

## **Project Title**

Expiring Monitoring Process in Automated Medication Cabinet

## **Project Lead and Members**

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## **Organisation(s) Involved**

Singapore General Hospital

## **Healthcare Family Group(s) Involved in this Project**

Pharmacy

## **Aims**

- To reduce the overall time taken for AMC expiring medication monitoring by 50% within 6 months at Inpatient Pharmacy
- To improve the decision making process of near expiry medication transfer

## **Background**

See poster appended/ below

## **Methods**

See poster appended/ below

## **Results**

See poster appended/ below

## **Conclusion**

See poster appended/ below

### **Project Category**

Care & Process Redesign

Quality Improvement, Workflow Redesign, Value Based Care, Operational Management, Productivity

### **Keywords**

Expiring Medications Across Multiple Pharmacy Sections

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# Expiring Monitoring Process in Automated Medication Cabinet

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## INTRODUCTION

- Expiry monitoring of medications is a key process in pharmacy.
- Institution policy requires tracking of medications that are expiring within 6 months.
- However, the AMC server is only able to provide a report for a list of medications expiring within 3 months. Also, the quantity of expiring medications in each device is not reflected in the reports.
- Pharmacy staff conducts physical counts of AMC stocks to determine the quantity of expiring medications as well as manually record the list of medications that are expiring and not reflected in the AMC server.

Time-intensive process but necessary to facilitate prompt removal of expiring medications for initiating stocks transfer to another AMC with better utilisation.



## MISSION STATEMENT

**PRIMARY OBJECTIVE** To reduce the overall time taken for AMC expiring medication monitoring by 50% within 6 months at Inpatient Pharmacy

**SECONDARY OBJECTIVE** To improve the decision making process of near expiry medication transfer

## METHODOLOGY

The total average time taken for the process of AMC expiry monitoring per week is 2385 minutes (approximately 40 man-hours per week). In addition, decision on the transfer of near expiry stocks is highly subjective as this is largely based on PTs experience and knowledge of medication usage pattern. Decision may not be consistent among the team.

The team identified 6 main reasons for the long time taken for AMC expiry monitoring. The final root causes were identified using the Pareto Chart (Figure 1). Based on the 80/20 rule, the main root causes identified were :

- ✓ Lack of knowledge on medication movement
- ✓ Manual process of keying in data into excel
- ✓ Manual process of formatting excel for final printout.

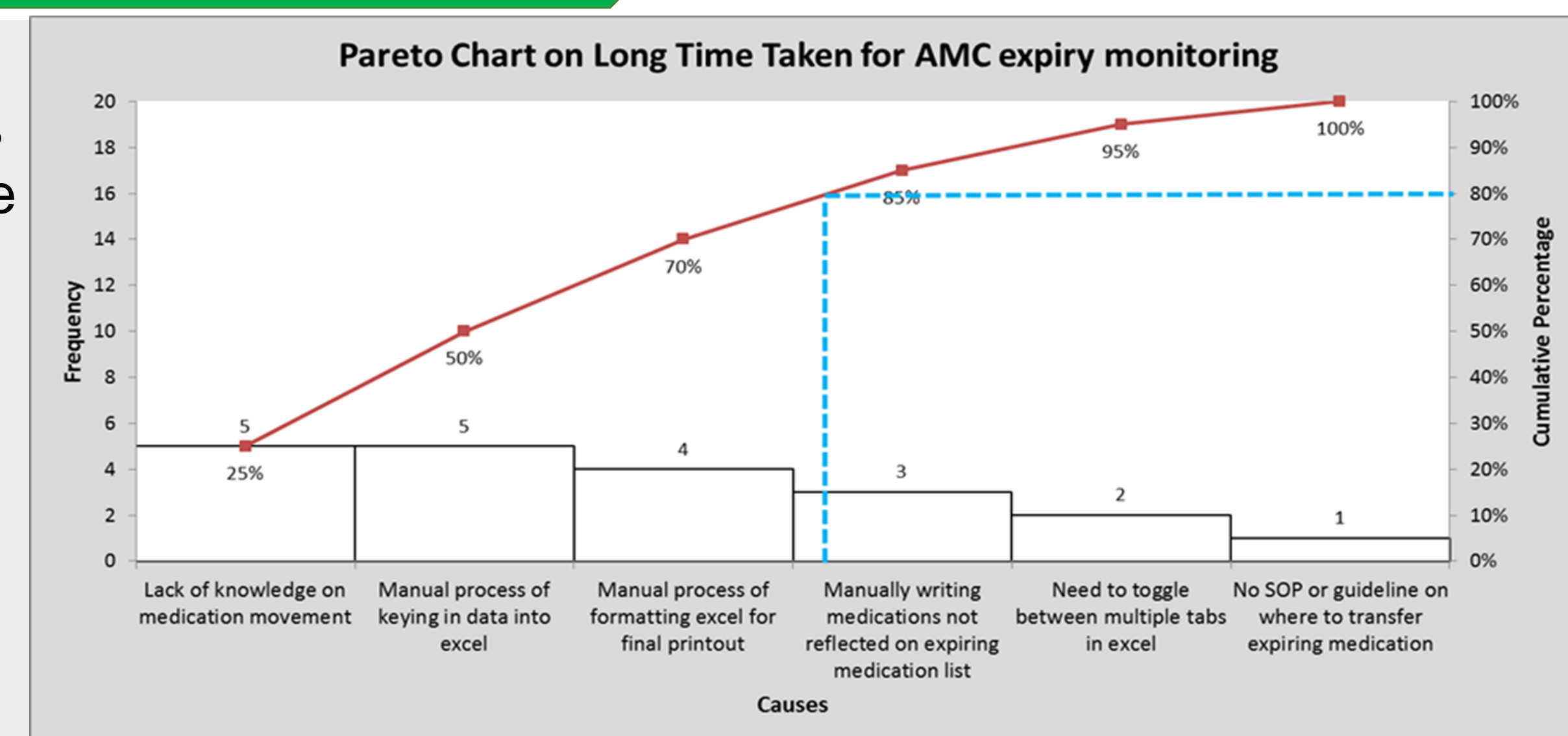


Figure 1: Pareto chart

## INTERVENTION

### PDSA Cycle 1

Creation of an excel macro-enabled file

Simplify process of data entry through the creation of a user form which will auto-populate entry fields (e.g. AMC Device, Medication name)

Automated formatting and printout by ward

Database to store collated list of near expiring medications in the AMC

### PDSA Cycle 2

Addition of a decision making tool into the excel file

- Auto suggestion of the appropriate transfer of the near expiring medication to another location/AMC with better utilisation.
- The backend information used to create the decision logic are derived from 3 months historical data of the medications topped up quantity into the respective AMC and PT knowledge of the medication usage pattern in other Inpatient sub-areas

WARD	AMC Device	Min	Ma	Drug Name	Expiry Date	Quantity	Remarks	To remove?	Suggested transfer	Device with highest refill	Device with 2nd highest	Device with 3rd highest	Device with 4th highest	Device with 5th highest
65	P65A-1	3	10	DIPHENHYDRAMINE HCL 50MG/ML INJ	31-Oct-18	10		YES	NA	P77A-1	P72A-1	P48H-1	P48A-1	P48C-1

## RESULTS

In PDSA 1, the average time taken for weekly AMC expiry monitoring reduces from 2385 mins to 884 mins. This translates to a **62.9% of time-savings** per week and an estimated saving of **1300 man-hours per annum**

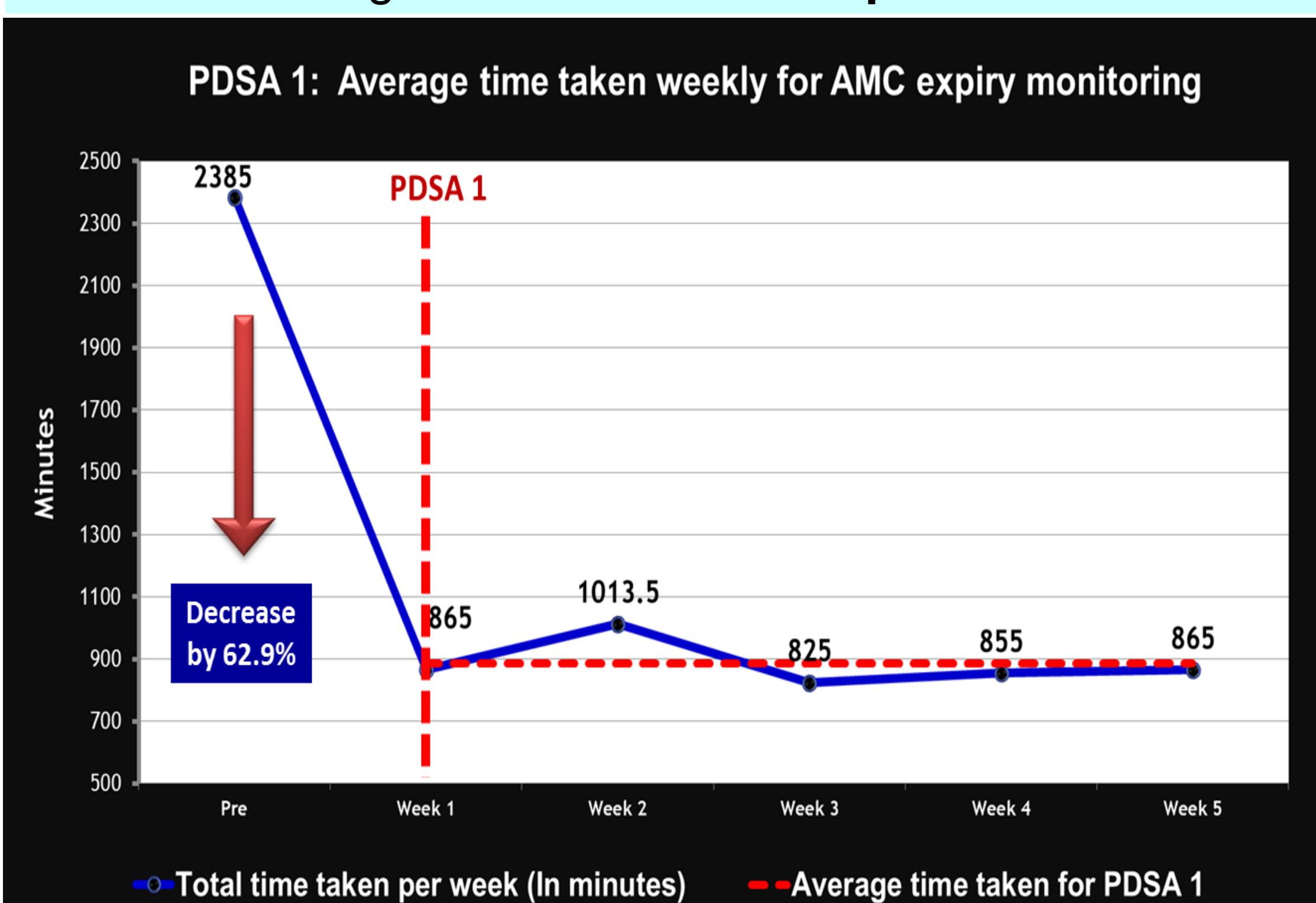


Figure 2: Chart on average time taken for weekly AMC expiry monitoring

In PDSA 2, the effectiveness of the decision making tool was measured by getting PTs to evaluate the decisions made by the system and indicate if it matches to the decision that would have been made by them based on the consumption trends. Each AMC keeps an average of 120 medication line items and a sample 50 medication line items were evaluated (Table 1)

Stocks PT	Match	Did not match	% of line items that match
PT A	49	1	98%
PT B	44	6	88%
PT C	43	7	86%

Table 1: Evaluation on the effectiveness of the decision making tool

The average % of medication line items suggested by the system that matches the decisions by the PTs stands at 90.7%, reflecting the ability of the system to emulate the decisions by stock PTs with high accuracy. As a result, stock PTs spent lesser time on decision making. After implementation of PDSA 2, the average time taken weekly further reduces to 841 mins.

**Overall, this project is estimated to have saved a total of 1337 man-hours per annum.**

## CONCLUSION

To ensure the sustainability of the project over time, standard work process has been put into place to ensure pharmacy staff are familiar with the usage of the new excel file. The historical data that drives the decision logic are updated quarterly to ensure that the decision tool remains effective and updated with the consumption trends within the AMC.

In addition, this project has resulted in a spin-off of a departmental quality improvement project that looks into using similar database and an objective decision making tool to streamline movement of expiring medications across multiple pharmacy sections.