Project Title

Optimisation Of Outpatient Pharmacy Automation System BD ROWA™Vmas

Project Lead and Members

Project lead: Lim Shi Zong Nigel

Project members: Norjanah Binte Alias, Maggie Ng Mui Kian, Siti Nurul Hudah Binte Salleh, Alice Lim Geok Choo

Organisation(s) Involved

Ng Teng Fong General Hospital

Healthcare Family Group Involved in this Project

Pharmacy

Applicable Specialty or Discipline

Pharmacy

Aims

To reduce the average ROWA™task idle time per task by 50% to 4.84 minutes per task, and the average ROWA™task picking time by 20% to 1.74 minutes per task. Because the BD ROWA™Vmaxis the centerpiece within the Outpatient Pharmacy Automation System and handles the bulk of the prescription packing load, we hope to improve the efficiency of the Outpatient Pharmacy and reduce manpower reliance.

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Lessons Learnt

It was extremely challenging to achieve the target for the ROWA™task average idle time, as the entire Outpatient Pharmacy inventory (> 800 medications) had to be reexamined. While increasing manpower might seem like an obvious solution to most problems, we actually manage to reduce manpower requirements by 1 pharmacy staff at the ROWA station through optimisation efforts. A fresh perspective is sometimes needed to illicit new changes. OPAS model at NTFGH Outpatient Pharmacy is highly effective and transferrable. Other hospital pharmacies also came to NTFGH OPAS to learn from our successes.

Conclusion

See poster appended/ below

Project Category

Care Continuum

Value Based Care (Operational Management – Resource Allocation)

Keywords

Outpatient, Pharmacy, ROWA, VMAX, Automation

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OPTIMISATION OF OUTPATIENT PHARMACY AUTOMATION SYSTEM BD ROWA™ VMAX

MEMBERS: LIM SHI ZONG NIGEL, NORJANAH BINTE ALIAS, MAGGIE NG MUI KIAN, SITI NURUL HUDAH BINTE SALLEH, ALICE GEOK CHOO

☑ SAFETY
☑ QUALITY
☑ PATIENT EXPERIENCE
☑ PRODUCTIVITY
❑ COST

Define Problem, Set Aim

Problem/Opportunity for Improvement

Between Jan and May 2022, prolonged task idle time and long task picking time with the BD ROWA™ Vmax within the Outpatient Pharmacy Automation System (OPAS) were observed.

The average ROWA™ idle time was 9.68 minutes per task, while the average ROWA™ picking time was 2.17 minutes per task for this period. This resulted in longer medication packing times, and also required an additional pharmacy manpower to manage the ROWA™ workload.

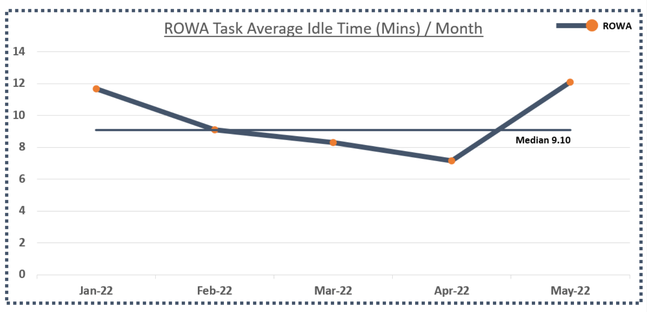
Aim

To reduce the average ROWA™ task idle time per task by 50% to 4.84 minutes per task, and the average ROWA™ task picking time by 20% to 1.74 minutes per task. Because the BD ROWA™ Vmax is the centerpiece within the Outpatient Pharmacy Automation System and handles the bulk of the prescription packing load, we hope to improve the efficiency of the Outpatient Pharmacy and reduce manpower reliance.

Establish Measures

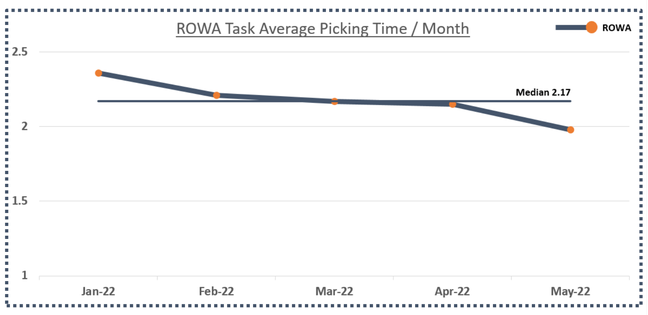
ROWA™ Task Average Idle Time

Between Jan and May 2022, the average ROWA™ idle time stood at 9.68 minutes per task.



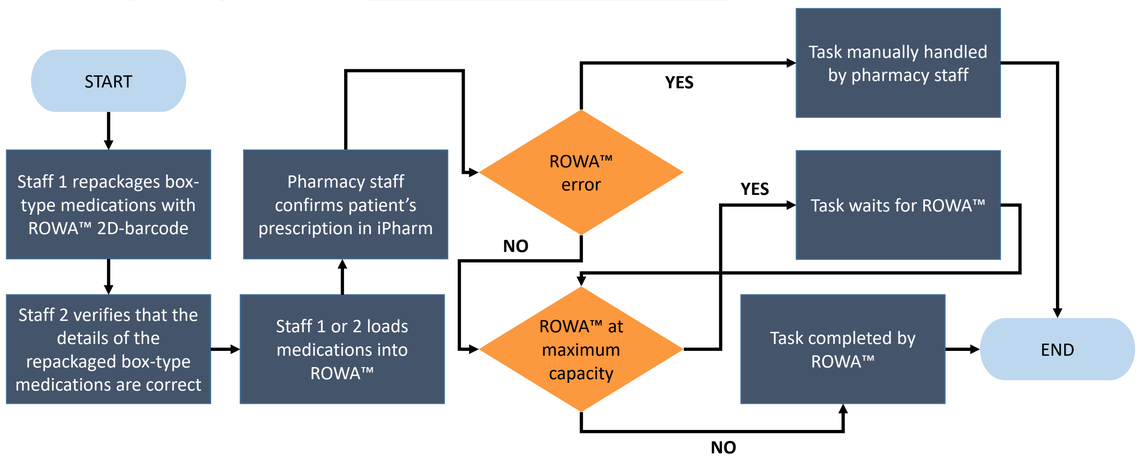
ROWA™ Task Average Picking Time

Between Jan and May 2022, the average ROWA™ picking time stood at 2.17 minutes per task.

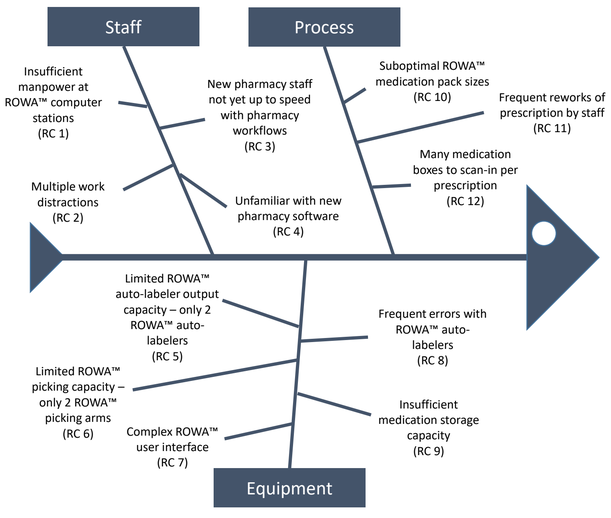


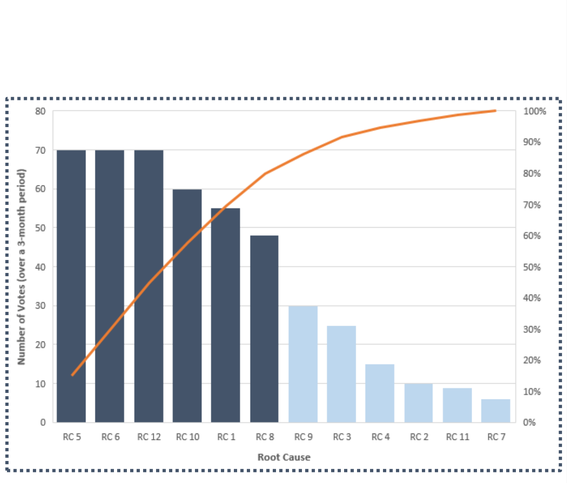
Analyse Problem

What is your process before interventions?



What are the probable root causes?

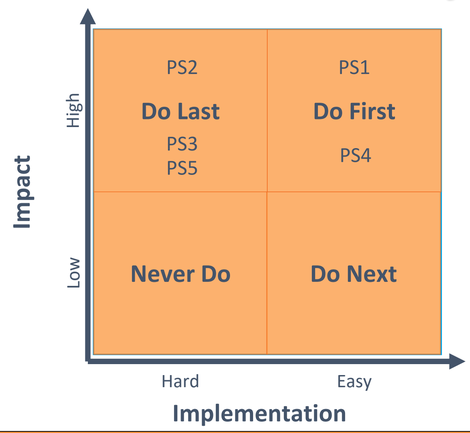




Select Changes

What are all the probable solutions? Which ones are selected for testing?

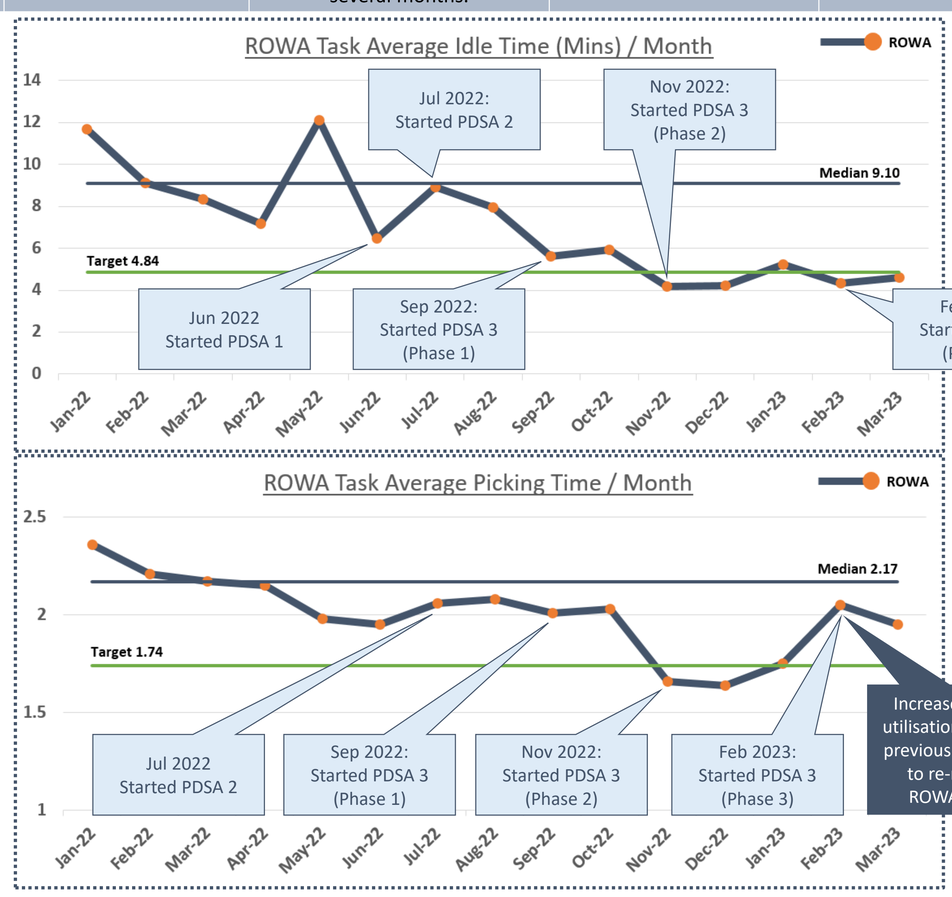
Root Cause		Potential Solutions
Limited ROWA™ Picking and Labelling Capacity (2 Picking Arms and 2 Auto-Labelers)	*1*	***Remove Mediations from ROWA™***
	2	***Redesign Entire OPAS Pack Sizes***
Insufficient Pharmacy Staff at ROWA™ Stations	*3*	***Increase Pharmacy Manpower***
Frequent Issues with ROWA™ Auto-Labelers	*4*	***Work Closely with Vendor to Resolve Issues***
Time Consuming to Scan in Multiple ROWA™ Boxes per Prescription	*5*	***Optimise ROWA™ Pack Sizes to Reduce Number of Boxes per Prescription***



Test & Implement Changes

How do we pilot the changes? What are the initial results?

CYCLE	PLAN	DO	STUDY	ACT
1	Improve reliability of ROWA™ auto-labelers to minimize issues and ROWA™ auto-labelers downtime.	Worked closely with vendor to identify, report, and rectify auto-labeler issues. One of the problematic auto-labeler was also replaced.	Staff reported smoother ROWA™ operations.	Channel of communication always maintained with vendor to ensure that issues can be timely rectified.
2	Reduce the number of boxes picked and labeled by ROWA™ per prescription.	Remove medications with small pack sizes (e.g. 10'S) entirely from ROWA™ to reduce the number of ROWA™ picking & labelling cycle.	Improvements were observed with the average task idle time falling to 5.61 minutes per task in the month of Sep 2022.	Adopted as part of NTFGH OPAS ROWA™ workflow. All medications within OPAS ROWA™ will follow this principle.
3	Redesign and optimisation of ROWA™ and entire OPAS inventory and pack sizes.	Large-scale optimisation of ROWA™ and entire OPAS inventory, to minimize ROWA™ picking and labeling time, while still fully utilizing ROWA™. Deployed in 3 phases over several months.	Achieved both average task idle time target of 4.84 minutes per task, and average picking time target of 1.74 minutes per task before Dec 2022.	Workflow logic to be employed by all future medications within OPAS.



Spread Changes, Learning Points

What are/were the strategies to spread change after implementation?

- *Upskilling of existing staff (e.g. pharmacy assistants, interns etc…) to handle new roles which require more technological know-hows.*
- *Regular updates conducted during Outpatient Pharmacy meetings to inform all staff of not only the changes, but successes of the implementation measures.*

What are the key learnings from this project?

- *It was extremely challenging to achieve the target for the ROWA™ task average idle time, as the entire Outpatient Pharmacy inventory (> 800 medications) had to be reexamined.*
- *While increasing manpower might seem like an obvious solution to most problems, we actually manage to reduce manpower requirements by 1 pharmacy staff at the ROWA station through optimisation efforts.*
- *A fresh perspective is sometimes needed to illicit new changes.*
- *OPAS model at NTFGH Outpatient Pharmacy is highly effective and transferrable. Other hospital pharmacies also came to NTFGH OPAS to learn from our successes.*

Ng Teng Fong General Hospital

Jurong Community Hospital