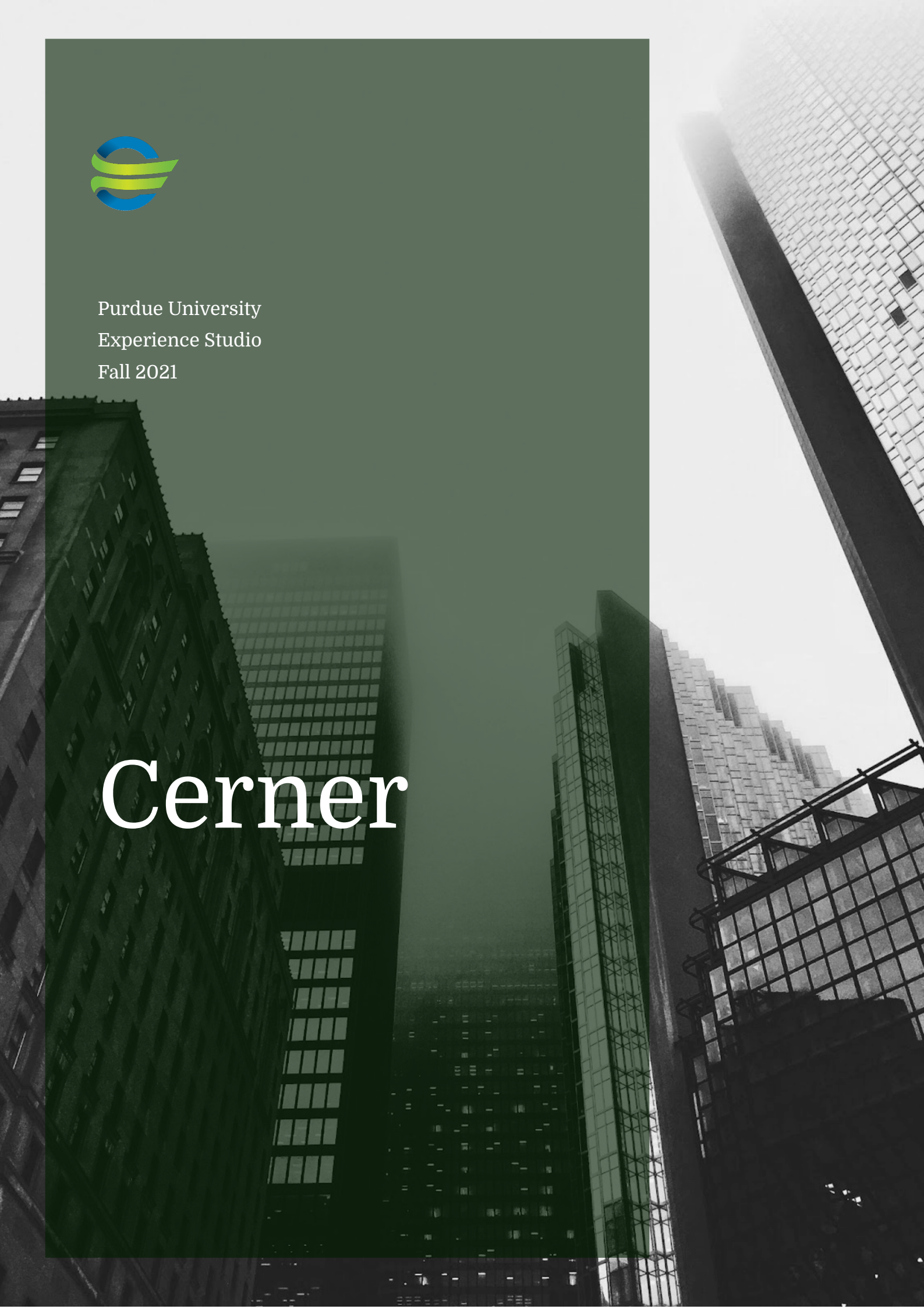


Purdue University
Experience Studio
Fall 2021

Cerner

Executive Summary

Healthcare aims to move away from a reactive approach towards a more proactive one, which helps to keep patients healthier, happier, and supports larger initiatives. In this project, we focused on building out the MVP of a patient portal, a secure online website that gives patients convenient, 24-hour access to personal health information from anywhere with an Internet connection.

From our interviews and competitive analysis, we found that patients typically use their portals to schedule appointments, message a healthcare provider, or view medical record information. Thus, these three main features defined our MVP for a patient portal. We highlighted many opportunities to improve the experience of each of these screens within a patient portal. However, through our interviews and secondary research, we uncovered a user group that had lots of opportunity for our group to design an entirely new and better patient portal experience for: First time parents of young children. After much discussion with our sponsor team, we decided to pursue this unique opportunity.

With our new user group, we conducted further secondary research into the pain points of caregivers and parents. We created a user story that highlighted these pain points as well as the opportunities for improvement, before creating some wireframes in order to test for success in addressing our users' problems. We understand that a major limitation of our evaluation was that we did not have access to many users within our user group, and tested mostly with parents of slightly older children and asked them to think back to a time when they had young children.

After evaluating for feature success, we created our final iteration. With our improvements of medical record information, scheduling process, and after-appointment care we were able to find solutions that addressed many of the pain points and needs of our users. We found that users showed a strong preference towards vaccine management in our testing, so we implemented immunization record screens. As for the scheduling process, we found that the "progress bar" that we had in many of our early mock-ups wasn't intuitive and overall confusing, so we updated it to time-based notifications on the home screen. Lastly our after-appointment care went through several changes as well. Patient summaries were reworked in structure and form. We changed how the summaries were stored visually as well as the actual content of the patient summary, including a very basic example of its layout.

At the handoff of this documentation, we foresee Cerner's next steps to include user research, usability testing, and continued iteration and sketching. With one of our limitations being limited access to users, we suggest that Cerner use their resources and influence to find users that are much closer to our user group. After gathering said users, we recommend the testing they conduct to be usability testing, as that was our next step given our team had more time. We imagined this round of testing would be multiple scenarios based on our medium fidelity mock-ups. From there, we suggest that Cerner take those insights and move on to a higher fidelity, from which they can continue to iterate.

Table of Contents

Project Overview

1. About Cerner
2. Meet The Team
3. Defining a Patient Portal
4. Project Goals & Problem Statement
5. Project Deliverables

About Cerner

This project was a combined effort with Cerner, a U.S supplier of healthcare information technology solutions. With a mission to seek innovations that will help shape healthcare and empower their clients, Cerner works to surface data that enables informed decisions to arm clinicians with the information they need to provide smarter care.

Our Sponsors

NICK GOULD
UX Designer

DJ
UX Designer

CARLY HUMMEL
UX Designer

KAT MAZANKA
UX Designer

Our team

Sarah Deak

Sarah Deak is a senior majoring in User Experience Design at Purdue University with a minor in Psychology, as well as a certificate in Collaborative Leadership. Sarah was drawn to User Experience Design as a combination of psychology and technology, but her desire to minimize the frustrations that have arisen in technology over the years has fueled her passion for it. Some of her passions include rpg gaming, criminology, and web development. While at Purdue, she intends to develop specialized skills in front-end development, UX research, and visual design. With her interests in mind, she strives to go out into the world and make small but essential differences in the lives of many. To connect with her, feel free to contact deaks@purdue.edu or view her portfolio at sarah-deak.github.io.

Jared Buls

Jared Buls is a senior at Purdue University, studying User Experience design with a minor in Psychology. He spends most of his time learning new skills to keep his mind sharp and hands busy. Jared is drawn to anything involving the study of people; psychology, philosophy, and language learning are all favorite topics of his when beginning to learn something new. More specifically to Experience Design, Jared finds himself most interested in front-end development, as it allows him to express himself and showcase his work to many different kinds of people. He utilizes his passion and knowledge to create seamless experiences in his work while always keeping the user in mind. Jared hopes to develop his existing skills in his final year at Purdue, as well as cultivate some new ones if he can. You can reach Jared at jbuls@purdue.edu, jaredbuls.wordpress.com, and linkedin.com/in/jared-buls-a0118a165.

Sarah Palagy

Sarah Palagy is a senior at Purdue University studying UX Design and a second year in the program. She is pursuing a minor in communications and a certificate in collaborative leadership. Before deciding to pursue UX, she studied Biochemistry with a concentration in pre-med. This experience has left her with a strong sense of empathy for others and a desire to help those with disabilities and disenfranchised identities. Her project experience includes an 8 month website-redesign for The Purdue OWL and now, working with Cerner to develop a patient/healthcare provider application. She is proficient in Figma and has basic skills in Adobe Suite software. She hopes to specialize in project management but is open to experience in any of the UX Design specializations. Sarah can be reached at spalagy@purdue.edu.

Enya Song

Enya Song is a current sophomore at Purdue University majoring in User Experience Design and minoring in Computer Information Technology. She views user experience as the perfect bridge between creativity and technology that she is looking for in a future career, and hopes to specialize in interaction design. Enya has a small background with basic HTML and hopes to expand her knowledge on front-end programming over the next few years. In addition, Enya enjoys working in teams, and looks forward to improving her communication and problem solving skills while pursuing her degree. Enya can be reached at song665@purdue.edu.

Natasha Chambers

Natasha Chambers is a sophomore at Purdue University studying User Experience Design, minoring in Psychological Studies and working towards an Entrepreneurship & Innovation certificate. She is excited to be pursuing a specialization in information architecture and interaction design throughout her undergraduate studies. She has previous experience in designing marketing materials and coding emails campaigns through her past internship opportunities and freelance work. Natasha is extremely interested in how human interactions and experiences with online social spaces can result in lasting negative effects and how a UX perspective can drive the search for a solution. You can reach Natasha through natasha@purdue.edu and on LinkedIn at linkedin.com/in/natasha-chambers.

Varun Aravapalli

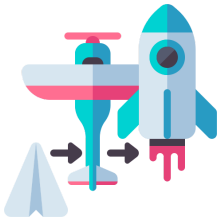
Varun Aravapalli is a sophomore at Purdue University studying UX design and pursuing a minor in Computer Information Technology and Psychology and currently pursuing a certificate in Data Analysis. He also has a background in multiple programming languages such as Python, Java, HTML, C etc. Varun was drawn to User Experience Design to better understand Human and Computer Interactions and learn to improve and create various different designs. In the future he wants to learn more about UI Design and both front and back end development. Last semester Varun gained valuable experience working with Sezzle and is very excited to work with Cerner. Outside of class, he enjoys playing sports, and is involved with various south Asian organizations at Purdue. Varun can be reached at varavapa@purdue.edu.

About the Project

What is a patient portal?

As defined by healthit.gov, a **patient portal is "a secure online website that gives patients convenient, 24-hour access to personal health information from anywhere with an Internet connection using a secure username and password."** Portals give patients access to information regarding recent doctor visits, medications & immunizations, and medical lab results. Some patient portals also give users the ability to securely message their doctor, request prescription refills, schedule appointments, and pay their medical bills.

What are our goals?



Define the Minimum Viable Product (MVP) for a patient portal

At the start of this project, our main goal was to **define the minimum required features that a patient portal must have for it to be able to be used as a portal**. The first ten weeks of our project explored this: the main features patients use in their portals, and how those features might fall short of user expectations.

Optional: Locate a unique opportunity space

In the process of defining our MVP, our team located a new and exciting user group that gave us the opportunity to pivot from redesigning the MVP screens of a patient portal to **improving the experience for a specific group of users.** After much discussion with our sponsor team, we decided to embrace this new problem space.

Who are our users?

As explained above, our second goal enabled us to design for a unique user group. During our process to satisfy our first goal of defining our MVP research persona, we found a user group that had a huge potential to have a better experience using portals. This user group is

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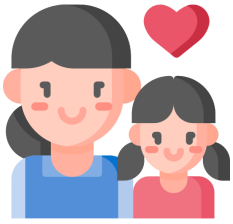
Parents of young children with frequent pop-up health issues.

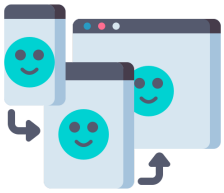
Meet our user, called **Sam.**



Sam is a parent of a young child (who we call Charlie). He works a full-time job, and is technically literate. Charlie is prone to pop-up health issues and frequently needs new vaccinations and proof of immunizations.

Sam struggles with **balancing time** for both work and Charlie's health, because of their busy schedules. Sam is also consistently faced with the **uncertainty** that comes when children have health issues.

A Final Goal + The Problem We Want to Solve



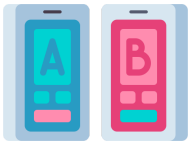
Minimize the effort required to use a patient portal

With our user group decided, we added a final goal for our project: to improve the overall experience of using a patient portal for parents of young kids, who experience "pop-up" medical issues. But how do we define a "better" experience for our users? Our project & final solution explores ways to minimize stress and caregiver burden by making the portal **streamlined, personalized, and simple.**

Deliverables

Our first deliverable is a product requirements document which defines the MVP for a patient portal. While we did not end up re-designing these features for the project, the research should still prove extremely useful to Cerner and the sponsor team. This document will define the MVP, the features within, and key suggestions for upgrading a generic patient portal to solve some major user issues.

However, our main deliverable for this project is **low-fidelity wireframes** of our proposed design. These wireframes will simply be **static screenshots**, which emphasize the new features that will address the pain points of our users. These will be evaluated for desirability and function, which is why we stayed at low fidelity. Our wireframes use **mobile-first** design.



Lastly, we will be handing off design documentation that includes an overview of our design process and work, and most importantly covers **testing insights and next steps for the Cerner team.**

How do patients use their portals?

Our team recognized that we were lacking basic knowledge surrounding patient portals and their uses. We decided to look into existing research, conduct interviews, and analyze competitor portals with the goal of answering each of the following questions. These sections will touch briefly on the takeaways we learned in regards to each of these main questions, but our full analysis of research can be found in the appendix. Our overarching goal was to ***understand the most utilized features of a patient portal****, as well as* ***why these features*** *(vs others) are used the most.*

1. How do patients interact with healthcare providers? How do the processes of setting up appointments and getting prescriptions work?

2. What are the most utilized features of a patient portal? What info do patients need to see?

3. What does patient engagement with portals look like? How might we increase engagement?

4. How has Covid-19 affected patient interactions with healthcare? What might we be able to learn from the recent increased need for telehealth?

5. What are some existing pain points of patient portal users that are being discussed online?

Deliverables: MVP Product Requirements Document, Suggestions for Cerner

How do patients interact with healthcare providers? How do the processes of setting up appointments and getting prescriptions work?

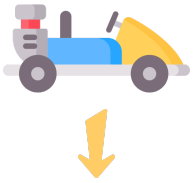
The answer to this question would help us better get a better understanding of the space we were working in, as our team felt that we were lacking **general knowledge about medical appointments** and their timelines. We answered this question through both general research online through blogs as well as through interviews. We also analyzed a few patient portals during our competitive analysis that had a clear, straightforward workflow that helped us make sense of the general timeline for appointments.

Recognize that an appointment is needed

For many people, medical visits are so regular that this isn't an issue at all- instead they have their appointments planned way in advance. For many others, this can be the most taxing part of the medical process due to having to balance taking time off of work, childcare, cost, etc as well as wondering if they really *need* to go to the doctor.

Schedule an appointment

Over 50% of our interviewees preferred to contact their provider over the phone rather than through a portal. We found that most portals required the user to select a location, doctor, reason for visit, date of visit, and time for appointment.



Attend appointment

Many websites stated that providers should demonstrate the value of patient portals to patients while they are at the appointment to increase portal engagement (HealthIT.gov, n.d.). Also, 54% of our interviewees reported issues with having to fill out a form online when scheduling, and then having to fill out that same form again at the in-person appointment.

Receive and pick up any prescriptions

This is not currently highly facilitated by a patient portal, due to the pharmacy often being disconnected from the doctor's office. However, portals do allow patients to view their active prescriptions and completed immunizations.

Contact provider about any follow-up information

Portals are well equipped to do this, but only about half (45%) of our interviewees stated that they would visit the portal for more information after a visit over calling their doctor directly.

What are the most utilized features of a patient portal? What info do patients need to see?

From our previous question, we found that many patients don't interact with their patient portal much at all. With this information, we wanted to learn **which features of existing patient portals users saw the most value in**, as well as which ones are the most common. We also wanted to understand where these **features might fail in the eyes of our users**, to perhaps gain insight into why patient portals are not more frequently utilized by patients.

Our competitive analysis helped us contextualize that the 3 most common features that were consistently on the patient portal were:

Medical records

Commonly used for showing medications, lab results, and charts in a secure way between healthcare providers and patients.

- 45.45% of our interview participants only understood medical terms well with some help. About 36% of our interviewees went online to seek help, whereas 70% asked through a phone call with the doctor or family
- 36% of participants use the web (browser or portal) to seek help with medical information

Messaging

Is either set up in a text or email format that allows the patient to communicate to multiple health care providers through one outlet.

- 45.45% participants get notify for appointments through patient portals AND think they are important, while
- 55% do not get notifications for appointments at all.

Scheduling

Takes out the middleman when scheduling by allowing the patient to view their openings and be able to pinpoint which date/time lines up with their schedule.

- 72.73% participants go to doctors for check-ups (ex. yearly phys) and when experiencing specific symptoms or problems.
- 45.45% participants check for availability as the FIRST thing they do when scheduling appointments
- 54.55% of participants say that the most frustrating part of their portal is Filling out forms in-person that you filled out online already
- 36.33% of participants describe their user journey as frustrated/stressed/confused when scheduling an appointment

This information had a huge impact in defining the MVP for a patient portal, which is explained in depth later. However, we wanted to continue our research to consider other ways portals fall short of user expectation with the following questions.

What does patient engagement with portals look like? How might we increase engagement?

During our research, we found that while **90%** of eligible hospitals and clinicians offer patient portal access, **only about ⅓ of patients actually use the tool**. This statistic raised a question: how might we increase patient engagement with portals and get patients to use the tool for their personal benefit?

Our answer to this question mostly came from existing research. According to healthit.gov (2017), patients are **2.6x more likely to stay patients if they have access to a patient portal**, but only if it:

Allows **online scheduling** & prescription refills. Something branded as a patient portal might not sound attractive to individuals who are mostly healthy, but creating an account for an online appointment scheduling platform does (Heath, 2020).

Enables view, download, and transmission of **personal health information**. The sooner they can get access to their pertinent documents and results, the happier and more engaged with their health patients will be (HealthIT.gov, n.d). Providing access to this content faster through their portals than through other means makes patients more likely to use their portal.

Offers quick, **secure emailing with care providers.** Most patients prefer to speak to their doctor directly, but providing a *secure and trustworthy* way to contact their providers offers patients more flexibility and helps them see the value in portals (Johnson, 2018). This is especially true due to the recent increase in the need for telehealth due to COVID-19 (Kaye et al., 2021).

This information corroborates our findings that these are the three main, most important features that patients utilize within a patient portal, which helped us further back up our MVP definition.

However, we also found information regarding ways to increase patient engagement by changing other aspects of the portal. These include:

Making it easier to interpret medical results. Current portals are filled with tons of medical jargon- instead, **concise, easy to read information can increase patient satisfaction** (Myers, 2019).

Increasing simplicity allows patients to better navigate their portal. Current portals feel clunky and hard-to-use: streamlining the process can help patients want to use them (Myers, 2019).

How has Covid-19 affected patient interactions with healthcare? What might we be able to learn from the recent increased need for telehealth?

Healthcare has become a much more prevalent issue due to COVID-19. The increased need for telehealth has made research into the discipline more common. For this question, we wanted a very quick overview into existing research regarding telehealth and the problems raised by COVID-19. The things we found fall into the following categories:

Worry about in person visits

There is heightened anxiety when going into appointments because there is fear of having COVID-19. This means an increase in the use of patient portals, with users who do not frequently use it or did not interact with it much before.

Effects of COVID-19 on how patients view healthcare

Circulation of misinformation about medical care has recently caused more **distrust in the medical system** and fear about what is and is not safe. This is partially apparente by the recent decrease in vaccination rates especially in children. (El-Shabrawi & Hassanin, 2020)

Another effect of COVID-19 has been **increased awareness and usage of telehealth**, even in younger populations who typically hadn't had reason to use patient portals (Kaye et al., 2021). This also has caused an increase in the number of new people using portals.

Portal interaction

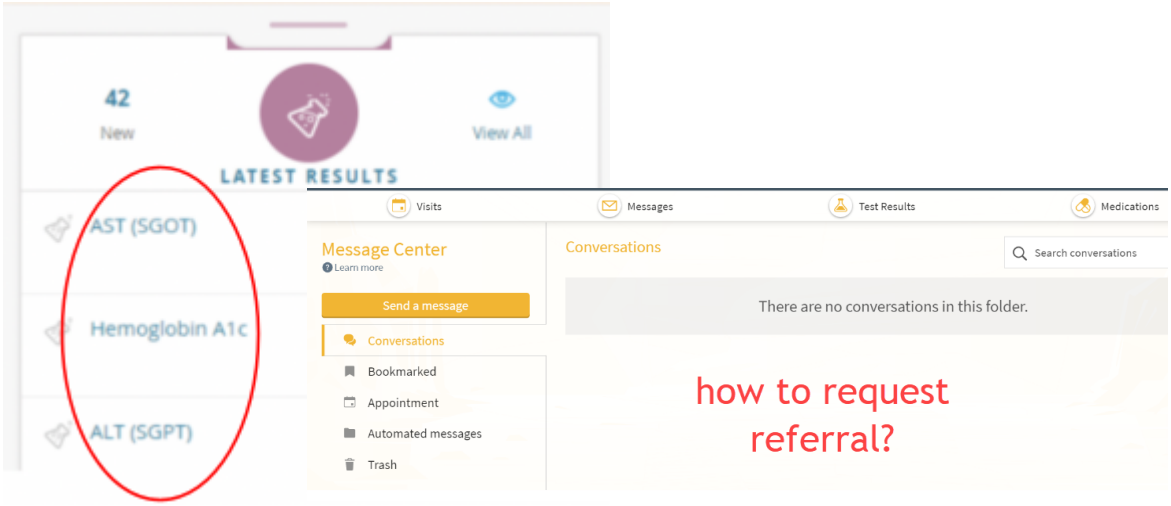
Patients who haven't interacted with their patient portals in an in-depth manner (beyond scheduling appointments) often don't explore other capabilities available to them:

"Usually I just look at my appointments, the only reason I've logged into my portal was for blood test results" (interviewee quote)

Our end goal: Make the functionality of our patient portal obvious and easy to use for newer, less frequent users.

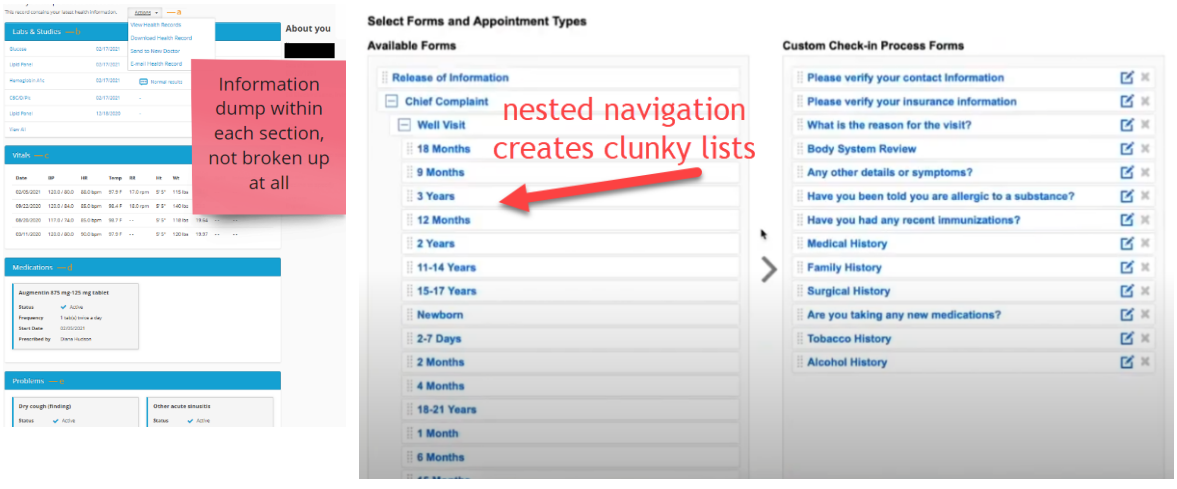
What are some existing pain points of patient portal users that are being discussed online?

Patient portals are widely discussed online through blogs and other sites like reddit.com but our interviews also brought up some interesting insights about the failures of existing patient portals. The answers to this question helped us to find opportunities to improve the experience of using a patient portal. We found many opportunities for improvement, but the most common reported issues fall into the following categories:



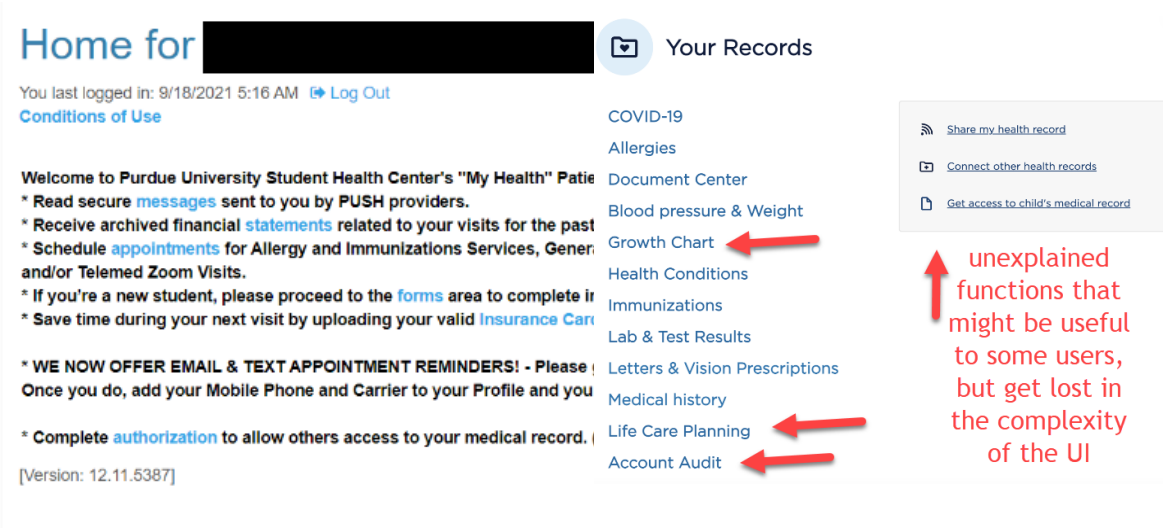
Problems accessing and/or understanding personal medical information

In our competitive analysis, a common problem with existing portals is the overuse of **confusing medical terminology**. **45%** of our interview participants stated they "understood medical terms/info well *with help*". Additionally, **73%** of our interviewees reported that when they want to seek medical help in a new location, the information is not readily available in their portal. In the messaging portal and two-way conversations with health care providers, there is no true way to communicate back and request external/excess information from them. Lastly, **55%** of participants say that the most frustrating part of their portal is "filling out forms in-person that you filled out online already".



Clunky, hard-to-use portals that over complicate the process

In our competitive analysis, we found that home pages and navigation tend to display a lot of overwhelming information all at once. There is a lot of this information displayed on the main page, as well as a lot of extra unnecessary content in other tabs. It does not allow for any **personalization**. The **scheduling feature** is confusing without help. The content is frustrating and can cause mental overload.



Difficulty finding the value in using portals

Users struggle to find value in their portals. The aforementioned things make the value hard to find- the things they want to do they either cannot find/do or are hard to use.

> *"The UI in my patient portal is very bland and it feels really tiring and boring to look at."*
> *"I think my portal offers a lot of things- I just don't think any of them are important to me. Just making an appointment and paying bills."* (interviewee quotes)

After we addressed these faults, we felt we were able to properly define our MVP for this project.

MVP- Defining Product Requirements

Since we have a focus on Agile UX, MVP's were a core part of our decision-making and helped us understand the core aspects of our design. **MVP is the process of defining the minimum features of a product that makes it that product**. Throughout the research above, we located three main features that define a patient portal. Below, we define what each of these features entail to be considered complete to a user.

Messaging

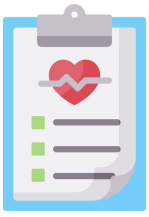
The patient portal provides a convenient, quick, and secure way to talk to medical professionals on-the-go and from the comfort of home.
This requires a user to be able to:

- Choose which provider to message
- Securely message their provider to ask questions about their care
- See provider replies and respond or otherwise acknowledge their message
- Be able to do this on-the-go as well as from their home
- See previous messages with providers
- Forward old messages to new providers
- Send patient documents to their providers

Scheduling

The patient portal empowers users to find a relevant doctor and makes scheduling an appointment a breeze.
This requires a user to be able to:

- Schedule a new appointment including reason, date, and time
- Choose their provider (if relevant)
- Edit or cancel an appointment they've made
    - This includes changing date, time, provider, and reason
- See relevant timing for appointments
- Receive appointment reminders
- Check-in to an appointment online



Medical Documents

The patient portal makes it easy for users to access their medical records such as prescriptions, lab results, and
This requires a user to be able to:

- Receive notifications for new documents
- View, download, & send documents
- See an overview of the document information
- See most recent document
- Search for a specific record by date or content
- View old records

Suggestions for Cerner

Through defining our MVP for a patient portal, we discovered some possible ways that Cerner and other companies could improve their portals to be more friendly for the "average" user. We define the "average" user as someone who:

- **Uses their patient portal infrequently**, really only to check lab results after appointments
- Uses their patient portal **only for themselves**
- Is **not very familiar with medical terminology**
- Is **familiar with technology**, but not necessarily completely technically literate

The reason these users tend to use their portal so infrequently is most commonly due to lack of trust and not seeing the value of their portal. Throughout the research we conducted thus far in our project, our team found a few opportunities that might help alter this user's mental model of patient portals.

Decrease use of medical terminology

By using more personable language, patients can better understand their diagnoses and what it means for them, instead of the initial feeling of fear that many patients feel in response to a new diagnosis. Providing diagnoses in "human-readable" language can help increase trust by giving patients the ability to see for themselves that their diagnosis is relevant to them.

Personalize content

Providing users with content that is specified for their diagnosis and medications can help them see more value in patient portals. Offering personalized suggestions such as scheduling future appointments could help with this as well. The portal needs to facilitate the user to take action for their health without requiring the user to think a lot about these actions.

Simplify navigation

Users see current patient portals as big, clunky, and hard to use. In our competitive analysis, we recognized the frequent use of only icons in menus, which makes navigation much more unclear. We also found that many portals suffer from overcomplication such as very long navigation lists- personalizing the content a user sees can help minimize the information overload a user feels.

If we had built out our MVP patient portal, we would have created the three main screens (messaging, scheduling, and medical records) and any necessary interactions between these screens. Through creating them, our team would have had a focus on addressing these three opportunities: decreasing medical terminology, personalizing content, and simplifying navigation. We will now explain what prompted us to move away from this direction.

A PIVOT- *Our research defines the MVP of a patient portal and considers how we might improve the experience for an average user. The work we did with MVP's was crucial to locating our new user group, and was our initial project deliverable- the work we did up to this point should be highly beneficial to Cerner, which is why it is included in such detail in our documentation.*

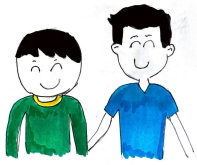
Through our research we found an opportunity to ***improve the patient portal experience for a more unique user group.*** *Much of our previous research impacted the ways we moved forward building out our portal- but we did not necessarily build off of this research. While the insights we already found were useful in their own ways, we recognized* ***our new user has different, more specific needs that we can address.***

An Interesting User Group Arises: Who are they, and what do they need?

1. A story
2. Overview of Parent-Specific Pain-Points
3. Our Goals
4. How might we address these pain points?

A Story

Meet Sam and Charlie.



Sam is a parent of a young child (who we call Charlie). He works a full-time job, and is technically literate. Charlie is prone to pop-up health issues and frequently needs new vaccinations and proof of immunizations.

Sam struggles with **balancing time** for both work and Charlie's health, because of their busy schedules. Sam is also consistently faced with the **uncertainty** that comes when children have health issues.

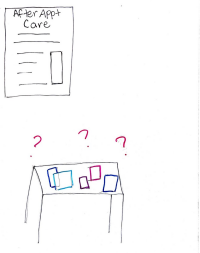
To better understand the issues Sam encounters when it comes to taking care of Charlie's health, let us tell you a story.

One morning, Charlie wakes up with an earache. It's so painful that Charlie doesn't want to get out of bed.

As a result, Sam calls off work and Charlie's school, and also calls the doctor's office to schedule an appointment. Sam's stress levels are rising as he tries to help Charlie alleviate the pain before the appointment.

While at the doctor's office, Sam feels overwhelmed and stressed. He is worried about Charlie's health and is trying to remember all the information the doctor is giving.

Additionally, the doctor tells Sam that Charlie still hasn't received a state required vaccine, and that Sam will have to schedule an additional appointment for it.



After the appointment, Sam is given a paper copy of the appointment summary. The summary details the antibiotics Charlie needs for his earache, as well as instructions on when to take the medicine and how to take care of Charlie for the next few weeks.

Although Sam tries his best to keep track of it, the business of everyday life leads to it being misplaced and for him to be confused about how to take care of Charlie.

Sam's busy schedule also creates more anxiety and distractions about reminding Charlie to take his medication daily.

And so, because of the current system, Sam is left stressed, overwhelmed, and distracted.

Overview of Parent-Specific Pain-Points

So, what does this mean for our users? We recognized three main issues that are pertinent especially to parents of young children.

Time management

Parents tend to have a large lack of time. Due to this, **medical appointments can cause a lot of extra stress** due to needing to keep track of scheduling priorities, appointment times and locations, and aftercare information such as medications to pick up and give to their children.

Stress of the unknown

Oftentimes, children are unable to clearly articulate how they are feeling. This can cause parents a lot of undue stress, as **they are not always sure what they can do to help their child feel better**. Appointments can sometimes be far in the future, and helping their child is a top priority.

Recollection of information

Parents already have a lot of information that they are juggling. **Medical appointments give parents even more important information to keep track of**. This information is pertinent to their children's current health, but having to remember all of this off the top of their head as well as everything else can be an extremely difficult task.

With our user's main pain points in mind, we developed three main goals for our new patient portal experience. These goals were refined and shifted throughout our ideation stage, but these were our three main goals at the start of ideation.

Our Goals

Our goals all focus on taking the stress of medical issues off the shoulders of parents and giving them more opportunity to focus on caring for their children, rather than worrying about the appointment and logistics.

Streamline the process of appointments

We want to minimize the time management necessary by giving parents **clear time expectations and reminders to help streamline the process of medical appointments.** We want them to be able to focus more on helping their child, rather than worrying about the appointment time.

Help parents care for child

We want to minimize the stress of the unknown by **providing them with personalized information** based on their inputted children's information. This can also save time by eliminating the need to search for information on the internet, and give them the ability to help their child quickly and correctly.

Provide parents with useful aftercare summaries

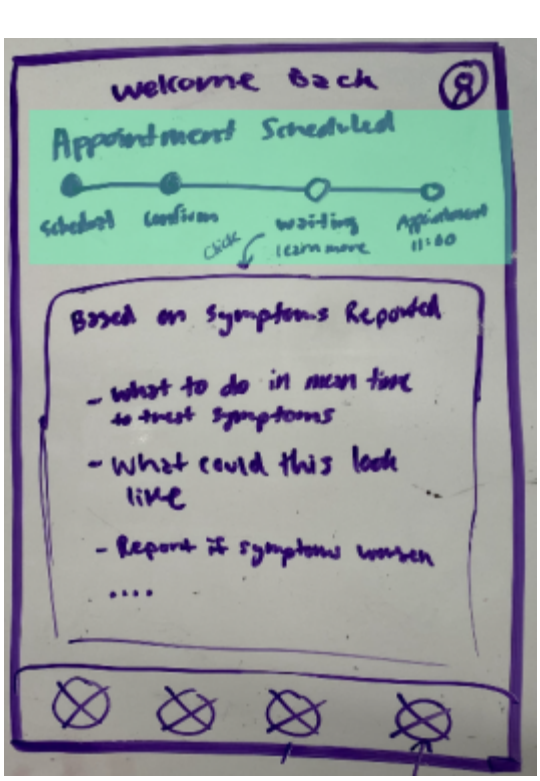
Lastly, we want to minimize the stress of having to recall a lot of pertinent medical information by providing parents with **clear aftercare summaries and next steps**. Lightening the load of this responsibility will help parents have a clearer mindset.

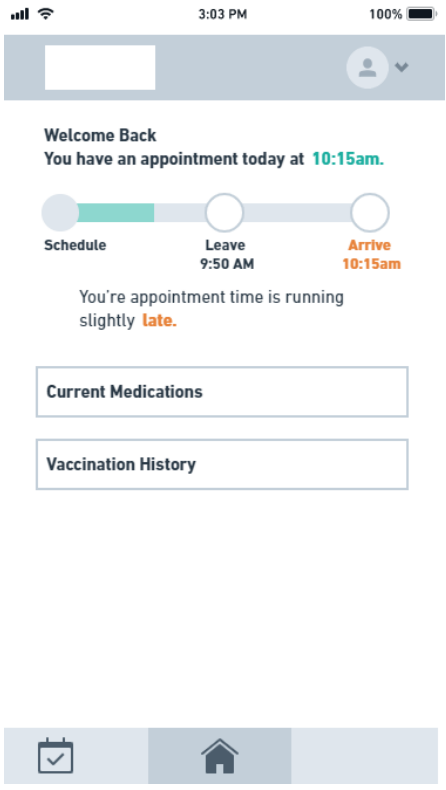
Our users have clear needs, and we have clear goals for how we can address their problems. With these things in mind, we started to ideate. How can we utilize a patient portal to address these issues?

How might we address these pain points?

We will highlight here the main ideas that we implemented within our final designs. We had many ideas for how we could address these problems, both through utilizing a patient portal as well as through related means. Our many ideas and all of our ideation can be found in the appendix, as well as our full wireframes. Testing insights explained throughout this section can be found there as well.

Streamlining the process





In order to address time management, we proposed having an **appointment timeline**. This would allow users to minimize the amount of thought that goes into creating and remembering appointments for both themselves and their children.

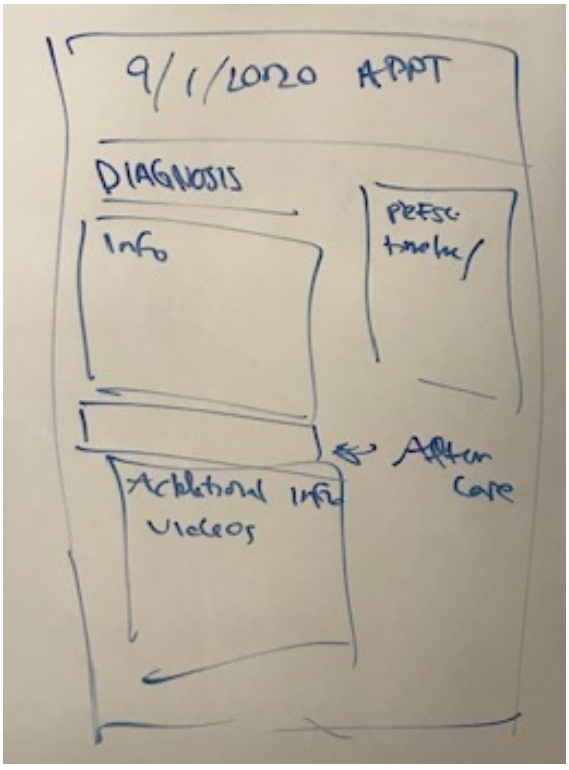
After testing we found that this timeline feature, while the *information* provided was extremely useful to parents, was **too clunky and hard to understand** for it to be a valuable feature. In our final design, this has been adapted to time-based information placed on the home screen.

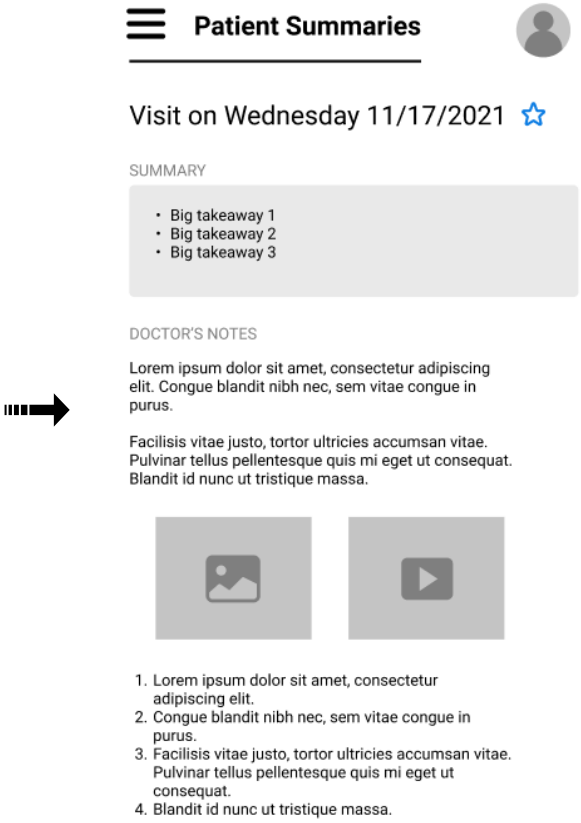
Helping parents care for child

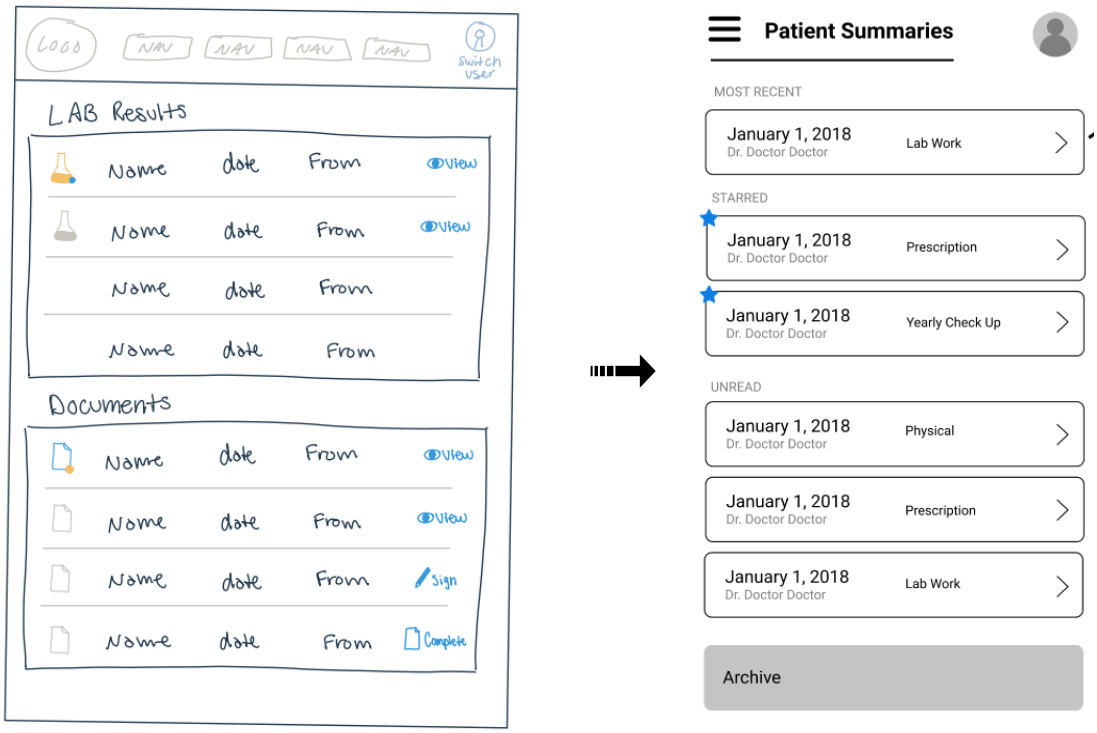
In order to give parents more personalized information in order to minimize the unknown that comes with having a sick child, we also proposed having an **"what to do in the meantime"** function. Based on the symptoms someone reports when creating an appointment, this will give them personalized suggestions for how to mitigate the symptoms in the best way possible. We also suggested a way to manage medication information such as through notification reminders, and aftercare notifications to help ensure the medication is working properly.

After testing we found that this feature provides extremely useful information to parents. However, we have yet to understand how this might negatively impact the health of children if the suggestions provided are ever incorrect. We understand that this could be a huge risk to implement- and thus needs much more research to ensure it can be executed properly.

Useful aftercare summaries







To address the issues of information management when it comes to healthcare, we proposed building out the patient summaries section to be more useful to parents. Many of these ideas included things that were pertinent to our MVP research and thus would be useful to anyone utilizing a patient portal, not just parents. By minimizing the effort it takes to find and understand summaries, we can help minimize the stress of medical care for children.

We recognize that our proposition to parse the information from a patient summary (PDF) and change the formatting to make it easier for patients to take in would be a very large undertaking. However, we truly believe it is worth the research and effort that would be put into it, as it would greatly impact the experience and perceived usefulness of patient portals.

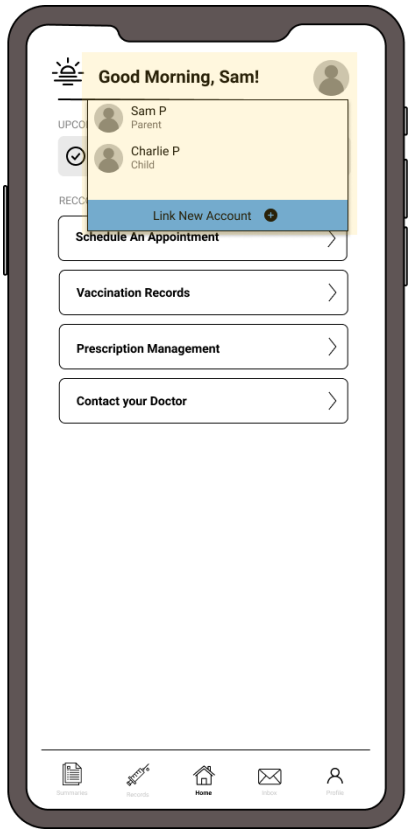
After testing, we found that this feature, while useful, is missing some important information when it comes specifically to children's health. This is **vaccination records**, which is extremely pertinent to keeping track of children's health. Current immunization management systems tend to be clunky, hard to use, or non-existent. We address these things in our final proposed design.

After sketching and evaluating, we created our final design. Due to limited time, we still have yet to test our final designs, which is why they are still in a low fidelity stage of design. However, after testing with users we understand that our designs satisfy the needs of our users. In this section we will walk through our designs and then talk about what our own team limitations were, as well as what the next steps are for continuing our project.

Does this design address the needs of our users?

1. Final design
    a. Home page & Timed Based Information
    b. Vaccination Records
    c. Patient Summaries
2. Our Limitations & Next Steps for Cerner

Home page



Overview

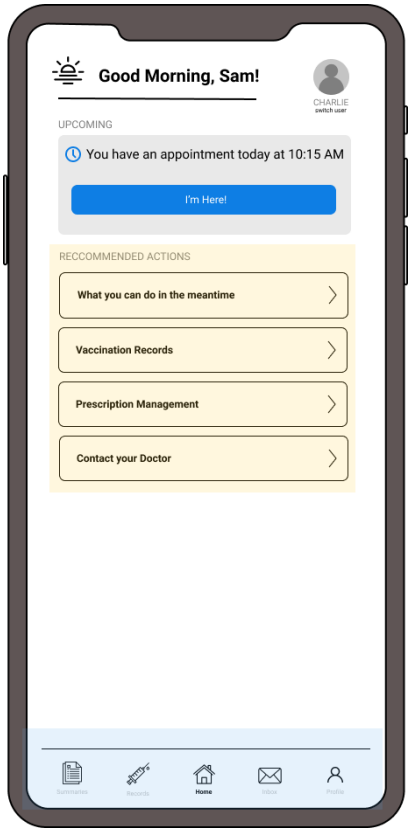
In our final design, we wanted to create a homepage that addressed time management pain points found in regards to parents wanting information personalized to their children and easy navigation.

Functionality

We constructed the layout of our homepage to display information dependent on the user, such as upcoming appointments or after appointment summaries, as well as most-commonly used tabs determined from user interviews and testing.

Profile Switcher

The profile switcher allows parents to balance both their own healthcare and their children's. This gives the capability to quickly switch between managing each person's health, giving them a better sense of autonomy.

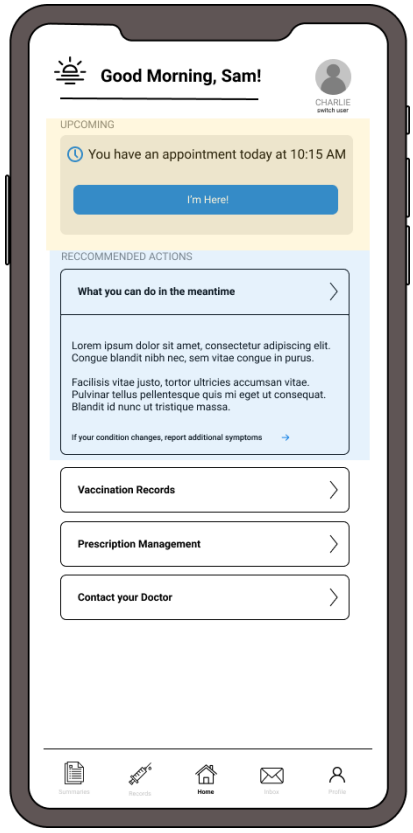


Recommended Actions

Buttons with quick call-to-actions in simple terminology. This helps address the time it takes to use and understand a patient portal, as well as the struggle of remembering how to use it upon infrequent return to the app.

Simple Bottom Navigation

Simple, clean bottom navigation that doesn't rely solely on icons to inform the user on its function.



Overview

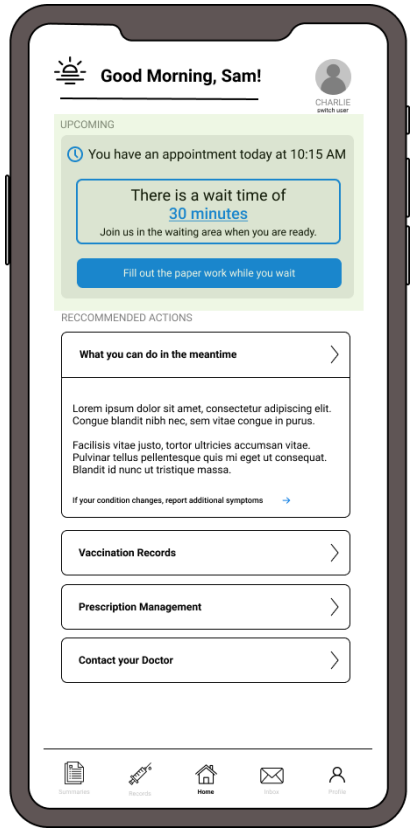
Through interviews and testing, we found that our users valued the option to see their appointment timeline. This led us to streamline the process into a notification on the homepage.

Reminder on the home page

When a user has a scheduled appointment, it is the very first thing they see upon opening the app.

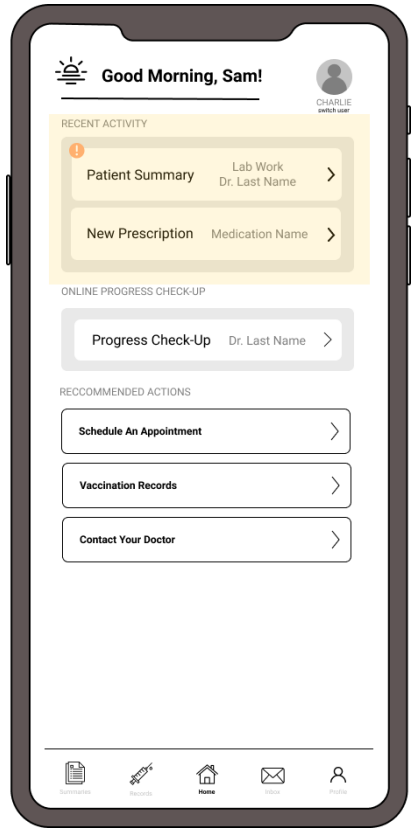
What to do in the meantime

A drop down to see personalized recommendations for actions to take to help care for their sick child. The information provided here would be based upon user-reported symptoms when the appointment is scheduled.



Check-In Upon Arrival

Allows users to check-in within the app to minimize time. Once the user is ready to check-in, the app will also show the current wait time.

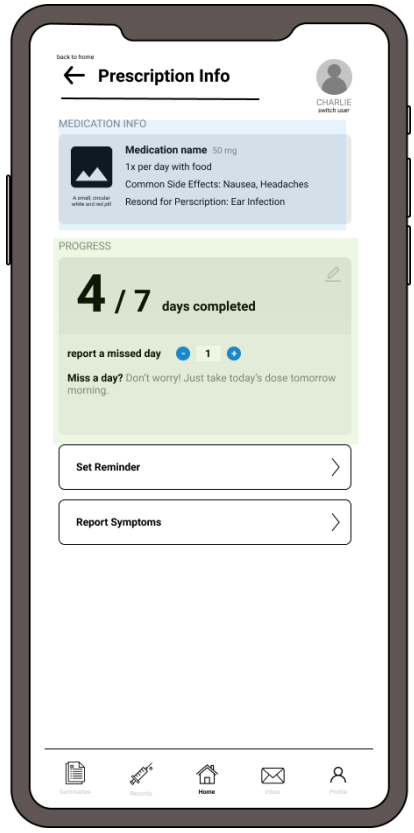


Overview

After an appointment, users can access quick links to their patient summary and any new prescription information. This minimizes time and inconvenience as users will not have to make additional clicks to find these details.

Quick actions after appointment

Simple actions to view their patient summary and any medication information.



Clear prescription information

Image and detailed information about specific medication. Users can see pertinent information including an image, amount to take, and common side effects. This especially helps when kids are not able to describe what is happening to them- and parents can cross reference this as a way to ensure the medication is doing what it should.

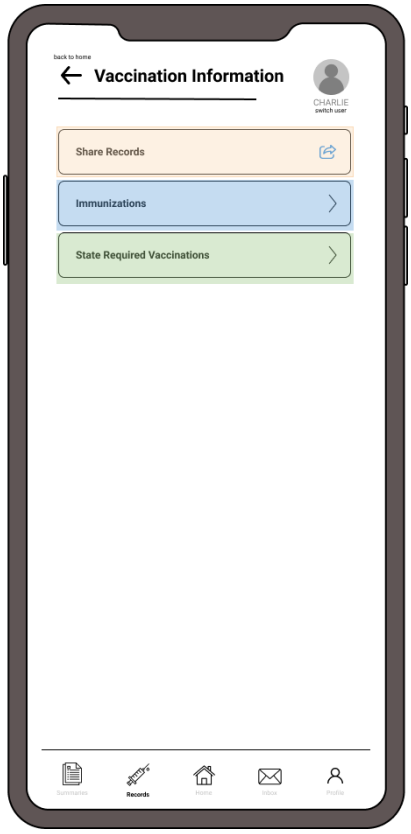
Personally track medication

Allows parents to personally track when their child takes their medication in a centralized location. This is not meant as a reporting system, just a guide.

How Does this Help Sam and Charlie ?

These features allow Sam to **receive credible information and save time** from searching on the internet about how to care for Charlie before the appointment. They also help Sam stay on top of Charlie's medications by having the option to **personally track** Charlie's intake.

Vaccination page



Overview

In our final design, we simplified a lot of the medical history sections of the app to focus more on vaccination management. We found that users had a very strong preference for this part of medical history, so we decided to focus on making this part really well.

Functionality

We found that these three options covered a lot of ground without being too complicated. The focus on these tabs was to make information easy to find and easy to use. Both the "immunizations" tab and "state required vaccinations" tab are equipped with drop-downs with more information. We'll go over those later on.

Share Records

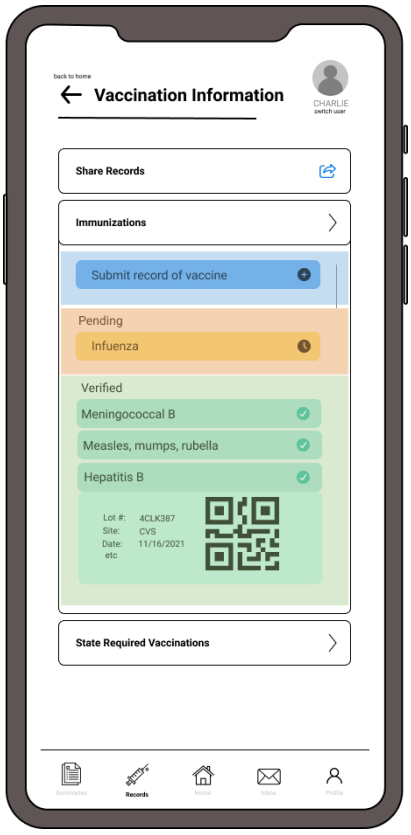
A button that allows users to quickly download or virtually share their vaccination information and records to schools or other health providers.

Immunizations

Harbors all information about the immunizations that the user possesses as a drop-down. We will go over this more in-depth later.

State Required Vaccinations

Similarly to "Immunizations", information about state required vaccinations can be found here.



Overview

This is what it looks like if you tap on the “Immunizations” tab. You’ll be met with three separate bars that display information and allow users to input information as well.

Submit Record of Vaccine

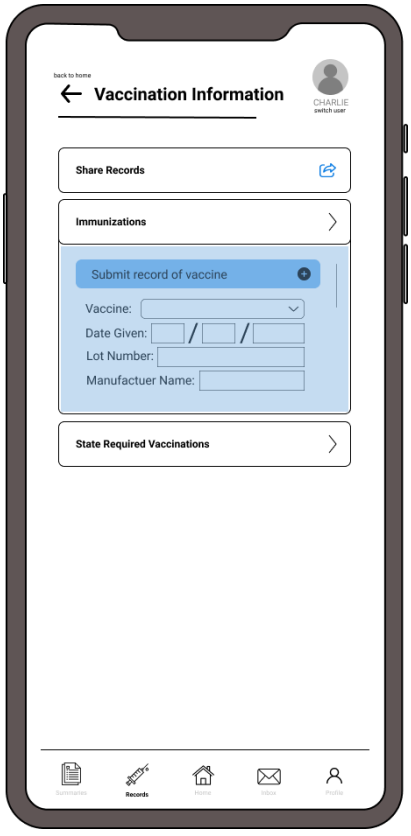
We’ll be going into this more later, but when tapped, the user will be exposed to a number of information fields that they can fill out, manually documenting a vaccination.

Pending

Shows the user what vaccines that they are in the process of being fully immunized for. So for example, users would see this bar if they were waiting on getting their second shot of the co-vid vaccine.

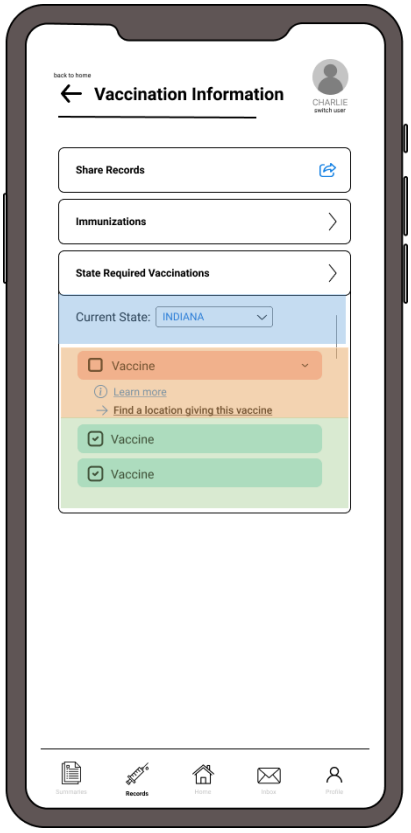
Verified

Lastly, the green tabs just indicate up-to-date vaccines that the user currently has. If clicked on the tab will expand, giving the user access to the respective vaccine’s information. They will also see a QR code that others can scan to verify the user’s proof of vaccination.



Submit Record of Vaccine (Dropdown) - Info Fields

These criteria are all information that is received when a user gets a vaccine that they can manually put in themselves. We found this important because we valued convenience a lot in these designs. Vaccinations are not always administered through one’s family doctor, and it would be a pain to have to transfer all of that information to the user’s primary health care provider by appointment or phone. This allows users to easily transfer information between two different systems.



Overview

This is the drop-down that users will see if they tap on the "state required vaccinations" tab. We found that these lists often overlap with schools and other events within a given state, so we figured our users would find value in having this information in one place that makes it clear what they have and what they don't have. Our goal with this feature is to reduce overall time searching for this list and the subsequent figuring out which ones they have.

Current US State

Allows the user to select the state they are currently in.

Still Need

Communicates to the user that they are missing a vaccine that is required by their state.

Learn More

Tells the user why the State requires this specific vaccination.

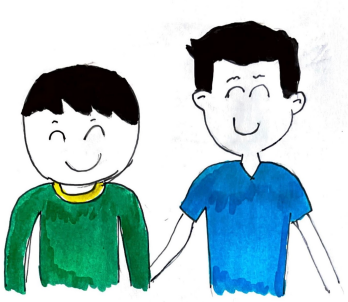
Find a Location

Tells the user places near them that are administering this vaccination.

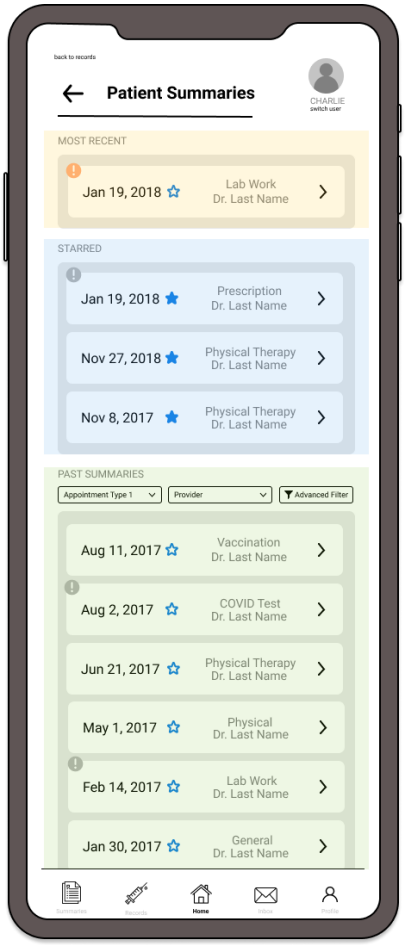
Verified Vaccines

A visual representation of the vaccines they do possess that are on the list.

How Does this Help Sam and Charlie ?



Sam is able to save time and stress because all of the vaccinations that Charlie needs are in one place that is easily accessible. He is also able to keep track of any on-going vaccines and easily share vaccination proof to schools.



Overview

The final design for our patient summary tab can be split into three main sections: most recent, starred, and past summaries. The preview of each patient summary contains the date of appointment, appointment type, and provider name.

Functionality

To streamline accessing important information we included an for any summaries with important results or actions. This appears as an orange exclamation point that is greyed out once a summary is read. Patients can also star summaries that they refer back to most frequently which moves the summary higher in both visual and information hierarchy.

Most Recent

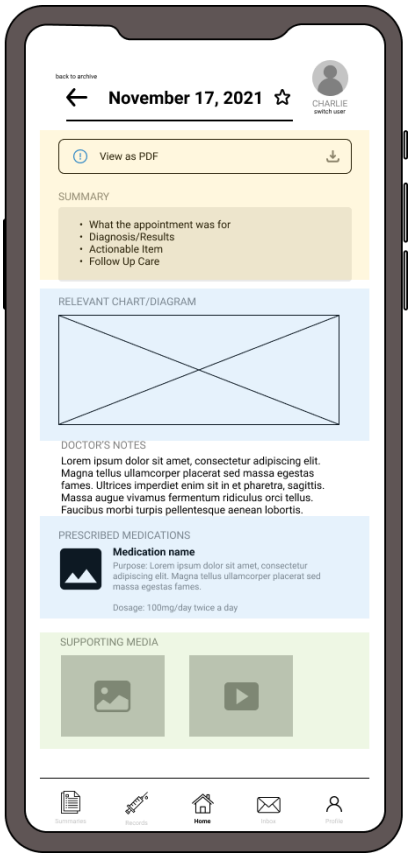
Contain only the patient's most recent patient summary for easy access after appointments.

Starred

Displays a patient's started summaries

Past Summaries

Contains all other patient summaries in a continuous scroll format. Patients have the ability to sort by appointment type, provider and other advanced filtering options. Admittedly these filters need more research, however by separating past summaries with filters, we hoped to consolidate this information in an unobstructive way that still allows users to refer back to information as the need arises.



Overview

Our team also designed a potential layout for the patient summaries themselves. Although we deemed this ultimately outside our scope, we include it here to make an argument for further research to be done in this area.

Quick Summaries

Because patient summaries are often dense and filled with medical terminology that is hard to understand we included a quick summary at the beginning of our patient summary that includes any action items, important results, and prescriptions.

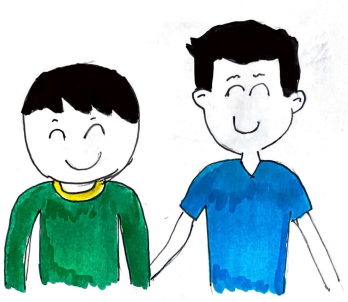
Important Information

As with typical patient summaries we included sections for important diagrams, results, and prescriptions to be displayed in-depth. If a patient needed more specific information they could view this section

Supporting Media

In order to better support patients in their after-care journey, and lessen some of the googling that happens after appointments, we included a supporting media section which may include images and video.

How Does this Help Sam and Charlie ?



With his patient summaries more organized and easier to understand content, Sam can easily access information about Charlie's earache medication. Without the stress of having to remember everything or managing a paper summary, all of Sam's attention can be devoted to supporting Charlie.

Although there are still barriers for Sam to overcome in his journey, he can now access supporting media within Charlie's patient summary that make him feel a bit more supported.

Limitations

Like many projects, we found that there were a few bumps in the road throughout the semester. This project had many familiar problems, along with a few unique ones as well. Part of the challenge for these projects is overcoming the mishaps that we encounter in a positive way.

Resource Allocation

We found ourselves very short handed when compared to other teams. During the semester, we had two team members effectively drop experience studio, leaving us with only five members of the team. Because of this we were often short-handed and had a difficult time delegating work, ultimately slowing down our project.

Defining Agile UX

Throughout the semester, we often got **too caught up with the definitions of agile UX practices** when we should have been more focused on the utility of said practices. We focused too much time on creating a sprint, for example, based on its definition alone. We eventually decided to **focus more on the utility of the practice** rather than having it fit a specific definition.

Access to Users

When our team would test, we would struggle to get participants that were representative of our user group. Being on a college campus and having limited incentive to bring on more participants, **we often settled for students and close family.** Testing with some users is obviously better than no testing, but it certainly wasn't optimal.

Time

Like many other teams, ours **struggled with time and time management**. Over the course of the semester we had to make a number of difficult decisions on how we spend our time and what we spend it on. This was accentuated by many other of our limitations, and proved to be **a constant factor in our decision making process**.

Next Steps for Cerner

With a lack of time, we have a number of suggestions for Cerner if they so choose to continue this project internally. We have a few suggestions based on what we were able to accomplish over the course of a few months. Had our team gotten more time, these would have been what we continued to work on

Usability Testing

With many of our final iterations ranging from low - medium levels of fidelity, we felt by the end of the project that we would be **comfortable testing these mockups with our users**, to see if the feature we created was intuitive. While we were able to get a lot of testing done, usability is one aspect of testing that we never really got around to.

Further Iteration

Despite having many different iterations in lower fidelity, **we still believe that the product is quite far from moving to a high fidelity prototype** given the many aspects of portals and number of unknowns involving our current iterations. For Cerner, we recommend getting in another couple rounds of testing, with room for **ideation and feedback-based implementations.**

Appendix

Secondary research

Patient Portal Information

Goals

Our team recognized that we were lacking basic knowledge within the healthcare industry. We decided to look into existing research in order to:

- Discover, through blogs and other conversations, existing pain points of patient portals and
- Identify common issues in the broad genre of healthcare and consider problem spaces that may intersect with patient portals through academic writings

Method

Each group member was tasked with conducting secondary research with the goal of answering a question. These answers were found through various sources such as health blogs, Reddit.com, and academic articles. We then grouped the insights we found into overlapping categories. This diagram helped us analyze the data we found and create actionable takeaways.

View the whole diagram here to better see intersections > Cerner Patient Portal Research.pdf

Overall Takeaways

The categories we found most pertinent to the current problems in healthcare and patient portals are broken down on the following pages. Our key general takeaways were as follows:

- Information in patient portals should be easy to locate and clear to understand
- Patient engagement with portals can be increased through both healthcare company personalization as well as through simplicity

Categorical Takeaways

According to several Reddit.com users, there is a struggle to receive crucial information regarding their personal health in a timely manner, due to the breakdown of communication between providers and patients.

Patient engagement is a crucial step to a good experience using a portal. This can be accomplished best through simplicity and personable connection with patient providers.

Current main user issues with patient portals include loss of features due to difficult navigation processes and confusing content layouts.

An increase in the lack of trust the population has for the healthcare industry causes users to not want to use their portals and have better experiences with in-person visits.
Portals with more personable language and with user personalized information clearly provided by their specific practitioners are more likely to be used by patients.

Healthcare is becoming a less desirable profession due to burnout, and mental health is becoming a growing concern. The lack of trust of technology combined with the increase of telehealth causes an interesting dichotomy. How might we be able to address these issues?

Caregivers

Goals

Our team recognized that we wanted to better understand the needs of our chosen users. We decided to look into existing research in order to:

- Better understand some pain points and stressors that caregivers endure and
- Locate possible areas of opportunity to mitigate these stressors for caregivers through patient portal access

Method

Our research into caregivers was found through resources such as health blogs and academic articles. Each team member was tasked with finding a relevant article and writing some key takeaways from the article. The full diagram can be found here > Cerner Caregiver Research.pdf

Overall Takeaways

Caregivers have specific needs that could be addressed with patient portals. These pain points and needs are listed below, with possible ways we could address them when redesigning a patient portal. The majority of caregivers experience role conflict and inadequate stress management: caregivers who have the least amount of outside assistance reported the highest levels of health problems and burden (Bialon & Coke, 2012). Bialon & Coke (2012) suggest that one possible way to address this is by increasing the amount of formal, personalized assistance that caregivers have access to.

Personalized information based on their caregivee's needs could help mitigate the stress that comes with the "unknown" of the medical illness. This could include things like what constitutes an emergency and reminders to take medications.

A more autonomy-supportive health care climate is moderately associated with greater exercise or physical activity (Martire & Helgeson, 2017). Much more research could be conducted to fully understand how we might be able encourage more autonomy for caregivees through patient portals.

Lastly, providing more efficient, clearer communication with doctors can take some of the stress off the shoulders of caregivers. Caregivers tend to be overprotective of their caregivee- they get used to refusing extra help out of the idea that only they know how to properly provide care to the person (Caregiver Burnout, 2021). Through things like secure and *quick* messaging, personalization to the caregivee's condition can give caregivers more comfort in accepting help.

Interviews

Goals

Once we completed our competitive analysis and synthesis, we wanted to cross reference the quantitative data we had collected with qualitative data from user interviews before moving forward. To gather the user data we needed, we decided to conduct interviews and ask people about their experience using portals as well as their general online medical experiences. With these interviews we wanted to:

- Confirm the insights we found regarding the most common patient portal features and
- Fill in any possible gaps in our research in order to **locate any new opportunity areas**

Method

Our team spit up into 3 groups and went around Purdue University campus to interview people. We also interviewed relatives and friends. We wanted a wide range of insights from multiple user groups, because of the possibility to find new, exciting opportunities within the space. Thus, we did not have a specific user in mind. The only criteria that would constitute an interview was that the interviewee must have used a patient portal before.

Overall Takeaways

After completing our interviews, we created an interview analysis list of the answers that were populated from our interviewees. You can view the full analysis here > Interview Analysis.pdf

Our interviews helped us have a better understanding of the problem space of patient portals and how patient portals are utilized by patients, as well as the timeline for a common doctor's visit.

Competitive analysis

Goals

After conducting research into existing issues within patient portals, our team wanted to understand the most important features and functionalities of patient portals. Our team conducted a competitive analysis with 7 patient portal providers in order to:

- Familiarize ourselves with common features of patient portals and their interconnectivity
- Identify both positive and negative trends among patient portals layouts, navigation, and content and
- Compare portals in order to locate the most crucial functionalities that all patient portals offer

Method

The competitor portals we analyzed were chosen based on what our team had access to, whether through personal patient portals or online video walkthroughs. The competitor portals we analyzed were:

Kaiser PUSH Epic (MyChart

NextGen Kareo California Speciality Pharmacy

Each group member was tasked with analyzing one competitor portal. Since we wanted to have a very broad view of the competitor's portals, the criteria for our analyses were as follows:

- How does the user navigate through the site? How easy or difficult is this method of navigation?
- How does the user schedule an appointment? Is this workflow easy or difficult for the user, and why?
- How does the user contact their providers? Keeping in mind a user's lack of trust, how secure does messaging feel?
- How does the user view medical documents? Is the information regarding these reports clear and easy to understand? Why or why not?
- What are the other features that the portal offers to users?
- Are any of those features unique?
- What are the portal's overall strengths and weaknesses?

Actionable Takeaways

Our full competitive analysis with images can be found here > Competitive Analysis Patient Portals.pdf (*if you're using chrome web browser, it does not allow infinite zoom on vector pdfs- try opening in a different browser or adobe pdf viewer)*

After completing our competitive analysis, we shared insights amongst the team to create actionable takeaways.

Shared features

There were three main shared features between all the patient portals we analyzed. These are

- **messaging** with healthcare providers,
- **scheduling** a new appointment, and
- accessing **medical records**.

Mistakes to avoid

Common issues we personally encountered when using the patient portals were:

- Complex online check-in processes
- Overuse of icons in navigation
- Lack of navigational context throughout the sites
- Overuse of complex medical terminology
- Clunky, long navigation lists

Actionable Items
These issues led us to our main actionable items. In order to increase engagement and trust, we wanted to ensure that our portal:

- Minimizes the medical terminology barrier
- Utilizes more personable language
- Formats messaging as an email and
- Offers personalized education materials along with patient diagnoses

Ecosystem mapping

Agenda and Planning

Review Workshop Objectives
The main objective of this workshop is to align our team on the context of our project, within the field of healthcare. Understanding the ecosystem of healthcare will help our team understand where patient portals fall, and what importance they hold in the lives of both clients and healthcare providers. We hope through sharing perspectives we can recognize what we already know and what we still need to learn.

Review Key Concepts
Identify Cerner's experience ecosystem, these are:

- Actors
  - The people who participate in our product or service experience.
  - Ex: Customers, internal stakeholders, the product or service
- Roles
  - Roles are the niches that actors fill.
  - Ex: A caretaker, a Provider, An organizer
- Artifacts
  - Digital or analog products with different capabilities that exist outside of an experience, but can affect the experience
  - Artifacts are not customer touchpoints
  - Ex: watch, tablet, computer, laptop, smart watches
- Factors
  - Things that shape the user's behavior and experience
  - Ex: Culture, trends, environmental changes
- Places
  - The location in which many of these processes take place.
  - Ex: Location where a company is located, A place where customers reside.
- Interactions
  - How each of these roles interact with each other.
  - Ex: Customer using a company's website, a developer adding new features to the website, a customer calling customer support.
- Relationships
  - There are multiple types of relationships that can exist between users, products, and people and these relationships are constantly changing
  - Mapping out these relationships can help understand the climate around a design, even though these relationships are constantly changing

    - Types of relationships: competitive, cooperative, supportive, transactional, regulatory, complementary, influencers, emotional
- Boundaries
    - Exploring the ecosystem to discover where it begins and where it ends.
    - Ex: For a place like Cerner, the beginning would be something like a self diagnosis or drug companies. The outer layers would be things like the FDA or insurance.

These definitions will also be provided to the participants for reference during mapmaking.

Create Maps

Team 1 - Focus on the patient as the center of the map. Focus on patient contexts and relationships. Cerner, Cerner products, and services are a small subset of the ecosystem.

Team 2- Focus on healthcare as the center of the map. Most entities are channels, touchpoints, the healthcare professionals that must interact with the portals in some way, as well as competitors and external forces.

- Split into two teams (With one co-facilitator helping each team) *
- Each participant will be given five minutes to write down as many entities (one per sticky) as possible for their respective ecosystem map.
- Each team will then share their sticky notes with the team with any relevant explanations, and more can be added during this discussion. 10 minutes
- Finally, they have the rest of the time to organize their sticky notes into a model in order to show relationships between the entities.

Share Out Maps

- Each team will walk through their map, highlighting entities and relationships that could have important strategy or design implications. We will then facilitate a discussion about connections across the two views and what it could mean for your work. Possible Questions:
    - What is part of its service ecosystem and what are its boundaries?
    - What do we know about our customers and what influences their choices?
    - Who are we competing with? What is their relationship to the customers we are targeting?
    - What potential connections and relationships are ripe for innovation?
    - What don't we need to worry about? What things seem to be in play but are outside of the boundaries useful to our service strategy and design?
    - What do we need to learn more about? Do we need to conduct research?
    - Do we have everyone involved in our effort who is required in order to improve the service?
    - Where do we begin to make change?

Reflect and Next Steps

Possibly create a map, and use the reflections within the end of this activity to drive the project toward our next goals.

Workshop Notes

Before Workshop

- Made the decision to do this workshop physically with a board and sticky notes as opposed to using a tool like Miro online to help immersion into this activity

- (10:11) we got coffee to help boost energy and start comfortable conversation between people within a group
- We realized that we could not drink coffee in the classroom, so we took over a workspace to do this workshop

Beginning of Workshop

1. Sarah P. asked for a three sentence agenda/ overview for this activity so that the team could understand what was going on
    a. Our main objective of this is to align our team within the concept of our project; understanding the ecosystem of healthcare and where patient portals lie within this ecosystem.

2. Jared starts to explain the key concepts listed within our workshop planning document to help the team define the key concepts and think about the different aspects of the healthcare environment.
    a. Without defining these key terms, it would be difficult to think about all of the different factors included in the environment

During Workshop

3. (10:23) Team splits into two groups; one team will take Cerner as the center of the map, while the other team takes the Patient as the center of the map
    a. Team chooses where to make each map, and decides who is on each team
4. Teams sit down to write down as many factors that they can think of within the ecosystem
5. At the center of each of the two maps is Cerner and the Patients respectively
    a. 15 minute timer is set to help space out time and keep the team on track
    b. First 15 minutes were devoted to exploring the space, and writing sticky notes on factors of the environment
    c. (10:41) The second 15 minutes were devoted to placing sticky notes and creating the map physically on the wall.
    d. We played a song to finish out the last 3 minutes of this workshop to help the groups wrap up and understand how to share out their information

Presenting Findings

6. Teams present gained information to documentarian and other team
    a. Cerner Team
        i. In left bottom direction, it talks about the patient portal and the lead up into making an appointment
        ii. Part of this map branches out into Electric Documentation, Hippa
        iii. Factors : Covid and conveniency to finding health information online
    b. Patient/User Team
        i. Customers, primary points of contact: portal, family members, prescriptions, primary care positions
        ii. All of these factors affect how people interact with a Patient Portant and the healthcare ecosystem
        iii. Insurance and monetary constraints are important that affect/impact how people interact with this ecosystem
        iv. Customer Service and IT workers could influence these ecosystems as well
7. Team decided that it would be more helpful to combine both of the different Ecosystem Maps to see how
    a. Communication between this team is incredible, they are all speaking and listening to each other, and collaborating perfectly as a team. This is incredible. They are really learning a lot within this workshop.

Reflection

- This activity helped the team discover different pathways and aspects that affect the experience
- Helped the team recognize the importance of scoping down for the project or focusing on specific aspects of the project
- Creating a list of entities that exist within the Cerner ecosystem will help the team understand who to interview
- It might be important to learn more about Hospital's connection with their client and how the two communicate through the portal
- Multiple Project Questions were generated throughout this session:
    - How do hospitals share the patient information?
    - Do they share the portal or do they share the document information?
    - How are records shared between hospitals/doctors/pharmacies?
    - How do hospitals share information with each other?
    - Is there a large database of this information shared from hospital to hospital?
    - How do immediate care facilities or ERs communicate with the primary care provider's database?
    - How do hospitals communicate with each other regarding patients, do they go through patient portals?

Specific Next Steps

Our next steps with Cerner are interviews, competitive analysis, and then we're off to start wireframes. With these in mind, we are hoping the entities we identified will help inform our interview recruitment. There are many different actors and roles within Cerner's portal, and understanding the people and processes that reside within it will be extremely helpful. We'll not only be able to identify the people closest to the portal, but also the constraints and roles that they interact with. Understanding these relationships in-depth is essential to finding the right people to interview and identifying key questions to ask them. Moving forward, the information we got from this workshop will give us a more holistic view of how Cerner and our users interact with each other. We hope that this new perspective will guide our furniture design decisions and inform any questions moving forward.

All Ideation

Sketches > MIRO

Wireframes > WHIMSICAL

Lo & Mid Fidelity mockups > FIGMA

Testing

Goals

Going into our testing we knew that we needed some way to know if our designs were actually useful to our user or not. Previously, most of the features we included were based on thorough research, interviews, and iteration. Our mockups were designed to target the pain points we found collecting data, and we needed a way to test if they actually solved these pain points. With that being said, we figured a lesser form of desirability testing would help us answer some of these

questions. As a base measurement of success, we created a number of questions that we hoped to answer with this round of testing.

- Do the designs that we talk our participants through make sense?
- Does each part of the portal succeed in what we set out to do with it?
- Do the features help reduce the time spent in the portal?
- Do the features visualize only the most relevant information to our users?
- Do the values and metrics we focused on match that of our user's?

Method

Each group member was tasked with testing our wireframes with one person from our user group. View our entire testing protocol here > "desirability" testing

Overall Takeaways

Our full analysis > Testing analysis.png

- **Vaccination information is of high interest to our user**
- Calling is more frequent
- Prescription refills are good
- Too much to figure out on their own
- Appointment timeline is useful
- The simplicity is nice

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