ORION HEALTH

IIHMR UNIVERSITY

ASSESSMENT OF KEY BENEFITS OF INTRODUCING AUTOMATION IN CANTERBURY DISTRICT HEALTH BOARD, NEW ZEALAND

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INTRODUCTION

- A patient in today's world is a customer to the hospital who expects a similar level of services he/she gets from other industries like banking, logistics etc.

- Hospitals that seek to grow in today's economy intend to introduce higher level of automation to achieve better return on investment

- New Zealand has one of the best healthcare systems in the world and wants to maintain it by investing in highly automated Hospital Information System (HIS)

- South Island Alliance of New Zealand (comprising of 5 DHBs) has partnered with Orion Health (head quartered in Auckland) to roll-out a state-of-art Patient Administration System across all its DHBs

INTRODUCTION (contd.)

- This study focuses on the largest DHB in South Island i.e. Canterbury District Health Board (CDHB) and two of its major hospitals – Burwood Hospital and Princess Margaret Hospital

- This study determines the key drivers and motivation behind CDHB's initiative to allow greater hospital automation by replacing its legacy Patient Administration System (PAS) and,

- Evaluate the tangible benefits CDHB has already achieved (or will achieve) by replacing its legacy PAS

- The tangible benefits would be measured by inspecting the patient visit data in the hospitals before and after legacy PAS replacement

LITERATURE REVIEW

- Hospital Information System (HIS) provides a means to the hospital go essential go ***paper-less*** i.e. introduction of automation in all the hospital departments that minimizes manual errors, better reporting to senior management and more importantly improved patient care and experience
- Level of automation introduced in a hospital via HIS could be varied depending on the hospital's expectations and investment in technology
- Transition to a highly automated HIS requires close examination of patient workflow in the hospital environment, training of hospital staff and monitoring of patient's journey in the hospital
- Regardless of the scale of hospital operations, proper implementation of an HIS in a hospital leads to a considerable return on investment (ROI) for the hospital and enhances patient's experience

BACKGROUND

An elaborate 30-60-90 day upskilling approach was employed at Orion Health that involved:

- Induction in to the organization and extensive training in Orion Health Enterprise Hospital Information System (HIS) followed by
- A 2-day visit/workshop to two hospitals in Canterbury District Health Board (CDHB) i.e. Burwood Hospital and Princess Margaret Hospital located in Christchurch, New Zealand.
- Hospital visit/workshop involved a thorough tour of the hospital, detailed discussions with hospital staff and patients, evaluation of how efficiently and HIS was operational in the hospital and finally
- Collection and analysis of data collected during the 2-day visit, drafting conclusions and recommendations

RESEARCH QUESTIONS

- What motivated CDHB to shift to Orion Health Enterprise HIS from its existing legacy Patient Administration System (PAS)?
- Did turn-around time for patient visits in Outpatient, Inpatient and Emergency departments improve after the adoption of Orion Health Enterprise HIS?
- Was there a considerable Return on Investment (RoI) for the hospital management after the adoption of Orion Health Enterprise HIS?

AIMS & OBJECTIVE

- To determine the key drivers and motivation behind CDHB's initiative to allow greater hospital automation by replacing its legacy Patient Administration System (PAS)
- To evaluate the tangible benefits CDHB has already achieved (or will achieve) by replacing its legacy PAS by plotting the:
    - Patient volumes in IPD vs OPD vs ED (Patient Demographic Study)
    - Total turn-around time for a patient (admission all the way through to discharge) in OPD, IPD and ED visits during all the
    - Variance in the total cost borne by the hospital before and after the adoption of Orion Health Enterprise HIS after the adoption of Orion Health Enterprise HIS

OPERATIONAL DEFINTION

- **HIS**: Hospital Information System which is a software that is deployed in each department within the hospital environment
- **PAS**: Patient Administration System is a portion of HIS software that deals specifically with patient related tasks like appointment scheduling, patient queues, waitlists, admission procedures (IPD/OPD/ED), discharge etc.
- **Patient Turn-around Time**: Total time lapsed from the moment patient requested and appointment at the hospital to the time when he/she was discharged (excl. appointment reschedules)
- **RoI**: Difference between the total hospital expenditure before and after the adoption of Orion Health Enterprise HIS (excl. extra costs borne due to unforeseen hospital outages and other miscellaneous activities that were not executed prior to HIS adoption)

METHODOLOGY

- The form of study employed is Retrospective Cohort Study
- Conducted on 2 hospitals in Canterbury District Health Board (CDHB) – Burwood and Princess Margaret Hospital in Christchurch, New Zealand
- Complete duration of the study was from 5th February 2018 until 6th April 2018 (incl. visits to Burwood and Princess Margaret Hospital on 9th and 10th April 2018 respectively)
- Study participants:
  - See next slide..

METHODOLOGY (contd.)

- Study participants:
  - Orion Health Enterprise HIS product management team
  - Orion Health Education Team
  - IT managers in Burwood and Princess Margaret Hospital
  - Clinicians/General Physicians
  - Cardiac Surgeons
  - Nursing staff assisting physicians and surgeons
  - Front desk receptionists and clerks
  - Radiologists
  - Laboratory technicians
  - Pharmacists
  - Cyber security experts
  - IT help desk staff
  - Board members of Canterbury District Health Board (CDHB)
  - Product Director - Enterprise

SAMPLING AND SAMPLE SIZE

- Audited record of patient visits for the following three periods:
  - ***2nd February 2015*** until ***27th November 2015***
  - ***29th July 2016*** until ***28th July 2017*** and
  - ***7th July 2017*** until ***30th March 2018*** with specific focus on the following
    - Patient volumes in IPD vs OPD vs ED (Patient Demographic Study)
    - Total turn-around time for a patient (admission all the way through to discharge) in OPD, IPD and ED visits during all the
    - Variance in the total cost borne by the hospital for each of the periods above

EXCLUSION AND INCLUSION CRITERIA

- Referrals from hospitals outside of Canterbury District Health Board (CDHB) were not considered
- Patient visit data for holiday periods were excluded due to difference in the hospital staff available during holidays
- Days for scheduled annual hospital outages for events such as fire drills etc. were excluded
- IPD visits for patients with prolonged illnesses (more than 5 years) and undergoing special treatments were excluded

PROCESS

- The complete study (conception to conclusion) was conducted in 3 stages in the following sequence:
  - Training on ***Orion Health Enterprise Hospital Information System (HIS)*** software and a typical hospital workflow in a New Zealand public hospital from ***5th February 2018*** until ***6th April 2018*** (both online and classroom modes)
  - A full day visit and workshop in **Burwood Hospital, Christchurch** (New Zealand) on ***9th April 2018*** and in **Princess Margaret Hospital, Christchurch** (New Zealand) on ***10th April 2018*** that involved a tour of all the hospital departments, detailed discussions with the hospital staff, hospital senior management, cyber security experts and occasionally patients and viewing the Orion Health Enterprise HIS software in operation at different stages of patient workflow within the hospital environment
  - Various workshops with Enterprise product management team over a period of 2 weeks to better interpret all the conversations and observations gathered during 2-days hospital visits and drafting conclusions

DATA COLLECTION METHOD

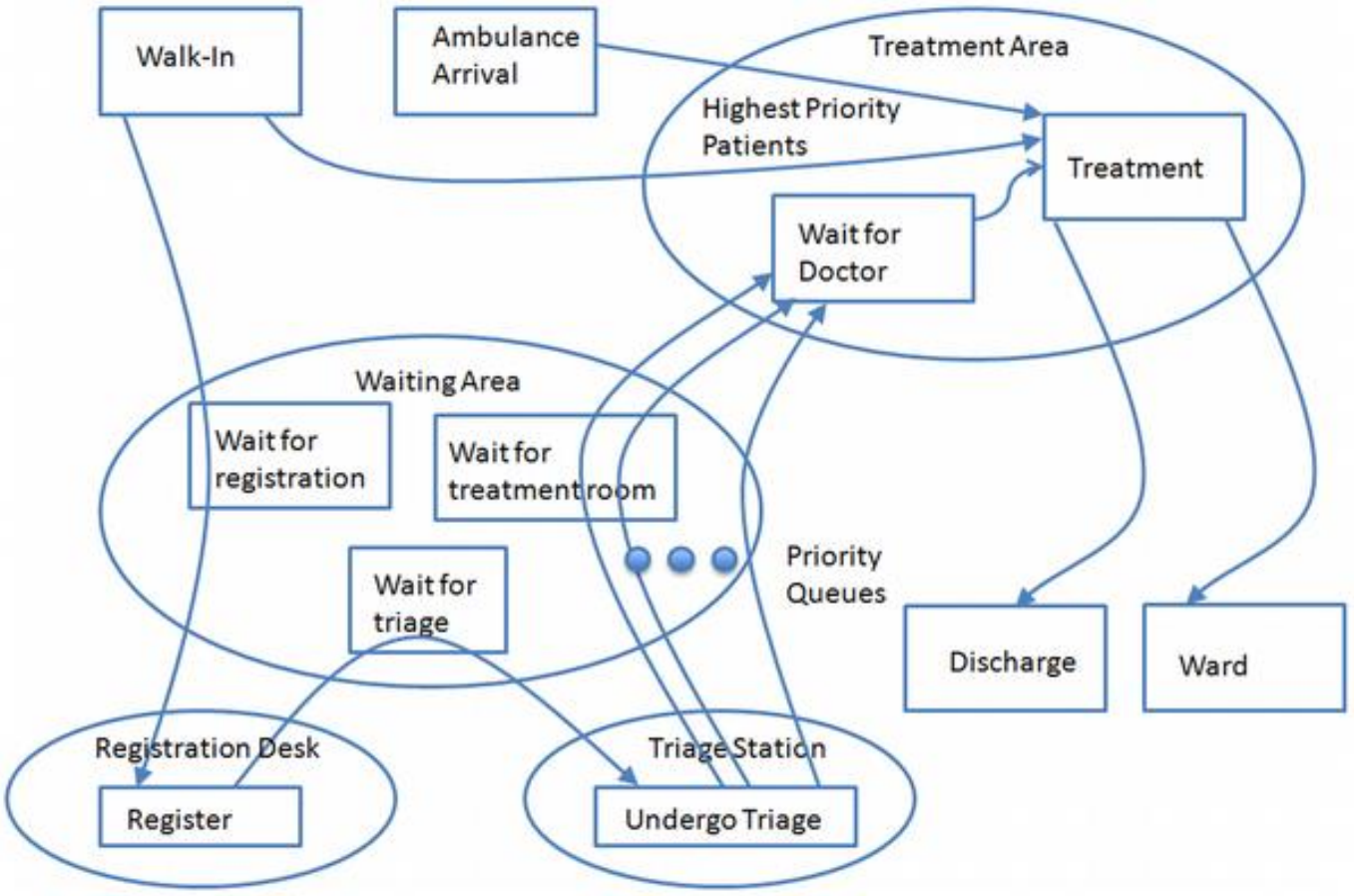
- Complete patient workflow explained (from admission all the way through to discharge) in both the hospitals.
- Introduction to all the hospital staff responsible for various stages of patient journey through the hospital e.g. front desk clerk, nursing staff, clinician, pharmacist, radiologist, lab technician, IT help desk etc.
- Explanation of their roles, work-procedures during emergency hours, manuals they use when the hospital is switched to a *manual mode*
- Exhibition of how Orion Health Enterprise was operational at various kiosks, on front desk reception, in radiology rooms, operation theatres etc.
- Interaction with the patients to understand their experience on a regular day to the hospital

DATA COLLECTION INSTRUMENT

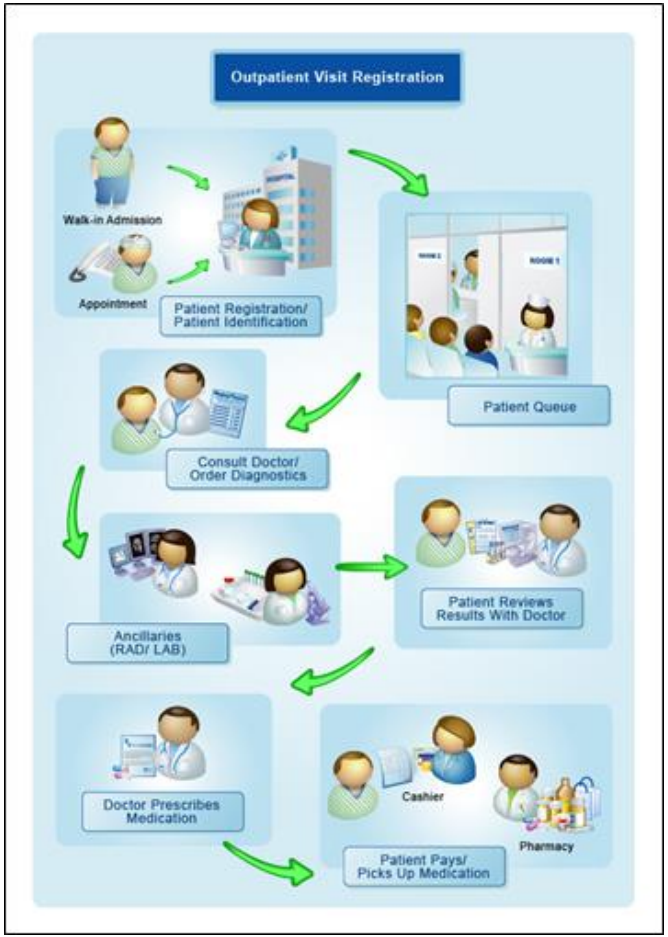
- ***Orion Health Enterprise HIS software*** - provision of a laptop with all the required software's installation and training for complete installation of the Orion Health Enterprise HIS. An investment of 2 weeks of the time during the internship to learn about the software was scheduled so that I am well-versed with the intended use of the software.
- ***UX Wireframe, mock-ups*** and ***Proto-typing*** – A methodology used within Orion Health where **User Experience (UX)** design team constructs a series of software screen mock-ups and collects user feedback to evaluate the suitability of the screen
- ***Microsoft suite*** namely MS Word, MS Excel, MS Powerpoint, MS Visio
- ***Flowcharts and workflow diagrams on MS Visio***
- ***Atlassian JIRA*** (Configuration Management Tool)
- ***Google Docs and Spreadsheet***
- ***Mac Numbers*** (Analogous to MS Excel in Apple Macbook)


RESULTS & PROCESS FLOW

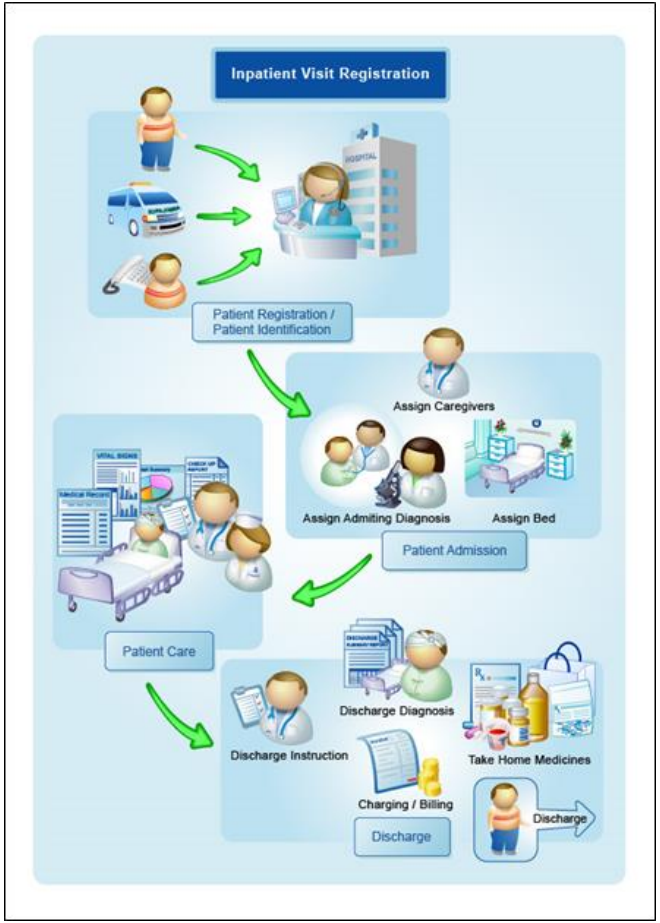
PATIENT JOURNEY IN BURWOOD/PRINCESS MARGARET HOSPITAL



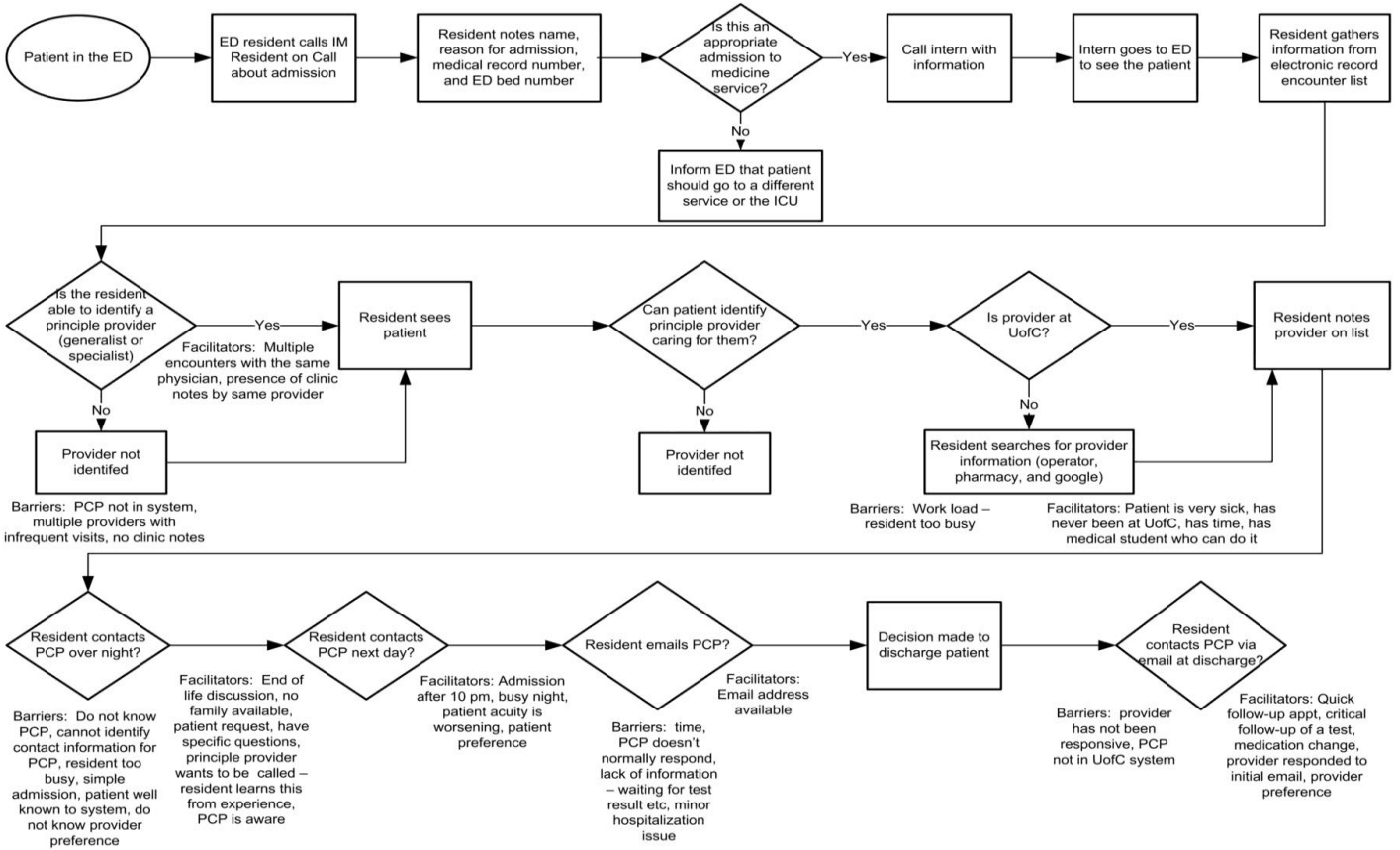
OUTPATIENT REGISTRATION WORKFLOW



INPATIENT REGISTRATION WORKFLOW

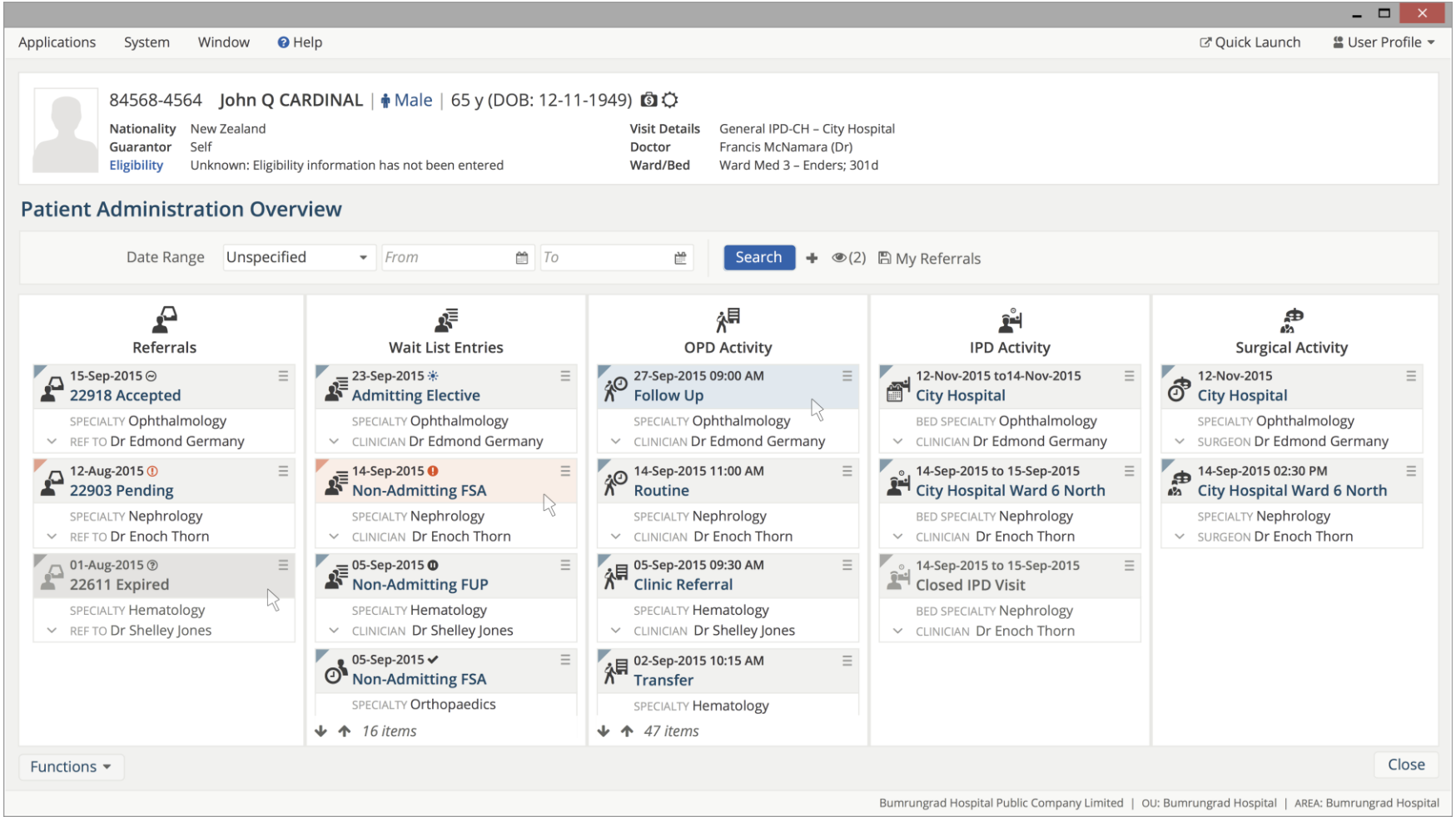


EMERGENCY DEPARTMENT WORKFLOW

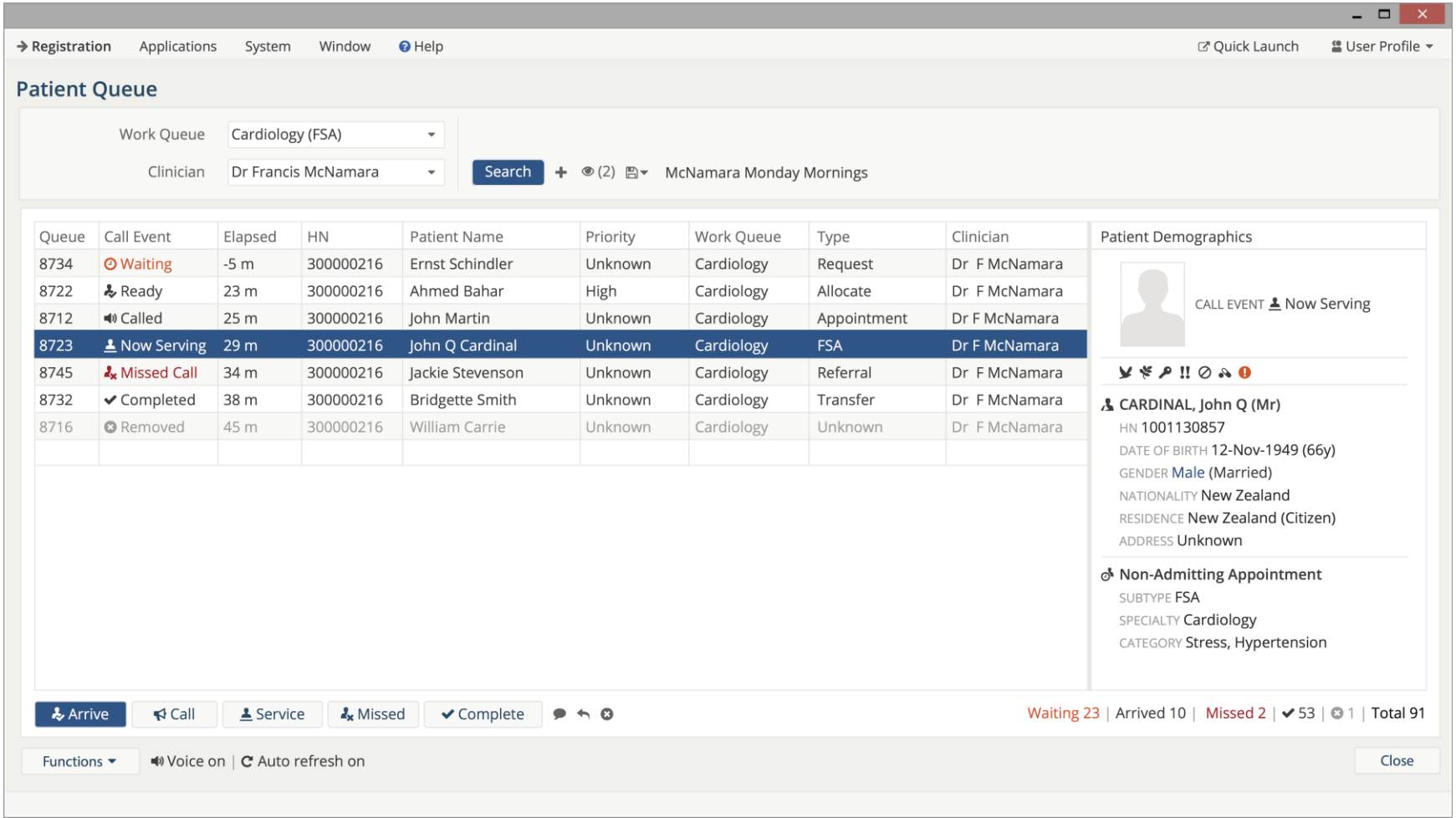



ORION HEALTH
ENTERPRISE

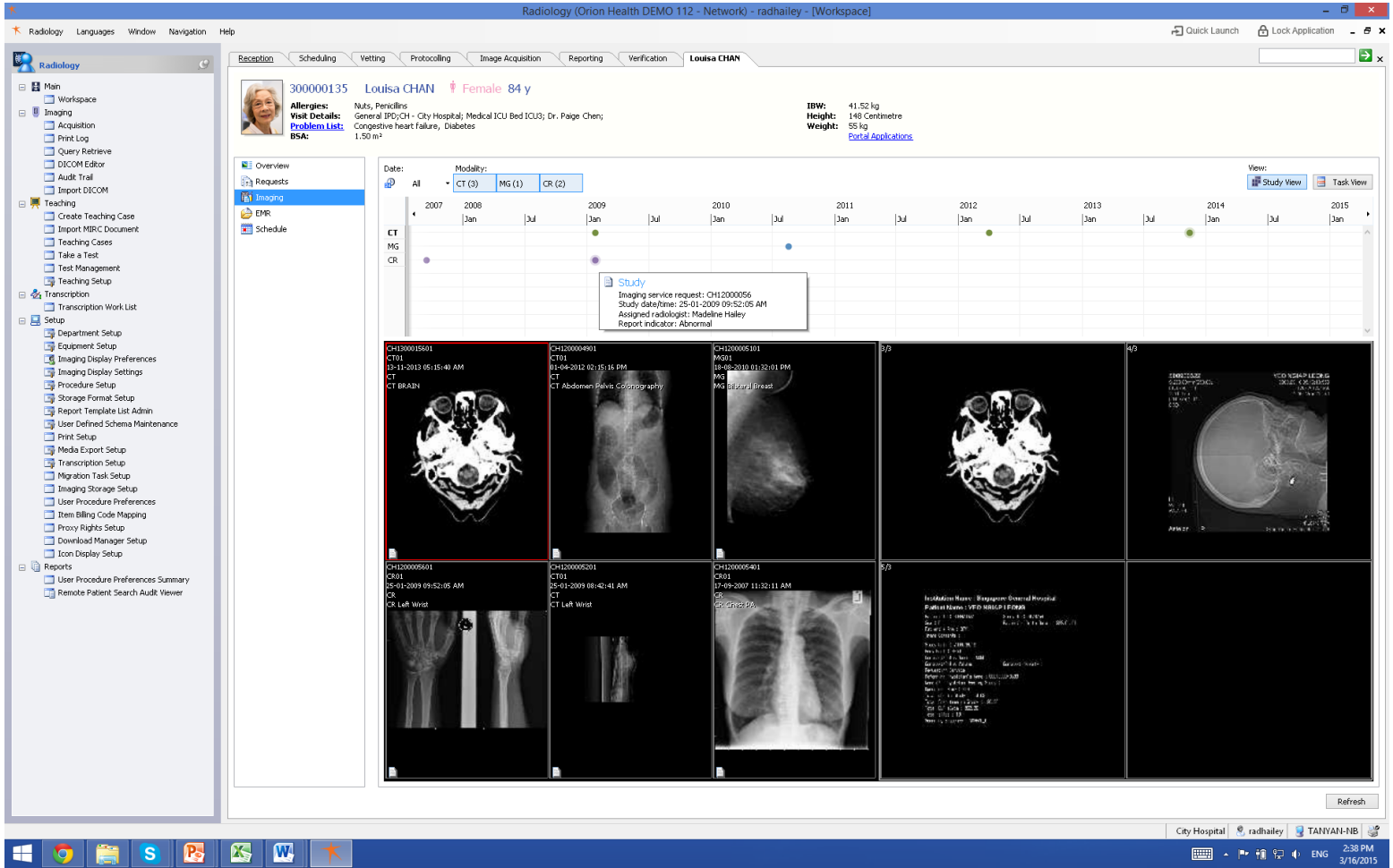
PATIENT ADMINISTRATION OVERVIEW



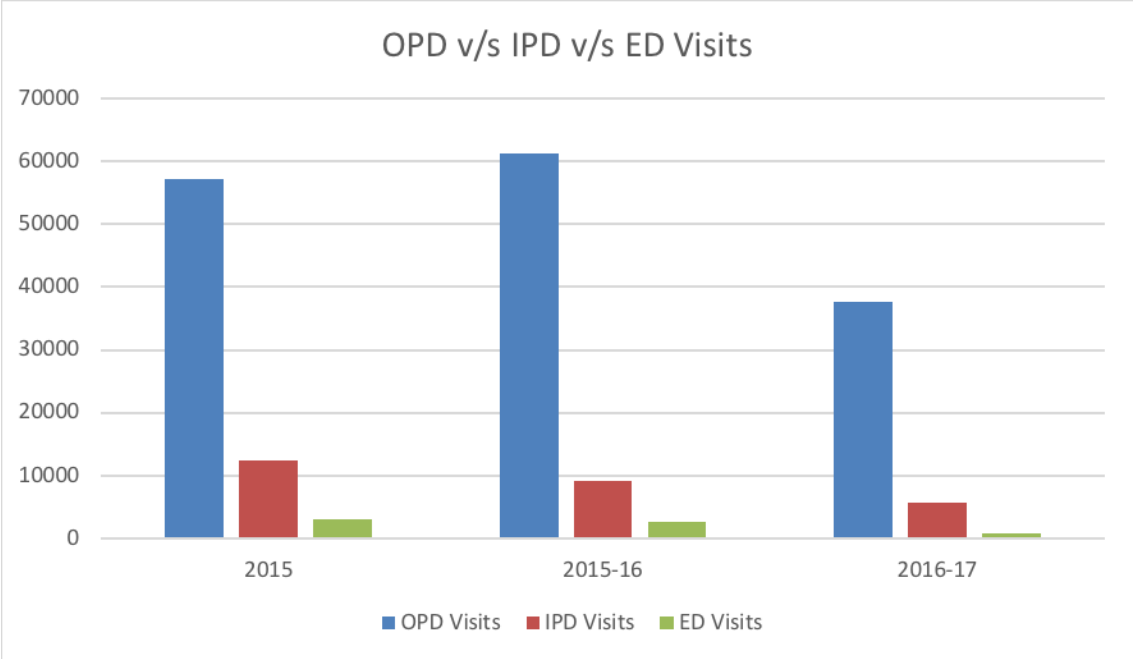
PATIENT ADMINISTRATION PATIENT QUEUE



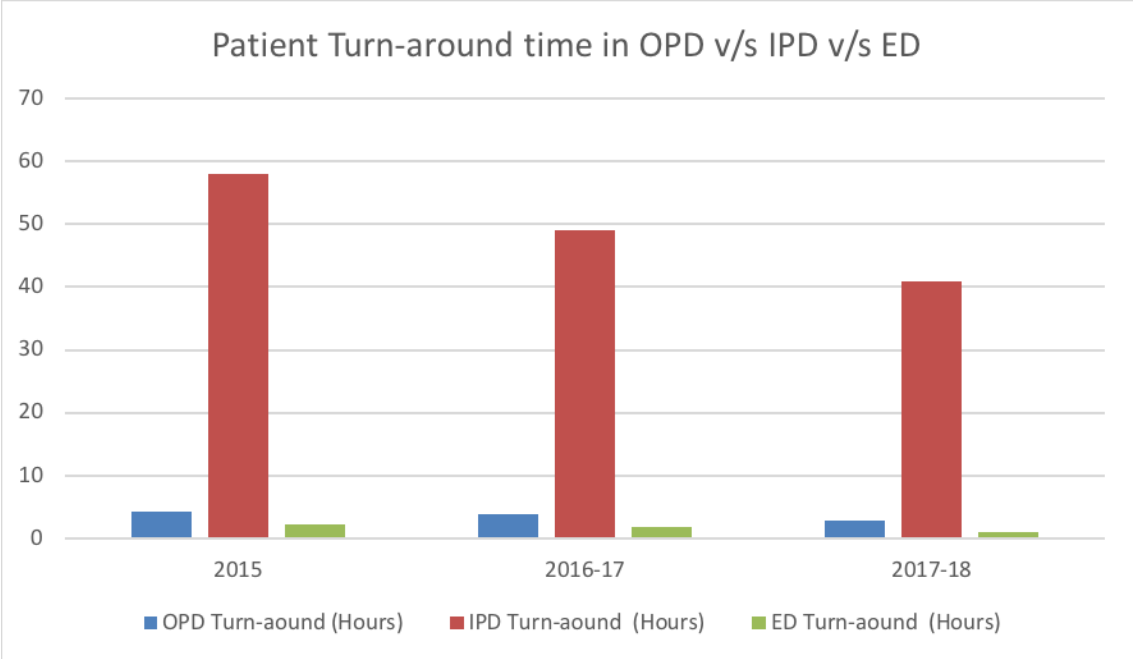
PATIENT RADIOLOGY VIEW



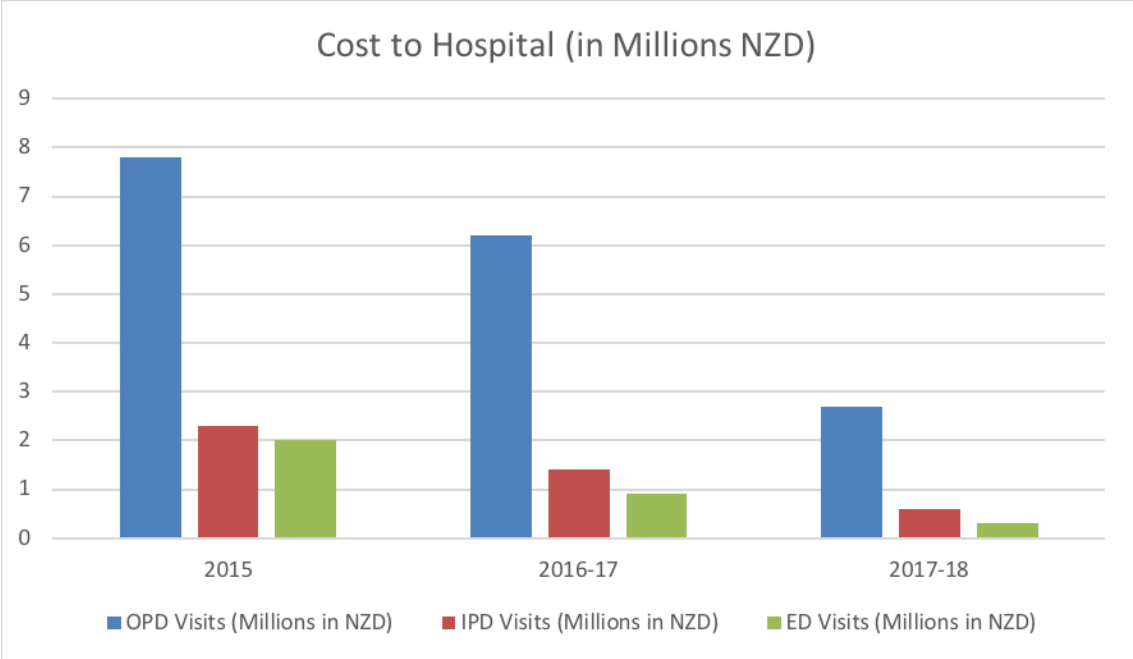
PATIENT VISITS IN OPD v/s IPD v/s ED



PATIENT TURN-AROUND TIME IN OPD v/s IPD v/s ED



COST TO HOSPITAL – INSIGHT IN TO RoI



DISCUSSION

Following were noticed as key benefits of Orion Health HIS adoption by Burwood and Princess Margaret Hospital:

- Better patient schedule management
- Easy patient record accessibility
- Patient record safety
- Less human errors
- Better coordination between hospital departments
- Better resource utilization
- Better operational efficiency
- Valuable insights for senior hospital management
- HIS adoption is valuable for hospitals of all scales

CONCLUSION

Adoption of Orion Health Enterprise HIS was clearly a wise decision and led to

- Better patient experience and less grievances/complaints
- Considerably higher return on investment that allows CDHB to invest in other key healthcare areas
- Better monitoring of hospital performance and availability of hospital reports for hospital management staff
- Transition to an HIS with higher level of automation was successfully achieved by CDHB

RECOMMENDATIONS

All the previous software releases of Orion Health Enterprise were studied and combined with interactions with hospital staff, following improvements to the software is recommended

- Additional Data Validation – Referral Prioritization Workflow
- Additional Data Validation – Service & Service Sub-Type Filtering
- Introduction of Capture for Un-Structured Appointments & Visits
- Workflow Improvements – Use of Prompts to Invoke Optional Triggering of Forms
- Workflow Improvements – Linking of Appointments to the Waiting List
- Additional Data Validation – Appointment / Visit Value Filtering
- Additional Data Validation – Reference Table Effective Dates

REFERENCES

- Orion Health (internationally renowned healthcare technology company) - https://www.orionhealth.com
- District health boards of New Zealand - https://www.health.govt.nz/new-zealand-health-system/my-dhb
- South Island Patient Information Care System (SI PICS) - https://www.sialliance.health.nz/our-priorities/information-services/si-pics/
- Release of new patient information system at Burwood hospital - https://www.sialliance.health.nz/news-/new-patient-information-system-completes-the-rounds-at-burwood-hospital/
- Quality improvement at CDHB - 2017 Canterbury District Health Board Quality Improvements/

REFERENCES (contd.)

- Burwood hospital's enhanced automation attempt with their inpatient facility - https://www.pulseitmagazine.com.au/new-zealand-ehealth/3641-canterbury-goes-live-with-si-pics-in-inpatients-finishes-medchart-roll-out
- CDHB's transformation program as a case study - International report encourages health systems to learn from CDHB
- South Island Alliance and its objective https://www.sialliance.health.nz/Canterbury District Health Board's mission and values http://www.cdhb.health.nz/About-CDHB/Who-We-Are/Pages/Vision-Mission-and-Values.aspx
- Details on South Island Patient Information Care System (SI PICS)
- https://www.sialliance.health.nz/our-priorities/information-services/si-pics/

THANK YOU

Q&A