



## Final Report

CS 147 Autumn 2023

Care on your calendar.

Delali Bruce, Abbie Maemoto, Susan Lee, Angela Mao



---

# Table of Contents

## [Introduction + Team](#)

- Value Proposition
- Problem/ Solution Overview

## [Needfinding](#)

- Interviews
- Synthesis

## [POV's + experience prototypes](#)

## [Design evolution](#)

- Final solution
- Tasks
- Design visualizations
- Values in design

## [Final prototype implementation](#)

## [Reflection](#)



---

## Project Name and Value Proposition

### Project Name

CheckUp

### Value Proposition

Care on your calendar.

### Team CheckUp

- Abbie Maemoto - Project Manager, Developer, UX Designer
- Angela Mao - Project Manager, Developer
- Susan Lee - Developer
- Delali Bruce - UX Designer

## Problem and Solution Overview

### Problem

Adults, particularly young working professionals, frequently forgo seeking out care for their health because the process is often arduous and time-consuming. It takes significant effort to find the right kind of care and find a medical practitioner that meets your needs.

### Solution

CheckUp exists to remove the burden of seeking medical care for adults by streamlining the process into a few simple clicks. As a virtual assistant CheckUp syncs with a user's calendar availability and schedules appointments with care practitioners based on the user's specific symptoms or medical needs.

---

## Needfinding interviews

### Methodology

Our needfinding process started with conversations with 8 individuals with experience or expertise in the healthcare space. We aimed to get wide-ranging perspectives from people who work in industry and those who seek medical care. Many of the participants we interviewed were young students or working professionals who have to navigate seeking care in the midst of their busy schedules. Some examples of extreme users we interviewed include a full-time student who seeks medical care out of pocket due to limited insurance as well as a director of a wide-ranging health services network. We recruited interviewees through word-of-mouth as well as by cold-outreach over email. The majority of our interviews were conducted in-person in the Bay Area. We conducted a few interviews remotely via Zoom. To protect our participants, each interviewee signed a consent form before the interview commenced.

With our interviews, we sought to understand the various experiences and challenges faced by those within or adjacent to the healthcare space. We used a set of questions to standardize as well as motivate the conversation further, but for the most part, we held the floor open for our interviewees to tell us the details of their experiences. Here is a sampling of our interview questions:

#### Questions for an individual seeking care

- Tell us about a time when you were sick and/or injured and you needed care. Could you walk us through how you were able to find care? [individual seeking care]
- What type of health insurance do you have? Could you tell us a little bit about the benefits or your plan, such as the co-pay amount? [individual seeking care]

#### Questions for an individual working within the healthcare industry

- Can you describe your role? How does it fit within the healthcare ecosystem?
- In your observations, how do students typically navigate finding in-network care?

### Insights

We used empathy maps to unpack the findings from our interviews, we focused on synthesizing the emotions and sentiments that our interviewees shared in conversation (see Figure 1). Our reflections post-interview revealed several key insights.

First, we heard from numerous individuals about the difficulties in finding and making personalized care decisions. There were a variety of reasons why this was the case but two primary reasons were due to moving locations and also lack of availability for scheduling. This ultimately would result in individuals, like Anastazja, a full-time college student, to find home remedies or another interview participant, Connie, to forgo receiving medical care completely.

Secondly, we learned that most students and young people have little to no understanding of their healthcare benefits and how to access their insurance. This was even more true for international students. John, an anonymous name for a prominent director in the healthcare space, said, “If students end up needing care, they need to figure it out – the vast majority of students have no idea how to access their insurance until it gets bad.”

Finally, we realized how profound the difficulty of scheduling appointments can be for those seeking medical care. There are often long wait times at clinics. Indeed, one of our interviewees mentioned this saying “I always have to plan ahead because doctors are always booked... for some clinics I have to check everyday for availability”. As a result many individuals begin to feel frustrated and that their time is being wasted.



Figure 1. Empathy maps for interview participants

## Point of Views & Experience Prototypes

As we continued in our design process, we narrowed down our interview findings to focus on three particular individuals and their unique insights. We began by crafting a point of view statement which aims to summarize and derive meaning from a particular interview. The POV describes who we met, something that was surprising to note, and some wonders that could lead to a potential solution.



From the point of views we generated, we then spent time brainstorming numerous how might we statements (HMW). How might we's are designed to question the possibilities and prime for solutions. Essentially, one uses the insights from the POV to then think about the potential needs that exist. These questions are not solutions but rather act as a prime for solutions; solutions are intended to answer HMWs.

Finally, from our HMWs we brainstormed several potential solutions. We narrowed down those solutions and built experience prototypes around them. The experience prototypes were designed to test assumptions made in each solution.

Connie: Entrepreneur, Stanford GSB '22

### Point of View

- **We met Connie**, an entrepreneur in her late 20s who moved to the Bay several years ago to create several startups.
- **We were surprised to notice** she gave up searching for a doctor and didn't go for regular check-ups when she switched to Medi-cal even though she had past critical health issues.
- **We wonder if this means** the stress of finding a doctor and scheduling check-ups is more stressful than the potential flare-ups of her past health issues.
- **It would be game-changing to** streamline the process of searching for doctors and scheduling check-ups after switching to a new insurance.

### HMW Statements

- HMW separate unavailable doctors from available doctors more clearly?
- HMW make the search process for finding doctors insightful rather than annoying?
- HMW remove the burden of finding doctors from the patients?
- HMW make the search process for finding doctors something to look forward to?
- HMW incentivize Connie to continue searching for doctors and get checkups instead of giving up?

### Solution & Experience Prototype

We were inspired by the underlined HMW statement to create a solution for Connie to find care without the search fatigue that can lead to giving up. The solution we crafted to meet this need is an app that takes your online calendar, insurance information, and preferences to automatically book you appointments with a simple request. The critical assumption within this solution is that people put off receiving care if they are busy because booking appointments is perceived as a long and tedious process.

We tested this assumption out with an experience prototype. In this prototype we created two calendars, one of a busy student and another of a busy professional. The participant was then told

that they got sick on Sunday with an ear infection. They were then asked when they would start looking for care, how long they expected it to take, when they would schedule an appointment and why. After testing the prototype, we found that people carefully think through their scheduling process and tend to be concerned about getting healthcare. We also confirmed our assumption that people thought booking appointments was “tedious”. Consequently, we also found that people tended to say that they would just go to a walk-in clinic without booking. Our main insight from all of this was that many people are willing to run the risk of their symptoms getting worse because they prioritize other responsibilities, especially since booking appointments can be seen as a long process. Many expressed that if they could book in a minute, they would.



**Figure 2.** Experience prototype for scheduling solution.

“John”: Director of a wide-ranging health services network

#### Point of View

- **We met John**, the director of a wide-ranging health services network that provides various types of care to college students.
- **We were surprised to notice that** the vast majority of students have no idea how to access their healthcare until their conditions get bad or it is too late.
- **We wonder if this means that** current educational resources regarding insurance and access to care aren’t effective enough or utilized enough.
- **It would be game-changing if** we could help students access and utilize resources to understand their insurance in an impactful way sooner rather than later.



## HMW Statements

- HMW remove the burden of co-pay for students?
- HMW alleviate the feeling of lack of access to care for students?
- HMW increase communication between healthcare providers and their constituents?
- HMW normalize conversations about insurance amongst young people?
- HMW educate students about their insurance at a younger age?

## Solution & Experience Prototype

Inspired by our conversation with John to address the question of how to educate students about insurance, we developed a potential solution. We proposed a virtual assistant that walks you through your healthcare needs and recommends relevant health options based on the user's questions. The critical assumption that was made here is that a user trusts what a virtual assistant or chatbot says, specifically that they trust it with their health questions, which are often personal and private.

We tested this assumption by creating an experience prototype where a target user was selected to interact with three online chatbot or virtual experiences. They were given an objective for their interaction (i.e. to find a train ticket to LA). They were then asked to gauge how much they trusted the results of the interaction. From this prototype, we found that the interactions that involved a chatbot provided through a service were more trustworthy than standalone chatbots like ChatGPT. We also saw that interactions were viewed positively when the user was able to get definitive results. Conversely, we also found that the UI of these chatbots was unclear and would often make it hard for the user to get the results they wanted. Ultimately, our main insight was that trust is more likely when the chatbot is connected to a company where the service is provided rather than a stand alone chatbot that is not affiliated with the specific industry.

Alia: Biotech founder, Georgetown

## Point of View

- **We met Alia**, a female entrepreneur who recently moved to the Bay and has been suffering from a recurring back injury because of various misdiagnoses.
- **We were surprised to notice that** YouTube is often her “at-home doctor” which she uses to create physical therapy regimens when she can't seek healthcare.
- **We wonder if this means that** she prefers to take her healthcare matters into her own hands rather than switch to CA health insurance because of mistrust in the healthcare system.
- **It would be game-changing to** leverage the desire for autonomy in healthcare to empower patients to proactively seek better treatments for medical needs.

## HMW Statements



- HMW reduce the rates of misdiagnosis?
- HMW create better ways to continue tracking recurrent injuries?
- HMW foster greater long-term trust between new doctors and patients?
- HMW help people easily switch in-state insurance plans upon moving?
- HMW provide Alia the autonomy she desires in her healthcare while maintaining the integrity of medical information?

### Solution & Experience Prototype

To answer the how might we statement concerning autonomy in healthcare desires while respecting the bounds of medical information, we brainstormed a solution which entailed a virtual hub for finding the most relevant cross-media content for at-home care based on a patient's current health needs. The critical assumption that we identified here was that when first addressing healthcare concerns, young people value saving money and ease-of-access over quality of care.

The experience prototype (see figure 2) we developed to test this assumption included giving the user a scenario in which they were sick or injured. The user was then given three distinct treatment plan options created upon different metrics including cost, time, and quality of care. Consequently, the user was asked to rank each option from 1 to 3, 1 being the first line of action. This process was repeated for a second scenario. With this prototype we found that the scenarios were believable and the users mentioned relating to some illnesses or injuries. We also found that some of the treatment options were considered so drastic that they were not seriously considered. Ultimately, we found that young people prefer to address their healthcare concerns themselves as a first line of treatment, rather than see a doctor if they can mitigate symptoms over the course of a few days.

## Design Evolution

### Arriving at a Final Solution

After testing an experience prototype for all three potential solutions, we worked on narrowing down to a final solution and refining it. The solutions that we chose from were:

1. An app that takes your online calendar, insurance information, and preferences to automatically book you appointments (sudden and recurring) with a simple request.
2. A virtual assistant that walks you through your healthcare needs & recommends relevant health options based on user's questions.
3. A virtual hub for finding the most relevant cross-media content for at-home care based on a patient's current health needs.

We ultimately decided to pursue and build around the first solution. The reason we turned away from the second solution was that we didn't feel like the experience was robust enough for a stand-alone app, rather it felt like a stand alone solution that didn't include many elements or details.



Concerning the third potential solution, among other reasons, we were not confident in the trust tested during our experience prototype.

Ultimately, we decided to further develop the first solution, committing to prototype and iterate around this final solution: a mobile app that syncs with your digital or paper calendar, insurance, and medical care preferences to seamlessly book appointments with a few clicks. Some reasons this solution felt promising to us is because of how glaring the theme of difficulty of scheduling and finding care was during our various needfinding interviews and also because there was an opportunity to build out certain key and interesting features (ie scanning one's insurance, syncing one's calendar to the app, etc).

## Identifying Tasks

After narrowing down our needfinding and synthesis to one final solution, we broke down the problem space into specific tasks that identified the need of the user. Essentially, we asked ourselves what a user would need or want to do that our app then provides an avenue to accomplishing. For a diverse range, we aimed to identify tasks across a range - simple, moderate, and complex.

### Task 1: Simple

Users can **communicate** with CheckUp that they **want to book** an appointment.

Thinking back to our user base, this task is important because in our needfinding with young people, so many have an active desire to seek medical care and book appointments with healthcare physicians. (See Figure 3)

### Tasks 2: Moderate

CheckUp connects with the **user's calendar** and **doctor preferences** to suggest them the **best availability** and **provider**.

We identified that so much of the friction arises when an individual has to sift through their own availability and try to find time to schedule care, so to respond to this we wanted to minimize this burden from the user as much as possible. (See Figure 4)

### Task 3: Complex

Users can **view** past and upcoming appointments and **reschedule/cancel** upcoming appointments. As touched on with our simple task, booking time to see medical practitioners is difficult. After addressing that need, we also wanted to provide the user with ease and flexibility when it comes to scheduling and canceling appointments. (See Figure 5)

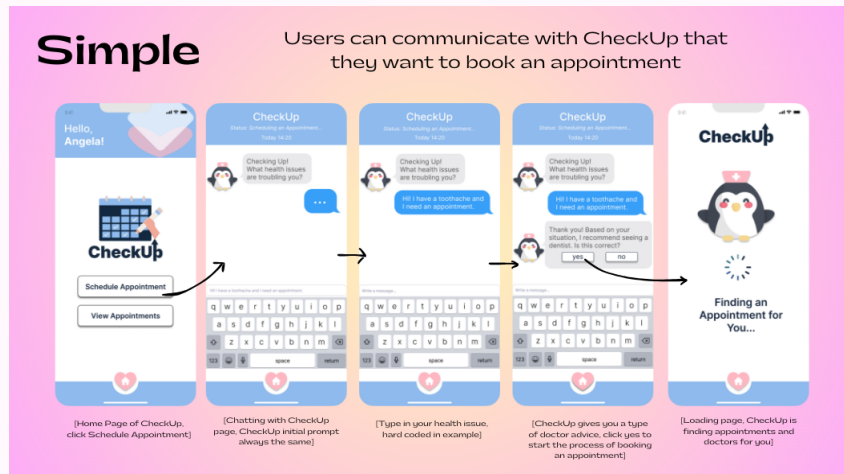
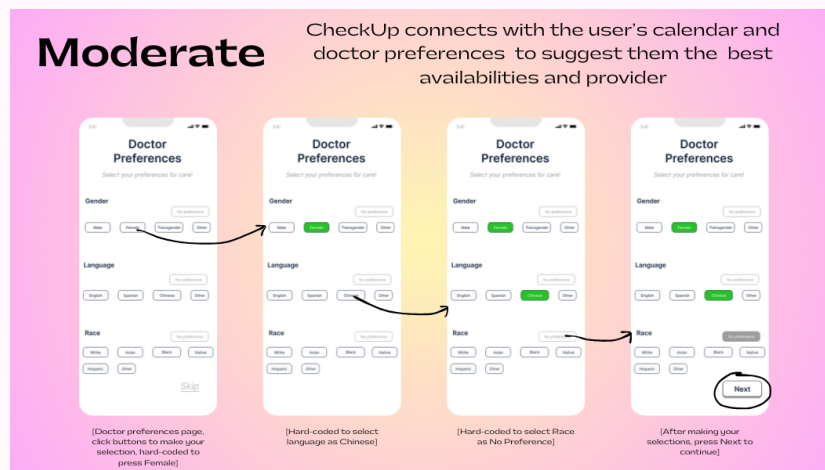
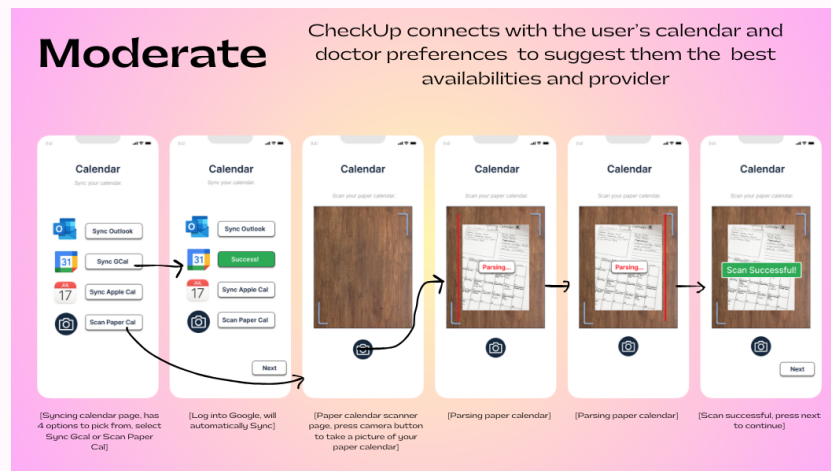


Figure 3. Our annotated simple task flow.



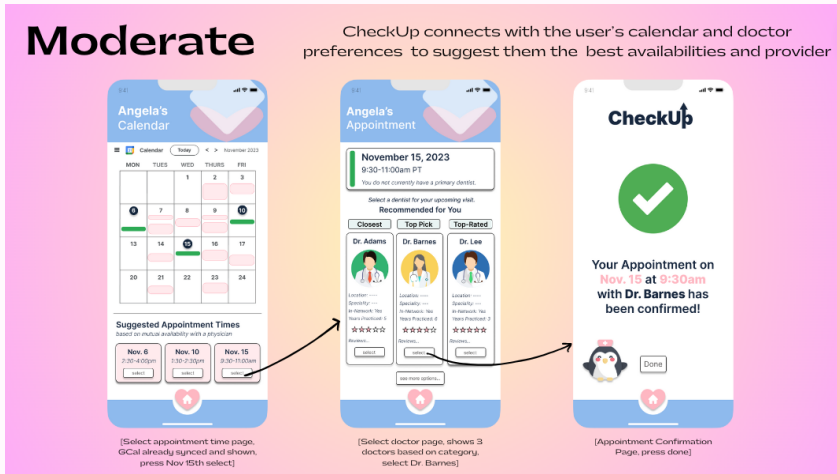


Figure 4. Our annotated moderate task flow.

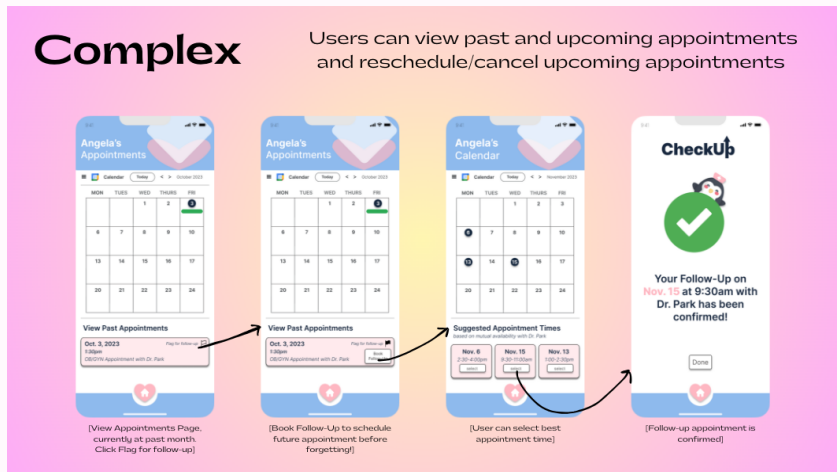
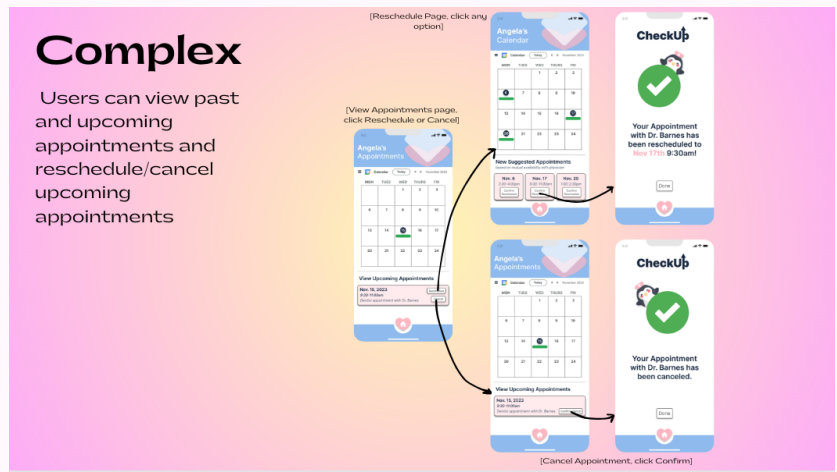


Figure 5. Our annotated complex task flow.

## Design Iterations

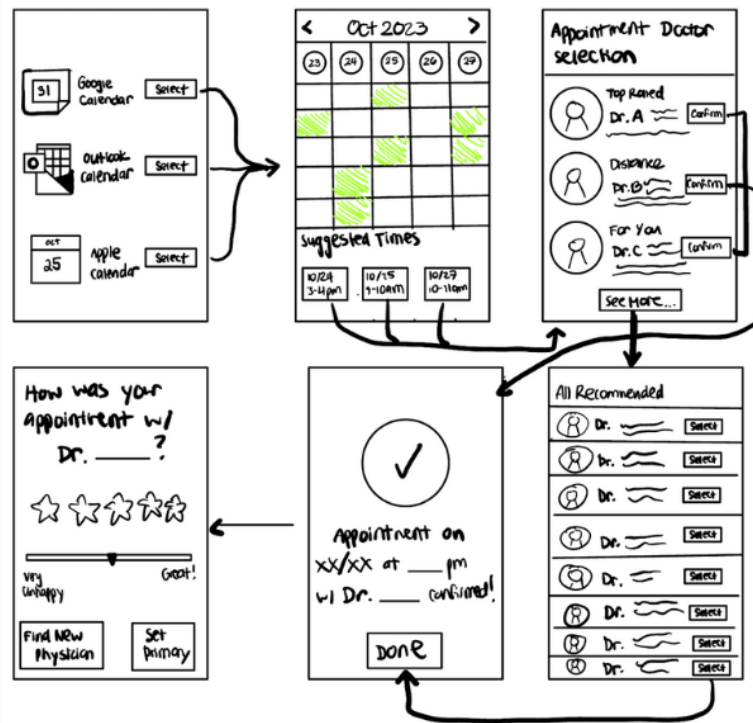
### Low-Fi Prototype

#### Brainstorming

We began the prototype process by thinking about our solution in several lenses. The goal for this was to think through the different ways our solution could be manifested, whether that be through hardware or mobile app creation. We drew sketches and task flows for these different formats and then came together and narrowed our creations down to interfaces that felt most aligned with our needfinding and the solution we chose to address.



**Figure 6.** An exploration of our solution that uses AR/VR



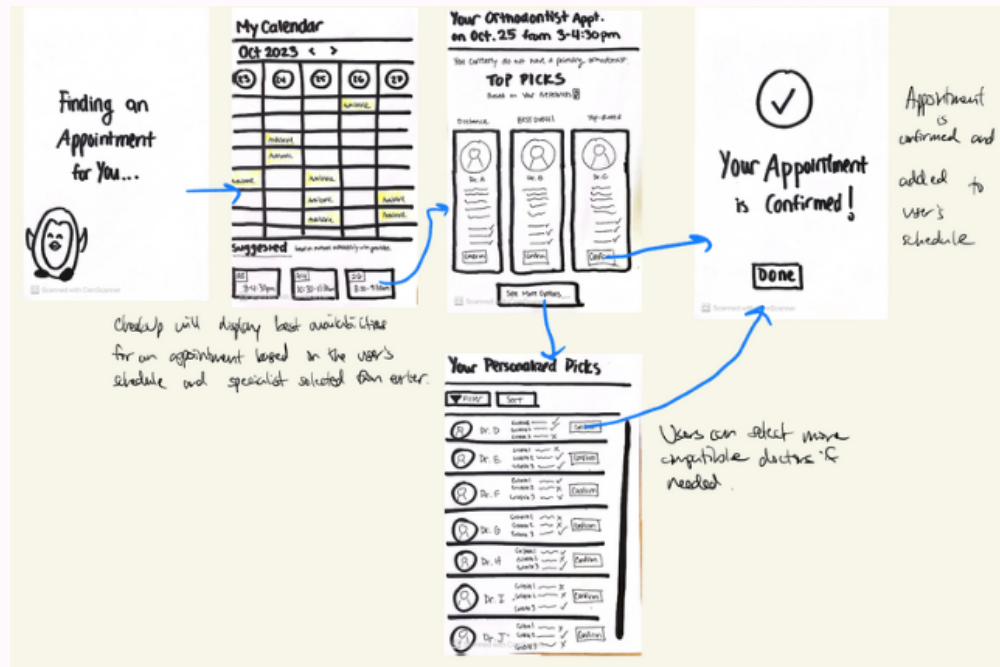
**Figure 7.** Storyboard of a mobile app for our solution

## Creation

We decided to use paper and a sharpie to construct our low-fi prototype. To operate the prototype, we switched between screens by hand. We decided to keep the design and execution as simple as possible so that we could focus on the feedback that came from user's interacting with a basic execution of our solution. The features that we aimed to implement at this level of the iteration process were the onboarding section as well as all three of our tasks (simple, moderate, and complex). The main expected interactions from the user were to tap the buttons, scroll, and also chat with our app using a paper keyboard. With this prototype, we had 3 main usability goals that we aimed to test:

1. Ease of Use  
How easily can users navigate the experience on their own? [Measured by the number of misclicks]
2. Usefulness  
Would users actually use our app? Is there user-solution fit? [Measured with responses to the question: on a scale of 1-10, how likely are you to use this?]
3. Intuitive Interface & Workflows  
Are workflows logical? Are there missing steps? [Measured by the number of questions asked / confusions]

## Key Screens



**Figure 8.** Key screens for our low-fi prototype - the moderate task flow implementation.

## Evaluation & User Testing

We tested our low-fi prototype with five participants from a diverse set of ages and backgrounds (two college students, two individuals in faith ministry, and one older adult working in music). All of our interviews were conducted in person on the Stanford campus (Tressider, Coupa, the Braun Music Library) or in the Bay Area (SJSU). All users signed a consent form prior to testing.

For testing, we used our paper prototype which consisted of 22 screens that were hand-drawn based on our 3 tasks. Those paper screens were organized into piles based on the 3 main task flows. During testing, screens were manually handed to the participant based on their interaction with the prototype. We continued to lay out screens on the table in front of the user until all papers and/or task flows were exhausted.

## Testing results

Following testing, we came together to synthesize the results. We saw that all participants were able to successfully complete all three tasks as well as the onboarding process. Participants shared that they thought the user experience was overall intuitive and easy to use. There were a couple points of confusion that stood out. The first is that many of our users were confused by the (...) button in the view calendar page. Many also wished that it was more clear what the difference was between the next

and save buttons on the page for setting up a profile. We also noted that some did not use the “see more” button on the doctors page.

### Other key insights

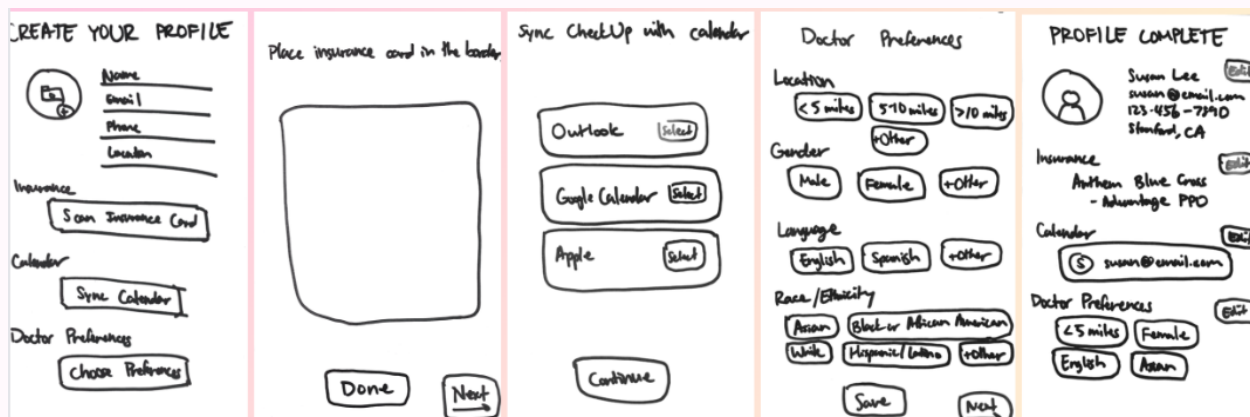
We found that 3 out of 5 our users thought we could make it more clear that calendar integration was necessary for the functionality of the app. We also observed that most users chose the doctor that was “best overall” when selecting their preferences from the recommended doctors to find care from. In addition, the UI was too cluttered in some places, such as when selecting doctor preferences and on the recommendations page. Finally, one user added a notable comment sharing that she didn’t know what to do during the insurance onboarding process because she doesn’t have insurance.

## Medium-Fi Prototype

### Responding to Low-Fi Findings / Design Changes

As we transitioned in the iteration process, we first worked to incorporate our insights and findings from testing the low-fi prototype into our interface before moving onto our medium prototype. We made 3 significant design changes, making sure that each change was motivated by our core design values.

The first design change was for our onboarding task flow. To maintain inclusivity, we added functionality that allows a user who does not use a digital calendar to scan a paper calendar in, which then gets parsed and digitized. Secondly, in our low-fi prototype, if a user wanted to reschedule an appointment they had to click three dots in the corner which would then display more options. We found this wasn’t intuitive for most users, so we revised it removing the three dots and adding clear options that were embedded directly in the appointments interface instead. Finally, the third design update we implemented was new and original. We added a feature page in our appointment flow that allows the user to rate either experience with a medical practitioner. This feature also allows the user to set that doctor as their primary, which would further the ease of scheduling appointments.





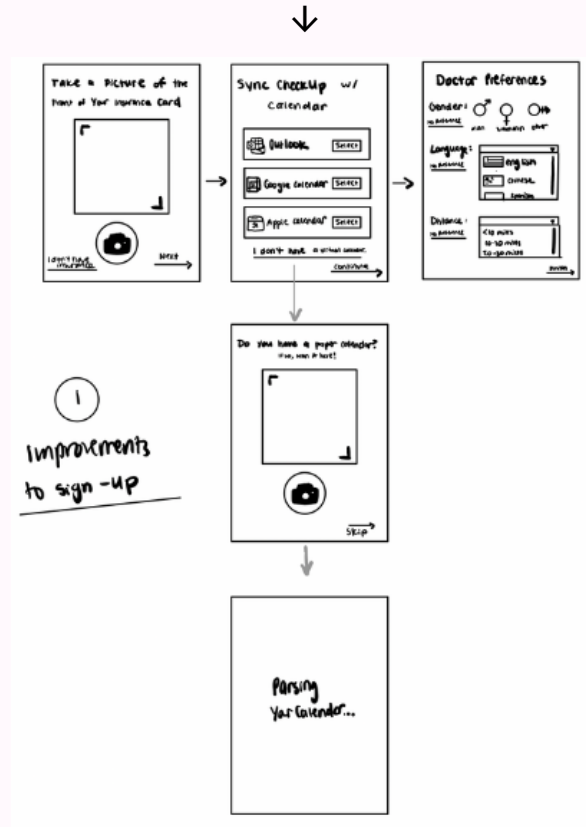
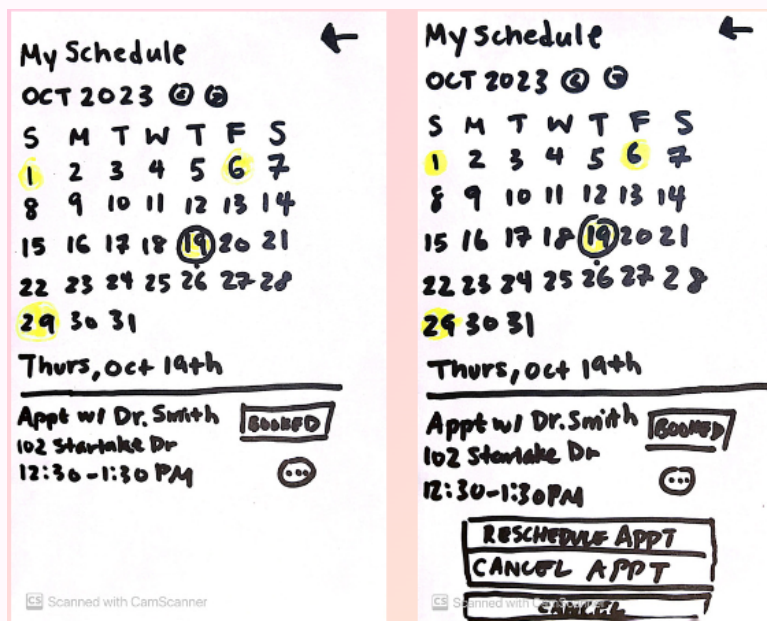


Figure 9. Calendar sync redesign



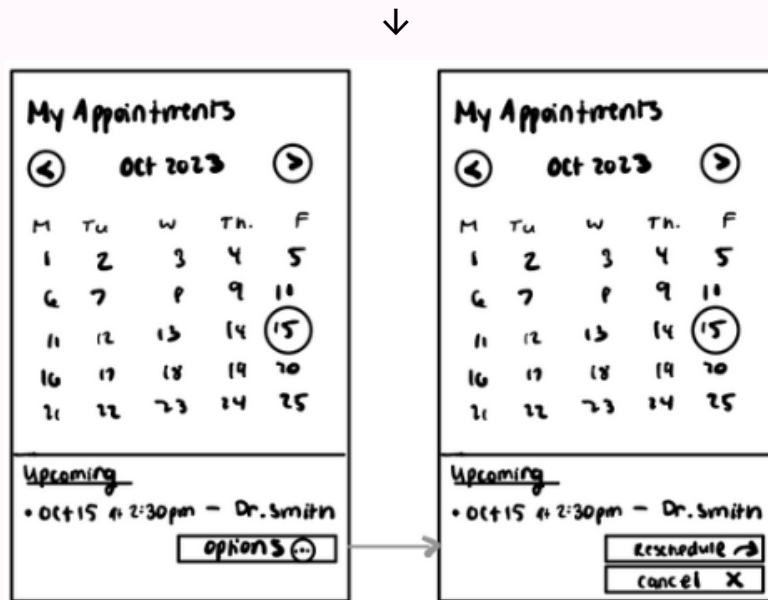
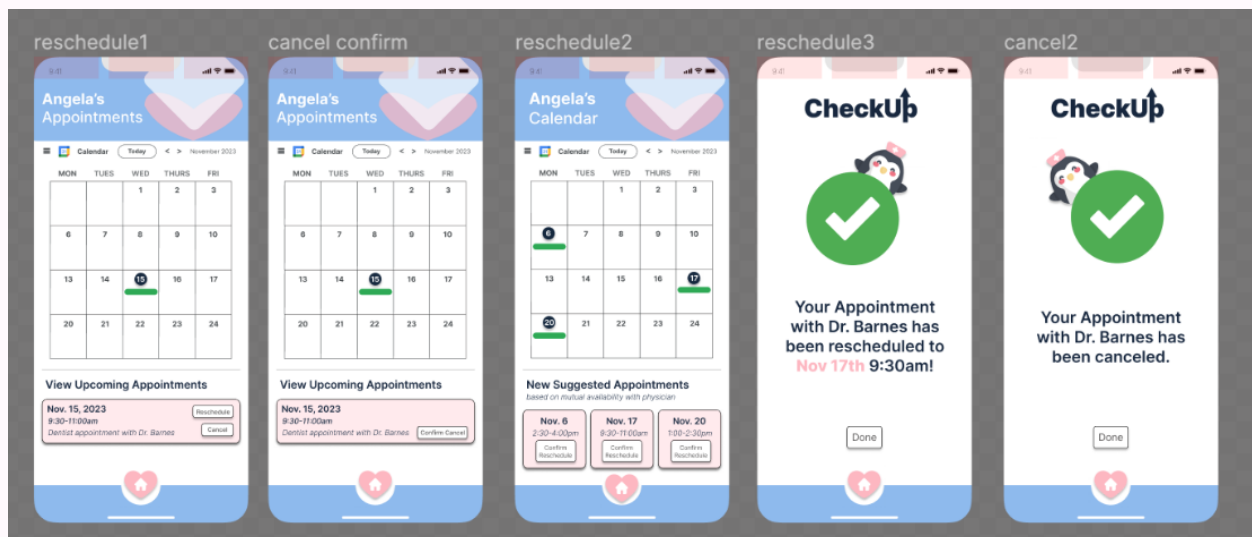


Figure 10. Appointments Rescheduling/Cancel Redesign

### Creation

We built out our medium-fi prototype using Figma, which is an in-web browser design tool that allows for real-time asynchronous collaboration. Much of this process involved taking the general structure and framework of our low-fi prototype and expanding on it with the numerous illustrative tools we had available. This meant adding color and increased functionality to the prototype. The design changes incorporated into the low-fi prototype were also brought over to the medium-fi prototype.

### Key Screens



**Figure 11.** Key screens in the medium-fi prototype – the rescheduling appointments task flow.

## Heuristic Evaluation

A team of 3 peers from our class acted as experts to evaluate our medium-fi prototype. To do this, they used 10 distinct usability heuristics to help guide their critique. 33 violations of severity varying from 1-4 were found, the most violated being consistency and standards, efficiency of use, and minimalist design. As we revised, we focused primarily on violations with a severity of 3 or 4 so as to prioritize major design elements that needed to be changed. For each violation, we worked to create a solution. Below see each of our violations with a severity of 3 or 4 (organized by task flow) and our fix for them.

### *Authentication Flow*

#### **H4: Consistency & Standards (3)**

- Problem: The interface used the string “Save” on the first screen for saving the user’s profile, but used the string “Update” on the second screen.
- Solution: We used the same string on each screen.

#### **H7. Flexibility and efficiency of use (3)**

- Problem: Relying only on scanning, no option for manual entry.
- Solution: We added an option that allows users to manually enter their insurance information or manually verify it after the scan.

### *Scheduling / Rescheduling / Canceling Flow*

#### **H8. Aesthetic and minimalist design (3)**

- Problem: Unnecessarily large logo on home screen.
- Solution: We decreased the size of the logo on the home screen.

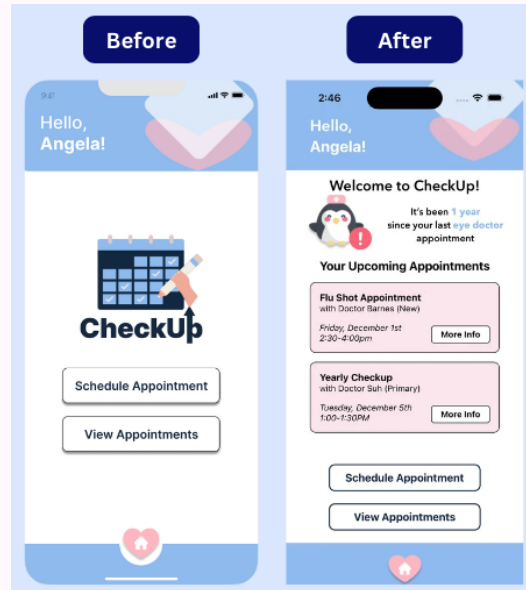
#### **H4. Consistency and standards (3)**

- Problem: Atypical home screen layout. Most mobile home screens today provide usable information and not only navigation options.
- Solution: We added more functionality to the home screen that allows users to extract usable information (ie see their upcoming appointments) rather than having to navigate somewhere else.

#### **H7. Flexibility & efficiency of use (3)**

- Problem: Interacting with current appointments, especially in a rush, is multiple taps away.

- Solution: Added an option for interact with upcoming appointments on the home screen.



**Figure 12.** Before and after of the CheckUp home page.

### H11. Accessible design (3)

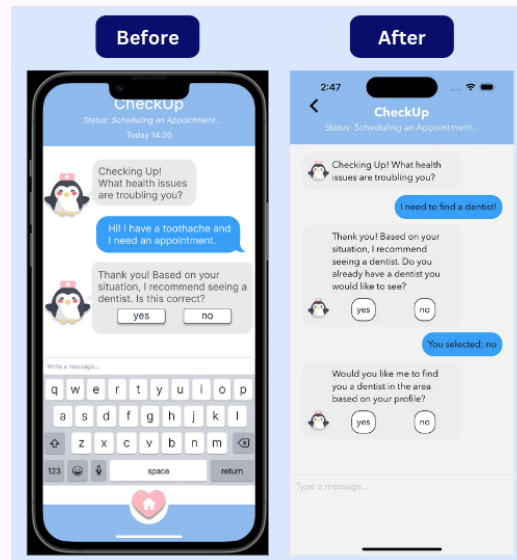
- Problem: Inconsistent keyboard use.
- Solution: We used standard system keyboard placement.

### H7. Flexibility and efficiency of use (3)

- Problem: Offering chatbot-only scheduling flow.
- Solution: We added an option for more direct/manual appointment booking.

### H7. Flexibility and efficiency of use (3)

- Problem: It's unclear from the prototype, but there doesn't seem to be a way to automatically choose your primary provider without needing to see other options.
- Solution: We added an option for users to indicate that they already have a doctor or caregiver they would like to see.



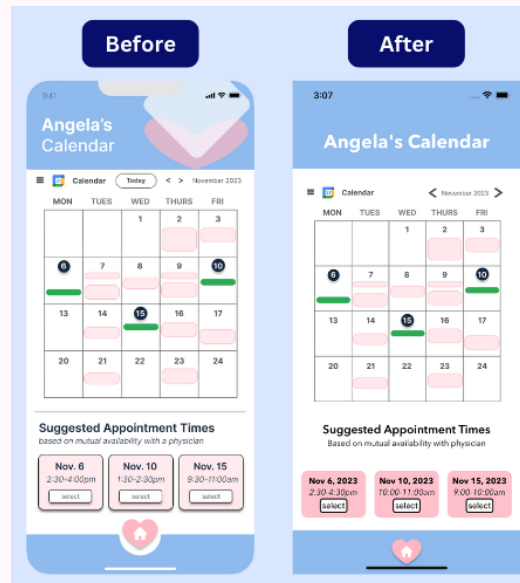
**Figure 13.** Allowing the user to indicate already having a primary care physician.

#### **H5. Error prevention (3)**

- Problem: Selecting a provider immediately books the appointment. The user might not know it would instantly book and have to cancel.
- Solution: We added a confirmation and summary page so the user has a chance to review their choices before booking.

#### **H7. Flexibility and efficiency of use (3)**

- Problem: On the Appointments page the arrows that allow you to go between months on the calendar are incredibly small and take a few clicks to land.
- Solution: We make these interactive buttons larger for ease of use and accessibility.



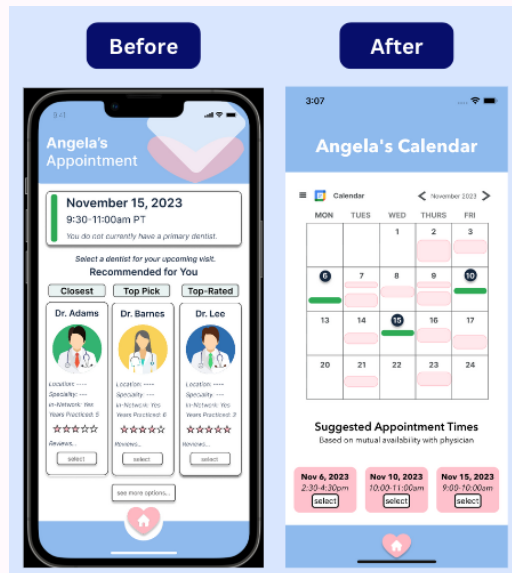
**Figure 14.** Making toggle buttons bigger and more accessible.

### H3. User control and freedom (3)

- Problem: The user cannot return to the November calendar on the appointments page when the arrow to October month is clicked. As such users have to click home and view appointments again instead of being able to click the forward arrow button to go back to November. A user should expect a forward button to do just that, load the next month, especially when the back button works. It can be frustrating to have an expectation and immediately have it denied.
- Solution: We ensured that the forward arrow button allows users to move to the next month.

### H1. Visibility of system status (3)

- Problem: Scheduling an appointment at 1:30 results in a page saying the appointment is confirmed for 9:30 am instead
- Solution: We ensured alignment of expected system updates and the given information.



**Figure 15.** Added consistency to the dates and times across the system.

### H1. Visibility of system status (3)

- Problem: Same as problem 9 but instead the 2:30 appointment defaults to 9:30 am.
- Solution: We made sure to align the expected system update and given information.

### H1. Visibility of system status (3)

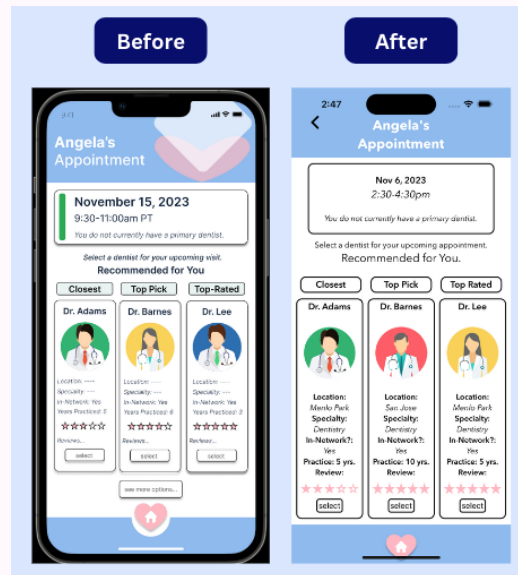
- Problem: Time is always mildly cut off.
- Solution: We ensured time is adjusted to the right.

### H3. User Control and Freedom (3)

- Problem: Users can't decline a review; it is good to provide options for the user to skip the review as it can be frustrating if they've time constraints to use that app.
- We decided against incorporating a solution for this violation because we felt that the violation of user error prevention, for which our solution was a confirmation/review page, was greater especially in matters of scheduling medical care.

### H3. User Control and Freedom (3)

- Problem: No back buttons available to return to appointment time in case users want to change the timing.
- Solution: Added back buttons for the user to backtrack.



**Figure 16.** After screen shows a back button added for the user’s control.

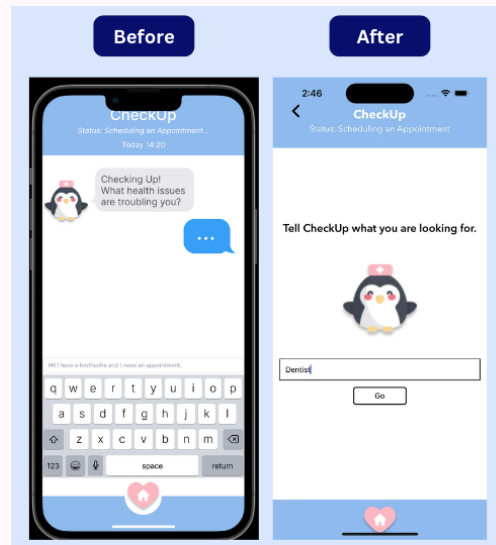
#### H5. Error Prevention (3)

- Problem: After clicking on a physician of choice, CheckUp immediately takes you to confirmed appointment page without a summary page.
- Solution: We built in a summary and confirmation page after choosing your doctor to allow the user to confirm their choice.

#### H7. Flexibility and efficiency of use (4)

- Problem: The only way to book an appointment is to answer the question “What health issues are troubling you?”
- Solution: Added an option that allows the user to tell CheckUp what medical care they are seeking if they already know what they are looking for.





**Figure 17.** Streamlining the process of finding care by adding a pathway for users who already know what type of care they are seeking.

### H8. Aesthetic and Minimalist Design (3)

- Problem: The title “CheckUp” is cut off by the iPhone camera on top.
- Solution: We adjusted the spacing to work with different iPhones.

### *Appointment Follow Ups*

### H1. Visibility of system status (3)

- Problem: No time estimate for potentially time-consuming process.
- Solution: We added a time update that informs the user of the estimated time their appointment-finding request will take.

### H1. Visibility of system status (3)

- Problem: Time is always mildly cut off
- Solution: Adjusted time to the right so it is not cut off.

## Values in Design

The values that we aimed to encode into our product solution were:

- Intuitive: Users should be able to easily understand how to book an appointment
- Flexible: Users should be able to customize their preferences for appointment times and doctors



- Inclusive: People of all demographics (age, gender, income, insured or not insured) should be able to use our app
- Privacy: Users should be confident that their private health information is safe

Each of our design values are reflected in the features of our app. For intuitiveness, we designed a chat functionality that allows you to communicate with CheckUp. The app also returns the top 3 appointment times and doctors which are easily clickable. In terms of flexibility, our app allows users to input their doctor preferences and it also integrates with multiple types of digital calendars. Regarding inclusivity, there is functionality that allows for paper calendars to be scanned to include this demographic of users (typically older). We also include an option for those who are uninsured to find the cheapest doctor available to them. Finally, for privacy, all user information is kept confidential and verification through FaceID is required every time you enter the app.

Given these different values, we found two significant tensions. The first is the balance between inclusion and intuitiveness. While we wanted to have CheckUp cover multiple demographics, taking into account many cases might make the app less intuitive to use. We ultimately decided to prioritize inclusion as the core value here because at the core of our needfinding is a desire for individuals to find the right sort of care, so demographics matter significantly for this. Another was privacy versus flexibility. By having users enter their personal doctor preferences, insurance information, and past health information, we realized that users might not feel comfortable with their private information being stored on our app. We did our best to find a balance between these two values, adding options for users to skip adding information based on their comfortability level with sharing their information.

## Final Prototype Implementation

### High-Fi Prototype Creation

In the final stage of iteration, we worked on evolving our app into a fully-functional front-end that users could actively interface with. To do this, we used React Native as an application framework. We sourced the design of the app and task flows from our medium-fi prototype which was created on Figma. We used Supabase for the authentication back-end and Expo for the software development kit. Finally, we used VSCode as our IDE.

### Wizard of Oz techniques

In order to bring the high-fi prototype to life we used a few Wizard of Oz features. The first concerned the search functionality on our app. For this, no matter what the user searched the app's search for appointment scheduling tool, CheckUp would "magically" take them to the next step in the

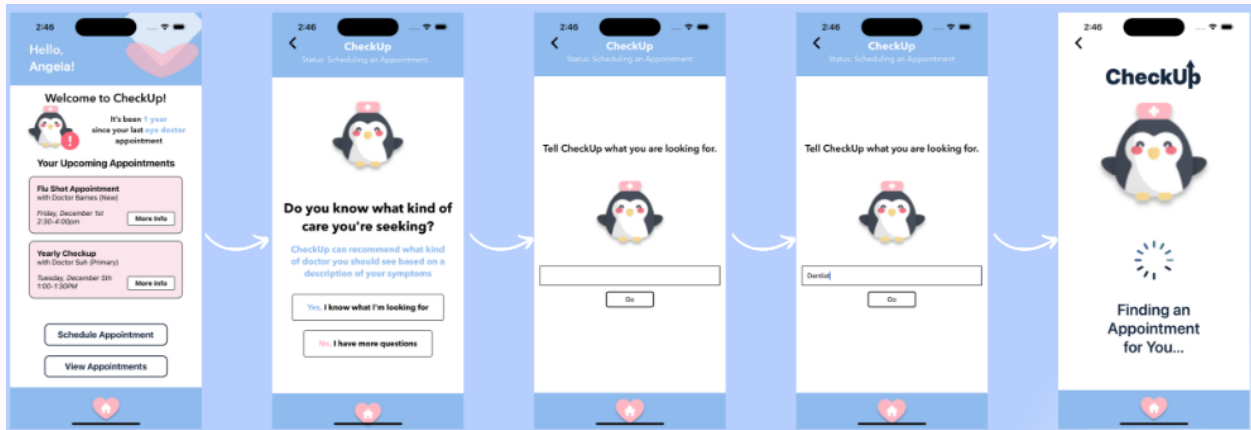


process. The search feature does not actually search the web for information. Secondly, for the chatbot feature, no matter what the user types into the chatbot, the interactions are faked using hard-coded chatbot responses. The “magic” chatbot interaction always pushes the user to the same endpoint.

## Hard-coded techniques

Similar to the Wizard of Oz techniques used, we also chose to hard code several aspects of the app to streamline our high-fi prototype. Some things that we chose to hardcode include the doctor recommendations, which means that the same three doctors are always recommended. We also hardcoded the 3 dates and times that are suggested to the user besides the doctor recommendations. In addition, what the chat says and/or responds to when the user interacts with it is hard coded into the interaction. Finally, any notification that come up for the user, whether that be the reminder on the home page or the upcoming appointments notifications, stay the same as they are also hardcoded into the app flow.

## Task Flows



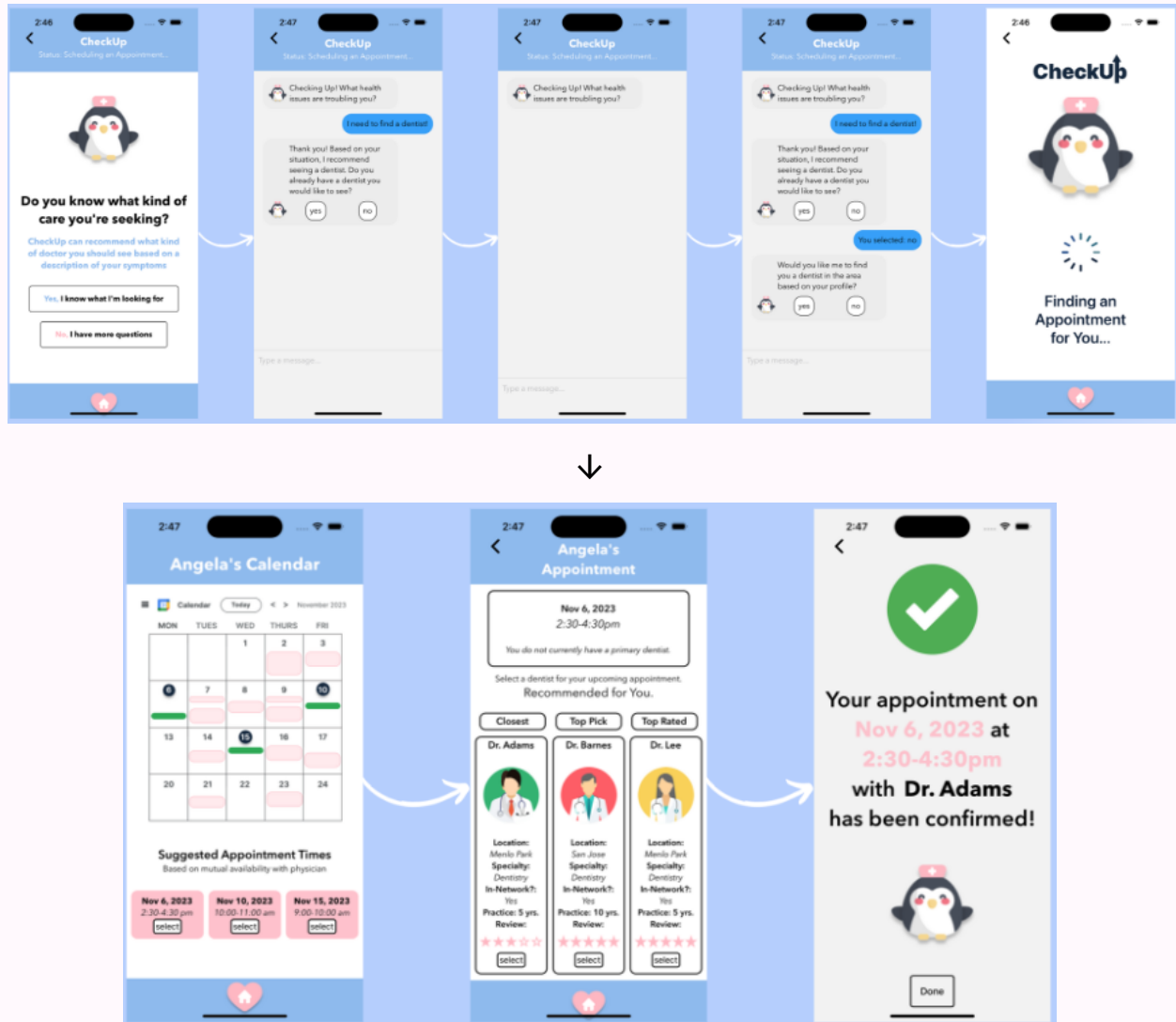


Figure 18. Task flow for booking an appointment with CheckUp (task 1)

## Reflections & Next Steps

If we were to continue building CheckUp, there are many improvements we would include in our mobile application:

1. Currently, our calendar is hard-coded. We would like to replace calendar images/screenshots with real calendar app plug-ins so that the calendar can be interactive and clickable.
2. As part of our complex tasks, we would like to allow users to rate their care after their appointments and decide to designate a primary caregiver/specialist or choose a different doctor.



- 
3. We would like to build out an automated reminder system which reminds users when they are due for their next appointment. For example, we would like to remind users to schedule their annual physical.
  4. Building out our “View appointments” feature, we would also like to keep a log of all user appointments in which users can easily filter and sort appointments to keep track of their healthcare.
  5. Lastly, we would like to build out a “patient log” feature which documents all of a user’s primary points of care, current medications, and any doctor instructions/advice.

Through navigating the design thinking process throughout the quarter, we learned that making healthcare accessible is extremely difficult. There are many different key players in the healthcare process (including insurance providers, primary care doctors, specialists, and policymakers), making it difficult to foster effective collaboration, communication, and consensus in the industry. Additionally, there are stringent regulations and requirements (ex. HIPAA) around patient care, and it was challenging to ideate solutions that would fit within such guidelines. Our team also learned a lot about what user-centered design truly means. We entered our studio with a solution in-mind, but after several user interviews, we realized the importance of developing solutions based on user-needs, rather than our own experiences/assumptions. Similarly, we greatly benefited from the extensive user and peer feedback we received throughout the quarter as it allowed us to continuously iterate upon and refine our CheckUp solution. Lastly, this project taught us about productive project management and execution. Throughout the quarter, we had dozens of hands-on collaborative “work sessions” where we learned to effectively delegate tasks while also supporting one another with challenges we faced. We allowed each team member to showcase their strengths in different assignments (ex. Video editing, digital design, front-end development), and we were able to learn from each other along the way. CheckUp would not have been successful without the contributions of every team member.