Synchronization of Health Informatics with "AADHAAR" (UID: Unique Identification)

Nitin Vohra and N.K. Jain

Centre for Development of Advanced Computing (CDAC), Department of Information Technology, Ministry of Communications & Information Technology, Government of India
{nitinvohra,nkjain}@cdac.in

Abstract. Healthcare providers are facing challenges to make unique EMRacross hospitals. In existing scenarios there is no concept of centralized repository and no mechanism to map records. To prevent duplicity of records various checks are available in rolled out applications but it depends on information keyed. Slight deviation in records may lead to duplicate registration. This 'identity silos' increase overall cost of identification and extreme inconvenience. WHO provide HL7 standards to exchange data between heterogeneous applications, but most of applications do not support HL7. In all scenarios the aim to maintain Unique EMR is lost. It can be prevented by identify a compulsory field which is unique to identify patient record. With the advent of AADHAAR we can check the duplicity of record and get EMR according to unique IDacross hospitals. Since AADHAAR is not mandatory in Hospital applicationsbecause ofguidelines, as a challenge we introduced UID in GNCTD, PGIMER and AROGYA Hospital projects.

Keywords: Hospital Management Information System(HMIS), UID, AADHAAR, EHR, EMR, LUCENE, HI (Health Informatics).

1 Introduction

HI is a discipline at the intersection of information science, computer science, and health care. It applies to the areas of nursing, clinical care, dentistry, pharmacy, public health and biomedical research. Research in the field of electronics instruments making dreams come true of researchers in the field of HI, HMIS is one example.

AADHAAR is a 12-digit unique number (Fig. 1) which the Unique Identification Authority of India (UIDAI) will issue for all residents. The number will be stored in a centralized database and linked to the basic demographics and Biometric information, photograph, ten fingerprints and iris of each individual. [1]

Fig. 1. UID (Unique Identification Number Format)

V.V. Das, E. Ariwa, and S.B. Rahayu (Eds.): SPIT 2011, LNICST 62, pp. 201–204, 2012.

HMIS is used in hospitals with the objective of streamlining the treatment flow of a patient, allowing doctors and other staff to perform to their best ability, in an optimized and efficient manner. Modeled on a unique combination of a 'patient centric and medical staff centric' paradigm it is beneficial to the recipients and the providers of healthcare. It provides an accurate, medical record of the patient. EHR is the ultimate goal of those who see the value of information systems in the care of patients. However much remains to be done in the areas of data exchange/interoperability, data entry, user interfaces, database design and security before the full benefits of EHR's can be realized [2]. The HL7 communication standard is developed for the Health Care domain and facilitates the exchange of messages between Health Care Information Systems [3]. Patients are mobile and visitmultiple health service providers. At present medical record number is issued and maintained by a practitioner or a provider organization; it is inadequate to support the national healthcare system. In our country about 15-20 per cent of patients are brought to the hospital in an unconscious state. Doctors have to find out their medical records, but by then it is often too late in case of emergency. "In order to uniquely identify an individual across multiple health organizations, a reliable Healthcare System is required and the best would be AADHAAR.

2 Industry Initiative (Previous Work in the Field / Literature Review)

The basic health care delivery system in India is implemented through the Primary Health Centers. In providing healthcare services the ANMs are made to maintain number of records in registers. Keeping this as the key information, CMC Limited designed a project using state-of-the-art technology, mobile devices which were handed to the ANMs for capturing data at the doorsteps of the rural people. The system covers the health care delivery at two levels. Data is electronically transferred upwards in the department hierarchy for strategic planning and decision-making. [4]

3 UID in HMIS

3.1 Requirement

Existing system with no Central Repository and absence of Patient's Unique Identifier was the biggest challenge. At present patients are mobile, visit multiple providers and treated by multiple health organizations. Patient Identifier is unique only within a provider organization which is inadequate to support the national healthcare system.

3.2 HMIS Design: Implemented Platform Overview

System is Based on N-tier J2EE Internet Architecture, Based on RDBMS for easy retrieval and better performance, Portable across a variety of platforms. (Fig. 2)

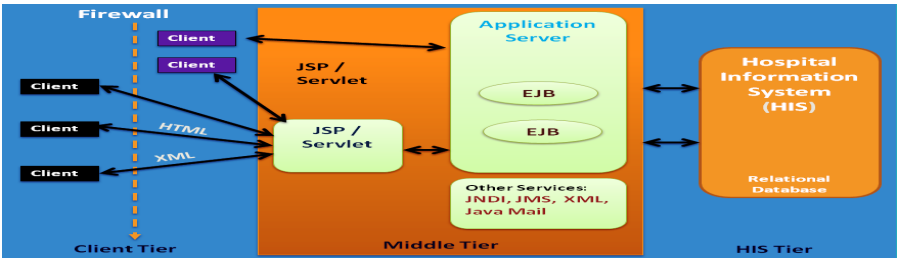

Fig. 2. HMIS Architecture

Patient information captured using Registration process of the HUIDS application and based on the National Health ID maintained in the system Unique Patient Information is stored in the Database, which is at the Hospital level point and then stored in Central Repository through boot model of cloud computing making it possible to run remote applications on "cloud" of computers [5], limits the Duplicity of records by implementation of LUCENE Technology, ensures smooth and fast retrieval and updating of Patient Historical medical information every healthcare point. (Fig. 3)

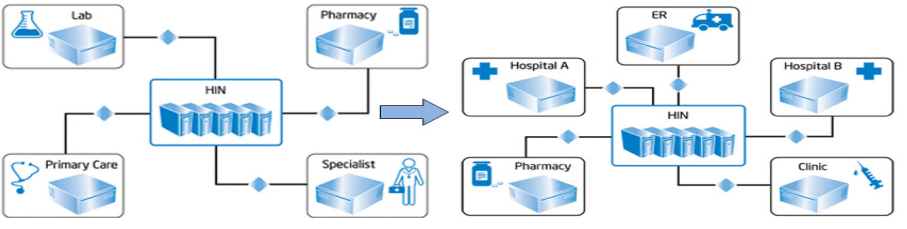

Fig. 3. Health Information Network

The Five basic functions that a Healthcare UID System supports are:

1. Complete computerization of hospital's operations.
2. Centralizing data storing and retrieving capabilities. (Fig. 3)
3. Manual and automated linkage of various clinical records from different practitioners, sites of care to form a lifelong view of patient records.
4. Accurate identification functions and DIS-Identification functions (under principle of Information security: confidentiality, integrity, availability).[6]
5. Reduce healthcare operational cost and enhance the health status of the nation.

4 Benefits of UID

Data collected can be used for surveys; this will provide a platform to roll out schemes like RSBY (RASHTRIYA SWASTHYA BIMA YOAJANA). Data can be used by companies ,institutions, service providers (such as developing a system which

can be used to provide FIRST Aid medical to the patient at the place of accident using I-version of healthcare system within the Ambulances by use of Hand held devices. Govt. will have access to data for further analysis and drawing up plan for better treatments to rampant diseases and outbreaks based on specific locations within country. India will be the first country to implement a unique ID HealthCare Information system (HUIDS) for its residents on such a large scale. Enabling it to target and deliver services effectively, higher returns on social investments in country.

5 Conclusion

Health informatics with UID will be a big success for developing a reliable Health care Information system under which UID will allow hospitals and clinics to track patient's medical records and get their medical histories. This way, patients may not take duplicate tests or treatments and in case of emergencies doctors will have access to critical information like patient is allergic to which medicine and insurance coverage etc. mapping of health related data with 12 key numbers of UID will speed up the process of treatment and will avoid cumbersome paperwork.

Acknowledgment. The Author expresses gratitude to UIDAI and seniors for their Guidance.

References

1. http://uidai.gov.in/
2. Carter, J.H. (ed.): Electronic Health Records, 2nd edn.
3. Koisch, J.: HL7 Interoperability Paradigms, http://www.hl7.org/
4. http://www.cmcltd.com/industry_practices/e-Governance/ihc.shtml
5. Sullivan, D.: The Definitive Guide to Cloud Computing. Cloud Computing: An enabler of IT in Indian Healthcare Sector, Study Report by Zinnov Management consulting
6. Whitman, M.E., Herbert: Principles of Information Security, 3rd edn.