# Digital Health Master Class for Hospital Leaders

**A leadership course to accelerate the adoption of Digital Health in Hospitals**

**March 2024**

# Objective of this Program

Digital tools are revolutionizing consumer experiences across industries with enhanced convenience and personalized services. In the health sector, digital initiatives are enabling patient-centric care. India's healthcare system is poised for this digital shift, aiming to improve patient engagement and streamline service delivery.

**Objective: This 4-hour Digital Health Master Class (DHMC) is designed to be an introductory course in Digital Health for Hospital Leaders - simplifying Digital Health concepts and how hospitals can use Digital tools to grow their business, profitability and provide better patient care.**

Streamlined Operations:
Boost efficiency and reduce costs.

Patient Satisfaction:
Improve care and patient experiences.

Financial Health:
Enhance business revenues through digital solutions.

Market Leadership:
Gain a competitive edge with innovative services.

# Course Outline


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| **1.** Module I – Introduction to Digital Health | 3 |
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# Module I – Introduction to Digital Health

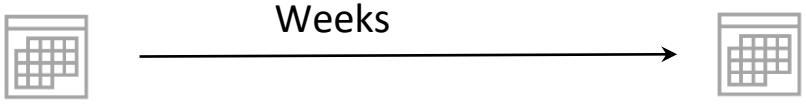
- Need for Digital Health adoption
- Definition of Digital Health
- Importance of Digital health for hospital, doctors and patients
- The role doctors & hospitals play
- How to adopt digital health (ABDM, NABH, HMIS & EMR, etc.)

# Why do hospitals need to adopt Digital Health?

# Digital Evolution: Banking and Communication

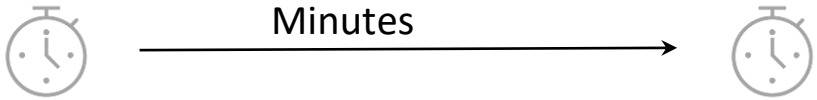
## Banking Industry

### BEFORE




Travel to branch | Meet representative | Wait for processing | Meet representative | Receive funds

### NOW




Apply via mobile phone

Quick approval

## Communication Industry

### BEFORE

Post Letter

Writing a letter, visiting the post office to send it out, and then wait for several days to get it delivered, depending on distance

Phone booths, Telephones

Phones made audio calls possible.

### NOW

Mobile phones

Instant communication through several ways such as calls, video calls, text messages etc.

# Digital Evolution: Retail and Transportation

## Retail Industry

### BEFORE

Hours to Days


Travel to Store


Browse Products


Queue for Checkout


Pay in Cash/ Card


Carry Items Home

### NOW

Minutes to Hours


Browse Online


Virtual Fitting Room


Digital Payment


Home Delivery/ Pick-up


Real-Time Customer Service

## Transportation Industry

### BEFORE

Days to Weeks

Visit Ticket Counter/Agent

Book Itinerary


Receive Paper Tickets


Follow Fixed Schedule

### NOW

Seconds to Minutes


App-Based Booking


E-Tickets

Flexible Scheduling


Real-Time Updates

# Which shop would you buy from?

## Shop A


- Accepts cash payments only.
- Customers have to wait in line to pay.
- Does not have change/cash to return.

## Shop B


- Accepts cash as well as digital payments.
- Customers can scan the QR code to pay, reducing wait time.
- Does not need to return change as exact amount is accepted.

# Which theater would more people go to?

## Theater A

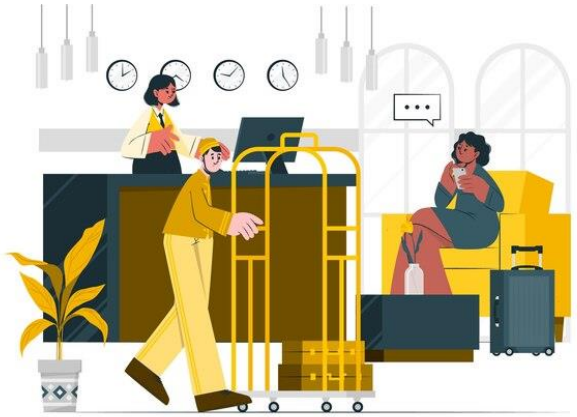
- Ticket purchase at physical counters.
- Paper tickets and tokens.
- Fixed schedules with limited flexibility.
- Manual updates on service changes.

## Theater B


- E-ticketing through mobile apps.
- Contactless access via QR codes and NFC.
- Dynamic scheduling with real-time tracking.
- Automated updates and notifications on smartphones.

# Which hotel would get more customers?

## Hotel A



- Traditional check-in with front desk assistance.
- Paper-based room service orders.
- In-person booking and confirmation.
- Physical keys for room access.

## Hotel B


- Mobile check-in and check-out.
- Online booking with instant confirmation.
- Digital keys and smart room control.
- Room service ordering via app.

# Which cloth store would get more customers?

## Store A


- In-store only shopping.
- Physical coupons and flyers.
- Manual payment processing.
- Paper receipts and manual returns.

## Store B

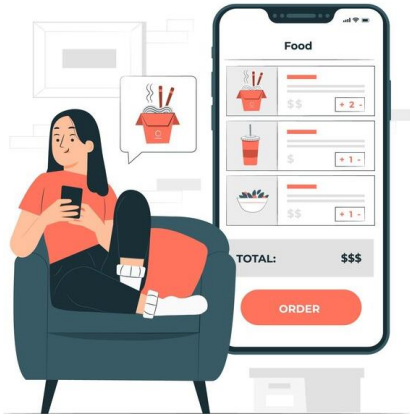

- Online and in-store shopping options.
- Digital coupons and personalized deals via app.
- Seamless mobile payments.
- E-receipts and simplified online returns.

# Which eatery will get more orders?

## Eatery A

- In-person dining with menu cards.
- Cash or card payments to a waiter.
- Waiting for a table during peak hours.
- Face-to-face order customization.

## Eatery B




- Online food ordering with delivery options.
- Multiple digital payment methods.
- Order from anywhere and real-time order tracking.

# Which hospital would more patients go to?

## Hospital A

- Long wait in line to register oneself and for the appointment.
- Requires patients to carry all previous case files for the doctor to review.
- Needs the patient to travel to the hospital for every follow-up visit.
- Need to pay the bills and later claim reimbursement from insurance companies.

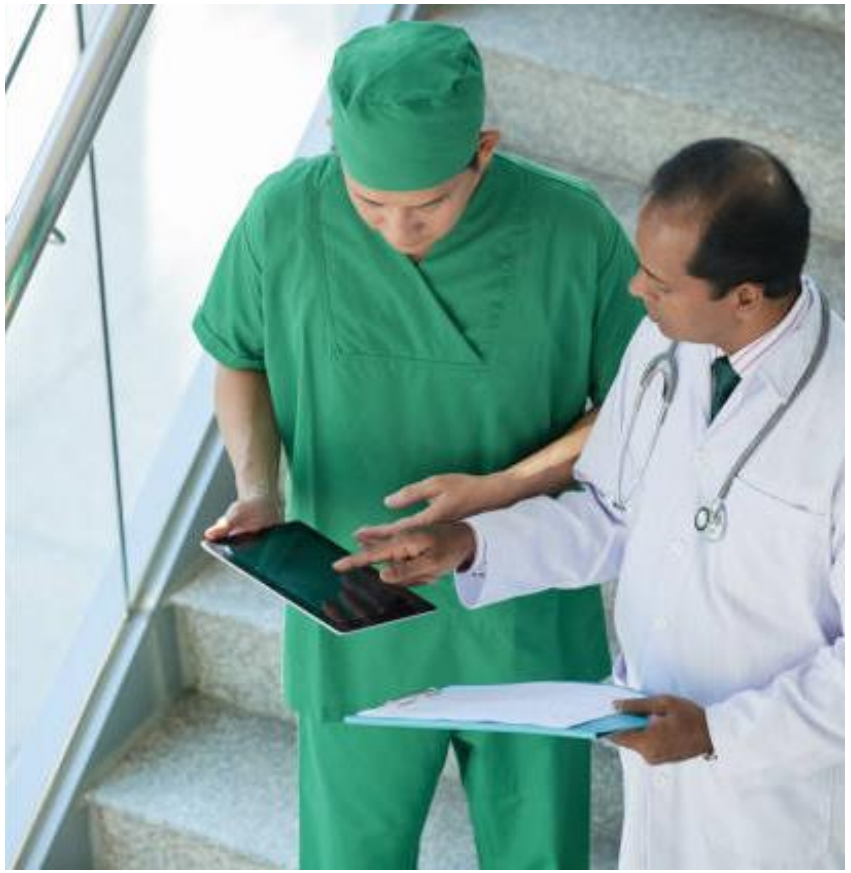
## Hospital B

- Allows registration on an app or website.
- Stores all previous case files in an Electronic Medical Records (EMR).
- Conducts follow-ups through teleconsultations and remote monitoring.
- Partners with insurance companies to simplify the claim processing/offers cashless claims.

# What does ‘Hospital B’ have that ‘Hospital A’ doesn’t?

# Introduction to Digital Health

# Digital Health: Introduction



**What is Digital Health?**

Digital Health is using health information (on computers, mobile devices, software apps and the internet) to enhance healthcare delivery and efficiency at all levels - patients, doctors, facilities, region/national level.

Most common **key technologies and applications** of Digital Health are listed below:

- Hospital Management Information System (HMIS)
- Electronic Medical Record (EMR)
- Telemedicine
- Apps and Wearables
- Patient Portal
- Provider Portal
- Analytics- AI/ML
- Performance Mgmt

# Digital Health Importance: Hospitals (1/3)

- **Enhanced Patient Record Management:** Digital health systems (HMIS & EMR) enable efficient management of patient records, ensuring quick access to medical information, treatment plans, and prescriptions.
- **Efficient Care Coordination:** Support improved care coordination including electronic prescription systems - reduce errors, streamline processes, and improve the overall care management within the hospital.
- **Improved Decision-Making:** Access to real-time data allows to make more informed and timely decisions, ultimately leading to better patient outcomes.
- **Business Growth:** Hospitals can use Digital patient information for driving business growth e.g., schedule follow up visits, patient reminders, telemedicine, patient engagement.

# Digital Health Importance: Hospitals (2/3)

- **Streamlined Administrative Processes:** The implementation of HMIS & EMR helps small hospitals reduce paperwork, minimize errors, enabling staff to focus more on patient care.
- **Efficient Resource Allocation:** HMIS & EMR can assist in analyzing trends in patient needs, optimizing resource allocation (e.g., doctors, nurses, support staff), and improving the overall efficiency of healthcare services without significant infrastructure investments.
- **Compliance and Regulatory Ease:** Digital systems help ensure that documentation and reporting are in line with regulatory requirements, reducing the legal and financial risks associated with compliance issues.

# Digital Health Importance: Hospitals (3/3)

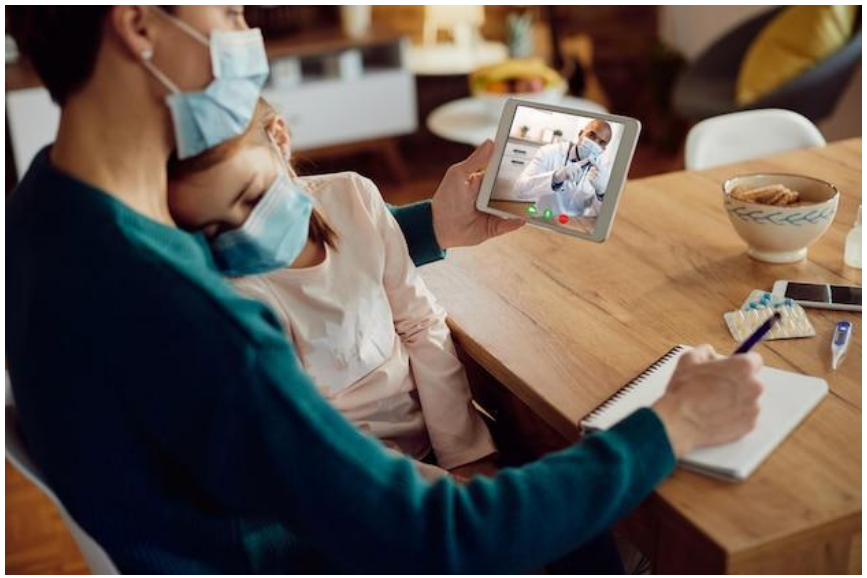
**Place Holder**

Add a video where a hospital owner is explaining the benefits they achieved through Digital Health implementation in their hospital.

# Digital Health Importance: Patients (1/3)

- **Enhanced Quality of Care:** Digital health records and decision-support systems  such as HMIS & EMR can improve the accuracy of diagnoses and the effectiveness of treatment plans.
- **Improved Access:** Streamlined processes can better access (e.g., doctor availability) and shorter wait times for appointments and procedures.
- **Improved Access to Care:** Online appointment scheduling make it easier for patients to seek care, and tools like telemedicine for patients in remote or underserved areas.
- **Cost Savings:** Reduced need for multiple tests (e.g., lab tests), lower wait times / online visits and more efficient care leads to significant time and cost savings.

# Digital Health Importance: Patients (2/3)



**These are the significant benefits for patients in using a digital hospital. It encourages patients to continue receiving care from the same hospital.**

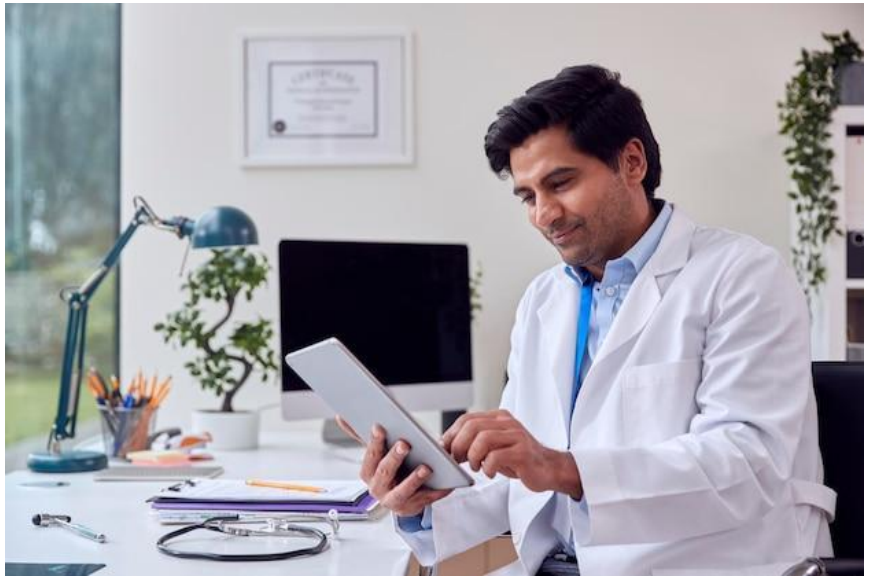
- **Safety and Privacy:** Digital health can improve the security and confidentiality of patient data compared to traditional paper records.
- **Increased Engagement:** Digital platforms can provide patients with more information and control over their health, leading to increased engagement in their care.
- **Better Health Monitoring:** Wearables and remote monitoring devices enable continuous tracking of health conditions, which can lead to early detection and intervention.
- **Education and Awareness:** Digital health resources can provide patients with more information about their conditions and treatments.

# Digital Health Importance: Patients (3/3)

**Place Holder**

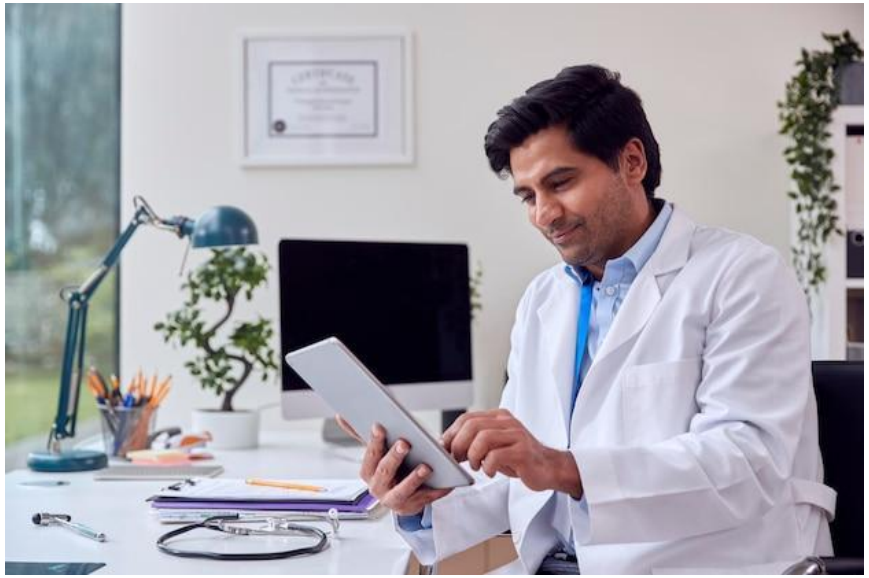
Add the video where the patient is explain the benefits they received just because the hospital choose to adopt Digital Health

# Digital Health Importance: Doctors (1/3)



- **Streamlined Access to Patient Data:** EMRs provide doctors with immediate access to patient history, lab results, treatment plans - accelerating care and making care more time efficient for doctors.
- **Enhanced Collaboration:** Facilitate communication and collaboration between doctors, specialists, and healthcare teams, leading to improved patient care.
- **Efficiency / Time Management:** HMIS automates administrative tasks e.g., scheduling, billing, payment, paperwork - optimizing their time.
- **Increased Patient Throughput:** Efficient digital systems leads to doctors managing more patients over time, increasing doctor and hospital capacity, and consequently revenues.

# Digital Health Importance: Doctors (2/3)



**These are the benefits doctors will receive when a hospital chooses digital health tools such as HMIS, EMR, etc. It will encourage doctors to continue working in the same hospital.**

- **Reduced Errors:** Digital prescriptions and automated cross-checking systems minimize the risk of human error in medication and treatment plans.
- **Enhanced Reach:** Telemedicine can extend the reach of doctors, allowing them to consult with patients who cannot visit the hospital due to distance or mobility issues.
- **Remote Monitoring Capabilities:** Doctors can monitor their patients' health remotely, which is particularly beneficial for managing chronic conditions and providing post-operative care.

# Digital Health Importance: Doctors (3/3)

**Place Holder**

Add the video where the doctors explain the benefits they received just because the hospital choose to adopt Digital Health and how they want to continue working in the same hospital because of these benefits.

# Journey of Digital Health Adoption in India

# Digital Health Transformation in Government/ Public Sector

## Key Government & Public Sector Initiatives in Digital Health

- **Ayushman Bharat Digital Mission (ABDM):** Launched in 2020, ABDM (formerly known as the National Digital Health Mission) has been a cornerstone in pushing digital health adoption..
- **Co-WIN:** It facilitates the tracking of vaccine coverage, scheduling appointments, issuing digital vaccination certificates, and monitoring vaccine stocks. Its usage has expanded to integrating data with other programs for comprehensive health mgmt.
- **E-Sanjeevani:** It is a government telemedicine service. As per reports from the National Health Authority, E-Sanjeevani had completed over 1.5 million teleconsultations by early 2021.
- **Nikshay:** It is a digital platform for tuberculosis management in India, exemplifies public sector digital health adoption, enhancing TB patient tracking, treatment adherence, and data management.

# Digital Health Transformation in the Private Sector

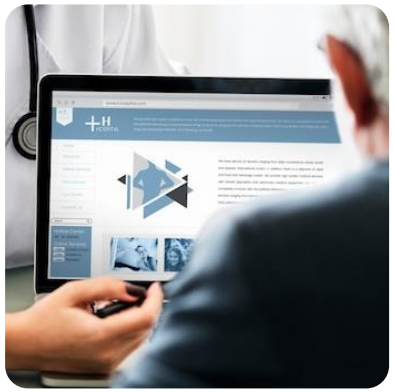
- **Increased Digital Technology Use:** Health organizations in India, including the private sector, significantly increased their use of digital technologies during the COVID-19 pandemic, leading to improved staff productivity and patient outcomes.
- **Use of mHealth Solutions:** Given the high use of smart mobile phones in India, mHealth segment is expected to drive India's digital healthcare market - mobile health solutions like apps and wearables will drive accessibility and convenience.
- **Wellness & Chronic Condition Management:** Many insurance companies and encouraging consumers to use mobile apps for wellness (e.g., weight reduction) and chronic condition mgmt.
- **ABDM Adoption in Digital Health:** Private healthcare providers - hospitals, labs and pharmacies - are participating in ABDM program by implementing EMRs, LMIS and Pharmacy systems.

# Module II – How will Digital Health impact small and mid-sized hospitals?

- Case studies of small hospital transformation through HMIS & EMR
- Business transformation - HMIS 1.0 to HMIS 2.0 strategy
- Clinical transformation & EMR adoption

# What is an HMIS & EMR? Why do I need one?

# Digital Health Adoption Of Small / Mid-sized Hospital



## Health Management Information System (HMIS)

Core system to managing hospital, staff, patients and financial management

**Ability to Track**

Administrative, operational, and financial information

## Electronic Medical Record System (EMR)

Core system to managing patient data and clinical management

**Ability to Track**

Patient data, medication, lab results and procedures

## Value to Hospitals

### Enhanced Clinical Performance

From better care coordination and use of clinical decision support by doctors and nurses

### Enhanced Operational and Financial Performance

From better tracking of staff and resource utilisation and ability to track key performance indicators

### Increased Business Growth

From higher patient satisfaction, greater visibility, better follow up and introduction of value-added services

# Introduction to HMIS and EMR


***Operational Management***
- Bed Management
- Equipment/ Maintenance
- Linen & Laundry
- Diet & Kitchen

***Key Functions***
- HR/ Payroll
- Staffing/ Scheduling
- Finance/ MIS
- IT/ Information Security

***Allied Services*** (Blood Bank, Ambulance, etc.)

***Patient Accounting***
- Patient Registration
- Patient Discharge/ Billing
- Health Insurance

***Orders/ Diagnostics***
- Laboratory Orders/ Results
- Radiology Orders/ Results
- E-Prescriptions

***Portals/ Mobile***
- Physician Portal
- Patient Portal

***Care Management***
- Outpatient Clinical Records
- Inpatient Clinical Records
- Clinical Documentation Templates
- Data Interoperability

***Advanced Clinical Tools***
- Clinical Decision Support
- Image Analytics
- Care Pathways and Patient Navigation Systems
- Clinical Reporting and Analytics
- Population/ Public Health

- HMIS and EMR often **have overlapping features and functionalities**.
- The **capabilities of HMIS and EMRs vary significantly** across vendors/products.
- EMR can be a standalone software or an extension of the HMIS - more common scenario in India.
- It is common for a hospital to first start with an HMIS - as it is relatively easier to implement and focuses on operational & financial processes.
- Subsequently, hospitals implement an EMR which focus on clinical processes.

# HMIS & Business Transformation

# HMIS: Introduction

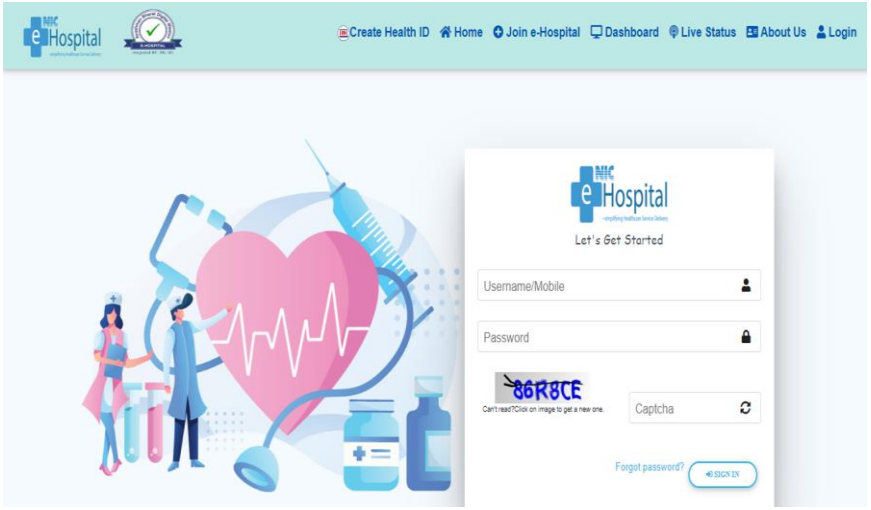
## HMIS Overview:

Hospital Management Information System (HMIS) is a software solution that supports the hospital's administrative and financial needs, enhancing operational efficiency.

## HMIS Key Features

- **Patient Registration & Admissions**
- **Patient Scheduling**
- **Billing & Finance Management**
- **Pharmacy & Lab Management**

## HMIS Example: e-Hospital



# HMIS Key Features

| HMIS Features | Capabilities | Benefits |
|---|---|---|
| **Patient Registration** | • Registers patients hospital app, patient app or website<br>• Captures patient demographic & contact information, patient condition, referring doctor etc.<br>• Captures financial information including health insurance<br>• Displays bed availability, upcoming discharges, and other pertinent information in real-time | • Reduces administrative workload for hospital staff<br>• Decreases patient wait times<br>• Provides doctors with instant access to patient records<br>• Ensure accurate billing / collections |
| **Patient Scheduling** | • Automates the scheduling of appointments, surgeries, allocation of resources, etc.<br>• Provides consistent and up-to-date patient information to all stakeholders e.g., doctors, nurses<br>• Displays bed availability, upcoming discharges, and other pertinent information in real-time | • Minimizes idle time, enhancing the efficiency of hospital resources<br>• Reduces patient wait times<br>• Enables more efficient time and energy management for doctors |

# HMIS Key Features

| HMIS Features | Capabilities | Benefits |
|---|---|---|
| **Patient Billing & Finance Management** | • Automates billing processes - lower errors, billing gaps<br>• Streamlines invoice generation<br>• Provides transparent and detailed billing statements<br>• Provides ability to submit insurance claims | • Accelerates revenue cycle for hospitals - faster billing and collections<br>• Offers clarity to patients and reduces financial stress |
| **Pharmacy & Lab Management** | • Automates pharmacy and lab ordering process<br>• Enables inventory tracking - reducing waste and expiration of medications and consumables<br>• Provides integration with various hospital departments including IPD, OPD | • Quicker diagnosis and treatment of patients<br>• Increases operational efficiency for hospitals<br>• Provides opportunity for creating complete patient records |

# I already have an HMIS, what's next?

# Business Transformation - HMIS 1.0 to HMIS 2.0 Strategy

### Patient Engagement

- Maintain website with relevant information on doctors & services
- Provide online appoint scheduling capability
- Offer patient portals to patients to access their information
- Conduct online patient surveys and address gaps

### Resource Management/ Optimization

- Access patient / staff wait times and optimize processes
- Analyze patient volume to enhance staff scheduling efficiency and job satisfaction
- Analyse supplies and optimize material usage and procurement

### Data Management

- Standardize data entry process e.g., use of procedure, diagnostic codes
- Ensure uniform data entry formats across departments
- Implement strong security protocols to protect patient data

### Doctor Engagement

- Provide online patient scheduling capability
- Provide online billing capability to doctors
- Enable doctors to view outstanding payments / receivables
- Enable doctors to view core patient information

### Performance Management

- Create important measures for both clinical and non-clinical aspects.
- Review to enhance clinical results, like reducing hospital readmission rates through improved discharge planning.
- Evaluate and enhance non-clinical measures for smoother operations and finances, such as optimizing inventory management to reduce costs.

### Data-Driven Decision Making

- Identify right information and analytics for key roles e.g., nursing head, finance manager
- Implement Analytics Tools to gain insights into operational efficiency and patient care
- Train staff on data analysis to improve performance
- Use more advance predictive tools

# EMR & Clinical Transformation

# EMR: Introduction

## EMR Overview

- Electronic Medical Records (EMR) are digital systems designed to capture, store, and manage patient health information.
- Use of EMR by hospitals is critical in exchanging patient health information (e.g., using ABDM), healthcare analytics and use of new technologies like AI/ML.

## EMR Key Features

**Clinical Patient Record**

**Clinical Decision Support**

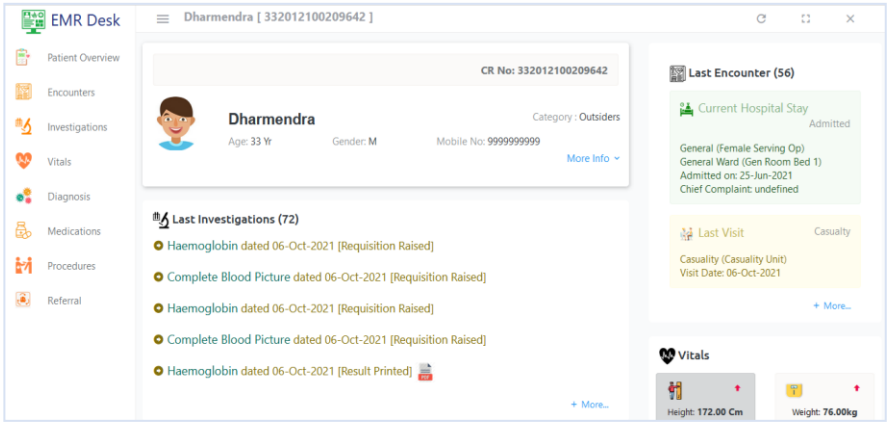
**Care Coordination**

**Physician Portal**

**Patient Portal**

**ABDM Compliance**

## EMR Example: e-Sushrut



# EMR Key Features (1/2)

| EMR Features | Capabilities | Benefits |
|---|---|---|
| **Patient's Clinical Record** | • Captures and centralizes patient medical records e.g., patient history, medications, and treatment plans<br>• Provides role-based access to patients medical records e.g., to nurses, doctors<br>• Uses clinical terminologies and clinical standards to enable medical records to be analysed and shared across facilities | • Reduces paper records - reducing burden on nursing and admin staff<br>• Minimizes errors in data capture<br>• Facilitates sharing of patient records for coordinated care |
| **Care Coordination** | • Offers a platform for nurses and doctors to collaborate and monitor patients - esp. for patients with co-morbidities<br>• Facilitates integration of patient records with various departments e.g., medical imaging, diagnostic labs<br>• Enables better tracking of patient records over time - including trending of key parameters | • Enables all doctors to get latest & consistent view of patient records<br>• Increase pace of diagnosis / treatment - better care for patients<br>• Reduces follow up effort of doctors - they can focus on patient care |

# EMR Key Features (2/2)

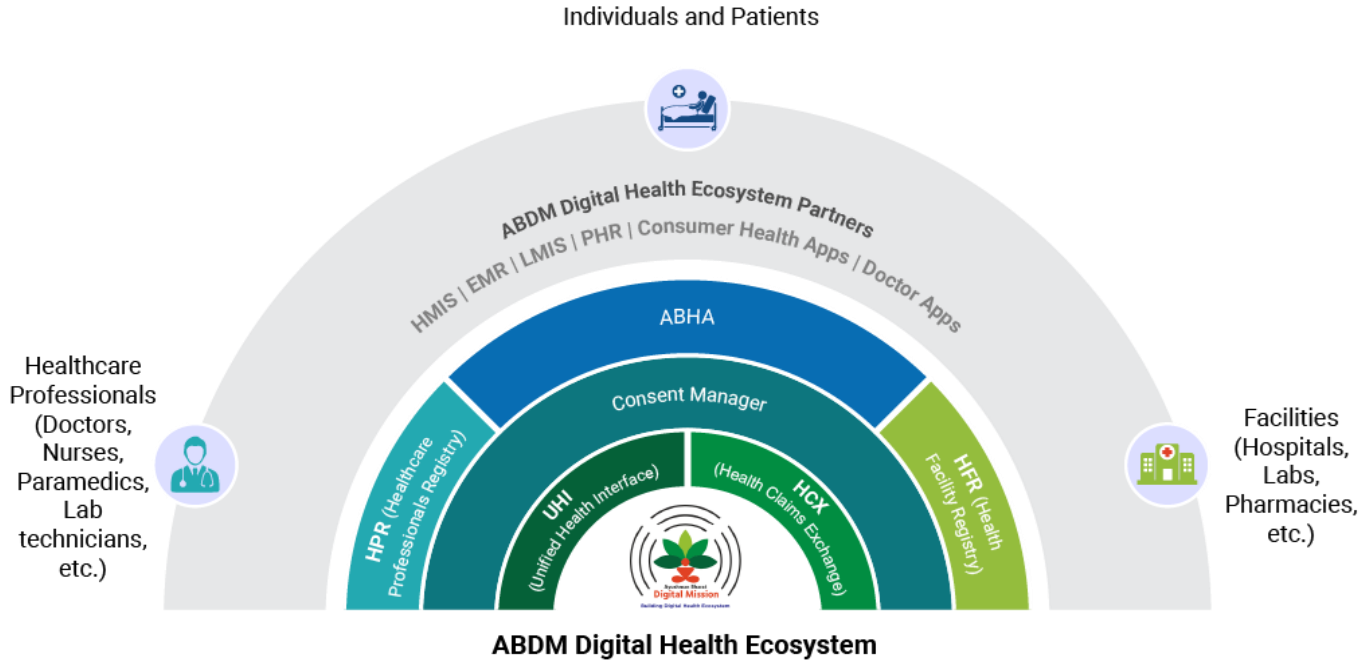
| EMR Features | Capabilities | Benefits |
|---|---|---|
| **Clinical Decision Support** | • Enables instant identification of critical information, aiding in prompt decision-making<br>• Enables doctors to develop and implement personalized treatment plans tailored to individual patient needs<br>• Offers evidence-based guidelines and alerts for doctors and nurses | • Reduces the risk of errors and enhances patient safety<br>• Provides ability to track clinical performance indicators - resulting in better quality of care |
| **Physician/ Patient Portal** | • Provide important clinical information to doctors e.g., ability to view lab results, treatment plans on physician portal mobile app<br>• Ensures secure, immediate and real-time access to patient records including clinical alerts<br>• Enables patients to communicate with healthcare providers, ask questions, and seek guidance remotely | • Increases doctor productivity and ease of doing business with hospitals<br>• Provides patients with easy and access to their medical reports and healthcare professionals<br>• Promotes data interoperability |

# ABDM Compliance - Requires an ABDM-certified EMR

**National Health Authority (NHA) has developed Ayushman Bharat Digital Mission (ABDM) to promote digitization of healthcare and create an open interoperable digital health ecosystem in India.**

## How ABDM work?

- Each **citizen has an Ayushman Bharat Health Account (ABHA)**
- **Hospitals need to register with NHA and get a Healthcare Facility Registry (HFR) ID**
- ABDM enables **exchange of patient records** (e.g., labs, discharge summary) between ABHA and HFR, **based on patient consent**
- Consumers & Patients can access their health records using an **ABDM-certified Personal Health Record (PHR) app**
- **NOTE: Actual patient data is NOT store in ABDM or by NHA** - ABDM only facilitates data exchange between parties



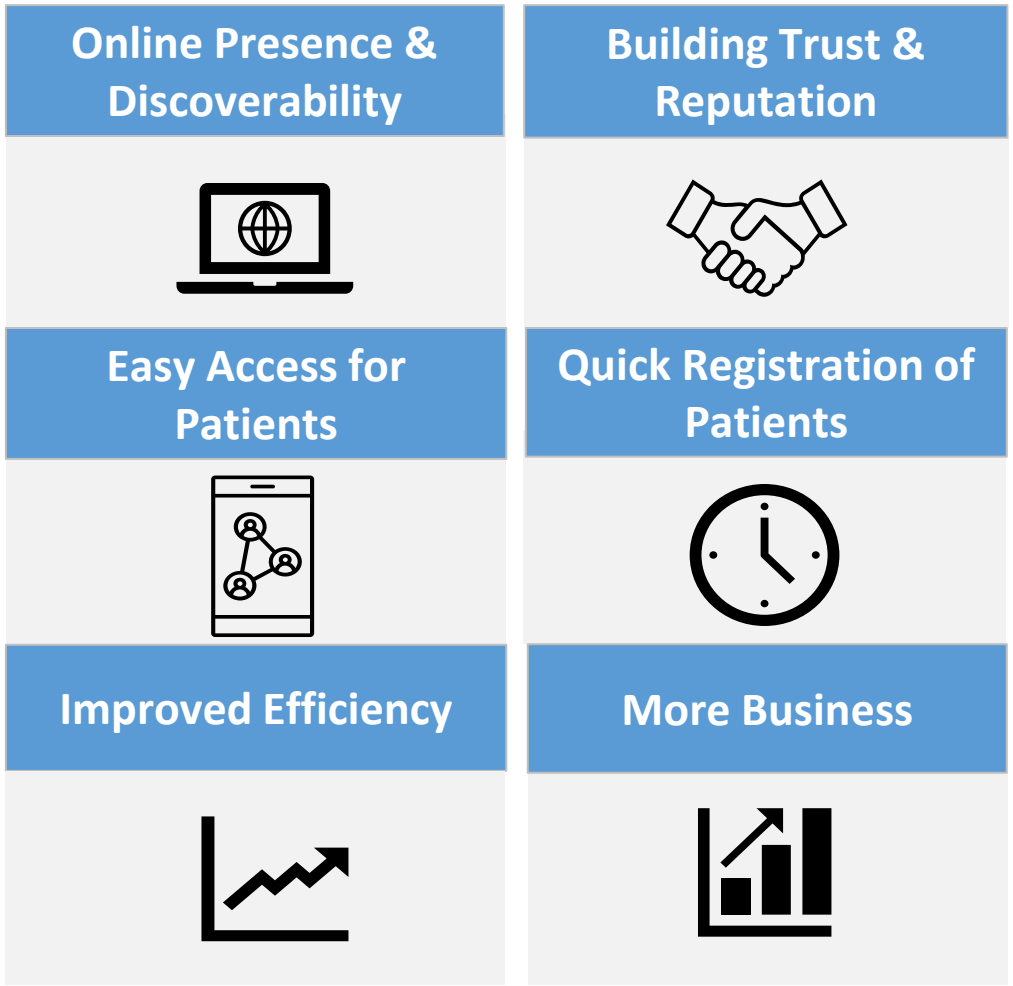

**Hospitals need to use an ABDM-certified EMR to be able to participate in the ABDM Ecosystem**

**Resources:** DHMC Resource Booklet (Guidelines for Adoption and Use of ABDM)

# ABDM Compliance - Key Benefits to Hospitals

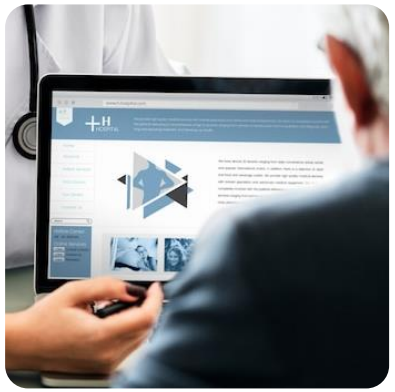
## Important Benefits of ABDM for Hospitals

- Hospitals can **list on verified health registries / portals** increases their online presence and instills trust in individuals/patients.
- ABDM makes it easier for patients to **search facilities and make appointment booking** for consultation
- ABDM support **Scan & Share Registration** - simplifying OPD/ IPD registration process and improving efficiency
- Hospitals can **access patients' previous records** (with patient consent) - making diagnosis quicker and more accurate
- Hospital can **receive lab results directly from labs** (with patient consent), and share them instantly with relevant doctors and nurses - **accelerating care delivery**
- ABDM **improves care delivery and operational efficiency** - **improving hospital financial performance**



# HMIS & EMR >> Drive Clinical Performance, Operational & Financial Performance, and Business Growth

# HMIS / EMR Adoption for Hospital



## Health Management Information System (HMIS)

Core system to managing hospital, staff, patients and financial management

**Ability to Track**

Administrative, operational, and financial information

## Electronic Medical Record System (EMR)

Core system to managing patient data and clinical management

**Ability to Track**

Patient data, medication, lab results and procedures

## Value to Hospitals

1. **Enhanced Clinical Performance**
   From better care coordination and use of clinical decision support by doctors and nurses
2. **Enhanced Operational and Financial Performance**
   From better tracking of staff and resource utilisation and ability to track key performance indicators
3. **Increased Business Growth**
   From higher patient satisfaction, greater visibility, better follow up and introduction of value-added services

# HMIS / EMR - Enhanced Clinical Performance

1

| | |
|---|---|
| **Patient-Centered Care** | • **Diagnostic Accuracy:** Access updated patient histories (e.g., allergies, medication) and test results leading to sharper diagnosis.<br>• **Patient Safety:** Implement protocols to enhance patient monitoring and prevent adverse events. |
| **Clinical Decision Support** | • **Decision Support:** Use EMR for accessing evidence-based treatment protocols, clinical alerts (e.g., drug-drug interaction)<br>• **Medication Accuracy:** Employ EMR for tracking prescriptions and allergy alerts, reducing medication errors. |
| **Clinical Workflow Enhancement** | • **Care coordination:** Access to EMRs facilitates care coordination across nurses and doctors - esp. important for co-morbidities<br>• **More focus on care:** Use HMIS & EMR to automate routine tasks, giving more time for doctors and nurses for patient care |
| **Clinical Quality Tracking** | • **Clinical Quality Metrics:** Utilize HMIS & EMR for monitoring clinical quality metrics and identifying areas of improvement<br>• **Clinical Training:** Train nursing and hospital staff in specific areas to improve care quality. |

HMIS / EMR are the core tools which doctors and nurses need for accessing timely information. They can also access clinical decision support tools to follow evidence-based guidelines and prevent medical errors.

HMIS / EMR also allows hospitals to track clinical quality metrics - which are key to “data driven & analytical” approach to improving clinical performance

# HMIS / EMR - Enhanced Operational / Financial Performance

2

| | |
|---|---|
| **Staffing Optimization** | • **Demand-Based Scheduling:** Adjust staff levels in real-time to patient demand.<br>• **Skillset Matching: :** Match staff skillsets to patient care requirements. |
| **Operational Efficiencies** | • **Inventory Management:** Track and adjust medical supply levels to reduce waste.<br>• **Loss Prevention:** Identify and address inefficiencies to prevent resource loss. |
| **Cashflow Optimization** | • **Accelerated Reimbursement:** Speed up billing and claims processes for faster payments.<br>• **Billing Accuracy:** Increase billing accuracy to reduce denied claims. |
| **Financial Analytics** | • **Cost Analysis by Service:** Analyze costs and profits per service line for better planning.<br>• **Financial Forecasting:** Use data for financial projections and resource allocation. |

Optimized use of HMIS/EMR boosts financial health in hospitals by refining billing and enhancing cash flow.

It mirrors the digital transformation seen in other sectors, making healthcare systems more efficient and financially sound.

# HMIS / EMR - Enhanced Business Growth

3

| | |
|---|---|
| **Continuity of Care** | • **Follow up visits / lab tests:** Automated reminders for follow up visits and lab tests e.g., annual examination for diabetes, cardiac patients.<br>• **Medication management:** Use EMR data to identify opportunities for supply of medications e.g., patients with chronic conditions. |
| **Referrals Management** | • **Referral management:** Provide easier access to internal and external doctor network for better referral management.<br>• **Labs / Pharmacies:** Track referrals to external labs and pharmacies. |
| **Teleconsultation / Remote Monitoring** | • **Teleconsultation:** Provide teleconsultation to patients, significantly boost to patient satisfaction and revenues e.g., post-discharge.<br>• **Remote Patient Monitoring:** Offer patient apps for tracking patients with specific conditions e.g., blood glucose. |
| **Patient Relationship Management** | • **Patient Education:** Provide relevant patient education material to improve compliance to care guidelines and health outcomes.<br>• **Patient satisfaction:** Track and enhance overall patient satisfaction resulting in better word-of-mouth and overall business growth. |

Customers have become “tech friendly” and expect their service providers to adopt technology - banks, travel, ecommerce, entertainment… and even the government!

Consequently, organisations adopting technology faster are gaining market share and becoming more successful. This is starting to happen in healthcare too!

# HMIS / EMR - Get NABH Digital Health Certified!

## NABH Digital Health Certification

National Accreditation Board of Hospitals (NABH) is also promoting Digital Health adoption in India through accreditation support to healthcare providers

- NABH has recently launched the 1st **NABH Digital Health Standards*** for hospitals.
- Hospital can also evaluate their digital maturity, and get certified by NABH
- Use of NABH Digital Health Standards help hospitals use technology to improve care delivery and ensure compliance to patient safety and data security standards

## NABH Digital Health Standards - Key Features

- Aligned to patient-centric delivery and access to information - aligned with clinical best practices
- Founded on leading practices in digital health assessment and adapted to Indian healthcare requirements
- Digital Health Standards incorporate validated by pilot study results and health experts
- Ascending levels of digital maturity to aspire healthcare providers to achieve higher digital adoption in their processes
- Ayushman Bharat Digital Mission (ABDM) requirements incorporated as key objective elements to ensure compliance by hospitals

# Let’s look at 2 case studies where small hospitals adopted HMIS & EMR successfully

# Examples of HMIS & EMR Adoption in India – Hospital 1

Placeholder

# Examples of HMIS & EMR Adoption in India – Hospital 2

Placeholder

# Debrief of Case Studies

| | |
|---|---|
| Q1 | What was the opportunity for change the hospital owners identified? |
| Q2 | What did the hospital owners do to bring changes in hospitals existing processes? |
| Q3 | By implementing HMIS and EMR, what are the changes the hospital witnessed? |
| Q4 | By using HMIS and EMR, what are the benefits the hospital received? |

**How to adopt HMIS & EMR for your hospital?**

**Let's explore!**

As we've observed, Implementing HMIS & EMR not only streamlines hospital processes, ensuring accuracy and improved communication, but yields a significant return on investment.

Hospitals gains operational efficiencies, reduces paperwork costs, and optimizes resource utilization.

Doctors benefit from time saving and enhanced collaboration, able to offer better & informed care

Patients enjoy better healthcare services, reduced waiting times, and an overall positive impact on well-being.

# Module III – How can I get started on the Digital Health journey?

- HMIS & EMR Need Assessment
- HMIS & EMR Budget Planning
- HMIS & EMR Selection
- Clinical & Admin Staff Training
- Implementation & Data Migration
- Post Go-Live Monitoring & Support

# HMIS & EMR Adoption Checklist


**Remember we covered this in Module 1? Let's explore each aspect in detail !!**

- ❑ **HMIS & EMR Need Assessment**
- ❑ HMIS & EMR Budget Planning
- ❑ HMIS & EMR Selection
- ❑ Clinical & Admin Staff Training
- ❑ Implementation & Data Migration
- ❑ Post Go-Live Monitoring & Support

# HMIS & EMR Adoption – Need Assessment (1/2)

## Initial Assessment and Requirement Gathering:

1. **Conduct Interviews**: Engage with different stakeholders to understand their daily workflows and challenges.
2. **Analyze Current Systems**: Review existing systems such as paper-based records and any existing digital tools for patient data management, administrative processes, and communication.

## Identify Key Areas for Improvement using HMIS & EMR:

1. **Patient Data Management**: Identify needs related to patient registration, medical history, appointment scheduling, and billing.
2. **Administrative Processes**: Look for areas in inventory management, staff scheduling, and financial reporting where automation and integration could increase efficiency.
3. **Communication Requirements**: Identify needs for information sharing among staff and communication with patients.

# HMIS & EMR Adoption – Need Assessment (2/2)


## Digital Infrastructure Requirements:

1. Network-related requirements such as Internet Bandwidth, LAN/WLAN, switches / routers, VPN, and firewall.
2. Software-related requirements such as HMIS/EMR software, PACS system, physician portal, patient portal, security software, and backup solutions.
3. Communication-related requirements such as email, video conferencing.
4. Audio / Visual components such as display screens and projectors.
5. Server Components such as servers to host HMIS and EMR, and storage capacity.
6. Other essential components such as workstations, barcode scanners, printers, and UPS units.

**Resources:** DHMC Resource Booklet (Typical Technology Infrastructure for Hospitals)

# HMIS & EMR Adoption Checklist


**Remember we covered this in Module 1? Let's explore each aspect in detail !!**

- ✓ **HMIS & EMR Need Assessment**
- ❑ **HMIS & EMR Budget Planning**
- ❑ HMIS & EMR Selection
- ❑ Clinical & Admin Staff Training
- ❑ Implementation & Data Migration
- ❑ Post Go-Live Monitoring & Support

# HMIS & EMR Adoption – Budget Planning

| Cost Heads | Description |
|---|---|
| **HMIS/EMR License** | The cost for purchasing the software licenses. This is usually a **one-time license fee** or an **annual licensing fee** depending on the software vendor's pricing model. |
| **HMIS/EMR Customization** | Estimated costs for customizing the HMIS/EMR to fit the specific needs of the hospital, such as adapting to existing workflows or adding hospital specific features (will vary with hospital) |
| **HMIS/EMR Integration with existing systems** | Estimated costs for integrating the new HMIS/EMR system with existing healthcare IT systems within the hospital, such as billing, scheduling, or lab systems (will vary with hospital) |
| **HMIS/EMR Implementation & Training** | The costs associated with the initial setup, configuration, and deployment of the HMIS/EMR system, as well as training hospital staff to use the new system effectively. |
| **Hardware - End-user (PC, Printers, QR Reader)** | Purchase of hardware required for end-users to use the HMIS/EMR system e.g., PCs, Laptops, printers for prescriptions, QR readers for patient identification |
| **Hardware - IT Infrastructure** | Cost of additional IT infrastructure required to support HMIS/EMR system e.g., Wifi, networking, servers for data storage, and backup systems. |
| **HMIS/EMR Software AMC** | Annual Maintenance fees for maintaining the HMIS/EMR software (typically 15-20% of one-time license fee) |
| **Hardware AMC** | Annual Maintenance fees for maintaining the hardware (typically 10% of the hardware costs) |

# HMIS & EMR Adoption – Budget Planning

| HMIS / EMR Costing Template | Small (<100 Beds) | | Medium (101-250 Beds) | |
|---|---|---|---|---|
| **HMIS / EMR Cost Heads (Typical)** | **Price (Rs. Lacs)** | | **Price (Rs. Lacs)** | |
| | Min | Median | Min | Median |
| HMIS/EMR License | 5.0 | 20.0 | 16.0 | 30.0 |
| HMIS/EMR Customization (Est. @10% of License) | 0.5 | 2.0 | 1.6 | 3.0 |
| HMIS/EMR Integration with existing systems (Est @15% of License costs) | 0.8 | 3.0 | 2.4 | 4.5 |
| HMIS/EMR Implementation & Training | 1.0 | 5.5 | 5.0 | 8.7 |
| Hardware - End-user (PC, Printers, QR Reader) | 5.0 | 7.0 | 9.0 | 12.0 |
| Hardware - IT Infrastructure | 2.5 | 4.0 | 3.5 | 6.0 |
| Total 1st Year Costs (in Rs. Lacs) | 14.8 | 41.5 | 37.5 | 64.2 |
| HMIS/EMR Software Licenses | NA | NA | NA | NA |
| HMIS/EMR Software AMC (@20% for Years 2-5) | 4.0 | 16.0 | 12.8 | 24.0 |
| Hardware AMC (@10% for Years 2-5) | 3.0 | 4.4 | 5.0 | 7.2 |
| Other / Misc. for Years 2-5 | 0.4 | 1.6 | 1.3 | 2.4 |
| Total 5 Year Costs (in Rs. Lacs) | 22.2 | 63.5 | 56.6 | 97.8 |
| Annual Ongoing Costs after 5 years (in Rs. Lacs/year) | 1.9 | 5.5 | 4.8 | 8.4 |

Please be informed that the pricing information provided in this guide are for reference purposes only, based on survey of popular HMIS / EMR in the market.

**Min Price** - Based on Lowest price received from popular HMIS / EMR vendors

**Median Price** - Based on Median price received from popular HMIS / EMR vendors

**Note:** The actual pricing quote received by a hospital can vary significant from the reference price given here:

(a) HMIS / EMR company and product selected

(b) current software and hardware already installed in hospital

(c) level of customization / integration requested by hospital

(d) special business or technical needs.

(e) Other factors e.g., location of hospital

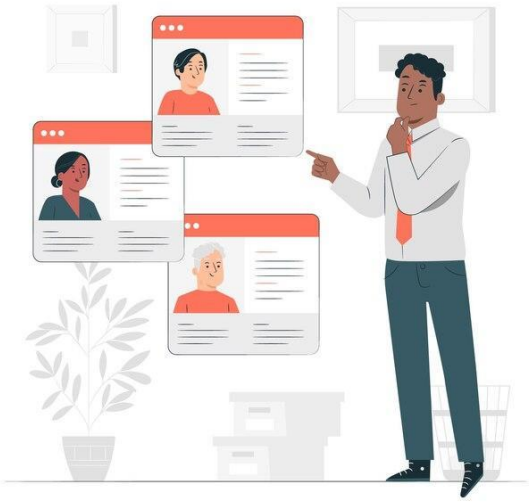
**Resources:** DHMC Resource Booklet (Draft Budget Template for EMR Implementation)

# HMIS & EMR Adoption Checklist


**Remember we covered this in Module 1? Let's explore each aspect in detail !!**

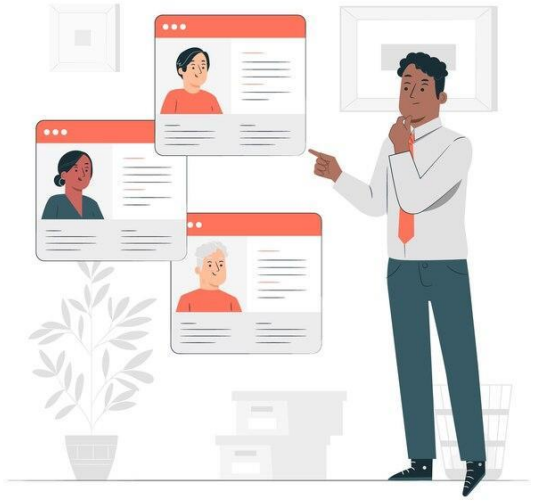
- ✓ **HMIS & EMR Need Assessment**
- ✓ **HMIS & EMR Budget Planning**
- ❑ **HMIS & EMR Selection**
- ❑ Clinical & Admin Staff Training
- ❑ Implementation & Data Migration
- ❑ Post Go-Live Monitoring & Support

# HMIS & EMR Adoption – Vendor Selection Criteria (1/2)



1. **Vendor Reputation and Experience**:
   - Check for the vendor's history and reputation in the healthcare industry.
   - Evaluate his experience with hospitals of similar size and type.
   - Ask for customer testimonials, and reviews.
2. **Software Features and Usability:**
   - Request product demonstrations to see the software in action
   - Assess if software meets your hospital needs identified in need assessment
   - Validate essential features like patient registration, appointment scheduling, billing, EMR, inventory management, etc.
   - Evaluate the user-friendliness of the software for your staff
3. **Customization and Scalability:**
   - Check if the software can be customized to fit your hospital's unique needs.
   - Ensure the solution is scalable to accommodate future growth and changes.
4. **Integration with Existing Systems:**
   - Check for software’s ability to integrate with your current systems and compatibility issues that might arise during integration.
   - Ensure the software supports interoperability including ABDM

# HMIS & EMR Adoption – Vendor Selection Criteria (2/2)



5. **Software Compliance and Certification:**
   - Check for relevant certifications e.g., ISO 27001 for security
   - Check if vendor will provide required data backup and data security
   - Confirm data security and protocols to protect data privacy (no sharing of data to other parties without written consent)
6. **Implementation Support & Training:**
   - Ensure vendor prepared to provide requisite implementation support
   - Check training resources and support services offered by vendor
7. **Pricing and Support costs:**
   - Compare software license pricing and annual maintenance costs
   - Assess total hardware costs incl. servers, PCs, Laptops needed
   - Review the total cost of ownership, including setup, licensing, training, and maintenance costs
8. **Post-Implementation Support and Updates:**
   - Ensure the vendor provides ongoing support after implementation.
   - Check frequency of software upgrades and how they are managed.

**Resources:** DHMC Resource Booklet (List of leading EMR / HMIS Companies in India)

# HMIS & EMR Selection: Key Options

## HMIS & EMR Selection - Key Options

When selecting an HMIS and EMR, here are the key selection options which hospitals will need to keep in mind:

1. **Vendor Profile Options**
2. **HMIS & EMR Options**
3. **HMIS & EMR Standards Support**
4. **Deployment Options**

# HMIS & EMR Selection – 1. Vendor Options

## HMIS/EMR Vendor Options

### Commercial Systems

- Wide range of solutions, features and scale of deployment and costs
- **Most widely used in private hospitals of all sizes**
- Examples: See popular EMRs in DHMC Resource Guide

### Government Systems

- Developed and deployed in government and public hospitals.
- **Most widely used in government hospitals**
- Two dominant government HMIS/EMR are e-Sushrut by CDAC, e-Hospital by NIC

### Open-Source Systems

- Solutions available for public download and use.
- Provides the ability to use and modify software to own needs
- **Not commonly used in India as it needs strong tech skills to use**
- Example: Bahmni

# HMIS & EMR Selection – 2. HMIS & EMR Options

## EMR and HMIS from different vendors

- EMR vendor is different from HMIS vendor
- Facilities have to integrate EMR system with existing HMIS in the facility.
- In many cases, the integration between **HMIS and EMR systems is not easy** to do and will need significant engagement with both vendors
- In addition, integration may need ongoing support from both vendors
- **Consequently, buying EMR and HMIS from different vendors is less common in India**

## EMR and HMIS from same vendor

- EMR and HMIS are purchased from the same vendor
- The vendor takes responsibility of ensuring integration between the two products, providing complete EMR-HMIS integration
- **More common in India as its easy to implement and does not need integration**
- **Note:** It may often be easier to change the HMIS system and buy a new HMIS-EMR system rather than buying EMR from a different vendor

# HMIS & EMR Selection – 3. HMIS & EMR Standards Support

**It is critical for HMIS & EMR to support key standards in interoperabilty and clinical terminologies. The most common ones which will be relevant to small / mid-sized hospitals are given below:**

## Interoperability Standards

- **ABDM Certified:** Support integration with ABDM (Ayushman Bharat Digital Mission) - Compliant to M1, M2 and M3 requirements
- **HL7/FHIR Compliant**: Support HL7 (Health Level Seven International) and FHIR (Fast Healthcare Interoperability Resources) standards for clinical data exchange.
- **DICOM Compatibility for Imaging**: Support DICOM for exchanging medical images
- **NHCX Compliant:** Supports new e-claims standards supported by National Health Authority (NHA)

## Clinical Terminology Standards

- **International Classification of Diseases (ICD)** codes for diagnoses and procedures.
- **SNOMED CT** (Systematized Nomenclature of Medicine - Clinical Terms) for clinical terminology. It is essential for recording and sharing clinical data such as patient problem lists, medical histories in EHRs etc.
- **LOINC** (Logical Observation Identifiers Names and Codes) for lab and clinical observations. It enables creation of consistent patient records used for care management programs, longitudinal reporting and better patient outcomes.

**Resources:** DHMC Resource Booklet (Healthcare Interoperability Standards)

# HMIS & EMR Selection – 4. Deployment Options

## HMIS/EMR Deployment Options

### 1. On-premises Systems

- HMIS/EMR solution whose servers, databases, storage, etc. are installed locally on hospital servers.
- Hospitals have control and customization over the application.
- Offers less flexibility due to physical servers.
- Suited only for large hospitals with in-house IT teams.

### 2. Cloud-based Systems

- Delivery of services such as databases, storage, software etc. on external servers (cloud) which are managed by vendors.
- HMIS/EMR system is accessed by doctors & hospitals over the internet.
- Offers scalability, flexibility and accessibility from anywhere and greater security.
- Reduces hospital IT burden and commonly used by smaller hospitals in India.

# HMIS & EMR Adoption Checklist


**Remember we covered this in Module 1? Let's explore each aspect in detail !!**

- ✓ **HMIS & EMR Need Assessment**
- ✓ **HMIS & EMR Budget Planning**
- ✓ **HMIS & EMR Selection**
- ❑ **Clinical & Admin Staff Training**
- ❑ Implementation & Data Migration
- ❑ Post Go-Live Monitoring & Support

# HMIS & EMR Adoption Checklist – Staff Training

1. **Assess training Needs** of doctors, nurses, administrative staff, and IT personnel.
2. **Plan for different training modules** focusing on different stages of HMIS & EMR roll out.
3. **Select trainers** -Ideally the vendor should provide this.
4. **Review training materials** of the trainers to ensure it caters to your staff.
5. **Schedule training sessions** in a way that minimizes disruption to hospital operations.
6. **Provide hands-on training** sessions where staff can practice using the HMIS & EMR system in a controlled environment.
7. **Conduct assessments** to evaluate staff's understanding and proficiency in using the system.
8. **Offer continuous support post-training** to address any challenges or questions that arise during actual system usage.

# HMIS & EMR Adoption Checklist


**Remember we covered this in Module 1? Let's explore each aspect in detail !!**

- ✓ **HMIS & EMR Need Assessment**
- ✓ **HMIS & EMR Budget Planning**
- ✓ **HMIS & EMR Selection**
- ✓ **Clinical & Admin Staff Training**
- ❑ **Implementation & Data Migration**
- ❑ Post Go-Live Monitoring & Support

# HMIS & EMR Adoption Approach

- HMIS are relatively easier to implement and most hospitals in India have few basic modules of HMIS already implemented.
- On the other hand, implementing an EMR takes more effort and needs the clinical and admin teams to become more proficient.
- Consequently, we suggest a **phased-wise approach to implementing an EMR** which will be easier for the hospital, while delivering strong clinical value to doctors and patients

## Phase 1 — Foundational Features

**Out-Patient Department (OPD)**
- Patient Registration
- ABDM-based Registration
- Appointment System
- Basic Clinical Module
- Patient Dashboards (with basic patient reports)

**In-Patient Department (IPD)**
- Basic Admissions Module
- Basic Clinical Module
- Basic Order entry
- Basic Discharge Summary

## Phase 2 — Intermediate Features

**Out-Patient Department (OPD)**
- Advanced Clinical Module
- Advanced Medication Management

**In-Patient Department (IPD)**
- Advanced Clinical Module
- Advanced Medication Management
- RIS, LIS, PACS integration

## Phase 3 — Advanced Features

- Critical Value Reporting for Labs & Radiology
- OT Scheduling
- Patient Wait Time (OPD, IPD, Labs etc.)
- Discharge tracking & follow ups
- Patient Education
- Patient Alerts
- Drug-drug interaction
- Clinical Reports and Dashboards

## Phase 4 — Others

More advanced features
- Advanced clinical quality reporting and analytics
- Quality Indicators & Hospital KPI Monitoring
- CDSS
- Pharmacy stock management

**A Phased-wise EMR approach ensures that hospital's clinical and administrative staff become more comfortable with EMR usage, increase efficiency, and progressively add / access more information**

# HMIS & EMR Adoption Approach – Phase 1

| | | |
|---|---|---|
| **Phase 1 - Foundational Features** | **OPD** | **Patient Registration-** Capture patient registration & core demographic details (name, age, contact details) and generate patient unique identifier (UHID). Generate / verify with patient ABHA ID and link it UHID. |
| | | **ABDM Registration-** Functionality to link patient medical records in hospital (generated at any patient touch point within the hospital or during any of the visits) to their UHID |
| | | **Appointment System** with scheduling, rescheduling, and appointment cancellation capability. |
| | | **Basic Clinical Module-** Capture basic OPD Assessment in EMR - Vital Signs, Chief Complaint, Medicine Prescription |
| | | **Patient Dashboards** with list of patients with basic demography details-OPD (Appointment list) & IPD (Admission list) |
| | | |
| | **IPD** | **Basic Admission Module-** Capture basic in-patient details, including personal information and insurance details |
| | | **Basis Discharge Summary-** Create discharge summary templates to document treatments and follow-up instructions. Ensure the Discharge Summary is linked with ABHA ID |
| | | **Basic Clinical Module-** Capture basic IPD Assessment in EMR - Vital Signs, Diagnosis, Medicine Prescription |
| | | **Basic Order Entry** for lab tests, diagnostic procedures, and in-patient medications |

# HMIS & EMR Adoption Approach – Phase 2

| | | |
|---|---|---|
| **Phase 2 - Intermediate Features** | **OPD** | **Advanced Clinical Module-** Detailed progress notes, clinical standards (SNOWMED, LOINC) & comprehensive medical history. |
| | | **Advanced Medication Management-** Capture medical history, medicine reconciliation, allergy management, etc. |
| | | |
| | **IPD** | **Advanced Clinical Module-** Detailed documentation of in-patient progress summary, nursing progress notes, emergency-department module ,patient referral management (Internal & External). |
| | | **Advanced Medication Management-** EMR capability to control and manage psychotropic drugs, high alert medications, look alike sound alike drugs, medication expiry, etc. |
| | | **RIS & LIS modules-PACS** integration, machine integration, reporting (OPD & IPD) |

# HMIS & EMR Adoption Checklist


**Remember we covered this in Module 1? Let's explore each aspect in detail !!**

- ✓ **HMIS & EMR Need Assessment**
- ✓ **HMIS & EMR Budget Planning**
- ✓ **HMIS & EMR Selection**
- ✓ **Clinical & Admin Staff Training**
- ✓ **Implementation & Data Migration**
- ✓ **Post Go-Live Monitoring & Support**

# Module IV – What is the role of CEO & Leadership in driving Digital Health?

- Hospital Vision & Key Areas of Focus
- Creation of strong Digital Health team
- Policy Development and Compliance
- Quality Control and Performance Monitoring
- Partnerships and Collaboration
- Expansion of Business

# CEO & Leadership Role in Digital Adoption (1/4)

1

Define Hospital Digital Health Vision

2

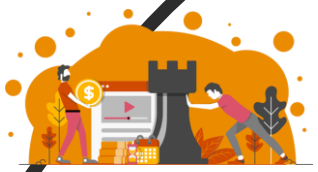
Create strong Digital Health Team & Budget

3

Support HMIS & EMR selection and implementation

4

Monitor HMIS & EMR usage across Clinical and Admin teams



5

Track clinical, operational and financial performance

6

Drive Patient Satisfaction & Business Growth

# CEO & Leadership Role in Digital Adoption (2/4)

| | Role of CEO & Leadership team | Learnings / Suggestions |
|---|---|---|
| **1 Define Hospital Digital Health Vision** | • Define clear Digital Health vision<br>• Identify key areas where HMIS and EMR should improve clinical performance<br>• Set clear metrics for financial performance and growth | • Include senior clinical leaders in developing vision<br>• Articulate vision to the leadership team and finance team to create buy-in<br>• Share Digital Health vision with all clinical and administration staff |
| **2 Create strong Digital Health Team & Budget** | • Assign strong clinical leader to drive Digital Health initiative<br>• Ensure Digital Health team has representation from clinical, nursing, admin and finance team members<br>• Create adequate budget for HMIS and EMR implementation | • Have Digital Health team led by senior clinical leader with strong credibility and alignment with Digital Health vision<br>• Limit size of team to 5-7 for ease of management |

**Resources:** DHMC Resource Booklet (Sample Digital Health Vision & Guidelines to form digital health team)

# CEO & Leadership Role in Digital Adoption (3/4)

| | Role of CEO & Leadership team | Learnings / Suggestions |
|---|---|---|
| **3 Support HMIS & EMR selection and implementation** | • Advocate for the integration of HMIS and EMR systems in line with the hospital's digital health strategy<br>• Set selection criteria for HMIS/EMR<br>• Oversee training and support for system users | • Include diverse users in selection<br>• Implement in phases with clear planning<br>• Establish fortnightly review meetings with Digital Health team<br>• Communicate progress to stakeholders |
| **4 Monitor HMIS & EMR usage across Clinical and Admin teams** | • Analyze HMIS/EMR usage data<br>• Address usage barriers departmentally<br>• Leverage data for care and process improvements | • Conduct user feedback sessions<br>• Track HMIS/EMR-related performance indicators<br>• Promote a culture of learning and system adaptation |

# CEO & Leadership Role in Digital Adoption (4/4)

| | Role of CEO & Leadership team | Learnings / Suggestions |
|---|---|---|
| **5 Track clinical, operational and financial performance** | • Implement performance tracking systems<br>• Use data for strategic decisions<br>• Maintain performance metric transparency | • Utilize analytics for insights<br>• Share data with staff regularly<br>• Embed performance tracking in culture |
| **6 Drive Patient Satisfaction & Business Growth** | • Focus on patient satisfaction for growth<br>• Enhance patient experience strategies<br>• Align growth with clinical and patient satisfaction outcomes | • Evaluate patient feedback systematically.<br>• Invest in staff training for better service.<br>• Use satisfaction data for marketing and growth. |

# Role of CXO: 1. Set Hospital Vision and Key Focus Areas

Place holder for video

CEO explaining the vision and strategy they set before the adoption of HMIS and EMR

## Debrief

1. What are the questions the CEO asked himself in order to set the vision and key focus areas for the hospital?
2. What are the questions you can ask yourself for the same?

## Worktime

1. Take 5 mins and note down a V1 of vision statement for your hospital
2. Put down a timeline to complete the vision and Key focus areas

**Resources:** DHMC Resource Booklet (Sample Vision & Strategy Document / Template for a Hospital)

# How will NATHEALTH support me with HMIS & EMR adoption?

# THANK YOU

# NABH Certification: Benefits for Hospitals

**Patient Trust and Satisfaction**: NABH certification can enhance the reputation of the hospital, instilling greater trust and satisfaction among patients.

**Market Differentiation**: NABH certification can set a hospital apart from non-certified ones, offering a competitive edge in the healthcare market.

**Legal Compliance**: NABH certification ensures that hospitals comply with legal and regulatory requirements, minimizing legal risks and liabilities.

**Improved Risk Management**: The certification process helps in identifying and managing potential risks in clinical and non-clinical processes.

**Access to Health Insurance Tie-ups :** Being NABH certified can lead to easier tie-ups with insurance companies, facilitating a smoother billing process and potentially attracting more insured patients.

**Sustainable Growth**: Meeting NABH standards helps in laying a strong foundation for continuous improvement and sustainable growth in healthcare services.

**Resources:** DHMC Resource Booklet (NABH Digital Health Standards)

# Business Transformation through HMIS, for a hospital owner to consider



**Patient Registration and Admission:** HMIS will enable the hospital to **handle more patients each day**, potentially increasing daily revenue due to higher turnover.



**Patient Scheduling:** By automating scheduling allowing more patients to be seen and treated, which could lead to an **increase in daily consultations and surgeries**.



**Core Pharmacy & Lab Management:** Prevent stock outs or overstocking, speed up diagnostic processes, leading to **faster treatment and turnover of patients**.



**Physician's / Patients Portals:** Providing 24/7 access to medical records and communication tools, reduction in the number of unnecessary visits , freeing up time to **attend to more patients.**



**Patient Billing & Finance Management**: With automated billing the hospital can expect a reduction in errors and delays. **Faster processing of bills and claims** means quicker reimbursement from insurance companies and patients. This **improved cash flow** can be critical for the hospital's financial health, reducing the days outstanding for accounts receivable and potentially providing **capital for reinvestment into hospital operations or expansion**.

# Clinical Transformation through EMR, for a hospital owner to consider

## Clinical Patient Record

- Reducing the time spent on manual data entry, minimizing errors in patient records, and reducing the risk of misplacing critical patient information.
- Improves the quality of care and patient turnover, allowing the hospital to accommodate more patients and increase revenue.

## Clinical Decision Support

- In a small hospital, where medical staff may be limited, clinical decision support can aid doctors with alerts and reminders and reduce the likelihood of human error and improve patient outcomes.
- This efficiency can boost the hospital's reputation for providing quality care, attracting more patients, and increasing profitability.

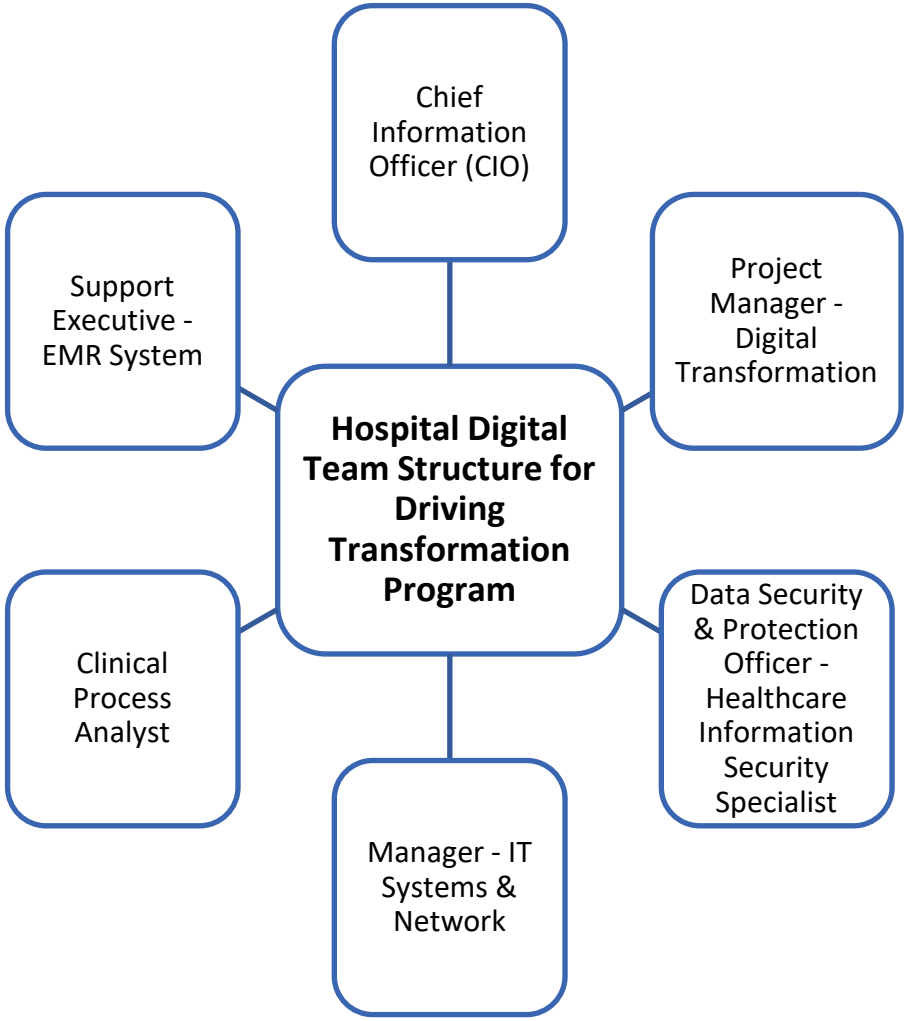
## Care Coordination

- For a small hospital, streamlined communication can lead to more efficient use of resources and staff time, resulting in quicker patient turnover and the ability to serve more patients effectively.
- Better care coordination also enhances patient satisfaction, potentially leading to repeat visits and referrals, which are vital for business growth.

## Clinical Analytics

- By leveraging EMR for clinical analytics, the hospital can gain real-time insights into patient data, helping to identify trends and manage KPIs effectively.
- This capability enables a small hospital to make data-driven decisions, optimize operational efficiency, and allocate resources more effectively, all of which can lead to cost savings and increased revenue margins.

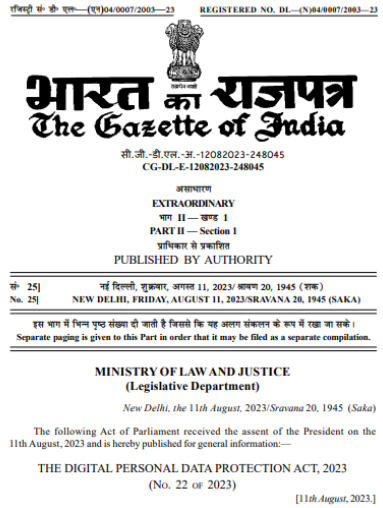
# Role of CXO: 2. Create a Digital Health Team




## Clinical Process Analyst

- Analyze clinical processes for EMR alignment and customization.
- Collaborate with stakeholders to customize EMR according to clinical needs.
- Conduct training sessions to ensure efficient EMR utilization.
- Assess post-implementation effectiveness and optimize workflows.

# Role of CXO: 3. Policy Development & Compliance (1/2)



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इस भाग में भिन्न पृष्ठ संख्या दी जाती है जिससे कि यह अलग संकलन के रूप में रखा जा सके।
Separate paging is given to this Part in order that it may be filed as a separate compilation.

MINISTRY OF LAW AND JUSTICE
(Legislative Department)

*New Delhi, the 11th August, 2023/Sravana 20, 1945 (Saka)*

The following Act of Parliament received the assent of the President on the 11th August, 2023 and is hereby published for general information:—

THE DIGITAL PERSONAL DATA PROTECTION ACT, 2023
(No. 22 OF 2023)

[11th August, 2023.]

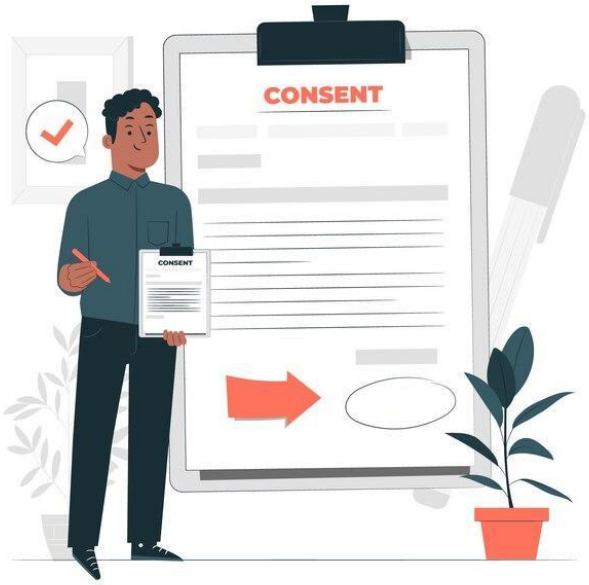
## Digital Personal Data Protection Act (DPDP) 2023

- **DPDP Act**: A new Indian regulation for personal data processing.
- **Privacy Protection**: Aims to safeguard personal data privacy.
- **Consent-Based Processing**: Personal data can be processed only with individual consent and for lawful purposes.
- **Wide Applicability**: Governs digital personal data processing within and outside India, if linked to offering goods or services in India.

## Penalties under DPDP 2023

1. Failure to provide safeguard to prevent data breach: up to **Rs. 250 Crores**.
2. Failure to notify the board & patients about data breach: up to **Rs. 200 Crores**.
3. Non-fulfillment of data obligations: up to **Rs. 150 Crores.**
4. Non-compliance with other sections of data Act: from **Rs. 10,000 to Rs. 50 crores**.

# Role of CXO: 3. Policy Development & Compliance (2/2)




## To comply with the DPDP Act, healthcare providers should:

**Obtain Consent:** Secure explicit patient consent before collecting and using personal data, except in medical emergencies or as exempted by the Act.

**Data Security and Confidentiality:** Implement robust measures to ensure the security and confidentiality of personal data.

**Breach Notification:** Report any data breaches to relevant authorities promptly.

**Data Accuracy and Deletion:** Maintain data accuracy and delete personal data once its purpose is fulfilled or consent is withdrawn.

**Grievance Redressal System:** Establish a system for addressing patient grievances and appoint an officer for handling queries.

**Data Protection Impact Assessments:** Regularly conduct assessments to evaluate and enhance data protection measures.

**Appoint a Data Auditor**: Ensure compliance and oversight by appointing a data auditor.

**Resources:** DHMC Resource Booklet (Healthcare Information Security Checklist Key Dos/ Don'ts)

# Role of CXO: 4. Quality Control and Performance Monitoring

| | |
|---|---|
| **Establishing Key Performance Indicators (KPIs)** | • Define clear and measurable  such as patient wait times, data entry accuracy, system uptime, and user satisfaction rates etc.<br>• Regularly review and adjust these KPIs to reflect evolving goals and standards. |
| **User Feedback and Satisfaction Surveys** | • Regularly gather feedback from staff and patients regarding their experiences.<br>• Use this feedback to identify areas for improvement and enhance user experience. |
| **Benchmarking and Comparative Analysis** | • Compare performance metrics with industry standards or similar-sized hospitals to benchmark progress.<br>• Use comparative analysis to identify areas where the hospital can improve or innovate. |
| **Regular Reporting and Review Meetings** | • Set up regular reporting mechanisms to update leadership on the status of digital health initiatives.<br>• Conduct review meetings to discuss performance reports, address challenges, and plan future actions. |

**Resources:** DHMC Resource Booklet (Sample Business & Clinical Transformation KPIs)

# Role of CXO: 5. Partnerships & Collaboration

**Insurance Companies**:

Work with insurance companies for streamlined claim processing and to be part of preferred provider networks.

This can increase patient footfall and ensure quicker, more efficient handling of insurance-related matters.

**Healthcare Networks and Associations**:

Join and collaborate with healthcare networks and associations to share best practices, learn from others' experiences, and stay informed about industry trends.

Example: XX

**Local Healthcare Providers**:

Establish relationships with local clinics, primary care centers, and other hospitals for patient referrals, data sharing and shared care initiatives.

**Academic and Research Institutions**:

Partner with academic institutions to collaborate on research projects that can provide insights into patient care improvement and operational efficiency.

**Government and Public Health Agencies**:

Participate in public health initiatives and programs, which can enhance the hospital's reputation and community engagement.

**Non-Governmental Organizations (NGOs) and Charities**:

Collaborate with NGOs and charities to enhance the hospital's social responsibility profile by doing community outreach, health camps, and awareness programs.

# Role of CXO: 6. Expansion of Business

The strategic use of HMIS and EMR enhances current hospital operations and lays a strong foundation for future growth and expansion.

The data-driven approach, operational efficiencies, improved patient care, and the ability to adapt to changing healthcare landscapes are key drivers in this process.

Some of the possible expansion areas are:

Increasing Bed Capacity

Introducing new specialties or departments

Advanced diagnostic facilities

Expanding outpatient services, including specialty clinics.

Telemedicine – Remote Consultations

Opening new branches or satellite clinics in underserved areas