CREATING AN INTER-ORGANIZATIONAL ELECTRONIC HEALTH RECORD IN KIBERA

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AGENDA

Background
Research Case and Methods
Challenges
  Legal
  Technical
  Organizational
  Inter-organizational
Future Directions
BACKGROUND

- Health record as constitutive of medical practice (Berg, 1996)
- Electronic medical record has received significant focus in recent years (Berner, Detmer and Simborg, 2005)
  - Improved chart legibility, availability, organization, information, functionality (Miller and Sim, 2004; Sood et al, 2008)
  - Reduced medical error, increased quality of care, positive financial returns (Fraser et al, 2005; Holroyd-Leduc et al, 2011; Wang et al, 2003)
  - Encounter challenges in implementation (Were et al, 2010; Williams and Boren, 2008)
- Little research looking at the use of electronic medical records to link independent clinics in resource-constrained settings
RESEARCH CASE

- Implementation of an EHR in Kibera, Kenya’s largest slum, located in Nairobi
- Kibera’s health care needs served by more than 90 mainly independent clinics (Saleh, Isaac, and Jawhari, 2011)
- Project objectives:
  - Integrate clinics through referral to improve utilization of existing healthcare
  - Integrate with a GIS to leverage data to better predict health trends
  - Leverage data to provide improved insurance to Kibera residents
- Locally-supported, self-sustaining model
Proof of Concept
RESEARCH METHOD

Ethnography
  - Participant Observation
  - Document Analysis
  - Interviews (to come)

Research Ethics
  - Approval from local institution in Nov 2012
  - Approval from Kenya May 2013

Timeline
  - November/December 2012 – Implement EMR (local) at Clinic C
  - January/February 2013 – Infrastructure setup for Clinics A and B, implementation delayed
  - June 2013 – Implementation Clinic A and B
LEGAL CHALLENGES – DATA PRIVACY

- Section 3.6.6 of Kenya’s Health Information System (HIS) Policy (2009) states that, “while the records (the documents or disks) are unequivocally the property of the practitioner or institution, the data is not.”

- To ensure that movement of health data is well documented, the HIS Policy will be enforced to ensure that (p. 11):
  - All the health and health related data and information shall belong to the Government of Kenya (GoK).
  - GoK shall grant right to access health and health related data and information through the defined protocols.
  - Personal data as inpatient records are in reality the property of the facility and are held in trust on behalf of the patients. All patients shall have access to information contained in their health records upon request or whenever it is considered to be of benefit to the patient.
DATA OWNERSHIP/PRIVACY – SOME SOLUTIONS

Considerable upfront work with Government of Kenya to gain approval

Draw upon “best practices” from Canadian jurisdiction

Work with clinics to establish organizational policies and practices

Retain central control of user management and security practices (at least in early stages)

Increase system auditability

Strong protection of server
TECHNICAL CHALLENGES – UNIQUE IDENTIFIER

Required to ensure that patient care data is accurately linked to the correct patient, reducing the possibility of medical error due to inaccurate data and protecting against breaches in patient confidentiality (Lobach and Detmer, 2007).

Each clinic has own patient identifier (and sometimes multiple)

No unique identifier nationally except National Identity number

- Connecting sensitive health data to National Identity number viewed with suspicion
- MOH is currently investigating but expect this to take significant time

Software could auto-assign but this assumes continuous Internet/power connection which cannot yet be guaranteed
UNIQUE IDENTIFIER – CURRENT DIRECTIONS

No unique identifier at present
- System is capable of managing multiple identifiers so can move without this

Meeting with various health organizations who offer some partnership opportunities

Working with implementing clinics to define organizational practices around identifying patients without the unique identifier
TECHNICAL CHALLENGES – INFRASTRUCTURE

- **Power**
  - Clinics A and C have generators, Clinic B does not

- **Internet**
  - Clinic A had existing Internet but small bandwidth
  - Clinic C had tightly controlled mobile data stick
  - Clinic B had no Internet

- **Cloud Hosting**
  - Strong security
  - Reliable
  - Inexpensive
  - In-country hosting
INFRASTRUCTURE – CURRENT DIRECTIONS

Power
- Generators
- Downtime procedures with paper backup and posthoc data entry

Internet
- Dependent upon size of clinic
- Clinic A is upgrading dedicated Internet line, other smaller clinics are piloting the use of mobile broadband routers (3G)

Cloud Hosting
- Original intent was to strike partnership with large ISP who have hosting capabilities (either full host or just rack space)
- Currently partnered with a private organization that provides server and technical support to a number of organizations including local banks
ORGANIZATIONAL CHALLENGES – PROCESS – SOFTWARE MISALIGNMENT

- Differences driven by size and volume of clinics, clinic funding source, healthcare service differences, existing infrastructure, physical space

- Software still pliable so this has been less problematic, as well only one clinic has been implemented

- Current Directions:
  - Participation in existing design
  - Prototypes and small releases
  - Close working relationship with clinics and their management
INTER-ORGANIZATIONAL CHALLENGES

Currently, ICChange and AAH-K serve as implementing partners and central project control

Eventually, need to move to different governance structure
- Manage and maintain software
- Decide on which clinics can be in network
- Work with government and other agencies
- Enforce data privacy policies

Current Direction
- Increase network of clinics to improve economies of scale
- Partnering with local university to build capabilities
- Partnering with local IT organizations to develop system knowledge
FUTURE DIRECTIONS

- Agile project management
- Network organization
- Frugal IS principles (Watson, Kunene and Islam, 2012)
- Bricolage (Levi-Strauss, 1966; Baker and Nelson, 2005)
- Agile organization