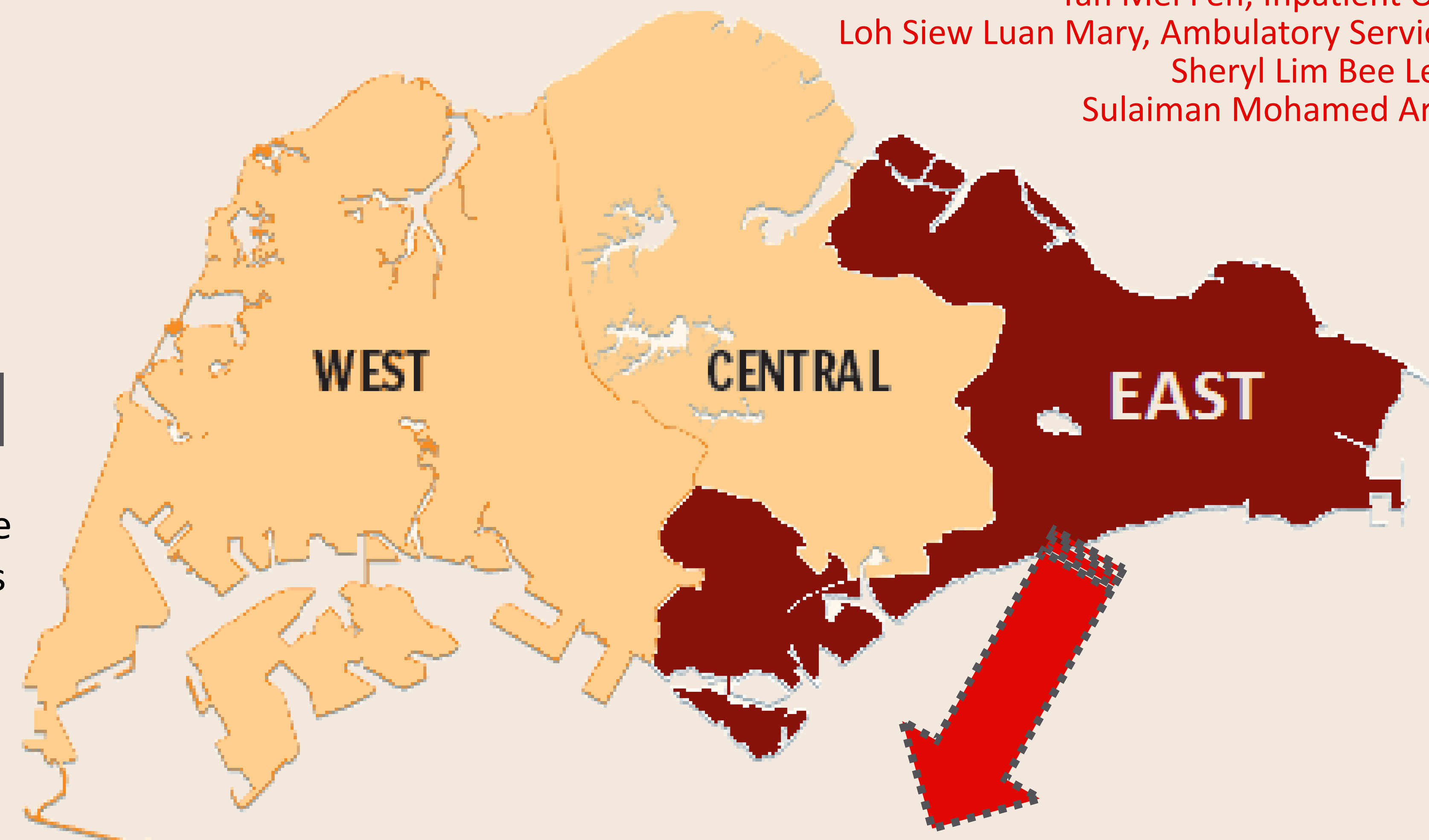
Journey Towards One Patient One Master Record

chapter 1 – the starting point

Koh Guat Cheng, HIMS, SGH
Teo Yaling, HIMS, SGH
Anne Goh, HIMS, SGH
Tan Mei Fen, Inpatient Ops, CGH
Loh Siew Luan Mary, Ambulatory Services, KKH
Sheryl Lim Bee Leng, IHIS
Sulaiman Mohamed Arish, IHIS

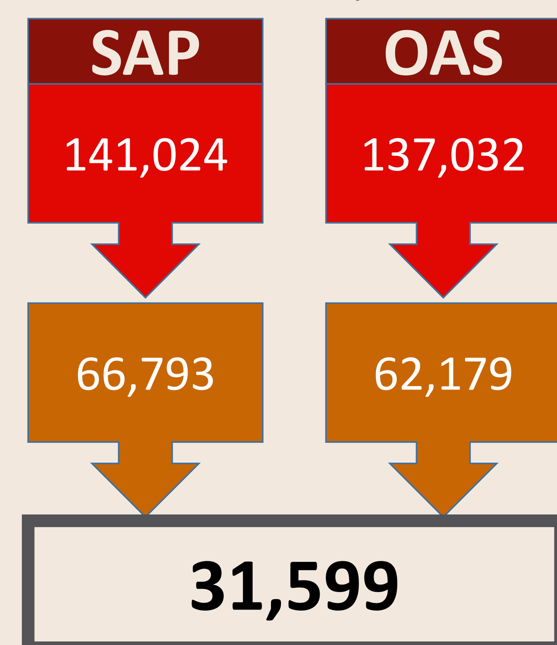


BACKGROUND

Patient Master Index has its origin back to the index card system that was arranged according to patient's name or medical records number (MRN, unique identifier of the patient) and all the clinical documents are linked to it. This acts to prevent duplication at patient registration and in turn prevent the risk of reduced information available for clinical care.

With the advent of electronic clinical systems that allow sharing of information across all SingHealth & EHA institutions, the amount of duplicates became more evident when the same patient visited different institutions and each institutions create own institutions' number.

In 2010, with National Electronic Health Records in mind, it was highlighted that the duplicates became even more apparent due to shared data nationwide. There were 141,024 (SAP) and 137,032 (OAS) items flagged by MOHH.



Number of items highlighted by MOHH but there are several items per patient.

After analysis, actual number of patients affected.

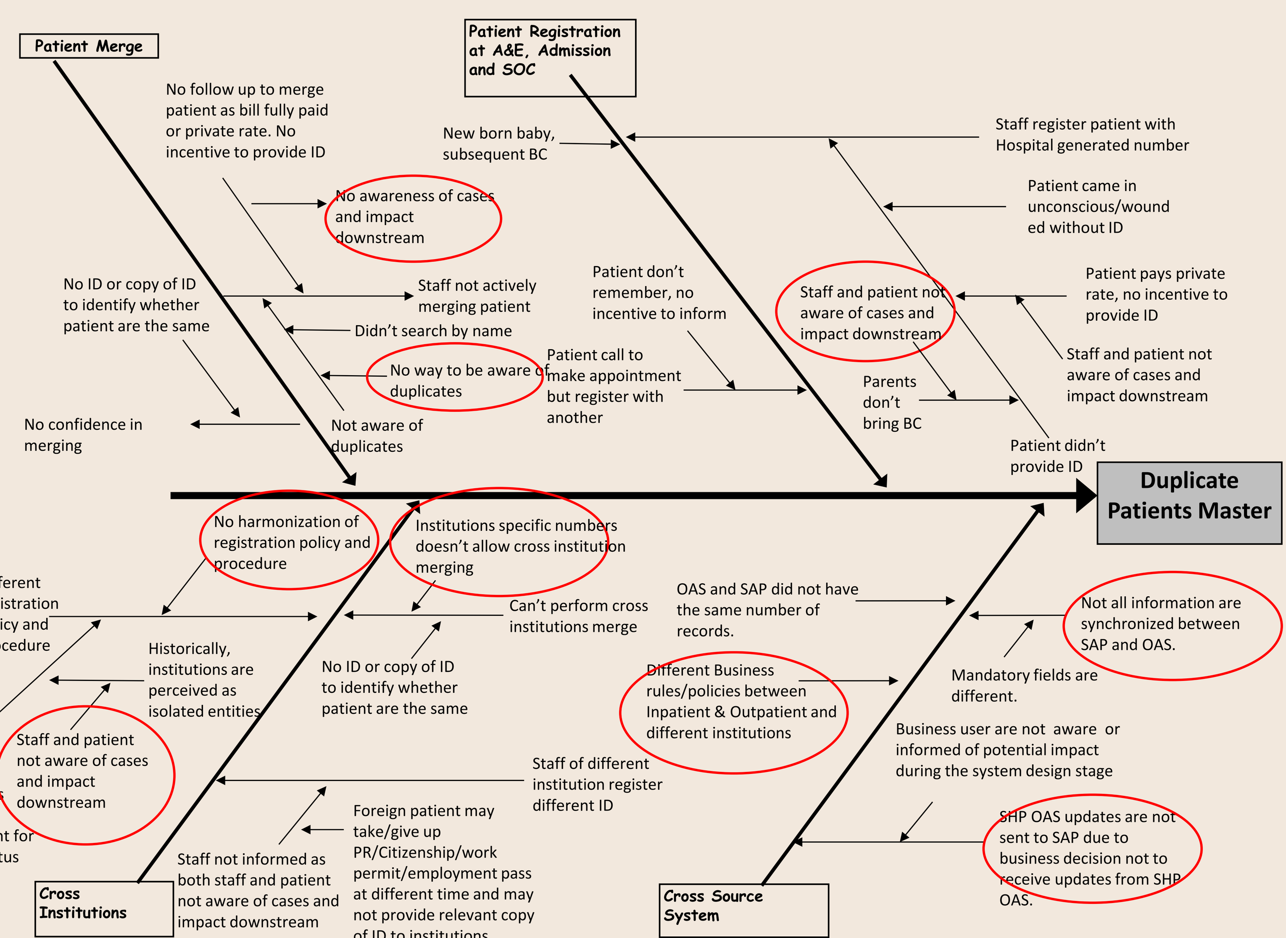
Number of patients after discounting the dormant patients, deceased and patients without visits from 2011.

AIM

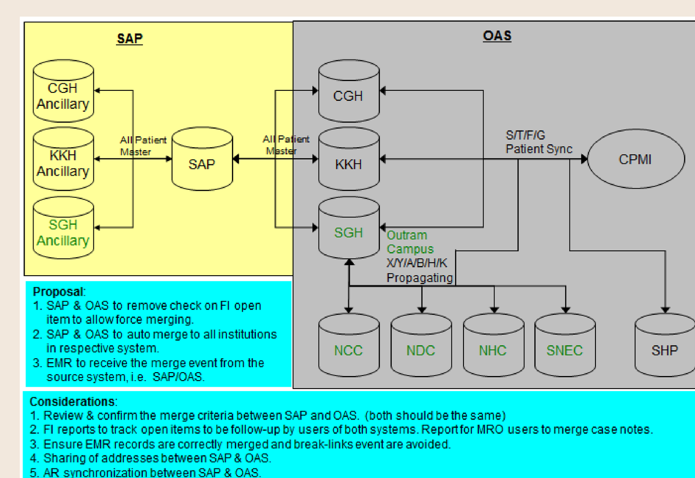
The principal aim of this project is to reduce this risk by implementing various measures to reduce or resolves the duplicates issues by 70%.

METHODOLOGY

Upon analysis of the 141,024 (SAP) and 137,032 (OAS) items, it was found that several instances maybe referring to the same patient. Thus reducing the number to that of actual number of patients rather than instances. Due to the huge data, the decision was to concentrate on active patient since 2011. For analysis of the causes, data was extracted from both SAP & OAS and from year 2011 – 2014. Based on the criteria set forth, number of patients identified was 31,599. These were just number of potential duplicates. Further analysis needed to be made for each potential duplicates before any merging can be performed.



Ishikawa diagram (left):- the causes that contributed to the duplicates were identified.
[1] Non-awareness of duplicates and impact downstream by business users across clusters
[2] systems configuration, interfaces and data not synchronized between systems and institutions [3] Institutions specific registration numbers, policies and procedures that leads to non-harmonization.



The three main causes as identified by Pareto analysis of the issues highlighted by the Ishikawa Diagram can be briefly classified to two:-

- non-synchronization of systems & data. Systems interfaces between institutions' and systems was complicated (e.g. figure on the left)
- lack of harmonization in business users' policies & procedures and coordination for cross institutions' merging of patient master.

SOLUTIONS

Synchronization of systems & data

[1] Standardized business rule in both SAP and OAS. Several change request were made to both systems. E.g. [2013 & 2014]

- Standardize the mandatory fields for both systems
- Importing SingHealth Polyclinics data into SAP

[2] Implement common X & Y number for all SingHealth institutions [Aug 2014]

[3] Deactivate dormant patient i.e. patient without visits. [2013]

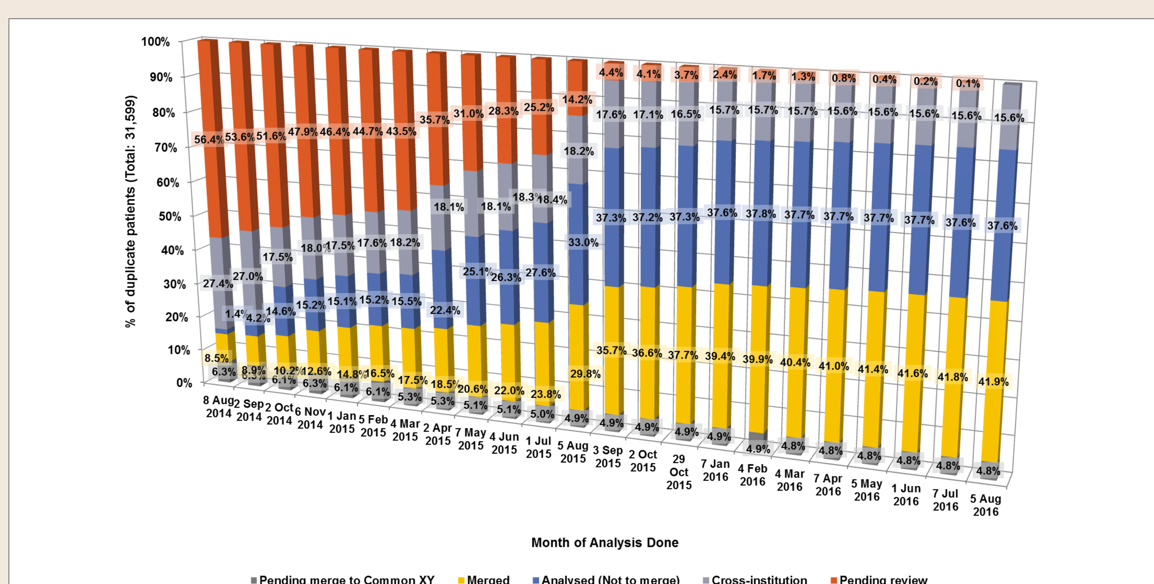
Harmonization & coordination between business users' policies & procedures and cross institutions' merging of patient master

[1] Dashboard that flags the duplicate patient based on extracted data from both SAP and OAS [2014].

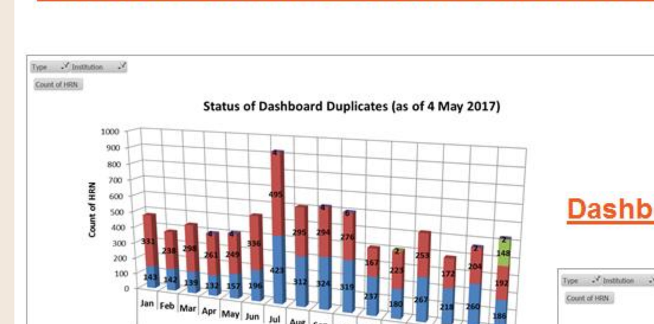
[2] Setting up a central unit that coordinates cross institutions' harmonization and merging of patient master. The formation of Patient Master Identity Services (PMIS) to fulfill the role of a central unit of coordination.

RESULTS | CONCLUSION

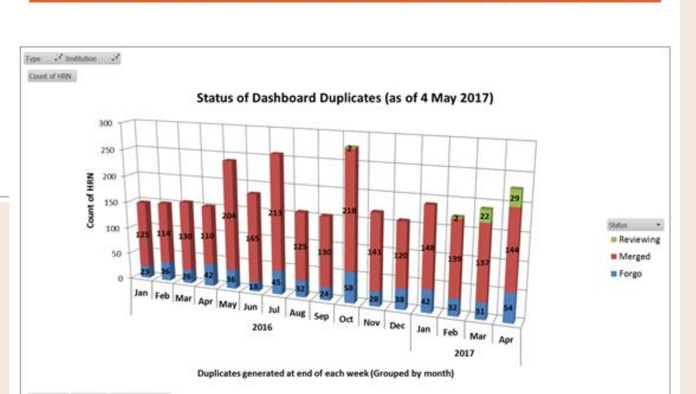
From the start of monitoring in Aug 2014, i.e. 31,599 patients. As of Aug 2016, 41.9% was merged, 37.6% had been reviewed and determined as different patient that should not be merged. 15.6% was cross-institutions cases which requires further documentation proof and review before merging can be done. In total, 79.5% was resolved i.e. 25,121 patients.



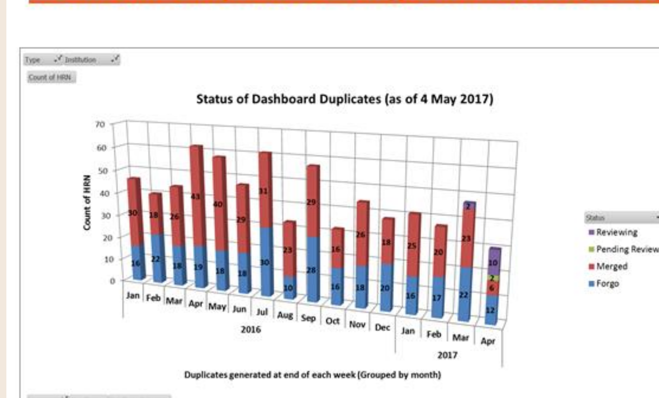
Dashboard Duplicates: Single-Institution (KKH)



Dashboard Duplicates: Single-Institution (SGH)



Dashboard Duplicates: Single-Institution (CGH)



NEXT CHAPTER? (AKAN DATANG)

Duplicates are still being created due to several factors such as patient brought in unconscious without ID documents, patient did not bring ID documents and change in patient's resident status over time. Such factors will not be eliminated. SingHealth PMIS unit lead by SGH HIMS, continues to monitor with tools such as dashboards and coordinates with various institutions to merge duplicates. Story will continue in the next chapter. Look out for it.