The lab bench for mobile health
Overview

Outline:

- Objectives
- Team, Background
- Problem
- Reify’s Solution
- Demo
- Use cases
- Progress to date
- What we’ve learned
- Roadmap
- Relevance to ICTR
- Questions for discussion
Objectives

1. Identify pain points our technology can currently address for ICTR members

2. Identify pain points we could address with additional development work for ICTR members

3. Identify opportunities to work together
Team

Ralph Passarella  
External Operations  
- MD/PhD at JHU  
- Cancer Biologist from Vanderbilt

Michael Lin  
Internal Operations  
- MD at JHU  
- Bioengineer from UC Berkeley

Henry Li, MS  
Front-end Developer  
- MD at JHU  
- Biomedical engineer from Georgia Tech

Joe Abrahamson  
Back-end Developer  
- PhD at JHU  
- Biomedical engineer from Georgia Tech
The potential of mobile health
The potential of mobile health

Mobile has potential to deliver low-cost engagement
1¢ for a text message  99¢ for a smartphone app
85% of adults own smartphones

Mobile has potential to deliver improved outcomes
1.9% reduction in HbA1c by mobile health therapy compared to 0.7% reduction from standard of care
The unfulfilled potential of mobile health

Rapid proliferation of mobile health technologies

Little solutions have evidence to support effectiveness
Mobile health R&D is hard

Research requires upfront capital
Mobile health proof-of-concept can cost up to $3 million

Research requires access to patients

Research requires access to scientists
Mobile health R&D tools are primitive
The lab bench for mobile health

EXPERTS

REIFY HEALTH
LAB BENCH

MOBILE HEALTH INTERVENTION
Use cases

**TRIMM - a weight loss intervention**
Six-month text message-based weight loss intervention tested in RCT with 120 patients.

**Project SCOPE - increasing college matriculation**
Intervention to increase graduating high school students’ matriculation. RCT among >3000 students in two languages.

**Post-operative prostatectomy management**
Mobile intervention to improve management of prostatectomy symptoms. Reuse of content and algorithms for TRIMM.
Progress to date

- 17 in pipeline
  - 5 prepared
  - 3 launched
  - 2 completed

- Wellness
  - Obesity
  - Smoking cessation

- Women’s health
  - High-risk pregnancy
  - PID
  - HPV vaccination

- Other therapies
  - Hypertension
  - Diabetes
  - Depression
  - Cystic fibrosis
  - Leukemia

- >100K Messages sent
- 4 Medical centers
- 4000 Patients
- 4000 Patients
What have we learned?

1. More “communication science” than “mobile health”

2. Twilio’s marketing is misleading

3. Building R&D tools requires building specifically for R&D

4. Old people like using mobile technology too

5. Teenagers will pour out their life stories into an SMS
Tool roadmap

Tools accessible from web app

- Accelerometer
- Smartphone App
- Other mobile sensors
- Medical devices
- Email
- SMS

We’re here

Tools in Toolkit

Time
Potential value for the ICTR

We provide accessible, low-cost tools that allow researchers to collect data and deliver behavioral interventions repeatably and reliably.

Example job
Patient data collection
Deliver behavioral intervention
Patient retention
Authentication
Passive data collection

Use case
Create form to query patients automatically about mood
Deliver targeted, personalized messages to individual patients
Send patients reminders to return for follow up visits in clinical trials
Use text messaging for two-factor authentication in trials
Allow trial patients to engage the system by initiating conversations
Questions for ICTR Data Managers

We want your feedback to help shape this technology

1. What components of our technology do you find most useful today?
2. Are there unmet needs we could help you address with additional development work?
3. Are there technologies we could/should consider integrating into our platform?
4. How can we effectively feed data back to researchers using our platform?
5. Do you know researchers at Hopkins who could use our platform?