Mobile Technology for Health Systems Strengthening
University of Washington, Computer Science and Engineering
- On faculty since 1986
- Professional interests
  - Computing for low resource environments
  - Educational technology
  - Pen Based Computing
  - Algorithms
- Sabbatical at PATH 2009-2010

Research projects
- Digital StudyHall
- Software to support the vaccine cold chain

CSEP 590b, Computing and Global Health
- Wednesdaym 6:30-9:20 pm
- anderson@cs.washington.edu
About PATH

- Seattle based NGO working in health technologies
- Program for Appropriate Technology in Health
- Approximately 1000 employees world wide, 400 in Seattle
- Focus areas:
  - Maternal and Child Health
  - Reproductive Health
  - Immunization
  - Infectious diseases
  - Safe Water
What is the role of mobile technology?

- Service delivery
- Health system strengthening
- Public health
  - Changing health practices

### Health System Domain

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Growing Beyond Pilots

- Large number of small, short term projects
- Critique: too many pilots
- What does it take to establish and sustain a technological intervention?
Health Systems

- Public health bureaucracy
  - Ministry of Health
  - Regional offices
  - Highly structured and political
- International organizations
  - UNICEF, WHO
- Donor funding
  - Large scale
  - Often narrowly focused
- NGO’s
Technology Landscape

- Rapid technological change
- Digital divides
  - North – South
  - Urban – Rural
- Internet infrastructure
- Technology workforce
- Of course, cell phones are everywhere
  - Cell phone coverage
  - GSM/GPRS/…
  - Pricing issues
Sustainability

- Systems with sufficient benefit that someone is willing to cover costs
- Business case
  - Benefit must align with funding
- Total cost of deployment
  - Up front costs
  - Ongoing
    - Airtime, maintenance, tech support, upgrades, losses, training, licensing, ...
Data Collection

- Data sent from mobile device to central server
- Multiple technologies
  - Custom SMS messages
  - Java applications
  - GSM/GPRS
  - Smartphones, ODK
- Many business processes
  - Stock reporting
  - Case reporting
  - Surveillance data
HISP/Punjab mobile phone deployment

- ANM – Auxiliary nurse midwife
  - 1 or 2 ANM’s per subcentre (5000 people)
  - Maternal and child health
  - Regular reporting
- 5000 phones deployed by Punjab State and HISP India
- Java application communicating by SMS to a server
- Integrated into state reporting system DHIS
Health workers not permitted to treat patients
- CHW, ASHA, VHV, ...

Tracking pregnancies, promoting health practices, identifying disease suspects, collecting information

Mobile applications
- Job aids, data collection, supportive supervision

Technology issues
- Usability, low cost phones
Household Visit Support (ANM)

- **Midwives**
  - Conduct household visits
  - Perform medical tests
  - Prescribe medications
  - Provide Treatment

- **Basic care**
  - ANC: Antenatal Care
  - PNC: Postnatal Care

- **Mobile device intervention**
  - Clinical protocols
  - Data collection
  - Diagnostics
  - Education
Mobile Midwife Project

- Mobile device to assist midwives
  - Decision support and visit check lists
  - Data collection
  - Videos for maternal education
- Smart phone application
  - Android phone with Open Data Kit
- Partners
  - ARTH, Action Research and Training for Health
  - University of Washington
- Support existing PNC program
Education and Persuasion

- Promote behavior change and adoption of practices
- Maternal and child health focuses on small number of interventions
  - Taking iron pills
  - Exclusive breast feeding
  - Keeping babies warm
  - Promoting institutional delivery
  - Birth preparedness
- Mobile Interventions
  - Multimedia playback
  - Reminders
  - Community building
  - Spam
Other applications

- Diagnostics
- Medical devices
- Decision support tools