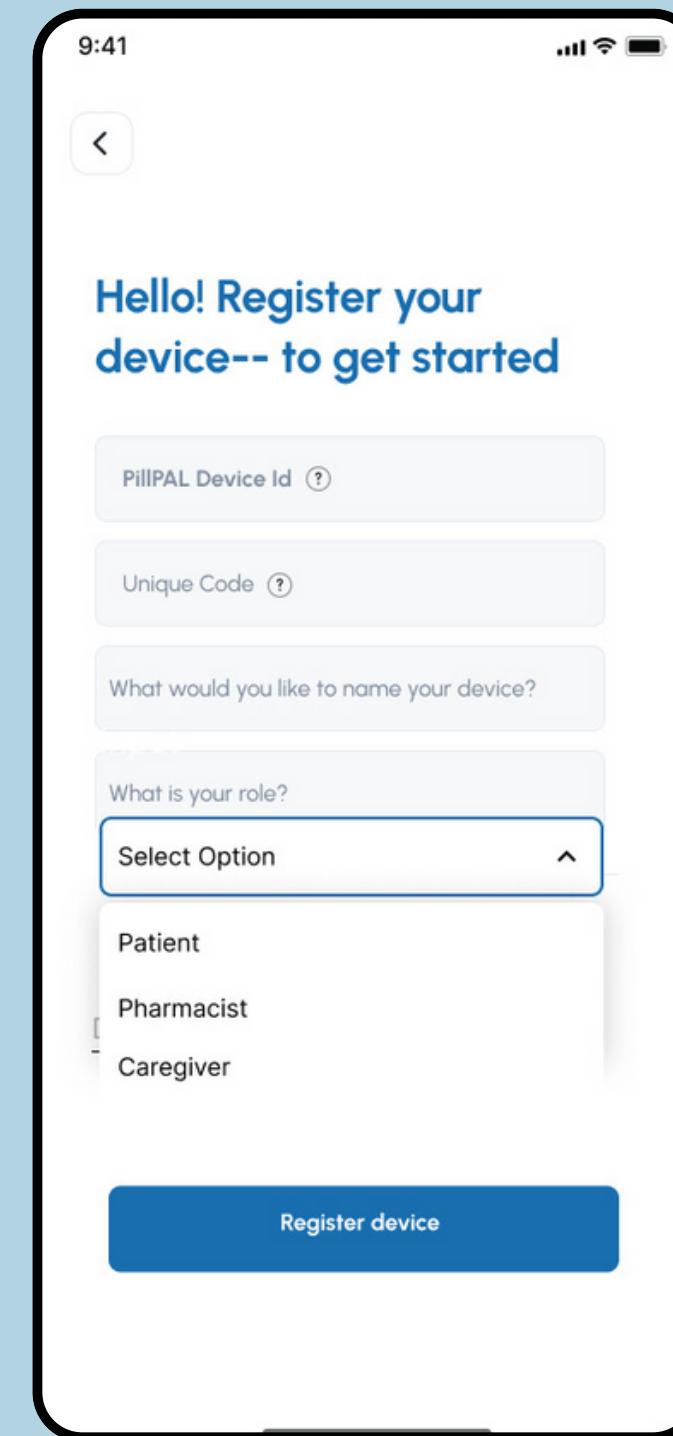
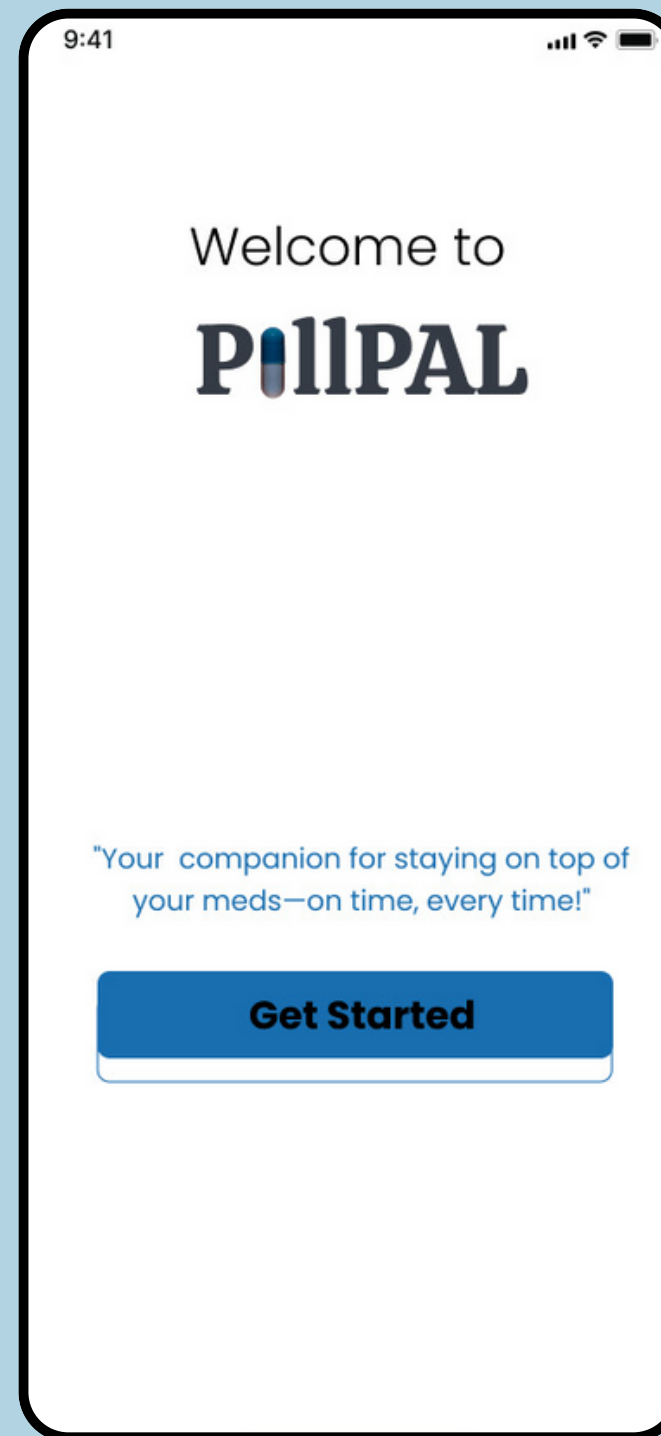


ACTIVITY DIAGRAM



Mockup

Onboarding and Signup



Onboarding and Signup

9:41

<

Signup!

Username

Gender ▾

Email

Input Pharmacist ID

Password 🔒

Confirm password

Signup

Or

 Continue with Google

Already have an account? [Login](#)

Pharmacist

9:41

<

Signup!

Username

Gender ▾

Email

Password 🔒

Confirm password

Signup

Or

 Continue with Google

Already have an account? [Login](#)

Patient and Caregiver

9:41

<

Welcome back Tejal! Glad to see you, Again!

Enter your PillPAL Device ID

Enter your email

Enter your password 🔒

[Forgot Password?](#)

Login

Or

 Continue with Google

Don't have an account? [Register](#)

Customized Settings

9:41

Manage your meds

Add your meds to be reminded on time and track your health

Add medicine

Sign out

9:41

Add New Medicine

Fill out the fields and hit the Save Button to add it!

Name*

Name (e.g. Ibuprofen)

Type*

Dose*

Dose (e.g. 100mg)

Amount*

Dose (e.g. 3)

Reminders

Date

dd/mm/yyyy , 00:00

Turn on Alarm

Save

9:41

Add New Medicine

Fill out the fields and hit the Save Button to add it!

Name*

Name (e.g. Ibuprofen)

Type*

Select Option

Capsule

Tablet

Dose*

1mg

Amount*

1

Reminders

Date

dd/mm/yyyy , 00:00

Turn on Alarm

Save

9:41

Add New Medicine

Fill out the fields and hit the Save Button to add it!

Name*

Ibuprofen

Type*

Capsule

Dose*

1mg

Amount*

1

Reminders

Date

dd/mm/yyyy , 00:00

Turn on Alarm

Save

9:41

Add New Medicine

Fill out the fields and hit the Save Button to add it!

Name*

Vitamin D

Type*

Dose*

1

Amount*

1

Reminders

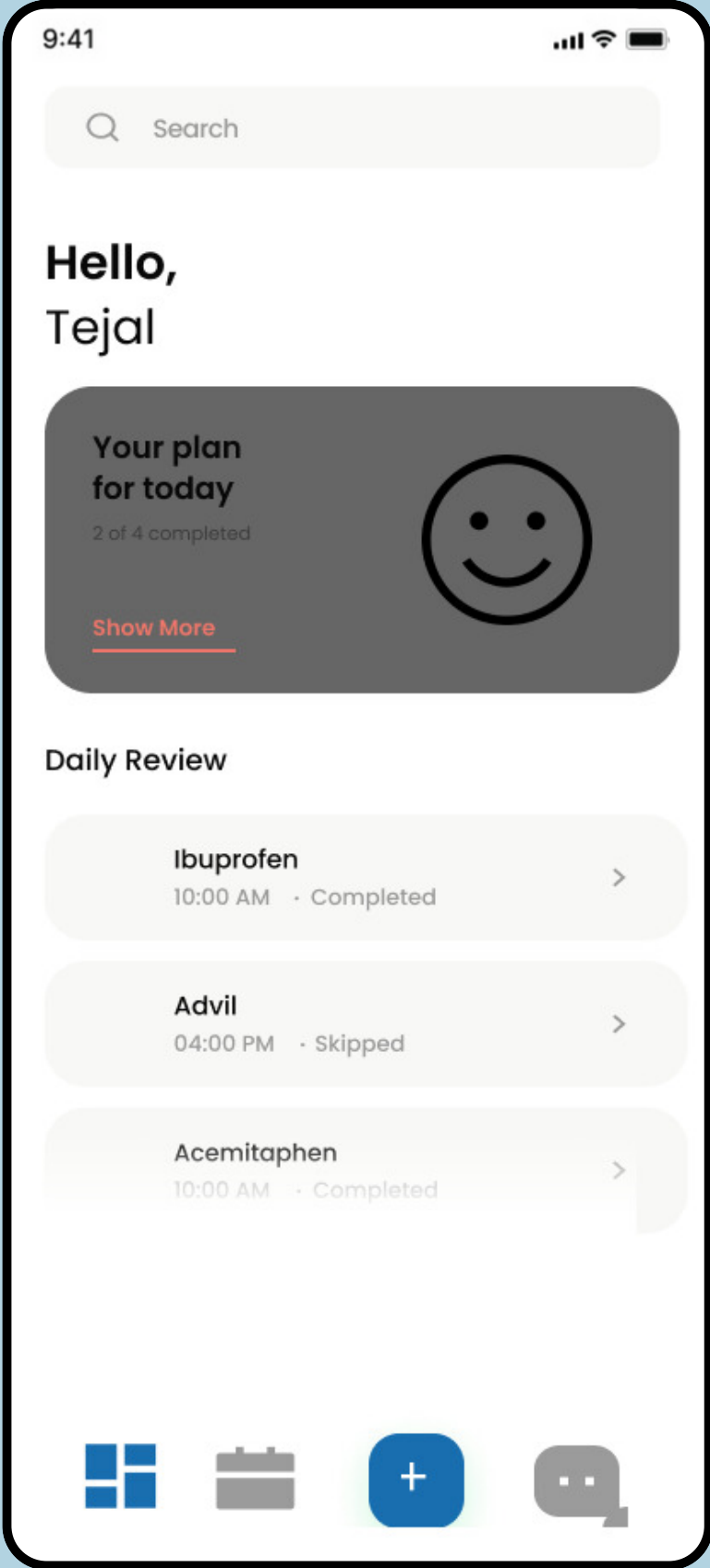
Date

dd/mm/yyyy , 00:00

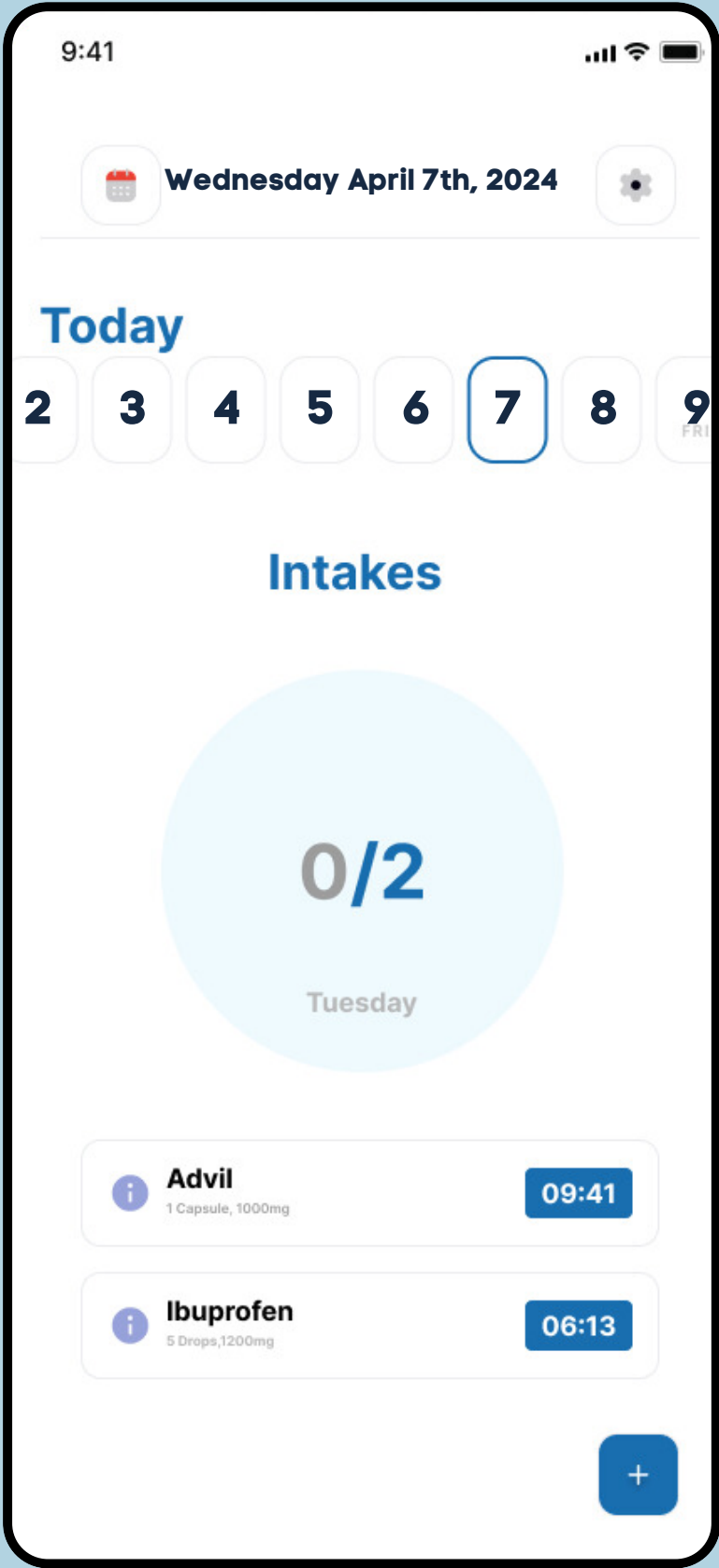
Turn on Alarm

Save

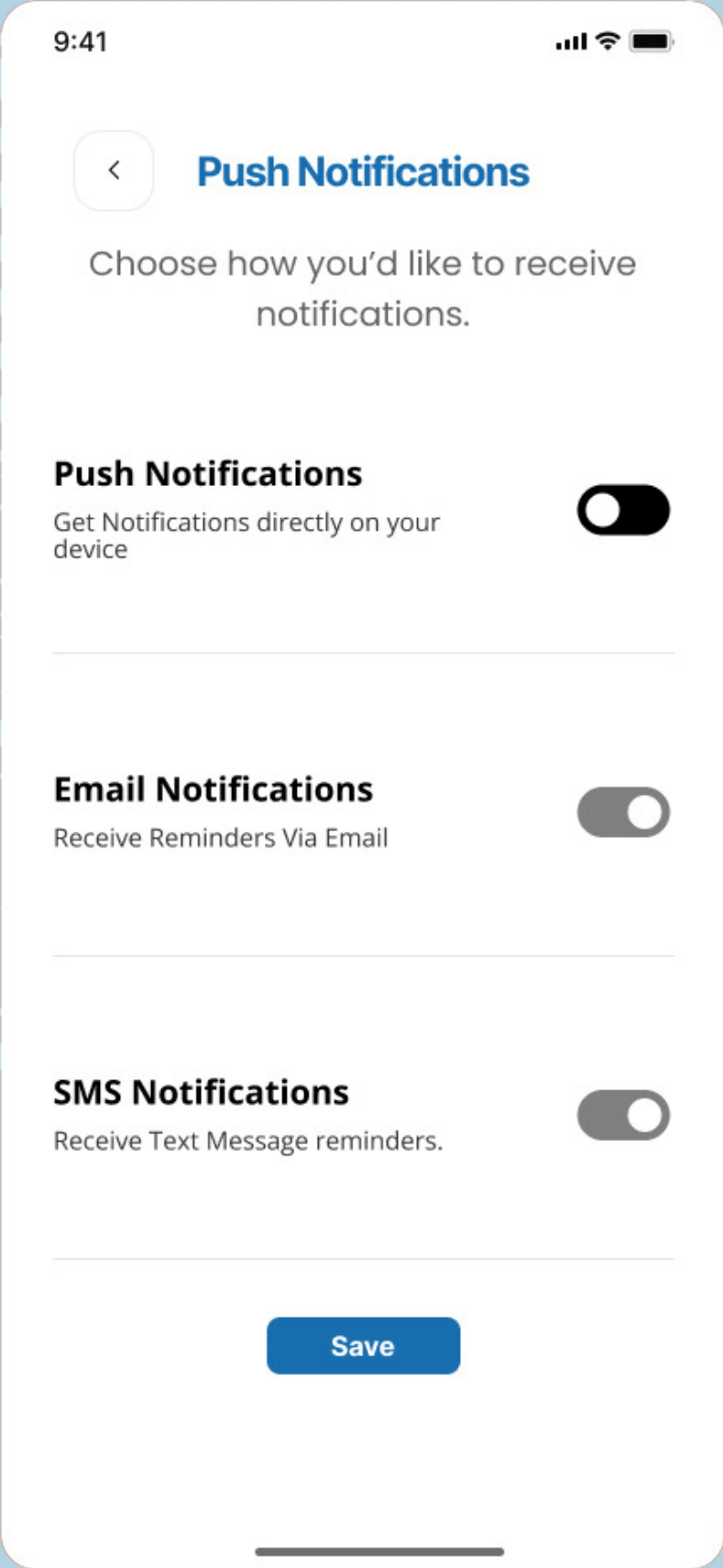
Dashboard



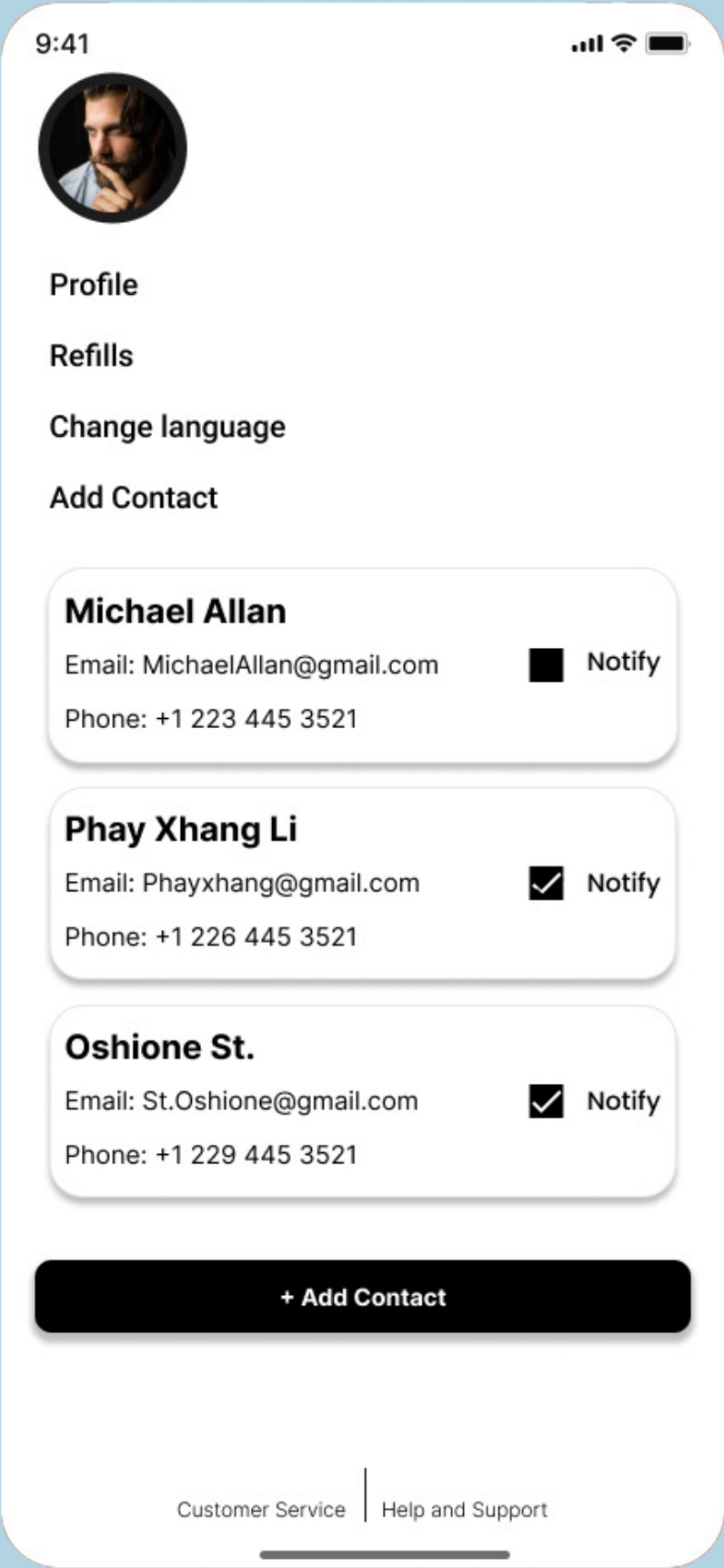
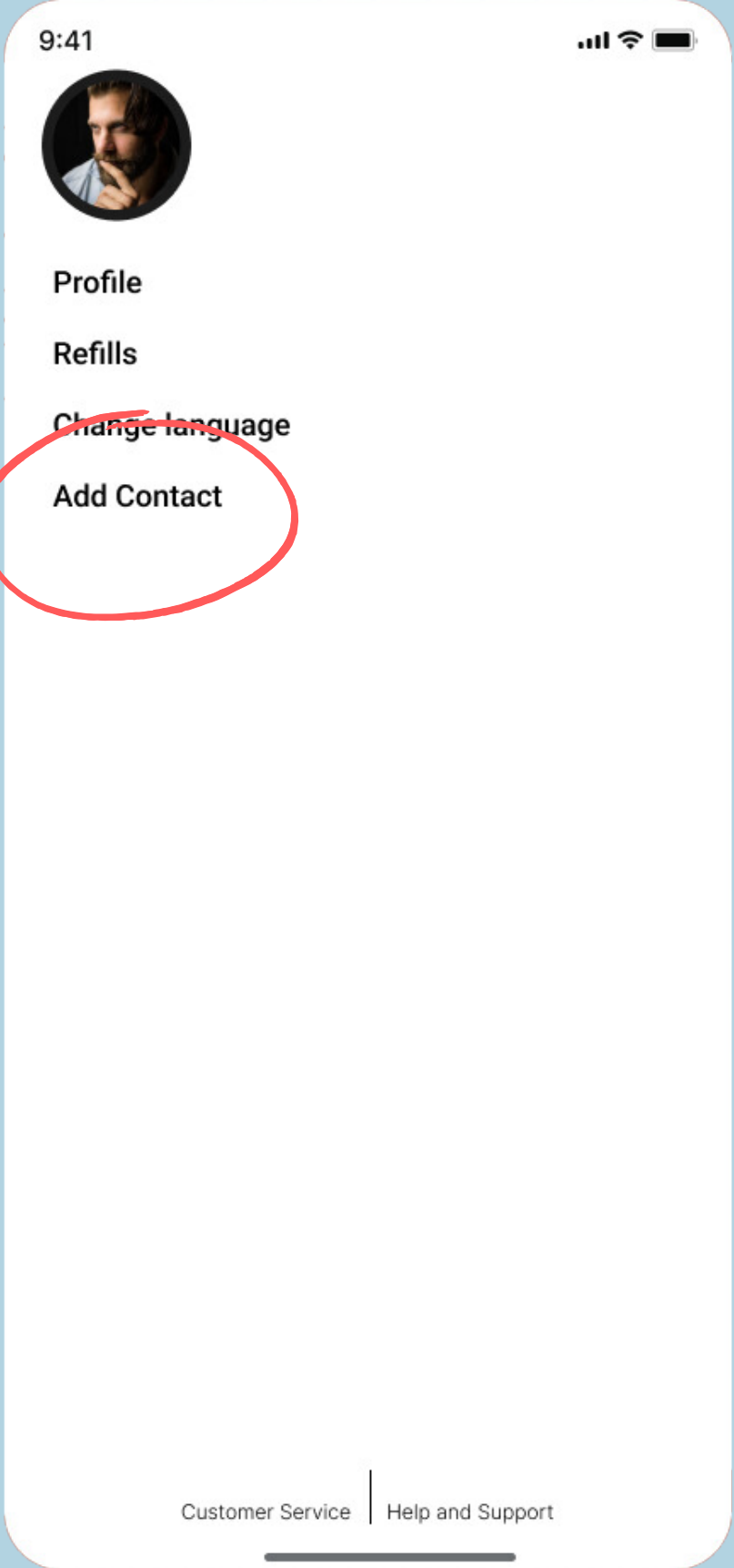
Scheduled Medication Regime



Customizable Notifications



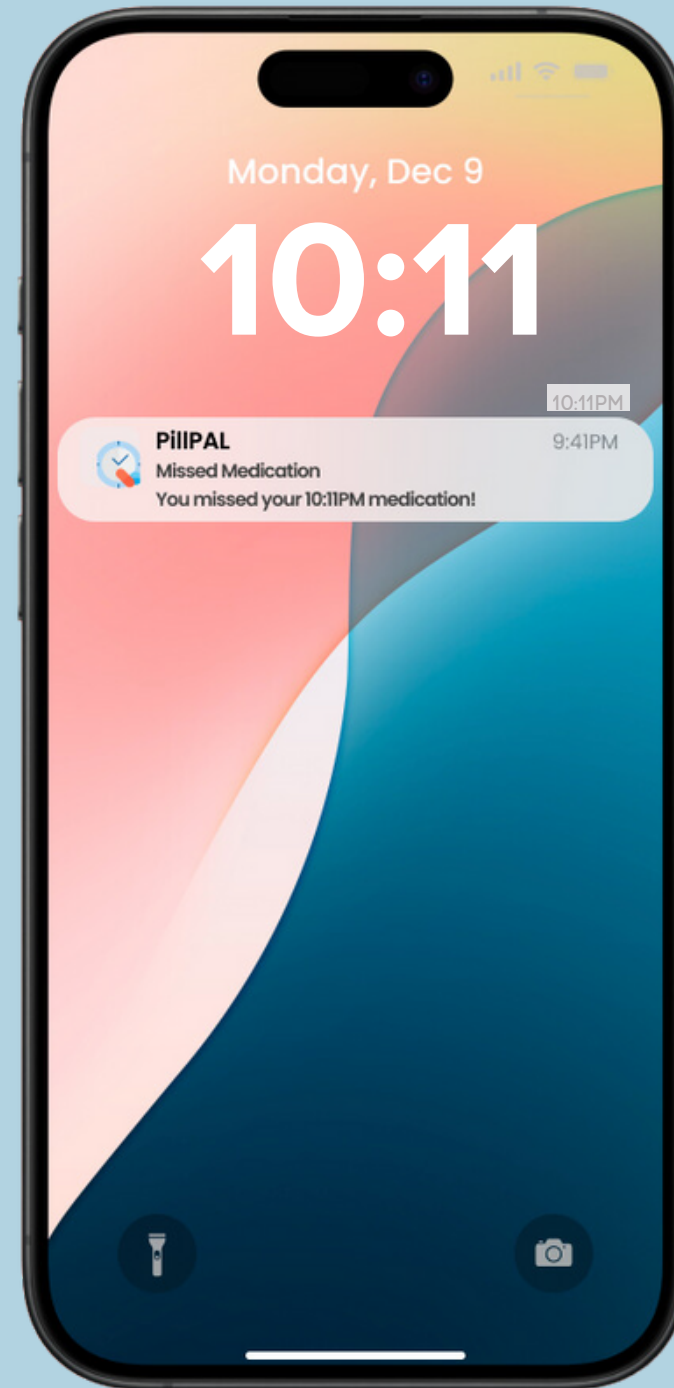
Add Contacts



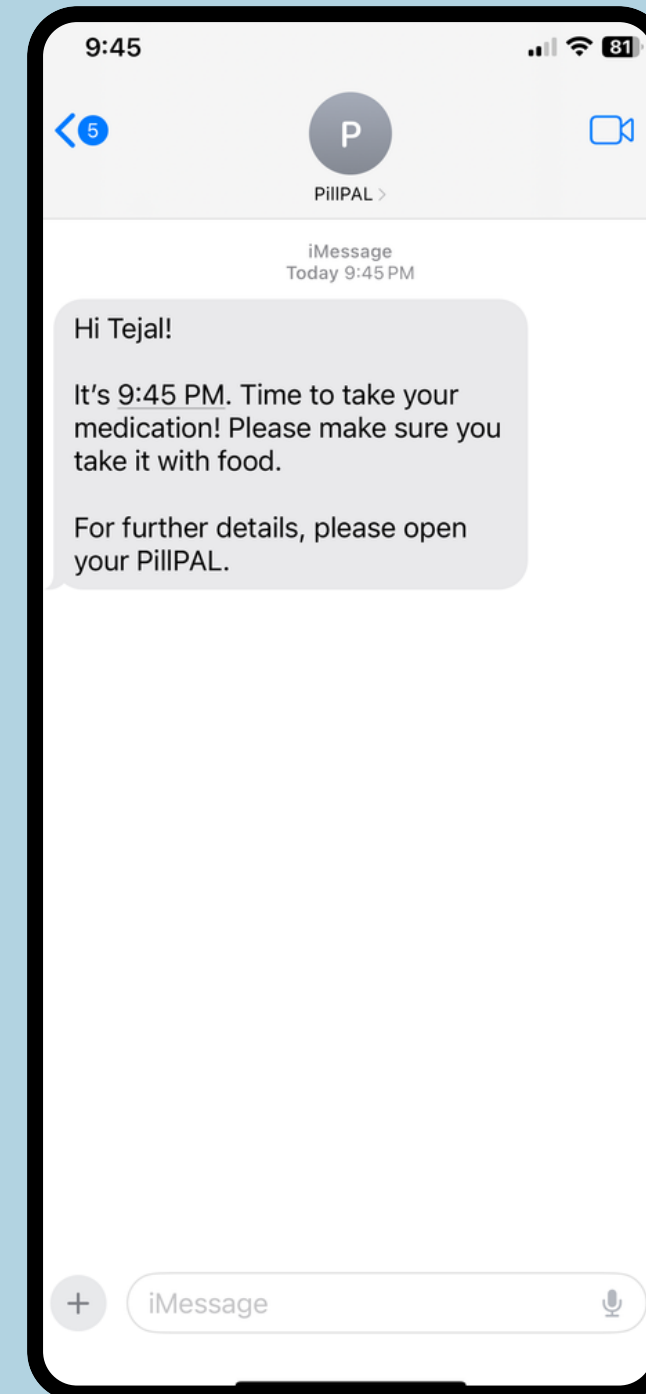
Reminders



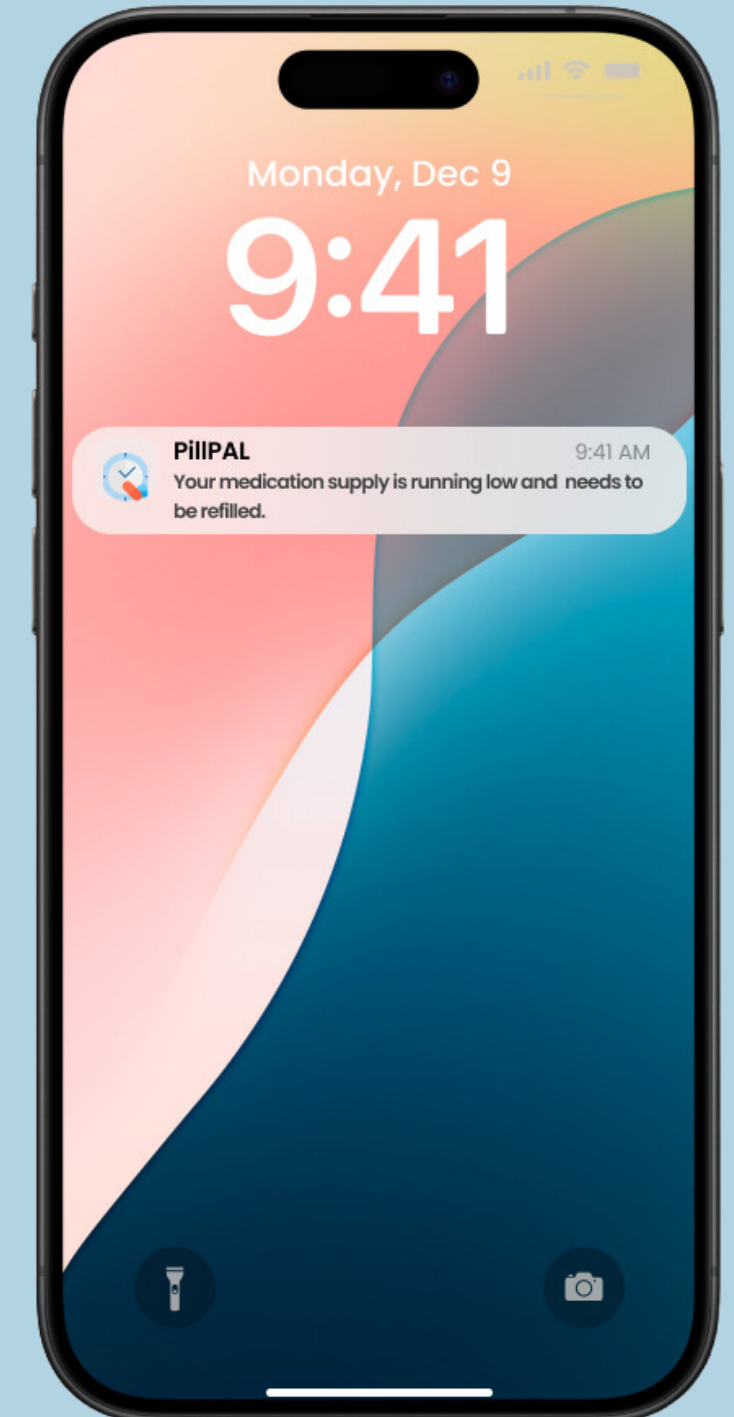
Missed Medication Notification

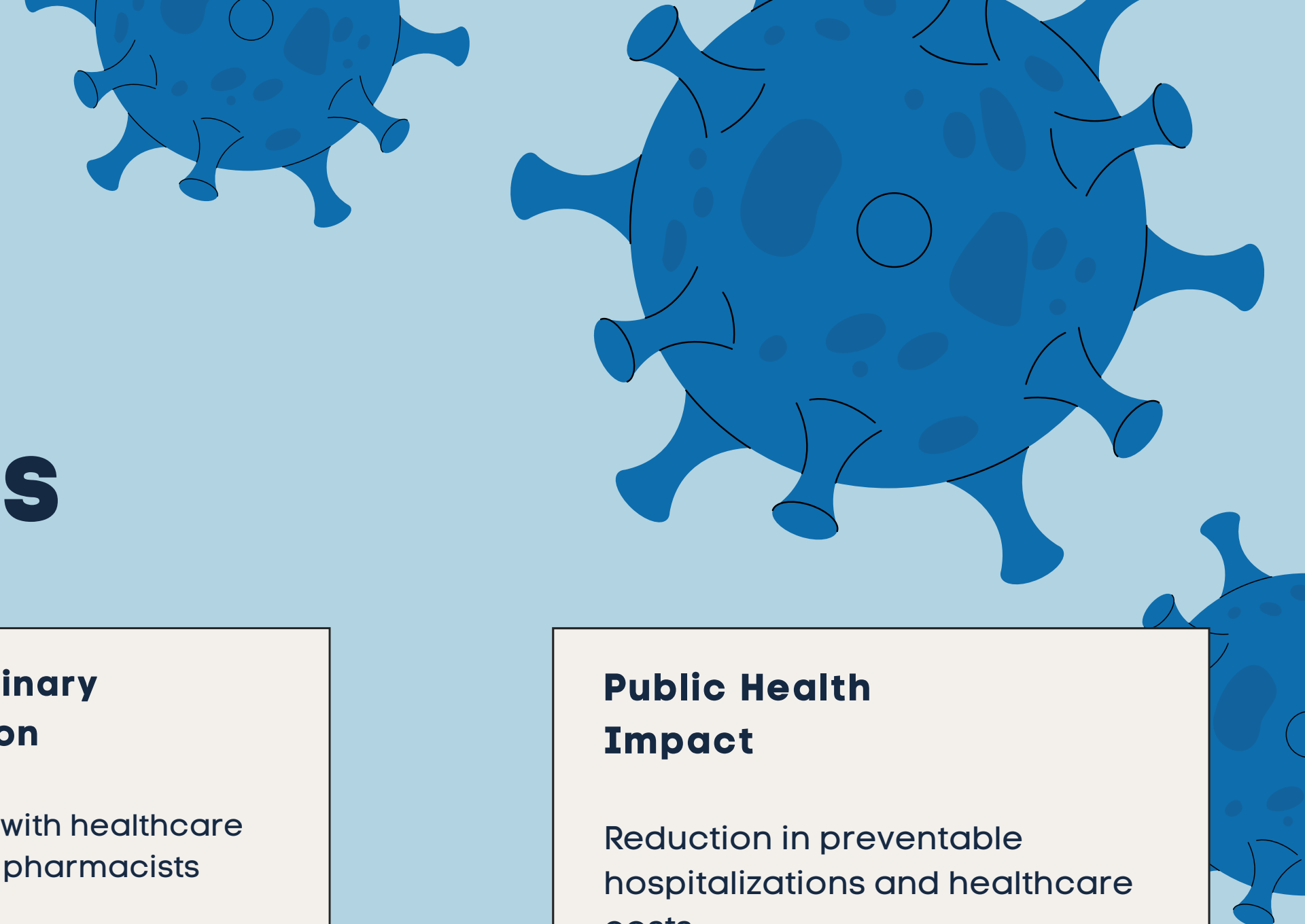


Text Message



Refill Reminder





Broader Implications

Supports Families

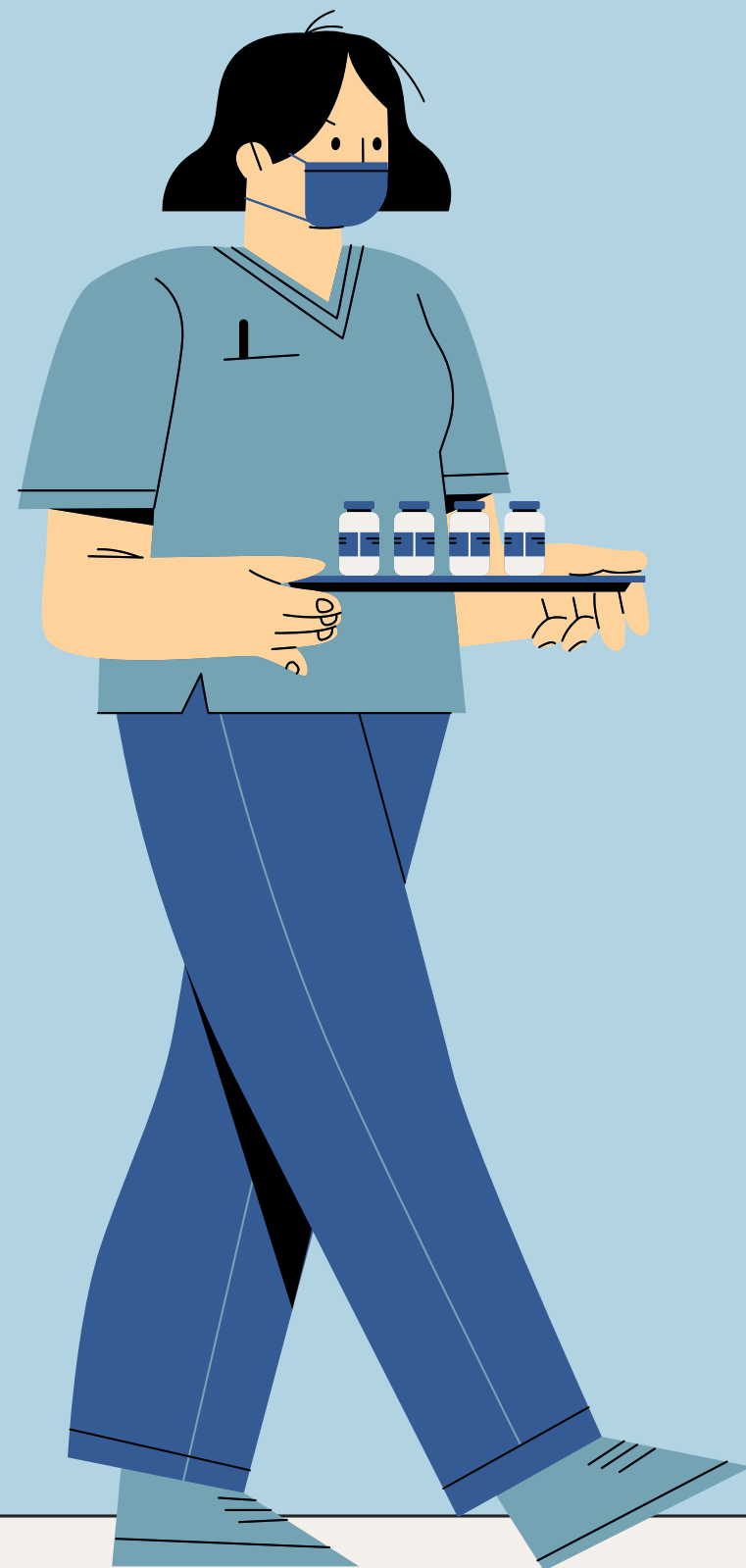
Notifications to caregivers for missed doses for proactive interventions

Interdisciplinary Collaboration

Collaboration with healthcare providers and pharmacists

Public Health Impact

Reduction in preventable hospitalizations and healthcare costs



Conclusion