THE E-HEALTH JOURNEY

Ministry of Health Jamaica

Optimizing the use of ICT Applications in Health and Patient Care
8th Caribbean Conference on Health Financing Initiatives

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Director, System & Information Technology Unit

November 13, 2013
1 The EHR and Benefits
The Electronic Health Record (EHR)

- A longitudinal electronic record of patient health information
- Any care delivery setting – Hospital / Health Centre / PP
- Patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports.
- Automates and streamlines the clinician's workflow
- Generate a complete record of a clinical patient encounter
- Supports quality management and outcomes reporting.

- Health Information and Management Systems Society (HIMSS)
A Simple Electronic Health Record System

- Patient ID Registration ATS
- Clinical data treatment orders/results, OPD visits
- Lab/haem/Path/Biochem/etc. Radiology
- Disease Classification and indexing
- Scanned documents / previous medical records
Core EHR Benefits

• Replace/supplement paper-based medical records which can be incomplete, fragmented (different parts in different locations) and hard to find.

• Provide a single, secure, shared, up to date, accurate, rapidly retrievable source of information, potentially available anywhere at any time; continuity of care.

• Improved safety of patient care

• Improved accuracy & timeliness of reporting for Health Information System
Health Information System

• A system that integrates data collection, processing, reporting, and the use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of health services. (WHO, 2004).

• Electronic patient records system lies at the centre of any computerized HIS (i.e. building block).
Outline

2. EHR Challenges
Critical Points in EHR Design & Implementation

• Start small – identify the core EHR module then build over time

• EHR data collection:
  – Electronic data entry is more about typing proficiency than computer literacy
  – Use of structured data to support HIS reporting
Critical Points in EHR Design & Implementation

- Must involve both users and managers
- Involve external stakeholders
- Change management for successful adoption of technologies in Health
- The “Unique” identifier
- The pros and cons of a centralized vs distributed system
- Affordable and sustainable solutions
Critical Points in EHR Design & Implementation

Information Governance:
The processes, functions, standards and technologies that enable high quality information to be created, stored, communicated, **valued and used effectively and securely** in support of an organization’s strategic goals.
Information Governance Issues

• Privacy, Security & Confidentiality
• Data sharing – interoperability standards
• Data integrity
• Data quality
• Data Access Control
Data Privacy

• Controlled **access** to personal health information and requires the **consent** of the individual about whom the information is relevant. It is related to the “who”, “what” (**to what extent**) and “why” (**for what purpose**) and “when” of access to and use of personal health information.
Data Confidentiality

• The disclosure of personal health information, with the consent of the individual about whom it is relevant, for the intended use only.
Data Security

• Proactively manage security risks by effectively identifying and prioritizing threats and rapidly address vulnerabilities.
Critical Points in EHR Design & Implementation

• Data Standards & Interoperability—provides common meaning, so that information within the data fields can be used intelligently
  - (The US National Committee on Vital and Health Statistics)

• Supports using, sharing and exchanging data

• Useful for medical & health tourism
Health Information & Technologies Steering Committee

• a.k.a. HIT or HITS
• Appointed by the P.S. of the MOH
• Mandate to strengthen & modernize the NHIS
• Provided leadership, coordination & assessment
• Multi-agency & multi-disciplinary representation – public and private sectors, health and non-health agencies
• Lifespan - 1 April 2010 to 3 Sept 2013
Evaluation of Existing Electronic Information Systems

• Multi-agency evaluation team
• The objective – to determine the usefulness of the system for the future & lessons learnt
  – Laboratory & Blood Bank
  – Patient Administration System
  – Order Communication System
  – Environmental Health
  – Mental Health
The Key Strategies

1. Scientific approach – Health Informatics
2. Involvement of wide range of stakeholders
3. Systematic & Phased approach – Health Metrics Network:
   – National Health Information System (NHIS) Assessment
   – NHIS & e-Health Strategic Plan
4. Free & Open Source Software (FOSS)
THE MOH APPROACH

HEALTH INFORMATICS
What is Health Informatics?

- The application of information technology to facilitate the creation and use of health related data, information and knowledge.

- The intersection of Healthcare, Health Information Management, IT PLUS Change & Project Management

Source: Canada’s Health Informatics Association
THE MOH APPROACH

STAKEHOLDERS’ INVOLVEMENT
Major Stakeholders

Fiscal Services Limited
Planning Institute of Jamaica
Ministry of Science, Technology, Energy and Mining
Central Information Technology Office
The University of the West Indies at Mona, Jamaica
National Health Fund
Clinton Foundation
World Bank
Pan American Health Organization
Medical Association of Jamaica
Universal Service Fund
e-ljam
THE MOH APPROACH

HEALTH METRICS NETWORK
The Basis for the NHIS Assessment and Strategic Planning ....

The WHO | Health Metrics Network Framework and Standards
Jamaica NHIS Assessment 2011 - Results

Average scores for HIS Components (%)

- Dissemination and use: 63%
- Information Products: 67%
- Data Management: 48%
- Data Sources: 61%
- Indicators: 74%
- HIS Resources: 47%
HIS Resources

Policy and Planning: 39
Institutions, HR, Finance: 41
Infrastructure: 58
Overall: 47
Phase 1
Leadership, Coordination & Assessment

Leadership
Coordination
Assessment

Phase 2
Planning and Priority Setting

Vision
Strategic Plan
Implementation Plan & Budget
Secure Funding

Road Map for Country Implementation

Phase 3 Implementation of Country HIS Strengthening Activities

Data Sources
- Census
- Civil Registration
- Population Surveys
- Individual Records
- Service Records
- Resource Records
- Routine and Non-Routine Data Collection Activities

Integrated Health Information System

Extract, Validate, & Integrate Data

Dashboard, Reports, Queries, Events & Alerts

HIS Actors Using Evidence for Decision Making
- Senior Country Official
- National Public Health Official
- International M&E Officer
- District Health Manager
- Senior Country Official
- Facility Health Officer
- Etc.

Policies, Resources and Processes
The Seven Strategic Objectives

1. Governance, change management & communication
2. Legislative, ethical, regulatory and policy frameworks
3. Health Information Management Re-organization
4. Data management & quality
5. Software & other technologies
6. National Health Information Network – ICT infrastructure
7. Information dissemination and use
NHIS Strengthening & e-Health Strategic Plan 2014-2018
Guiding Principles

- Small is Beautiful!
- Patient-centric
- Sustainable
- Ethical Use
- Collaborative
- Cost-effective
- Standards-based

Patient-centric

Small is Beautiful!

Sustainable

Ethical Use

Cost-effective

Standards-based

Collaborative
### Expected Outcomes

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<th>Improved</th>
<th>Reduced</th>
<th>Improved</th>
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<tr>
<td>- Continuity of care</td>
<td>- Healthcare delivery costs</td>
<td>- Access to quality data:</td>
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<td>- Quality of care</td>
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<td>- Mortality/Morbidity</td>
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<tr>
<td>- Privacy compliance</td>
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<td>- Utilization</td>
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<td>- Access to shared &amp; protected patient data</td>
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<td>- Access</td>
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<tr>
<td><strong>Citizen trust!</strong></td>
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<td><strong>To support:</strong></td>
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<td>- Planning</td>
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<td>- Decision-making</td>
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SO#5: Major e-Health Initiatives

- Implement core systems & prioritize for specialty IS
- ePAS as core EHR module for continuity of care and provide information for planning, policy and decision-making
SO#6: National Health Information Network

- ICT infrastructure design & standards
- Secure, robust, scalable & redundant
- IT Human resource capacity
FREE & OPEN SOURCE SOFTWARE
FOSS Selection Methodology

• Wide online search:
  – MEDFLOSS
  – SOURCEFORGE
  – OPEN HEALTH TOOLS
  – US Open Source Systems for Public Health Webinar
  – Canadian Health Informatics Consultant
FOSS Selection Methodology

• Criteria for selection of FOSS:
  – Organized FOSS community with a solid “raison d'être”
  – Designed for both PHC and Hospitals
  – Standards-based
  – FOSS Support – local vs overseas
  – High usability (user-friendly interface)
FOSS Selection Methodology

• The FOSS “Pros” & “Cons”
  – Maximize FOSS “pros”
  – Explore low-risk options for FOSS “cons”
FOSS Opportunity

- GOJ FOSS Migration Study to develop framework for FOSS
- MOH is one of 3 Migration Study Pilot Sites
GNU Health as our FOSS

• Selected from among 8 solutions
• MOH/RHAs open interaction with GNU Solidario addressed high level issues over a 16-month period (May 2012-Aug. 2013)
• GNU Solidario Community – NGO/Non-Profit:
  – Confidence with organized FOSS Community
  – Established in global e-Health arena
• Has EHR modules already developed and may form the basis of future modules for MOH
MOH - GNU Solidario MOU

- Two-year period (began Sept 16, 2013)
- GNU Solidario to provide customization & training to implement GNU Health as ePAS
- Develop capacity for support within MOH
- Develop training capacity through MOU with UWI
- Develop support capacity of Jamaican IT firms
GNU Solidario Mission to Jamaica
GNU Health FOSS Main Features

• Primary Care & Hospital Information System
• Health Information System (Statistics)
• Enterprise Resource Planning (ERP) platform (Tryton)
• Open Standards – e.g. International Classification of Diseases (ICD-10) of WHO
• Native HL7 compliance (Jan 2014)
• Web client (Nov. 10, 2013)
• Android Client
MOH FOSS Selections for GNU Health
Post GNU Solidario Mission

• Weekly electronic meetings GNU Solidario & MOH
• Established online collaboration tools
• Core implementation team (MOH & RHAs)
• Three Work Groups:
  – Technical
  – Programming
  – Functional
GNU Health Continuing Updates

GNU Health 2.0
Free Health and Hospital Information System

GNU Health v2.2.0
New Version GNU Health 2.2.0!
New functionality, bug fixes and new modules (Dengue and Diagnostic, Imaging Tests)

UNIVERSITY
Summary of Major Activities

• Health Information & technologies Steering Committee (2010-2013)
• Evaluation of existing electronic Information Systems (2010-2012)
• National HIS Assessment (July 2011)
• National HIS & e-Health Strategic Plan 2014-2018 (Dec 2012)
• e-Health Pilot Project (2013-2014)
• GNU Solidario (FOSS) Mission (Sept 16, 2013)
• Committee for Monitoring the Implementation of Information Systems for Health (MIISH) (Nov 2013)
Key Lessons

1. Utilize established scientific disciplines and evidence (Health Informatics)
2. Include stakeholders fully & early
3. Collaborate with experts broadly
4. Know the truth re the evolution of FOSS
5. Keep It Simple & Safe (K-I-S-S)
6. Evaluation of electronic Information Systems
Key Lessons Based on Guiding Principles of the Strategic Plan

- Small is Beautiful!
- Sustainable
- Cost-effective
- Collaborative
- Standards-based
- Ethical Use
- Patient-centric
- FOSS
- Continuity of care
- Policy/Legislation
- Stakeholders
- National/International

ePAS
"Information is 'the **lifeblood** of medicine' and health information technology is destined to be 'the circulatory system for that information.'"

—David Blumenthal, MD, Former National Coordinator for Health Information Technology
Thank you for your attention!