Amanda Long
MaMA

Overview

The Maternal Monitoring App (MaMA) is an app designed to connect pregnant and postpartum women in rural and other medically underserved regions to health care providers and emergency services. Women can remotely monitor their health and the app can identify patients in crisis. It also offers a 24/7 chat bot, the option to be connected to a remote nurse, a resource finder, and scientifically accurate information about pregnancy and motherhood. Women who may have been reluctant in the past to seek help can now do so from their cell phones.

The Maternal Monitoring
Application

I was hired by MaMA as the Lead Researcher. As such, I am responsible for supervising, scheduling, and advising the other researchers on the team, as well as: creating protocols, scheduling and interviewing participants, usability testing, synthesizing data, and reporting my findings. The primary focus of my research was usability testing.

Problem Definition

MaMA's users are women who don't have easy access to maternal and postpartum care. They come from all walks of life and have varying degrees of education, different socio-economic statuses, and differing levels of support from their families and/or spouses and partners. How might we design the app so that all women can use and understand it – whether they be a 14-year-old first-time mother or a 35-year-old graduate student?

My goal was to conduct various usability tests (A/B testing, task completion, surveys, etc.) to identify areas of the app that are misleading or confusing to users. My measure of success was obtaining data that identified these problem areas. I then brought them to the attention of the Design and UI teams, made suggestions for improvement, and retested those areas after they had been revised.

Audience

The target users for this product are pregnant and postpartum women living in medically underserved regions.
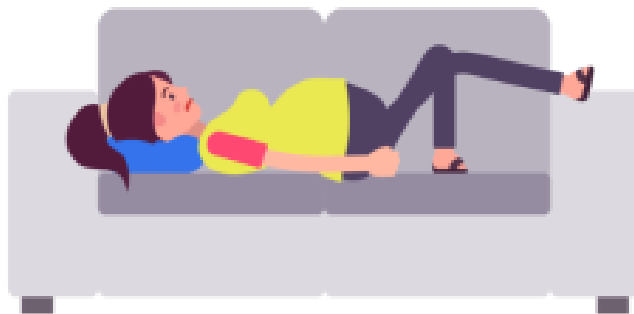
Team/Role

I was the Lead UX Researcher for this project and I was responsible for supervising, scheduling, and advising the other researchers on the team. I was also responsible for creating protocols, scheduling and interviewing participants, usability testing, synthesizing data, and reporting my findings.
I was extremely lucky to work with a very talented team. They were:

- **Zohreh:** Design Lead, UX Researcher

- **Faith:** Medical Content Strategist

- **Fisayo:** Attorney

- **John:** Mobile Developer

- **Kristi:** Design Consultant, UX Researcher

- **Richard:** UX Researcher

- **Charles:** HIPAA Compliance/Security

- **Willie:** Web Developer

Zohreh
Design Lead

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Medical Content Strategist

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Constraints

I encountered several constraints with this project, but the one I struggled with the most was recruiting appropriate participants. Austin is a highly educated city. To address this issue, I recruited on community college campuses. I was able to find a good mix of women – some who have master's and bachelor's degrees, but also those who only have high school degrees. The age range and diversity were decently varied as well. I also pursued alternate sources. For example, one of my researchers had a friend with a daughter in high school, and we

approached her and her daughter's friends' parents about letting their daughters participate in our study.

Research Number	Researcher	Which app?	Number of Participants	Age Range	Grade school only	Some high school	High School Graduate	Assoc. Degree	Bachelors	Grad School	Unknown	Women?	Disability/Accomodations	Parts Tested	Status
1	Amanda L.	Pregnancy - VUI	10	19-35	0/10	0/10	2/10	3/10	4/10	1/10	0	10/10	None noted	Onboarding, Data Entry Feature, Main Menu	Complete
2	Amanda L.	Postpartum - VUI	10	19-38	0/10	0/10	2/10	0/10	6/10	2/10	0	10/10	None noted	Checklist, Main Menu, Quick Search	Complete
3	Zohreh	Pregnancy - VUI	8	14-42									None noted	Data Entry, Main Menu, Resources	Pending
3	Zohreh	Postpartum - VUI	7	14-42									None noted	Checklist, Main Menu, Quick Search, Resources	Pending
4	Amanda L.	Pregnancy - VUI	10	18-35	0/10	0/10	9/10	0/10	1/10	0/10	0	10/10	None noted	Symptom Checker	Complete

Our budget also limited our research. We were a startup so funds were lean. Most participants were willing to grant interviews for free or for a small fee ($5-$10), but it limited the size of our participant pool. It also limited our ability to get rural participants. We were able to connect with them over Google hangouts, but I would have liked to travel to their homes to conduct the interviews in person.

Another constraint was our aggressive schedule. My teammates depended on the findings from my tests and interviews to inform their design decisions. As such, I needed to have a quick turnaround time on my research. I accomplished this by maintaining a very detailed schedule to make sure that nothing fell through the cracks. I also would touch base with the team and my researchers frequently.

Design Process

I wanted to make sure that my research for MaMA was rigorous and that no part of the app escaped scrutiny. In order to achieve this, I first sat down with my team and formulated a research plan. We decided that after each section of MaMA was created, we would take three initial steps:
1 - Examine the new section individually and make notes as to initial impressions and any areas that were confusing or problematic,
2 - Speak with the Design and Content teams about any concerns they may have, and
3 - Run an informal user testing session with a friend or family member to see what issues they had.
After these three steps were carried out, I met with my researchers, discussed our findings, and got to work creating a user test and protocol. Once the protocols were finished, I passed them out to my team and tasked them with completing 'x' number of interviews by time 'y'.

I established an initial recruiting plan for my team, focusing largely on college campuses, coffee shops, shopping centers, and other areas where women tend to congregate. I also had a small recruiting budget so I was able to authorize a small payment (usually $5 - $10) for our participants. Each member of the team was responsible for recruiting his or her own participants, so I met with each member individually to discuss strategy and address any concerns. I also established schedules and offered advice when requested.

I created a secondary recruiting plan designed so that we could get participants from rural areas. This included reaching out to my team's family members in rural areas and asking to speak to their friends in our target user group. It also included traveling to these rural areas to interview them in person, as well as approaching prospective participants at colleges, coffee shops, shopping centers, etc. Unfortunately, time and budgeting constraints prevented us from doing this, but we were able to use Google hangouts as a cheaper and quicker alternative.

Sprint Number	Researcher	Which App?	Feature	Feedback	Our Notes
1	Amanda L.	Pregnancy	Main Menu	"Weights should be weight" 1/2	Noted! - Z
		2 women		Move the HOME button to top of all slides.	Noted! - Z
			Data Entry Main	Call it "vitals?"	Perhaps, but would everyone understand
			Data Entry (Vomiting)	Confusing.	Yeah, I hear ya. -Z
			Assessments	Did not make correct assumption of what it was. 1/2	We should be more clear with what these this! - Z
				One thought it was for AFTER baby was born. 1/2	Splitting up the app, so this shouldn't be -Z
			Kick-Counter	Did not understand 2/2	Noted. -Z
			Blood Glucose	One did not know what the word meant. 1/2	Maybe Blood Sugar is better? - Z
2	Amanda L.	Postpartum			
		2 women	Emergency Services	Didn't like. 1/2	Noted. -Z
			Quick Search	Misidentified as using keywords to find problem. 1/2	Noted. -Z
			Font	Font is too small. 1/2	Noted. Will enlarge fonts whereever poss

The initial user tests were mostly focused on task completion in order to gain information about the app's learnability, but I also tested user satisfaction to a lesser degree. Once a round of user interviews was completed, I met with my team to discuss how it went and what their initial takeaways were. Then I gathered the data for synthesis so I could then report my findings to the Design and Content teams. I also made recommendations as to how the app might be redesigned to alleviate some of the issues my research had identified. For example, testing had made it clear that our users were unfamiliar with the word 'emesis', so I suggested replacing it with 'vomiting'.

VOMITING

Keeping a record of how many times you throw up can be a good way to inform your doctor that you might need help.

Tap the button below when you have finished vomiting.

LOG EMESIS

VOMITING

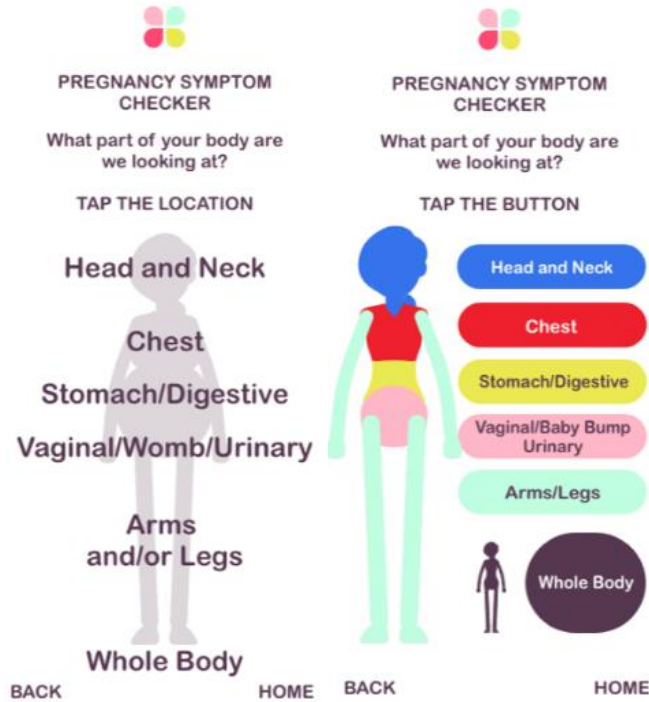Keeping a record of how many times you throw up can be a good way to inform your doctor that you might need help. At the end of each day, record the number of times you threw up.

Times Vomited Today

ENTER

 As I got more user data, I was able to synthesize said data and create new iterations of the original protocols to focus in on the issues users were having. I did this mainly with task completion and A/B testing.

PREGNANCY SYMPTOM CHECKER

What part of your body are we looking at?

TAP THE LOCATION

Head and Neck

Chest

Stomach/Digestive

Vaginal/Womb/Urinary

Arms and/or Legs

Whole Body

BACK   HOME

PREGNANCY SYMPTOM CHECKER

What part of your body are we looking at?

TAP THE BUTTON

Head and Neck

Chest

Stomach/Digestive

Vaginal/Baby Bump Urinary

Arms/Legs

Whole Body

BACK   HOME

I met with the Design and Content teams frequently to present my findings and suggestions. They in turn would redesign the app so I could create a new testing protocol and return to them with more insights. We established a perpetual feedback loop.

	Scenario	User w/o app	Evaluation w/o app	With app evaluation		Before	After
Third Data Collection	**Hot Painful Leg**	Friend	Fail	Success		3	8
	(possitble DVT)	Hospital	Success	Success			
	Contact physician	911	Success	Success			
		Google	Possible	Success			
		Google	Possible	Success			
		Home Remedy	Fail	Success			
	*	Home Remedy	Fail	Success			
		Mom	Fail	Success			
	Trouble Breathing	Google	Possible	Success		7.5	7
	(possible PE)	Hospital	Success	Success			
	Emergency	911	Success	Success			
		911	Success	Success			
		Emergency Room	Success	Success			
		Emergency Room	Success	Unsuccessful	Yikes! This might be spurious		
		Emergency Room	Success	Success			
		Emergency Room	Success	Success			
	Red c-section	Emergency Room	Success	Success		4.5	6

Red c-section	Emergency Room	Success	Success		4.5	6
(possible infection)	Google	Possible	Success			
Contact physician	Google	Possible	Unsuccessful	Unclear with Tummy heading		
	Google	Possible	Success			
	Doctor	Success	Success			
	Hospital	Success	Success			
	Home Remedy	Fail	Success			
	Home Remedy	Fail	Unsuccessful	See above		
Fever of 100.6	Emergency Room	Success	Unsuccessful	Could not find	3	6
(possible infection)	Medication	Fail	Success			
Contact physician	Emergency Room	Success	Success			
	Medication	Fail	Success			
	Emergency Room	Success	Success			
	Medication	Fail	Success			
	Medication	Fail	Success			
	Medication	Fail	Unsuccessful	Went to head		
Golfball clot	Google	Possible	Success		4.5	8
(possible hemorrhage)	Google	Possible	Success			
Contact physician	Emergency Room	Success	Success			
	Google	Possible	Success			
	Emergency Room	Success	Success			
	Hospital	Success	Success			
	Nothing	Fail	Success			
	Nothing	Fail	Success			
				Total	22.5	35
				Percentage	56%	88%
				Improvement	32%	

	Could they find?	Thoughts		
Depression Questionnaire	Success	Positive		
	Success	Positive		
	Success	Positive		
	Unsuccessful	None		
	Success	None		
	Unsuccessful	None		
	Success	None		
	Success	None	Percent who could lc	75%

The main takeaways from this project were:
● Use simple language and avoid medical terminology when possible. Users have varying levels of education and no one wants to reach for a dictionary when they are sick or scared.
● Avoid excess text. Users don't read – they scan!
● Use illustrations or icons to convey meaning when possible. Again, users don't read – they scan!
● Voice and tone matter. If a user's symptom is urgent, the tone should be urgent as well. But if a user's symptom is not urgent, don't scare them unnecessarily – use a lighter tone.
● Limit the number of operations and/or choices per screen when possible. This cuts down on user error, and once more, users don't read - they scan!
● The most severe symptoms should appear first in the 'symptom checker' function. If a woman is having trouble breathing, she doesn't want to answer questions about hair and skin before finding the screen that pertains to her.

YOU MUST BE SEEN NOW!

GO DIRECTLY TO YOUR NEAREST EMERGENCY ROOM OR DIAL 911

911

SKIN, HAIR, AND NAILS

This isn't too common (lucky you!) but usually is not cause for concern.

You want to make sure you're keeping up with your vitamins and your doctor will probably want to look at your thyroid if she hasn't done so already. Usually you can chalk this one up to, you guessed it, HORMONES.

HOME

Retrospective

I enjoyed working on this project. I really believe in this app and knowing that it will help a lot of people when finished gives me a tremendous amount of satisfaction. There are however, things that I would like to have done differently. They are:

● I would have liked to travel to a rural location to conduct in-person interviews with our target users. Google hangouts is helpful, but leaves something to be desired.

● I would have liked to do usability testing with men and children (with their parents' permission) as well as with women. While the app is designed primarily for women, situations might arise where the woman is unable to use the app and her partner, spouse, or child might have to step in. I would have liked to see if our app is understandable to everyone.

● I would have liked to conduct more A/B testing. It's faster to test for task completion, but A/B testing allows you to compare the efficacy of different versions, as well as the rate of task completion giving you a richer data set.

● I would have liked to usability test the part of the app that works over a landline (not all of our target users have cell phones. Unfortunately, that part was not completed in time.

Steps:
- Identify function to be tested
- Create usability test protocol (script)
- Recruit and schedule participants
- Interview participants
- Synthesize/analyze data for insights
- Present findings

Deliverables:
- Presentation of findings

Methodologies:
- Recruiting
- User interviewing
- Usability testing - task completion, learnability, surveys, A/B testing
- Evaluative research
- Data synthesis
- Presentation of findings

*** ALL ILLUSTRATIONS COURTESY OF ZOHREH DALY ***