Role of Information Technology in Health Care

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Introduction

Today, the utilisation of the resources of **Information Technology Industry** has become the building block of all organisations, companies and departments including health care. With the continuous evolution of health care organisations, information can no more be maintained manually. Hence, there becomes growing need for the information to become computerized so that it can be suitably stored and retrieved as and when required. The most convenient storage systems for this is the Databases System. The obvious area of database technology in health care is the maintenance of patient records.

The Information Technology Department of The Gujarat Cancer & Research Institute started in the year 1993, initially with very few desktop computers for documentation work utilising WordStar 4 MS-DOS and simple data sheet creation in lotus software. In the year 1998, new patient registration was initiated with an in-house dos base customized application. Thereafter, in the year 2005, patient registration was done utilising window-based application. Then various web-based applications for patient services and administrative purposes was developed. All the above applications were developed in a phased manner, interlinked with a common database. Thus, existing **Hospital Information Management System (HIMS)** i.e. **GCRI Suite of Applications** was implemented in the institute. Currently, up graded to **SYNERGY SUITE OF APPLICATIONS.**

Further the **"SYNERGY SUITE OF APPLICATIONS** "comprises several modules as follows:

1) **GCRI.NET** - This is a GCRI Intranet Website, which is very useful for Employee Self Service Portal, Leave Management, it showing Payslip and Monthly Duty Hours Report, Patient Inquiry, Telephone Directory, Patient Information along with Billing Details, GCRI Tariff, and Notice Board etc.

2) **InfoDIAGNOSTICA** - Diagnostic Laboratory Data Management System like Patient Blood Collection and process for various reports by laboratory information system which allows effectively manage the flow of samples and patient data to improve lab efficiency. It improves access to quality diagnostic testing and provides accurate, timely information for patient care.

3) **InfoHAEMATICA** - This module enabled with Core Blood Bank Management System for Blood Grouping, Investigation Keeping records of Blood donors, BT Demand, Issue and return etc.

4) **InfoMEDICA** - This module covers all the Surgical Procedure day to day done by Department of Surgery like , OT Entry & List, OT Performed Reports, PMJAY Software Package Entry, SMS Dispatch Module, Railway & ST Pass Module etc

5) **HR and Payroll System** - HR database, Recruitment, On boarding, Workforce management, Time and attendance Management, Absence and leave management

6) **Billing** - Patient billing integrates with all clinical and administrative modules: Outpatient, Inpatient, Laboratory, Radiology, Diet & Nutrition, Pharmacy, etc. TPA Authorisation for Various Govt Scheme like Ma Yojana, PMJAY, ESIS, School Health, SC, ST, LIG etc

7) **Ward Management System** - This module provides entire management for indoor patients like: Patient Admission, Transfer and Discharge, Item Indent and Demand for various department, Diet Register, Service Indent, etc.

8) **Medical Records Department** - Patient Registration, Patient Follow-up, Patient Visit & File Movement. It also manages and organize Patient health records; ICD-O code and classify diseases; store and retrieve health records; and collect, tabulate, analyse and interpret data for research, training, and administrative use. This Module is also connected with various projects are being run by ICMR like PBCR, HBCR, RCR etc

9) **Radiotherapy** - Radiotherapy Data Management System with Radiotherapy Appointment, Planning, Approval and Exposure of Patients on different Machines.

10) **Health Check Up Programme** - Health check-up for VIP and Diagnostic Camps for Oncology

11) **Store & Purchase** - MATERIAL MANAGEMENT SYSTEM with Material Planning and Control, Purchasing, Stores Management, Stock Control or Management

12) **Pharmacy** - Pharmacy Management System supports the distribution and management of drugs,

shows drug and medical device inventory, and facilitates preparing needed reports.

13) **InfoDiagnostica Report Viewer** - Patient Laboratory Report Viewer& Printing Module

IT Department implements the governance for the use of IT facilities like network and operating systems, and it assists the operational units by providing them the functionality as per their need. This department is providing support for the IT infrastructure and automation facility by obeying the rules and regulations of IT SOP (Standard Operating Procedures).

The Department of IT at GCRI is enabled to provide ITC enabled services for patients and administration. IT is facilitated with HELPLINE, Patient's Case File request system, complains registration systems for Patients, Maintenance request system for internal users.

Responsibility

GCRI IT departments have an essential role to play in assisting hospital staff to manage and care for patients. This department is not only responsible for the smooth functioning of clinical software and the other processes that help administrative staff to keep patient records and admission systems, but, also have an important role to play in ensuring to run smooth daily activities of all wards, operating rooms, and emergency departments, etc which are working 24 X 7.

Some of these functions include Patient billing, Patient registration, health information management, Patients Laboratory Reports, and special software for such things as Radiology Picture Archiving and Communication System (PACS) & Radiology Information System (RIS) , Interventional Therapy Centre (IVTC) & Modality Treatment Planning Software, Laboratory Information System (LIS) Software, etc.

IT department also performs such tasks as providing IT Infrastructure, Providing support for online/offline meetings/conferences/academic programs, IT Network infrastructure, IT security, Server Maintenance, Software deployments, in-house customized Software Development, and so on.

IT department is also responsible for desktop support and running the help desk. The support staff working in this particular area generally doesn't require clinical knowledge, but they are having sufficient knowledge to support operating hardware like desktops, laptops, printers, and other devices in the hospital.

The GCRI IT helpdesk acts as a single point of contact to get requests and problems of users.IT Helpdesk always remains ready to receive phone calls from users to provide solutions when they have issues to get help. Normally, the staffs of the IT Helpdesk are not clinical experts, but they are having basic and sufficient knowledge of various applications used by different areas of the hospital.

Apart from onsite support to GCRI, IT Department also providing remote support whenever needed by managing Community Oncology Centre - Vasna and Satellite Centres RCCC Siddhpur, SCCRI Rajkot and BCCRI Bhavnagar.

IT Department has also adopted the latest technologies and Business continuity planning (BCP),

1) Network Security through Firewall and Antivirus
2) Data Security through Access Control
3) Data Protection through Data Backups and Restore Procedures,
4) License Compliance
5) Cloud-Based E-Mail System Facility
6) Hospital Information Management System
7) Maintains Network Uptime and Monitoring of Internet Bandwidth Utilization
8) User Support Functions & Troubleshooting
9) Provides Secure Connectivity to Remote Locations through IP-Sec VPN and Secure Site to Site Tunnels with Auto Failover Facility
10) Centralized Helpdesk Support
11) Robust Internet Connectivity with Backup Line
12) Front End Application Support
13) Wi-Fi Access Point Monitoring & Support
14) Website Maintenance & Managing of Twitter Account
15) Data Management and Archival
16) Data Centre with Hybrid Cloud
17) Provides Support during Online/Offline meetings/Conferences/Academic Programmes.
18) Vendor Management

Online Training / Seminar

- IT Department has undergone Online Training of Sophos Firewall Zero Trust Network Access conducted by Netlogic.
- Online Seminar of Nutanix - Next Level Hypervisor with scalability conducted by Nutanix
- Online Webinar of Cybersecurity Incident Response Best Practices conducted by Sophos

Future Directions

Our road map is to focus on the adoption latest technologies and move to the cloud-based computing system to minimize IT infrastructure with premises. IT department also takes initiative in selecting and implementing new applications.

To develop in-house IT Team

To adopt latest technologies on IT Infrastructure side Like Hyperconverged Environment on Server, Integration of AD with Firewall for User-based Policies, More on Hybrid Cloud Computing, Maximum use of other software in Office 365 Portal.