Mobile Phones for Health
Applications in the Health Sector
Andrew Erbs - mHealth and Communications Specialist
What is mHealth?

Susannah Fox, Associate Director,
Pew Research Center's Internet & American Life Project
The History of mHealth?
Defined by Prof. Robert Istepanian

● Biomedical Engineer in 2003
● Referring to Sensor Technology

● Now trending towards...
  ● Voice
  ● Short Message Service
  ● Remote Diagnosis
  ● Remote Sensing
What is mHealth?

Logistics Support

- Supply Chain Management
- Tracking Stocks of Pharmaceuticals
- Verify authenticity of Medical Supplies
- Support medical evacuations
What is mHealth?

Remote Monitoring

- Sensors for monitoring vital signs
- Wireless reporting over distance
- Real Time Alerting to medical services
What is mHealth?

Point of Care Support

- Guidance for healthcare workers
- Walkthroughs for procedures
- Reminders for tests
- Access to best practise
What is mHealth?

Data Collection

- Health Surveys on general population
- Streamline and aggregate reporting
What is mHealth?

Treatment Adherence

- Reminders to take medication
- Return to clinic for follow up
- Tailored health messages
What is mHealth?

Training and Professional Development

- Access to content rich training materials
- Regular updates via SMS on best practise
What is mHealth?

Education and Awareness

- Message blasts for awareness messages
- Support behaviour change in population
- Opportunity to reach out to remote populations
What is mHealth?

Disease Tracking

- Leverage geolocation functionality
- Improved epidemiological monitoring
- Support vector control programs
Why do M4D projects succeed?

- They work with organizations that are already functioning, supporting existing service delivery.
- Users are involved from the start in the design, development and innovation process in a continuous feedback and quality improvement process.
- Projects are designed on a sound business model to support ongoing costs.
- Projects 'coded in country' to enable ongoing support.
Why do M4D projects fail?

- Projects originate externally
- Lack of local technical skills
- Costs are underestimated
- Costs / design is unsustainable
Why do M4D projects fail?

Mobiles and ICT are merely an enabler that can support existing capacity and enhance services.

If service delivery / management / monitoring / reporting isn't happening already:

**a mobile phone will not fix it**
So why consider using M4D in your programs?

- Mobile phones are the most rapidly adopted piece of technology in human history.
- The spread of mobile phones into even the most rural of areas opens up new ways for projects to communicate with their audiences.
6 billion mobiles - 7 billion people
Feature phones vs. smart phones

- **Basic Phones**
  - Simple, can make calls and text

- **Feature Phones**
  - Same functions as a basic phone
  - Has internet access and simple browser
  - Camera and maybe audio recording + playback

- **Smartphones**
  - Same as a functions as a feature phone
  - High resolution display and advanced processor
  - Applications, video, audio, camera and GPS
It's important to keep the regional context in mind when designing projects.

Each country's mobile network infrastructure is unique.

Telecos are the gatekeepers to the flow of information though the networks.
mHealth tools

- **FrontlineSMS**
  Flexible, open-source two-way texting tool

- **Freedom Fone**
  Open-source Interactive Voice Response (IVR)

- **Mobile Medic**
  - Mobile health solutions using two-way text and mobile data collection

- **RapidSMS**
  - Powerful, scalable, two-way text platform
  - Suited for high volume programs
### Medic Mobile

*Image of a screenshot from the Medic Mobile application showing a list of patients with their names, birthdates, and CHW names.*

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<th>Name</th>
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<th>ID</th>
<th>CHW</th>
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M-Pedigree and PharmaSecure

■ Working to combat counterfeit medication.
■ Uses SMS to 'verify' authenticity

■ Requires electricity or charging device
■ Requires mobile coverage
■ Requires credit on the user's phone
■ Requires literacy of the user
Mobile Midwive - Grameen Foundation

MOTECH - Ghana

- Focus on maternal and neonatal health
  - MDG4 - Reducing infant mortality
  - MDG5 - Improving maternal health
- Targeted awareness messages delivered via voice and text to the family's mobile phone in local language.
- Extensive research into messages delivery, tone of voice, gender and origin of speaker.
- Concurrent mobile patient information program to support midwives, nurses and health workers.
What can I do to take advantage of mobile in my project, program or business unit?

Questions to ask yourself...

- Who's your audience and what's your goal?
- What's the timeframe or budget for implementation?
- Are you seeking quantitative or qualitative data?
- Are you expecting staff to use personal mobiles?
- Will you 'incentivize' reporting (be beware)?
- Do you have the people power to maintain and support?
Working with telecommunications service providers

- First thing - start talking early
  - Remember - relationships are everything
  - Bulk SMS can become very expensive
  - But don't ask for free SMS just yet...
  - Base negotiations on 0.03 cents for SMS
  - Keep thinking about how to scale nationally
Lessons learned

- Build a strong coalition of partners
  - Develop partnerships between organisations

- Link to a strong evidence base
  - All programs should have an M&E plan

- Align to standards and existing systems
- Share lessons learned and best practise
- Link to the reality of each country / division / province
Challenges

- Many players with a range of different interests
- Clear need for collective action
- Need to develop evidence base through M&E
- Need to drive standards for interoperation
- Sustainable funding models
- Capacity building at a local level
- Lack of policy around
  - Privacy
  - Standards
  - Security
Opportunities

- Leverage existing policy development around eHealth services in Australia, America, Europe and UK.
- Link with existing non communicable disease programs in operation
  - Diabetes
  - Hypertension
  - Healthy lifestyles
  - Gamification
- Share innovation in healthcare service delivery
  - Example - citizen centred healthcare
What's next in M4D?

Mobile power systems

- Bike power systems
- Low cost solar panels
What's next in M4D?

Machine learning

- Natural language processing
- Making sense of free text data
- Use of machine learning
- Making sense of large amounts of unstructured data
What's next in M4D?

MMS diagnosis

- Intracellular imaging
- Blood sample taken
- Shine LED light through
- Capture holographic image
- Transmit image via MMS
- Database compares incoming image to cell library
- Auto diagnose of malaria, full blood count, certain STD's
- Perhaps HIV, TB diagnosis....
What's next in M4D?

SMS made easy - FrontlineSMS

- Message blasting
- Interactive audience
- Workflow management
- Contact coordination
What's next in M4D?

Mobile money

- MiPESA
- $10 Million USD in transfers every day
- 100 other new platforms in last 12 months
- Underpins payroll for health workers
- Conditional cash transfers for patients
- Micropayments - ie. for pregnancy, etc
What's next?

- Gamification and public health
  - Make healthy living fun
  - Define goals to build towards
  - Links with social networking
  - Rewards healthy habits
What's next?

- Consumerification of mHealth
  - Nike Plus and Fuelband
  - Fitbit One and Ultra
  - Jawbone Up