mHealth: from the Lab to the Patient

Linkage solutions for MDR-TB in South Africa

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NHLS: a vital link

- CHC/PHC
- Primary Health Care Nurses
- Doctors
- Injection teams
- Contact tracers
- MDR-TB treatment initiation sites
Primary aim (overall)

MDR-TB mHealth in South Africa

To develop a comprehensive mHealth solution to improve linkage to care for RIF (R) patients identified by GeneXpert technology to ensure their rapid access to appropriate MDR-TB treatment.
MDR-TB patient flow

PHC → GeneXpert → Patient Registered

Patient Returns → RIF resistant → 2nd sputum

Patient counselled and sent home with mask

Sub-District TB coordinator
- Appointment at MDR-TB Tx site
- Patient informed of appointment

Total TAT = 5 days

± 3 days

± 5 days

Source: L.E. Isherwood
# mHealth interventions

## Automated messaging and reporting of MDR-TB

1. **Bi-directional SMS printers**
   - **Active**

2. **MDR-TB “TTIA”**
   - **Time-to-Treatment Initiation APP**
   - **November 2014**

3. **Emocha (M&E)**
   - **November 2014**

4. **M4JAM (Micro-jobbing)**
   - **New**
Bi-directional SMS printers
SMS bi-directional printers

• Phase 1: 2096 Health Care Facilities ✓
• Phase 2: 90 Correctional Services (60)
• Phase 3: All Health Care Facilities ✗
Connectivity “Big Brother”
Challenges
MDR-TB “TTIA”
(Time-to-Tx Initiation APP)
MDR-TB TTI: COJ & Ekurhuleni

With compliments: Floyd Olsen
Work flow for TTIA

1. GeneXpert (RIF R)

2. PHC clinic receives SMS & MDR-TB site receives an early warning

3. Patient alerted to return to PHC

4. TB coordinator alerted

5. Patient arrives at MDR-TB Tx initiation site

Monitor time to treatment initiation (TTI)

Schematic work flow for “TTIA”
Aim & reporting

AIM:
Provide stakeholders with the TAT of treatment access from date of diagnosis

Reports to pre-defined list of recipients
Study progress

• APP designed
• PDA (tablet/smartphone) interface designed
• 14 x Nexus tablets on order
• NHLS-TLC (engineers) agreement finalised
• Implementation aimed for November 2014
Clinicians & Researchers

Mobile Apps
data capture, communication, education, and enrollment

Web Interface
data visualization, analysis, and management.

Clinical Data Sources
multiple data sources integrated as needed

Patient

emocha
MOBILE HEALTH INC.
Intended workflow for automated component of mHealth Solution

1. Sample collection in clinic
2. Lab-based GeneXpert
3. Existing NHLS LIS Connection
4. Server
5. MDR-TB patient table
6. Secure, bi-directional web service interface

Weekly mHealth reporting
- National Coordinators
- Provincial Coordinators
- District Coordinators

In-time mHealth reporting
- District Tracer Team Coordinator
- NIMDR nurses

Data integration
ETR.net & EDR.net

MDR-TB Tx initiation site
- Healthcare worker
- Tracer Team
Plan to roll-out to all MDR-TB facilities across all 9 provinces

- Ugu District, Kwa-Zulu Natal
- Murchison Hospital (first site)
- Peripherial primary health care clinics
- Contact Tracers
- Injection Teams
- Patient
- Implementation commences: October 2014
Challenges identified at site visits

- Work overload at health facilities (High volumes of work/little staff)

- Frequent movement of patients: multiple registrations in TB registers

- Lack of unique patient identifier across all health facilities (SA-ID highly recommended)

- Limited MDR-TB initiation sites

- Poor communication between treatment initiation sites and down-referral clinics

- Lack of efficient hospital filing systems (in some facilities)
Other challenges

• Biggest problem that prevents implementation programs is that staff do not take responsibility within their facilities.
• There should be accountability by all staff.
• Phone/tablet must be linked to a clinic. Devices disappear.
• Sustainability of projects through funding.
• Viruses infiltrate into IT equipment.
• Unauthorised access to patient information.
• **Functionality in clinic:** need a smart device and a system where nurse gets a secure SMS (patient confidentiality).
Study progress

• Global Funding received: as from September 2014
• DoH agreement in place for Murchison Hospital
• MDR-TB hospital staff are fully aware of the project
• MOU between NHLS and emocha finalised
• IP address has been secured
• First ‘proof-of-concept’ data exchange completed
• TTI APP fully developed by emocha
• Emocha due to arrive beginning of November 2014 for implementation planning
• Plan: TTIA, followed by M&E APPs
• Step-wise implementation throughout all 9 provinces
Community involvement through incentivization

- **The Market: specific to South Africa**
  - Official unemployment is 25.5%,
  - 69.2 mill active SIM cards
  - 32.9 mill people with some form of telephone
  - 14.1 mill smart phones (estimated)
  - Data cost declining, free WIFI penetration increasing
  - Advertising & market research on the decline
  - Tougher legislation changing the landscape for marketers
  - Social engagement continues to grow
  - Chat based platforms: highest levels of engagement

**Micro jobbing can be the game changer for Developing Markets**

Courtesy: Wendy Stevens, National Priority Programme Unit, NHLS
Expert networks (overall)

Assessing gaps in TB treatment access and adherence
EDR/ETR.net integration
Database development of all TB facilities

Proposed by L. Isherwood: National mHEALTH & eHEALTH Task Team in South Africa

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