

Encouragement System

for Pregnant Women in Kenya

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Maternal mortality is high

Kenya **530/100k**

US 24/100K



Low clinic visits during pregnancy

only attending

1 of the 4

recommended clinic visits



- pregnant women **lack practical health knowledge**
- Women often **do not plan for the financial burden** of pregnancy and birthing
- Cell phone coverage is reasonable
- the female literacy rate is around 80%

Solution

Send **interactive** SMS messages containing **practical** and **actionable** information that will **encourage** and **empower** the women to take their health care into their own hands.

Patients get **automated** messages **regularly** that are **tailored to their health condition** (such as high blood pressure, anemia, etc)

before



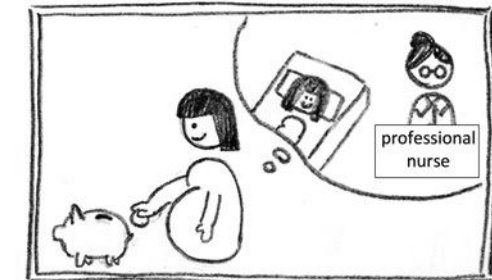
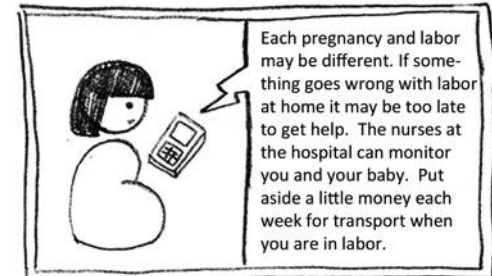
before



after



after



Solution

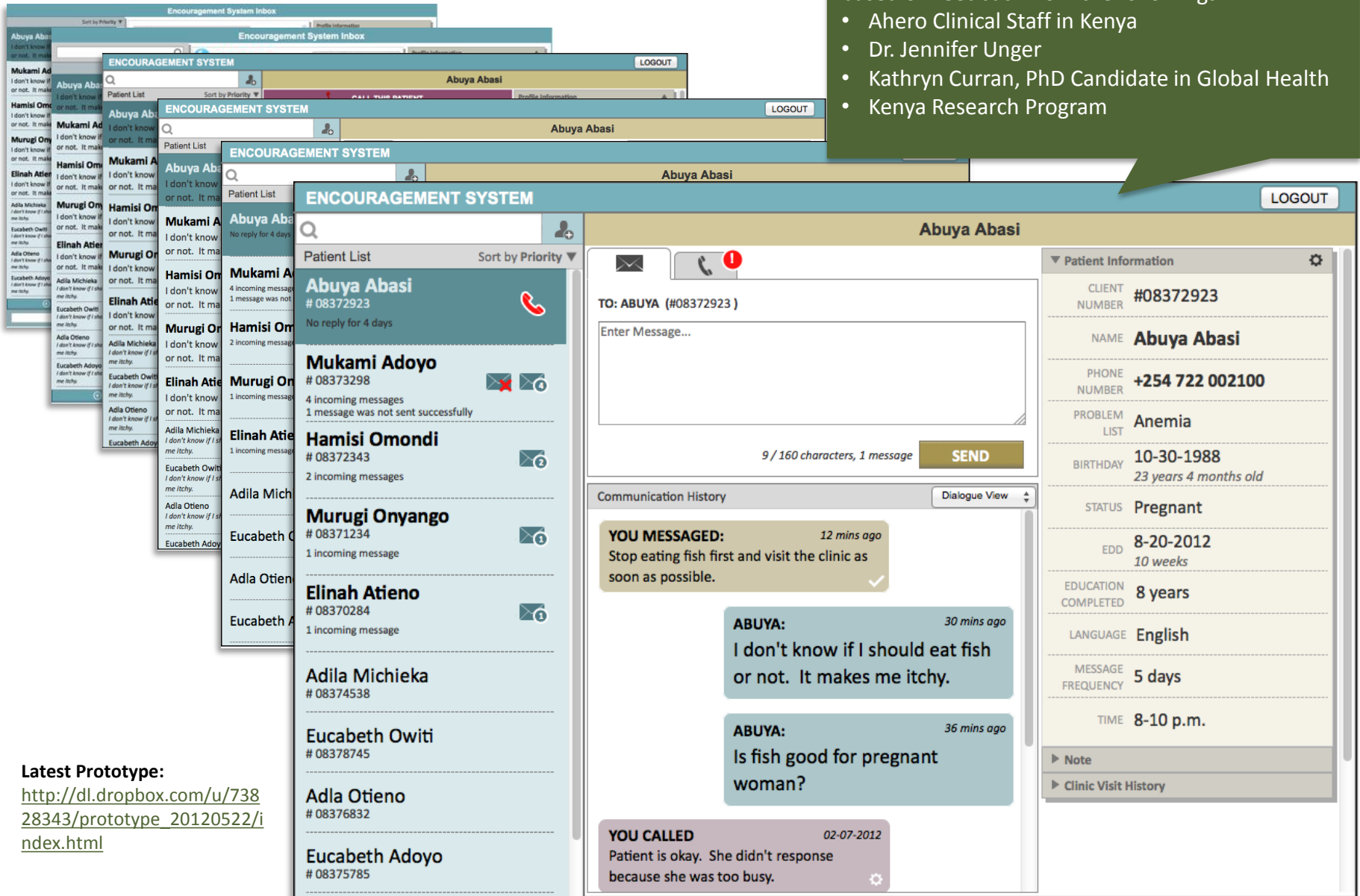
- A **web-based application** that allows nurse to handle messages from patients
- Nurses have a list of all patients and **one click access to all correspondence**
- Nurses get periodic **reminders** to call and check in with patients who have not texted in two weeks
- Nurses may add notes and visit histories, call logs, and keep track of health conditions



6 iterations

based on feedback from the followings:

- Ahero Clinical Staff in Kenya
- Dr. Jennifer Unger
- Kathryn Curran, PhD Candidate in Global Health
- Kenya Research Program



Latest Prototype:

http://dl.dropbox.com/u/73828343/prototype_20120522/index.html

Architecture

- The encouragement system runs on the **Django** framework, with automated message scheduling using **Celery**, an asynchronous task module and a **JavaScript** front end
- Since we are using an HTTP-based SMS service, no hardware or SMS libraries are needed
- The server may be hosted on any webhost that allows Django projects

Overview

ENCOURAGEMENT SYSTEM Log out

Search... +

PATIENT LIST [Download](#)

Pregnant (#1000) [Download](#)

New (#2000)

Pregnant

✉ ☎

TO: PREGNANT (#1000)

Send message

0/144 characters, 0 messages [Send](#)

Message History Conversation ▾

Nurse: May 22, 2012, 4:51 p.m.

Nurse: May 22, 2012, 4:50 p.m.

Nurse: May 22, 2012, 4:50 p.m.
This is a super long message to test the javascript. This is a super long message to test the javascript.

Nurse: May 22, 2012, 4:32 p.m.
Hi there

You called: May 21, 2012, 9:50 p.m.
This phone call was a failure.

You called: May 21, 2012, 9:50 p.m.
This is the log of a phone call.

System: May 21, 2012, 9:49 p.m.
This is a system message.

Nurse: May 21, 2012, 9:49 p.m.

▼ Patient Information ⚙

ID number: **1000**

Name: **Pregnant Woman**

Birthday: **Dec. 30, 1990**

Phone Number: **Please have client send registration key**

Location: **Kenya**

Pregnancy Status: **Pregnant**

Expected Due Date: **May 30, 2012**

Education: **5**

Registration Key: **MOHEIAH**

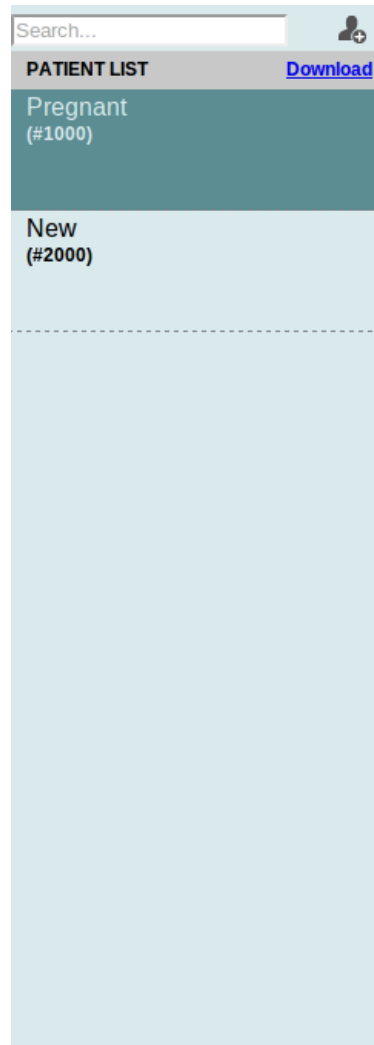
▼ Notes +

Note 1 May 22, 2012, 12:54 a.m. ✕

▼ Clinic Visit History +

This visit went well! May 21, 2012 ✕

Overview – Patient List



- Patients are sorted in order of urgency
- Live search enables searching by name or ID number
- Add patient button pulls up an intuitive form for adding a new client
- If it is urgent to call a patient or if they have pending messages, a notification displays by their name

Overview – Message List

TO: PREGNANT (#1000)

Send message

0/144 characters, 0 messages **Send**

Message History Conversation ▾

Nurse: May 22, 2012, 4:51 p.m.

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This is the log of a phone call.

System: May 21, 2012, 9:49 p.m.
This is a system message.

Nurse: May 21, 2012, 9:49 p.m.

- The entire correspondence with the client, one click away
- Send messages to the client, view received messages, and add call notes
- The hub of interaction with clients

Overview – Patient Details

▼ Patient Information 	
ID number:	1000
Name:	Pregnant Woman
Birthday:	Dec. 30, 1990
Phone Number:	Please have client send registration key
Location:	Kenya
Pregnancy Status:	Pregnant
Expected Due Date:	May 30, 2012
Education:	5
Registration Key:	MOHEIAH
▼ Notes 	
Note 1	May 22, 2012, 12:54 a.m. 
▼ Clinic Visit History 	
This visit went well!	May 21, 2012 

- The overview for all of patient's information
- Keeps track of a patient's medical conditions, any notes, and their visit history
- Allows adding of notes, visits, and editing of patient information

- Handles messaging through interface with web-based SMS service API
- Written to make changing interfaces as easy as possible
- Need a service that does reverse billing

- The standout feature of the Encouragement System
- Sent out twice a week
- Keyed into a patient's medical conditions, as well as which week of pregnancy she is in
- Administrators can modify the list of medical conditions and add, edit, and remove automated messages.
- Some conditions and messages will come pre-loaded

Demonstration

Demo server hosted at 23.23.212.97

- 1 adding a patient
- 2 registering
- 3 editing the patient's status
- 4 sending a message to the patient

Deployment

Pilot deployment in Kenya **this summer**
with Dr. Unger and Brian DeRenzi

Looking into **SMS provider** to use