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# Harmonizing Error Correction Efforts for Wrong Registrations / Wrong Merges / Imposters within SingHealth



Defining Tomorrow's Medicine

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## BACKGROUND

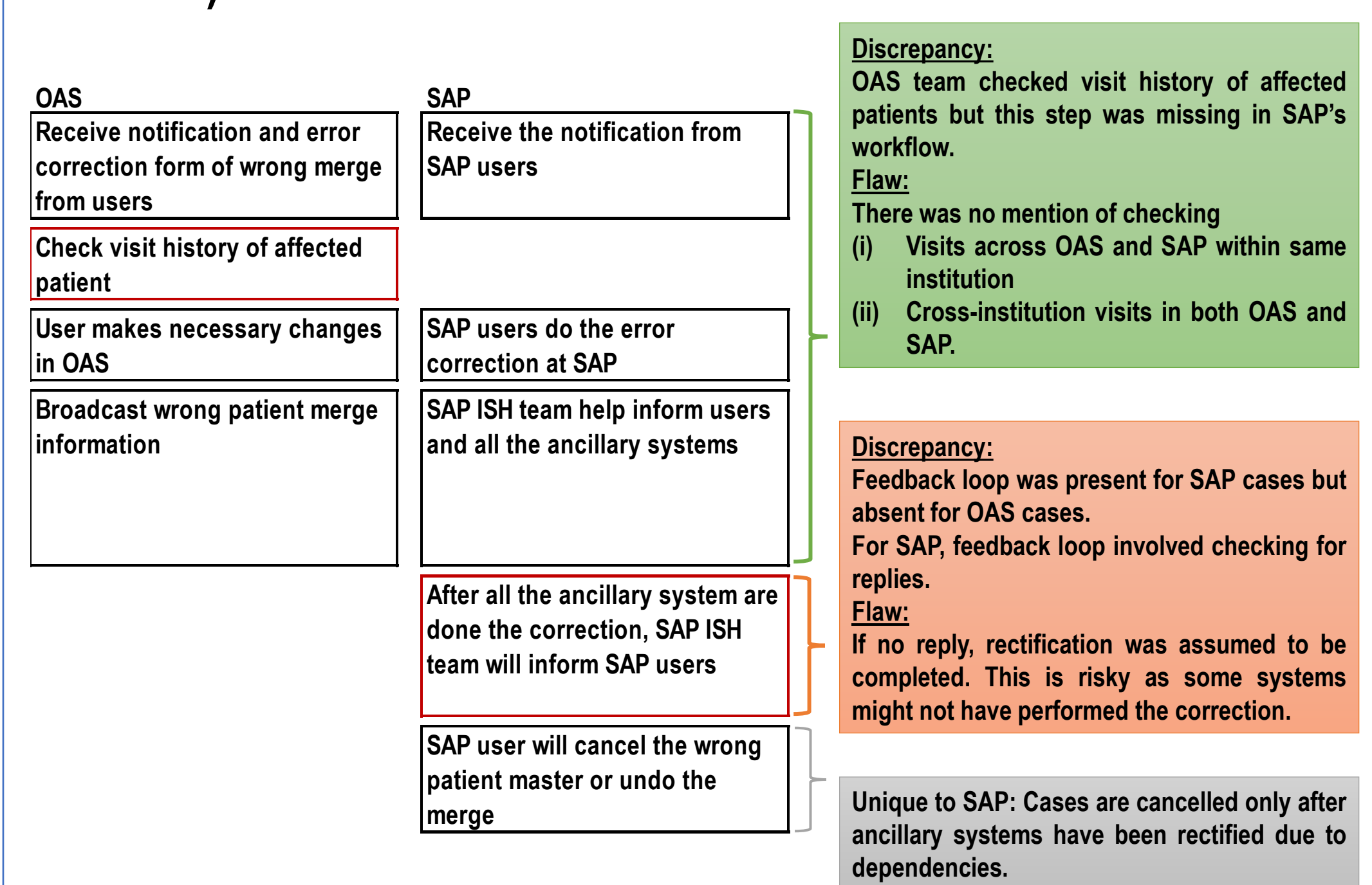
As health information transits from paper medical records to electronic medical records, it has become crucial to look into the data integrity of health information, especially when two distinct patients' medical records are combined as a result of a wrong registration or wrong merge originating from patient registration systems. Patient Management Information Services (PMIS) unit, which was setup in 2012 to enhance patient information data quality within SingHealth (SHS) and Eastern Health Alliance (EHA), has started a workgroup in 2015 to examine the existing error correction efforts in the event of wrong registration or wrong merge. Wrong registrations, wrong merges and imposter cases were dealt with by individual departments within a single institution. In most cases, simple rectification was done only in the registration system or not at all. Communication to affected downstream ancillary systems and other hospitals within the cluster were poor or non-existent. Furthermore, there was no proper tracking and documentation. These issues, if left alone, will undermine data integrity and safety of our patients when clinicians base their treatment on incorrect medical information within patients' electronic health records.

**Aim: To harmonize and centralize the error correction efforts for wrong registrations, wrong merges and imposter cases that occur within SingHealth from FY2016.**

## METHODOLOGY

The team examined the similarities, disparities and flaws in the following aspects:

### 1. Rectification workflow in patient registration systems (SAP and OAS)



### 2. Broadcast list to ancillary systems

Broadcast list:	Broadcast list:
Users: AO, BO, MRO, SOC, Finance users	Users: AO, BO, MRO, SOC, Finance users
Site ITs SAP Team	
Ancillary systems:	Ancillary systems:
CMIS CSRIS DTS EMR EMRX SGH_ESRS SGH_FMCMS SGH_IMS SGH_MAX LAB SGH_NUMIS SG_MRTS NEHR SGH_OG OTM SAP SMR	Amalga/RIS BMS Cloverleaf eMenu Emerge EMR / HIDS ePorter ESRS IMS IPS (maxcare)/Pyxis LIS (Lab) MIS NeHR OAS OTM SAP FIMM/HR SAP KKH/CGH Trendcare

**Discrepancy:** Some ancillary systems were listed in OAS broadcast list but absent in SAP, and vice versa. **Flaw:** The list of ancillary systems is incomplete.

### 3. Rectification workflow within different institutions

SGH	SHP	KKH	CGH
SAP/OAS IT (Depending on source of error)	SHP IT	KKH frontline / MRO user who initiated the error	CGH frontline user

**Discrepancy:** Either IT or institution user took up the role of co-ordinating and broadcasting to ancillary systems.

### 4. Error Correction Form (ECF)

**Flaw:** Details of wrong visits were listed in free-text portion which led to variation in details submitted. **SHP had the most detailed form.**

## RESULTS

### Central coordinator across SingHealth:

PMIS team took on the role for error correction effective from 1 April 2016.

### One common Error Correction Form to be used across SingHealth:

This was initially adapted from SHP's form and further revised to incorporate the necessary details. (Figure 1) It is now mandatory for all systems to include before and after screenshots of rectification for verification by PMIS team.

### One error correction workflow across SingHealth:

This was implemented from 1 April 2016 and subsequently revised in October 2016 and April 2017. (Figure 2) The workflow was sub-divided into 5 stages for easy tracking.

### Standardized broadcast list to ancillary systems:

A feedback loop was implemented to ensure that all ancillary systems have checked and completed their rectification, if affected. Reminders were sent on a weekly basis.

### One tracking system:

The PMIS Register was created using Microsoft Excel in June 2016 to record the error details of each case and to track the number of cases pending at each stage. (Figure 3)

Figure 1. Error Correction Notification Form

Figure 2. Error Correction Workflow

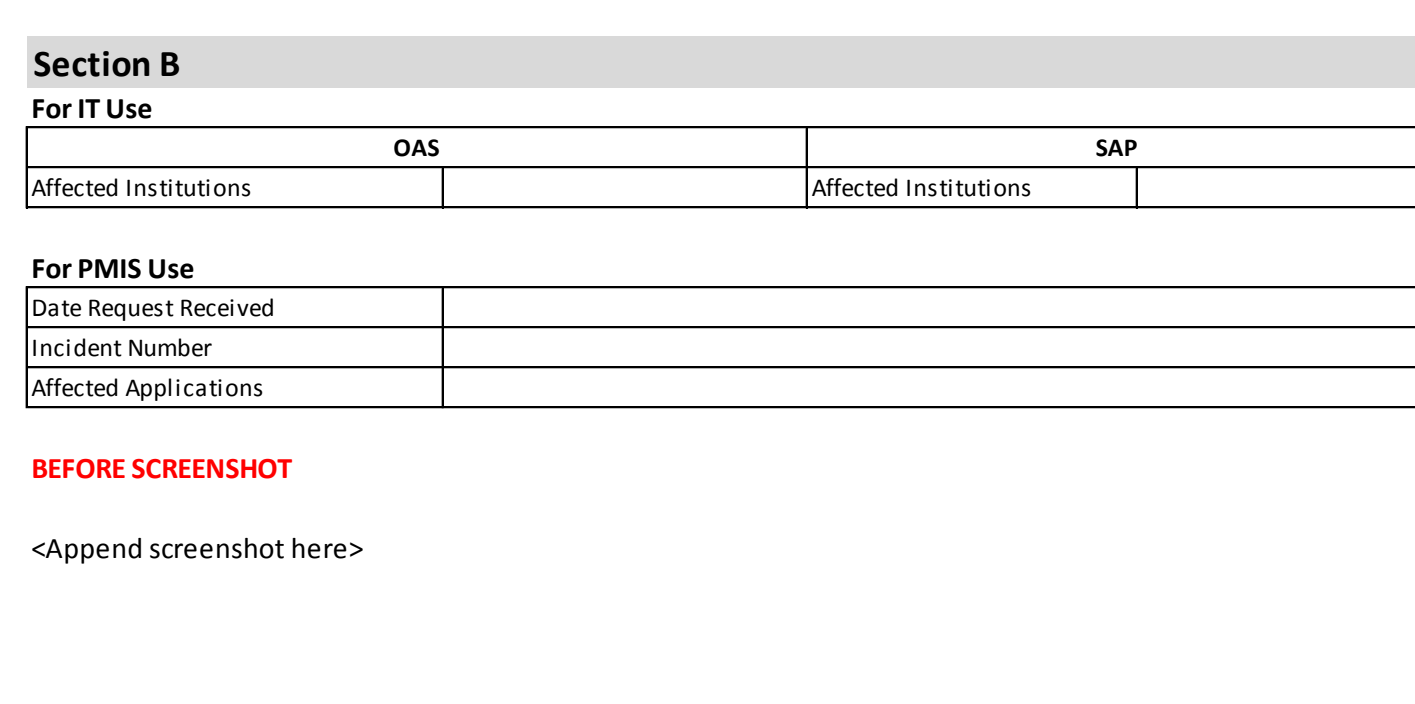


Figure 3. PMIS Register - Summary of Cases

Type	Total Cases	Patient Ref	Stage 1 of 5: Completion of Error Correction Forms with Case/VISIT Created & Transferred in SAP & OAS, Cancel cases in OAS	Stage 2 of 5: Rectification in Ancillary Systems	Stage 3 of 5: Cancellation of Visits in SAP	Stage 4 of 5: Verification & Rectification of Clinical Information in SCM	Stage 5 of 5: Completion of Rectification and Reporting to NEHR	No further action required
Imposter	4					4		
Wrong Registration	12		3	1		5	3	
Wrong Merge	10					3	6	1
Wrong Merge	3						3	
Wrong Merge	6		1	2		2	1	
Wrong Merge	2					2		
Total	37		4	3	0	16	13	1

Updated: 28/04/2017

## CONCLUSION

This collaborative project has achieved its objectives of harmonizing error correction efforts for wrong registrations, wrong merges, and imposter cases within SingHealth. This has not only resulted in the uniformed rectification of wrong patient information within patient source systems, SAP and OAS, but also the electronic medical records in SCM and most importantly, in the National Electronic Health Record (NEHR).