Health Management Information System (HMIS)

Tamil Nadu Health Systems Project

Pankaj Kumar Bansal I.A.S.
Project Director
HMIS project

- World Bank aided project
- Hospital Management System (HMS)
  - Pilot – covering 5 hospitals
  - Phase 1 – 5 districts covering 38 hospitals
  - Phase 2 – rest of districts covering 222 hospitals
- Health Management Information System (MIS)
  - Unified Health reporting system across all Directorates – DME, DMS, DPH
Highlights

- The Largest healthcare implementations in India (currently 41 hospitals online)
- Centralized web based solution
- Scalable Solution on fully open standards technologies
- Comprehensive Hospital Management System and a State wide unified Health Reporting System
- No data entry support
Hospital Management System

- Modules
  - Registration, Inpatient, Medical Records, Lab, Pharmacy, Stores, Blood Bank, Diet, Linen, Biomedical Waste Management

- Implemented in 41 hospitals
  - 12.6+ Million Patients registered to date
  - 6.5+ Million Patient Medical Records online
    - 20,000 Patients/Day cycled through system currently
  - 2000+ Users Trained
    - 400+ Doctors; 100+ Pharmacists
    - 200 Hospital Workers, 600+ nurses
Features of HMIS applications

- Unique identifiers for Hospital, patients, users
- Simple, user friendly forms
- Alerts for end users
- Provides for patient referral across the health chain
- Online health records – ease of retrieval
- Real time data available (Centralized database) – eg.
  - Drug inventory across institutions
  - Diagnosis, treatment patterns across institutions
- Standardization
  - Reuse of codes – drugs/districts as per other departments in Govt.
  - ICD 10 codes for diagnosis
  - Drug, equipment, Institution, Lab test, etc - codified
  - Standard nomenclature - for names for departments, wards, etc.
Hospital Management System

Sample list of activities handled online

- **Doctors**
  - OP Record
    - Investigations
    - Prescription
  - ANC Record
    - Assessment
    - Prescription

- **Nurses Activities**
  - Ward management –
    - transfer/discharge of patients
    - Diet for patients
    - Linen and laundry management
  - Drug Indents/issues online
  - Biomedical waste management
  - Inpatient details (doctors instructions/handover, takeover, etc.)
  - Injection details
Clinical OP record - alert

Current Medication
1. Glimpride Tab. - 1 mg
2. Metformin Tab. 1 P. - 500 mg Film coated
3. Vit B Complex Tab. NFI (Prophylactic) B1 - 2 mg B2 - 2 mg B6 - 0.5 mg Calcium pantothenate 1 mg (with appropriate overages)
# Consumption Report

**Govt. Hospital, Tambaram**  
03/08/2011 11:52 AM

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Diagnosis Trends

TOP TEN DIAGNOSIS IN JULY 2011

- Upper Respiratory Tract Infection: 31%
- Myalgia: 23%
- Lower Respiratory Tract Infection: 8%
- Osteoarthritis: 7%
- Low Backache: 7%
- Asthmatic Bronchitis: 6%
- Acid Peptic Disease: 5%
- Essential (primary) Hypertension: 5%
- Viral Fever: 4%
- Non-insulin-dependent diabetes mellitus: 4%
Trends in Prescriptions and Investigations

TOP TEN DRUGS PRESCRIBED ONLINE - JULY 2011

TOP TEN LAB TEST ORDERS ONLINE - JULY 2011
Management Information System (MIS)

- Unified Health Reporting system
  - Clinical Information
    - Patient census, Morbidity, Mortality, Patient services, Immunization, etc
  - Ancillary Services
    - Blood Bank, Lab services, etc
  - Administrative Information
    - Buildings, Finance, Personnel, Vehicle, etc
  - Program Information
    - Malaria, Blindness control, etc.
MIS

- Rationalized the input formats to standardize across all 3 Directorates
- Implemented in all 1539 PHCs
  - Fully online since April 2010 for Clinical Module
  - NRHM reports being exported online from HMIS
- Training completed for all DMS hospitals
  - Equipment inventory online
  - Personnel data – data upload in progress
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Issues/challenges prior to automation

Maintenance of Manual Records
- No Outpatient records for patients maintained in hospitals
- Time consuming data entry
- Duplication of data entry
- Huge effort in data consolidation and reports preparation

Reports related
- Periodic reports sent as hard copy
  - Challenge for data analysis/comparison
  - Number of copies sent high
  - Delays in receipt of data

Lack of standard names and codes followed

No real time data available to monitor the performance of the hospital
- Drug inventory/equipment inventory
- Maintenance and tracking of warranty/AMC-more cumbersome
- Current Manpower status

Evidence based program management – lack of adequate data
Impact for Government Health Sector

- Transition into digital record keeping
- Quick Retrieval of patient records
- Online access to information across locations
- Expected Improved delivery – drugs, resources, etc
- Single unified reporting platform across all health directorates in the State
- Collation/consolidation of data – saving in time and effort
- Uniformity and standardization of reporting forms and processes in all directorates
Challenges in Implementation

- Change Management - Mindset of the hospital staff
- Total system transformation
- Mapping existing process and rationalization of input forms for standardization
  - Several iterations
- Infrastructure – connectivity/power
- Training the hospital staff
  - Lack of computer knowledge
Project Strategy

- Multi pronged approach
  - ICT Initiatives
  - Policy Initiatives
  - Process initiatives
ICT Initiatives

- **Application Software development**
  - Centralized Web based application
    - Development and implementation partners- M/s Tata Consultancy Services
  - Application software on Open Source Technology

- **Infrastructure investments**
  - Hardware investments – Servers, Desktops, Printers
  - Connectivity
  - UPS
  - LAN

- **Utilization of Infrastructure investments by State Govt.**
  - State Data Center – for co-location of servers
  - TNSWAN Connectivity – For secure wide area network
Policy Initiatives

- Government infrastructure strengthening
  - Increasing facilities and hospitals to ensure healthcare services available within reach of common man

- Issue of government orders
  - Orders for sustainability
    - Usage
    - Inclusion in budgets for ongoing maintenance, support
  - Removal of Manual records maintenance as soon as online system stabilizes
  - Streamline areas of interventions with suitable reference orders
    - Directorate level orders and follow up communication

- Manpower training
  - Basic computer Training through TNEGA/ELCOT
  - Application training

- Rationalization of manpower
  - Creation of new posts to support ICT interventions
Process Initiatives

- Stakeholder meetings
  - Periodic reviews
  - Follow up on action points
- Helpdesk set up
  - Central helpdesk
  - Protocol established
- IT coordinators at district level
  - Coordinate all infrastructure issues related activities
  - Application support and training as needed
- Motivation to end users – Close monitoring and reviews on online performance/usage by Top Administration team - Project Director; Director of Medical Services
- Hospital/District level etc.
  - Daily online usage monitoring
  - E-nodal team set up at each hospital
  - HMIS part of Quality circle meeting agenda for review
Levers of success of HMIS

- No data entry support – end users trained to use system
- Strong ownership and support from Top Administration Team (Health and IT departments)
  - Principal Secretary, Special Secretary Health, Director of Medical Services, Director of Public Health, Mission Director State Health Society, etc.
- Supporting Government orders issued
  - Mandating usage of Online system
  - Providing for Removal of Manual registers maintained after system stabilizes
- Tapping into the State Investments in Infrastructure
  - TNSWAN – for connectivity
  - State Data center to house the Servers for Health Department applications
  - Agencies like ELCOT / TNMSC for procurement and infrastructure management
Levers of success of HMIS

- **Centralized Web based application**
  - Cost Effective Maintenance and Management

- **Open source software – savings in cost and maintenance**
  - For end client machines – Linux
  - For Server software – open source

- **Infrastructure support**
  - Placement of IT coordinators in districts
  - Establishing a Central Helpdesk for call management

- **Phased Implementation**
  - Investments and scale up in phased manner to ensure optimal utilization of resources
Investments Overview

Phase I – HMS in 36 hospitals across 5 districts

- Pilot - 5 hospitals
- Nov 2009
- INR 2.8 crores

Phase II – HMS in 222 secondary care hospitals + HMIS in 1500 PHC’s

- Hardware installation in progress........
- Nov 2009
- INR 5 Crores
- INR 82 crores projected

Phase III – 47 Institutions under Directorate of Medical Education including 18 Medical Colleges + Tamil Nadu Dr. MGR Medical University

- INR 50 Crores projected
- Up next.....
Online usage statistics
upto July 2011
Kanyakumari District
– upto July 2011

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Module wise Details

- Registration
- Lab
- Pharmacy
- Clinical

No.of Patients
THANK YOU