e-Upchaar in Haryana

1. Introduction:

<mark>e-Upchaar is one of the e-governance initiatives being implemented by State Health Systems Resource Centre Haryana to improve quality of service delivery.</mark>

<mark>The core objective of e-Upchaar is to bring administrative efficiency through a state of the art ICT enabled Hospital Information System by streamlining and digitizing workflows. The scope of e-Upchaar implementation in 55 healthcare facilities includes Software development, Infrastructure set-up, Training & Change Management, followed by Operations & Maintenance support.</mark>

e-Upchaar expects to achieve:

- Streamlined, transparent and efficient operations

- Improved patient care and service delivery

- Better administrative control

- Smart inventory and financial management

- Increased regulatory and reporting compliance

- Improved efficiency of doctors, other hospital staff and administrators

Description of the initiative:

The following are the rings that make up the complete solution:

1. **HMIS Core Application:** Out of 20 modules there are- 19 patient centric modules viz - Registration, Out Patient Department, Emergency & Medico Legal Cases, In-Patient Department/Intensive Care Unit, Labour Room, Laboratory, Radiology, Picture Archiving and Communications System (PACS), Pharmacy, Operation Theatre, Central Sterile and supply Department (CSSD), Blood Bank, Medical Record Room, Birth & Death Registration, Billing, Ambulance Service. Module -20 covers the Human Resource Management for the health facility.

   e-Upchaar is accessed across all facilities using a web browser. This provides a unified platform for coordinating the resources and workflows across all the facilities. The health information recorded at various touch points during the patient's visits at the hospital is being collated into the Electronic Health Record.

   EHR (Electronic Health Record): The Patient EHR is at the core of the solution. It is accessible across all the facilities of the state. Each patient is identified by a unique UHID across all facilities.

2. **HMIS Backend Support:** The backend support modules are - Central Stores, Sub-stores, Asset & Equipment, Maintenance Cell, Finance and Accounts, Human Resource Management.

3. **Management Information Systems Reports:** This layer presents the specified list of Management Information System Reports that are built on top of the data that is gathered by the enclosed e-Upchaar System.

4. **Government of India and Haryana Government's Applications:** These are existing systems such as State Resident Database (SRDB), IdM , Birth and Death, Referral Transport System, etc.

5. **HIS Web Portal:** The Web Portal displays static information as well as dynamic information from the HIS Application, the MIS Reports and selected reports/documents from Haryana's existing and future applications.

	Earlier	Now
Doctors	Paper based clinical information and difficulty in finding past medical history	Electronic heath records – clinical history available in HIS
	Multiple times of similar investigations – ineffective information for medical decisions	Diagnosis and treatment recorded in HIS - effective information for medical decisions
	Dependent on physical investigation reports to plan treatment	Lab Investigations available in HIS – doctor not dependent on the Patient
Nurses	Manual coordination with multiple departments	Ease of communication with other departments via HIS
	Maximum time spent on documentation and report generation	Quick documentation and on demand system-generated reports
Pharmacist	Difficulty in stock estimation leading to under or over stocking – manually work with multiple departments for supplies	Ease of inventory estimation for stocking – Automatic workflow will send alerts to central warehouse to replenish stocks
	Difficulty in stock verification	Automated reports for stock verification
	Manual process to track Schedule H drugs/ Expiry dates	Automated reports available to check Schedule H drugs/ Expiry dates
Front Office	Multiple point of data entry for a single patient... chances of data inconsistency	Allows accurate patient data entry at a single point to generate unique HID
	Difficulty in tracking and old patient. Repeat data entry for the same patient	Unique HID for a every patient thereby ensuring easy identification
	Manual inter-departmental	Reduces overall paperwork and robust

OT	communication and hand-offs	communication channels
	Paper based case records – manual paperwork entries may lead to poor records	Easily retrievable, accurate, electronic and safe storage of patient records and reduced paperwork
	Manual coordination with other departments. Manual OT scheduling and monitoring	Support work schedule for multiple stakeholders for inpatient care

Cost Effectiveness

e-Upchaar has been implemented judiciously, has reduced costs, efforts, and time to deliver services, leading to improved productivity in the hospitals where e-upchaar has been implemented.

One of the cited examples where costs have decreased in a trend over a few months has been explained below—

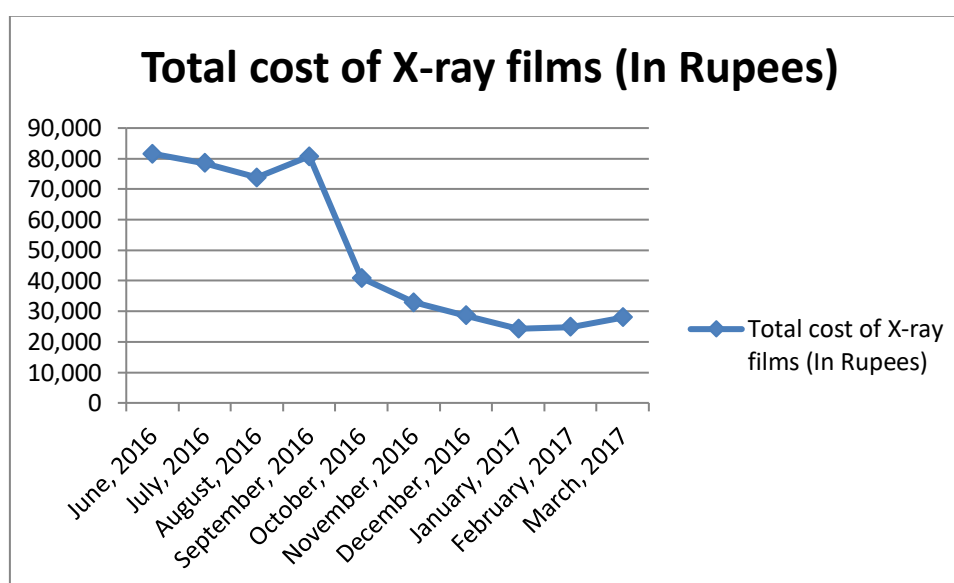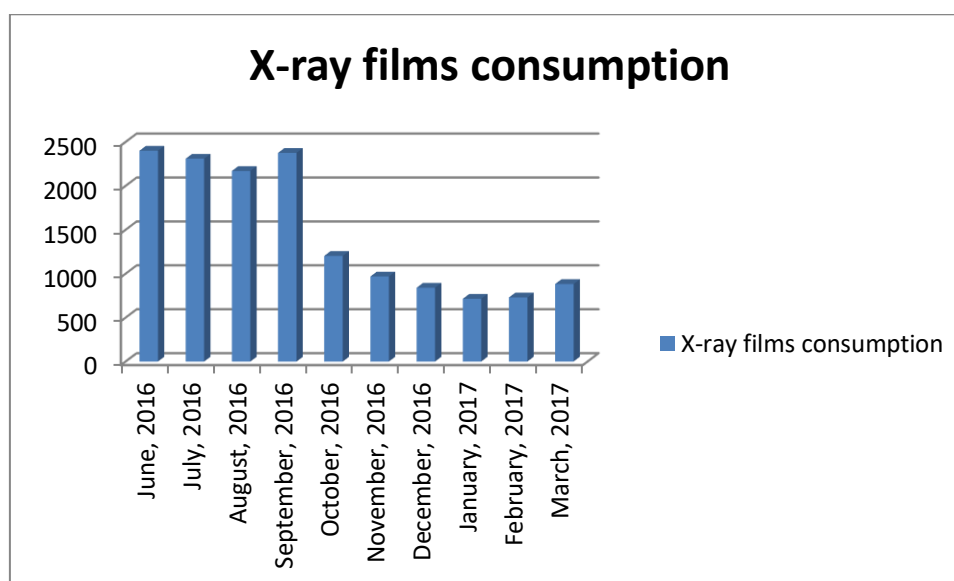1) **Digitisation of Radiology**

In one of the functionalities in e-upchaaar, electronic X-Ray images are transmitted digitally eliminating the need to manually file, retrieve, or transport hard prints.

A case study taken up in one of the district level hospitals in the state suggesting that the intervention has reduced costs and efforts has been elaborated below-

The consumption of X-Ray films was taken in one of the district hospital from June 2016 till March 2017. It has been observed that the consumption of X-Ray films declined about 70% from June 2016 till February 2017. The decline in consumption of X-Ray films also brought down the cost of purchase of X-Ray films to about 65%.

Time period	X-ray films consumption	Total cost of X-ray films (In Rupees)
June, 2016	2400	81,600
July, 2016	2309	78,506
August, 2016	2169	73,746
September, 2016	2375	80,750
October, 2016	1202	40,868
November, 2016	968	32,912
December, 2016	840	28,560
January, 2017	714	24,276

February, 2017	729	24,786
March, 2017	882	27,948

X-ray films consumption

[Bar chart titled "X-ray films consumption" showing monthly values from June 2016 to March 2017. Y-axis ranges from 0 to 2500. Legend: X-ray films consumption]

Total cost of X-ray films (In Rupees)

[Line chart titled "Total cost of X-ray films (In Rupees)" showing monthly values from June 2016 to March 2017. Y-axis ranges from 0 to 90,000. Legend: Total cost of X-ray films (In Rupees)]

2) Electronic Health Record-

One of the demonstrable effectiveness of e-upchaar can be measured in terms of creation of an Electronic Health Record (EHR) of a patient. E-upchaar captures a range of data, including demographics, medical history, medication and allergies, immunization status, laboratory test results, radiology images, vital signs and the treatment during the course of

hospital stay including any medical/ surgical procedures that have been performed which would be during all subsequent visits across the 55 facilities through a unique Identification.

Through e-upchaar EHR systems captures the state of a patient across time, reducing the risk of data replication as there is only "ONE" medical record and one Unique Identification. The digital information is searchable and it is simple to extract patient information, the physician/ surgeon needn't search for the entire paper based record when information is available in a single click.

- The alert prompts being an additional feature in which a physician can alter the treatment modality simultaneously as soon as the Laboratory/ X-ray investigations are prompted on the doctor dashboard.

4) Optimal use of Laboratory Reagents/ consumables

e-upchaar laboratory dashboard has an integration with laboratory biomedical equipment. The laboratory results are available as soon as the analysis is completed, the

3) Drug inventory management-

Medication Management is involves not only storage of vital and essential drugs but the process of indentation, issuances and estimation of consumptions.

E-upchaar has functional modalities where the drugs can entered along with their batch codes and issuances can be automatically updated various departments such as from Pharmacy to IPD, Emergency department, Labour Room.

The list of near expiry drugs is visible on the dashboard which is leading to lesser drug expirations and lesser wastage of drugs. These small cost savings lead to an efficient healthcare delivery system