opHop:

Addressing opioid crisis

FirstNet Hackathon: The Road to 5G (AT&T)

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What are opioids?

Pain killers

Affect brain areas controlling emotion

Manufactured in lab

Require doctor prescription

Apparently, you can get it from your friends, family and loved ones[1].

Don’t! Seriously Don’t!!!!!!

What if my doctor prescribes opioids for me?

"Always talk to your doctor about managing your pain better without opioids."[2]

Some Popular Opioids:

- Codeine (only available in generic form)
- Fentanyl (Actiq, Duragesic, Fentora, Abstral, Onsolis)
- Hydrocodone (Hysingla, Zohydro ER)
- Hydrocodone/acetaminophen (Lorcet, Lortab, Norco, Vicodin)
- Hydromorphone (Dilaudid, Exalgo)
- Meperidine (Demerol)
- Methadone (Dolophine, Methadose)
- Methadone (Dolophine, Methadose)
- **Heroin (Diamorphine)** [3]

First Steps

We Did Literature Review

We Did Data Extraction

We Did Some Short Semi-Structured Interviews with different stakeholders here

THE STATE OF OPIOID MISUSE IN AMERICA (2017)

11.4 million
people misused opioids in the past year

- 11.1 million misused pain relievers
- 886,000 used heroin
- 562,000 both misused pain relievers and heroin

2.1 million
people had an opioid use disorder

- 1.7 million people with a prescription pain reliever use disorder
- 652,000 people with a heroin use disorder
- 252,000 had both pain reliever and heroin use disorders

53.1%
obtained the last pain reliever they misused from a friend or relative

36%
from a prescription from a healthcare provider

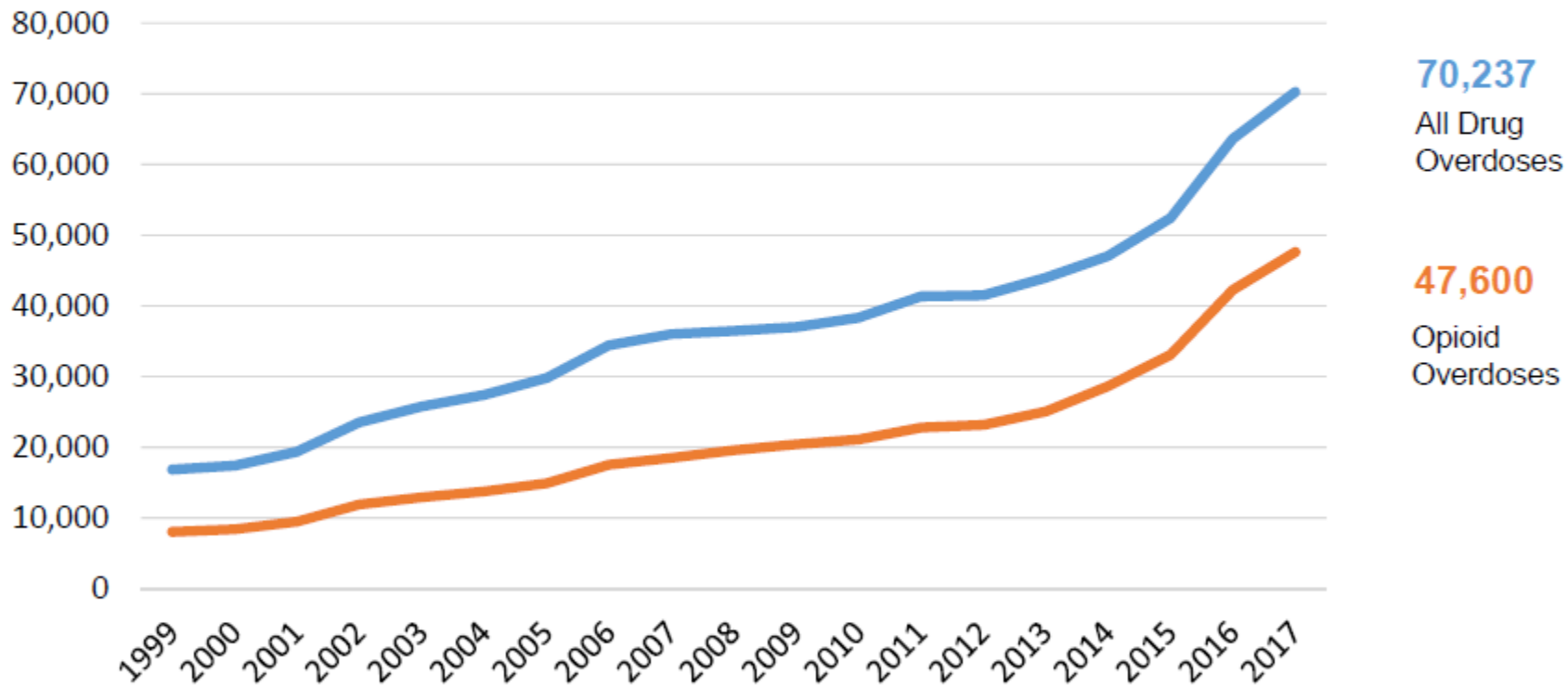
Main reasons for opioid misuse: Pain 62.6%

OFFICE OF THE
ASSISTANT SECRETARY FOR HEALTH

NSDUH, 2017 Data; published Sept. 2018

U.S. DRUG OVERDOSE DEATHS

THE MOST CRITICAL PUBLIC HEALTH CHALLENGE OF OUR TIME



OFFICE OF THE
ASSISTANT SECRETARY FOR HEALTH

SOURCE: NCHS, National Vital Statics System, Mortality

HHS 5-POINT STRATEGY TO COMBAT THE OPIOIDS CRISIS

1

Better addiction prevention, treatment, and recovery services

2

Better data

3

Better pain management

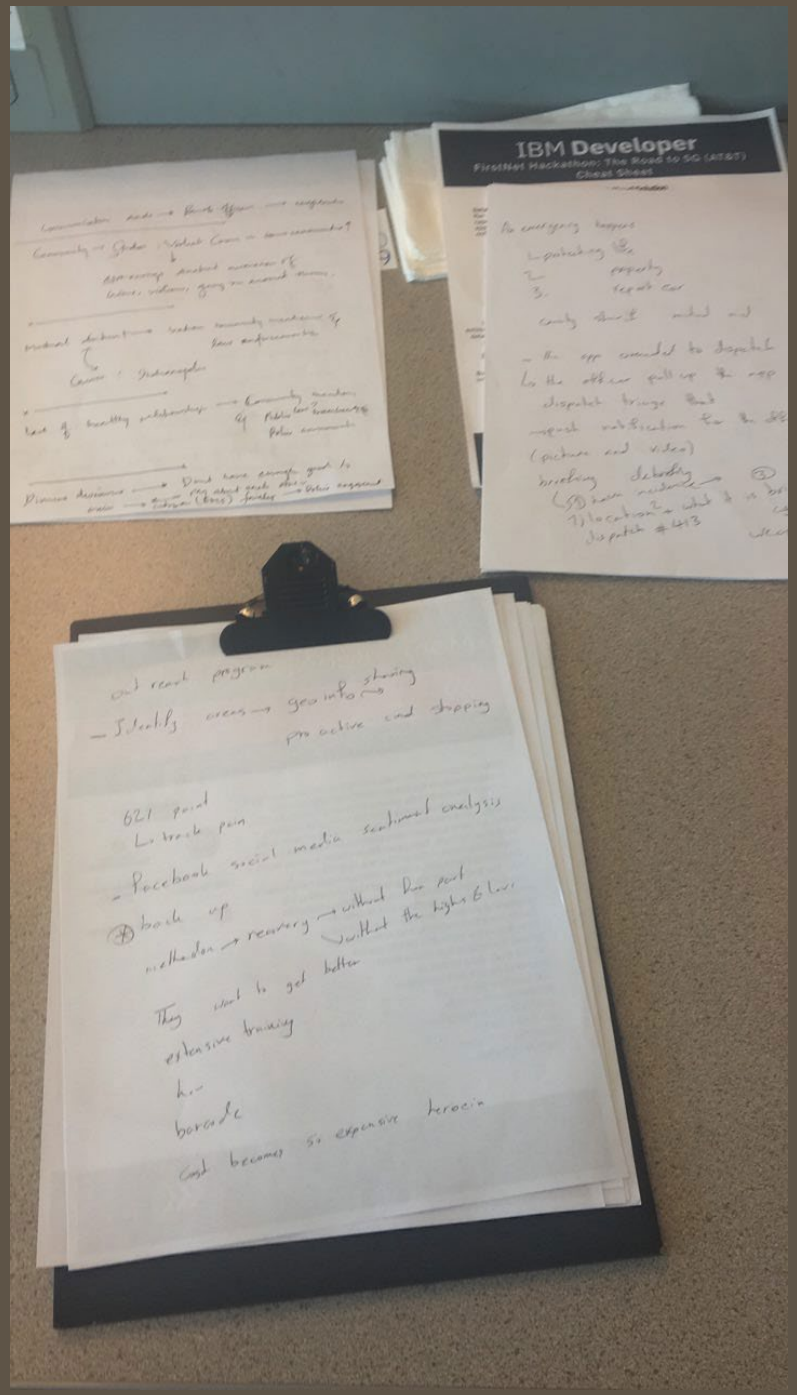
4

Better targeting of overdose reversing drugs

5

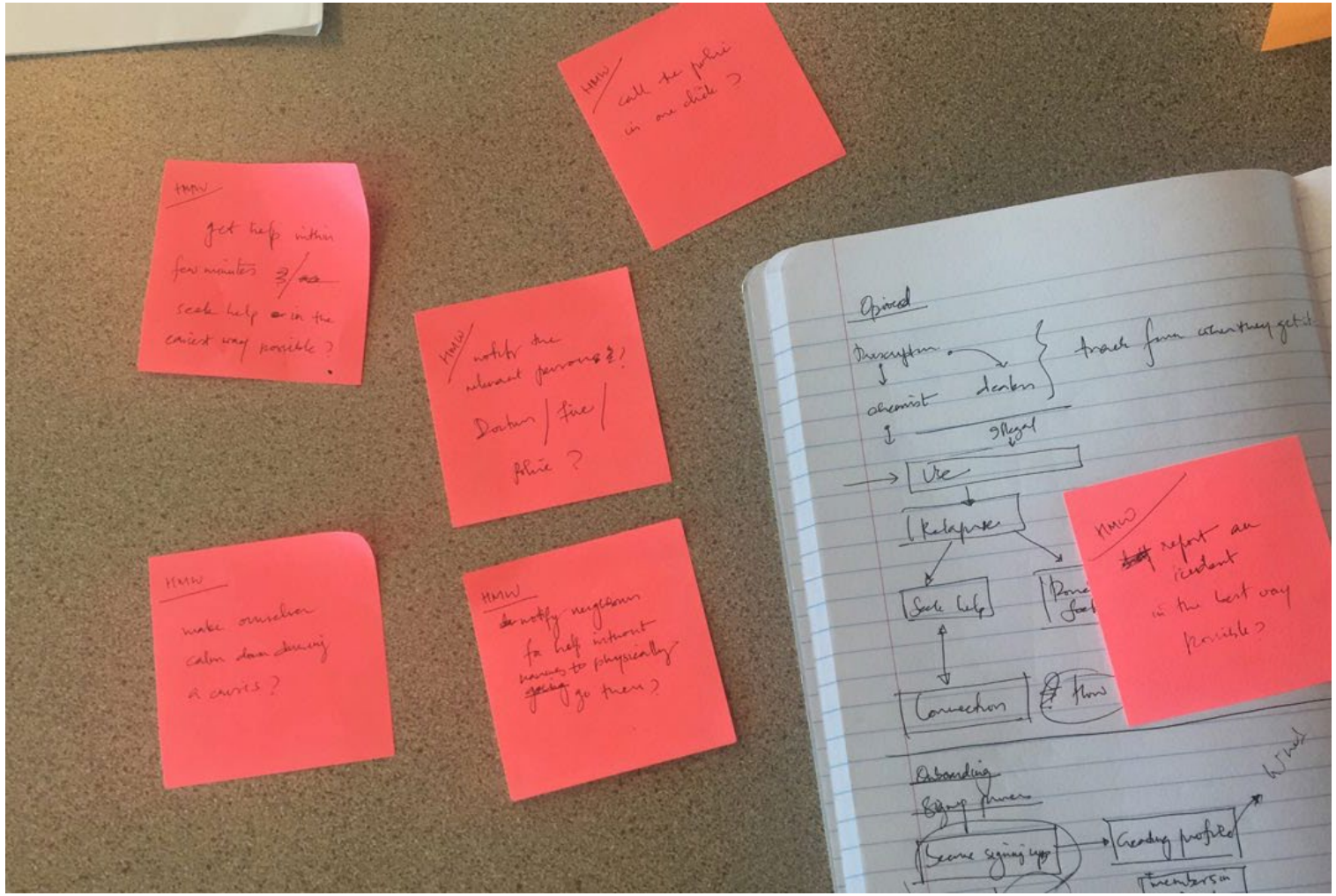
Better research

https://www.hhs.gov/opioids/



Iterative Ideation
Semi-Structured Interviews

- Many debrief sessions in the balcony!
- Getting some food and some sun!



Affinity Diagrams Flow Diagrams

Sponsors & Sponsees

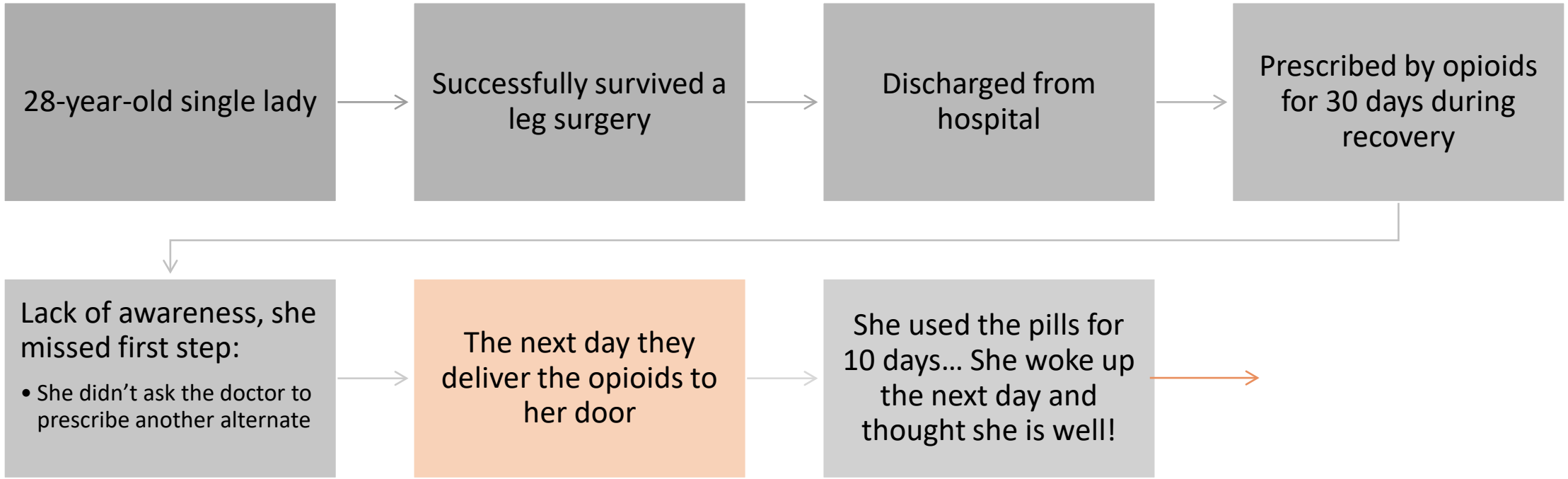
Who are they?

Main findings

- They need to be healthy again
- They need to get read of pain
- They want app they can trust
- They want a push button in case of emergency
- They will allow the app to share their location with police and healthcare in case of emergency
- The time of crisis they are usually down and alone
- Increasing knowledge around opioids
- Sending messages to sponsors
- Remiders
- Scheduling feature
- Sharing location with a network of support

Our Persona
Mia
Story Boards

Meet Mia



How it all started for Mia?

Lack of awareness, she decided to suddenly stop taking it!

- Instead of following doctor instruction step by step
- Gradually stop using the medication

→ **The day after she got up by severe amount of pain, fatigued and nauseated**

→ **Let me take 2 pills instead of one**

→ **This cycle repeated without careful attention to doctor instruction**

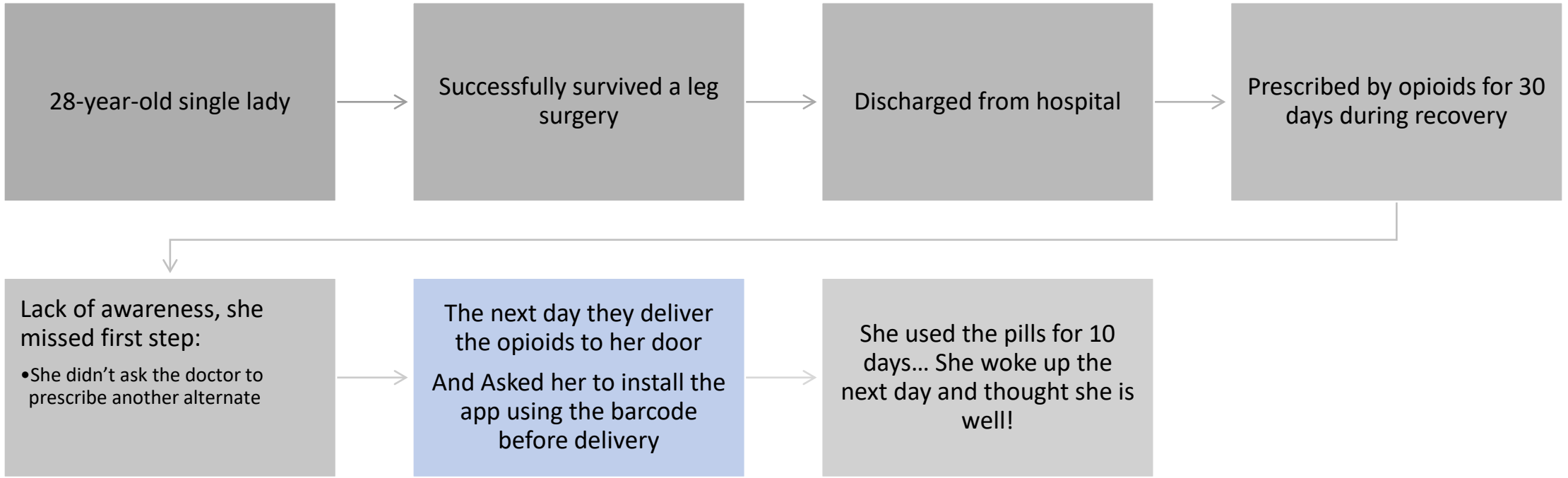
↓

She took all her pills and asked from her friend Suzy and his brother Sam if they have pills

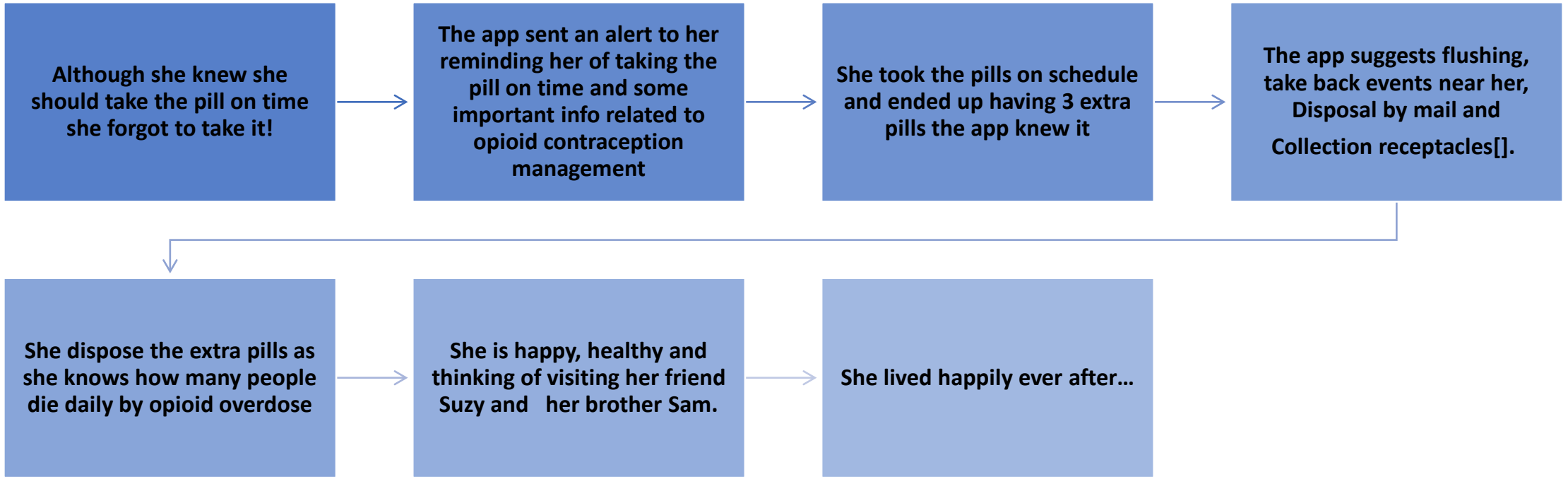
→ **She found a clinic that sells opioids is now addicted to opioid for 5 month and still thinks she can stop whenever she wants**

→ **3 month later: she is confused, she is helpless, she has no ideas what to do!!!**

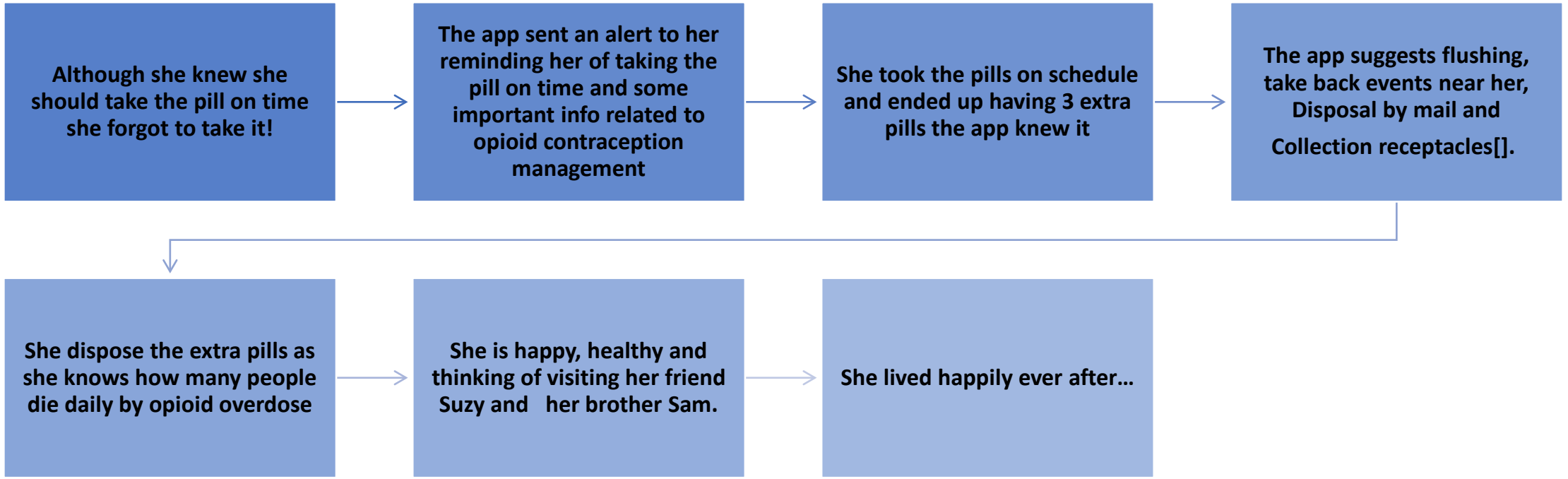
What happens to Mia?


28-year-old single lady
Successfully survived a leg surgery
Discharged from hospital
Prescribed by opioids for 30 days during recovery
Lack of awareness, she missed first step:
•She didn't ask the doctor to prescribe another alternate
The next day they deliver the opioids to her door
And Asked her to install the app using the barcode before delivery
She used the pills for 10 days… She woke up the next day and thought she is well!

What if..



Happy ending with opHop



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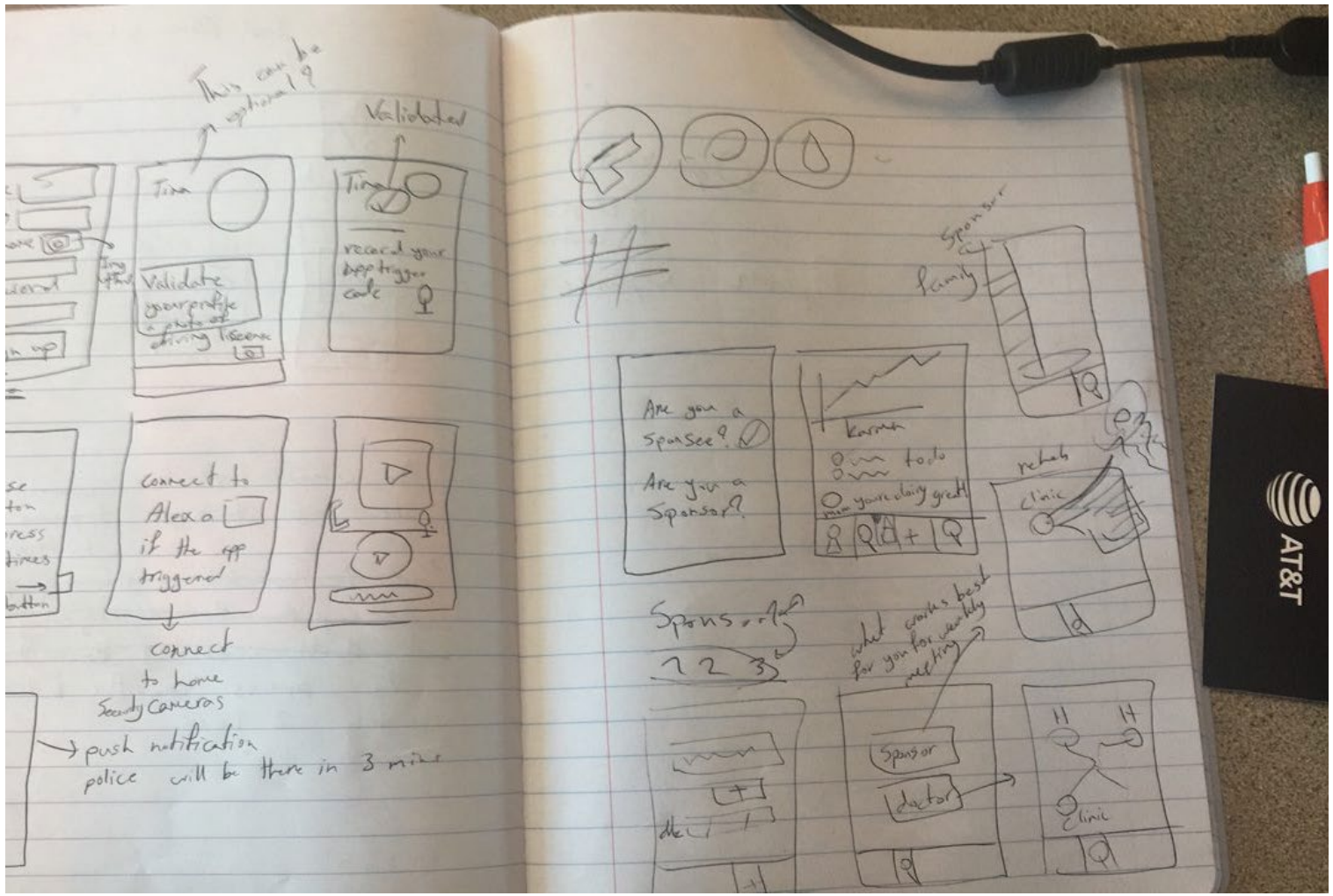
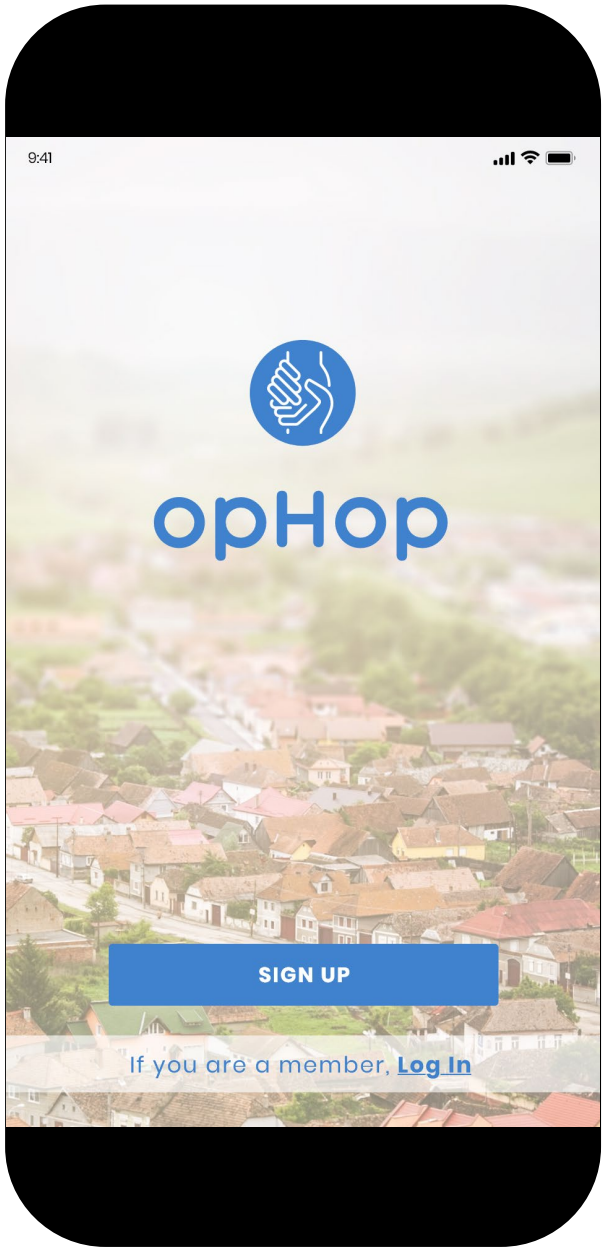
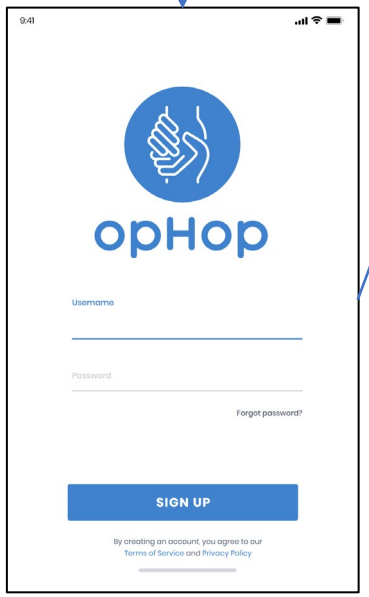


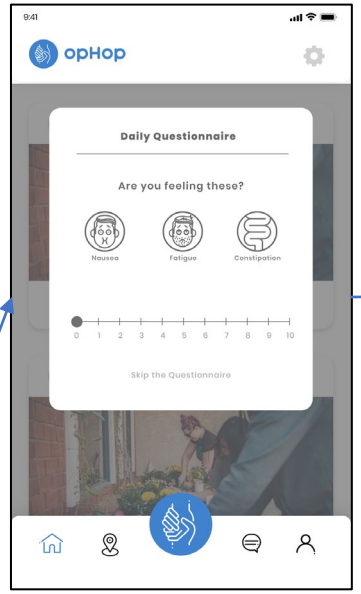
Low Fidelity Prototype: Sketching

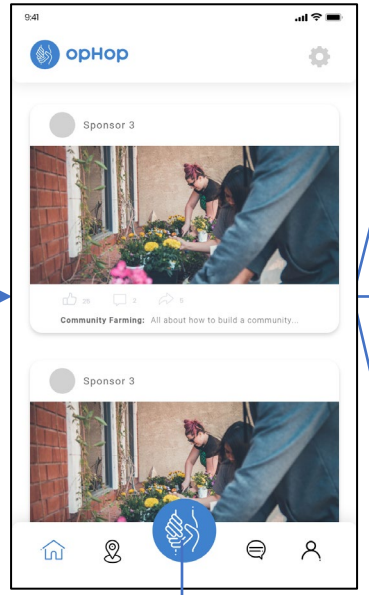
Medium Fidelity Prototype

opHop

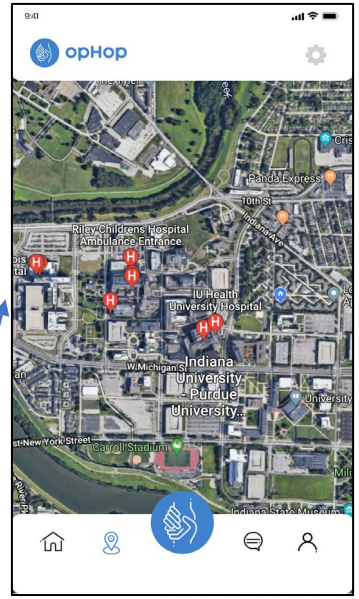


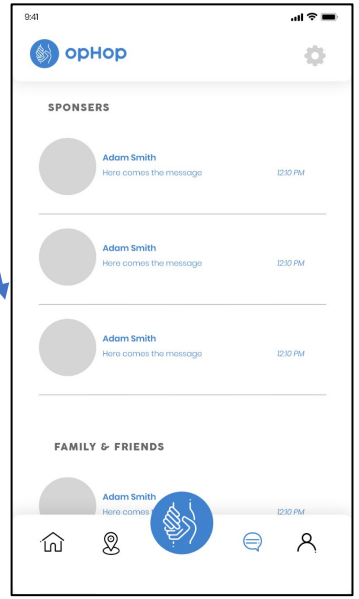


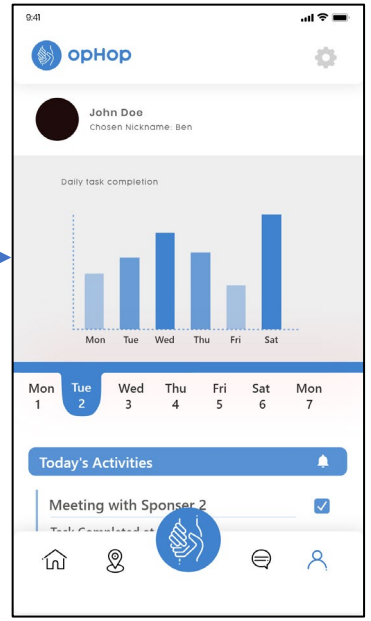




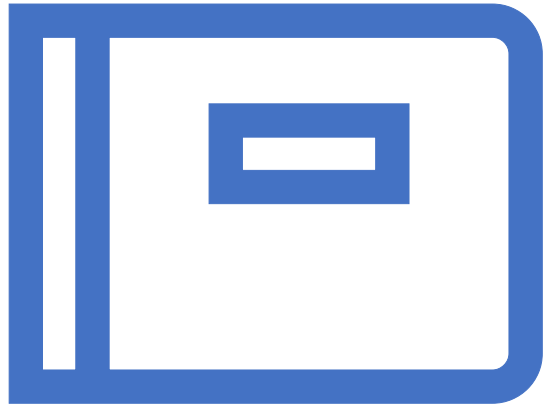
Emergency Alert







Demo



Addressing Opioid Crisis

- Connecting Sponsors & Sponsees
- Controlled downloads
- Emergency alerts through shakes & option-press
- Questionnaires to collect and monitor health data
- Text message between sponsees and sponsors & sponsees and family
- Location awareness of hospitals and rehabilitation centers within
  3-mile radius
- Analytics to show the improvement
- To-do list for unfinished tasks
- Sponsees encouraged to be future sponsors

Addressing Community Engagement Crisis

- Connecting Sponsors & Sponsees
- Building mutual understanding between sponsees and the community
- Ending isolated drug overdose cases
- Engaging more people from the community to become sponsors (sposees ultimately turning sponsors)
- This can be used community-wise that build strong bonds thus ending mutual distrusts and communication divide
- Most of the violent crimes happen due to isolation, we hope this app could address this aspect as well

Addressing safety and informing first-responders

- Emergency text alert via a single click
- Emergency alert via 3 vigorous shakes of the device while the sponsee is in trouble/ having an epileptic shock
- The data received from the behavioral questionnaire can be used to build a database for future use for the first-responders
- Pattern recognition for quicker response

Future steps

- Connection to social media for and image analysis. This could enable the sponsor t understand the whereabouts of the sponsees to understand their community engagement.

Technologies Used

- Android
- IBM Watson Studio
- Google API
- MPH Open Data
- Python
- Jupyter notebook
- Adobe Creative Suite
- Microsoft office Suite

References

NAC 2019 Opioid Presentation Slides | AMA

Opioid Medication & Pain: What You Need to Know

Opioid (Narcotic) Pain Medications: Dosage, Side Effects

Disposal of unused pain medications - Mayo Clinic