AN ADVANCEMENT IN HEALTHCARE INDUSTRY AS HOSPITAL INFORMATION SYSTEMS (HIS) & E –HOSPITAL MANAGEMENT (E - HMS)

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ABSTRACT Technology advancement in Information & Communication Technology (ICT) and facility of Internet has greatly impacted the hospital and service industry models. E-Hospital Management Systems contribute towards benefits of streamlined operations, decorated administration, excellent patient compliance and reasonable cost benefits with best profitability. Worldwide health care systems have to follow Healthcare Insurance Portability and Accountability Act (HIPAA) standards of the US and now it has become the routine methodology for Healthcare industry in context with records management system and patient information privacy policy. This study is discussing about understanding the Hospital information systems (HIS), summarizing the normally followed standards and protocols like Health Level Seven (HL7), Hospital Information System (HIS) etc. To conclude an idea of larger picture on E-Hospital Management (E - HMS) and Hospital information systems (HIS) achievements of HIS are considered in the study.

KEYWORDS : E - HMS, HIS, HIPAA, HL7, ICT

INTRODUCTION

Now a days Hospital Information systems (HIS) has become an important system in the aspect of continuously increasing population and also a useful tool for the practicing doctors and hospital industry for their service and precision. There are various factors to evaluate the performance of services like hospital industry and successful installation and application of Hospital information system (HIS) which results an important role. Hospital information systems (HIS) are software Technology which is tremendously available in the market and host companies are also providing their customized versions according to the need of Industry and some special cases Hospital information systems (HIS) even developed or modified majorly according to hospital requirements completely from the original version under specified license agreement to conceal the patient information being leaked[1].

E – Hospital Management & HIS

Due to increased demands and legal issues, the Healthcare Insurance Portability and Accountability Act (HIPAA) of the United States has advocated for global rules and regulation among healthcare organizations which is complete realization of urgency to integrate the Healthcare Industry worldwide. Hospital Information System (HIS) is an integrated information system which is enriched with latest technology to improve patient compliance by upgrading the user information and decreasing uncertainty of any mismatch with provision of rational decisions to be executed from the information provided[2]. HIS consist of various softwares which are technically integrated to categorize data in specific sections of the hospital which could handle the routine process of daily medical services and also helps in managing financial, administrative and clinical services data altogether at one place[3]. Softwares like AyuSoft[4] can be referred as boon to medical services, because of its Pioneering Multidimensional Effort for Indian Traditional Medicinal system. Which provides one point medical solutions based on traditional medicines at your fingertips. AyuSoft is primarily a collaborative movement of agencies like Centre for Development of Advanced Computing, Pune (R & D Organization under Ministry of Electronics and IT, Govt. of India), Interdisciplinary School of Health Sciences, University of Pune, Pune, India, Department of Ayurveda, University of Pune, Pune, India and Jnana Prabodhini, NGO, Pune, India. AyuSoft includes all data collection like:

* Constitution (Physiological and Psychological) and Tissue Quality Assessment
* Disease Diagnostics & Treatment
* Diet & Lifestyle Advice

* Personal Information Management System
* Multimedia based Encyclopedia
* Textual & Graphical Analytical Report Tool investigation,

HIPAA privacy guidelines for Medical Records and patient information

The main objective of HIPAA guideline complied for all Hospital information system (HIS) regarding implementing E – Health management systems (E – HMS) of global standards is their privacy rule which must be regulated and followed in all aspects. The HIPAA Privacy Rule covers all "individually identifiable health information" kept or transferred by a covered entity or its associate / agency in any form or media, whether electronic, paper, or oral mode of transmission. In their language these privacy rules are categorized as "protected health information (PHI. A detailed guideline manual over the identification methods to be applied for PHI content in medical records and information systems management is delivered by U.S. Department of Health & Human Services[5].

RIM Development Framework

Health Level Seven (HL7) is one of the pioneer American National Standards Institute (ANSI) accredited Standards Developing Organizations which is functional in the healthcare industry worldwide and well known for its standardization. ("Level Seven" means - highest level of the International Standards Organization's (ISO) communications model for Open Systems Interconnection (OSI) —the application level). HL7 works at the reference information model (RIM) to obtain domain specific information models and modify them into HL7 message specifications Traditionally involved in transforming clinical and administrative data[6]. HL7 version 3.0 specification is primarily based on the Reference Information Model (RIM) which is a basic and underlying modeling framework and content with artifacts like: Use Case Models, Information Models, Interaction Models, Message Models, and Implementable Message Specifications. Leading software industry like Microsoft is premier member of this domain HL7 for ten years and member of Healthcare Information and Management Systems Society (HIMSS) since 2002. The Reference Information Model (RIM) is the cornerstone of the HL7 Version 3 development process[7].

HOSPITAL MANAGEMENT TASKS & FEATURES

For a comprehensive E Hospital management / Hospital information systems model (E – HMS / HIS,) different types of E – Hospital management system tasks are analyzed and mentioned in this context as follows[8]:-

Storage and monitoring of patient's condition:
• Accurate and electronically stored medical records of patients (e.g. drug allergies) are provided
• Visual and auditory warning systems are generated in the event of abnormal test results or other important data
• Time intervals and / or testing periods for tests on patients to be specified
• Data Processing and analysis for statistical purposes and research oriented purposes

One of the effective and successful E - hospital management solutions (E – HMS) is National Informatics Center, India[9]. It is a typical Hospital Management System (HMS) works at ICT solution for Hospitals industry effectively meant for Government Sector hospitals. This is a technical software system which comprises majority of functional aspects like patient care, pathology lab services, routine medical document / information exchange, human resource and patient medical records management system of a Hospital / organization. The core strength of NIC is patient-oriented system rather than a series of add-ons to a financial service.

SUCCESS FACTORS
The success of the Hospital Information System (HIS) comprises a number of critical factors.

• The intention of senior management regarding installation must be the clear targets and outcome is motivation towards the success of this business module. Implementation to operational processes, job roles, and professional organi zational culture will require resources with continuous and consistent support of top management[10]. below levels of management should also be fairly updated and must remain accountable for the key design needed to be implement to maximum system benefits.
• Proper implementation of the inpatient information system is most urgent because of the resultant impact of delays on benefits realization is costly.
• Majority of annual expenses are from labor costs, senior management, will require to partner with labor to take complete use of the efficiencies introduced to the workflow under the HIS.
• Internal policies require physicians and reception staff to detail and codify accurately all hospital procedures.
• Workflows must be redesigned to incorporate the suggested changes and proper system functionality.

SUMMARY
As per Health Evidence report[11] of the it mentioned that five major parameters should be evaluated for measurement of hospital performance during positioning, as below:
• Regulatory inspection
• Surveys of consumer's experiences
• Third-party assessments
• Statistical indicators
• Internal assessments.

Basic Modules
1. **Registration and Appointment Module -** Registration module is a needed patient management system, which provides entire details.
2. **O.P.D. Module -** Outpatient module works as a starting point to schedule appointment with the Resident Doctor or Consultant for their Consultations.
3. **Billing & Insurance Module -** Billing module basically manages all sort of billing for OPD / IPD patients.
4. **Services Module -** Service module encourages effective management for all the services in the hospital and sanctioned charges for these services are securely paid though available online portals.
5. **Manager Module -** Manager module commonly provides security through managing the grant of access about

information entered during registration and existing data.

Optional Modules
1. **Pharmacy Module –** This module Speaks about the administration management system of a pharmacy.
2. **Pathology Module –** This module facilitates the pathological investigation of all major disciplines.
3. **Radiology and Ultrasonography Module –** This module manages services like X-ray, Scanning, Ultra sound, MRI, CT scan etc.
4. **Electronic Medical Record (EMR) Module –** This EMR Module caters for Medical and clinical record keeping of patients in the hospital.
5. **House Keeping Module –** This Module is designed for clean and dust-free environment for patients and general public.
6. **Nursing Module –** This Module manages nursing staff for their routine activity with the objective of patient compliance and improved service.
7. **Emergency Management Module –** This module caters fast registration of patients admitted under emergency conditions by mentioning their specific registration details obtained in short period keeping in mind the essence of situation.
8. **Blood Bank Module --** This module is very peculiar in nature and maintains all updates regarding blood donation and its maintenance.
9. **Payroll Module –** This module caters for Pay calculation, printing of salary slip, salary certificates and PF statements, Gratuity Statement and provides a monthly analysis.

CONCLUSION
The mentioned key points and standards of E – hospital management solution (E – HMS) and Hospital Management System (HIS) are detailed with respective their various sections. The successes of these E – HMS / HIS shows variation in aspect of results, depending upon management improvisation, revised training, technology implementation, user adaptation[12], etc…HIPAA privacy has mentioned his guidelines and HL7 / RIM frameworks has been recognized well as the key indicators and standards on Global compliance in designing and improvisation E - hospital management solutions successfully and also variety of papers published on E – hospital management solution (E – HMS) and Hospital Management System (HIS) remain committed towards future research and upgradation on Enhancements in E - Hospital Management domain.

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