

# Design Thinking for Business Innovation Project

**An Overview - *TeleHealth***

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If our persona was a cloud, it would look something like this

A cloud-shaped word cloud composed of various adjectives. The words are primarily in red, with some in blue. Some words have small descriptive labels in red or blue placed near them.

The words include:

- engaged
- exhausted
- hard-working
- engaging
- sad
- diverse
- peculiar
- intense
- trilingual
- studying
- excited
- self-improvement
- clever
- ambitious
- tired
- insightful
- school
- bilingual
- engaged
- happy
- inspiring
- success
- admirable
- gifted
- stressed
- international

# Getting to know the Persona

## Photo



## Characteristics

### Approach towards life

Ambitious, hard-working, clever

### Leisure Activities

Socializing, general cohort activities, sports

### Feelings toward social topics

Open-minded, excited to try new things

### Primary Motivation

Experience & learning

## Overview

Our persona sees themselves as hard-work and contributive members of society who aim to improve the world around.

One of the most important things to our persona is to make their parents and country proud by succeeding in their academic careers.

## Basic Profile

**Age Group:** 20 – 35

**Occupation:** Student

**Classification:** Graduate

**Coursework:** Intense

**Interests:** Sports & Fitness

**Category:** International

## Our Persona in context to Health

- Health and fitness conscious
- Financial constraints
- Different eating habits and preferences
- Dietary constraints
- High mental and physical stress

# Research Overview

## **Who we tried to approached and What expectations we had**

### **Graduate students**

- To get to know about their daily schedules
- Challenges they are facing in dealing with intense curriculum

### **International Students**

- Know about the changes they are facing
- How they are dealing with the cultural shock
- Physical and mental health challenges
- How they are dealing with high financial expenses

### **Inclined towards Health and Fitness**

- What fitness/sports interests they have
- How are they managing their hobbies/interests along with coursework
- How they manage their challenges with prioritization of work
- How much they are utilizing the technology during their activities

# Research Overview

## Tools and methods we used:

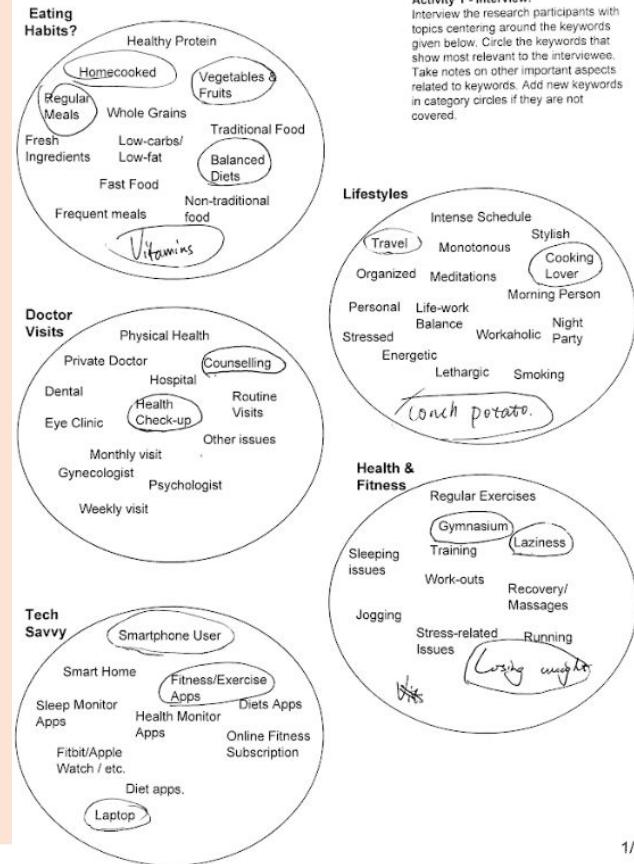
**Combined:** Research Activity 1 & 2: **Interviews** and **In-Home Tours**

### Brief Description:

- We've reached out our interviewees at their homes with our *Activity Sheet 1*. There are five categories.
- In each of the category the interviewee had to circle the things they feel related to. We've asked them questions on the circled keywords to know more about them.
- Depending on their responses, we've taken photos of their food, equipments, and belongings relevant to the topics.

### Aim:

- To know about likes/dislikes, frequency/schedule of their activities in each of the five categories
- To know about the things they relate to in particular
- To take photo records so that we can back our findings and assumptions with evidences



# Research Overview

## Tools and methods we used:

### Research Activity 3: Ideal Vs Reality

#### Brief Description:

- In Activity 3 we asked our interviewee to discuss on their ideal situations expected Vs what they have in reality
- Similar to activity 1, this activity is also divided in categories
- The ideal in this case has two interpretations:
  - What the interviewees considered ideal or perfect
  - What ideal expectations interviewees had before coming to the US

#### Aim:

- To know what are the ideal expectations from our persona
- To understand the differences and challenges they are facing in reality
- Try to understand the main causes and reason(s) behind these differences and challenges

| Activity 3 - Ideal vs Reality:<br>Researcher ask about participant's ideal situations in different categories Note down the positions where their reality situations are. |   |   |
|---|---|---|
| IDEAL   | REALITY   | WHY?  |
| <ul style="list-style-type: none"><li>• Eating Habits / Lifestyle<br/>More vegetables/grains/nutritious</li></ul>   | Monotonous ; More meats<br>More rice.   | Job → Malaria<br>Help lose weight<br>- More balanced diet |
| <ul style="list-style-type: none"><li>• Healthcare<br/>More appointments with doctors<br/><del>Regular timeline</del></li></ul>   | Only talking with doctors on phone.<br>Irregular timeline,<br>not enough sleep<br>Not familiar with the process<br>Time-consuming | Taking care of own health (Want to)                       |
| <ul style="list-style-type: none"><li>• Overall Experience</li></ul>  |   |   |
| <ul style="list-style-type: none"><li>• Tech Savviness</li></ul>  | Use less <del>tech</del> technology   | Because of the complexity & not reliable                  |

# Understanding the Outcome - Research Activity 1 & 2

## General Trends – Insights into the Data

|                  |   |
|------------------|---|
| Eating Habits    | Vegetable & Fruits, Home cooked, Healthy Protein, Fast Food |
| Lifestyle        | Distributed results – <b>Intense Schedule</b> , Stressed    |
| Doctor Visits    | Physical Health, Routine Health checkup, Eye Clinic         |
| Health & Fitness | Distributed result – <b>Laziness</b> , Workouts             |
| Tech Savviness   | <b>Smartphone</b> , Laptop, Fitness/Exercise apps           |

# Understanding the Outcome - Research Activity 3

## General Trends – Expectation Vs Reality

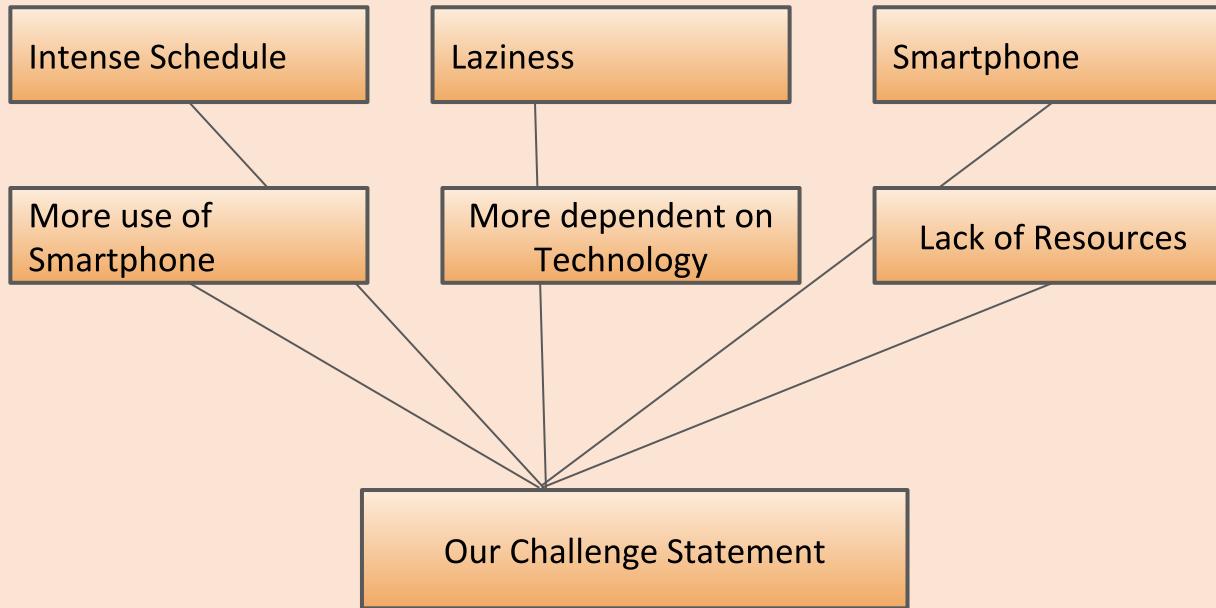
| <i>Expectation</i>                      | <i>Reality</i>                             | <i>Reasons/Implication</i>             |
|---|--|--|
| Personal doctor visits                  | Talking only on phone                      | Lack of transportation/Not comfortable |
| Proper diet                             | Rarely having balanced diet                | Lack of Time Management                |
| Reduce use of smartphones and computers | More dependent on technology for solutions | Complex curriculum/ Effects on health  |
| Proper traditional medicine             | No proper outlets available                | Lack of resources/Expensive            |
| Proper Sleep                            | 5 hours sleep                              | Intense coursework/Stressed            |

# Hypothesis or Reality?

**Based on our outcome and findings, the following Hypothesis is confirmed**

- International graduate students in UT are currently facing challenges when seeking for health and fitness resource.
- Our persona are not really utilizing the mental health care benefits available in the university or they just listen to it once and let it go.
- Our persona are facing issues due to the intense schedule and change of atmosphere and culture etc.

# Opportunities



# Our Challenge Statement

**From the previously mentioned challenge statements, We find that this challenge statement is most convincing to us.**

How might we make students discuss health-related problems with others



How might we provide better communication mediums and better health information at right time



How might we provide international medicines and international/traditional resources to students in their own language.

# Challenge Statement Analysis

- ***Explanation:***
  - We can provide the advice from the international doctor to the students over the internet. This will make them a little more comfortable and give them a feeling of staying in their home country. Also, we can have international medical resources available to them over internet.
- ***Advantages:***
  - Addresses a problem that is widely shared by the international students
  - It instills a belief that they are diagnosed by a doctor who knows them well
  - Instill better confidence in our persona
  - Reduces hesitation of meeting a new doctor and discussing problems with them
  - It greatly focuses on the telehealth aspect as it tries to bring international medical healthcare close to our persona via technology
- ***Possible Disadvantages***
  - A lot of International health and medical resources and expertise is required
  - Finding equivalents of international medicine can be a tedious task

# Working towards our Prototype

- **Overview**

As described in the previous section, based on the detailed analysis we finalized our challenge statement as:

***How might we provide international medicines and international/traditional resources***

- **Possible approach towards this problem**

- To make international students feel at home - by connecting them to the doctor from their own country
- To instill belief that the medicines they are prescribed are approximate equivalent of medicines they would get in their home country
- To help them understanding the prescription better by providing it in their local language

- **Expected Outcome**

***Will connect to the international students more closely and help them feel at home in a foreign country and foreign people***

# Potential Solutions

We came up with following solutions for our Challenge Statement

***Solution 1:***

**GroupDoc :** App that allows multiple people (mostly friends) to connect with the international doctor at the same time via audio/video call -- to discuss the common symptoms

***Solution 2:***

**DocChat :** App that allows our persona to chat with the international doctor directly (helpful in case of emergencies and urgent advice) and get the recommendations and advice online

***Solution 3:***

**GlobalDoc :** App that allows our persona to connect with the international doctor through audio/video call as well as get the closest approximate equivalent of international medicines and resources

# Solution 1: GroupDoc



*Groupdoc is an application that allows a group of friends to connect with their doctor together and share common symptoms.*

## Pros:

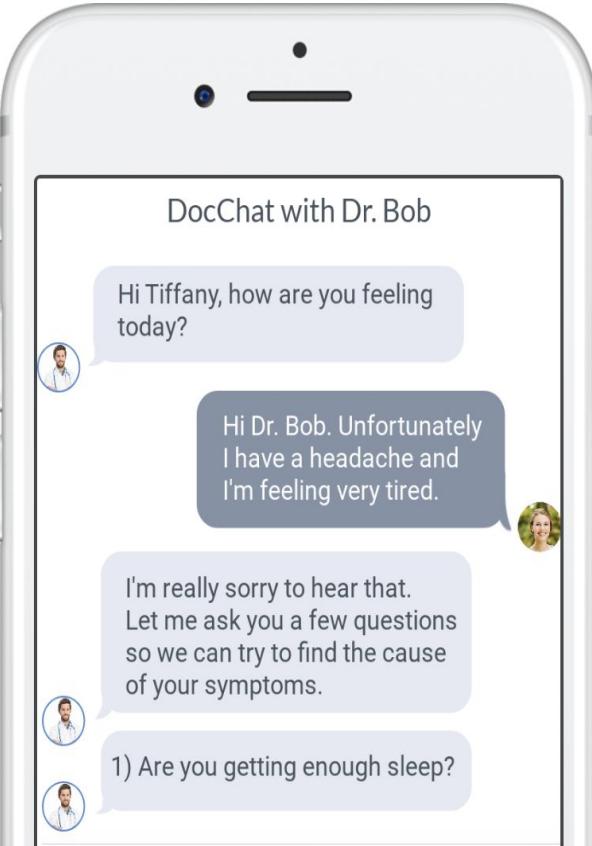
- Persona does not have to drive to doctor
- Time efficient and cost efficient
- Only a cell phone and internet connection is needed

## Cons:

- It would be hard to find a time that works for the doctor and everyone in the group
- People might end up talking at the same time
- Some people may want to discuss the problem personally to the doctor
- Even with the similar symptoms, it is not mandatory that everyone has same problem and need same medicines

*Based on these disadvantages, we decided to move over to our next solution!*

# Solution 2: DocChat



*DocChat is an application that would allow our persona to connect with their international doctor via a chat application.*

## Pros:

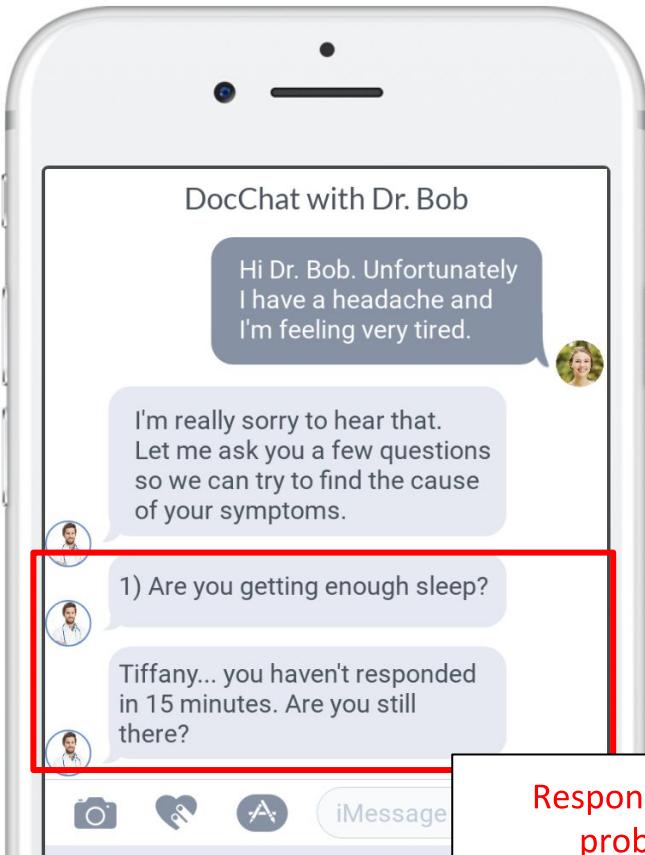
- Persona does not have to drive to doctor
- Time efficient and cost efficient
- Chat is private -- patient can discuss their problems personally with the doctor (unlike the previous solution)
- Persona can reach their international doctors anytime, in case of emergencies

## Cons:

- Miscommunication problem
- Response time problem
- Doctor might not be always available to discuss the problem
- It might be difficult for the doctor to type every time

*Based on these disadvantages, we decided to move over to our next solution!*

# Solution 2: DocChat



- Chats can be inefficient if the person is not replying promptly.
- Delay in chats can lead to discontinuity of the flow
- Diagnosis may not be that efficient if the response time of the chat is too high

# Solution 2: DocChat

The image shows a smartphone screen displaying a messaging app interface titled "DocChat with Dr. Bob". The conversation starts with a doctor's message: "1) Are you getting enough rest?". The student responds with two messages: "What I mean is I am getting enough sleep and I am still tired." and "I feel tired even though I am sleeping. Does that make sense?". A red rectangular box highlights these two messages from the student. Dr. Bob's final message is "Yes, that makes sense. But I mean rest, not sleep.". Below the phone, a red box contains the text "Miscommunication problem".

DocChat with Dr. Bob

1) Are you getting enough rest?

What I mean is I am getting enough sleep and I am still tired.

I feel tired even though I am sleeping. Does that make sense?

Yes, that makes sense. But I mean rest, not sleep.

Miscommunication problem

- Misinterpretation and miscommunication are the major drawback of the chat
- It can be frustrating for the doctor to give explanation for every statement
- It is not guaranteed that the doctor is understanding what the student is saying

# Solution 3: GlobalDoc



GlobalDoc is an application that would allow our persona to connect with doctors from their original country and obtain medicine similar or equivalent to that of which they were receiving overseas.

## Pros:

- Persona does not have to drive to doctor
- Time efficient and cost efficient
- Simple and easy to use
- Avoids cons of previous solutions
- Allows persona to get international prescription and medicines equivalent

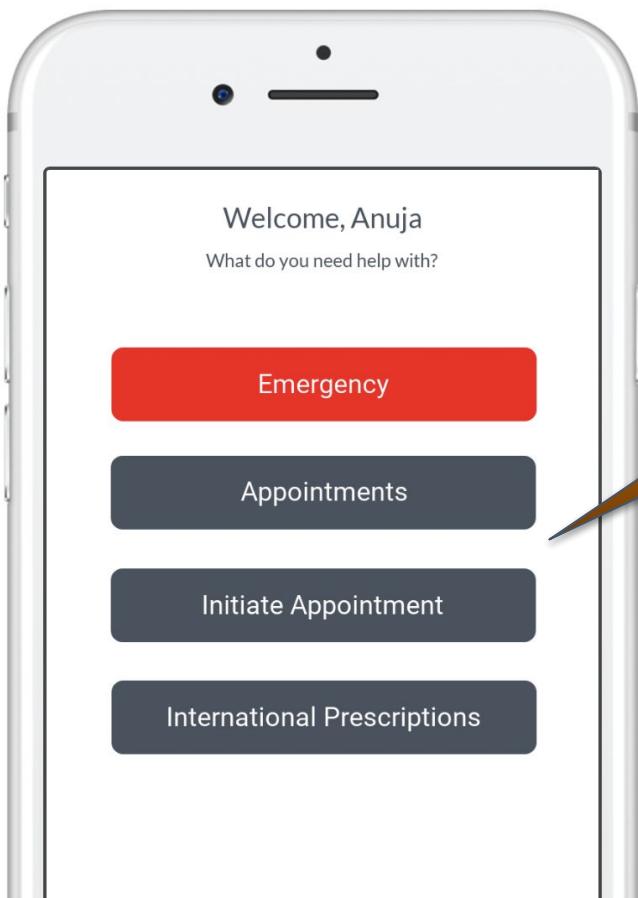
## Cons:

- There might not always be an equivalent medicine
- Time zones could be problematic

*Based on high advantages, we decided this idea as our final solution!*



# GlobalDoc : Explanation



A screenshot of a mobile application interface for a doctor. At the top right is a logo with a globe and "G.D.". The title is "Doctor's View". Below is a search bar with a magnifying glass icon. The main section is titled "Scheduled Appointments" and lists three entries: Juan from Mexico at 26/8/2018 - 12:00 pm, Liming from China at 26/8/2018 - 4:00 pm, and James from UK at 29/9/2018 - 3:00 pm. Below this is a section titled "Emergency Appointment Requests" with a single entry: "Alexa From Brazil &lt;Short Emergency Description&gt;". At the bottom are three buttons: "Schedule Appointment" (green), "Attend Now" (yellow), and "Decline" (red).

# GlobalDoc : Explanation



Our app **GlobalDoc** is divided into 2 sections: - **Student's View** and **Doctor's View**

## **Student's/Persona View**

- Make an emergency call to local emergency services
- Create personal health profile
- View Past Appointments
- Schedule appointments
- View international prescriptions in persona's local language
- Communicate remotely with international doctors

## **Doctor's View**

- View the scheduled appointments
- View persona's medical history
- Adjust the schedule if needed (For eg. mark the office hours as available, keep fixed time everyday for attending international students, keep the weekends off/on)
- Find equivalent international medications
- Generate international prescriptions

# GlobalDoc : Explanation : Doctor's View

Doctor's View

Search

## Scheduled Appointments

| Name   | From   | Time                 |
|--------|--------|----------------------|
| Juan   | Mexico | 26/8/2018 - 12:00 pm |
| Liming | China  | 26/8/2018 - 4:00 pm  |
| James  | UK     | 29/9/2018 - 3:00 pm  |

## Emergency Appointment Requests

Alexa From Brazil

<Short Emergency Description>

**Schedule Appointment**   **Attend Now**   **Decline**

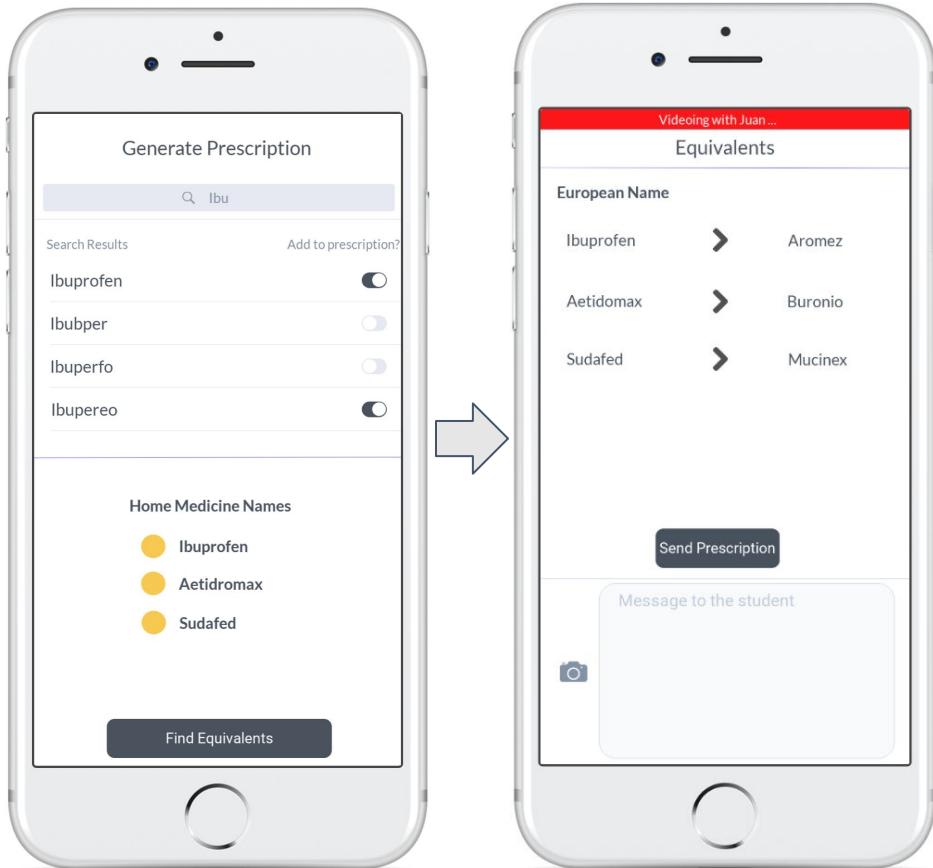
This is the home page of **Doctor's view** :

Screen Details:

- It allows doctors to search the medicines by name / patients by name
- It shows the list of scheduled appointments (the call will start at the scheduled time)
- It also shows any emergency appointment request (The Doctor has the option to delay the call - by scheduling the appointment later, attend now or Decline the call (if the schedule is too packed))



# GlobalDoc : Explanation : Doctor's View



These two examples are representations of what the **doctor's will view while they are connecting with the persona**

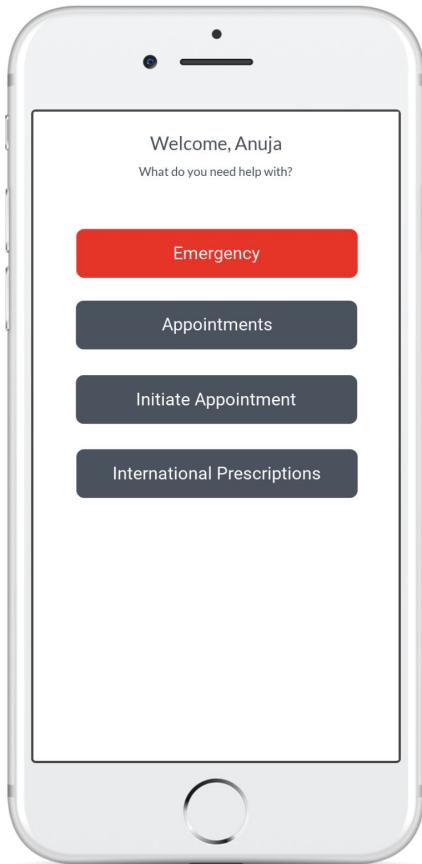
Screen 1: Medicines Prescribed by the doctor

Screen 2: Get US Equivalents of the medicines and send the prescriptions (*with recommendations/advice*) to the patient

*Technology when integrated with real life makes human life easy and we thought we could use it for our persona so that it would make the life of our persona a little easier.*



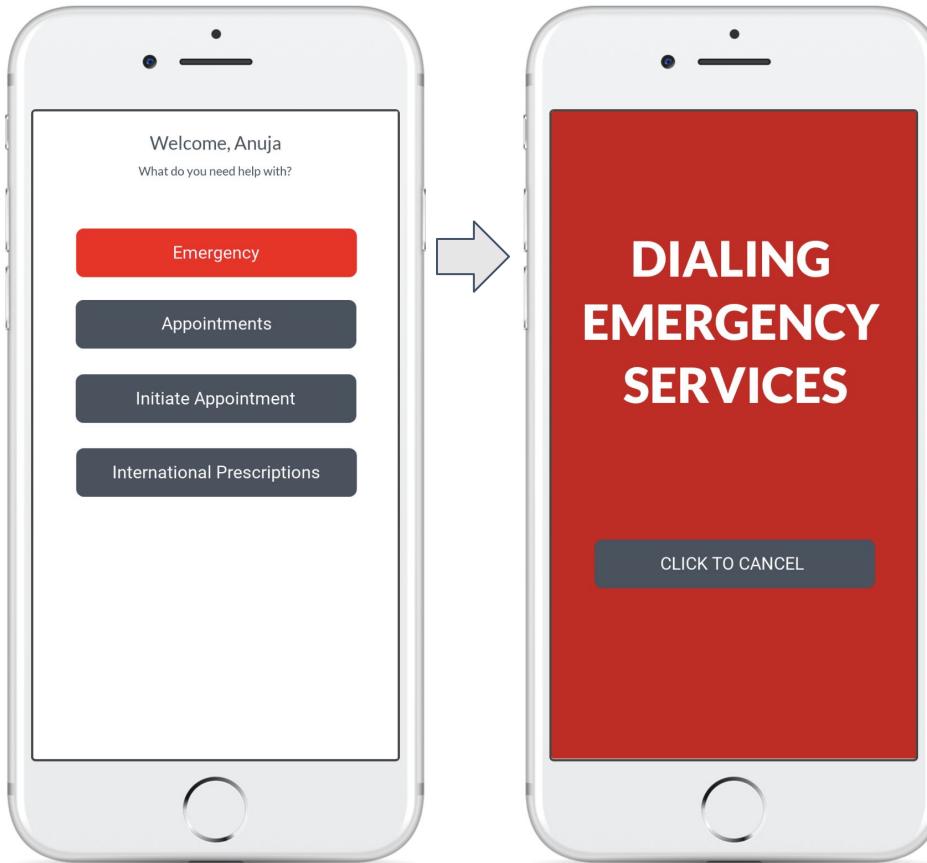
# GlobalDoc Explanation : Persona's View



This is the home page of **Persona's view** :

- Emergency: immediately dials local emergency services
- Appointments: allows persona to view past and scheduled appointments
- Initiate Appointment: begins the call with the scheduled doctor
- International Prescriptions: view & print prescriptions (*optional see prescription in their local language*)

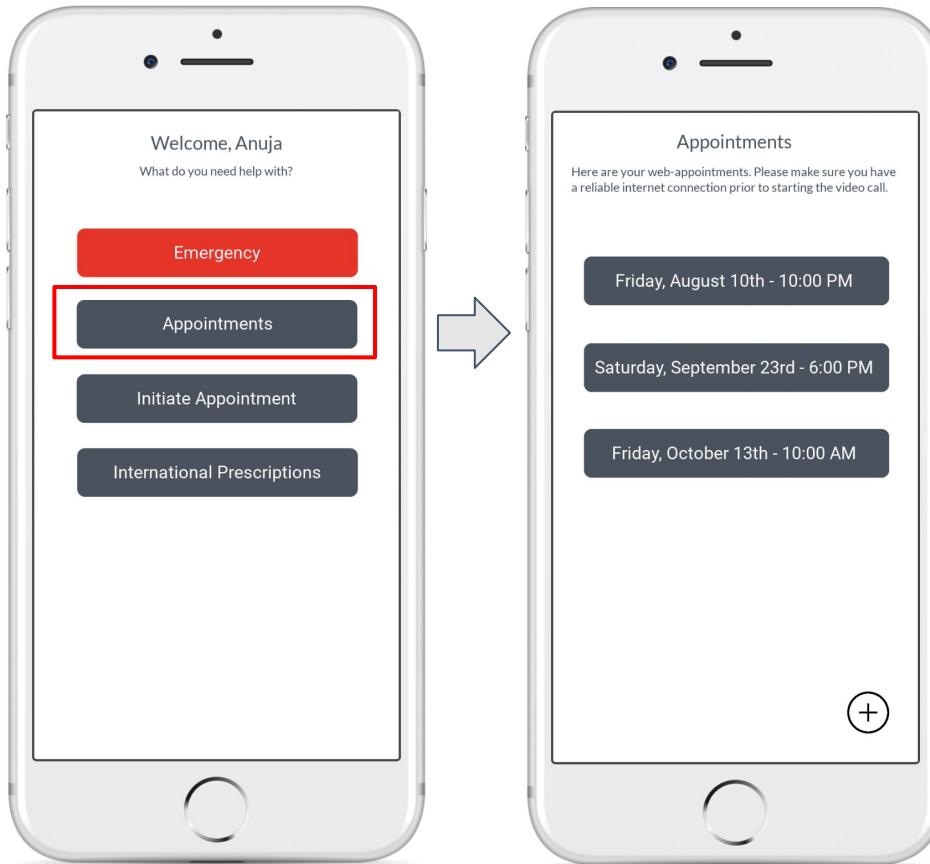
# GlobalDoc : Explanation : Persona's View



The Emergency button automatically dials local emergency services.

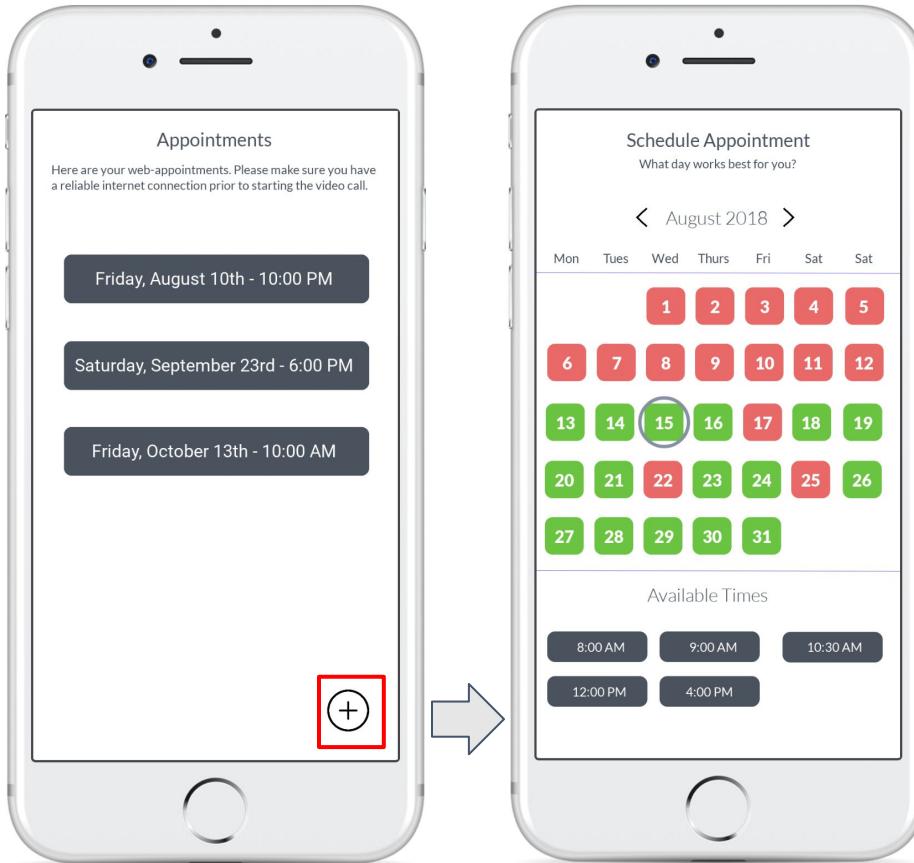
It is at the top to mitigate accidental clicks.

# GlobalDoc : Explanation : Persona's View

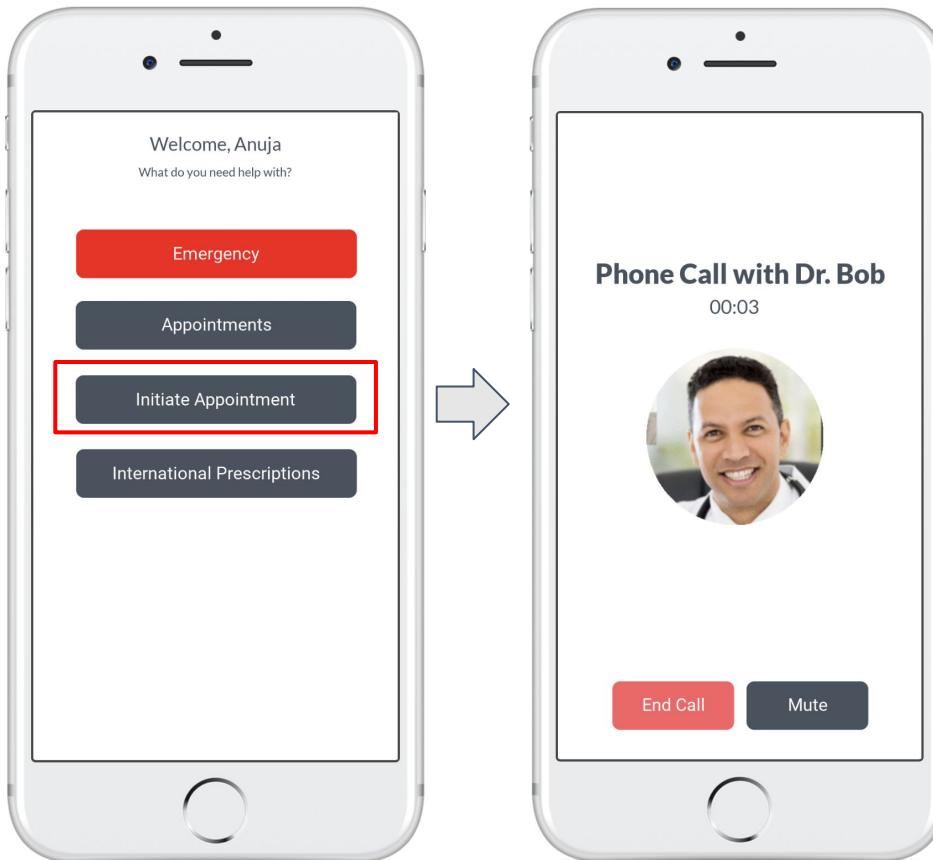


The appointments button will take our persona to a page that will allow them to see their past and future appointments.

# GlobalDoc : Explanation : Persona's View



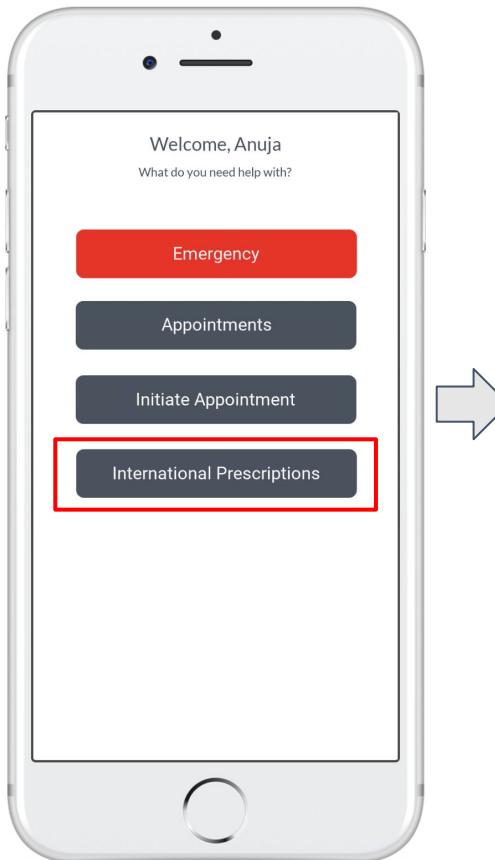
# GlobalDoc : Explanation : Persona's View



The “Initiate Appointment” button will begin a phone call with the global doctor.

The app determines which appointment is scheduled and which doctor to connect to automatically.

# GlobalDoc : Explanation : Persona's View



The “Initiate Appointment” button will begin a phone call with the global doctor.

The app determines which appointment is scheduled and which doctor to connect to automatically.

# Testing and Feedback



## Our Research Participants:

- Difu (China - Classmate)
- Abraham George (India - Classmate)
- Roshni Das (India - Classmate)
- Omar Shalamar (Pakistan - Neighbour)

## Feedback

| <b><i>Positives</i></b>                  | <b><i>Critical comments</i></b>   | <b><i>Status for Critical comments</i></b>  |
|--|---|---|
| Interactive and intuitive user interface | Video call would have been a better option  | Implemented   |
| Easy to use                              | In Emergency Call section there should be an option to convey the medical history | Implemented   |
| Good Scheduling system                   | Confused about search bar on doctor's view page                                   | Search bar facilitates the doctor to search medicine by name or search for a particular patient |

# GlobalDoc Modified Version



We redesigned the call interface in order to make it more visual and more personal based on the feedback we received. Rather than normal audio calls, appointments with the global doctor will be video calls.

This will allow the global doctor to visually see the patient's symptoms and provide a more personal experience to the persona.

# GlobalDoc Modified Version



Old



New

We redesigned the emergency calling interface in order to make it more informative and effective.

We also added the "Display Medical Information" feature to allow medical information including allergy and reactions, blood type, medications, family emergency contact, etc. to be shown to any emergency service crew in the situation in case it is necessary.



# GlobalDoc Modified Version



## Challenges

- Getting all the international doctors registered on the app will be a challenge
- Working according to different time zone can be challenging
- Difficult to find international equivalents for all the medicines
- Inadequate network quality could lead to an inefficient diagnosis

## Areas for Improvement

- More features
- A compression algorithm so video calls are more reliable
- Make it more user friendly with tips

Scan this QR code to try GlobalDoc!



THANK YOU