Hospital Management Information System
1. About HMIS

2. Objectives

3. Functionality covered

4. Coverage and current statistics

5. Benefits to stake holders

6. MIS (Hospital level & State level)

7. Challenges overcome

8. Future road map
Hospital Management & Information System (HMIS) is a system for patient care and hospital management. HMIS automates financial, administrative and patient care activities of hospital, generates extensive management reports, operational statistics & offers a powerful query module. It generates as well as maintains Electronic Medical Record (EMR) and makes it available across the hospitals.

HMIS has been envisaged to not only help the administrators to have better monitoring and control of the functioning of hospitals using decision support indicators but also assist the doctors and medical staff to improve health services with readily reference patient’s EMR. It also provides work flow enabled process and parameterized alarms and triggers while patient treatment cycle.

HMIS monitors pre-defined health indicators and uses exception reporting to enable efficient decision making by the hospital management, top management and administrators for policy and strategic decisions.
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Objectives

Streamline overall operations and increase efficiency of government hospitals

Maintaining high patient satisfaction index through quality health care services

Consolidated patient EMR made readily available at any point of time

Effective management of available resources (manpower, machine, space)

Effective management of available resources (manpower, machine, space)
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### Functionalities Covered In HMIS Solution

#### Patient Care Services
- Registration
- Wards
- Pharmacy
- Billing
- Patient Education
- Information Kiosk
- Nursing Care

#### Clinical Services
- Clinical/EMR (Gynecology, Ophthalmic, Orthopedic, ENT, General Medicine, Pediatric, Surgery, Skin, Dental etc...)
- Laboratory (Pathology, Microbiology, Bio Chemistry, Radiology)
- Blood Bank

#### Hospital Admin
- Hospital Admin
- Human Resource
- Payroll
- Financial Accounting
- Stores/Inventory
- Purchase
- Complaints & Redresses
- Transportation
- MIS Reports
- EIS Reports

#### Ancillary Services
- National Programs
- Linen Management
- Equipment Maintenance
- Resource Scheduling
- Special Camp & Training
- Bio Medical Waste
- Application Security
- NABH (National Accreditation Board for Hospital & Healthcare)
- RKS (Rogi Kalyan Samiti)
Broad level features and services provided in HMIS

**Patient Services**
- Appointment Scheduling
- Registration
- Pharmacy
- Patient Education
- Information Kiosk

**Clinical Services**
- Clinical
- Laboratory
- Blood Bank
- Wards
- Nursing Care

**Hospital Admin**
- Hospital Admin
- Human Resource
- Resource Scheduling
- Payroll
- Stores / Inventory
- Financial Accounting
- Purchase
- Billing
- EIS Reports
- MIS Reports

**Ancillary Services**
- National Programs
- Special Camps
- Linen Management
- Bio Medical Waste
- Equipment Maintenance
- Complaints
- Transportation
- RKS
- Application Security
- NABH

**Broad level features and services provided in HMIS**
- Appointments
- Out Patient Management
- Drug Stock Management
- Hospital Information
- Patient EMR
- Lab Reports
- In Patient Management
- Blood Bank Management
- Employee Management
- Resource Scheduling
- Inventory Management
- Patient Billing
- Medical Indicators
- Dashboards & Reports
- Programs & Camps Detail
- Linen Management
- Waste Management
- Equipment Maintenance
- Vehicle Management
- NABH Indicators
<table>
<thead>
<tr>
<th>Number</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1.</td>
<td>About HMIS</td>
</tr>
<tr>
<td>2.</td>
<td>Objectives</td>
</tr>
<tr>
<td>3.</td>
<td>Functionality covered</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Coverage and current statistics</strong></td>
</tr>
<tr>
<td>5.</td>
<td>Benefits to stake holders</td>
</tr>
<tr>
<td>6.</td>
<td>MIS (Hospital level &amp; State level)</td>
</tr>
<tr>
<td>7.</td>
<td>Challenges overcome</td>
</tr>
<tr>
<td>8.</td>
<td>Future road map</td>
</tr>
</tbody>
</table>
HMIS Coverage and Statistics

Project Start Date: 12-JAN-2005
1st Site Live Date: 26-JUN-2006
3yrs Warranty completion date: 26-JUN-2009
AMC Start Date: 01-JUL-2009

- 8 Major Teaching hospitals
- 23 Minor District hospitals
- 2 Dental hospitals
- 2 Mental hospitals

Total Online Patient Registrations: 2,83,70,288
Total No. of patients visits: 3,79,33,868
Total Outpatient Clinical Record: 1,04,36,198
Total Lab Test Requests: 80,85,147
Total Outpatient Pharmacy Issues: 54,45,071
Total Inpatients Registered: 37,11,716
Total Major / Minor Surgeries: 3,36,865 / 3,00,211
Total no. of Deliveries: 2,58,903

As on Jun 2014
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Benefits to Stake holders

Citizens / Patients
- Reduction in Patient waiting time
- Digitized Patient EMR across all hospitals
- Appointment Booking before visiting the hospital
- Easy access to hospital services
- Easy to Locate Patients through Information Kiosk
- SMS & email alerts for various activities like appointments, follow ups, lab tests and reports collection

Doctors & Healthcare Staff
- Workflow driven processes for clinical & diagnostic services
- Easy access to Patient EMR for clinical orders and treatment
- Diagnosis as per ICD 10
- Reduction in patient serving time through Templates
- Alerts and reminders for key indicators related to Patient treatment
- Reduced chances of medication errors
- Query module for clinical analysis

Administrators
- Holistic view of hospitals’ day-to-day functioning
- Online review & monitoring based on identified indicators
- Access to Disease Trend
- Comprehensive drug management and Consumption monitoring
- Visual Alarms & Alerts for key medical parameters
- Effective utilization of Human Resource and Equipment
1. About HMIS
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Key reports for hospital level monitoring

**Out Patient Registration**

**In Patient Registration**

**Drug Consumption across Hospital**

<table>
<thead>
<tr>
<th>Sr No</th>
<th>Drug Name</th>
<th>Consumed Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diclofenac Sodium Tablets 50mg</td>
<td>909145</td>
</tr>
<tr>
<td>2</td>
<td>Chlorpheniramine Maleate Tablets 4mg</td>
<td>782226</td>
</tr>
<tr>
<td>3</td>
<td>Furosemide Tablets 20mg</td>
<td>668157</td>
</tr>
<tr>
<td>4</td>
<td>Folic Acid Tablets 5mg</td>
<td>658704</td>
</tr>
<tr>
<td>5</td>
<td>Paracetamol Tablets 500mg</td>
<td>594068</td>
</tr>
<tr>
<td>6</td>
<td>Vitamin B Complex Tablets (Therapeutic)</td>
<td>563994</td>
</tr>
<tr>
<td>7</td>
<td>Calcium Gluconate Tablets 500mg</td>
<td>533738</td>
</tr>
<tr>
<td>8</td>
<td>Furosemide Sulphate Tablets 200mg</td>
<td>432557</td>
</tr>
<tr>
<td>9</td>
<td>Amoxicillin Capsules 500mg</td>
<td>373115</td>
</tr>
<tr>
<td>10</td>
<td>Amoxicillin Tablets 5 mg</td>
<td>336235</td>
</tr>
</tbody>
</table>

**Patient EMR**

**EXAMINATION**

<table>
<thead>
<tr>
<th>Examination Type</th>
<th>Examination Name</th>
<th>Result</th>
<th>Remarks</th>
<th>Doctor Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conja</td>
<td>RIGHT: Sealing</td>
<td>LEFT: Sealing</td>
<td>Dr. S Bisaria Guptaa</td>
<td></td>
</tr>
<tr>
<td>Conja</td>
<td>RIGHT: Tear</td>
<td>LEFT: Tear</td>
<td>Dr. S Bisaria Guptaa</td>
<td></td>
</tr>
<tr>
<td>Vision</td>
<td>RIGHT:</td>
<td>LEFT:</td>
<td>Dr. S Bisaria Guptaa</td>
<td></td>
</tr>
</tbody>
</table>

**DIAGNOSIS**

<table>
<thead>
<tr>
<th>Disease Name</th>
<th>Secondary Diagnosis</th>
<th>Diagnosis Type</th>
<th>Details</th>
<th>Doctor Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye malignant neoplasm, unspecified</td>
<td></td>
<td></td>
<td></td>
<td>Dr. S Bisaria Guptaa</td>
</tr>
</tbody>
</table>

**Laboratory Investigations**

**Fast Moving Drugs**

**Specialty wise registrations**

<table>
<thead>
<tr>
<th>Specialty wise registration</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>DENTAL OPD (15)</td>
<td>18</td>
</tr>
<tr>
<td>DERMETOLOGY(SKIN) OPD (18)</td>
<td>48</td>
</tr>
<tr>
<td>ENT OPD (21)</td>
<td>2</td>
</tr>
<tr>
<td>GENERAL OPD</td>
<td>352</td>
</tr>
<tr>
<td>GENERAL SURGEON</td>
<td>82</td>
</tr>
<tr>
<td>GYNEC OPD</td>
<td>26</td>
</tr>
<tr>
<td>OPTHOMOLOGY(EYE) OPD (19)</td>
<td>73</td>
</tr>
<tr>
<td>ORTHOPEDIC OPD 04</td>
<td>4</td>
</tr>
<tr>
<td>PEDIATRIC OPD 05</td>
<td>20</td>
</tr>
</tbody>
</table>
Key reports for State level monitoring

Hospital Performance Comparison on Key Indicators

Disease Trend

Year wise comparison of disease

Specialty wise Performance Report
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## Challenges Overcome

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease prevalence and trend monitoring not possible</td>
<td>Standardized disease codes using ICD 10, enabling hospital and state level disease trend possible</td>
</tr>
<tr>
<td>Poor acceptance of the system by users</td>
<td>Improved GUI and addressed genuine feedback. This enabled almost 3 crores registrations across Gujarat</td>
</tr>
<tr>
<td>Medical staff found system time consuming</td>
<td>Introduced “Templates” helping doctors accelerate diagnosis process + efficiency</td>
</tr>
<tr>
<td>Challenge in monitoring drug stock</td>
<td>Entire drug catalog standardized, Hospital level drug stock monitoring enabled across state</td>
</tr>
<tr>
<td>Monitoring performance of hospital &amp; resources</td>
<td>Introduced hospital grading that helps authorities to track hospital and resource performance using intelligent parameters</td>
</tr>
</tbody>
</table>
Transformations Delivered!

THEN

- Maintenance of manual records and no fixed workflow
- No real time access to patient’s past history
- Health indicator reporting process a challenge with delays in receipt of data
- Not possible to manage drugs inventory
- Multiple sources + channels for reporting and monitoring performance
- No dedicated team to address ICT needs of hospital

NOW

- Transition into digital record keeping and digital workflow for each process
- Patient’s history available in EMR
- In time consolidation and real time retrieval of reports
- Real time inventory management resulting in availability of essential drugs
- Single unified reporting platform with uniform standardized reporting
- Establishment of ITCELL to leverage and address ICT needs of hospitals
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Future road map

- Comply to EHR standards (MoHFW GOI)
- Expansion up to SDH, CHC, PHC
- Biometrics Implementation
- Smart Cards Implementation
- Integration with Hand Held Devices
<table>
<thead>
<tr>
<th>Awards / Media Notes</th>
</tr>
</thead>
</table>
| **HMIS (Health Dept., Gujarat)** “Governments ICT Enabled Initiatives”  
EHealth World Awards 2011 |
| **HMIS** for “Best Health Care Practices“  
National Conference on Best Practices in Healthcare Delivery 2011 |
| **HMIS (Health Dept., Gujarat)** " Use of IT for maximizing business impact “  
Enterprises driving growth and excellence through IT 2010 |
| **HMIS** for “Specific Sector Award“ – TCS Implementation  
National Award for e-governance 2008-2009 |
| **HMIS** for "e-Health“ – TCS Implementation  
Skoch Challenger Awards 2008 |
| **HMIS (Health Dept., Gujarat)** “Best e-Governed Department”  
CSI-Nihilent e-Governance Awards 2007 |
Thanks....