



INJECTING THE INTEROPERABILITY FOR COORDINATED HEALTHCARE MANAGEMENT

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BACKGROUND

A shot of Information Technology has helped to revive the health of various sectors by bringing transparency, better control over the business processes and ultimately customer satisfaction. Advanced technology has changed the localized patient management bringing control over key health indicators such as Infant Mortality Rate (IMR) and Maternal Mortality Ratio (MMR). From success stories of localized patient management, it is time for applying the technology to create uniform healthcare experience for any individual across all providers. Such an experience can be given when healthcare service providers coordinate effectively to exchange information internally (various functions) and externally (other providers, pathology, pharmacy, insurance and patients) using standard formats. Such Coordinated Healthcare Management (CHM) shall help efficient decision making, continuity of treatment as well as research to achieve ultimate goal of सर्वे सन्तु निरामयाः!

Easy technology access and increasing flow of information are changing healthcare engagement patterns making Interoperability all the more necessary. Following facts show some of these changing patterns

- Tracking Fitness and specific health parameters, measure sleep, alertness, energy are some of the popular usages of wearable devices with Internet connection to send alerts to doctors. India's wearable devices' market is poised to grow four times in next five years in terms of number of units matching expected global growth. Individuals are uploading the data collected through these gadgets to Personal Health Record (PHR) portals as Electronic Medical

Records (EMR). This new healthcare engagement pattern expects healthcare service providers to collect, analyse and meaningfully respond to the data.

- Gol's Services Export Promotional Council has identified Healthcare Services as the fastest growing sector promoting it through India Healthcare Tourism Portal (<http://www.indiahealthcaretourism.com>). Advantage Health Care India portal mentions that India is emerging as a preferred healthcare destination for patients across the globe. Growing at a compounded annual growth rate (CAGR) of 27%, the inflow of medical tourists in India is likely to cross 3.2 million in 2016. Majority of developed nations have already moved towards EMR, these international medical tourists expect local providers to operate in the same fashion.
- As per United Nations, India's Non-Resident (NRIs) population is the largest in the world pegging at 16 million Indians living outside the country in 2015. Given the Indian ethos, parental care remains top priority for these NRIs. They expect international standard of healthcare services from local providers.
- Gol's 12th Five Year plan targets implementation of Health Information Systems (HIS) by ensuring all hospitals maintain electronic data of patients using international standards. Consultation of establishing National eHealth Authority (NeHA) and initiation of development of Integrated Health Information Platform (IHIP) by National Health Portal (NHP) are significant steps in this direction. NeHA shall be responsible for enforcing laws related to EMR.

HARD LOOK AT INTEROPERABILITY NEEDS FOR CHM

The above facts translate to the following Interoperability needs for Healthcare Service Providers

- Moving to internationally accepted EMR management instead of paper based systems. EMR should be compatible with the international standards like HL7 (Health Level 7) V3 and FHIR (Fast Healthcare Interoperability Resources), SNOMED CT, DIACOM etc.
- Systems deployed at hospitals, pathologies and clinics should have interoperability features to accept and produce EMRs ensuring privacy and data security of patient's health records
- Single brand hospitals having separate installations of Hospital Management System (HMS) should have interoperability features to seamlessly exchange EMR within group of hospitals
- PHR portals should have interoperability features to ease the uploading and downloading individual's data gathered at various times

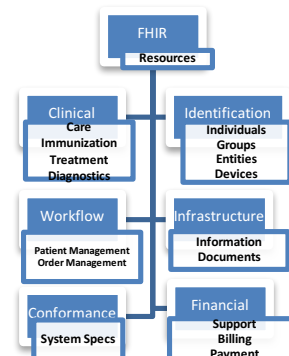
MORE ABOUT STANDARDS

Following standards are being currently used internationally to ease interoperability within and across various healthcare functions.

HL 7 V3 – HL7 is a standards are proposed and maintained by Health Level Seven International for information management of health service providers in specific format. The standard covers patient management (Admit – Discharge – Transfer), Order Management (Pharmacy – Treatment), Observation Result, Financial Management (Billing – Transactions), Document Management (Patient and other

hospital Records), Pharmacy and Treatment Management. The exchange of information within various functions and to the outside world takes place using industry wide standard formats like XML (eXtensible Mark-up Language).

FHIR – Sighting implementation issues of V3, and accommodating new technology, HL7 has released Fast Healthcare Interoperability Resources (FHIR – pronounced as *FIRE*) as a new standard. Whenever we are accessing any information on the web it is attached to a resource which is identified by web address also known as Unified Resource Locator (URL). Taking a cue from this nomenclature, FHIR categorises healthcare resources as shown below



SNOMED CT – Consistent and Common clinical vocabulary remains most central for CHM. Systematized Nomenclature of Medicine - Clinical Terms (SNOMED CT) is being maintained by The International Health Terminology Standards Development. Every clinical thought is expressed as Concept in SNOMED CT. Currently more than 3,00,000 active concepts exist. Every Concept has Description and Relationship with other Concepts. The Relationships are expressed in the form of “Is A”. e.g. “Head- Injury Is A

Disease”. Currently there are more than 13,60,000 relationships.

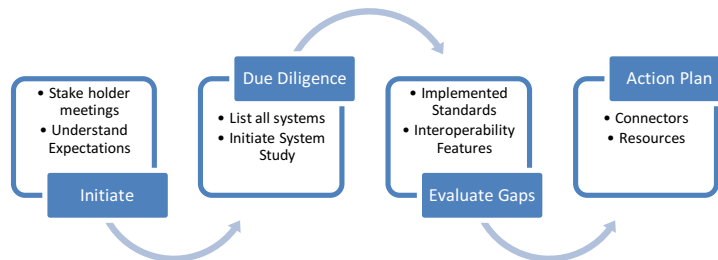
DICOM – National Electrical Manufacturers Association (NEMA) proposed DICOM (Digital Imaging and Communication in Medicine) standard to access, store, print and transmit medical imaging related information. This helps transmitting the imaging related information on internet as well as within various systems.

Value Proposition for Health Service Providers

- Accurate and efficient decision making based on historical data
- Adhering to international standards and medical tourism

READINESS FOR CHM

IPLit suggests the following approach to evaluate and get your plans ready to inject operability in your systems



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