Today’s topics

- Trevor Perrier, SMS
- Phone messaging
- Messaging technologies
- Example Projects
- Messaging studies
- Adherence
- Health information systems

Readings and Assignments

- SMS For Life
- WelTel Study
- Iron Tablet Adherence Study
- Homework 6
  - Design an SMS syntax for cold chain reporting

Organization

- Patient support
- Treatment support
- Worker support
- Behavior Change Communication

Patient Support

- Messaging
  - Spam
  - Reminders
  - Interaction
  - Adherence messaging
- Adherence (other than messaging)
- Information services

Phone Messaging

- Different types of messaging
  - What is the intended behavior to be influenced
  - What is the theory of behavior change
- Health knowledge
- Promotion of a specific activity
- Reminder of action
- Interaction with health system
Adherence

- Medication
  - HIV ART
  - Tuberculosis
  - Diabetes
  - Iron Pills
- Lifestyle
  - Diet
  - (Not) smoking

Obstacles to Adherence

- Why do people stop taking medication?

Reminders

- Appointment reminders
  - ANC visits
  - TB Testing
- Immunization reminders
- Long term birth control

Technology

- SMS, Voice, Smartphone Apps, Social Media

Personal mobile phones

- Mobile phones have tremendous reach, but
  - Vast variety in different situations
  - Rapid change

Mobile Phone Issues

- Handsets
  - Generally available, prestige good
- Airtime
  - Prepaid. Costs vary dramatically
- Signal
  - Widely available, spotty coverage, no coverage
- Electrical power
  - Depends on the electrical grid
- Simcards
- Monopolies
Mobile Phones and Gender

- Phone ownership models
  - Shared across household (less common)
  - Household phone
  - Individual phones
- Common practices
  - Men have better phones than women
  - Children have access to mothers phone

SMS

- Available on almost all mobile phones
- Restricted message length
- Highly variable cost
  - Although essentially no cost for carrier
- Highly variable usage
  - Different populations and countries
- Gateway Issues
- SPAM!

Voice

- Universal on phones
- IVR – Interactive Voice Response
- Automated calls with recorded messages
- Callbacks triggered by missed call

Smartphone Apps and Social Media

- Applicability depends on demographics
- Rapid change
- For global health, often an emphasis in reaching late adopters

Example projects

- Walter Curioso
  - Early work in SMS reminders in Latin America
    - Voxiva
  - Messages aimed at high risk populations to influence behavior
  - Many issues around confidentiality and privacy
Free msg. Morning sickness may be caused by a change in your hormones. Try eating crackers or dry cereal. Eat small meals often. Don’t go without eating.

**Mobile Technology for Community Health (MOTECHEL)**

- Platform developed by Grameen Foundation with support from BMGF
  - Motechsuite.org
- Evolving platform
- Significant deployment through BMGF grantees in Bihar
- Initial work in Ghana

**MOTECH Architecture**

- Initial deployment in Northern Ghana
- Early version of Motech developed to support deployment
- Maternal messaging and phones for nurses

**Lessons learned**

- Phones for nurses
  - Phone management and logistics
  - Nurses did not feel the phones helped them in reporting
- Messaging
  - Voice, not SMS
  - Tremendous challenges in localization
  - Expense for translation
  - Cost and sustainability challenges
  - Significant formative work in identifying needs

**Evaluation Studies**

- Very different approaches to evaluation based on discipline
- Medical evaluation
  - Define intervention
  - Construct study design
  - Enroll study subjects in different arms
  - Conduct study without further intervention
- Computer Science
  - Develop technology with initial field tests
  - Deploy technology in field with iterative adjustments
  - Analysis of multiple sources of ad hoc data from deployment
  - Promote large scale deployment or use
WelTel Study

- HIV Patients on ART
- Simple intervention
  - Send patients a weekly SMS: Mambo
  - Patients respond: Sawa/Shida
- Measured outcomes
  - Self reported adherence
  - Viral suppression

Adherence to Iron Pills

- Evaluate if voice messaging improves adherence to taking pills
- Study goal – evaluate mHealth intervention with measurable health outcome
  - Anemia is highly prevalent for low income women in India
  - Simple treatment – iron pills
  - Measurable results – Hemoglobin test

Sian Hospital Study

- High anemia rates, low utilization of iron pills
  - Pills available for free, but 70% of women fail to take them
    - Forgetfulness, dislike of pills
- Intervention
  - Recorded voice calls from doctor
  - Three messages per week in local language
  - Positive, affective messages

Results

- Slight positive results, treatment superior to control, but not statistically significant
- What went wrong
  - Study failed to enroll sufficient number of subjects who completed study
  - Difficulty in following up to get final Hb
  - Early subjects had to be de-enrolled due to poor quality Hb measurements

On PubMed and IEEE Xplore, we included all studies that contained both an adherence keyword and a phone keyword in the title or abstract, with at least one of the keywords appearing, in the title: adherence, treatment, follow-up, compliance, “compliance”, and “compliance”. For phone-related keywords, we used “phone”, “telephones”, “interactive voice”, “voice response”, “automated calls”, and “automated voice.”
Adherence
• Direct Observation Therapy

TB Drug Distribution
• Fingerprint scanning in drug distribution

SMS Reporting
• Send confirmation code associated with each pill

Pill box notifications

Health Information

Awaaz De
Health Line, Pakistan

- Voice based health information system
- Target low-literate users

- Speech recognition research challenges

Next week

- Treatment Support