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Read our weekly blogs during the project at medium.com/@sturgeme

01 Research
Phase 1

Focus

Once we decided that vaccines were going to be our area of focus for the project, our very first step of research was exploring the people and places that the topic is currently affecting the most.

Government

The type of exemption a parents uses to opt out of immunization is not as important as the state's process for getting one, said Saad B. Omer, a professor of global health, epidemiology and pediatrics at Emory University in Atlanta. "*What often makes the difference is how easy it is to get an exemption," he said. In some states, he noted, it's much easier for a parent to check off a box for an exemption than to spend time in a pediatrician's waiting room.*" (Bailey, 2019)

Primary Schools

Three times as many private versus public schools don't make the grade. More than 15 percent of the private schools in California failed to reach a 90 percent immunization rate, compared with 5 percent in public schools. Ninety percent is what public health officials believe is the minimal rate needed in order to keep many of these childhood diseases at bay. (Grohol, 2018)

Herd Immunity

"Herd immunity occurs when the majority of a population is immune to a disease. In general, the medical establishment agrees that a high proportion of immune individuals prevent the disease from spreading as it cannot find new hosts easily (Fox et al., 1971). If the concept of herd immunity is influenced positively by vaccination rates, then the anti-consumption of vaccines poses an interesting paradox. It

is an act of anti-consumption that actually becomes easier to practice as mainstream consumption increases. While the risk of a vaccine will remain constant, unless a vaccine is reformulated, the risk of catching a disease fluctuates, seasonally, depending on the level of herd immunity." (Fortin, et. all, 2011, pg. 487)

Minorities

"*Our findings based on the 2008 NIS-SES module revealed associations between a variety of social factors and vaccination UTD status of children aged 19 to 35 months. Family mobility, parents' concerns about vaccine safety, number of children in the household, child's age, and insurance status were strongly associated with UTD vaccination status. Few associations were found between parental employment and UTD vaccination status.*" (Chen, et. al, 2016, pg. 7)

Research Methods

The three research methods that our group decided to use for our project are Interviews, Surveys, User Journey Maps, and Affinity Diagramming. We thought that moving forward with our research, all of these methods would be valuable tools in developing a more educated understanding of our topic.

We focused on establishing a list of experts on the topic and professionals in the field to contact. Considering that our topic is in the medical field, in-person experiences were the most challenging, but with that being said, we collected a list of interview questions for email conversations, phone calls, and the potential in-person interviews.

We decided to start with a survey that we could distribute on social media to get a vague idea and response of a general public's opinions and feelings on the matter. A great deal of craft and construction went into the question making because we were looking for a subgroup of parents, specifically pregnant/new mothers who were unsure if they were going to vaccinate or not. We know there are the people who are 100% yes, no question about it and the 100% no, no matter how much data you show me, I won't change my mind groups. The group in the middle that is unsure/ not knowledgable about what to do is where we wanted to focus our time. This was the ideal target because there

is the most room and opportunity for improvement. From our secondary research we learned that the doctor/nurse talking about vaccinations has most of the power to sway the parents decisions. So there is an opportunity to create something to fill this gap and inform people on the options and positives of vaccinating.

The rise of social media was also a factor because those who are unsure will sometimes refer to the media, even fake news, to make a decision. We saw a result of this a few years ago with the vaccines causing autism claim by a celebrity, which is completely false, but the public believed her. People who are undecided can get overwhelmed by reading complicated research, so they go to social media to find condensed information, but that is where they run into illegitimate data that is biased.

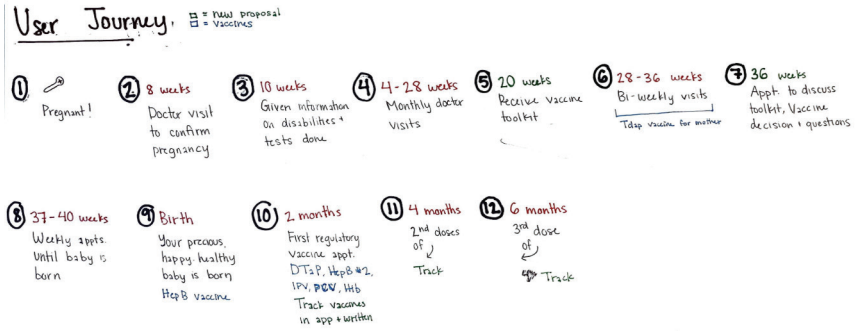
After reviewing our survey, we noticed a few areas that needed improvement on how we were asking our questions in order to get more specific answers. We each reached out to numerous people on our feed to ask them to share the survey, which resulted in our response rate tripling from the week prior!

Additionally, we conducted a phone call interview with Dr. Tom Wendel, a family friend of Halie's that works directly with the CDC. We also reached out to Maddie's pediatrician's office. We've visited The Little Clinic to talk to them about vaccines and flu shot procedures. Lastly, we've had a Facetime interview with Morgan's friend Kenzie from high school who has a 2 month old baby girl and just recently went through the first round of vaccines.

Our primary research gave us insights from a variety of different platforms and people who all have different knowledge on the topic of vaccines. We began focusing in on the opportunity to create a design solution for those who are new to parenthood or do not have access to information about vaccines and need a way to become educated on the topic to help them in their decision making. Next, we came together to start focusing in on key opportunities that we could use to create solutions to our problem area. We decided to analyzing our primary research and look at potential solutions and insights learned from our work.

Analysis

After looking at Kenzie, the new mom's personal journey, we decided it would help to lay out the typical user's journey and add in where we could introduce a solution, and show were the vaccines usually take place.



We also discussed our desired audience, in which we wanted to address. We are looking at new parents, uneasy parents, and those who want and need credible knowledge on vaccines. More specifically, new and expecting parents who are either on the fence about vaccines, or have no access to information on the topic.

Some opportunities and solutions we conceived were a brochure or website with a better way to digest the information. We were also thinking a toolkit could be useful based on our research from talking to Kenzie. She said it would be helpful to have a designated appointment where you can get information to read at home and then a week or two later meet again and discuss any questions. We were thinking that the toolkit could be analogue or digital, or have elements of both. Lastly, we thought about a guerrilla campaign to address the issue of miscommunication cluttering social media on vaccines.

Insights

The current situation is that there is no regulated way of providing information on the topic of vaccines which results in confusion and anxiety amongst new parents.

Most information on vaccines is handed out in a packet of paperwork during appointments as an afterthought with the assumption that parents will look it over on their own time. This is a frustration for those who feel unprepared or do not understand the information displayed in these large packets of paperwork full of intimidating medical jargon. The desired end-state would involve a set of information explained in lamans terms, within a specified time frame that allows for time to review and discuss vaccines prior to the baby coming.

STAGES	*4 weeks*	*8 weeks*	*12 weeks*	*20 weeks*	*28, 30, 32, 34 weeks*	*36 weeks*	*37, 38, 39 weeks*	*40 weeks*	*2 months*	*4 months*	*6 months*
Appointment Overview		Pregnancy test at doctor is positive	Check up visit	Check up visit	Check up visit occurs biweekly	Vaccine for Taylor. Discuss Tool Kit	Weekly visit, checking dilation	8 hour delivery for healthy baby girl	1st round vaccines	2nd round vaccines	3rd round vaccines
Information Given		Schedule of next appointments, foods to avoid/symptoms	Told about possible disabilities, screenings for common disabilities	Vaccine Tool Kit given				Schedule 2 month visit, Given pregnancy essentials for going home/postpartum	Schedules appointment for 4 month and 6 month vaccines		
Doctor/Nurse Conversation		Doctor confirms pregnancy + congratulates new parents	Supportive, telling them not to worry, given options if necessary.	Tells them to look over kit, told about recommended procedural vaccines, emphasis on routine process	Explain that at 36 weeks mom will receive Tdap vaccine	Go over any questions Taylor + Michael have about vaccines	Signs to look for discussed: contractions, water breaking, told to pack a hospital bag	Congrats, given all vitals + measurements	And that her arm might be a little sore, but that's normal	General check up for baby, then she gets her shots	General check up for baby, then she gets her shots
Thoughts + Feelings	Tells Michael she missed her period - they both are really hoping she is pregnant	Excited and nervous for next steps	Overwhelmed that something could be wrong already, feeling guilty	Curious about tool kit, wants to learn more once they get home, feels more in control	Feeling very pregnant Feet are sore Having a lot of food aversions	They feel a lot better after talking to doctor, hesitancy is gone. Decide to vaccinate	Excitement and nervousness Feeling anxious about last minute preparations	Tired, excited, bliss. Can't believe she just had a baby!	Seems like a lot of shots all at once for her little girl. Sad to see her cry	Second round is easier because she know what's happening and that the crying will stop soon	
Vaccinations						Mother receives: Tdap vaccine		Baby receives: Hep-B #1 at birth	Baby receives: DTaP IIV #1 Hep-B #2 IPV PCV 13 Hib	Baby receives: DTaP #2 IIV #2 Hep-B #3 IPV #2 PCV 13 #2 Hib #2	Baby receives: DTaP #3 IPV #3 PCV 13 #3
			Discussion with nurse/doctor	Talking about vaccines along the way. NEEDED!							

Looking at the pregnancy through 6 months, we put together the journey map of a pregnant mom-to-be. We classified easy visits by looking into the appointment, information given, conversations with the doctor, the parent's thoughts throughout each stage, and vaccinations. Notations in orange are important discussions with the doctor. Blue notes are current vaccine discussion and also additional discussion we think is necessary to set the pace for vaccines and be a normal conversation throughout the way.

Research 02
Phase 2

Synthesize

In reconvening after our primary research and future plans presentation, we began synthesizing questions and topics we have yet to cover. More specifically, we looked for holes in our research that will be vital questions and pieces of information moving forward. Some questions are listed below:

What are the most pressing unmet needs of the parents? (prevalent challenges)

How can our project be a visually digestible solution to the process?

Although there's a lack of standardization in the immunization process, there is some… what is it?

How can we "pre-board" parents before the 1st vaccine appointment? (what will this process look like?)

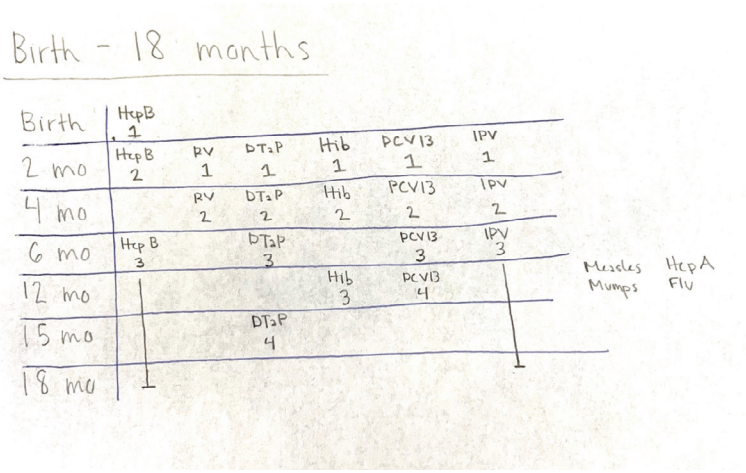
Where can we replace medical literature and jargon for more digestible content while still maintaining its credibility?

At what point in the process is our solution imple mented?

After discussing these questions and possible solutions we decided that we needed a little more discovery before we were ready to begin the design phase. In doing so we created an immunization chart to detect what questions we had in this vital piece of the puzzle, and then decided to approach this in two ways: we need…

More new parent information/input and,

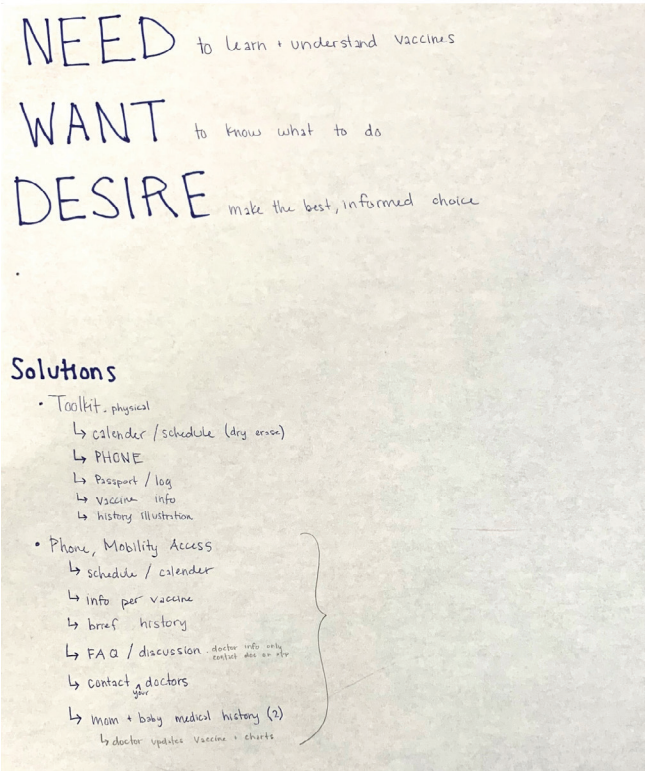
Content that physicians offices currently give to patients



Future

Our project team has decided to approach our solution in one distinct way, an app/toolkit

After conducting research on our target audience and discovering the diversity among them, we think that this solution will be the most effective way to show and implement our research.

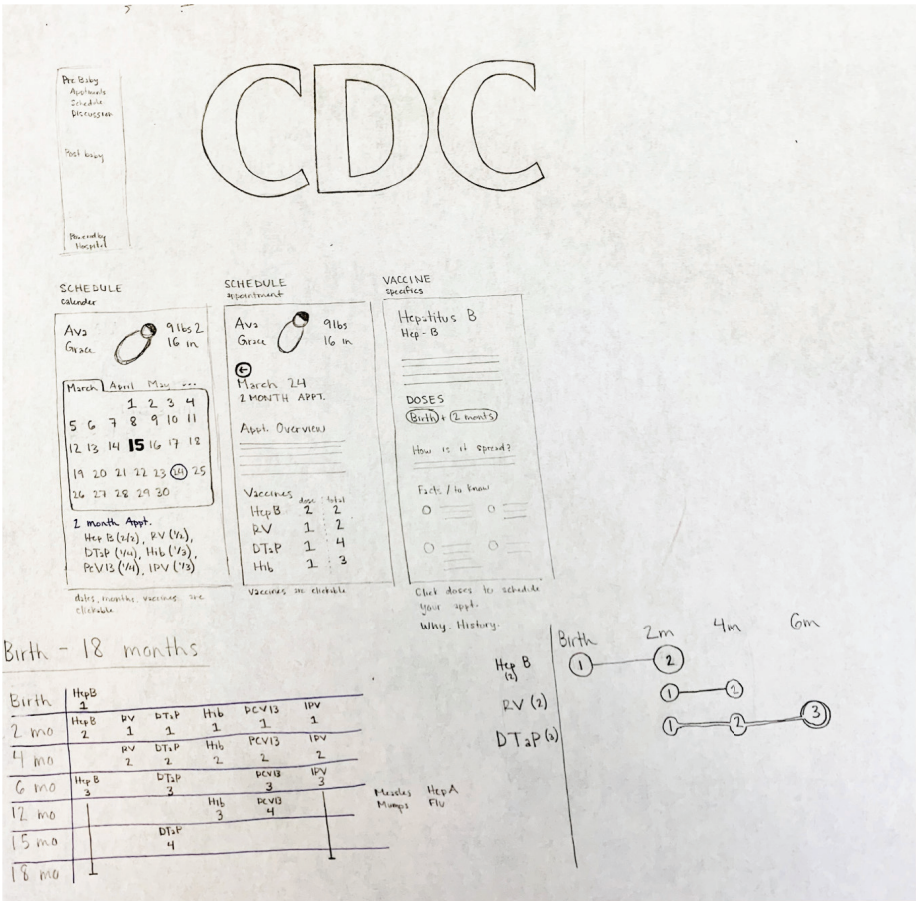


Concept 03
Ideation

Approach

With this weeks focus on conceptualization, we looked at the feedback we have received up to this point, examined the areas we are most passionate about, and discussed potential solutions.

We have a general idea of the approach we want to take, communicating the importance of immunizations and how easy they can be to keep track of, but the medium in which we will design for is undecided. We have also established that we want to highlight pregnancy and what that process looks like in accordance to vaccinating the baby.



Next, we looked at multiple platforms currently tackling this subject to see how the information is being communicated, where the flaws are, and what is being said about those platforms (stars, reviews, stories), a few we looked at are listed below:

Vaccination Matters, Queensland Government

American Academy of Pediatrics

Baby Tracker

CDC Mobile app

The Vaccine Handbook app

Kids Talk Vaccines, Toronto Public Health

Healthychildren.org, in collaboration with AAP

We then individually ideated on our own ideas, and then came together to synthesize and compare/contrast our more specific solutions. Below is our brainstorming:

Halie Jo

Guerrilla marketing campaign focused on history → incorporated into the built environment

CDC immunity initiative campaign → photography of real kids & what they can do now that they are vaccinated

Animated data visualization → statistics, "why", history

New app → acts as a toolkit for appointments

Re-working the CDC's app → to show more digestible information while maintaining credibility

Maddie

Data visualization

Date campaign → paint the town in facts

Doctor's office pamphlet

New app → "mom friendly". (could potentially have a Patient interface and a Doctor interface, so the two can work hand

in hand in asking questions digitally and for scheduling appointments)

CDC app → refresh

Morgan

Animation piece → informs audience about vaccines in a friendly/humanistic manner, could be posted on social media

New app → combining all the paperwork and physical information given but having it in one place so the parents don't forget it

Way finding/EGD pieces that could be put into an environment that explains vaccines + their history → museum? doctors office? CDC?

CDC app → could be redesigned to meet our needs + give credibility behind the facts we are presenting

Animation → could be condensed down to be added to our new "app" instead of standing on its own. maybe onboarding piece or just quick snippets explaining certain aspects of the app?

Ideation

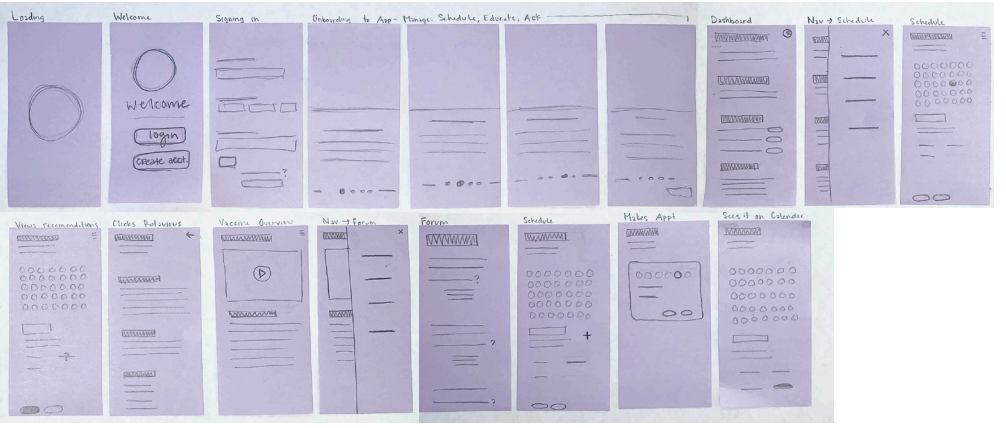
This week we narrowed down our final deliverable to be an application that is revolved around vaccines for new parents. The application's purpose is to inform and educate new parents/expecting parents about vaccines in a way that makes them more comfortable and educated about the process. Our end goal is that the application will allow parents to educate themselves about vaccines and ultimately schedule/confirm their child's appointments within the app. We want our application to ease the fear and miscommunications parents face currently.

To start off the process, we thought back to what our target user Taylor would desire and need in an app.

User desires:
1. Manage both her own & her child's health records
2. Ability to schedule appointments
3. Access to resources to educate herself on vaccines
4. A forum to read information & ask questions

User tasks:
1. See overview schedule
2. Education on vaccines
3. Read forums for more knowledge
4. Schedule the vaccines learned about

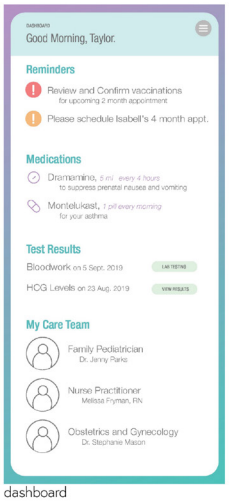
Next, we brainstormed what we would want our app to include, such as features, onboarding tasks, animations, etc. This resulted in our wireframes shown below.



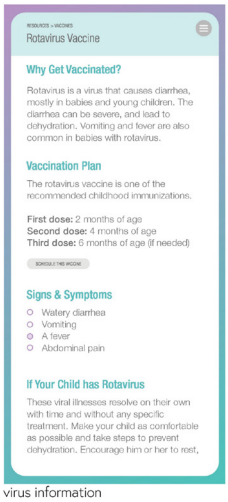
We knew that we had a round robin style critique coming up, so after creating our wireframes, we decided that making 3 example screens to show visual styles would be beneficial. The screens we chose to tackle were the dashboard, the rotavirus screen, and the navigation.

Using these pages and the same content, we each created our own visual language to show the content for Wednesday's class to get feedback. Below is each of our screens.

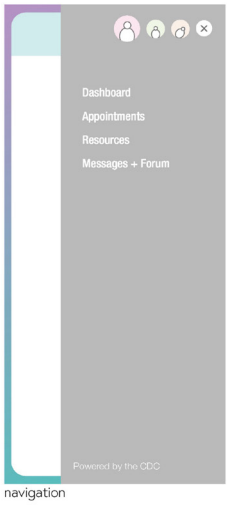
Maddie's Screens



dashboard

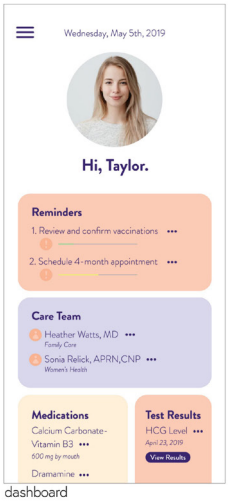


virus information

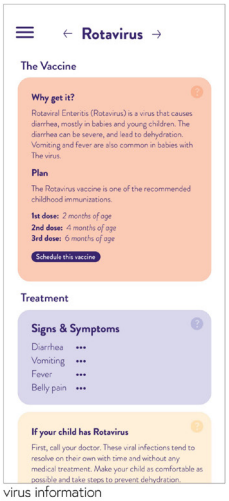


navigation

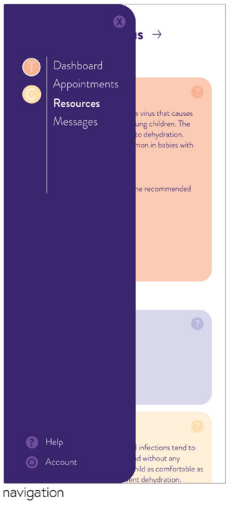
Halie's Screens



dashboard

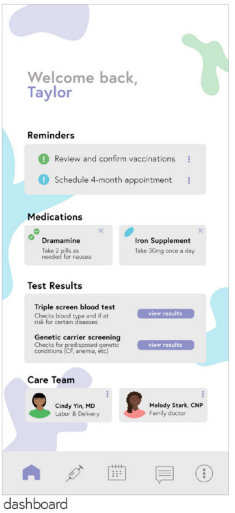


virus information

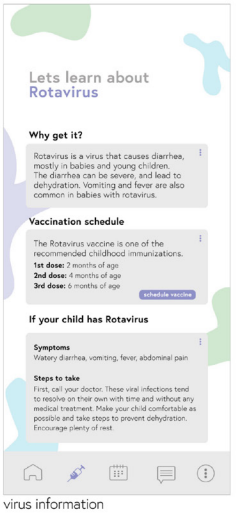


navigation

Morgan's Screens



dashboard



virus information

navigation

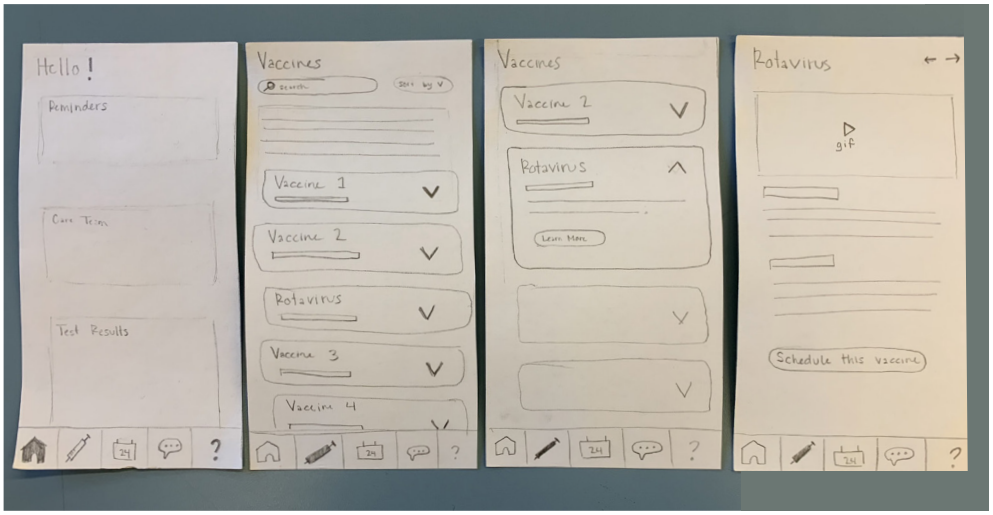
We received a lot of good feedback during our round robin critiques and we are planning on doing some user testing on our screens so that we can really narrow in and get further insight on what is working vs not so we can continue.

User Testing

We decided before we dive deeper into aesthetics, it is important that we have a compatible system for the user and that there are no hiccups in the processing of tasks. So we made very basic prototype mockups of 2 different tasks that we would test on 8 people.

The scenario: You are at home with your 5 week old baby, she is crying every time you try to put her down, so you have her in one arm and grab your phone with the other. You need to look up her 2 week appointment on the app. You open the app and this is the first page you see.

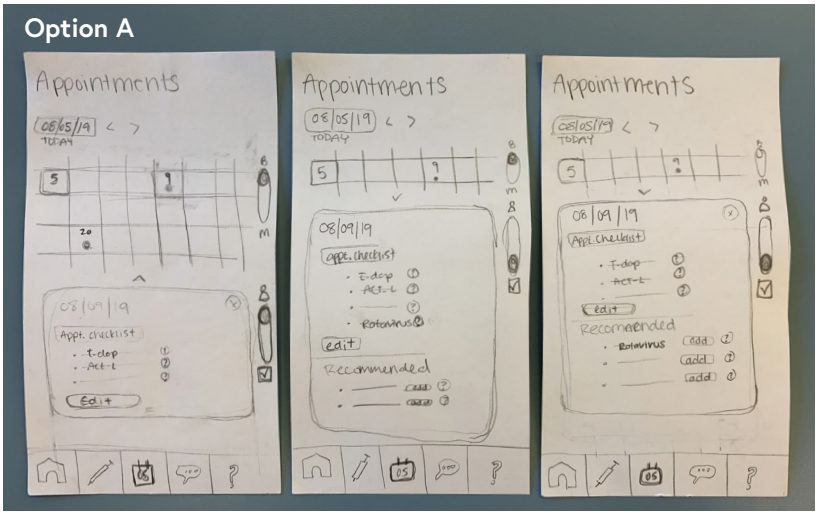
Task 1: Learn about the Rotavirus Vaccine



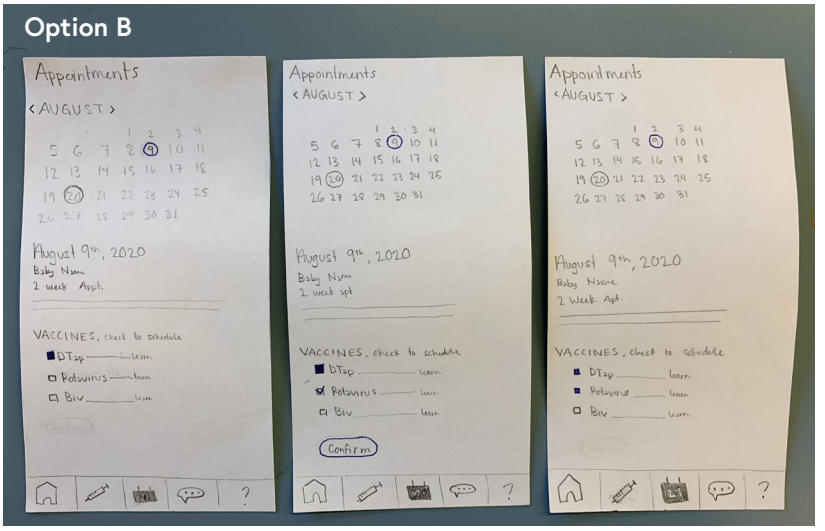
This task was fairly simple for everyone. Starting on the dashboard, each participant notices the vaccine/shot icon and clicked on it to get into the Vaccination section, then had no problem clicking rotavirus to get the drop down and then clicking the button to learn more.

For our second task, the three of us each came up with a different way to display the information. So we tested the 3 ways on each person and observed their experience then asked their preference. This is shown on the following page.

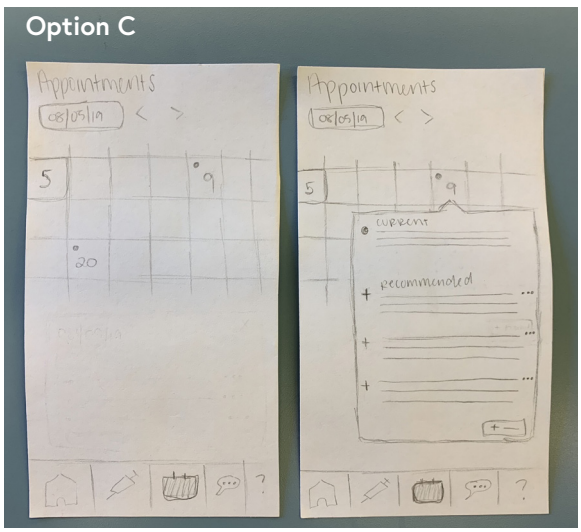
Task 2: Add a recommended vaccine (Rotavirus) to your baby's 2-month appointment on August 9th.



Option A: For this design, in general people took a bit of time to see what was happening and they almost all clicked "Edit" and then "added" the vaccine on the next page and saw it in place on the third page. Some recommended we say edit/add. But the main miss was the toggle switch on the right side which would show the recommended ones.



Option B: In this situation, it took a second once again, they say Rotavirus and knew they were supposed to do something for it and clicked the box. Then they saw it was checked and so they clicked confirm. And they noticed on the last page that it was filled in as well. They were a little confused, in general, on the first page what they were supposed to do and why some of the vaccines were filled and others were not.



Option C: With this design people knew they had to select the date at first to see any data. Then they guessed that they would have to click the check. They said this one was the simplest; however it wasn't the preference because they wanted to know more information than was given.

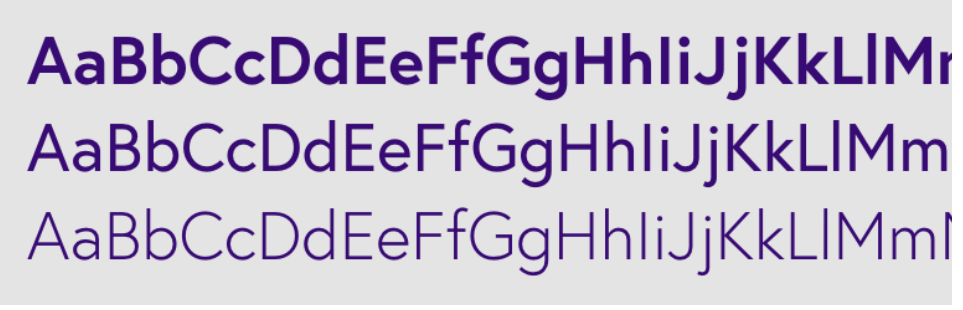
Overall, there was a mix in preference, but people said they liked the edit/add button and also like to see all the information upfront and not have to click to see the vital information. We took this feedback as we began to work on the step by step frames and design of these more complicated tasks in the upcoming weeks. At this point, we also started working on style and the look of the system based on feedback from the round robin.

04 Concept
Development

Branding

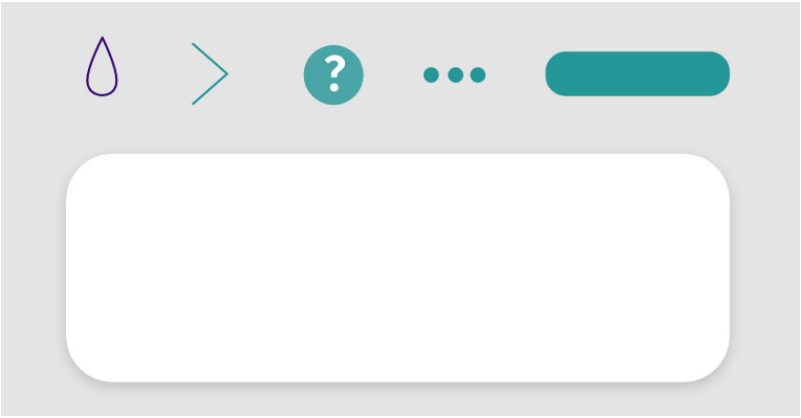
We analyzed the data from our user testing and came together as a group to decide on our brand assets. We chose our typeface, color palette, and the overall aesthetic of what we would like our app to be.

Typography:
Europa–Light, **Regular, Bold**

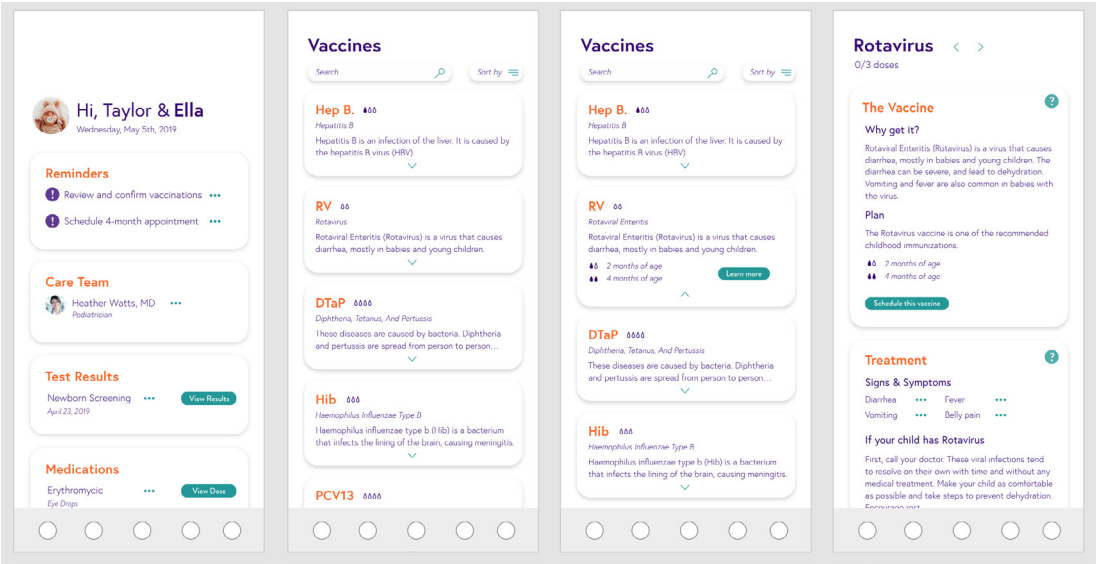


Colors:
Green #249898, Orange #f76b2c, Purple #370a74

UI Elements:

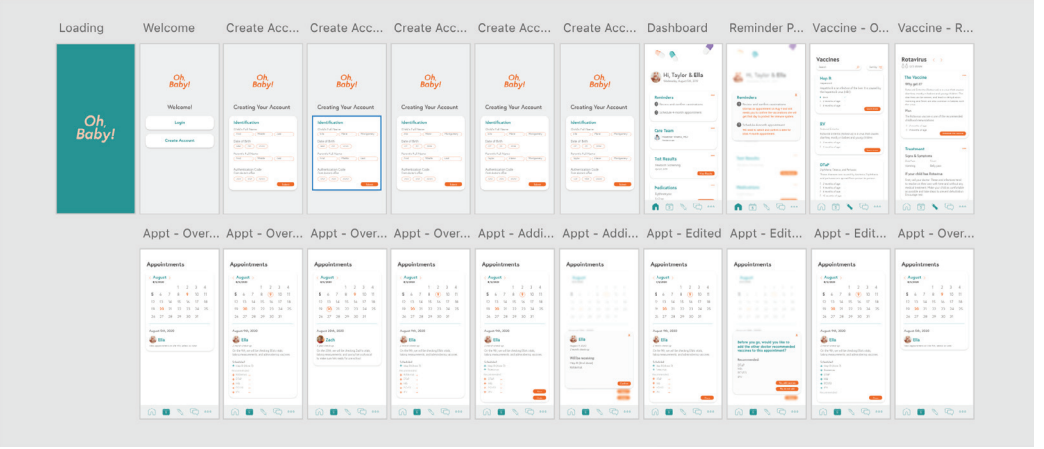


We decided for user simplicity, to have only a few elements. There is a drop to show dosage, arrow, question button, three dots (to express clicking this will pull up a pop-up with more information), and a long-rounded button, which takes you to a new page/step.



Next we went to Adobe XD and began to make our first round of digital screens based on all of the feedback we had prior and user testing of our paper prototypes.

Before making more screens, we reviewed these screens with our peers during a round robin. Some of the comments made were that there were too many interaction points to get to the Rotavirus screen, the orange color of our headers was standing out more than the green that was supposed to be the interactive elements, and people were not sure why there were dots, question marks, and down arrows for the same type of interaction action, and there was confusion on what the drops meant, etc. With these comments made, we went back and did a few refinement phases which will be shown below.



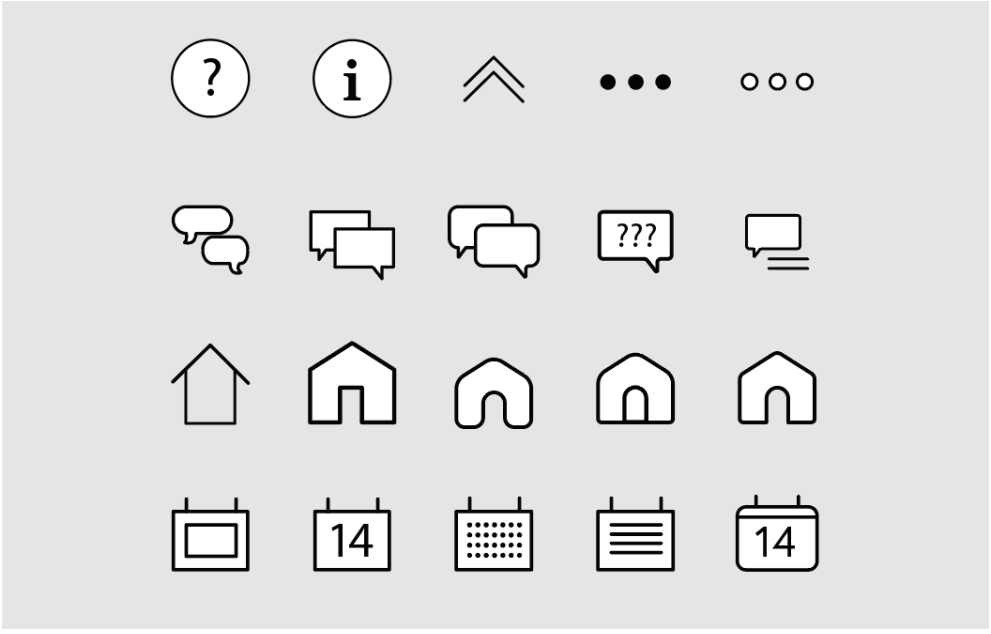
The main changed came in determining our hierarchy. We switched the aqua and orange from the first set (on page 18). We thought it was important to have a consistent interaction color, this became our orange (it was bright enough and was the first thing you saw). The aqua is an inviting, popping heading color. And we simplified the overall look by making our type a dark grey. This was a drastic switch from the purple, and helped make the content seem more official and improved overall legibility.

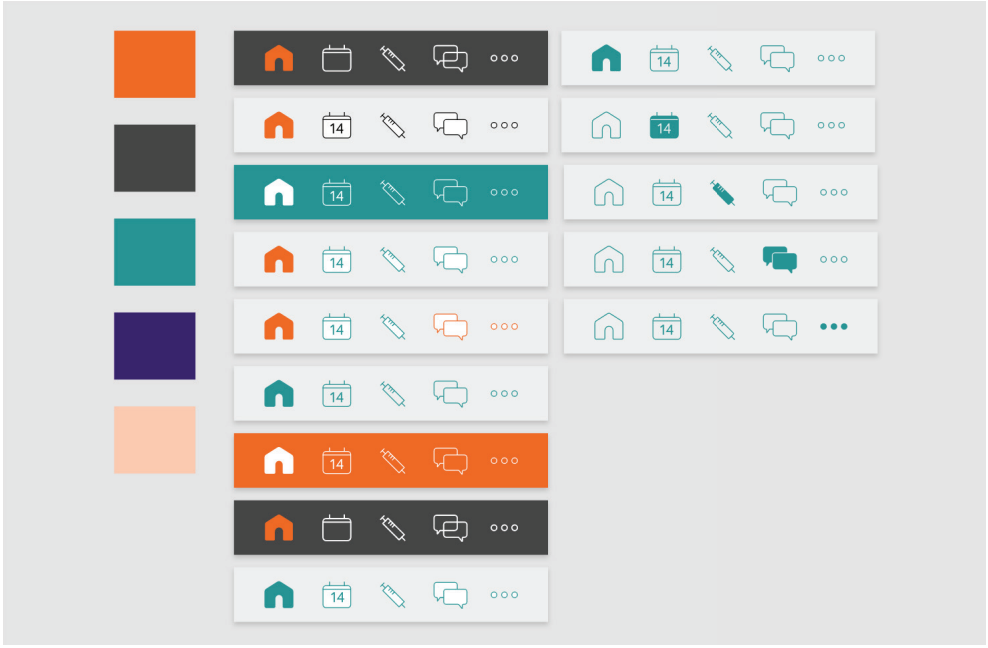
We spent some time buttoning up our Oh, Baby! interface which needed a bit more user testing, mainly for the calendar portion of the app. We wanted viewing appointments and adding vaccines to appointments to be a seamless, intuitive process, while also making vaccines the primary focus of every stage. We also tweaked our log-in page after researching how several medical institutions handle this process on platforms such as "MyChart."

Navigation

We looked at the navigation icons for the 5 main screens our app would need: dashboard, calender, vaccines, forum, and other/extras.

We looked at styling and form of the icon. They needed to relate to the overall design of the app: friendly, inclusive, and comprehensible. And then overall color of the bottom bar and how the selected page would differ.





On-boarding Videos

After logging into the app for first time use, we decided it would be helpful to create 4 quick, simple videos that explained the app and the main functions.

Aesthetically, we kept the colors scheme we had developed for the wireframes to be used as the background to make these fun and colorful. The addition of simple illustrations also helps make these pages be a nice introduction and welcome into the Oh Baby! environment.

1. "Oh, Baby!" logo animation
2. Dashboard (house icon) // wireframe of screen, baby binky, pills
3. Vaccines (syringe icon) // wireframe of screen, germs, syringe, magnifying glass, bandaid
4. Calendar/schedule // wireframe of screen, calendar flipping, pencil, +/- abstracted
5. Forum (chat bubble icon) // wireframe of screen, bubbles filling, question mark, pencil
6. Dots (show options here?) // wireframe of screen, bubbles filling, question mark, pencil

We strategically planned which pages needed a brief description and selecting the best illustrations to use.

Story-boarding

After finalizing wireframes, taskflow, and aesthetics, it was time to begin thinking about how we would tell the story of our project. We decided there needed to be an over arching video that explained why we created the app and highlighting the main features that solve the current problems parents face when deciding to vaccinate.

After this first attempt, we realized it would be helpful to make the video match the friendly graphic style in the app. The aqua seemed too sterile and plain. Also, we needed to be very cautious of our word choice to make sure it matched the language we use in the app.

Content wise, the structure wasn't quite right, the video was now in 2 parts: the first half explaining the topic and the second a long video showing the app interactions. We needed to intertwine these two sections together better and focus the narrative on the new features our app has and the current problems that are being addressed.

05 Final Solution
Oh, Baby!

Interface

First time parents are often overwhelmed and confused by the information given to them at the doctors office about vaccines. This is an important decision and there needs to be a better way to go about this process. This is why we created ***Oh, Baby!*** It is a simple application where parents can...
Learn about the importance of vaccines to a child's health.
Not feel pressured or overwhelmed by medical jargon.
Keep track of their child's vaccination schedule & appointments.

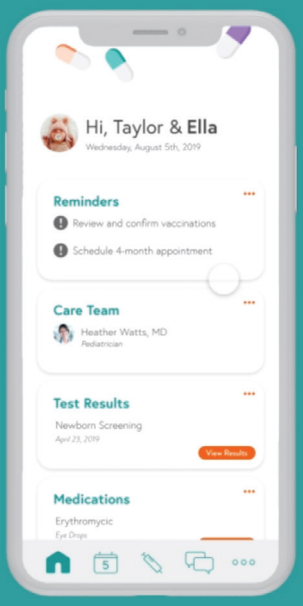
Oh, Baby! is a friendly interface that is linked to a parent's doctor's office that keeps track of a family's doctor appointments and health records. But most importantly, it is a safe space to learn about vaccines & feel comfortable knowing you are doing what's best for your child.

Final Screens

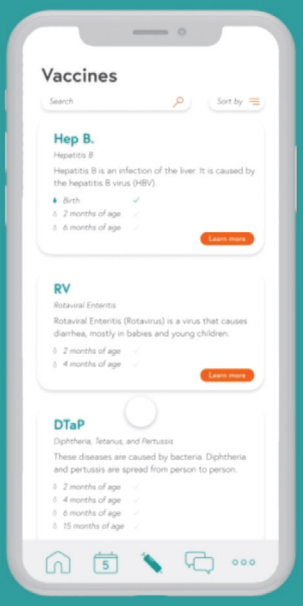
ios App

Loading Screen

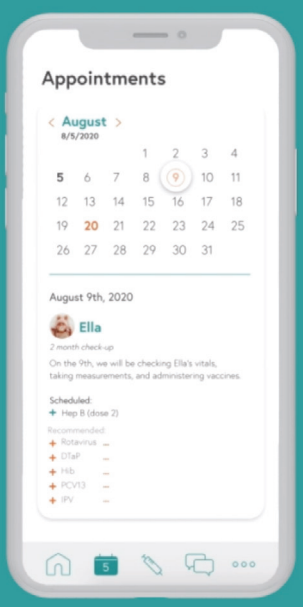
Login. *Authentification code links this account with doctor's office.*



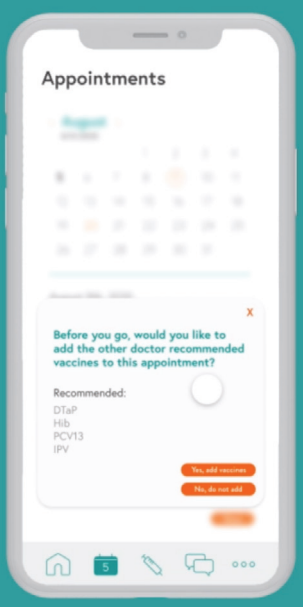
Dashboard. *See upcoming appointments, physicians, test results, and medications.*



Vaccine page. *See when your child should receive each vaccine and the doses they have already gotten. Learn more about vaccinations without feeling pressured or overwhelmed by medical jargon.*



Appointments. *Preview upcoming appointments and manage all your children's doctor visits in one place.*



Appointments. *Add doctor recommended vaccines to your child's appointment. Be prrompted to add additional vaccines when first ignored.*

Overview Video

To wrap up the whole project, we created an overview video that summarizes the background of why the app was created and how it helps new parents make the tough decision of vaccinating their children or not.

We also propose a slight adjustment in the pregnancy doctor appointments. Introducing ***Oh, Baby!*** in week 20 allows the parents to have time to do their own research on the app and then following up with the doctor in weeks 34-36 help the mother feel prepared to make her decision.

Pregnancy Appointment Timeline

STAGE	*4 weeks*	*8 weeks*	*12 weeks*	*20 weeks*	*28, 30, 32 weeks*
Appointment Overview	Misses her period, thinks she is pregnant	Doctor's office confirms pregnancy	Check up. Talk about possible disabilities. Baby is tested for disabilities.	Check up. Doctor introduces ***Oh, Baby!*** and encourages her to go through and read about vaccines.	Check up visit occurs biweekly.

cont.	*34 weeks*	*36 weeks*	*37, 38, 39 weeks*	*40 weeks*	*2 months*
	Biweekly check up. After her research on ***Oh, Baby!*** she decides to get the Tdap vaccine.	Receives the Tdap vaccine. Discuss ***Oh, Baby!*** and her decision to vaccinate her baby.	Weekly visits, checking dilation.	8 hour delivery for healthy baby girl.	Baby receives her first round vaccines. Hep-B #2, DTaP, IPV, RV #1, PCV 13, Hib

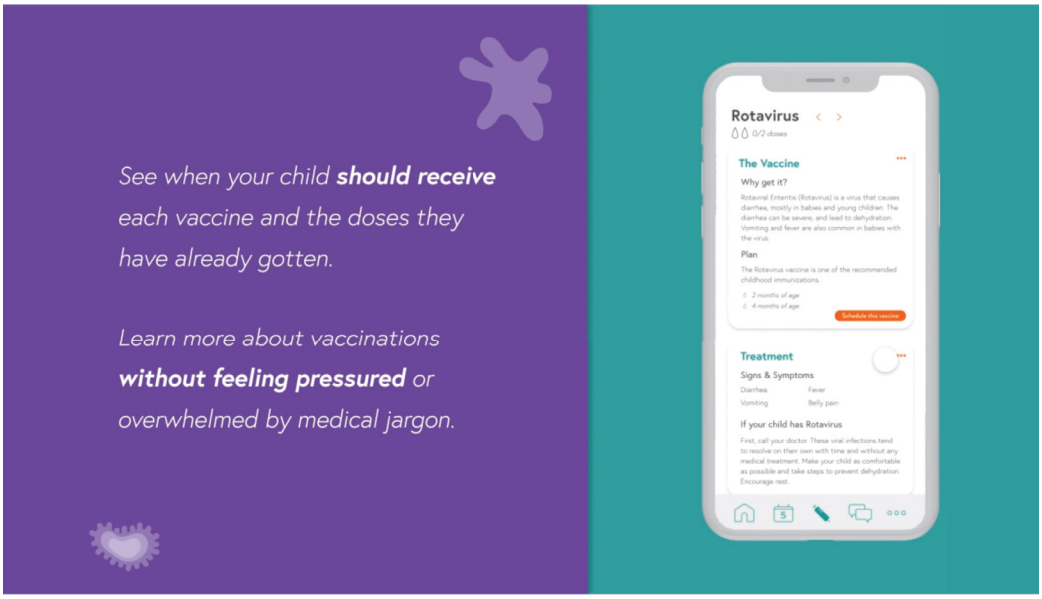
The video begins with a quick introduction explaining what vaccines are any why they're important. Then it dives into ***Oh, Baby!*** and how this app can help parents learn and manage vaccines for their own children.

We have a 1-to-1 action between app feature and visual desmonstration. This way the viewer can read the about the feature on the left side of the screen and then see how to do it within the interface on the right side of the screen. When compiling this video it was important to keep the approachable aesthetics of the app itself and keep a friendly conversational tone.

You can watch the video at:

https://www.dropbox.com/s/idgllju37htnbs5/Oh%2C%20Baby%20Overview.mp4?dl=0

Still Frame:



Overview Storyboards:

Fall 2019 Design Methodology

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