



Recycling of Medication Packaging Materials and The Impact of Increasing Accessibility of Recycling Bins for Staff at Pharmacy @ IB

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Introduction

The amount of waste generated and disposed of from the hospitals has increased significantly in the recent years [1]. The increase may be attributed to various factors, including an increase in the number of patients seen in the hospitals, especially during the COVID-19 pandemic. Recycling bins have been deployed within Changi General Hospital (CGH) compound to help with the segregation of recyclable and non-recyclable waste. Pharmacy @IB takes part in this recycling initiative and has been mindful in recycling general waste especially packaging material such as paper box and plastic bottles.

Objectives

The aim of the project is to recycle at least 40 kg per month of recyclable waste at Pharmacy @IB within 12 months. The secondary aim of the project is to study the effectiveness of increasing accessibility of recycling bins to improve compliance of staff correctly segregating waste into the recycling bins.

[1] Source: National Environment Agency

Method

PDSA Cycle 1

A focus group (consisting of 2 pharmacists and a pharmacy technician) was set up to discuss the deployment of recycling bins for paper waste within staff area in Pharmacy@ IB. The group decided to deploy 4 pedal bins with appropriate labelling for paper waste and with green plastic bag lining per bin that were placed strategically near picking areas with high volume of waste generation (Fig 1). Results were then collected over a period of 2 months (Fig.3) before the next PDSA cycle.

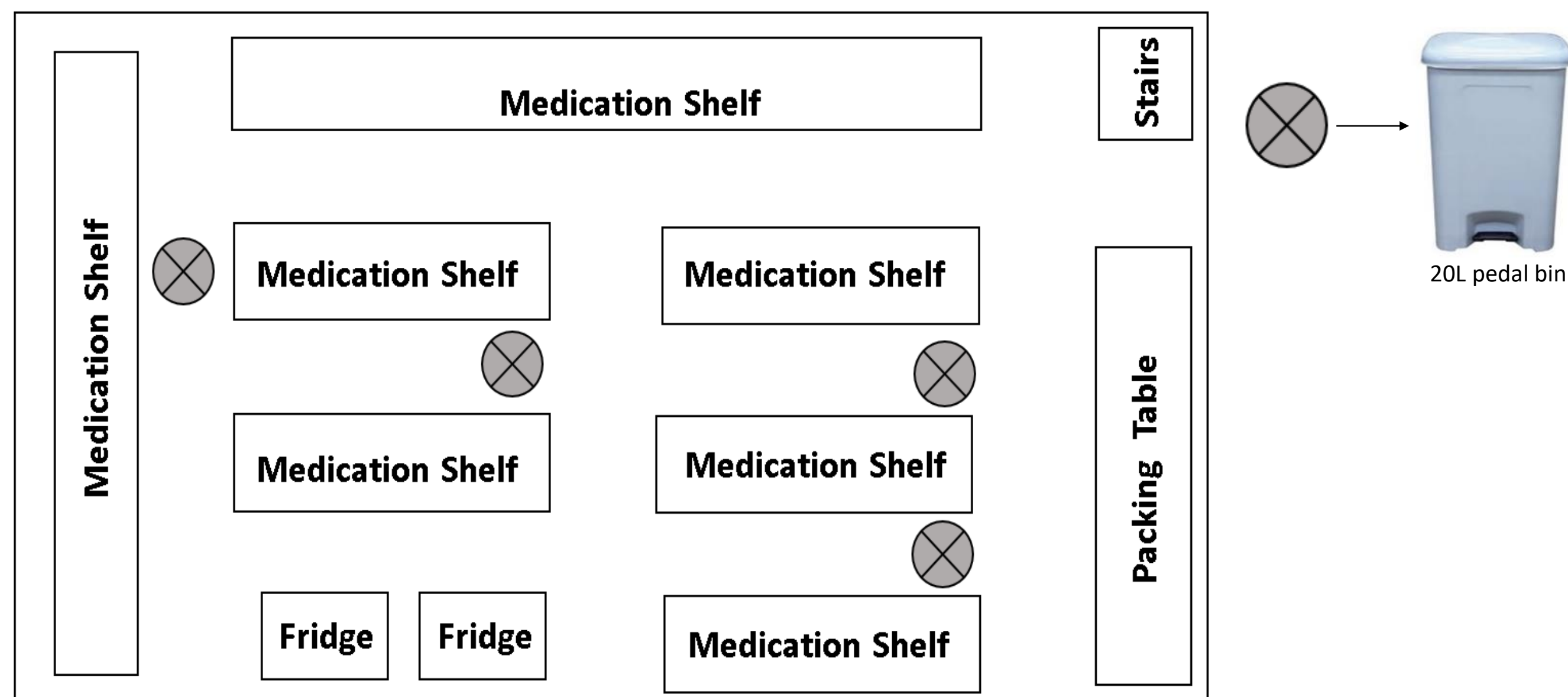


Fig 1. Pharmacy layout after deployment of 4 recycling bins.

PDSA Cycle 2

The team conducted a staff survey to understand reasons of staffs' non-compliance to correct segregation of recyclable waste. The most voted reason for non-compliance was "recycling bins were placed too far away" (85%), and the team decided to increase the number of bins from 4 to 8 to improve accessibility. In Oct 22, the team also introduced plastic bottle waste bins to allow staff to recycle plastic bottles.

PDSA Cycle 3

In Mar 23, the team conducted a second staff survey to check on non-compliance of segregation of recyclable waste. The two most voted reason was for non-compliance were "inconvenient to step on pedal bin" (70%) and "bin was full" (20%). The team decided to remove the lid of the recycling bins and to change 3 of the recycling bins to the bigger size (Fig.2).

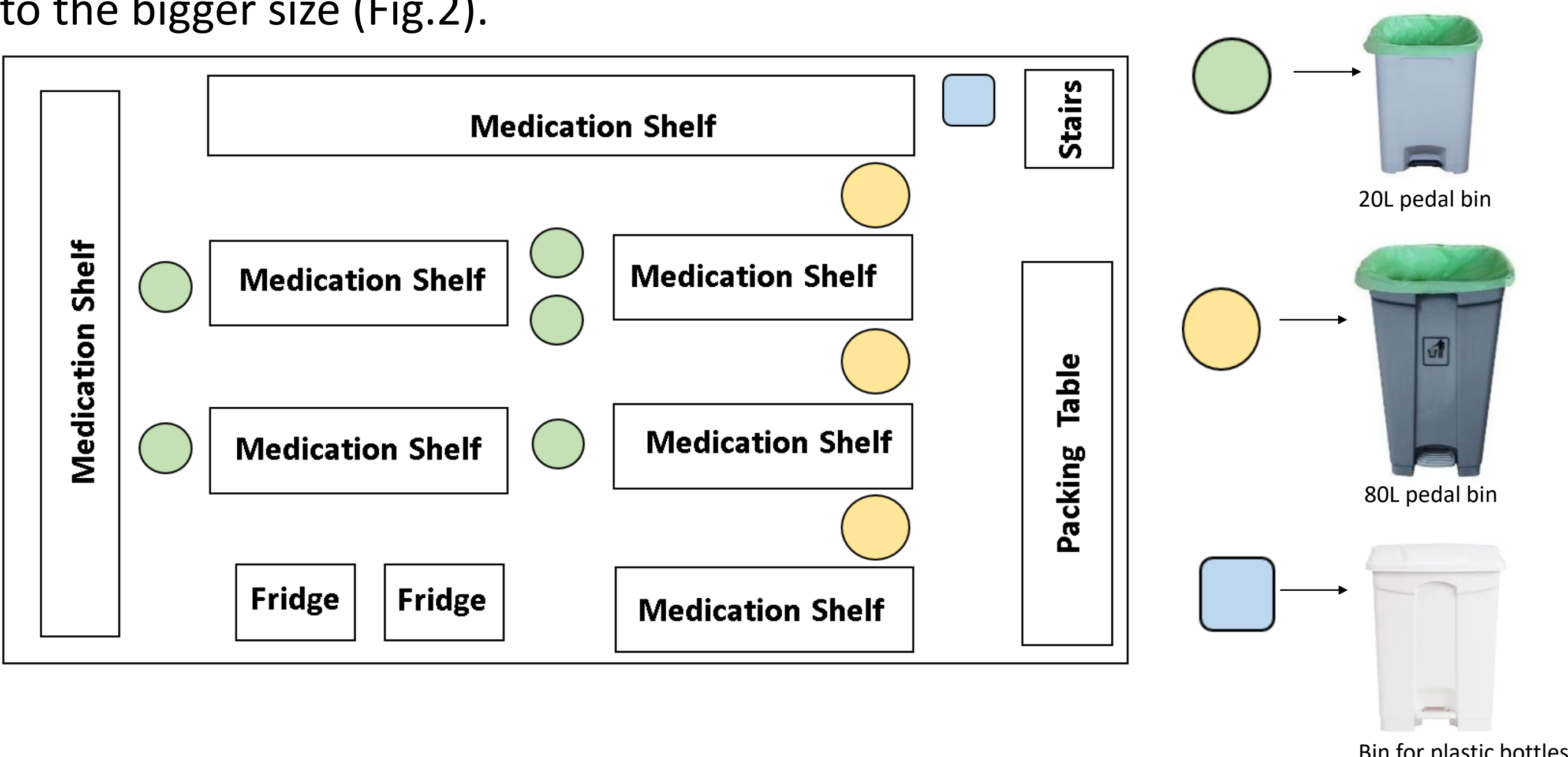


Fig 2. Pharmacy layout after the number of recycling bins was increased to 8. The lid of all the bins was removed and 3 bins near the packing area were changed to bigger size.

The team also conducted weekly random checks on the new waste bins to check if there was wrongly segregated waste in the recycling bins e.g., non-paper waste in paper waste recycling bin.

Measures

- A) Weight of recyclable waste collected (kg)
- B) Number of recycling bins with wrongly segregated waste

Results

- ✓ Successfully initiated recyclable waste collection at Pharmacy @ IB
- ✓ Increased weight of recyclable waste collected after increased the number of bins
- ✓ Further increased weight of recyclable waste collected after removing the lids of recycling bins
- ✓ Successfully introduced new recycling bins for plastic bottles

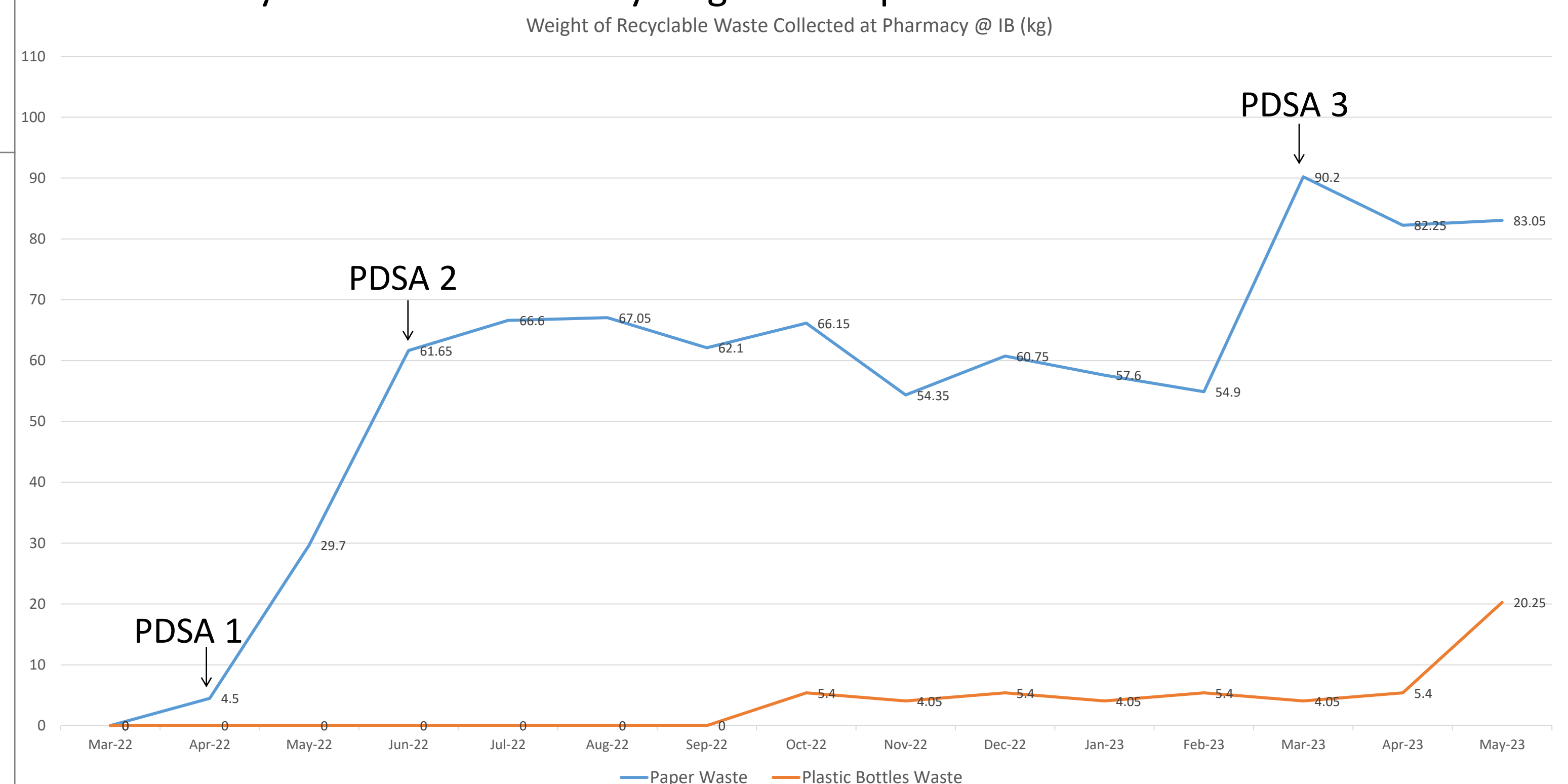


Figure 3: Weight of recyclable waste collected at Pharmacy @IB.

The weight of recyclable waste was less than 40kg the first 2 months post-implementation (PDSA 1). The weight of recyclable waste collected was increased to average of 61kg monthly after the team increased the recycling bins at the pharmacy (PDSA 2); and the weight was further increased by at least 20 kg after the initiative of removing the lid and increasing size of the bins to facilitating waste collection (PDSA3). New bins for plastic bottles were introduced later which the pharmacy collected average of 5kg per month.

A) Effectiveness of improving accessibility of recycling bins

After the changes made to improve accessibility of recycling bins, there was an increase of at least 30kg per month of recyclable waste collected.

B) Balance Measure: wrongly segregated waste in the recycling bins

Week	1	2	3	4	5	6	7	8
Number of recycling bins with wrongly segregated waste	3	4	1	0	0	0	0	0

There was negligibly low incidence of recycling bins (average of less than 5 incidents per week first 3 weeks post-implementation) with wrongly segregated waste and the team concluded that staff was still able to segregate the waste effectively even without the lid.

Conclusion

The team achieved its primary objective of recycling 40 kg of recyclable waste within 12 months at Pharmacy @ IB. Accessibility of the bins (i.e., increasing number of bins, removing lid of bins and increasing size of bins) is an important factor in improving staffs' compliance rate to recycling waste.

Environmental sustainability is a continuous journey that requires on-going effort within the healthcare industry. Pharmacy Department environmental sustainability team is formed to engage all CGH pharmacies to participate in recycling effort and raise awareness.

Moving forward, the team will work on increasing staff awareness on recycling and explore the potential to recycle other wastes such as inhalers and insulin pens. The team also aim to spread this project to other pharmacies within the hospital.