



Enhancing Patient Safety Through Timely and Effective Results Acknowledgment

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BACKGROUND

Timely and appropriate actions on patients' test results are crucial for ensuring patient safety. In line with other SingHealth institutions, Outram Community Hospital (OCH) utilizes the Results Acknowledgment Module (RAM) within the Sunrise Clinical Manager System (SCM) for electronic result acknowledgement. While the RAM system is seamless and accurate, its effectiveness relies on proactive user engagement in promptly acknowledging and addressing the results.

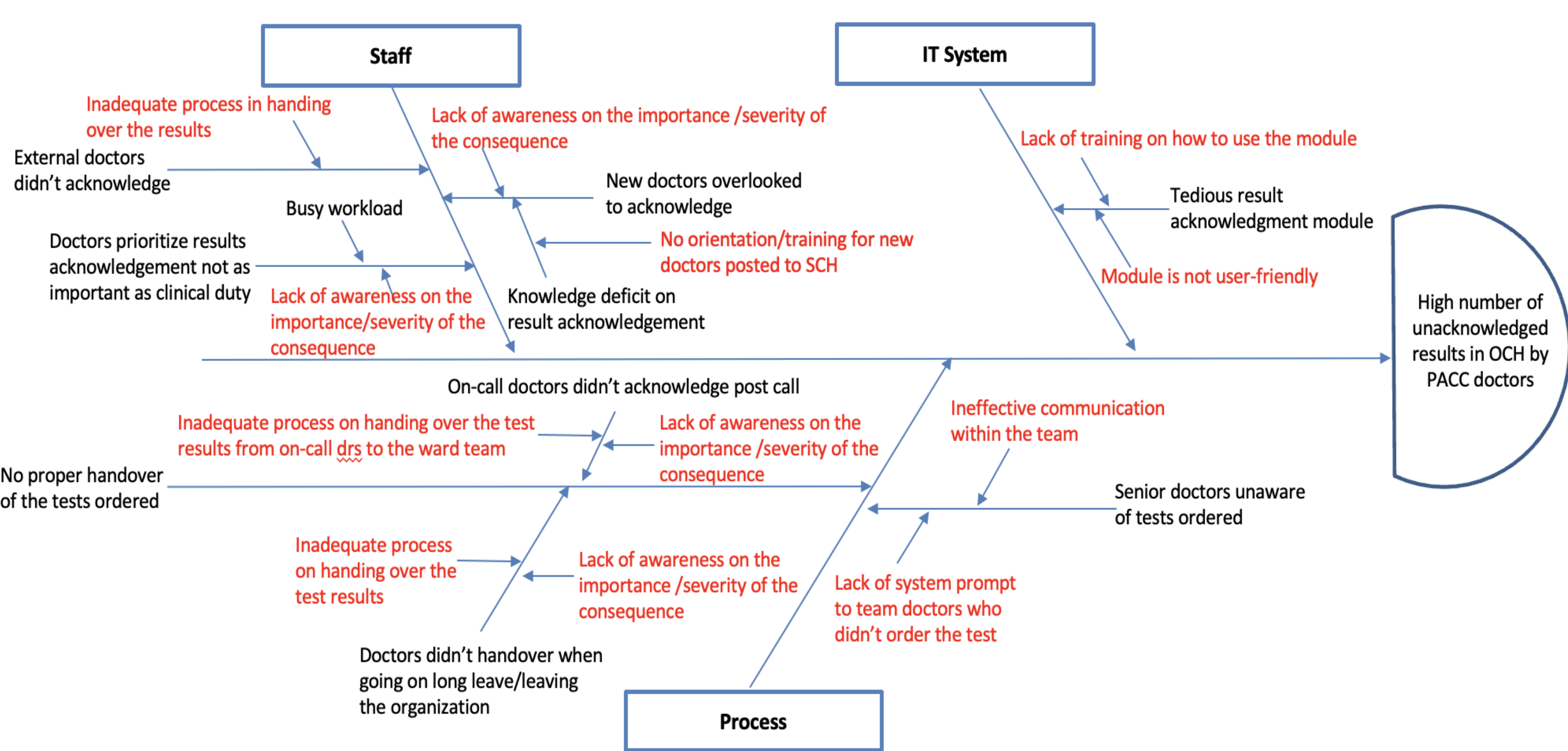
PROJECT AIM

OCH faced a concerning trend of increasing unacknowledged test results from 2020 to 2022. Our baseline data, spanning from October 2020 to May 2022, revealed an average of 20 unacknowledged results per month over the 20-month period. Unacknowledged results can lead to delayed issue recognition and impact the treatment process, posing a potential risk to patient safety. Thus, our team set out with the goal of reducing the number of unacknowledged results from 25 to 0 within a 6-month timeframe, emphasizing our commitment to patient care and safety.

ANALYSIS

We performed a Root Cause Analysis via the Ishikawa diagram to identify the contributory factors, followed by the Pareto analysis. Self-reported questionnaires were distributed to the doctors to understand their knowledge, attitudes and perceptions towards results acknowledgement. We employed the Plan-Do-Study-Act (PDSA) to introduce rapid, small-scale changes. A total of 4 PDSA cycles were undertaken, and we implemented the changes that showed an improvement in our data.

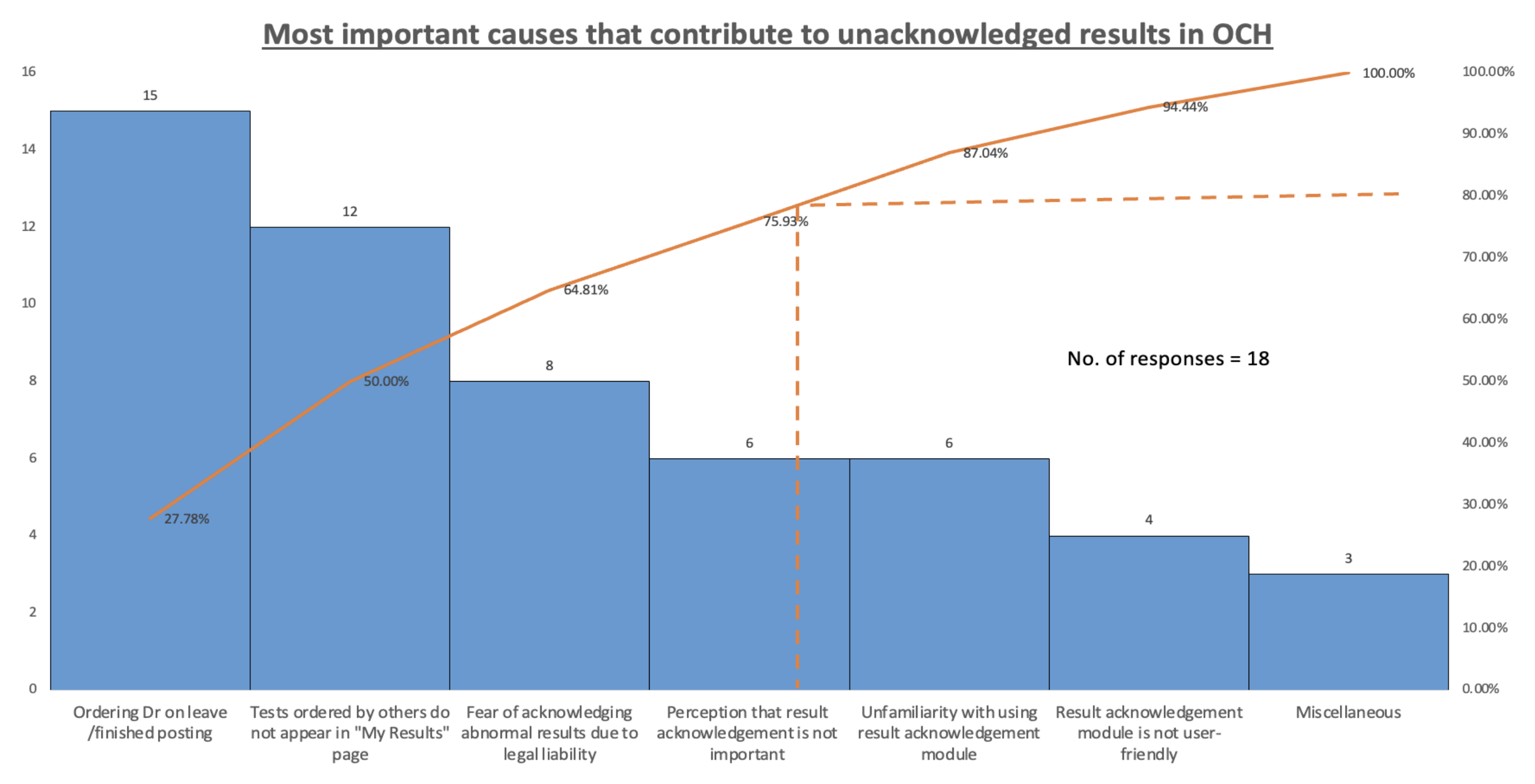
Ishikawa Diagram:



Root causes identified:

Staff	IT System	Process
Lack of awareness on the importance of result acknowledgement and the implications of missing abnormal results	Tests ordered by someone else (e.g. on-call doctors) do not appear under "My Results Page", hence the primary team misses acknowledging the results	Inadequate process for handing over to acknowledge test results before the ordering doctor goes on leave or has left the department
Concerns of legal liability hence a tendency to avoid acknowledging results not ordered by oneself	The unfamiliarity of doctors with using RAM effectively	Some tests are ordered by external doctors who came to review the patient in OCH wards
Doctors have overriding priorities in their daily job hence forget to acknowledge	RAM is not user-friendly	

Pareto Chart:



SOLUTIONS

1st PDSA – Result Acknowledgement Module (RAM) Training Session

Target: Lack of training, Poor awareness and misperception among doctors

- RAM was incorporated into the 6-monthly SCM training for new doctors whereby concerns and misperceptions were also addressed during the training.

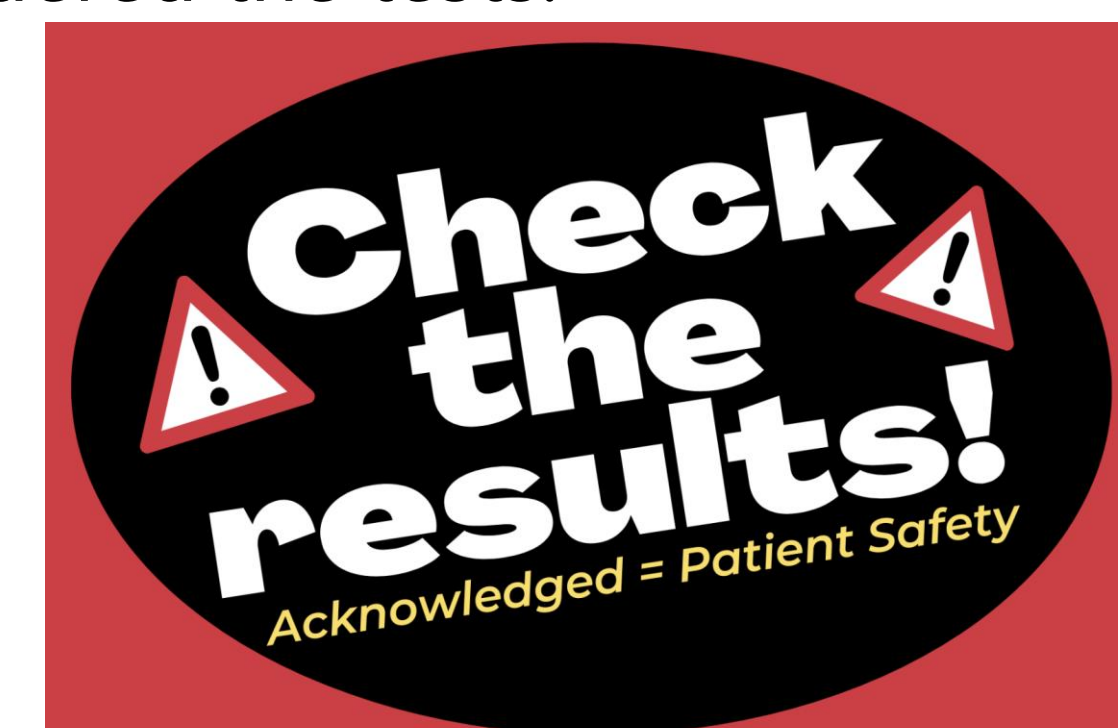
Target: Inadequate process of handing over among doctors, RAM not user-friendly, Tests ordered by someone else do not appear under "My Results Page"

- During the training session, we individualized doctors' RAM settings based on their ward location via the *User-Centric Filter Functions* on SCM. By doing so, all doctors working in the same ward will be notified of any unacknowledged results, regardless of who ordered the tests.

2nd PDSA – Reminder prompts

Target: Doctors forget due to busy work schedule

- We created an eye-catching reminder poster and pasted them at strategic locations in the ward workstations to remind our doctors.
- We also sent reminder texts periodically to remind doctors to acknowledge results.



3rd PDSA- Automation of reminder texts

Target: Reinforce PDSA 2 to improve sustainability

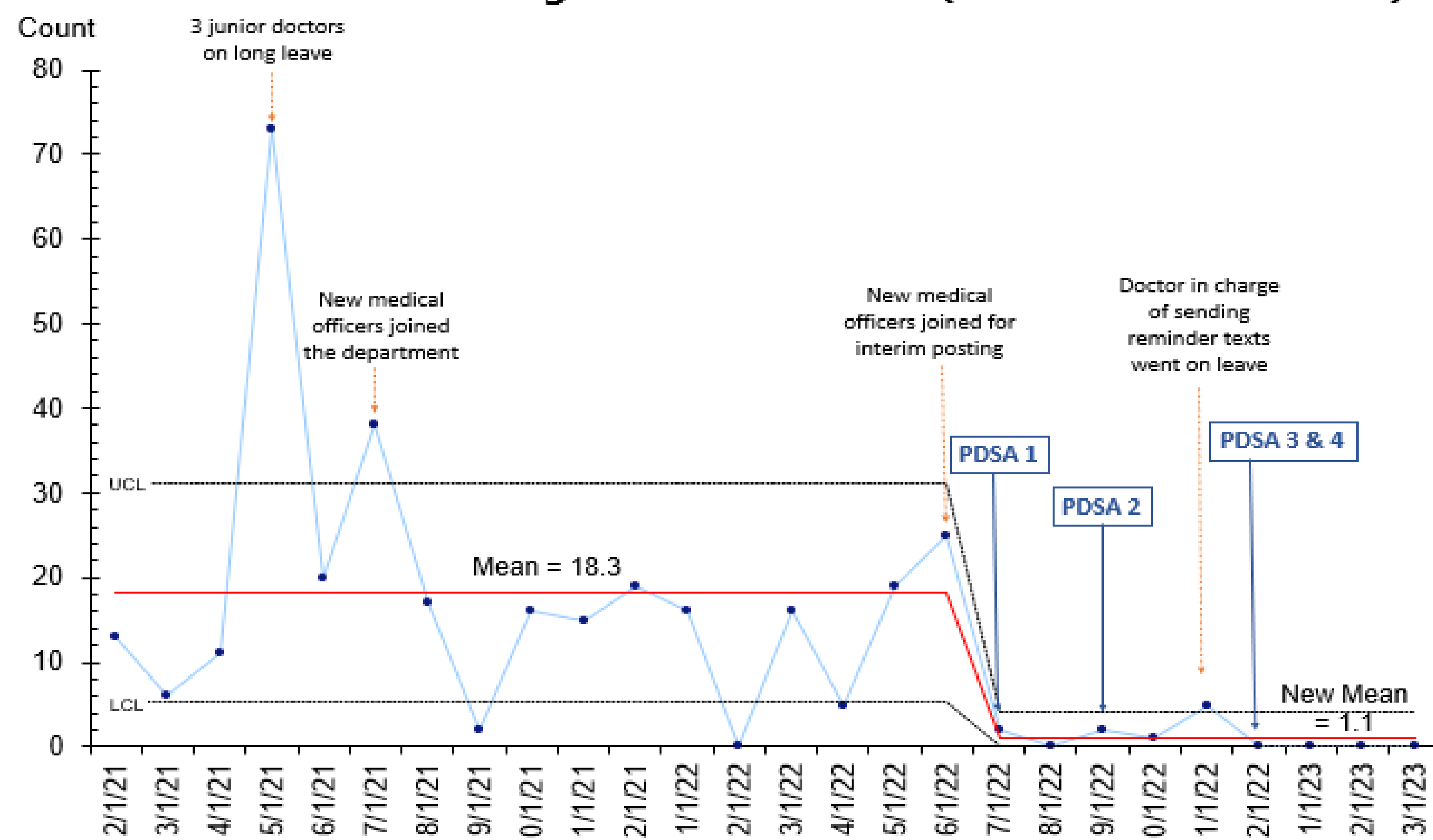
- Feedback that PDSA 2 reminder text was helpful, hence we automated the reminder text using *Shortcuts* on iOS to improve sustainability.

4th PDSA – Positive reinforcement for behavioral change

- We rewarded teams who acknowledged all results for 3 consecutive months with Starbucks gift cards.

PROJECT'S IMPACT

Number of Unacknowledged Results in OCH (Oct 2020 to Mar 2023)



The Shewhart chart above demonstrated the success of our interventions, reducing the mean of unacknowledged results from 18.3 to an impressive 1.1. We achieved our project aim of acknowledging all results from December 2022 to March 2023 after conducting the various PDSA cycles.

SUSTAINABILITY AND SPREAD

Our project coincided with the MOPEX rotation of junior doctors in July 2022 and January 2023. Sustained improvement was observed till March 2023, indicating the effectiveness of our RAM training for the new doctors. However, to fully evaluate the sustainability of our interventions, a longer monitoring period would be desirable to ensure continued compliance.

While individualising users' RAM based on ward location was highly effective in our project, its generalizability may be limited in settings where doctors rotate rapidly across multiple locations. However, we remain open to sharing our interventions with other community hospitals encountering similar challenges in the future.

Conclusion:

Our quality improvement project successfully addressed the high numbers of unacknowledged results in OCH through a root cause analysis and targeted interventions. The achievement of 100% result acknowledgement underscored the significant impact of our interventions.