



POVS, HMWs, & Experience Prototypes

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TEAM PILLIONAIRES



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Original vs more focused

Improving patients
knowledge / agency
in their medicinal care

Demystifying medication use



Our process: start to finish!



Gather more perspectives

- Interviewed 2 new subjects
- re-analyzed all previous interviewees



Analyze & Brainstorm

- Analyzed results
- Planned next steps under the frameworks of POVS, HMW's, EP's



Experience prototype

- Gathered real-world information our experience prototype on 4 participants



Decide key findings

- Combed through our info for final insights and next steps

PROCESS: solutions & experience prototypes

Assignment 2: POVs

POV 1: Dr. Keesha

We met...

We were surprised to notice...

We wonder if this means...

It would be game-changing t...

POV 2: Dr. Kim

We met...

We were surprised to notice...

We wonder if this means...

It would be game-changing t...

POV 3: Corey

We met...

We were surprised to

We wonder if this me...

POV's

Voting & Discussion



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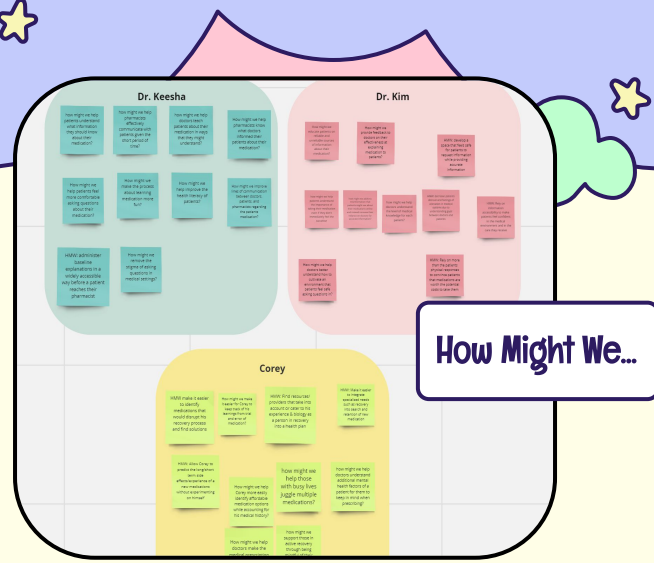
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How Might We...

gamification: Incorporate games into health education. Create health-related games or interactive apps that teach patients about various health topics. These could include quizzes, challenges, and rewards for completing educational modules or tracking their health metrics

a. Critical Assumptions:

- i. People are more likely to learn if they are incentivized by a game where they can win/ gain points
- ii. People can learn effectively by interacting with and testing their knowledge on things
- iii. People will enjoy games about "boring" or confusing topics.
 1. A1: Competitiveness of game makes it fun
 2. A2: Players hesitant to express not knowing but not intimidated
- iv. People do not feel intimidated by knowing/not knowing because it is a game
- v. People are more comfortable playing a game format that is already widely known
 1. A1: our assumption
- vi. People will be able to learn
 1. A1: Showing people it helps them learn

b. Experience Prototype:

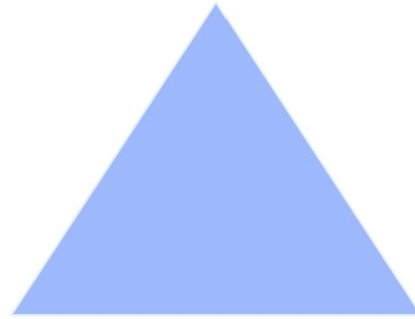
- i. **Artifacts:** Gameshow testing knowledge about medication, Brief survey
- ii. **Role:**

Experience Prototype

**Recall from
last time...**

Doctor:

- Dr. Kim



Patients:

- Mike
- Naomi

Pharmacist:

- Dr. Keesha

**Interview a Doctor to understand the
whole picture and workflow**



Dr. Keesha

About Dr. Keesha:

- **Pharmacy Resident at Penn Presbyterian Medical Center**
- CVS health, Refuah Health Center, Penn medicine, Thomas Jefferson University Hospital
- A lot of experiences with patients

Key Takeaways:

- Pharmacist are busy, no individualized attention to all the patients
- Professionals struggle to explain medication that the patients would understand
- Discrimination in the field
- **There is an uneven playing field when it comes to medicinal education**



Dr. Keesha

We met Dr. Keesha... Pharmacy resident in contact with clients daily

We were surprised to notice... Many patients lack crucial info about the medication they are taking + Hesitant to ask professionals follow-up

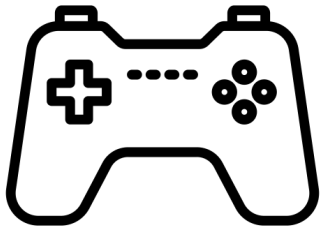
We wonder if this means.. Doctors: difficulty to explain professional medical terms. Patients: embarrassed to admit unknowns + hesitant to ask fellow-ups. Together: Patients accumulate questions for pharmacists.

It would be game-changing to... Allow Dr. Keesha to feel more confident that her patients understood key details about their medication -> reduce number of questions patients have

How might we...

- Help improve the health literacy of patients?
- Remove the stigma of asking questions in medical settings?
- **Make the process about learning medication more fun?**

Solution 1:

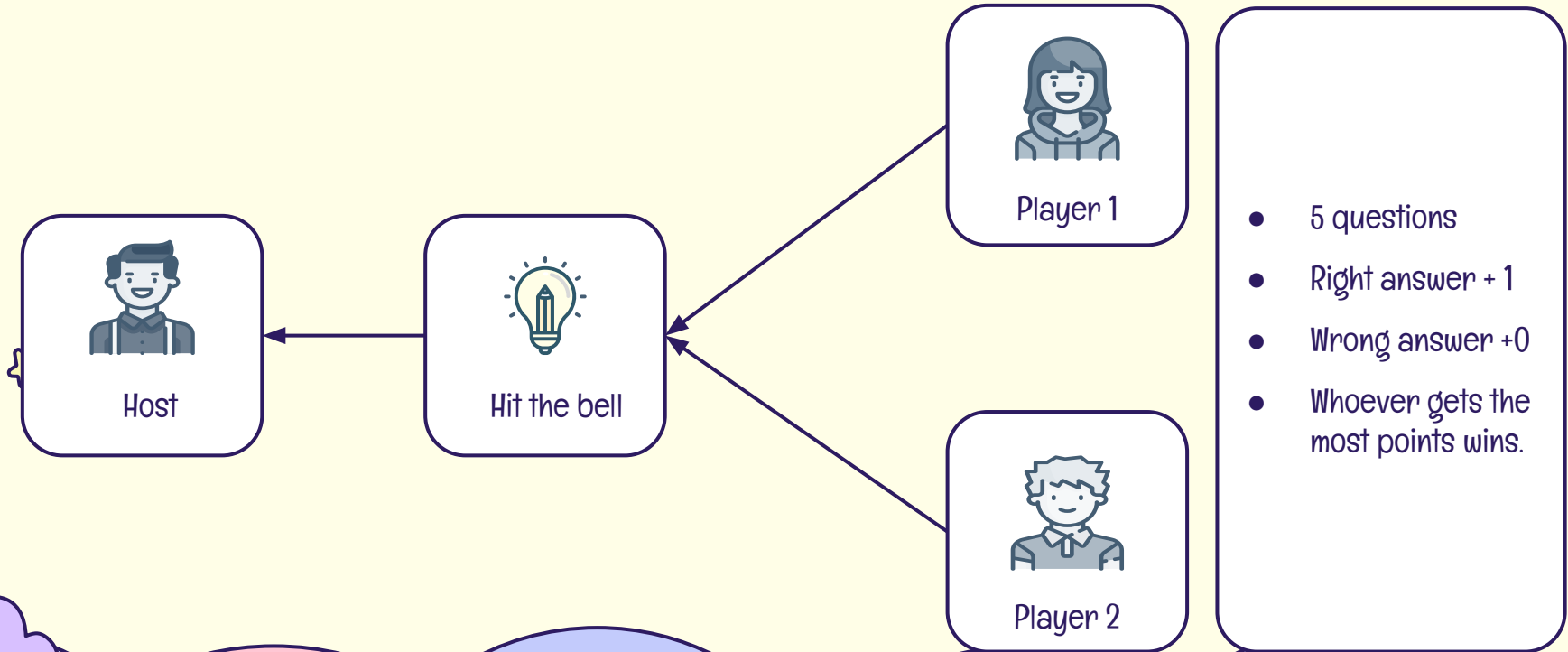


Competitive Game

Critical Assumptions:

- People enjoy games about “boring” subjects.
- No intimidation to admit unknown.
- People enjoy playing games in a format they’re familiar with
- Competitiveness enhances learning.

Experience Prototype 1: Game testing medical knowledge



Survey Questions

- How much did you enjoy a game about medical knowledge?
- People are comfortable playing the games in a format that they are familiar.
- Did the competition in a game encourage them to learn about a subject,

Findings

What did work:

- **Both participants were engaged:**
 - They were excited to play the game
 - they get happy when they get questions correct.
- **Both participants were able to retain** what they learned during the game.
- **Both participants were confident** about the structure and the format of the game..

What didn't work:

- Questions lacked variety in its category.
- Number of questions were low.



Lathrope, room 149

Findings

- + Competitiveness in the game -> more participants' attention and engagement.
- + More willingness to learn + retention
- Participants were embarrassed to admit the unknowns.



Lathrope, room 149



Dr. Kim

About Dr. Kim:

- **Hospice physician** who additionally has previous experience working in outpatient hospitals, in-home care settings, and assisted living facilities
- **Varying degrees of direct interaction** with patients over the course of her career

Key Takeaways

- Patients aren't absorbing important medical information when doctors explain
- Educating individual patients is an interactive process
- Doctors may not be equipped to explain concepts to patients based on
- **Patients have very low levels of medication understanding and have barriers in clarifying understanding**



Dr. Kim

We met Dr. Kim... Physician in inhome + outpatient care

We were surprised to notice... Patients may stop taking medication if they couldn't feel results

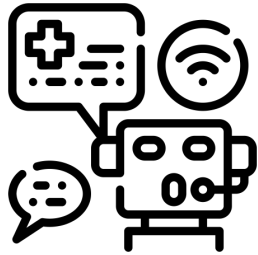
We wonder if this means.. Distrust results because they don't understand treatments conceptually, only tangibly/physically. + Unreliable source of information about the medication

It would be game-changing to... have a reliable source for patients to gain knowledge of their medication in ways they can understand

How might we...

- Provide feedback to doctors on their effectiveness at explaining medication to patients?
- Help doctors understand the level of medical knowledge for each patient?
- Have a reliable source of information about medication for patients.
- **Decrease patients distrust and feelings of alienation in medical systems due to understanding gaps between doctors and patients?**

Solution 2:



AI Chatbot for Explaining
Medical Concepts

Critical Assumptions:

- People will feel comfortable, not intimidated asking medication-relation questions to an AI chatbot
- People will have an idea about what questions to ask a chatbot + how to ask questions
- People will ask follow-up questions when they do not understand something

Experience Prototype 2: Participants ask a chatbot questions about cold medicine



Pre-Survey



Pre-survey on prior knowledge of cold medicine



Brainstorm

Brainstorm questions to ask chatbot about cold medicine



Chatbot Interaction

Ask questions and follow up questions about cold medicine to ChatGPT



Post-Survey



Complete post-survey about their experience

Survey Questions

- How comfortable did you feel asking this chatbot questions about medication?
- How confident do you feel about your knowledge of cold medicine?
- Were there any points in which you did not understand a description from the chatbot?
- Did you have any remaining questions for the chatbot?
- Please describe your overall experience interacting with the chatbot.

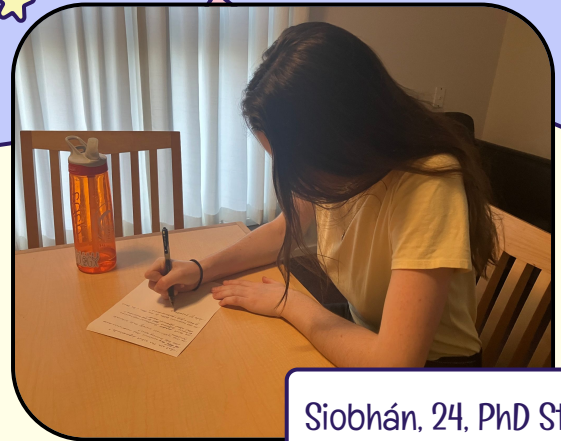
Findings

Things that worked:

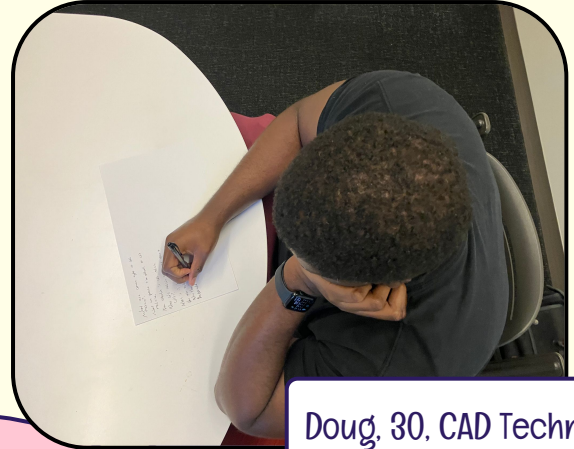
- Participants rated high levels of comfort asking the chatbot questions
- Interacting with a chatbot felt familiar to them
- Participants fully understood the chatbot's answers
- Participants did not struggle brainstorming questions

Things that didn't work:

- Repetitive information across questions was annoying
- Misinterpretation of participant's question
 - Participant rephrased a question to be more specific
- Participants appeared bored



Siobhán, 24, PhD Student

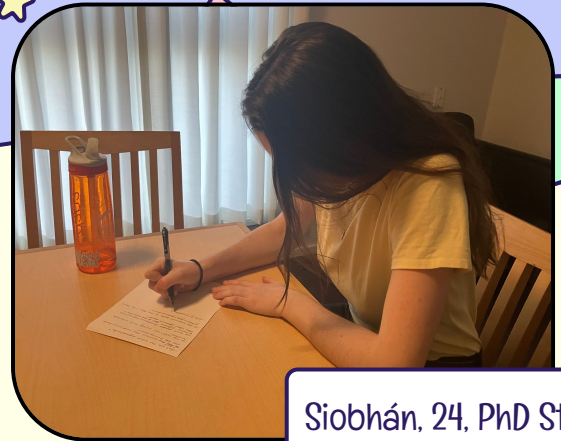


Doug, 30, CAD Technician

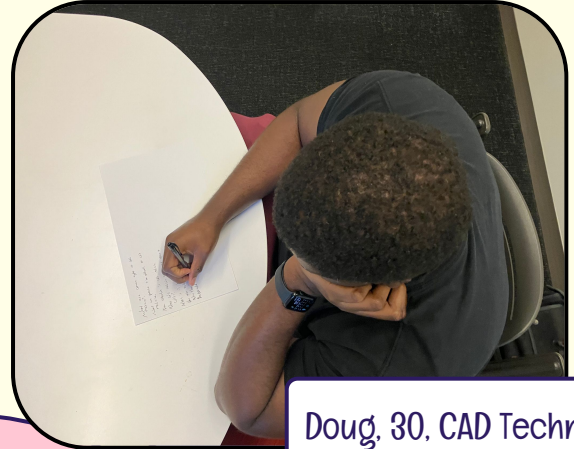
Key Learnings

Key learnings:

- Prior experience with LLM-based chats can help young adults feel comfortable during these interactions
- Visuals may help chatbot-interaction feel more exciting
- Maintaining a balance between accuracy and conciseness is important



Siobhán, 24, PhD Student



Doug, 30, CAD Technician



Corey

About Corey:

- **Resident Fellow for The Well House** : a substance-free undergraduate dorm
- Collegiate Recovery Coordinator for Stanford's Office of Substance Use, Education & Resources
- In active recovery from substance abuse for 9 years
- Anxiety, depression, ADHD

Key Takeaways

- Stanford insurance -> Kaiser = **Decrease in care and access** to his medications
- His recovery -> **non-abusive/mind altering** medications
- *New medication -> **trial-and-error** side effects + result of drug interactions*




Corey



We met Corey who is currently **dealing with various chronic and mental illnesses** that he has to take medication for, while being in recovery.

We were surprised to notice how much Corey relies on his own knowledge, **obtained through trial and error**, to decide if a medication is good for him, and how careful Corey has to be with which medications he takes given his recovery.

We wonder if this means healthcare providers aren't able to fully take into account Corey's unique biology and responses to treatment, causing Corey to have to rely on himself much more.



It would be game-changing to help Corey find suitable ways to take care of his chronic illnesses through medication while still continuing his recovery journey.

How might we...

- Find resources/ providers that take into account his experience & biology as a person in recovery into a health plan?
- Make it easier to identify medications that would disrupt his recovery process and find solutions?
- **Make it easier for Corey to keep track of his learnings from trial and error of medication?**

Solution 3:



Medical Journal

Critical Assumptions:

- People will prefer to answer questions that are short/ quick to answer
- People prefer less invasive questions
- People will find it helpful to check-in with themselves using pre-set questions

Experience Prototype 3

Medical Journal EP: A Google Form with 12 Questions about the Participant:

- **4 required, 8 optional**
 - This was to see which questions participants would want to answer
 - Required questions were sprinkled throughout to make sure the participant saw all of the form
- **Question topics three categories: major/academic interests, food, wellbeing**
- **Varied response types** (i.e. short answer, linear scale, multiple-choice/checkbox, long answer/open-ended questions)
- **Variations of the same question using different response types**
 - Eg. How are you doing?
 - Use three words to describe your week so far (short-answer)
 - On a scale of 1-5, how are you feeling today? (linear scale)

Findings

What did work:

- **11/12 questions filled out**
 - The one question not filled out was: What have you eaten today?
 - Through the question, he was reminded that he had not eaten anything that day and needed to grab lunch after
- **Mix of response types** helped to keep the form **engaging, less boring**
- Questions that they saw **multiple times but reworded** helped them to **reimagine how they thought about the answer**
- Large number of questions but because they were short, easy to answer, **it didn't take too long to complete**

What didn't work:

- Scope of question categories seemed too broad, a little random

Key Learnings

- **Repetitive filling out of the journal might result in less time spent each time:**
 - If each question is expected, then it will take less time to gather thoughts on each question
 - How does this apply to a medical journal? If someone routinely fills out their medical journal, they might be more regularly reflective on how they feel in anticipation of writing it in their journal
- **Different questions are more suitable (prompt a quicker response/require more thought) for different response types:**
 - E.g. he took shorter to answer the “How are you doing” question when it was the linear scale response versus the short answer response
 - How does this apply to a medical journal? To ensure that the medication journal is effective, we may need to edit response types to balance how much time is spent on the question with how helpful the participant finds the question.

Next Steps

OUR SOLUTION: Tracking + Gamifying + Communication Combo

- Our solution involves:
 - **Easing the process** of tracking medication use
 - **Using gamified components** to increase consistent usage
 - **Creating easy sharing functionality** to remove barriers in communication and facilitate comfortable communication from users

Next Steps

Ethical Implications of our solution:

- Privacy of medical data
- Creating positive/negative correlations around one's personal health

Who can we serve with our solution?

- Patients + their Caretakers
- Family of patients
- Medical Professionals

Who is left out from our solution?

- People without consistent access to a mobile device
- People with skepticism of technology
- People with disabilities

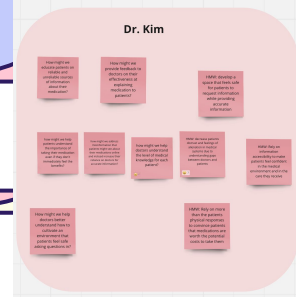


Thank You!



Appendix

10+ HMWs generated for each POV - Dr. Kim



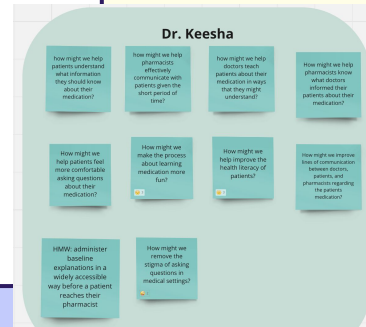
How might we...

1. educate patients on reliable and unreliable sources of information about their medication?
2. provide feedback to doctors on their effectiveness at explaining medication to patients?
3. develop a space that feels safe for patients to request information while providing accurate information?
4. decrease patients distrust and feelings of alienation in medical systems due to understanding gaps between doctors and patients?
5. help patients understand the importance of taking their medication even if they don't immediately feel the benefits?
6. address misinformation that patients might see about their medications online and instead increase their reliance on doctors for accurate information?
7. help doctors understand the level of medical knowledge for each patient?
8. Rely on information accessibility to make patients feel confident in the medical environment and in the care they receive?
9. Rely on more than the patients physical responses to convince patients that medications are worth the potential costs to take them?
10. help doctors better understand how to cultivate an environment that patients feel safe asking questions in?

10+ HMWs generated for each POV - Dr. Keesha

How might we...

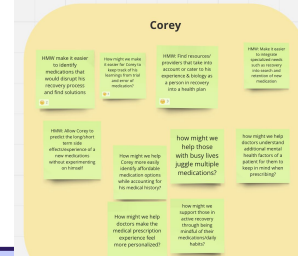
1. help patients understand what information they should know about their medication?
2. help pharmacists effectively communicate with patients given the short period of time?
3. help doctors teach patients about their medication in ways that they might understand?
4. help pharmacists know what doctors informed their patients about their medication?
5. make the process about learning medication more fun?
6. help improve the health literacy of patients?
7. help patients feel more comfortable asking questions about their medication?
8. improve lines of communication between doctors, patients, and pharmacists regarding the patients' medication?
9. administer baseline explanations in a widely accessible way before a patient reaches their pharmacist
10. remove the stigma of asking questions in medical settings?



10+ HMWs generated for each POV - Corey

How might we...

1. make it easier to integrate specialized needs such as recovery into search and retention of new medication
2. find resources/ providers that take into account or cater to his experience & biology as a person in recovery into a health plan
3. make it easier to identify medications that would disrupt his recovery process and find solutions
4. make it easier for Corey to keep track of his learnings from trial and error of medication?
5. allow Corey to predict the long/short term side effects/experience of a new medications without experimenting on himself
6. help doctors understand additional mental health factors of a patient for them to keep in mind when prescribing?
7. help those with busy lives juggle multiple medications?
8. help Corey more easily identify affordable medication options while accounting for his medical history?
9. support those in active recovery through being mindful of their medications/daily habits?
10. help doctors make the medical prescription experience feel more personalized?



Experience Prototype Participants



Nathan, 21

Current student
Recruited by word of mouth

Selected based on status as a young adult, who is usually busy and would need an efficient journal process for his medications



Doug, 30

CAD Technician from North Carolina
Recruited by word of mouth

Selected based on status as a young adult, a demographic who might feel comfortable with AI chatbots



Siobhán, 24

PhD Student
Recruited by word of mouth

Selected based on status as a young adult, a demographic who might feel comfortable with AI chatbots



Jackson, 18

High School student
Recruited by word of mouth

Selected based on status as a youth who is comfortable with AI and interested in playing games

Experience Prototype #3

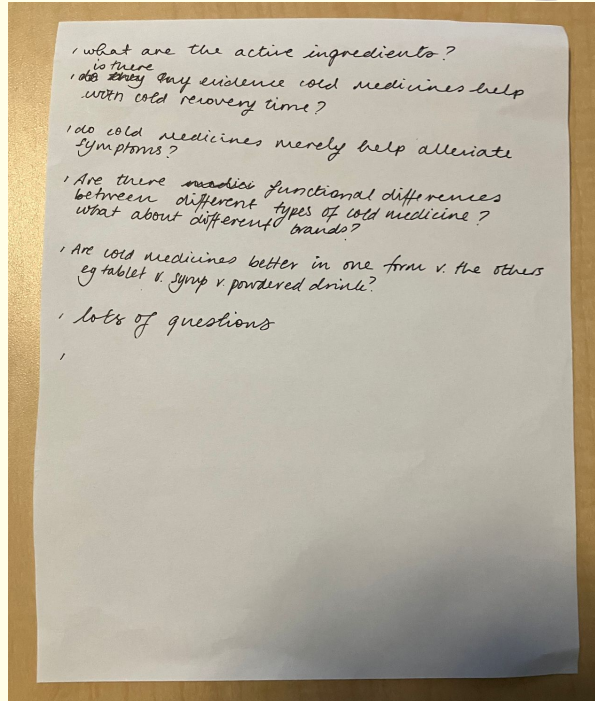
Process for Experience Prototype:

1. Introduce form on participant's laptop, context: "feel free to answer whichever questions you want"
2. Participant scans over form to see all the questions
3. Participant completes the journal form.
4. Conduct post submission questions

Post submission questions for the participant:

- How did you select which questions you wanted to do?
- If you were to do this form again tomorrow, would you change the questions you wanted to answer?
- How did you feel about the mix of question types?

Experience Prototype #2: Additional Details



Questions brainstormed by participant 2:

- What are the active ingredients?
- Is there any evidence cold medicines help with cold recovery time?
- Do cold medicines merely help alleviate symptoms?
- Are there functional differences between different types of cold medicine? How about brands?
- Are cold medicines better in one form vs the others? e.g. tablet v. syrup v. powdered drink?
- Lots of questions

Experience Prototype #2: Additional Details

What are common types of cold medicine?

What are potential side effects of cold medicine?

How effective is cold medicine?

Does cold medicine help prevent spread of colds?

When is it best to take cold medicine?

How often should one take cold medicine?

Why should one take cold medicine?

Are there any risks?

Questions brainstormed by participant 1:

- What are common types of cold medicine?
- What are potential side effects of cold medicine?
- How effective is cold medicine?
- Does cold medicine help prevent spread of colds?
- When is it best to take cold medicine?
- How often should one take cold medicine?
- Why should one take cold medicine?