

S.E.R.V.E - A mobile app tool for Trauma patients



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Project Summary

SERVE is a **patient-centered mobile app** developed to reduce the percentage of patients who return to the ER from wound complications or other issues after being discharged from a traumatic injury. It is meant to extend the care patients receive from the hospital into their homes and to improve their education in a digestible manner.

During Discharge

- 15 to 20 pages of discharge papers, patients don't read
- Discharge caller skims through it to find what information is relevant
- Doesn't have any more contact with patients after discharge call
- Usually alone or a family member there now with them because of covid

Story - leaving the hospital

After 2 - 3 weeks of being in the hospital from gunshot wounds that punctured your lungs and abdomen you are ready to go home. A nurse approaches you and narrates 15 pages of discharge instructions in the span of 3 minutes. You don't care, you'll read it later, you just want to go home.

Somebody calls you from the hospital a couple days later, she asks if you read the papers; sure you did... Yes, you got your meds and you are doing okay, for now. That's the last time you hear from the hospital.

Multiple Appointments & Wound Care

- "I thought I had an Ortho appointment today to remove my cast"
- If patient is referred out, appt won't be scheduled on discharge, but given a number to call
- "When call the number there is a long wait"
- Patients come to the hospital for immediate need-based care, but not for preventative

Story - first follow-up

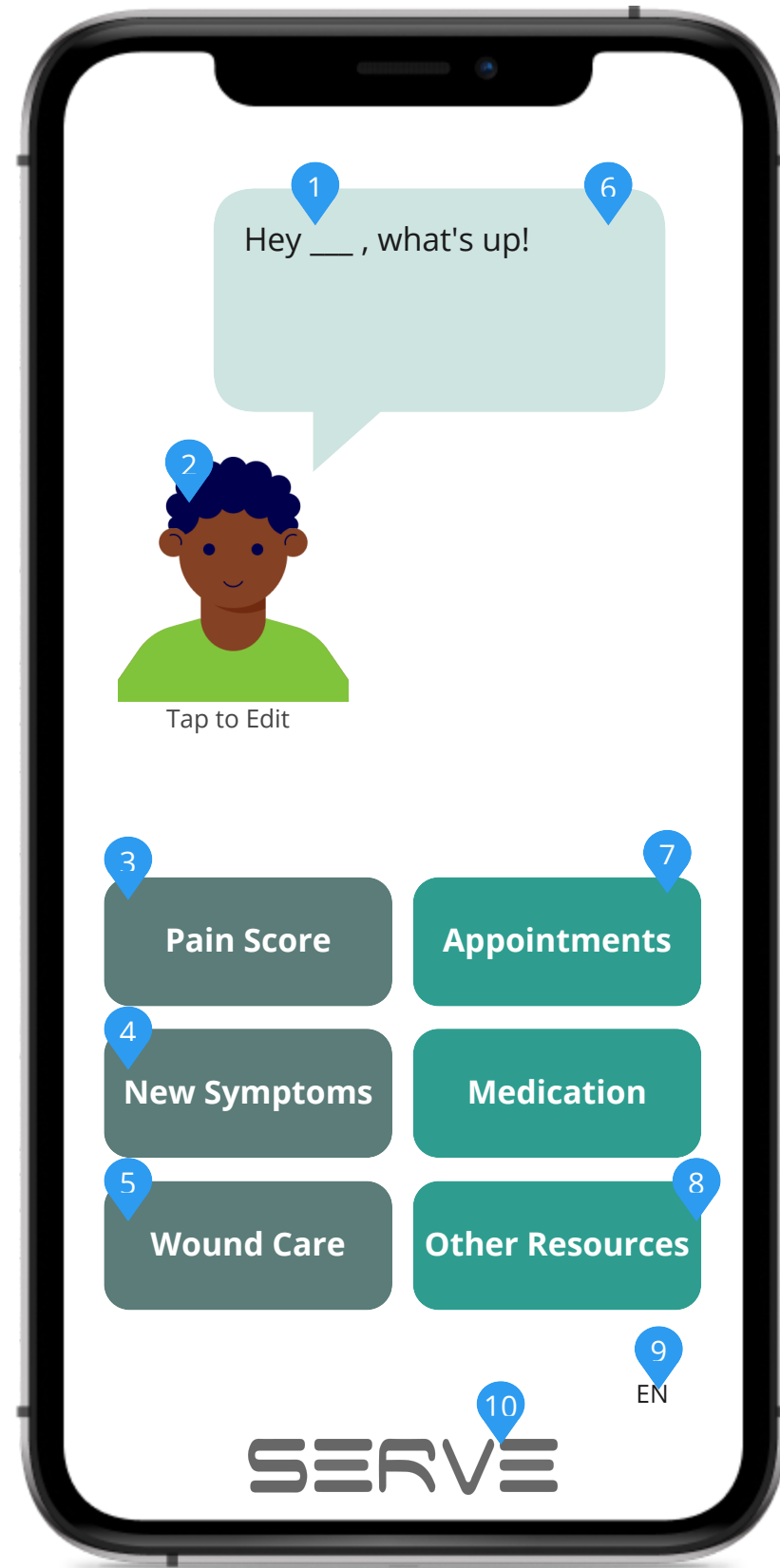
Today you went to your Ortho appointment to remove your cast so you can go back to work again. You have another appointment tomorrow with a general Trauma clinician to check on other wounds, not sure you can come tomorrow, you got things to do and Grady is far...

- "I've been trying not to get the wound wet when I shower but it's very hard"
- Patients are unsure what is the proper care for their wound
- Patients believe they shouldn't touch the wound at all to let it heal

Story - the day to day

The sutures you have in your abdomen make it very hard to shower, it's impossible to keep them dry and you haven't been able to clean yourself properly all this time.

- 1 App calls patient by name to make it more personable rather than generic action items
- 2 User creates an avatar on start up to create emotional link with app
- 3 User can input a pain level of how they feel and the avatar will recommend them specific courses of action to take (i.e. take pain meds, try a breathing exercise, etc)
- 4 Patient can select from a variety of symptoms (i.e. wounds is itching, wound has pus) and the app will recommend best course of action (i.e. call advice nurse, go to ER ASAP, see your doctor, etc)
- 5 App contains a small set of best practices to take care of your wound, how to wash it, change bandages, etc



- 6 App follows a dialog model for interacting with the user. Emulates the actions of a nurse/doctor at the hospital
- 7 Appointments can be centralized in the app, if a user has multiple appointments that could be combined into one, app will notify them so
- 8 Patients have accessed to resources by location (Fulton or DeKalb) on topics like Mental Health, Crime Victim Assistance, Job Support, and many others.
- 9 Information can be displayed in Spanish to allocate larger percent of patients who come to Grady
- 10 SERVE stands for Shared Engagement Recovery and Violence Elimination which is the aim of this app. In addition our goal is to *serve* better our patients

Identify Signs of Pain & Other Resources

- Patient thinks only action they have is to go to emergency room "I don't have any other resources"
- "I had to come back to emergency room because my wound had a foul smell to it, or I was in pain"
- For example infected wound, if caught early you wouldn't be back in hospital
- Patients don't know where to go, or have the resources available, insurance, and lack of education

Story - the return

It's been 3 weeks since your last appointment and your wound has been hurting a lot. Last time you looked, it had pus all over and had a foul smell. You should go to the hospital but you don't know how or what to do, also you don't want to be charged for it. *(A week goes by)*

You broke out into a very strong fever and your wife took you to the ER. You are back in Grady and the doctors are asking why you didn't come to your check ups. You didn't even know you had check ups...

- Paperwork includes a number patients can contact, "if you have questions call, but number goes to robotic call center"
- "A week after I was very stressed a few day after the procedure thinking about the medical bills"
- A victim advocate came to the hospital to tell me about what to do
- Withdrawal symptoms from the drug made feel bad

Story - what's next?

You are feeling a little better about your wound, your pain meds are keeping it in check and there haven't been any problems coming up. Except... do you have to pay for the time spent at the hospital? Also you are feeling a bit depressed after what happened and wish there was a place you could talk about this stuff, or somebody who knows what to do in these situations.

Usability Results

- "Hey! What you doing? Not taking your medicine?? Hey you need to be doing this!"
- Can the app know that you need words of encouragement?
- "Can this be in Spanish?"
- Have different avatars with personalities and style that people can choose

Behind the scenes

Patients like the ability to interact and personalize their avatar. They found very valuable having the best practices regarding wound care available and not having to rely on having their discharge papers on hand.

The clinical team had very positive responses as well. They found useful features like suggesting to have appointments on the same day and recommendations based on new symptoms.

Acknowledgements



Eastern Association for the Surgery of Trauma
 Advancing Science, Fostering Relationships, and Building Careers



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