IDDS Curriculum Worksheet
Project Report

Project Abstract (idea)

We aim to bridge the maternal health information gap between expecting fathers and doctors, and ultimately reduce pregnancy-related deaths and complications, by providing fathers a hotline for accessing doctor's advice in discrete, accessible bite-sized nuggets (i.e. thirty seconds to one minute in length). The hotline, called "Rah-e-Maa" - which means "the way of the mother" in Urdu - enables fathers to become informed decision makers and partners in getting their wives and unborn children timely and appropriate health care according to their needs and means. By targeting fathers, we are able to put knowledge in the hands of key household decision-makers and change the nature of their conversation about maternal health care.

This idea, as simple as it sounds, sparked from a challenge to address the high maternal mortality rate within Pakistan. Ultimately, our service will help bring families on the same page about maternal health care needs and help reduce major delays in accessing health care, specifically around deciding when to seek healthcare for pregnant women. These delays in seeking care often compound and women and children often suffer from otherwise preventable complications or death.

Furthermore, by providing improved access to health information in a private, learn-in-your-own-time format - and at a time when fathers are more proactive about seeking health education - we can open new avenues for engaging Pakistani men in health education overall.

Context

Background

Fathers are currently not part of the conversation around maternal care. There are many reasons: culturally this has always been "women's business", there is social discomfort with the topic, and there is little access to gynecologists. We found, however, that fathers do in fact want to know how to provide and care for their wives and unborn children - fathers are especially frustrated about being cut off from doctors and being frenzied at a hospital in response to emergencies, many of which are preventable. It is difficult to make informed decisions or provide the necessary support if you don't know what you don't know. As a result, preventable maternal deaths or complications still occur in Pakistan.

Community Description

Our target audience consists of new or expectant fathers in Pakistan, especially those who have not had more than two children. We designed and prototyped our service by focusing on fathers from Model Colony, an urban slum in Lahore - a design group we chose primarily because of existing networks within the team. By targeting fathers with no more than one or two children already, we can build on their experience knowing what to expect in pregnancy, but also expect that their ideas about maternal health care have not been ingrained. Their average education level is between grades 5 and 10; their average household income is PKR 12,000-18,000/month (USD 115-170) and a majority of the men had low-cost smartphones on which they connect to the Internet over Wi-Fi.

The welfare of their wife and child is crucial to these fathers; they rely on their pregnant wives and their own mothers to tell them what is needed. Often, they also ask other fathers among their peers for advice. They want to provide for their wives - most often expressed by providing good nutrition and medicines, and reducing women's physical exertion during pregnancy. They want to be well-prepared for caring for their wives and do not want to incur a debt.

These fathers view it as their responsibility to arrange transportation to get their wives to hospitals. They do not trust ambulances to arrive in a timely manner and therefore opt for rickshaws. Once at the hospital, fathers are not allowed inside the ward or delivery room. Their responsibility is to arrange for medicines or blood bags as per the doctor's requests. They generally respect doctors and view them as authority figures.

Problem Framing Statement

By providing fathers improved access to doctors' advice that turns the father into an active partner in the health monitoring and logistical planning during the critical stage of pregnancy, **we eliminate a major delay** that causes preventable maternal or child death or complications. The father will be empowered to extend how he looks after his wife and child, and potentially avoid crippling expenses/debt.

We created an Interactive Voice Response (IVR) system that actively engages the father throughout the pregnancy by enabling him to assess health or danger symptoms and enact a contingency plan to access medical services in order to prepare for safe delivery.

Design Process

In order to help reduce maternal mortality due to delays in receiving health care, we began our design work by studying the "three delays model." This model outlines three major delays that occur in accessing maternal health care: 1) delays in decision-making to seek health care; 2) delays in transportation to a health care facility; and 3) delays in receiving health care once at a medical facility. We determined that, by focusing on the first delay, we could affect the greatest impact at the root of the problem and achieve traction at an accessible point of intervention

entry - directly engaging with fathers, rather than ambulance operators and hospitals, with whom building joint monitoring or dispatch systems would be a more complicated and potentially bureaucratic task.

Problem Framing Tree

Problem Framing Tree		
We wanted to find out what expecting parents (fathers particularly) were most concerned about, how they prepared, what decisions they made, so we could find out how to engage them.	We wanted to understand the transportation issue to see how people used transport, what arrangements they made, how emergency services responded, what barriers existed.	We wanted to find out what the experience was like in getting to the hospital, and what parents needed to do there. We wanted to explore if parents had information about the hospital, this would change parents' decisions
Areas to focus on: ● Where a decision delays getting the parents to hospital (knowledge) ● Where fathers do not have a contingency plan (backup transport) ● Where parents don't know what symptoms mean they need emergency care ● Where parents don't know what to prepare before delivery (medicine, blood, cost...)	*Outside scope:* ● *Traffic and encroachment* ● *Rescue services (not the option that parents choose anyway, unlikely to change, already overloaded)* ● *Where parents have already decided/ planned to go to hospital for delivery*	*Outside scope:* ● *Where complications happen at hospital (requires working with hospitals, and their infrastructure)* ● *Coordination with ambulances and hospitals (estimate limited impact)* ● *Referral systems from BHU level upward (did not have time to interview these users, still think there is merit there)*
IDEALLY… **Decision making:** Mother and father have done their health checks, father knows what to do	IDEALLY… **Transport:** Has been arranged, is affordable, cost is not an issue	IDEALLY… **Health care:** Parents know about BHUs, if referral is needed it goes to the correct or relevant place

Value Proposition

We are bridging the maternal health information gap between expecting parents and doctors by engaging and informing fathers through a hotline that provides accurate and accessible doctor's advice about the entire pregnancy and delivery process.

Summary of Design Process

Our initial prompt asked for us to focus on the second of the three delays that contribute to maternal mortality, namely, to address factors that delay arrival at a health facility. In our first round of information gathering, we met with Rescue 1122 (ambulatory service) administration personnel, fathers in the urban slum and mothers, fathers and hospital administrators at a government hospital in Lahore. Of the leading issues, the main ones were road encroachments and lack of coordination between ambulances and hospitals. We felt that working directly with a government body (Rescue 1122) would be risky in terms of being able to procure sufficient data during the summit to be informed enough to design an ICT-based solution.

Therefore, we decided to focus on the first delay, the delay in deciding to seek care. In particular, we chose to focus on knowledge gaps that lead to this first delay. The next decision point was whether to focus on a hardware solution (e.g. a handheld device that mothers could use to measure fetal heart rate) or a software solution (e.g. an app that pushes reminders to mothers about when their next antenatal care visit is). We chose a software-based solution for its feasibility as well as its scalability. Next, our team met with Amy Smith and she advised us to have fathers as our target audience so we could differentiate our solution in a space already saturated by innovations and interventions targeted towards women.

We went back into the field and interviewed doctors and nurses in maternity wards and more fathers and developed the following hypothesis: **access to information up front would help with the decision making process and potentially eliminate all downstream issues.** When interviewing doctors at the maternity ward at hospital, we learned that their ideal solution is simply education. So we decided to tackle the subject of all three issues through addressing the root cause: lack of information.

We then met with Dr. Agha Ali, a professor at Information Technology University (ITU) who wowed us about the potential reach an IVR system has. So we decided to use an IVR system over an SMS-based one to include the low-literate population.

A constant source of inspiration was the character Baymax from the animated movie Big Hero 6. We kept joking around about creating a personal health care companion until this point during the summit when it struck us that we *should*. So we created "Dr. Saba," a middle-aged obstetrician who a young, new or future father would trust and respect, who would offer an audio version of "What to Expect When You Are Expecting," a classic reference book for to-be mothers in the West. In addition, inspired by Dr. Agha's experience, we decided to add a feature where fathers could record and share their experiences on becoming a father for others to learn from.

Analysis and Experimentation

Due to time restraints, we had approximately 10 fathers go through our IVR in the field. The twinkle in their eyes when they listened to either the tips or the stories was as much satisfaction as we could have hoped for. More work needs to be done in developing the content and menu options; this will be discussed in a later section.

Technology/Final Prototype

Design Requirements

User Need	What to measure	How to measure (units)	Good value	Better value
Accessibility	Access to cell phone/phone network			
Convenience	Availability at user's choice of time	Server availability (hours/day)·	22-23	24
		Number of concurrent users		
		Downtime (hours/day)	1-2	0
Affordable	Call cost is low enough	Cost	PKR 0.5/min	Free
		Time		
Easy to use (navigability)	Manageable number of branches, does not overload with options	Number of branches		
		Duration of stories/tips (min)	<1 min	<1 min
		Clear navigation (no recursive loops)		
Relevant information (content)	Content that users find useful, relevant to their situation	Number of stories/tips listened to per call		
		Rate of call dropouts		
		Number of calls per unique caller		
		Number of times story/tip shared		
		Number of stories added		
Low power needs	Does not drain battery more than normal use	bandwidth	3G-4G	2G-4G
Safe, content will not cause harm	Supports, and does not contradict (or replace) proper medical advice, legally safe	Vetted stories (build into process for content upload)		

Sustainable		· Number of community-generated stories added		

How it Works

After calling into the hotline, the caller is greeted by a digital character called, "Dr. Saba." Dr. Saba guides the caller, telling him that the hotline will provide information about how to keep his wife and child safe through the pregnancy. Dr. Saba's presence adds personality to the hotline and improves user trust. By using keypad numerical inputs, e.g. 1 for doctor's tips or 2 for fathers' stories, the caller will be able to navigate through various menus, tips, and stories, categorized according to pregnancy trimester and/or topical area. See the diagram and prompt below for an example.

Each father's story - an anecdote from a real-life father's experience while dealing with his wife and unborn child's health care needs - is accompanied by a doctor's tip summarizing what the father did which was good or could be improved upon.
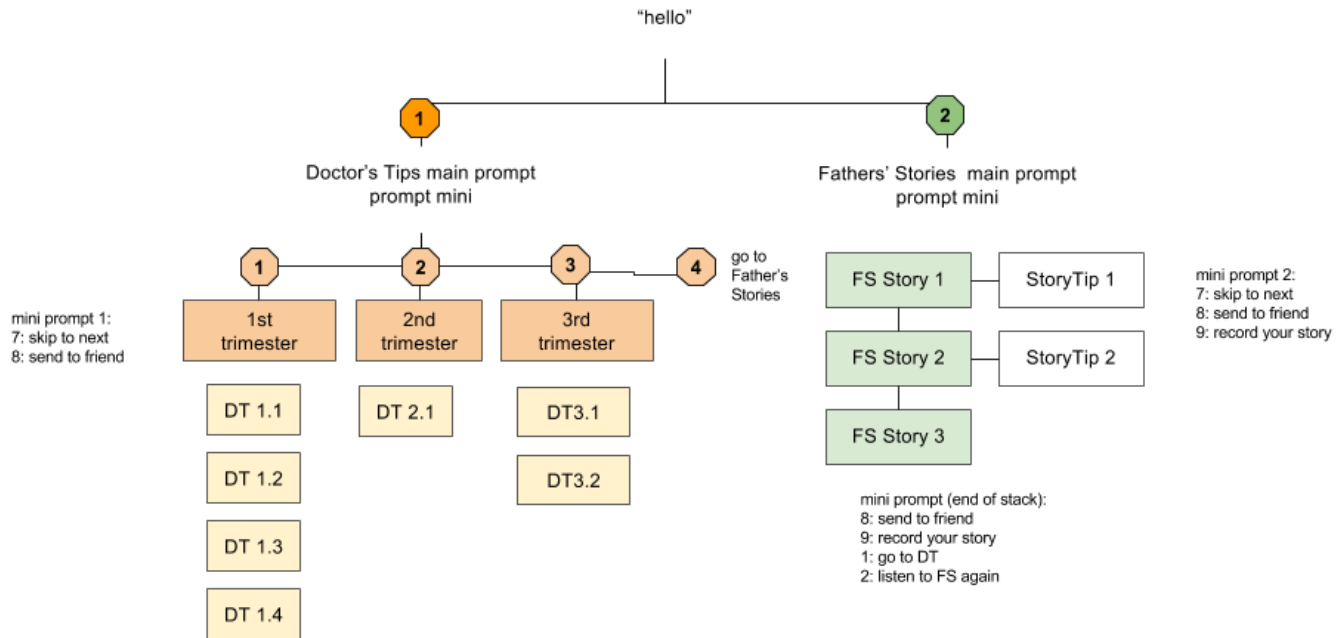
Script:
(inspired by Baymax, from Big Hero 6)
"Hello, I am Dr. Saba. I want to help you. Congratulations, you are going to be a father, During this time, whatever help you need, I'll guide you so that your wife and child remain safe. When you go to the hospital, this information will help you. For doctor's tips, press 1. For father's stories, press 2."

"AOA, may Dr. Saba hoon, may aapki madat karna chahti hon. Mubarak ho, aap baap ban'nay walay hain. Es doraan, jitni hidayaat darkaar hongi, may aapko muhaiyya karti rahoon gi, ta'kay aap ki biwi aur aapka baccha sehat-mand rahain. Jab aap hospital jayen gay, yeh hedayaat aapki madad karein gi. Doctor ki hedayaat kay liye, 1 dabaye. Waalidain kay waaqiayaat kay liye, 2 dabaye."

Father is given a phone number to call
+1 330 817 6123
001 330 817 6123

"hello"

1 Doctor's Tips main prompt
prompt mini

2 Fathers' Stories main prompt
prompt mini

mini prompt 1:
7: skip to next
8: send to friend

1 1st trimester
2 2nd trimester
3 3rd trimester
4 go to Father's Stories

DT 1.1
DT 2.1
DT3.1

DT 1.2
DT3.2

DT 1.3

DT 1.4

FS Story 1 — StoryTip 1
FS Story 2 — StoryTip 2
FS Story 3

mini prompt 2:
7: skip to next
8: send to friend
9: record your story

mini prompt (end of stack):
8: send to friend
9: record your story
1: go to DT
2: listen to FS again

Performance

The above navigation tree has been implemented in Python, using a server currently hosted at ITU, and using Plivo's voice API.

The server drops calls or gives a busy signal perhaps 10-25 percent of the time. The server is currently hosted at ITU but is sometimes shut down - often requiring someone at ITU to troubleshoot the issue. An independent server with a reliable power connection should be secured.

Plivo was a service that had already been implemented by our network, but they could only provide us a US-based number, which is not viable for sustained community testing (due to the relatively high cost of making calls to the US from Pakistan, at about Rs 2-3 per minute). Having a US-based number is certainly not viable for our target audience. A Pakistan-based number capable of hosting at least 100 callers at a time should be secured.

Additionally, the performance of the menu navigation needs to be tested and optimized.

Lessons Learned

Community Engagement

Summary of lessons learned from community engagement. IVR content which seeks to influence health behaviour needs to cater for the following:
- Content needs to be medically supported
- Content should be recognised as supplementary, and not replace the need for medical advice or health checks
- Content should not (where possible) directly contradict existing beliefs, but widen knowledge and show strong alternatives
- Content should be short and digestible, a user should be able to relay/repeat the message to another person easily
- Content should be designed with awareness and respect for local practice, norms, hierarchies
- Content, when translated, should be correct (not vague or open to misinterpretation) according to local language
- All content should be themed/related to specific topic, so that later if other themes e.g. polio are added, content is not misinterpreted

User Feedback

Based on user feedback, these are areas of improvement we identified:
- **Navigation**: potentially design a faster way for trimester content? Topic based navigation vs time-based navigation?
- **Navigation:** potentially design for a faster way to receive feedback on specific questions?
- **Navigation:** how would they do a repeat visit, would the stories be new? Navigate through previously listened-to stories?
- **Navigation:** test the need for functions to replay, listen to previous
- **Functions**: build ability to record own story, share
- **Functions:** build ability to connect advice/stories to real-world next steps
- **Functions:** build ability to test knowledge gained from tips/stories and gamify + incentivize listening
- **Content:** how would they categorise so that there's a prefix?
- **Content:** figure out how would new tips/stories stack?
- **Content:** find out optimal soundbyte length (A/B test?)
- **Content:** design a way for user to know they're done with a whole section
- **Content:** design a way for if new content is added to a track the user had previously completed
- **Localisation:** add language options in future, and record new versions
- **Localisation:** content to suit rural communities
- **Add-on services:** ability to add new topics/branches, e.g. polio

Next Steps/Project Future

Reflection on Project Viability and Other Design Opportunities

Areas to work on going forward include:

1) **Improving upon the dissemination model for how fathers would receive and be incentivized to call the hotline in the first place.** We presume that doctors could provide the hotline number to expectant mothers after their first checkup during pregnancy, instructing the expectant mother to tell her husband that the doctor said to call the hotline. (People generally are quite willing to follow doctor's advice in Pakistan, as doctors are very well respected.)

2) **Improving navigability of the hotline menus** - Currently, the hotline is set up to play doctor's tips and father's stories in a fixed order, one after the other. Some sort of navigation options or bookmarking feature could be created so that users can quickly jump to the information which is relevant for them and not have to listen to the same information repeatedly. Such features should, however, be balanced with the need to be able to guide users through the appropriate health care and monitoring steps, rather than allowing users to cherry-pick information they deem relevant (which could be dangerous).

3) **Improving content** - At present, the hotline uses curated stories and voice actors for both doctor's tips and father's stories. Further, we need to make sure the medical advice is accurate, safe, relevant, and culturally acceptable. Father's stories should also not be misleading - if they portray medically dangerous or unideal actions, our service should make a clear disclaimer saying as much.

4) **Introducing gamification or other incentives (may help generate revenue $)** - Users may be tested on health information they gain from the service and be incentivized to participate through quizzes, raffles, or offering other non-monetary prizes such as unlocking songs, jokes, fun facts, phone minutes, or other features.

5) **Connecting the hotline services with real world next steps (may help generate revenue $) -** Fathers often expressed a desire or expectation that the hotline would be connected with real-world doctors, community forums, and/or face-time at hospitals, pharmacies, etc. It may be beneficial to think of ways (e.g. advertising or referral programs) to connect with our service - medical liability, however, may become in issue in these circumstances.

6) **Building mechanisms for users to contribute content -** We are considering using the hotline as a sort of social network for fathers, collecting and disseminating user-generated stories from fathers. This has the potential to ignite peer-to-peer knowledge-sharing and, we hypothesize, may attract more users than relatively dry advice from doctors. (This was inspired by Baang, created by Dr. Agha Ali at Information Technology University, Lahore.) However, given the medically sensitive nature of the information we want to provide and control for, monitoring and screening user-generated content may prove to be an excessively laborious task. As a compromise, we plan to first source real-life father's stories from data collectors/social scientists, but using voice actors to reshape the stories in a medically appropriate manner. We will A/B test the user-response for actor-portrayed stories vs. raw, unedited stories.

a) **Building mechanisms for review of user-generated content -** If we do source content directly from users, we will have to hire reviewers to vet the stories for appropriateness, abuse, or other harmful information. Additionally, we may introduce voting mechanisms to help the community vote up more beneficial content and/or self-govern.

Project Next Steps - High Level
- Content development
- Improve navigability
- Figure out partnerships / revenue streams
- Recruit graduate students / staff
- Apply for funding

Tech Issues
- Securing an independent server with a reliable power connection
- Securing a Pakistan-based number for the host phone number
- Tracking user calls in order to make platform dynamic for each user
- Call costing
  - Develop Pakistan telecom contract OR look at another Plivo-type service, e.g. Nexmo
- Database + what to track
- Can we create a feature or is there an already existing feature for people to record tips, etc. onto their phones?

Budget

Component	Unit type	Units	Unit Cost (PKR)	Total for 1 year
Server with data storage capacity	server	1	20,000	20,000
Content reviewers for doctor's tips	persons	3	100,000	300,000
Content development team for father's tips (including travel)	team of 2 people	1	100,000	100,000
"Dr. Saba" voice over (A-class voice)	actress and studio time	10 pages	25,000	250,000
Contract with "Dr. Saba" (securing a single voice actor for future recordings)	contract	1	80,000	80,000
Fathers' voices	actors and studio time	30 pages	10,000	300,000
Dumb phones	phone	2	5,000	10,000

	Total	1,060,000

Continuity/Dissemination Model

We plan to take the project forward, with this team, centred in Lahore. Sacha Ahmad and Umair Anwar are the primary points of contact in Lahore; other team members will contribute remotely. If and when it gets up and running in Lahore, we can then look at how to establish this service in other locations.

We will develop partnerships with a local NGO/CBO or government to pilot the service. Additionally, an ITU and/or MIT graduate student will spearhead research on content development and tech-related issues such as A/B testing and gamification of the service.

The pilot of the service will itself provide marketing/educational opportunities for the community to adopt our service. Going forward, uptake from a provincial government, or multilateral/bilateral organization such as USAID, DFID, or UNICEF will help push dissemination forward. We are largely counting on developing partnerships with CBOs/NGOs and/or teaching hospitals, such that doctors, community health workers, and other medical professionals will refer our service to married men and pregnant mothers.

Potential Business Models

By developing a network of service-providers who recognize that their business and mission can be supported by our service, such organizations will themselves be incentivized to refer families to Rah-e-Maa. Government and most CBO/NGO organizations would welcome the thought of being able to cultivate fathers and patrons who:
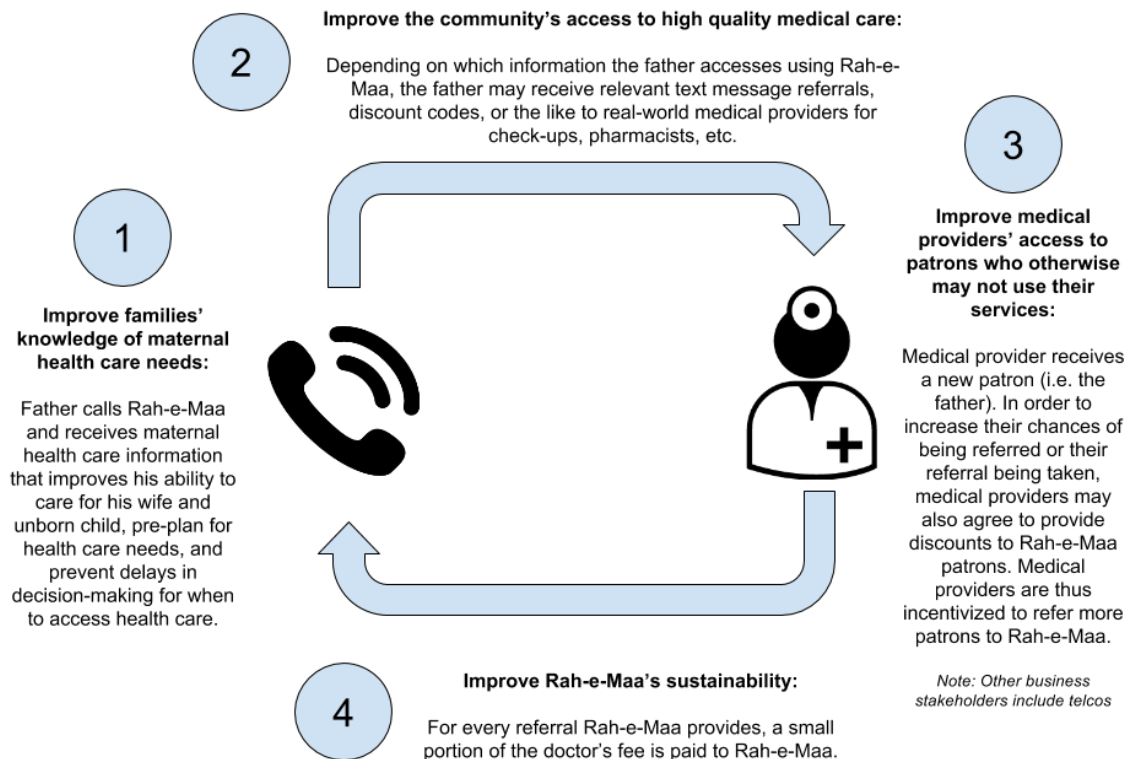
- Are better educated about the needs/benefits of seeking doctor's help (i.e. instead of a midwife)
- Are proactive about planning for medical complications and expenses
- Are responsive to and understanding of their wives' medical needs, rather than badgering doctors or other staff at hospitals about what to do
- Can be engaged more often (e.g. to provide medical advice, advertising, or otherwise)

However, it is possible that some private hospitals and medical providers - who often profit by convincing families to partake in more complicated and more expensive medical procedures, such as C-sections - may in fact not want to better educate the community about their health needs (and rights).

If either a) the simple social good of our service or b) the promise of a more educated and engaged target group of patrons are not incentivize enough for potential partner organizations to freely refer people to our stand-alone service, we may need to consider some of the following scenarios:

1. **Augmenting our service with other community education campaigns that the government is invested in (e.g. polio vaccination, family planning, etc.) - this could improve the chances that partner organizations would freely refer people to our service**
2. **Being acquired or combining our service with an already existing service (e.g. UNICEF may want proprietary control if we partner with them)**
3. **Developing a network of medical service providers who Rah-e-Maa endorses and, in turn, who endorse Rah-e-Maa**

The third model would allow Rah-e-Maa to remain a stand-alone enterprise and holds promise of providing sustained revenue for Rah-e-Maa and partner organizations. Rah-e-Maa's business ecosystem may look something like this:

2

Improve the community's access to high quality medical care:

Depending on which information the father accesses using Rah-e-Maa, the father may receive relevant text message referrals, discount codes, or the like to real-world medical providers for check-ups, pharmacists, etc.

3

Improve medical providers' access to patrons who otherwise may not use their services:

Medical provider receives a new patron (i.e. the father). In order to increase their chances of being referred or their referral being taken, medical providers may also agree to provide discounts to Rah-e-Maa patrons. Medical providers are thus incentivized to refer more patrons to Rah-e-Maa.

Note: Other business stakeholders include telcos

1

Improve families' knowledge of maternal health care needs:

Father calls Rah-e-Maa and receives maternal health care information that improves his ability to care for his wife and unborn child, pre-plan for health care needs, and prevent delays in decision-making for when to access health care.

4

Improve Rah-e-Maa's sustainability:

For every referral Rah-e-Maa provides, a small portion of the doctor's fee is paid to Rah-e-Maa.

6-month Plan and Team Engagement (Roles and Responsibilities)

Within the next 6 months we plan to accomplish the following:
- Meet with potential partner organizations (a meeting with a representative at the Punjab Information Technology Board has already been held, other meetings have been scheduled within the next couple of weeks with representatives from USAID, UNICEF and DFID)
- Identify a willing mentor (already identified a potential one, working on his willingness)

- Establish a working relationship with at least one organization for a minimum of one year with the aim of securing administrative and financial support to work on content and technology development
- Selecting masters students to conduct research in the following areas:
  - **Content development:**
    - If we are targeting a maternal healthcare information service at fathers, what should the content be?
      - E.g. What content are fathers most responsive to?
      - E.g. What do fathers need to know in terms of maternal healthcare?
    - How should the content be developed?
      - E.g. Who are key gatekeepers for the information for fathers, and how can they be involved in content development?
    - What information can be tied to some sort of outcome change we want?
      - E.g. What info can be delivered in order to help reduce maternal mortality or change behavior?
      - How would we measure this?
    - What level of information is safe to give? What information could potentially cause harm?
  - **Technology development:**
    - A/B testing for navigation - both main menus and submenus
    - A/B testing for curated content vs. raw content from father's
    - A/B testing for ability to record own story vs. not
    - A/B testing for advertising and/or referrals to other services
    - A/B testing for doctor's tips added onto father's stories vs. not
    - A/B testing for different types of doctor's tips
  - **Other:**
    - How to measure impact? (generally for whatever it is we create)
    - In order to make people use this service, is there a need to tie the information service to real world services? Or, would the information service be more effective if we tie it to real world services? How can this effectively be done? (e.g. "Real world services" include advertisements or referrals, or something else?)
- The above-mentioned research will take approximately a year to conduct; the content development should be complete within the first 6 months once a partnership is established
- Decide pricing model and structure and details of contracts with telcos and/or procure shortcode for callers to receive subsidized rates for using the service

Sacha St-Onge Ahmad is the local project lead and is responsible for networking, meeting potential partner organizations, and planning. Umair Anwar is responsible for the tech-related work including determining and managing our software/hardware needs for the project. Faran Sikandar is responsible for our business model and assisting Umair with coding. Kim Chatterjee is responsible for supporting with information architecture, story structure, messaging and

promotional material. Ehsam Ullah Baig is responsible for supporting with community engagement and service promotion.

Anticipated Risks and Challenges

- Incentivizing uptake of service (E.g. Are there other competing services? Will other health care providers find Rah-e-Maa a complimentary service or a competing service?)
- Medical liability for information provided
- No government buy-in
- No long-term funding
- Finding the right pricing model
- Partnerships with Telcos
- Partnerships with medical providers

Stakeholders

- Funding agencies
- Telcos
- Pakistan Telecommunication Authority
- Punjab Information Technology Board (PITB)
- Secretary Health (Primary & Secondary)
- Content developers (proposed: Dr. Zahida Sarwar, Additional Director, Policy & Strategic Planning Unit; Dr. Shakila Zaman, Dean, Lahore School of Public Health; Dr. Aysha Zahidie, Aga Khan University Hospital Community Health Sciences)
- Doctors and other healthcare providers at public hospitals who deal with our target audience
- Basic Health Unit Medical Officers (and other staff)
- Rural Healthcare Centres
- Mothers
- Mothers-in-law
- Fathers
- Babies

Table. Synthesizing Information Based on Stakeholder and Stage of Delivery Process*

ENTRY POINTS:	What if 1122 could see actual effectiveness from their data Find symptoms to know <u>when</u> to call 1122 to save lives Ensure women know <u>when</u> to get health care		Facilitating emergency patients when they arrive at the hospital (where to go, procedure, etc.) Signage at hospital confusing and unreliable; dependence on human redirection :. color-coding of signs and integrate with app		

	Emergency	Transport to hospital	Hospital intake	Triage	Waiting	Transfer/ referral
Mom	Appropriate/expected time Delivery card Health check Referred "away", don't know where to go Not aware of timing, left it too late to go to hospital	Difficult to get transport in remote areas	Don't know point of contact Secretary decides severity Waiting times unknown Manual queuing Hospital too busy	Transfer from hospital 1 to hospital 2 Referral to different hospital Doctor or room not available Don't know how to long to wait for (anxiety)		
Ambulance driver (Lady Willingdon)	Not being contacted Permission to be deployed Knowing where to go Don't know hospital staffing Could have access to tech, but maybe Caller does not provide correct coordinates Reaching caller is difficult when caller doesn't know exact location, driver/receiver of call doesn't understand	Delay in relating information from control room to substation and substation to dispatch (but 1122 doesn't have a mechanism of timing this) Problems in response time: 1. Traffic → measured 2. Demand/supply → measured 3. Long distance → measured 4. Delay in understanding/dispatching call → NOT measured 5. Delay in ambulance leaving post or station → NOT measured There is only an oxygen cylinder and a couple of other things in the ambulance 24/7 availability Can go anywhere in district once they have permission Usually get 14 calls on average Free service, no charges Daytime shift is more busy and nighttime shift is normal	Driver facilitating intro with hospital Intake → not always clean Bad wayfinding/signage Hospitals have unwillingness to work → doctor not available → doctor not willing/lazy (old mentality) 1122 helps speed up	Transferring mothers from one hospital to the next, no coordination between hospitals		We don't take expectant mothers from 1 hospital to another We need transport superintendent's permission to go anywhere Can't go anywhere without permission Aren't allowed to take mothers to private hospitals Can't transfer patients from public to private hospitals Medical staff present when moving patient from hospital to hospital No staff while transferring mother from home to hospital Lady Willingdon Hospital ambulances only for hospital transfers (says admin), driver contradicted by saying they go anywhere in Lahore

Private driver/ rickshaw	Affordability Accessibility of driver to pick up point Less urgency	No way to siren the traffic Encroachments/roadblocks Private cars not allowed in hospital				
Hospital admin/ intake staff	No coordination to know which hospital has capacity Insufficient pre-education about going to hospital	No nexus with transport	Patient doesn't know who does intake Long lines Manual queuing Secretary determines severity, no doctor/nurse	Family lacks information on where/why they're waiting e.g. why meds	Family doesn't know how long they're waiting	
1122 Admin		Encroachments Traffic Roadblocks Time delays in peak hours, provide free services				

*Note: After developing the above stakeholder-framing table, we realized that focusing on helping women better know *when* to access health care. However, additional conversations with experts and stakeholders in the field suggested to us that the most value-added intervention would help improve father's maternal health involvement, as key decision-makers who were currently not being engaged as much as they could be.

Contact Information

Team members and point of contact

1. Sacha St-Onge Ahmad (point of contact in Pakistan) - sachamahmad@gmail.com
2. Umair Anwar - umair.anwar@itu.edu.pk
3. Ehsam Ullah Baig - ehsamullah11@gmail.com
4. Kim Chatterjee - kim.chatterjee@gmail.com
5. Faran Sikandar - faran.sikandar@gmail.com

Community Partners

Sacha works for an NGO - Hope Uplift Foundation - that services 2 urban slums in Lahore. She has connections with many community members in these areas and can request their participation in the research phase.