

# RESULTS MANAGEMENT

STEO (CO); S CHIA, R TAN, S MENON (MI);  
SIM SN, YEO SQ, L GOH, (NTFGH SO); A AW, LUM OC (JMC);  
G CHUA, G TAN (CLINICAL REPS)

- SAFETY
- PRODUCTIVITY
- PATIENT EXPERIENCE
- QUALITY
- VALUE

## Define Problem, Set Aim

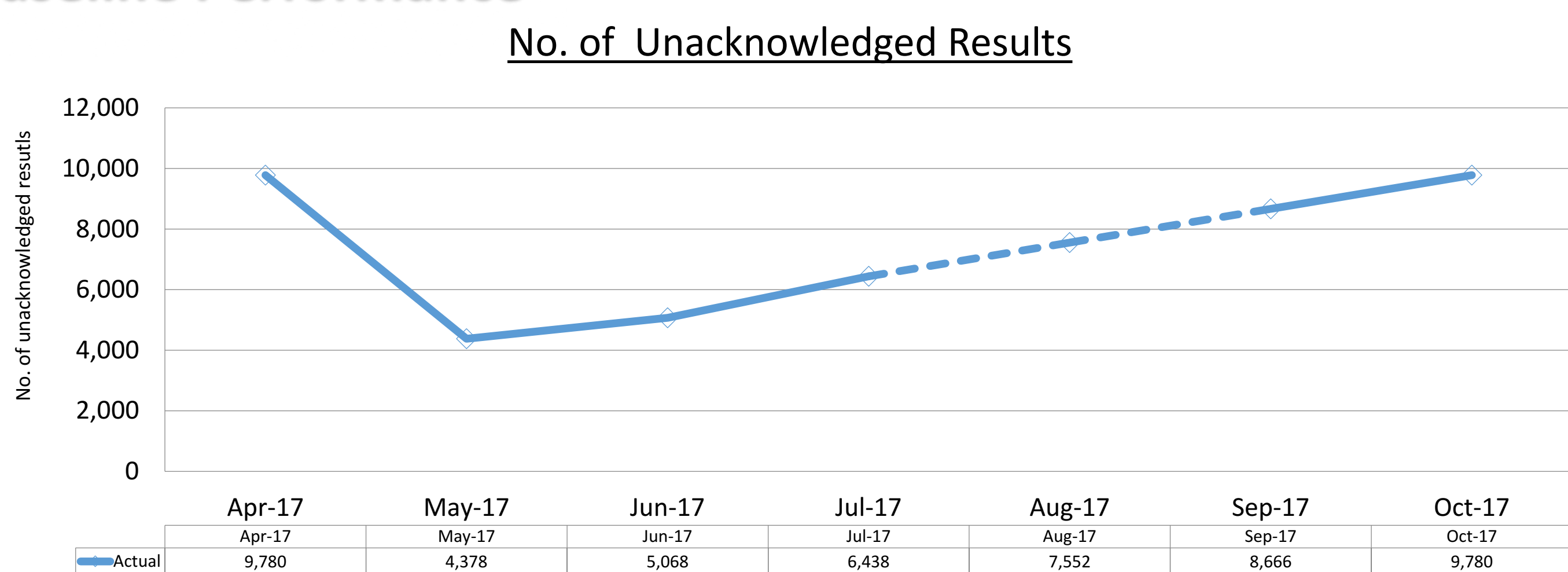
### Opportunity for Improvement

- In February 2017, CMIO reported that there was a large number of unacknowledged abnormal laboratory/radiological results in Epic
- In April 2017, a one-time 'clean up' reduced the numbers of unacknowledged results to 4,378
- However, the number started climbing again. It doubled to 9,780, within 6 months

**Aim**  
To reduce the number of unacknowledged results in Epic from 9,780 to 5,000 in 6 months (by Apr 2018), and to maintain it below 5,000 (i.e. 5,000 as the upper limit)

## Establish Measures

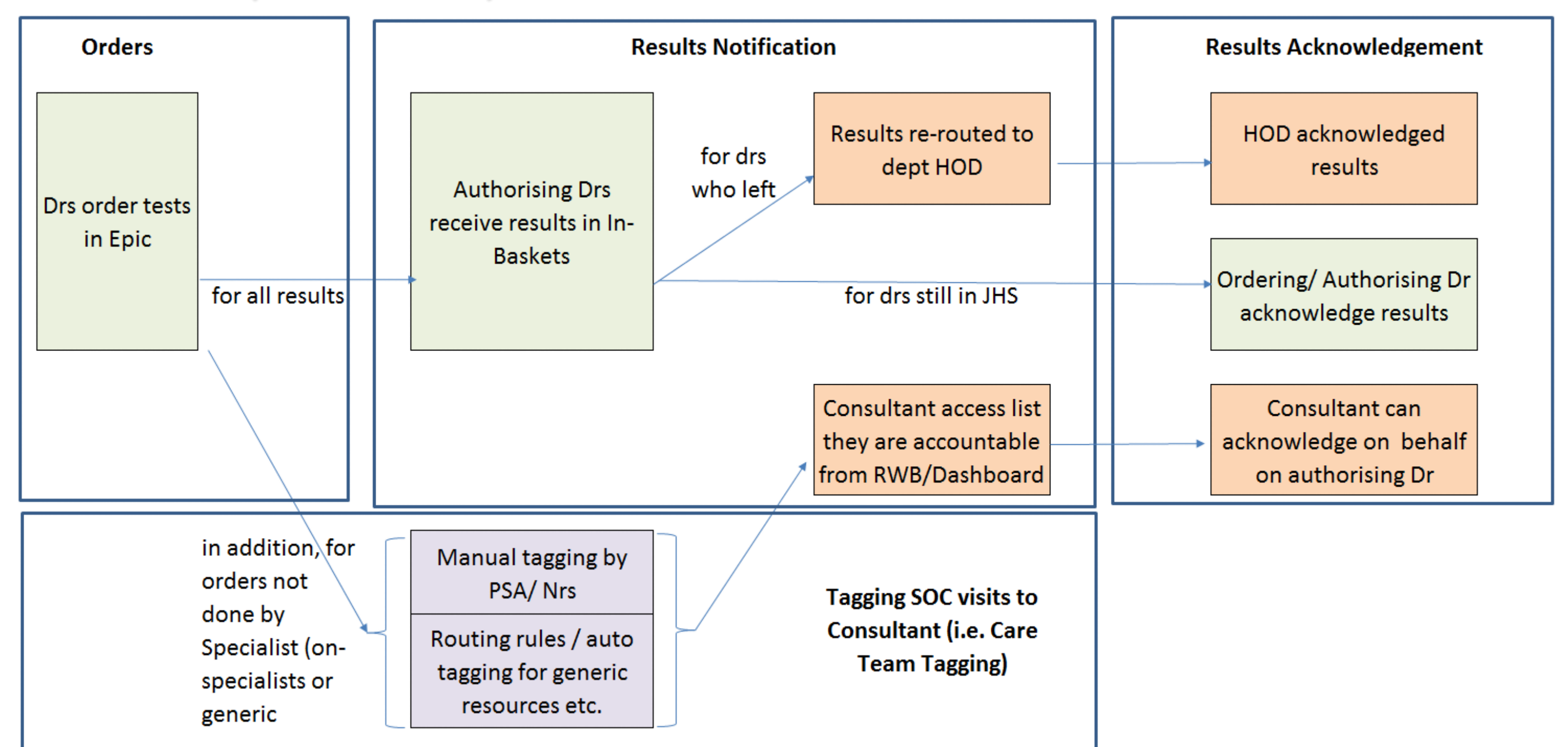
### Baseline Performance



## Test & Implement Changes

### Implementing Changes

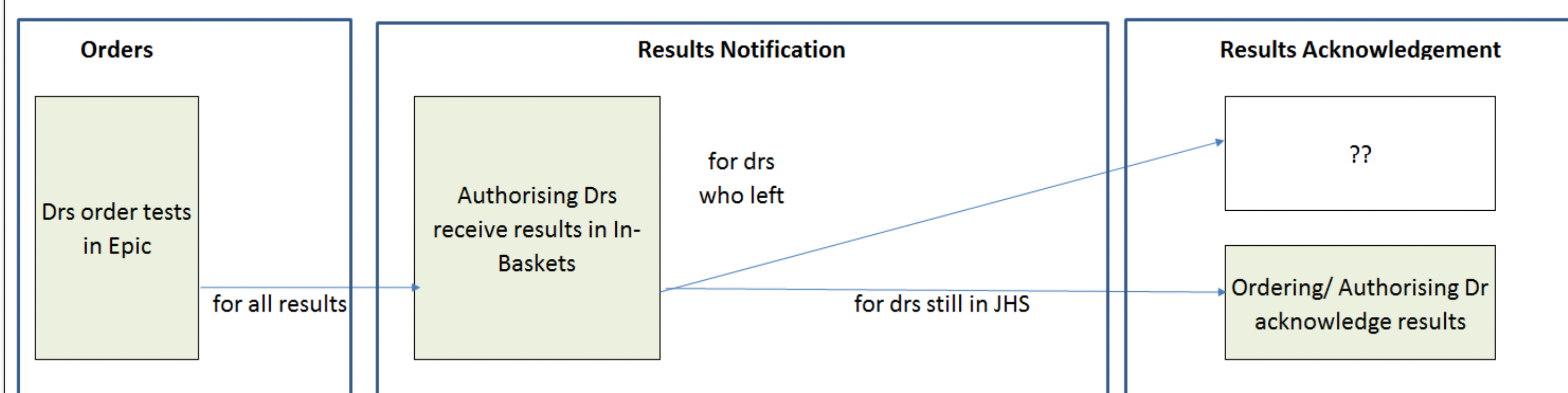
- (A) Communication
- CMB & clinical representatives of this project met up with the rest of the clinical heads/ directors of services, & shared about the problem, how it could be managed
  - Beside being responsible for acknowledging their own results, Consultants are also tasked to ensure that their non-specialists doctors are acknowledging results timely
- (B) IT/ Epic Solutions
- A suite of IT solutions were implemented by Medical Informatics to plug process gaps, & to tighten process controls (ref: orange boxes in diagram, below)
  - PDCA was used. Each solutions implementation was planned for ("Plan-Do"), & fine-tuned ("Check-Act")



## Analyse Problem, Select Changes

### Process Before Improvement

- Each doctor was responsible for acknowledging results he ordered/ authorised in Epic
- If the doctor leaves the organisation, results that were not acknowledged in Epic would stay unacknowledged



### Root Causes & Probable Solutions

- We analysed the root causes using the "5-Whys" drill-down technique (E.g. Why are results not acknowledged in Epic? It's because ...)
- We then determined the probable solutions for each of the root causes. The solutions were in 3 categories.

Root Cause Analysis Using "5-Whys" Technique		S/No.	Probable Solutions		
Results not acknowledged in Epic			Communication	IT / Epic solutions	Tag all SOC visits to Consultant
Drs have left the organisation without clearing InBaskets/ Pt Lists		1		X	
Generic resources (e.g. XX Dept MO1 ; XX Treatment Services) not "owned"		2		X	X
Non-Specialists not clearing InBaskets/ Pt Lists		3			
human behaviour		3a	X		
Results not-tagged to Consultant, hence not being supervised		3b		X	X
Consultants not clearing that InBasket/ Pt Lists		4			
human behaviour		4a	X		
Department performance not frequently monitored		5			
HODs/ DoS' not aware that problem is still existing		5a	X		
HODs/ DoS' don't know how to run the report		5b	X		
Hard to identify which non-specialists/ generic resources belong to their dept		5c		X	

Solutions	Ease (1=Hard ; 3=Easy)	Impact (1=Low ; 3=High)	Score
A Communication	3	2	6
B IT / Epic solutions	2	2	4
C Tag all SOC visits to Consultants	1	3	3

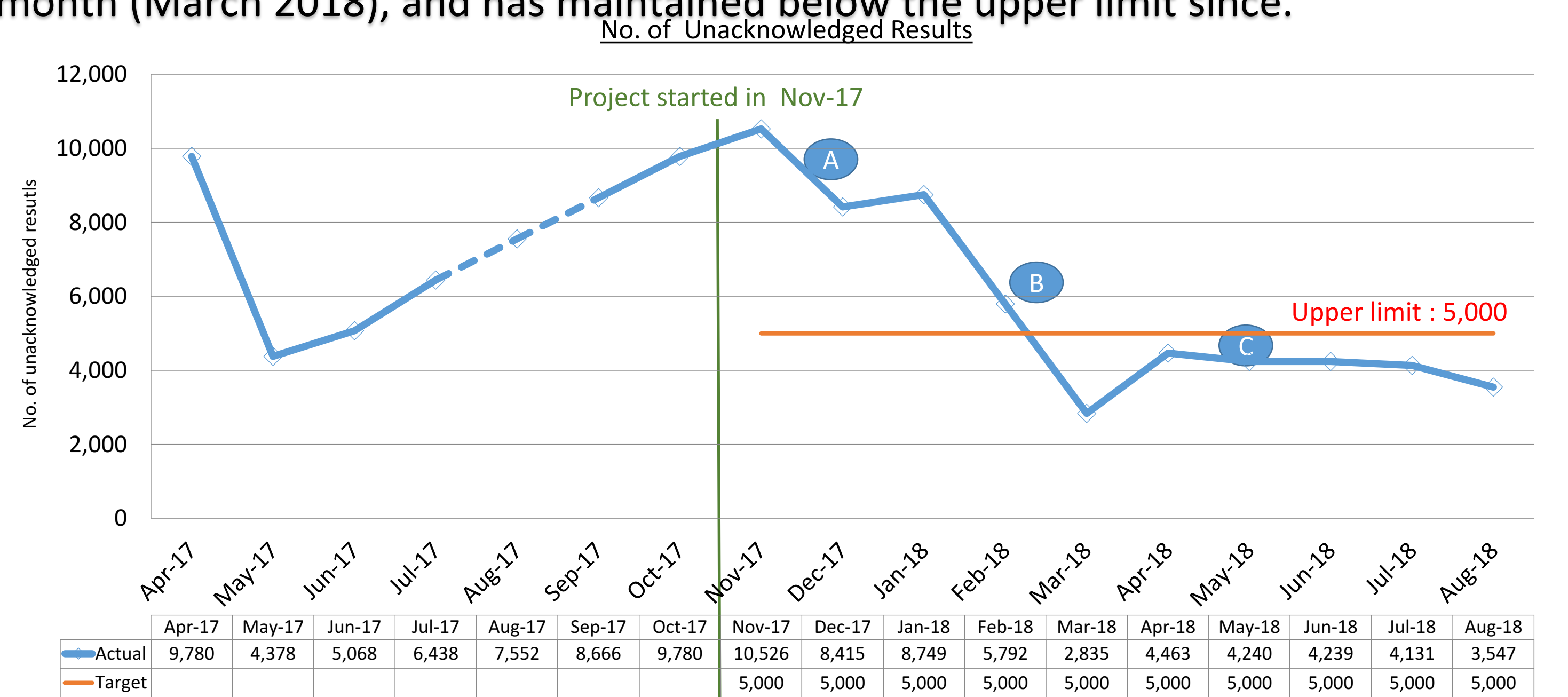
- We also analysed the priority of implementation based on ease of implementation & impact when implemented. The one with the highest score was implemented first, & the lowest, last

- (C) Tag all SOC visits to consultants (ref: purple boxes in diagram above)

- New Epic fields (ref: diagram on right) were built. PSA were to manually tag consultants to SOC visits
- As there were still many omissions & errors despite months of trying, the possibility of automated tagging was explored
- SOC roster schedules were simplified so that the tagging "logic" could be automated
- Automated tagging was implemented in April 2018 for most of the SOC roster schedules

### Results

The number of unacknowledged results decreased, and was below 5,000 by the 5th month (March 2018), and has maintained below the upper limit since.



## Spread Changes, Learning Points

### Sustainability

A handful of SOC roster schedules (e.g. SOC sessions shared/run by multiple VCs) could not be simplified & therefore, tagging could not be automated. The project team is working on these, & hopes to achieve 100% automated tagging, which will ensure long-term sustainability of result

### Spread

Solutions (B) & (C) are expected to be used by most other Singapore public hospitals as they replace their current EMR system with Epic