

Duty Cycle Process

Unless stated otherwise, system sensor duty cycling are as follows:

-Pedometer Sensor (Step Count)

- Always on

-Accelerometer Sensor

- Disabled during sleep mode
- Sampling at ~15Hz

-Photoplethysmography Sensor (Heart Rate Sensor)

- Disabled during sleep mode
- 5 Minute Duty Cycle
 - Enabled for 30 seconds
 - Disabled for 4 minutes and 30 seconds

-Localization Sensor (Beacon/Estimote Sensor)

- Disabled during sleep mode
- 1 Minute 30 Second Duty Cycle
 - Enabled for 15 seconds
 - Disabled for 1 minute and 15 seconds

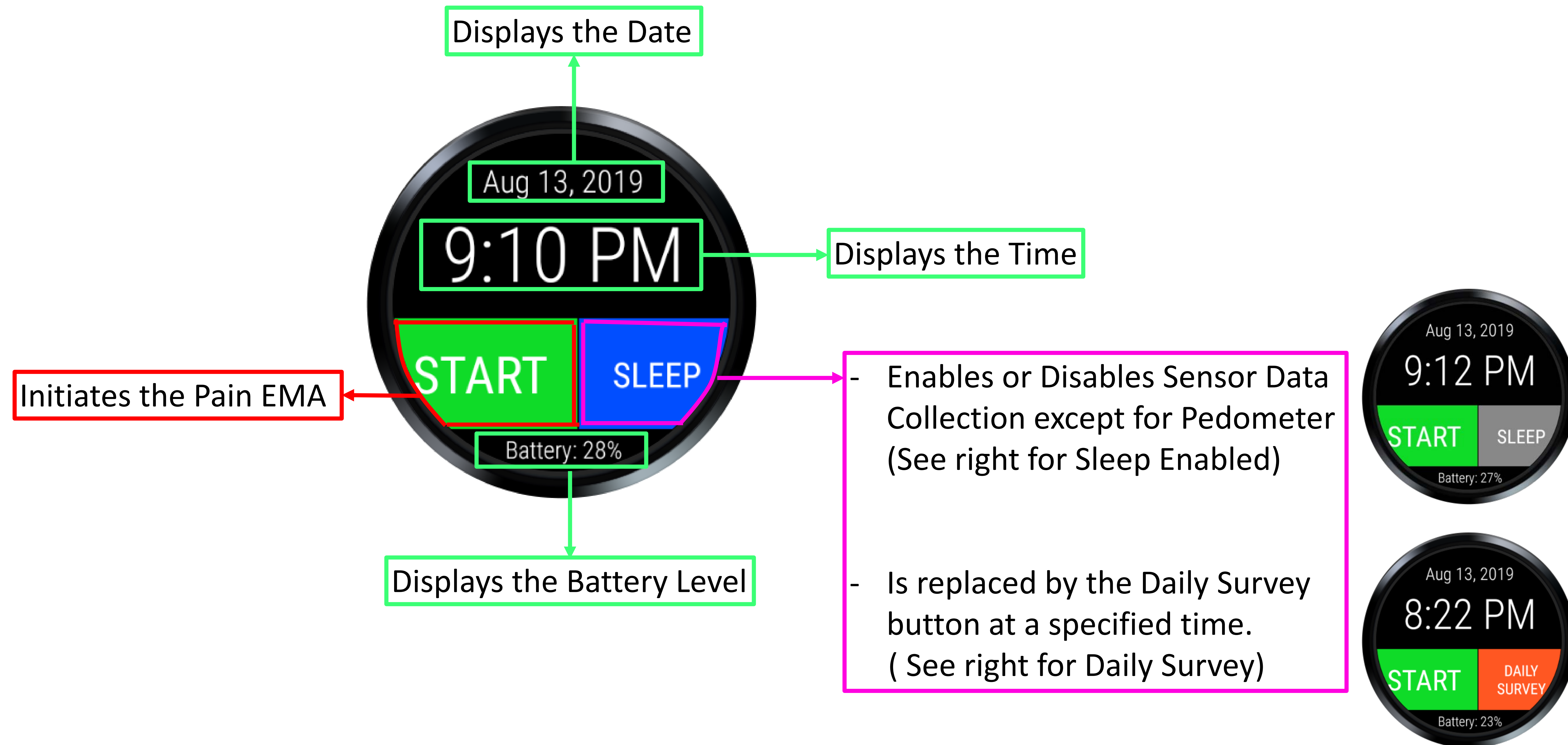
* During the Pain and Followup EMA, the Heart Rate Sensor and Localization Beacon are running continuously until end of survey. (No duty Cycling Enabled)

* If no steps are detected after the Localization sensor has run 5 times, the sleep function is automatically enabled.

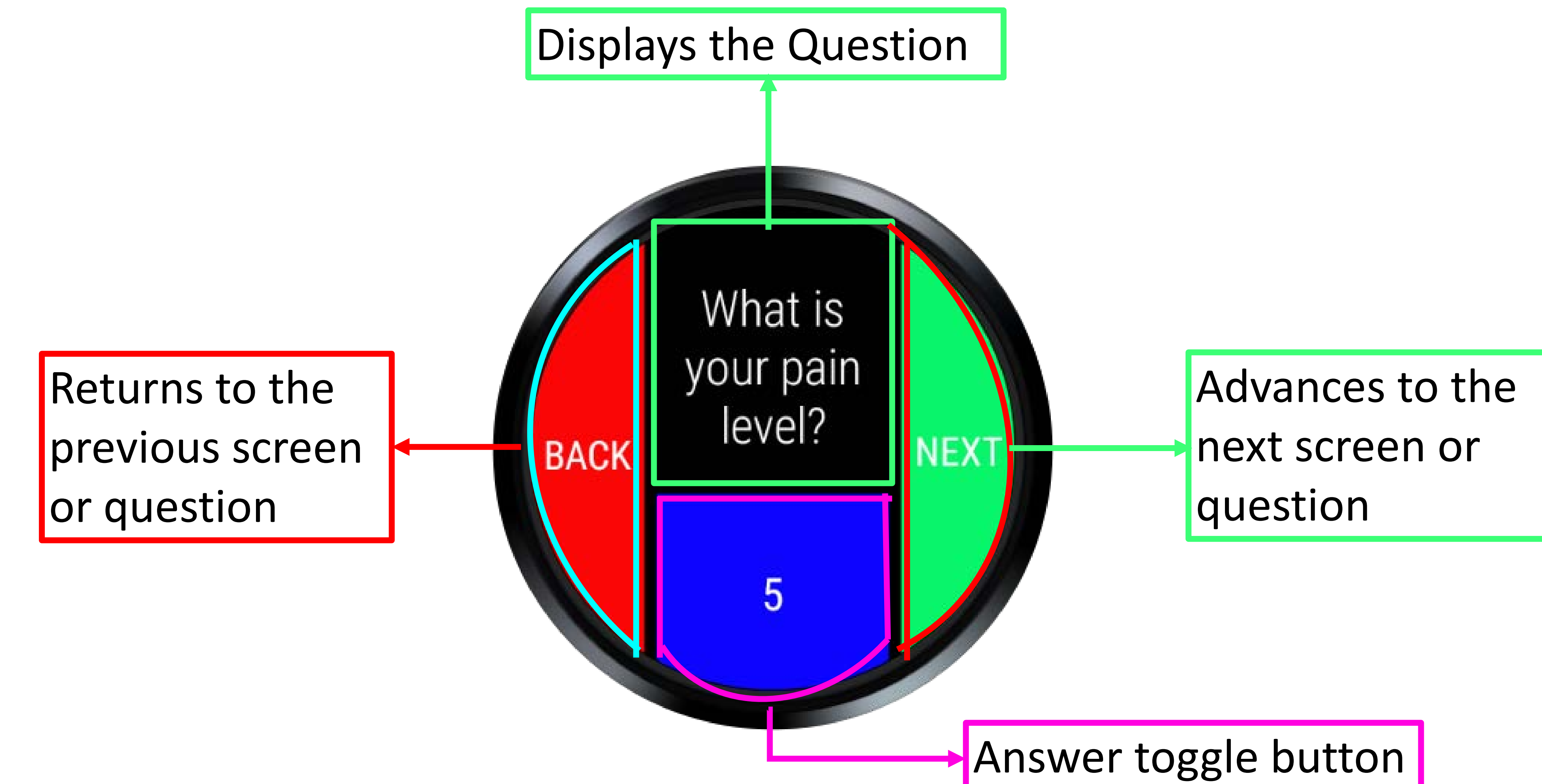
* The sleep function disables all sensor and data gathering except for the Pedometer Sensor.

BESI-C Application Screens

Main Application Screens

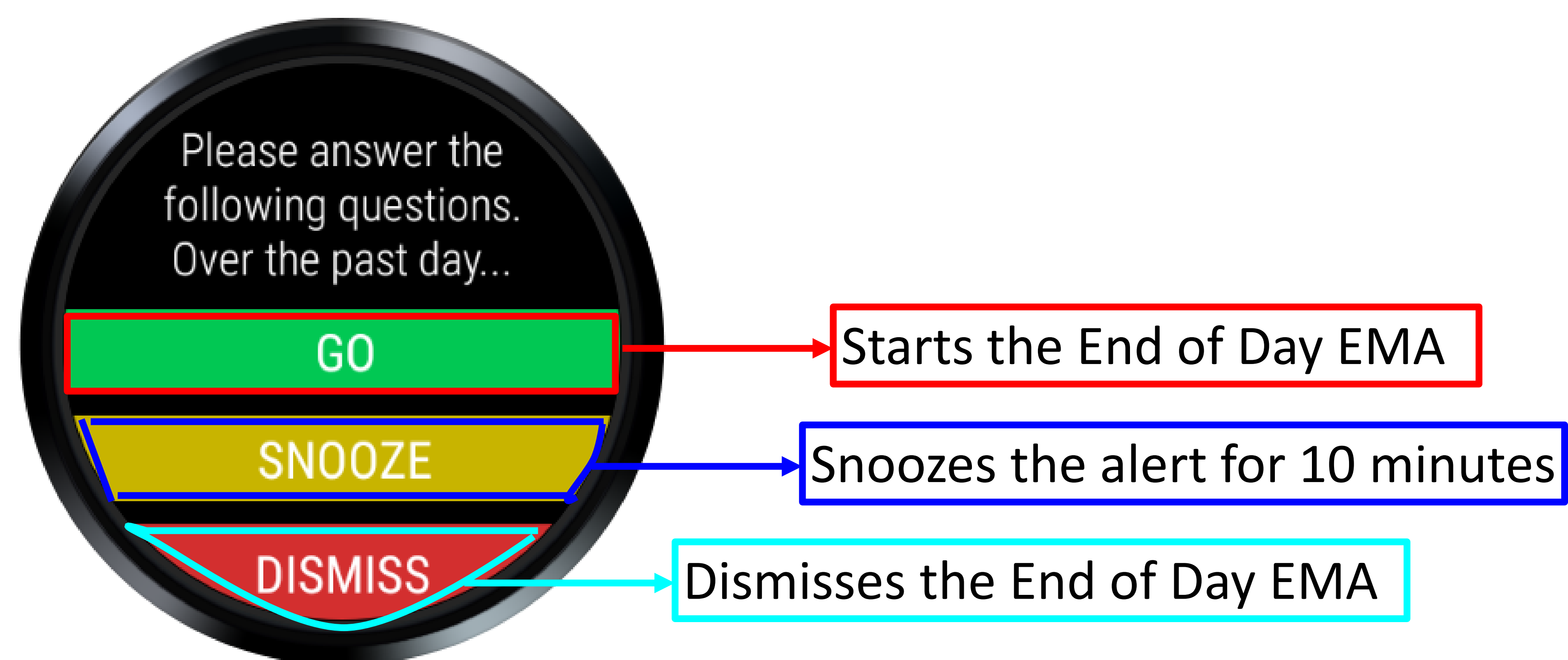


EMA Question Screen



Alert or Prompt Screens

First automatically generated End of Day EMA



Alert Screen for manually triggered End of Day EMA



Second Alert Screen after Snoozing Initial Alert Screen (Activated after 10 minutes of snoozing)

Low Battery Screen (Initiated if device is at 15%)



Dismisses the Alert for 15 minutes

Toasts (Appears for about 3-5 seconds)



Random Image Toast for the End of Day EMA

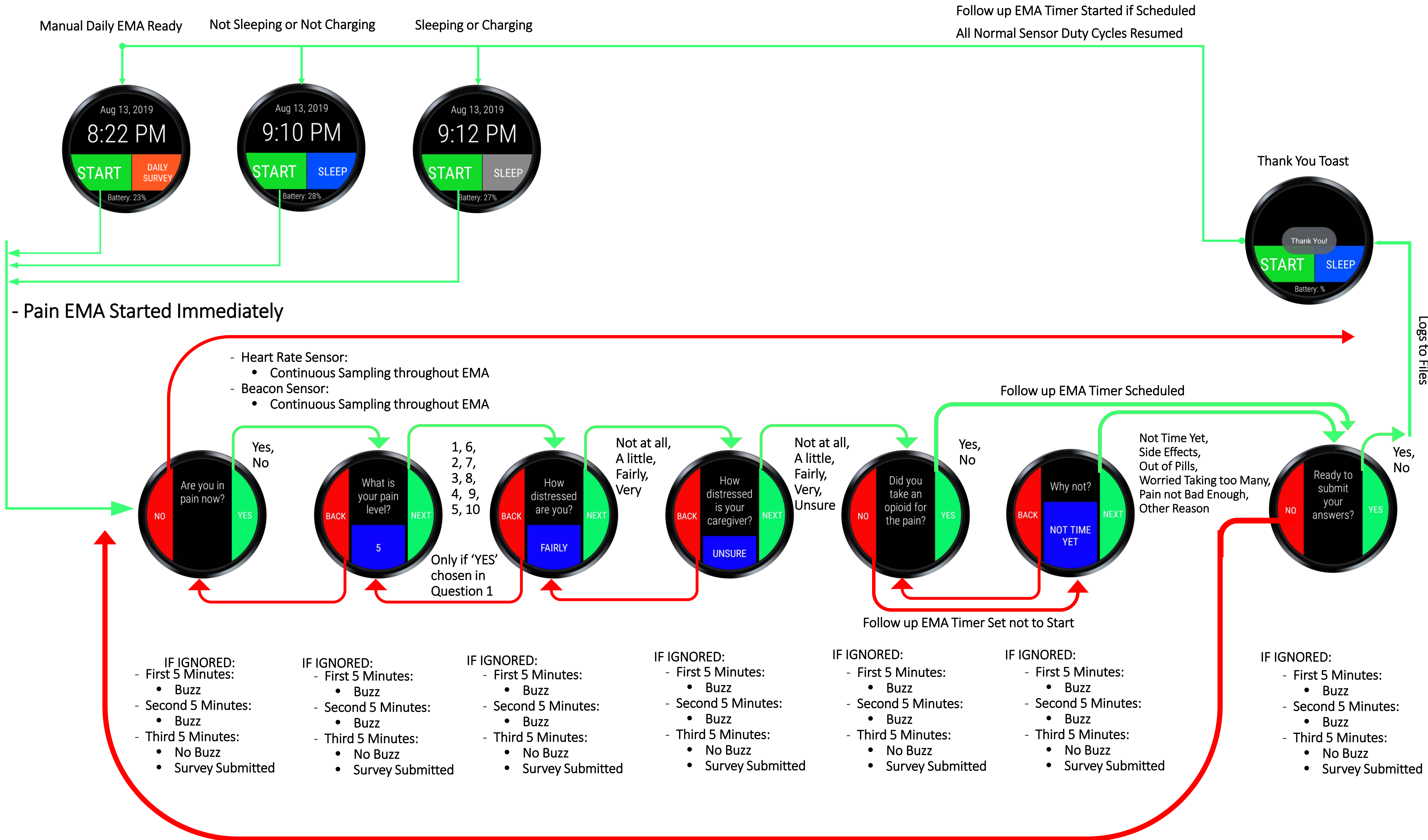


Toast when device begins charging



Thank you toast after Pain and Followup EMAs

Patient Pain EMA



Patient Followup EMA

Manual Daily EMA Ready Not Sleeping or Not Charging Sleeping or Charging All Normal Sensor Duty Cycles Resumed



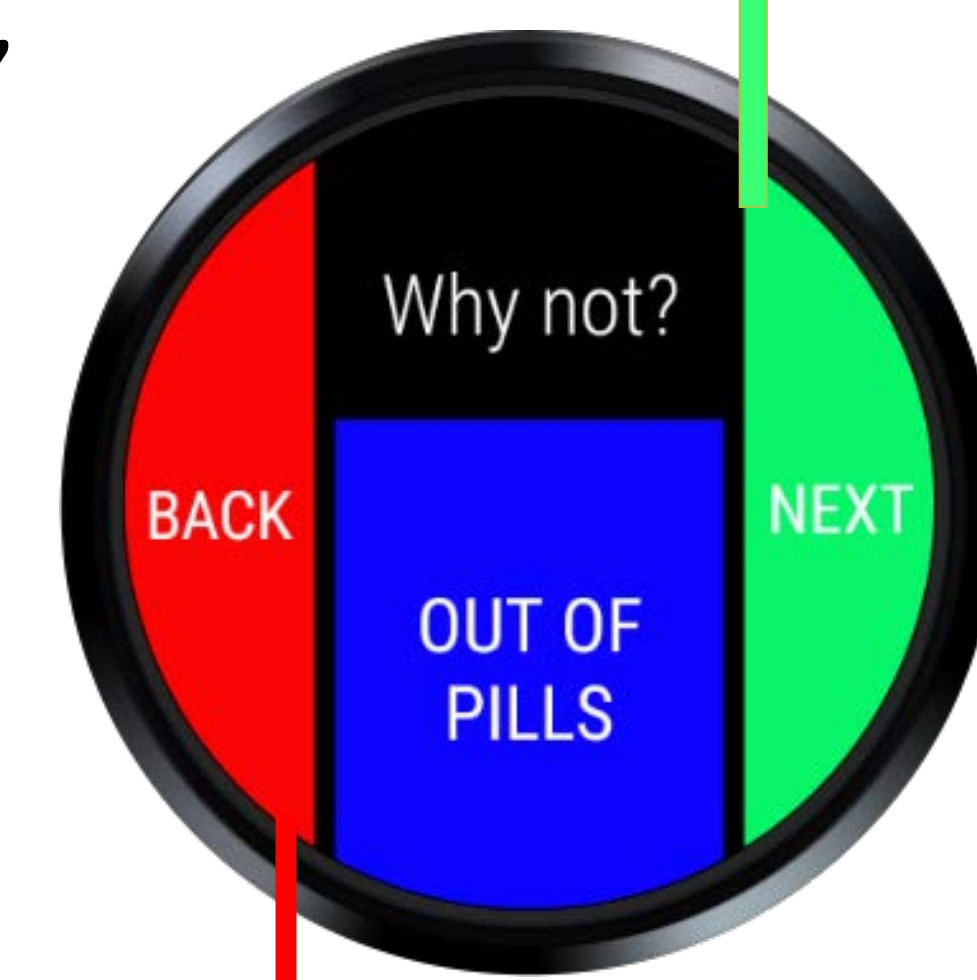
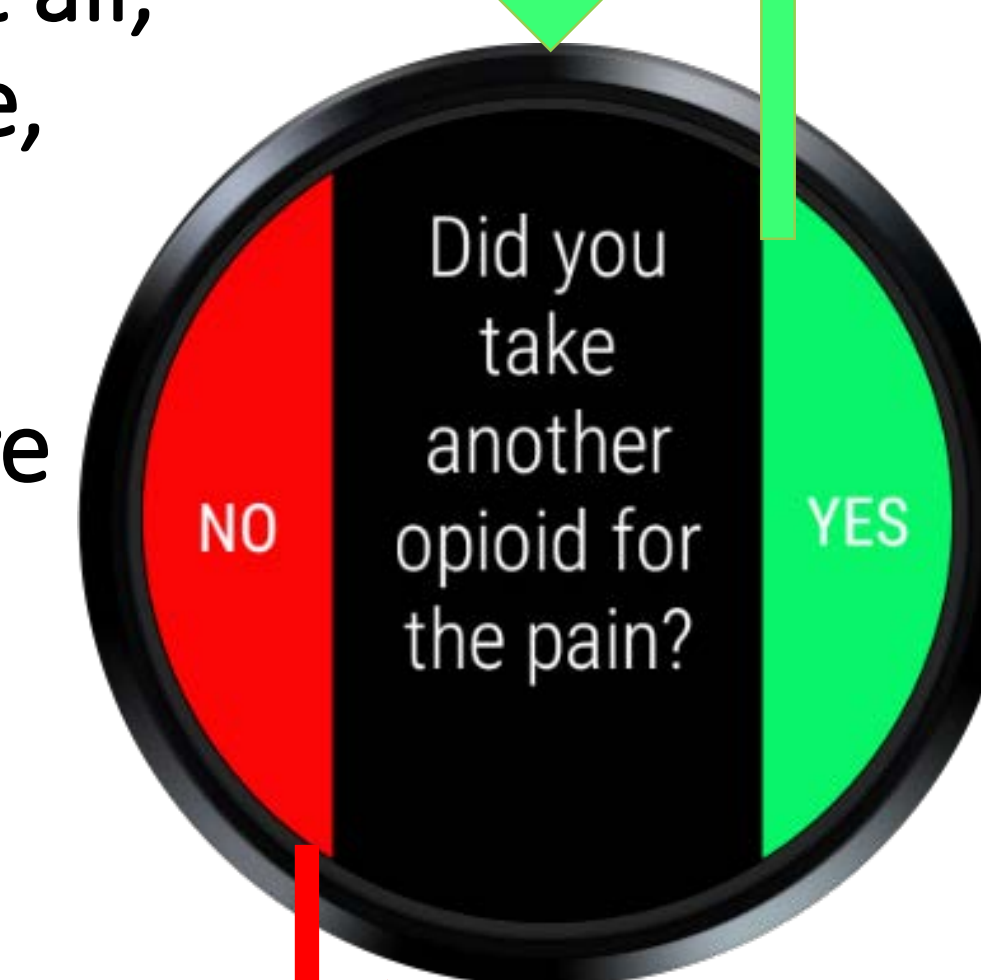
Thank You Toast



PAIN EMA ACTIVITY

- 30 Minutes after Pain EMA:
 - If Opioid Question was answered "Yes"
 - Followup EMA timer started after Submission of Pain EMA
 - Followup EMA is started

- Heart Rate Sensor:
 - Continuous Sampling throughout the EMA
- Beacon Sensor:
 - Continuous Sampling throughout the EMA



1, 6, 2, 7, 3, 8, 4, 9, 5, 10
Only if 'YES' chosen in Question 1

Not at all, A little, Fairly, Very, Unsure

Not Time Yet, Side Effects, Out of Pills, Worried Taking too Many, Pain not Bad Enough, Other Reason

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - Buzz
 - Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - Buzz
 - Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - Buzz
 - Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - Buzz
 - Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - Buzz
 - Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - Buzz
 - Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - Buzz
 - Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

Logs to Files

Patient Manual End of Day EMA

Manual Daily EMA Ready



- End of Day EMA Started Immediately

Not Sleeping or Not Charging

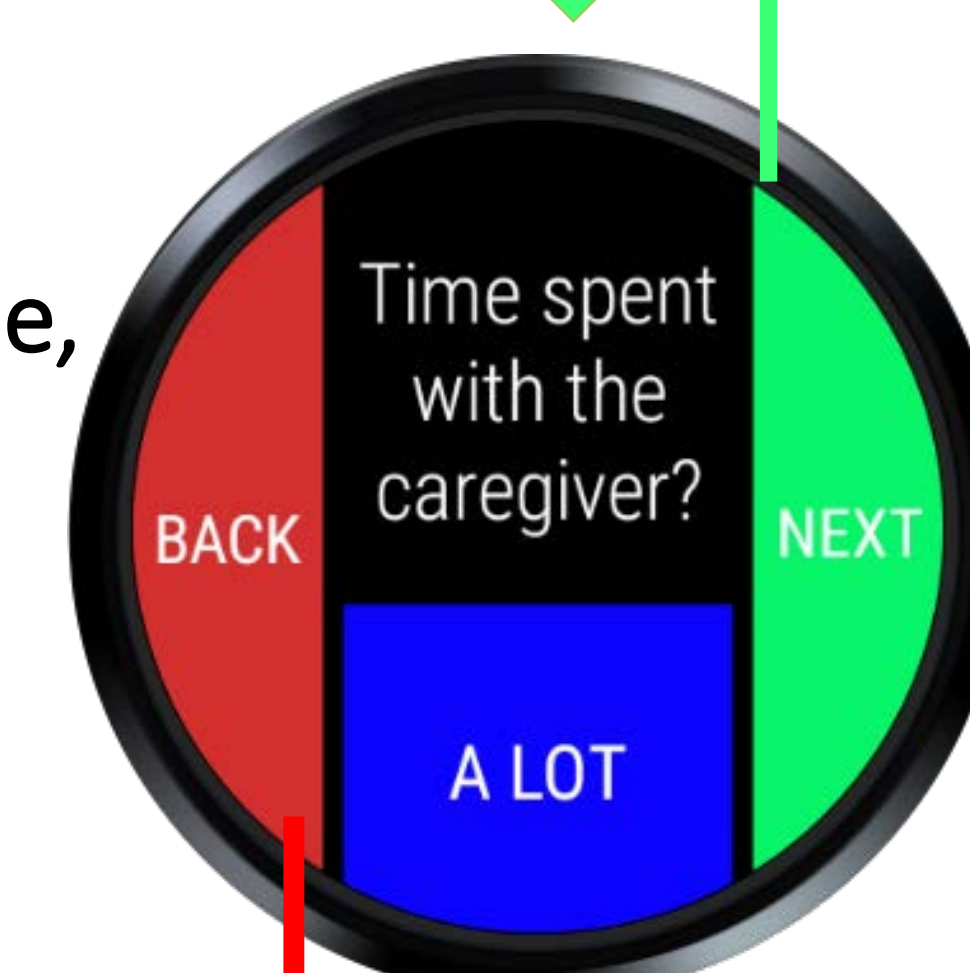
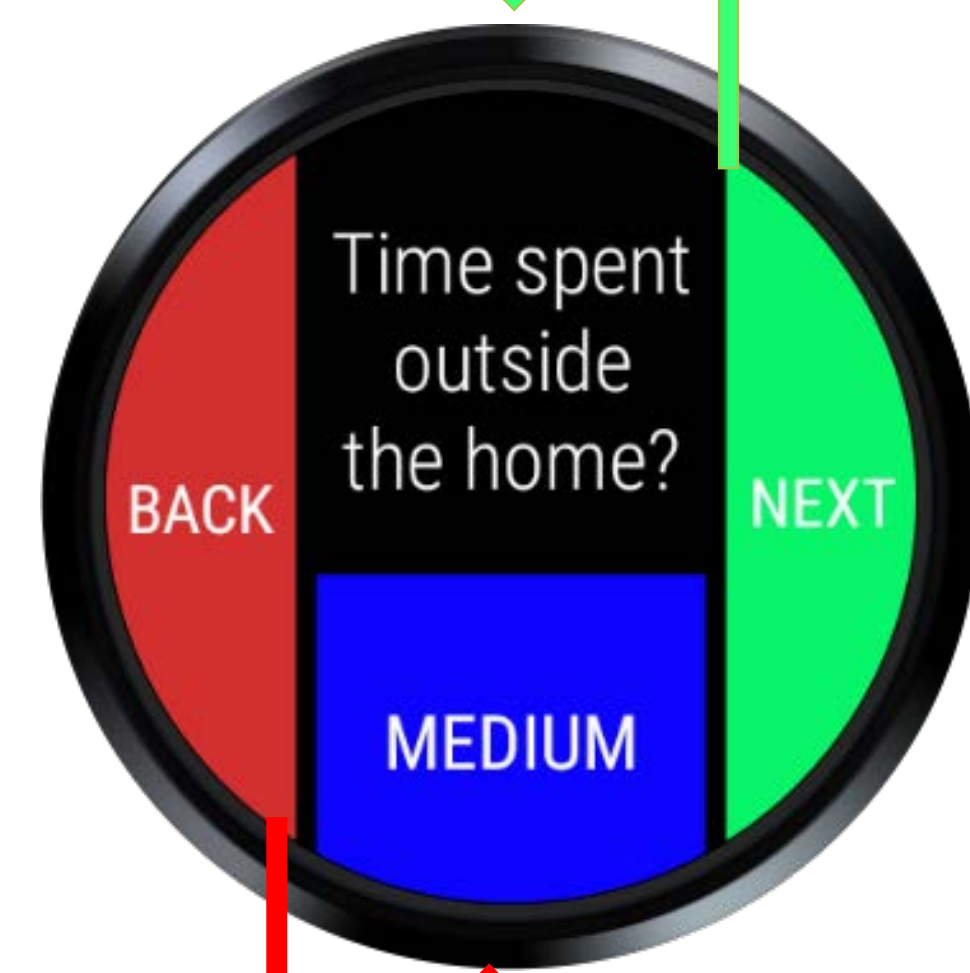
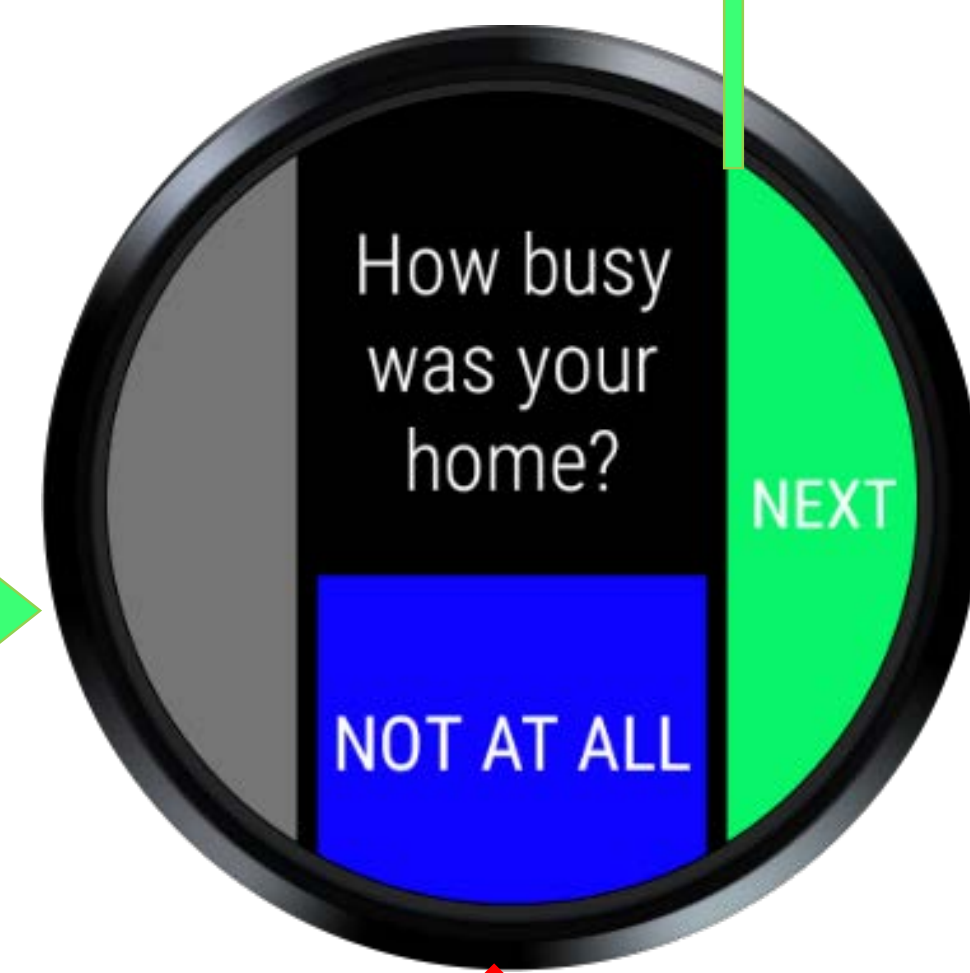


Sleeping or Charging



All Normal Sensor Duty Cycles Resumed

Randomized Image Thank You Toast



IF IGNORED:
- First 15 Minutes:
• No Buzz
• Survey Submitted

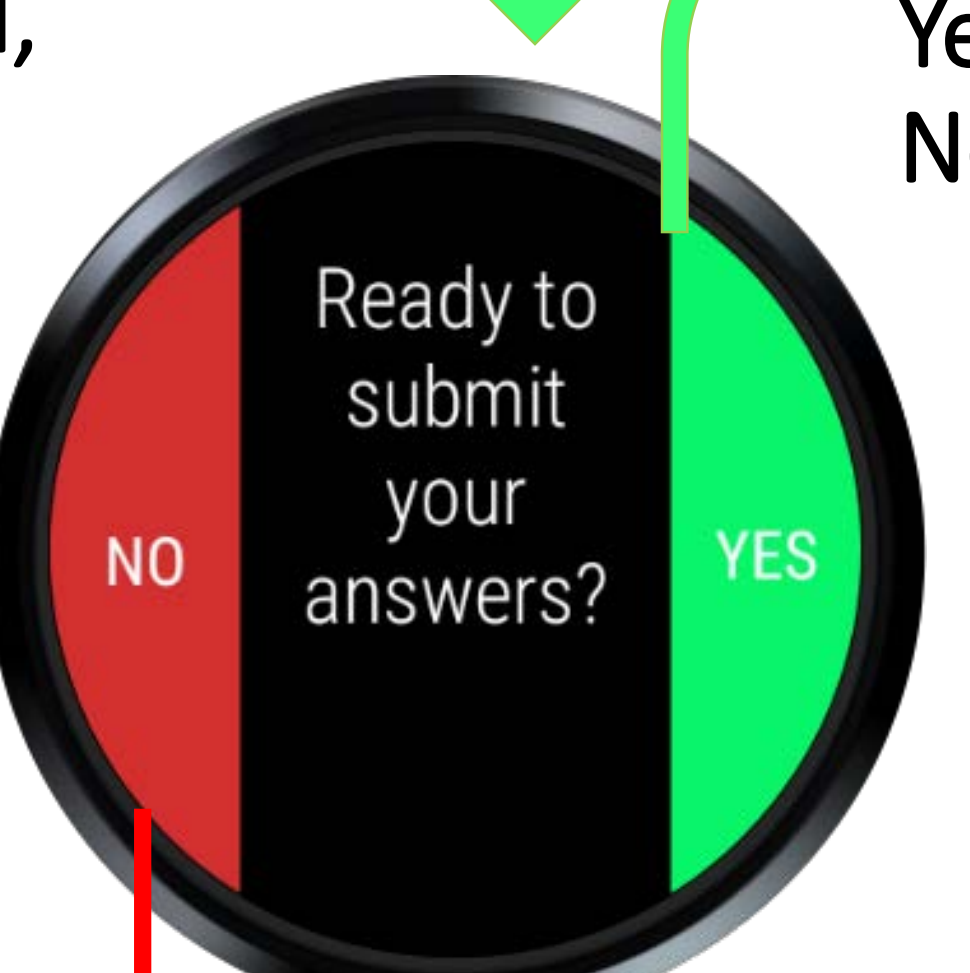
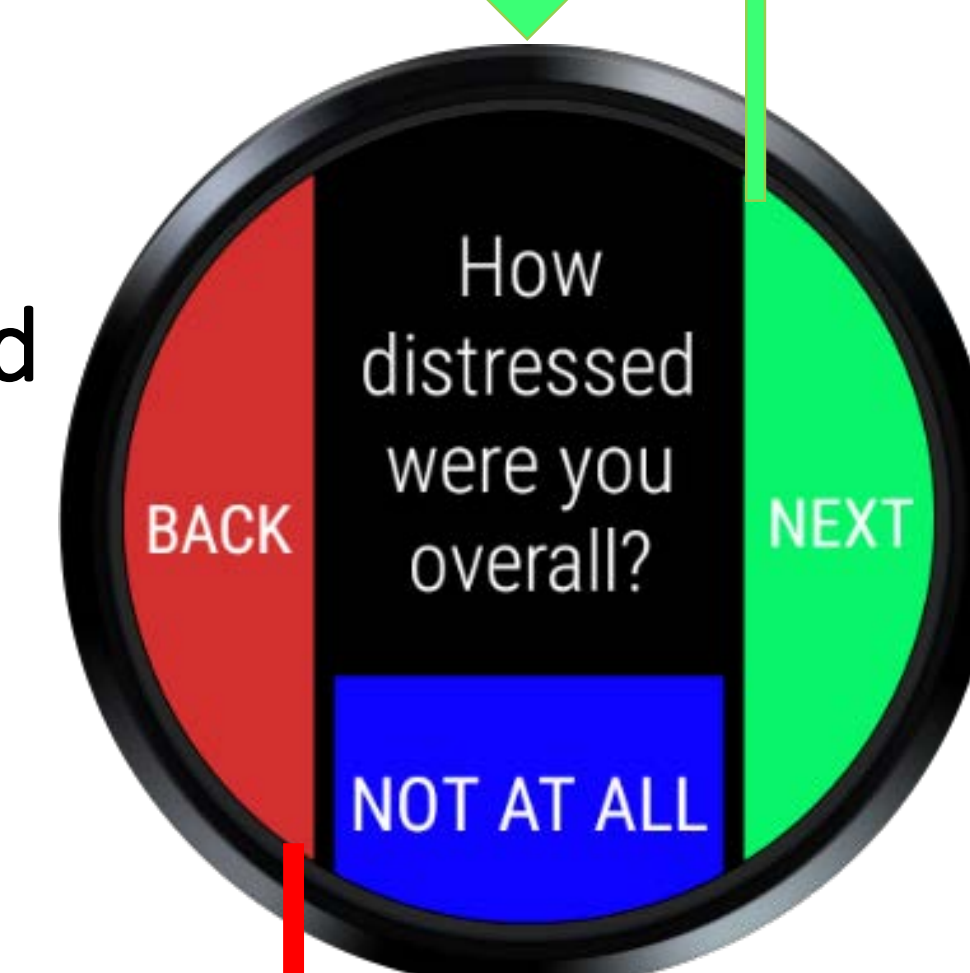
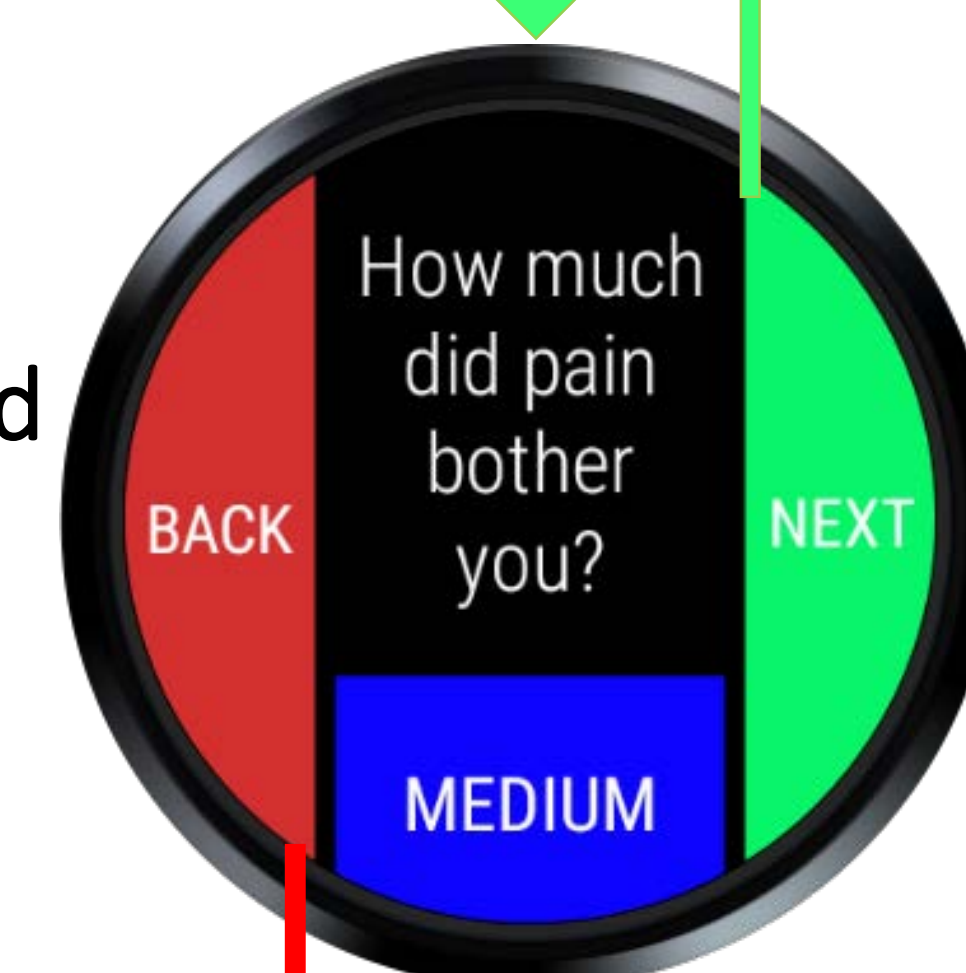
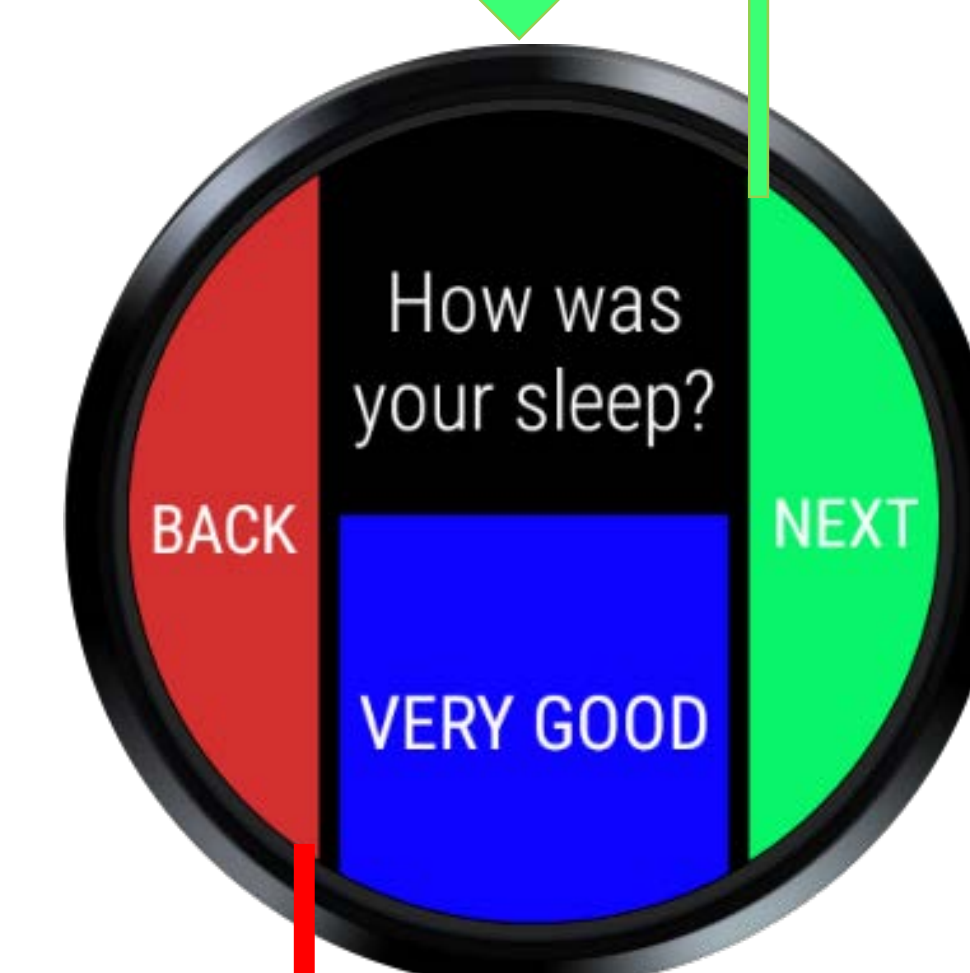
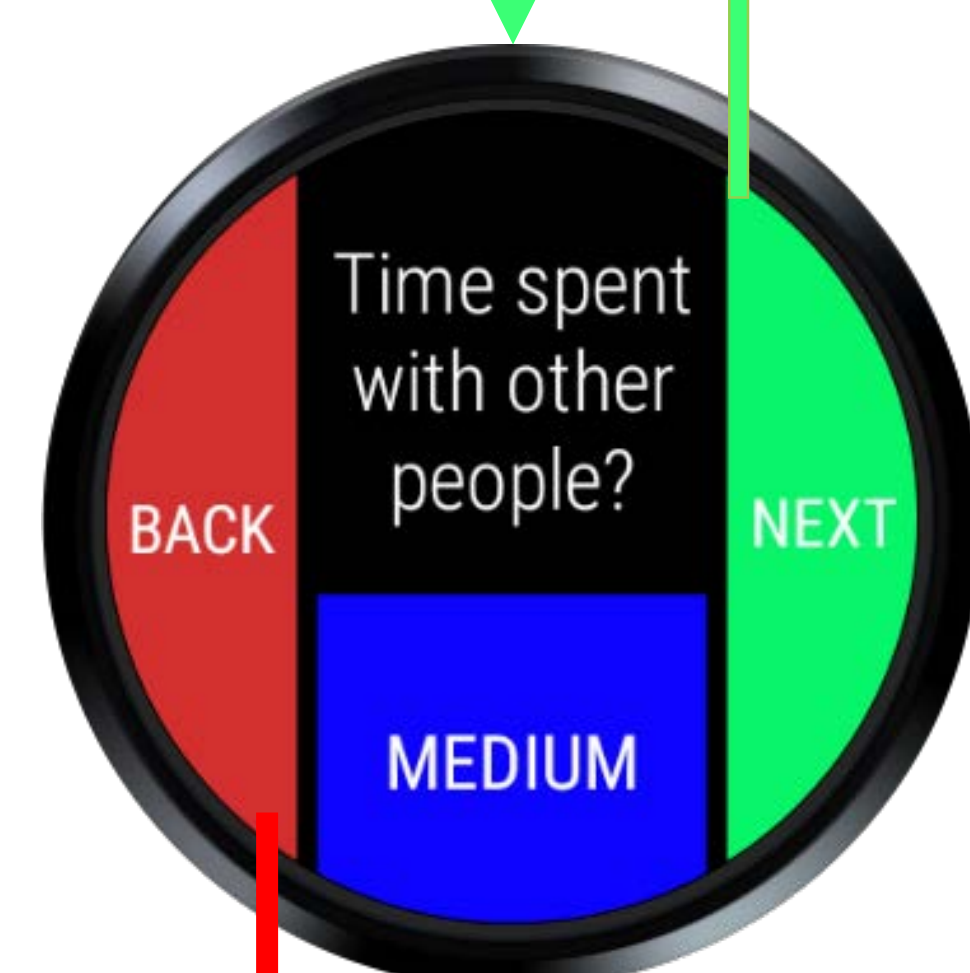
IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted



IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

Logs to Files

Caregiver Followup EMA

Manual Daily EMA Ready Not Sleeping or Not Charging Sleeping or Charging All Normal Sensor Duty Cycles Resumed

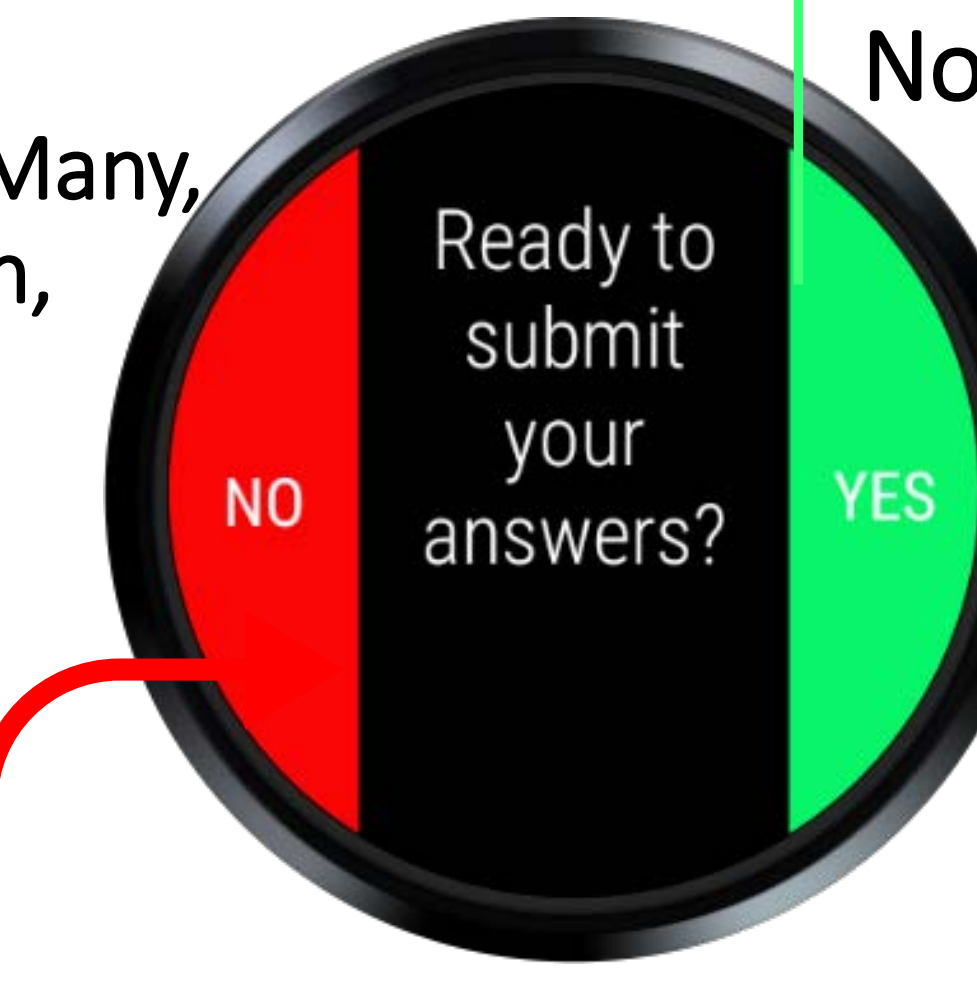
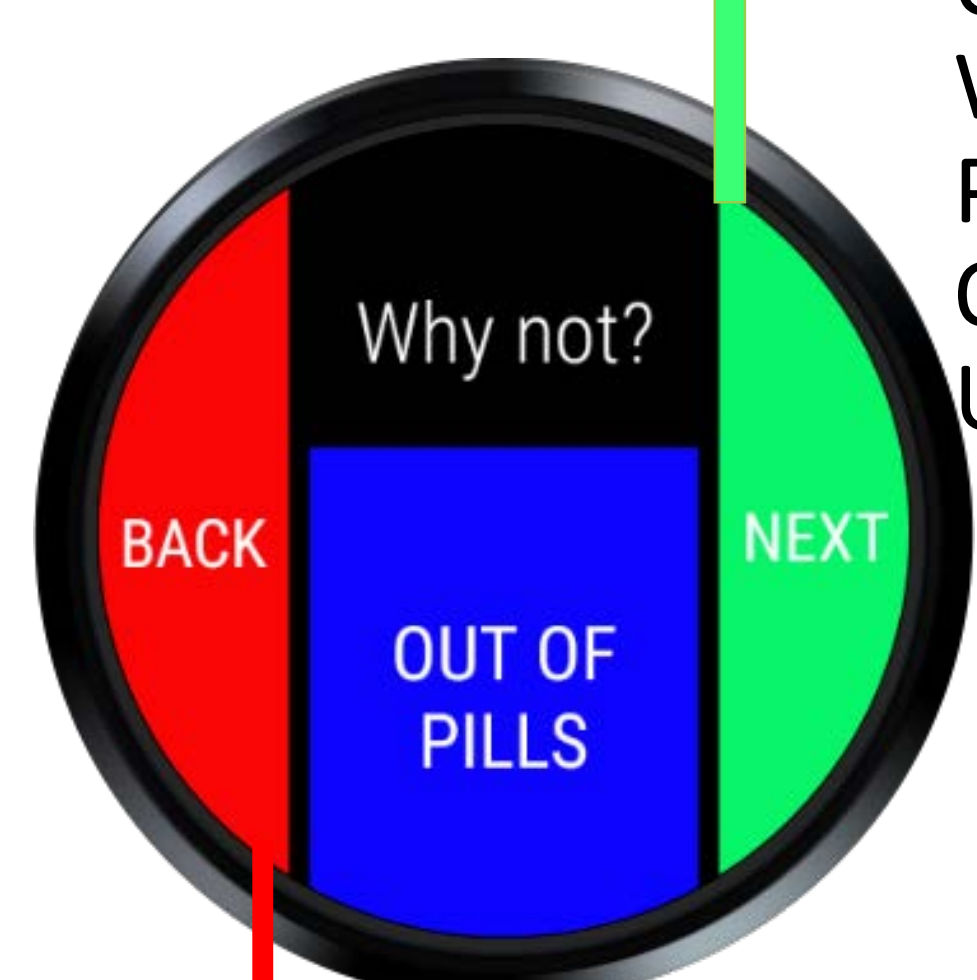
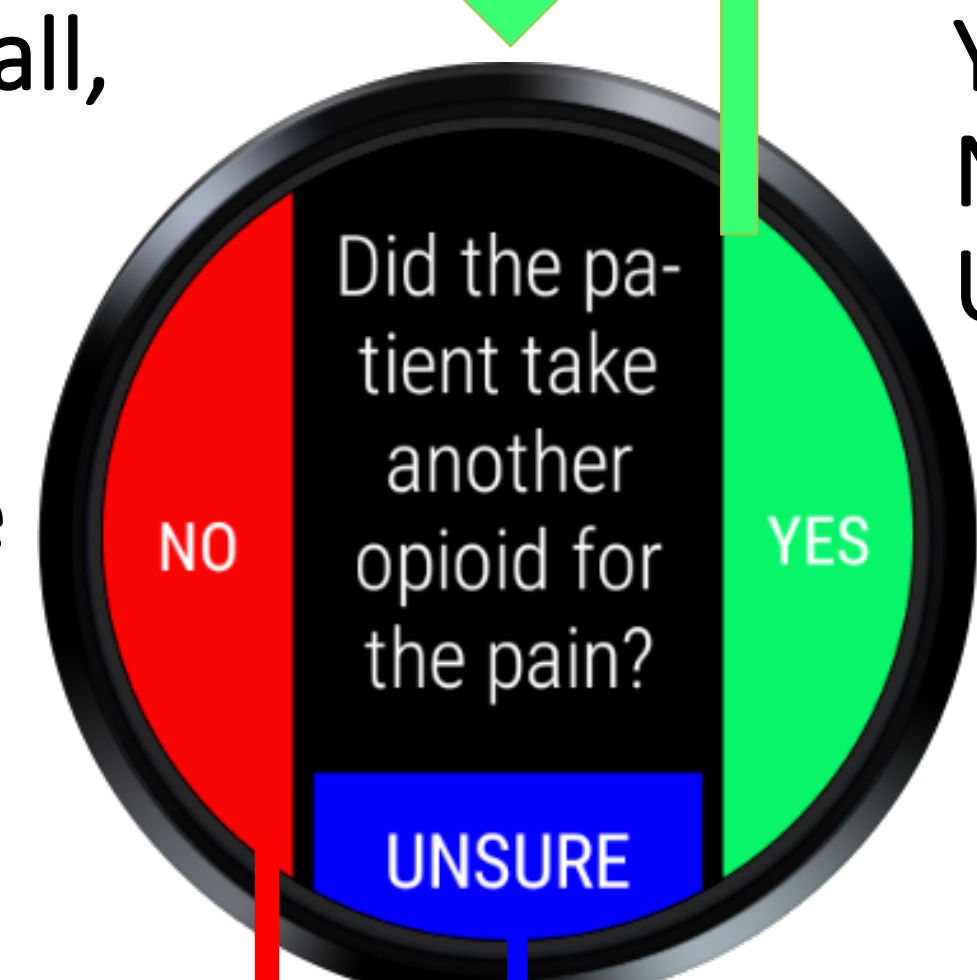
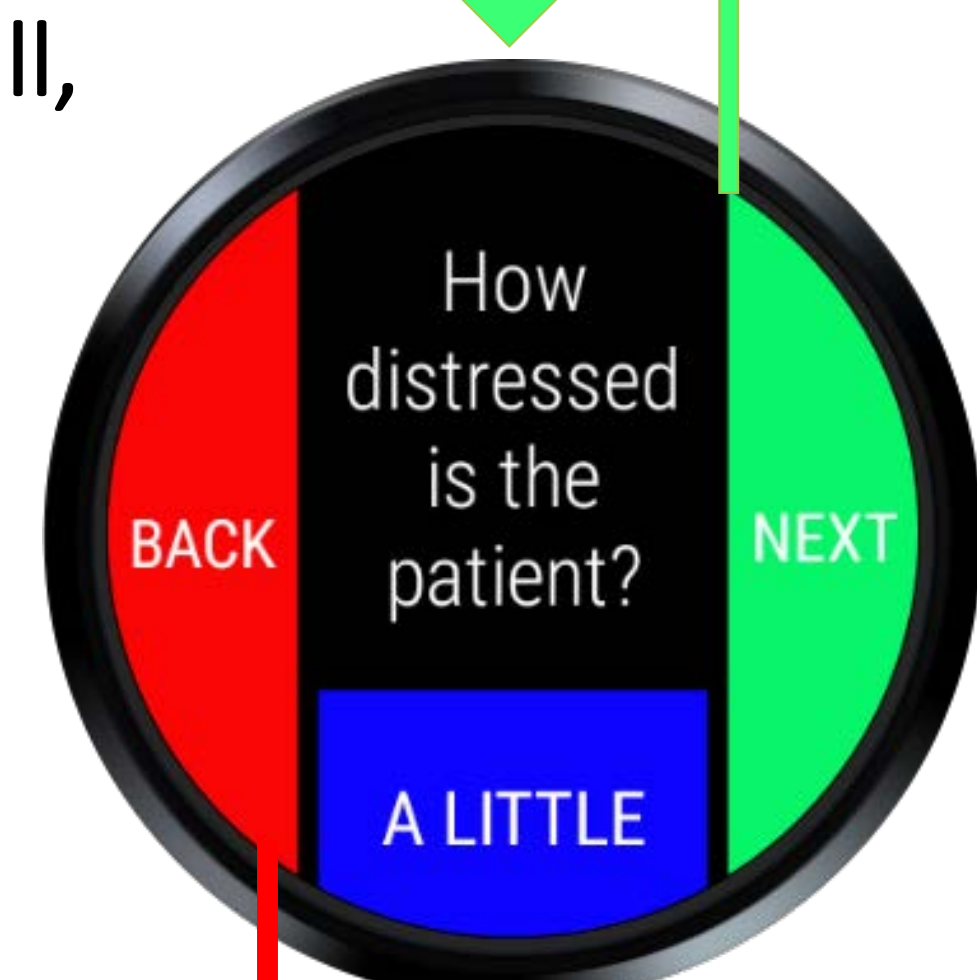
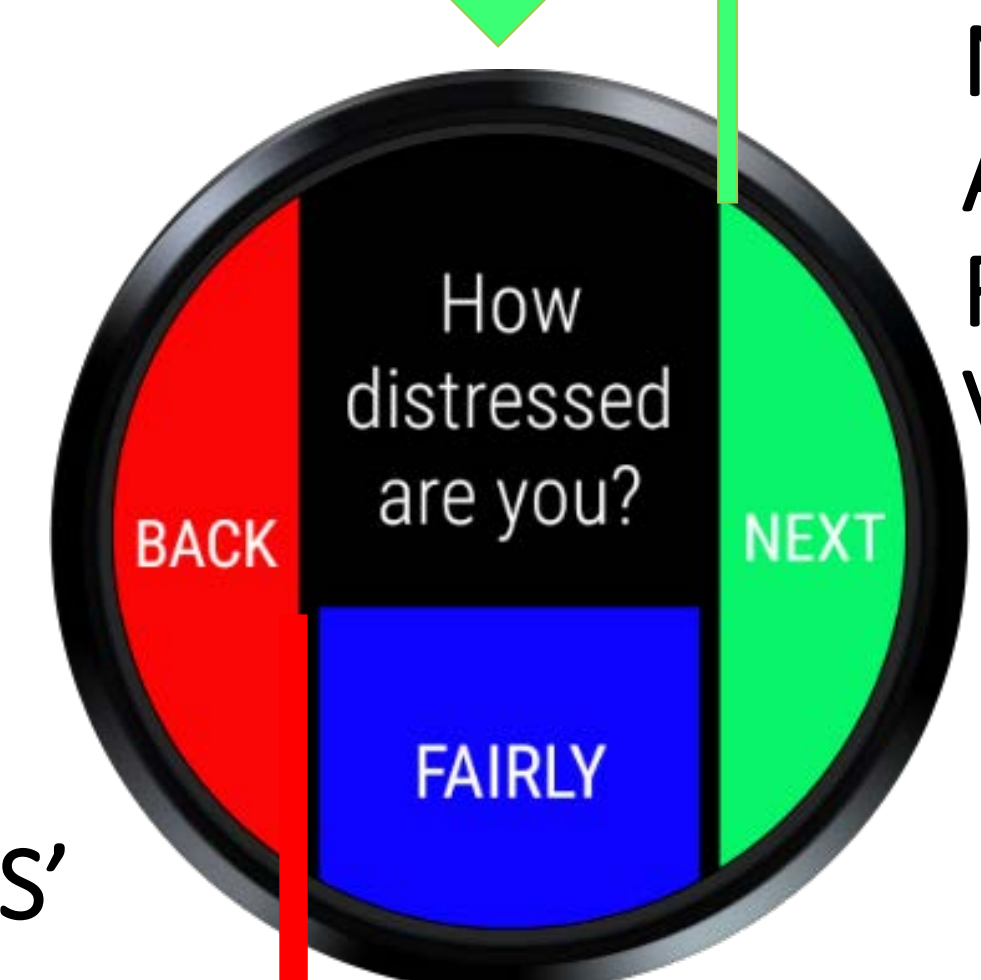
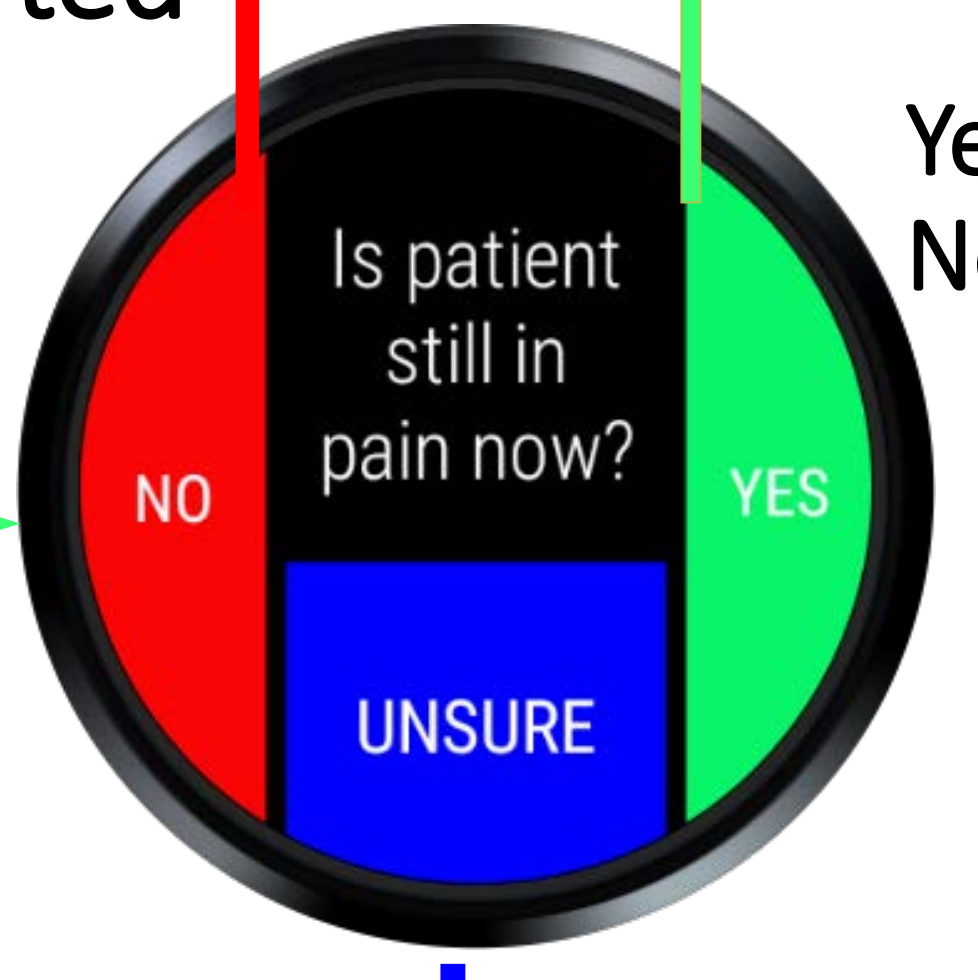


PAIN EMA ACTIVITY

- 30 Minutes after Pain EMA:

- If Opioid Question was answered "Yes"
- Followup EMA timer started after Submission of Pain EMA
- Followup EMA is started

- Heart Rate Sensor:
 - Continuous Sampling throughout the EMA
- Beacon Sensor:
 - Continuous Sampling throughout the EMA



Only if 'UNSURE' chosen in Question 1

Only if 'YES' chosen in Question 1

IF IGNORED:

- First 5 Minutes:
 - Buzz
- Second 5 Minutes:
 - Buzz
- Third 5 Minutes:
 - Buzz
- Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

IF IGNORED:

- First 5 Minutes:
 - Buzz
- Second 5 Minutes:
 - Buzz
- Third 5 Minutes:
 - Buzz
- Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

IF IGNORED:

- First 5 Minutes:
 - Buzz
- Second 5 Minutes:
 - Buzz
- Third 5 Minutes:
 - Buzz
- Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

IF IGNORED:

- First 5 Minutes:
 - Buzz
- Second 5 Minutes:
 - Buzz
- Third 5 Minutes:
 - Buzz
- Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

IF IGNORED:

- First 5 Minutes:
 - Buzz
- Second 5 Minutes:
 - Buzz
- Third 5 Minutes:
 - Buzz
- Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

IF IGNORED:

- First 5 Minutes:
 - Buzz
- Second 5 Minutes:
 - Buzz
- Third 5 Minutes:
 - Buzz
- Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

IF IGNORED:

- First 5 Minutes:
 - Buzz
- Second 5 Minutes:
 - Buzz
- Third 5 Minutes:
 - Buzz
- Fourth 5 Minutes:
 - No Buzz
 - Survey Submitted

Logs to Files

Caregiver Manual End of Day EMA

Manual Daily EMA Ready



- End of Day EMA Started Immediately

Not Sleeping or Not Charging



Sleeping or Charging



All Normal Sensor Duty Cycles Resumed

Randomized Image Thank You Toast



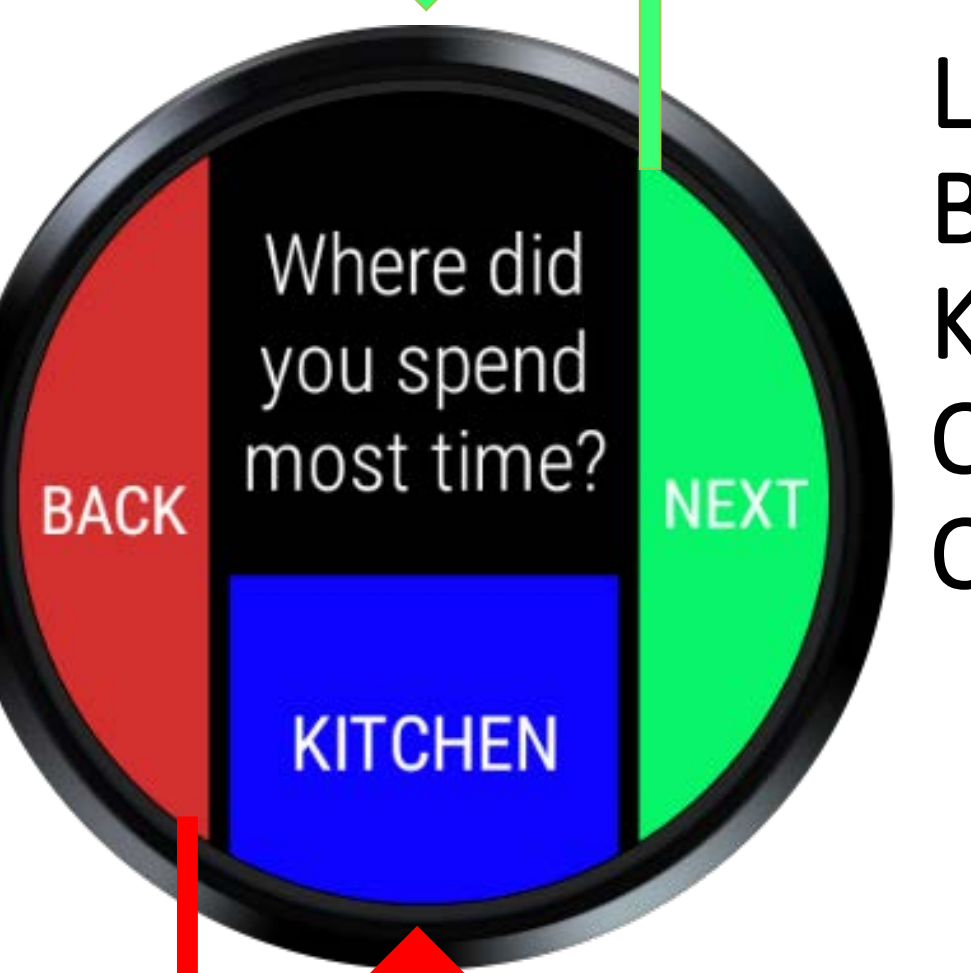
Not at all,
A little,
Fairly,
Very



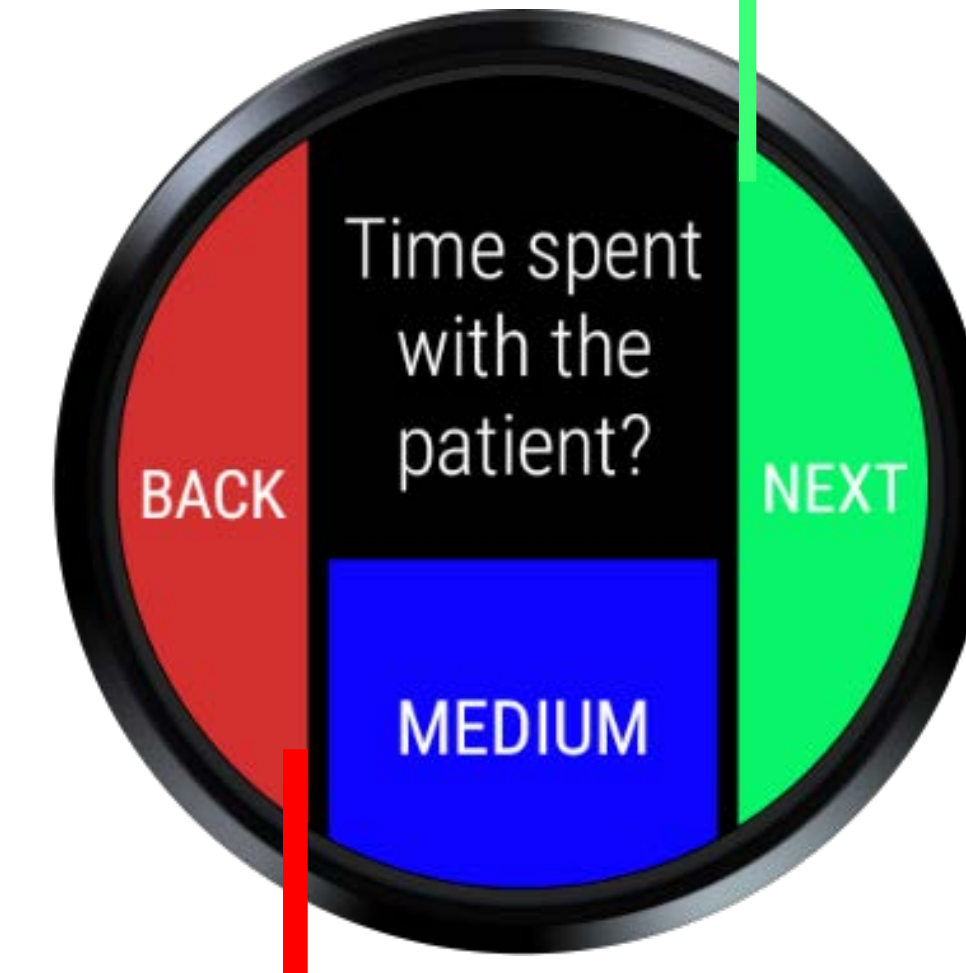
None,
A Little,
Medium,
A Lot



Not at all,
A little,
Fairly,
Very



Living Room,
Bedroom,
Kitchen,
Outside the Home,
Other



None,
A Little,
Medium,
A Lot

IF IGNORED:
- First 15 Minutes:
• No Buzz
• Survey Submitted

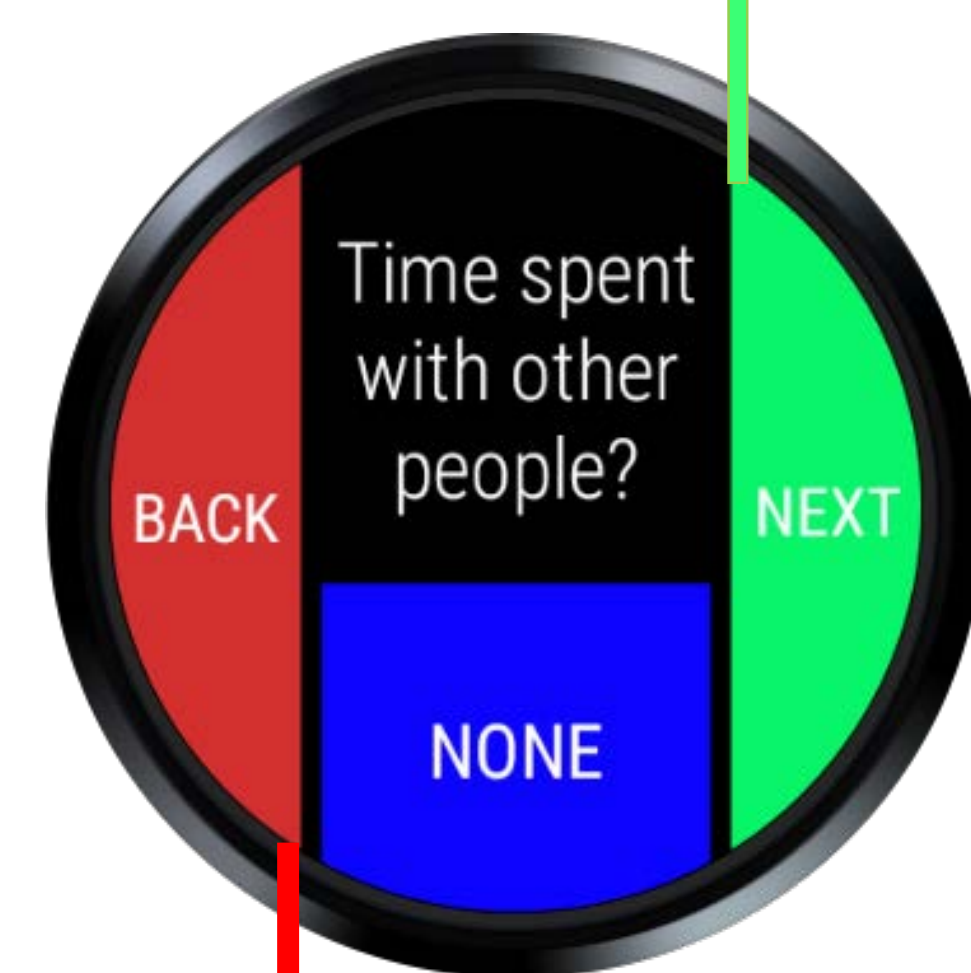
IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

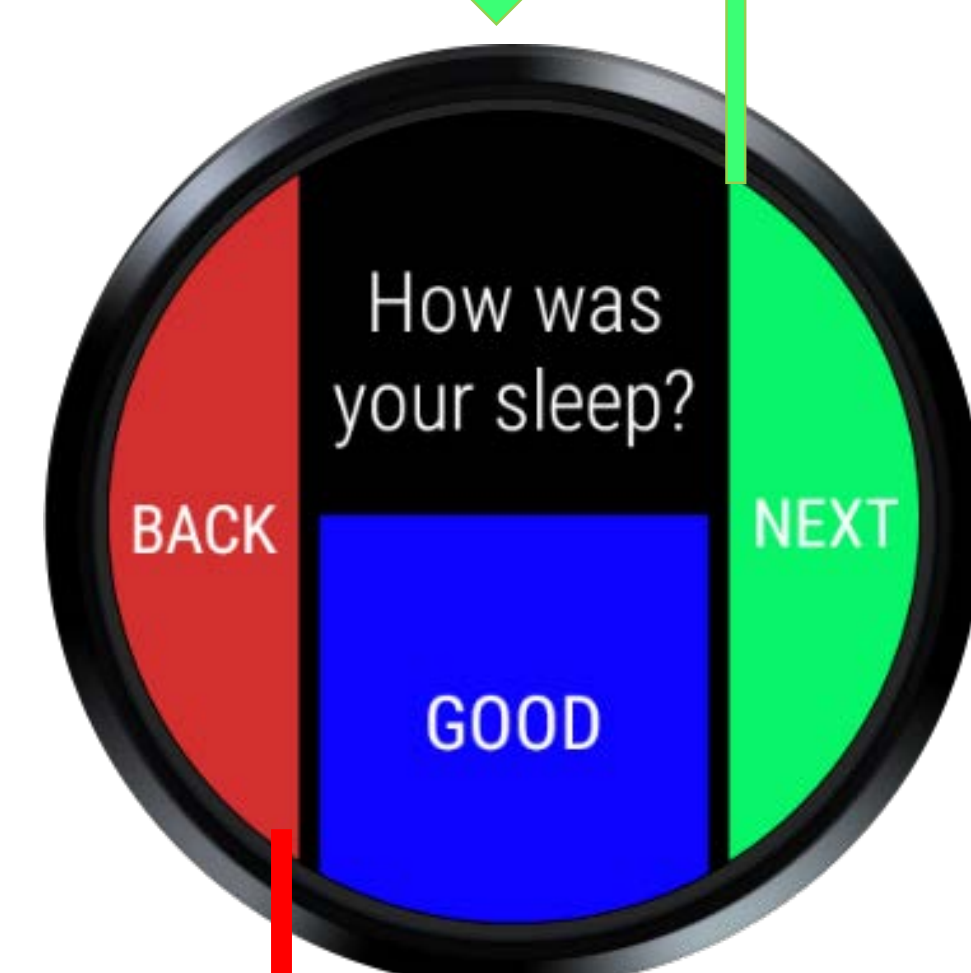
IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

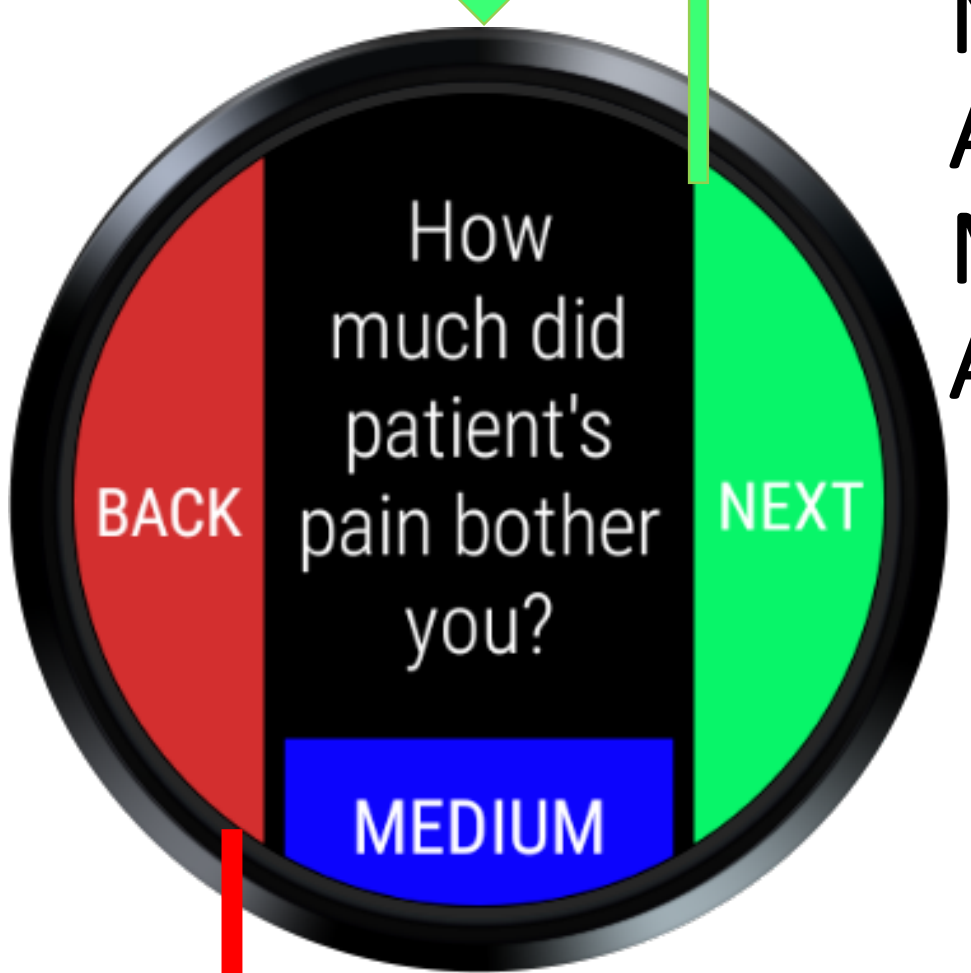
IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted



None,
A Little,
Medium,
A Lot



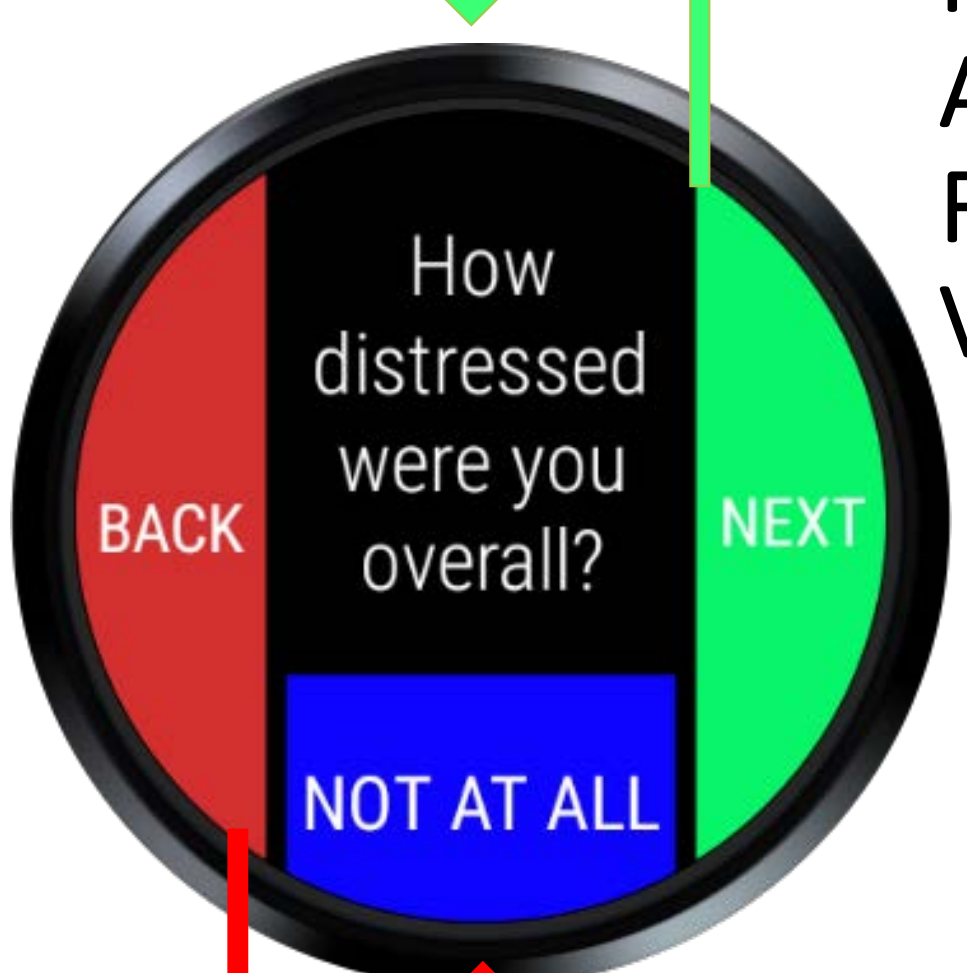
Poor,
Fair,
Good,
Very Good



None,
A Little,
Medium,
A Lot



Poor,
Fair,
Good,
Very Good



Not at all,
A little,
Fairly,
Very



Not at all,
A little,
Fairly,
Very,
Unsure



Yes,
No

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

IF IGNORED:
- First 5 Minutes:
• Buzz
- Second 5 Minutes:
• Buzz
- Third 5 Minutes:
• No Buzz
• Survey Submitted

Logs to Files

Manual Daily EMA Option is removed and Automatic EMA is generated immediately.

Caregiver Automatic End of Day EMA



- Person Presses Snooze or
- If ignored for 15 Minutes:
 - System automatically snoozes



- After 15 Minutes:
 - Dismiss is pressed



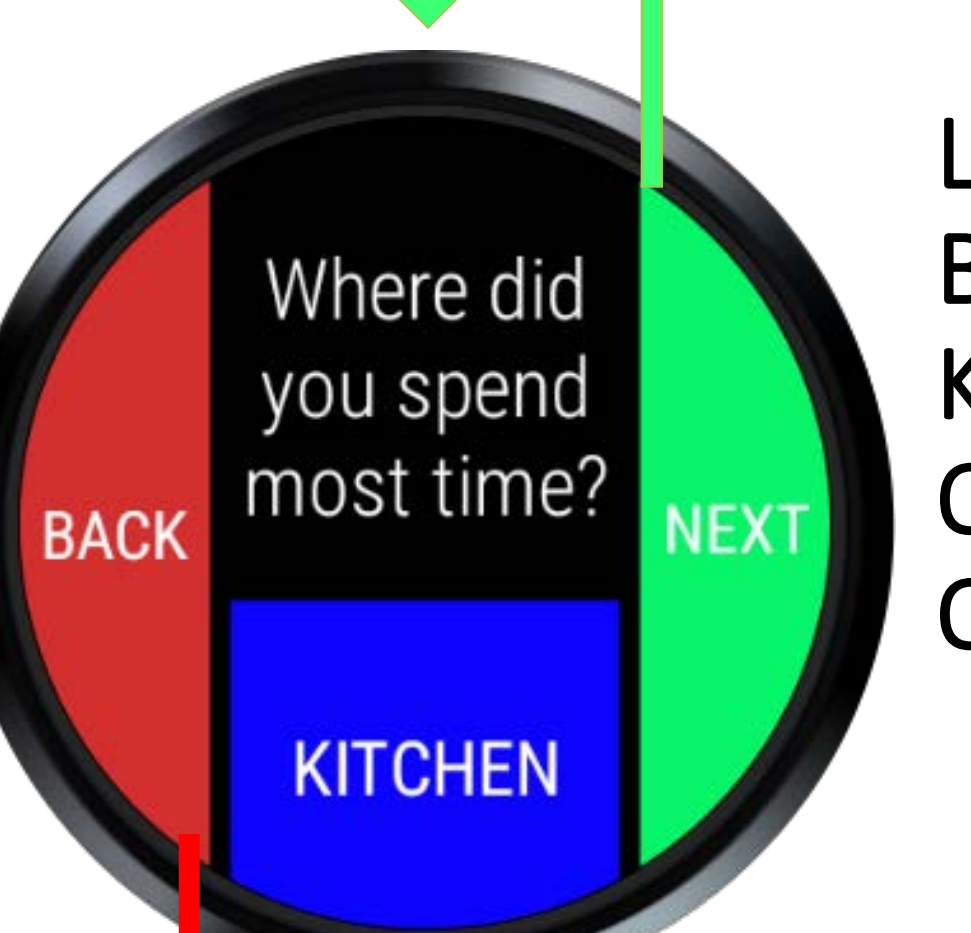
Not at all, A little, Fairly, Very



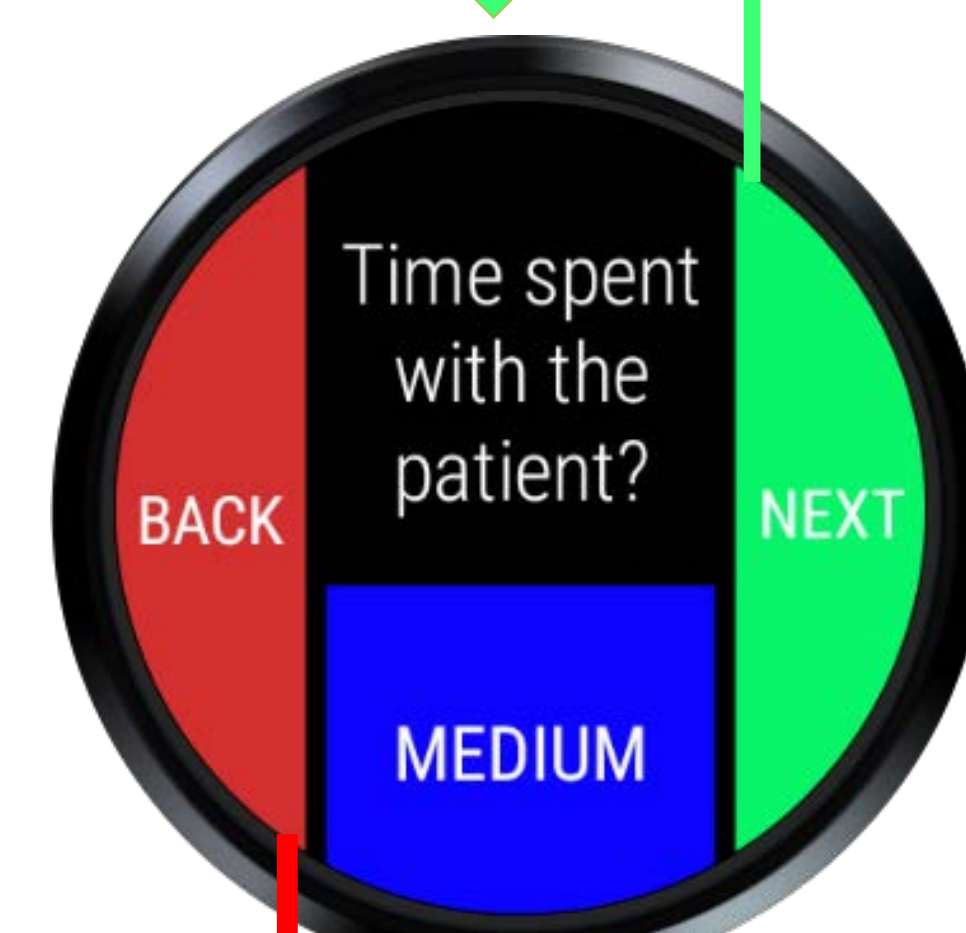
None, A Little, Medium, A Lot



Not at all, A little, Fairly, Very



Living Room, Bedroom, Kitchen, Outside the Home, Other



None, A Little, Medium, A Lot

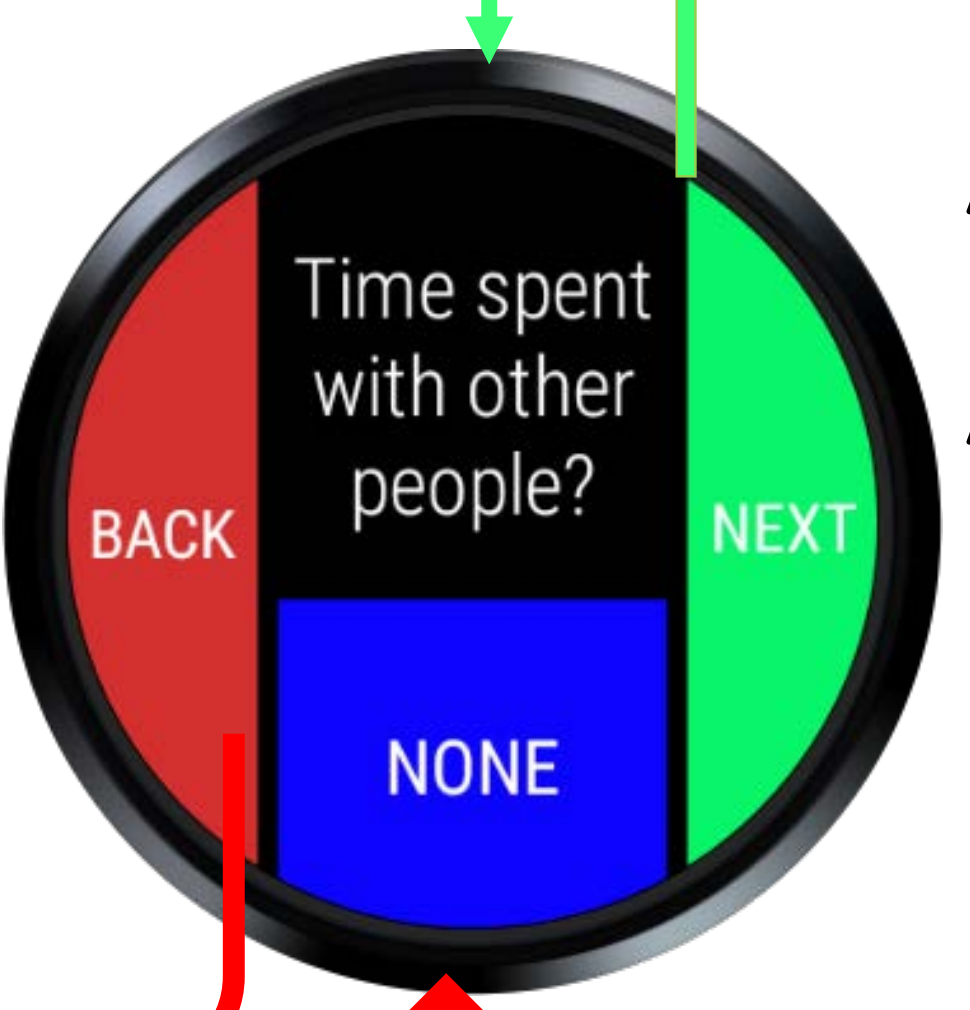
- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

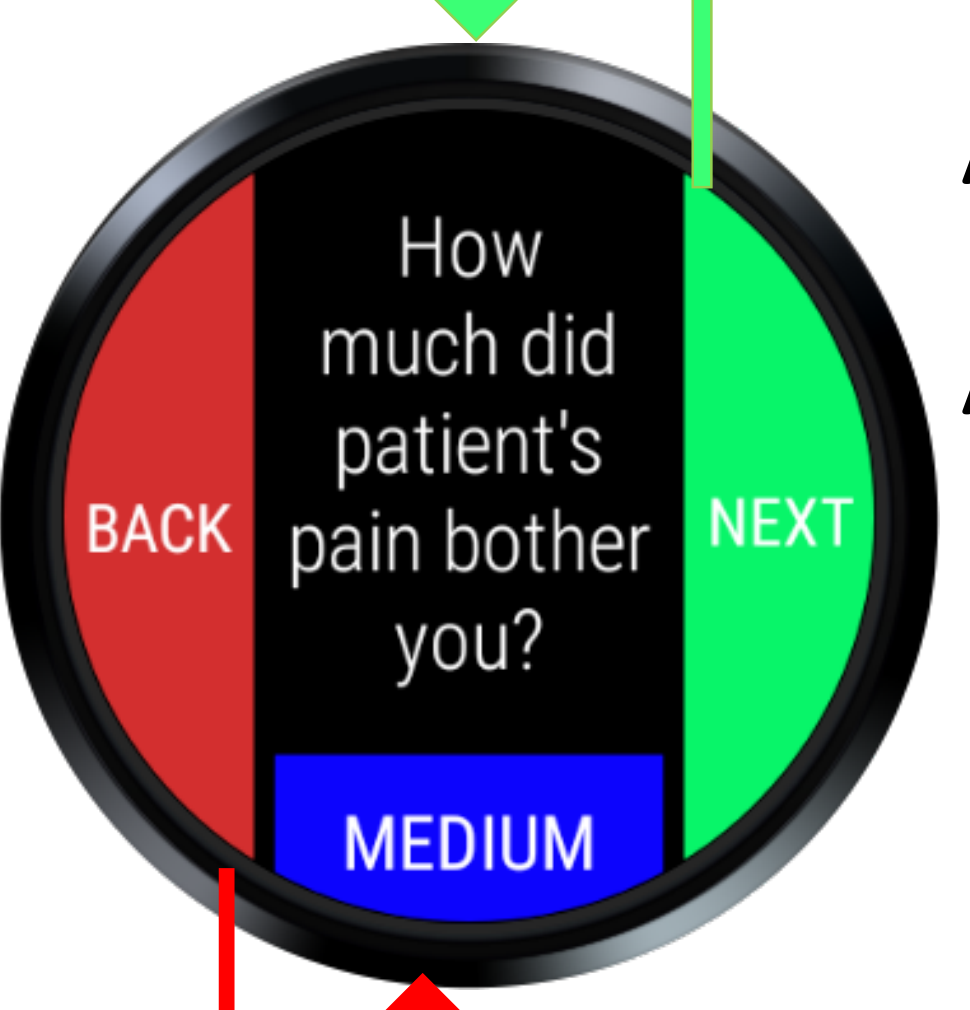
- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted



None, A Little, Medium, A Lot



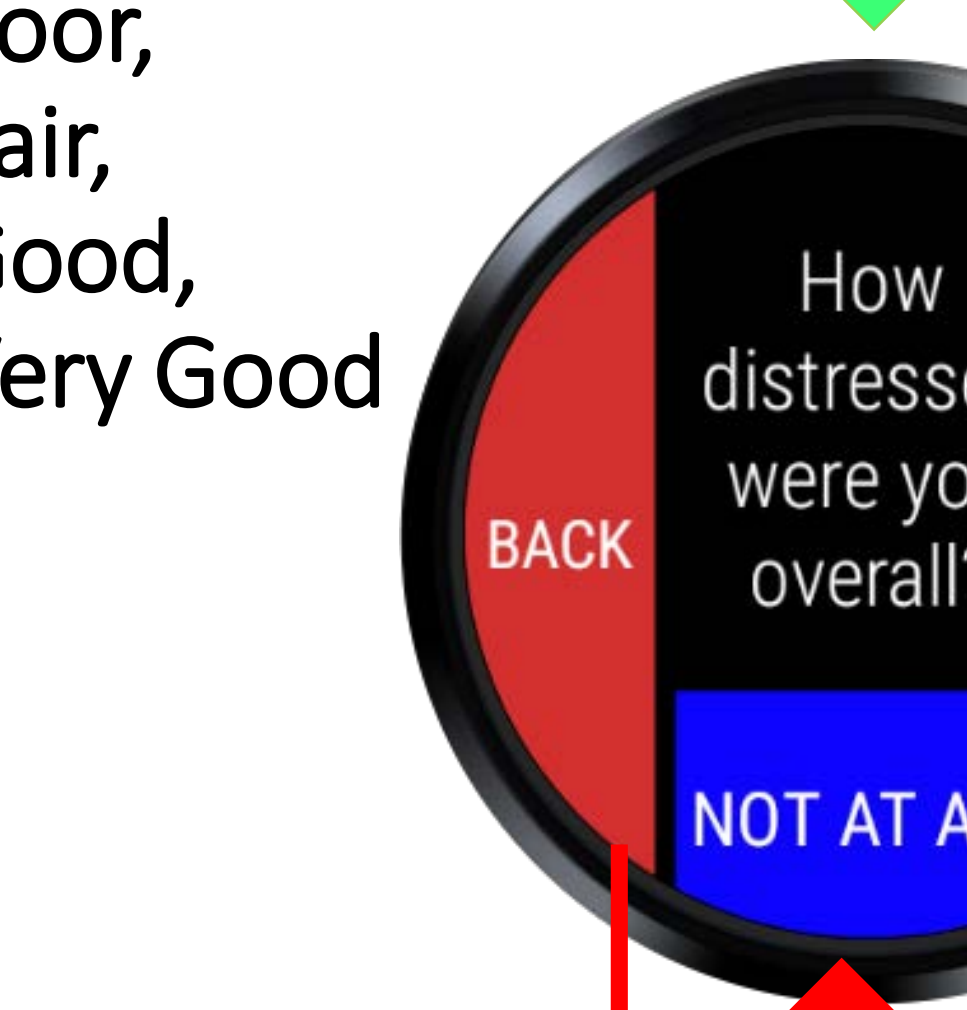
Poor, Fair, Good, Very Good



None, A Little, Medium, A Lot



Poor, Fair, Good, Very Good



Not at all, A little, Fairly, Very



Not at all, A little, Fairly, Very, Unsure



Yes, No

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

- IF IGNORED:
- First 5 Minutes:
 - Buzz
 - Second 5 Minutes:
 - Buzz
 - Third 5 Minutes:
 - No Buzz
 - Survey Submitted

Not Sleeping or Not Charging

Sleeping or Charging

All Normal Sensor Duty Cycles Resumed

Randomized Image Thank You Toast



10 Minutes After Snoozed is Pressed Second Prompt Is Initiated

Logs to Files