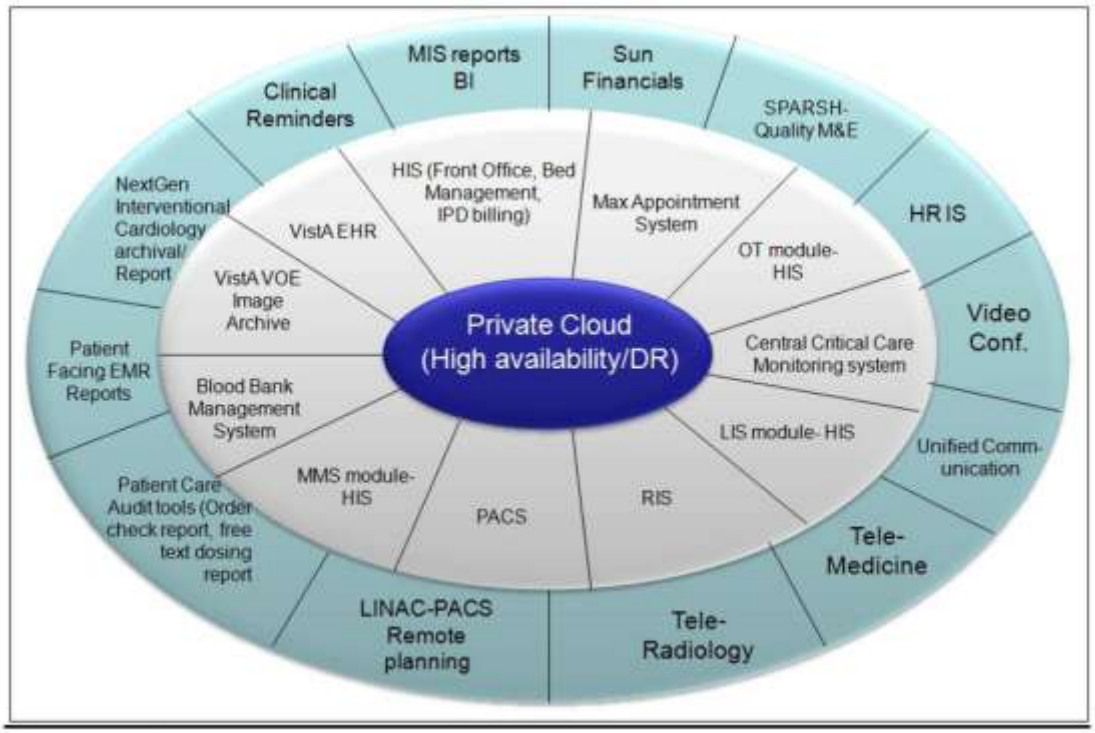
Max Healthcare Institute Limited

Category: Healthcare Service Provider

Background:

Max Healthcare Institute Ltd. uses 'Max-eCare' as the Integrated Hospital Application and Technology stack, which has the following components:



The Integrated eCare

This case study includes detail of two IT initiatives at Max Healthcare - WorldVistA EHR (Electronic Health Records) implementation with BCMA and Tele-medicine and m-Health supporting Virtual In-Patient Rounds

Project: WorldVistA EHR (Electronic Health Records) implementation with BCMA

Background:

Max Healthcare has been at the forefront of delivering healthcare in Delhi-NCR and is now extending to other parts of north India. It had been using a robust Hospital Information System for past decade but wanted to move to an EHR system (Electronic health records) with CPOE (Computerized Physician Order Entry), CDSS (Clinical Decision Support System) and BCMA (Bar Code Medication Administration) for closed loop medication administration.

IT initiative/Project:

- The project was initiated on April 1, 2010 and the major roll-outs were completed in 2011
- EHR system (Electronic Health Record) is where all Clinical data is directly recorded by Doctors and Nurses

- The IT initiative involved WorldVistA EHR implementation
    - With BCMA (Bar Code Medication Administration)
    - With Real time Bidirectional Integration with max-HIS
    - With closely integrated Lab, radiology and Pharmacy workflows
    - As a single instance enterprise application over a private cloud
- Resident doctors, Consultants, Senior Consultants and Visiting doctors use the system to review all records of the patient and place orders on the system in real time. The orders include Radiology, Laboratory, Pharmacy, Procedures and consults

  All inpatient areas mandate that patient care proceed after doctors' orders and do not allow nurse to place orders. Nurses verify and complete all orders depending on type of order for example, scheduling a radiology investigation, drawing a blood sample and dispatching it or administering a drug dose to the patient. On drug administration the direction was to have an eMAR (electronic Med. Admin. Record) linked to actual doctors' orders (CPOE) to form a closed loop medicine administration. To achieve this, the project incorporated inclusion of BCMA (bar code medication administration) as the method for closed loop medication administration. The workflow links the drug dispensing from pharmacy to the doctors' orders with the unique barcode on drugs (at the level of generic drug). Use of the barcode on giving the drug to patient is linked to "Right Patient, Right time, Right drug, Right dose" with audit trail record of "who gave the drug". The application interface for each role (doctor, pharmacy, nurse) caters to this workflow actively checking for time of dose and active orders for each drug. Technology leveraged to achieve this is the application riding on a hospital-wide Wi-Fi over a COW (computer on wheels) with a barcode scanner. The patient ID-wrist band and drugs are bar coded to uniquely identify each, respectively. Incidentally, the drugs are bar coded not just for the above process but also for pharmacy billing and inventory using a separate barcode used at the time of dispensing/billing at inpatient pharmacy.

  Clinical decision support systems included in the system rely on intelligent order checks, notifications and clinical reminders

- Order checks- Duplicate drug class check, Drug-Drug interaction check, Drug-Allergy interaction check, Radiology contrast media/Aminoglycoside drug orders checked against kidney function tests.
- Notifications for doctors- Consults request, Consults completion, abnormal lab results, ADT (Admission, Discharge and Transfer) status are sent to physicians interface in real time and the system can track the action taken on these while retaining patient context.
- Clinical Reminders- Chronic diseases are typically managed over a long period of time (for example, Diabetes and hypertension). Care Reminders are set for providers to help them track actions recommended by the respective guidelines for managing the disease. (For example, regular eye exam, regular foot exam or the Glycosylated Hemoglobin tests in case of diabetes)

Image data is also stored as part of the patient records; DICOM images generated as part of Radiology, is stored in PACS, scanned and Non-DICOM image are also stored through an integrated application framework.

Impact:

- 4 Facilities catering to nearly 1000 beds went live using the complete Clinical system in 2011
- Data processed by system till date: 1, 04,130 patient-days across the facilities that are live; 31,23,900 pharmacy orders, 26,03,250 laboratory orders, 5,20,650 radiology orders and 3,12,390 bedside procedures
- The impacted hospitals by EHR systems integrated with BCMA have annual revenue of nearly 370 Crores

Project: Tele-medicine and m-Health supporting Virtual In-Patient Rounds

Background: In the last year the organization increased its foot prints outside of Delhi-NCR, with new hospitals that became operational in 2011, namely Mohali, and Bhatinda; with soon to be operational at Dehradun. To extend the reach of super specialists available in its flagship hospitals in Delhi to the other group hospitals a telemedicine system riding piggy back on the single instance EHR was implemented.

IT initiative/Project:

- The project was initiated on April 1, 2010 and major roll-outs were completed in 2011
- The collaboration tool was built on top of EHR with Tele-medicine at the patient bedside for remote group hospitals for second/expert opinion
- All hospitals equipped with Wi-Fi at the "Point of Care" together with Computers on Wheels (COWs) as required
- Based on the requirement, desktop of COWs enabled with the camera
- Microsoft LYNC implemented for Desktop Video Collaboration
- Super-specialist doctors can "Virtually" visit the in-patient area with the COW and use EHR for all the patient data including Vitals, history, active problem, diagnostics and progress notes
- Can also be used for team meetings and Patient Case discussions in many of the department
- Diagnostic images from X-Rays, CT, MRI and reports from Laboratory enabled on mobile devices like iPad, iPhones, Blackberries and Android phones
- As a next step Microsoft LYNC is also being rolled- out on the mobile phones. The diagnostic results on mobiles coupled with patient collaboration on mobile devices is expected to provide end-to-end Mobile Virtual in-Patient Round

Impact:

- Emergency patients admitted in Mohali, Bhatinda and Shalimar Bagh hospitals can get a second opinion from a larger specialist team available at emergency at Super Specialist hospital at Saket at all the required times
- Oncology patients in distant hospitals under the care of oncologists can get a real time second opinion from senior Onco-specialists located at Saket/other locations.
- The diagnostic reports together with imaging on mobile devices enabled doctors to respond faster to the need of the patients supporting early start of treatment. The super-specialist could provide faster second opinion from anywhere/anytime for even the trauma patients, leading to life saving decisions in some case.
- Significant improvement in inter-disciplinary clinical information flow along with a faster clinical decision making improved care delivery to the patients, thereby improving patient satisfaction

About the company:

Max Healthcare Institute Ltd. is a healthcare service provider offering services in the categories of diagnostic services, specialty and super specialty services for treatment, allied services like physiotherapy, mental and allied services support, trauma and emergency services, preventive health check-ups to national as well as international patients across 12 locations in India.