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Background and Context of Problem

- Medication Delivery Services (MDS) in National Skin Centre (NSC) is a service for NSC patients preferring the convenience of having their medications delivered to their homes.
- During the COVID-19 circuit breaker, MDS requests increased exponentially within 2 months from 30 cases per month to 1300 cases per day. However, the existing work space, manpower and other resources for both NSC and ALEX Fulfilment Services (courier partner) were designed to manage up to a maximum of 100 cases per day.
- MDS is accompanied by time-consuming, complex, manual processes affecting multiple stakeholders:
 - Tedious manual process of medication delivery requests
 - Tedious manual process of tallying large quantity of parcels
 - Multiple complaints by patients about long waiting time and dispensing errors
 - Multiple complaints by patients about late deliveries and delivery errors
 - Multiple incident reports to investigate/rectify multiple recurring errors

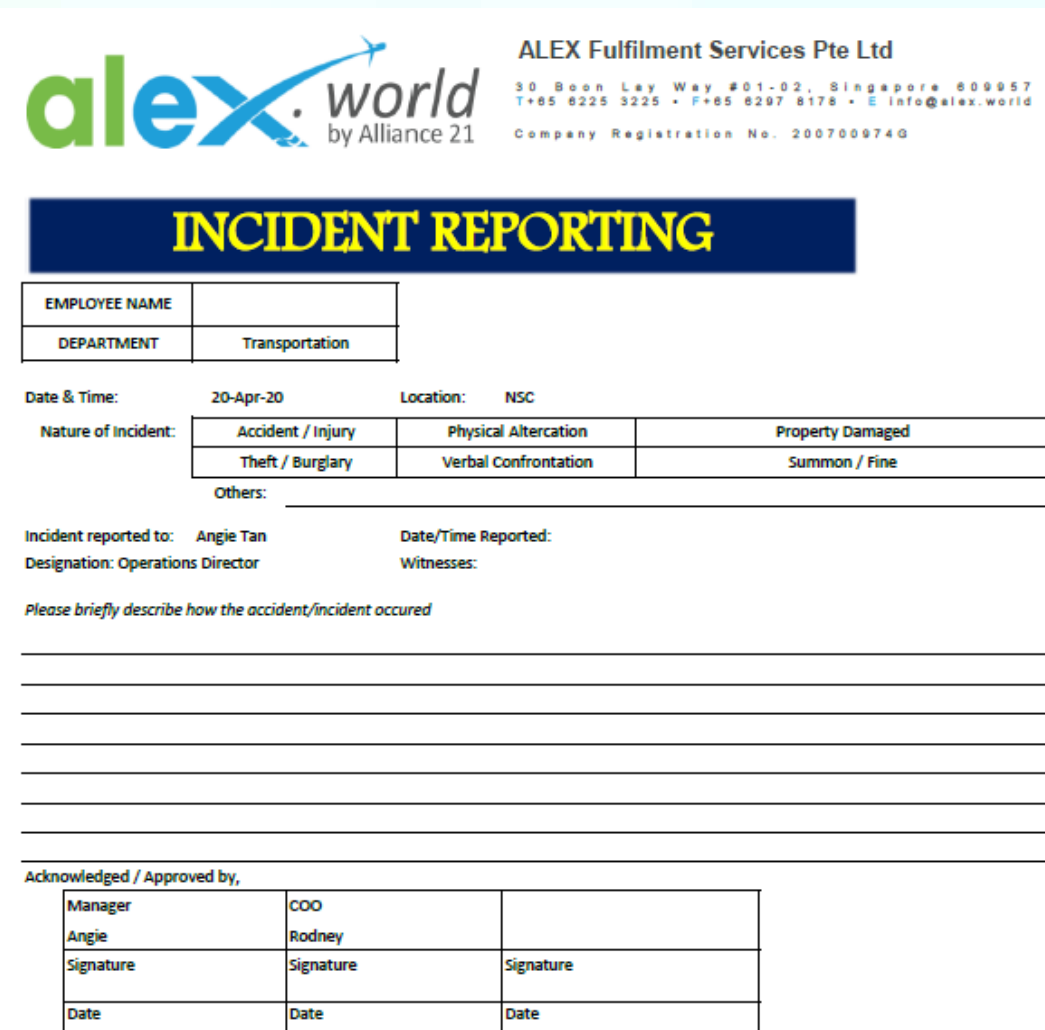
Project Objectives

- To improve the operational efficiency of medication delivery services (MDS) for dermatology outpatients in NSC
- To minimise MDS error rates for NSC and ALEX Fulfilment Services

Methodology

- NSC Pharmacy and ALEX Fulfilment Services collaborated to streamline MDS processes using Kaizen Methodology and Digitalisation approach
- Implementation of Incident Management Bundle and Digitalisation of MDS Parcel Journey using barcode verification technology
- Collaborative workflow redesign by NSC Pharmacy and ALEX Fulfilment teams with system thinking approach (upstream, downstream, and concurrent processes) and human factors considerations
- Plan-Do-Study-Act (PDSA) was used to review effectiveness (quantitative measures) and identify areas for continuous improvement (qualitative inputs from patients and stakeholders)
- Progression from complex manual processes to standardised/simplified and digitalised processes with sustained system-level improvement

Incident Management Bundle for Alex Fulfilment Services



INCIDENT REPORTING

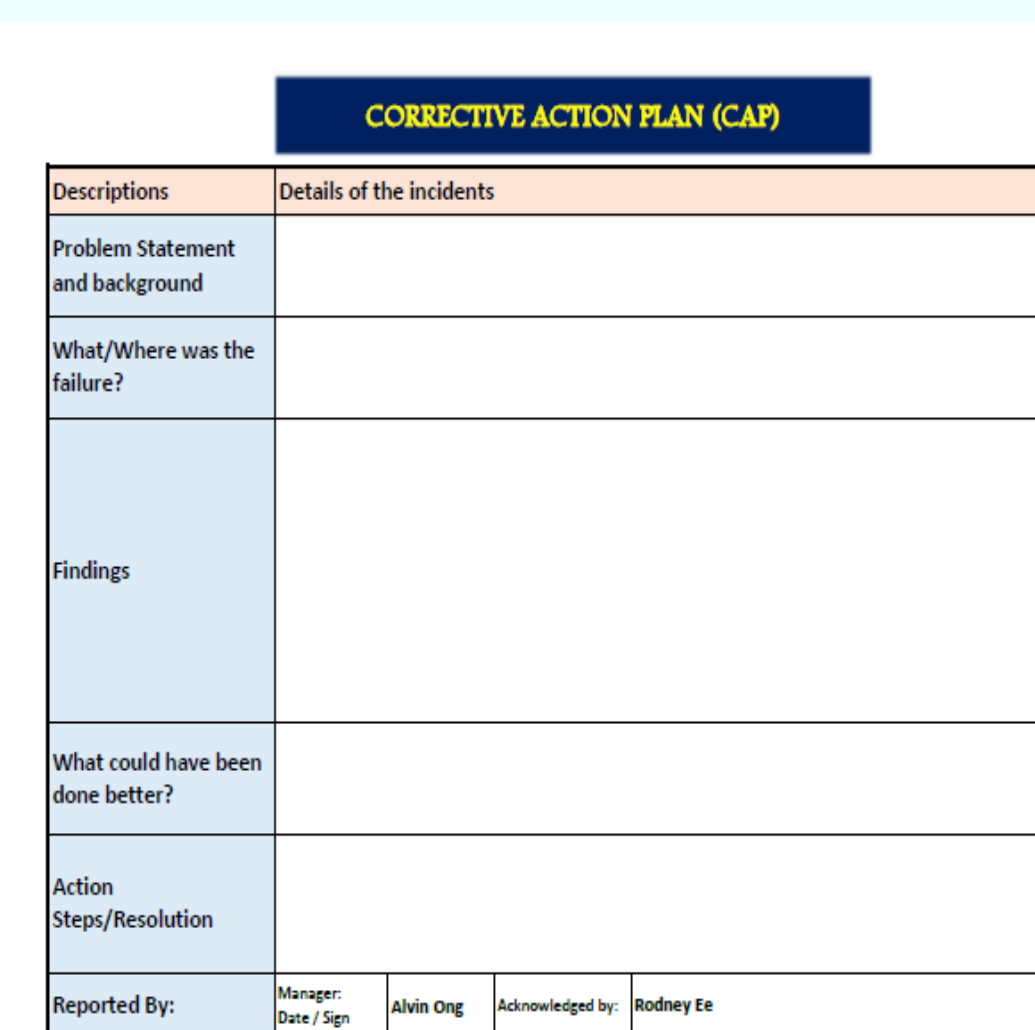
EMPLOYEE NAME: _____
DEPARTMENT: _____

DATE & TIME: 20-Apr-21 14:00:00
LOCATION: NSC

INCIDENT REPORTED TO: _____
OPERATIONS DIRECTOR: _____

PLEASE BRIEFLY DESCRIBE HOW THE INCIDENT OCCURRED

ACKNOWLEDGED / APPROVED BY: _____
DATE: _____



CORRECTIVE ACTION PLAN (CAP)

DESCRIPTION: Details of the incidents

PROBLEM STATEMENT AND BACKGROUND: _____
WHAT/WHERE WAS THE FAILURE? _____

FINDINGS: _____

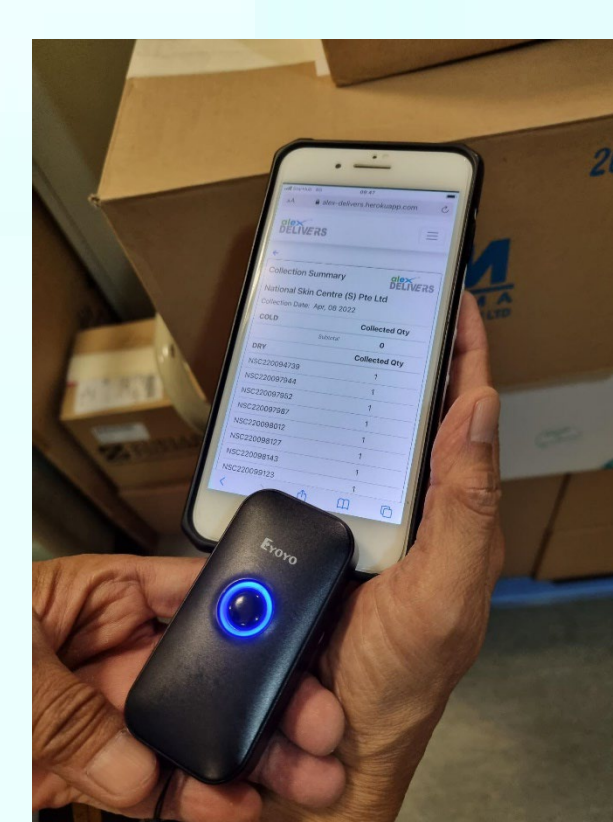
WHAT COULD HAVE BEEN DONE BETTER? _____

ACTION/REVISION: _____

REPORTED BY: _____
DATE: _____

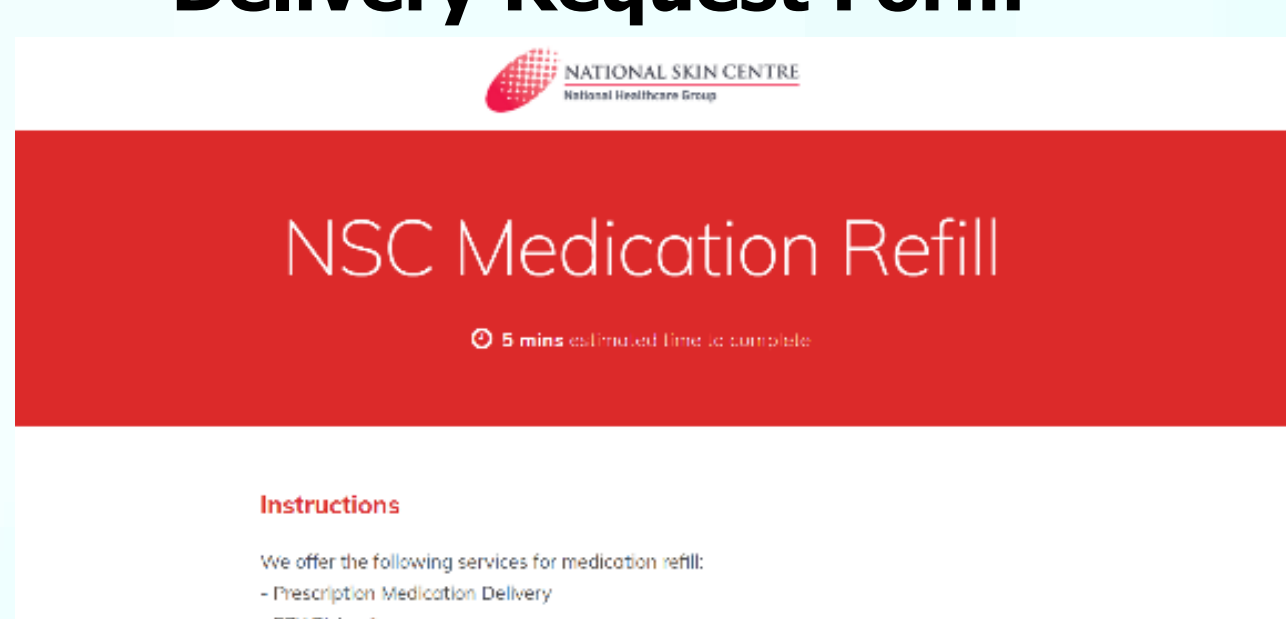


ALEX staff verifying parcels using Barcode Verification Device during medication parcel pick-up

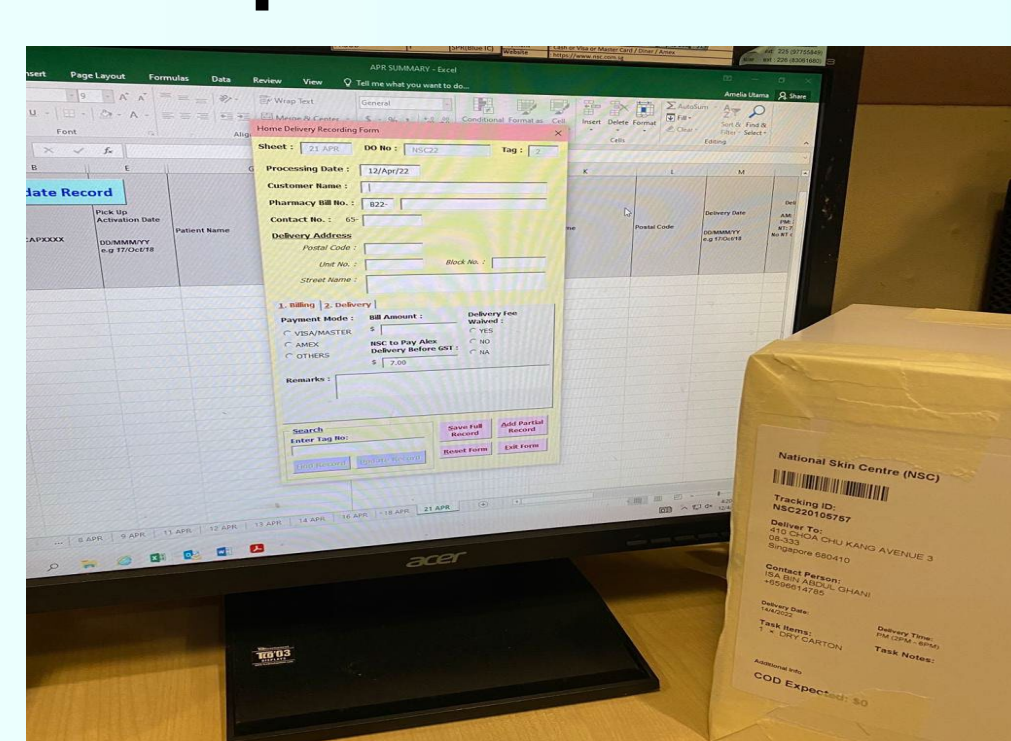


Barcode Verification Device for medication parcel pick-up

FormSG Medication Delivery Request Form



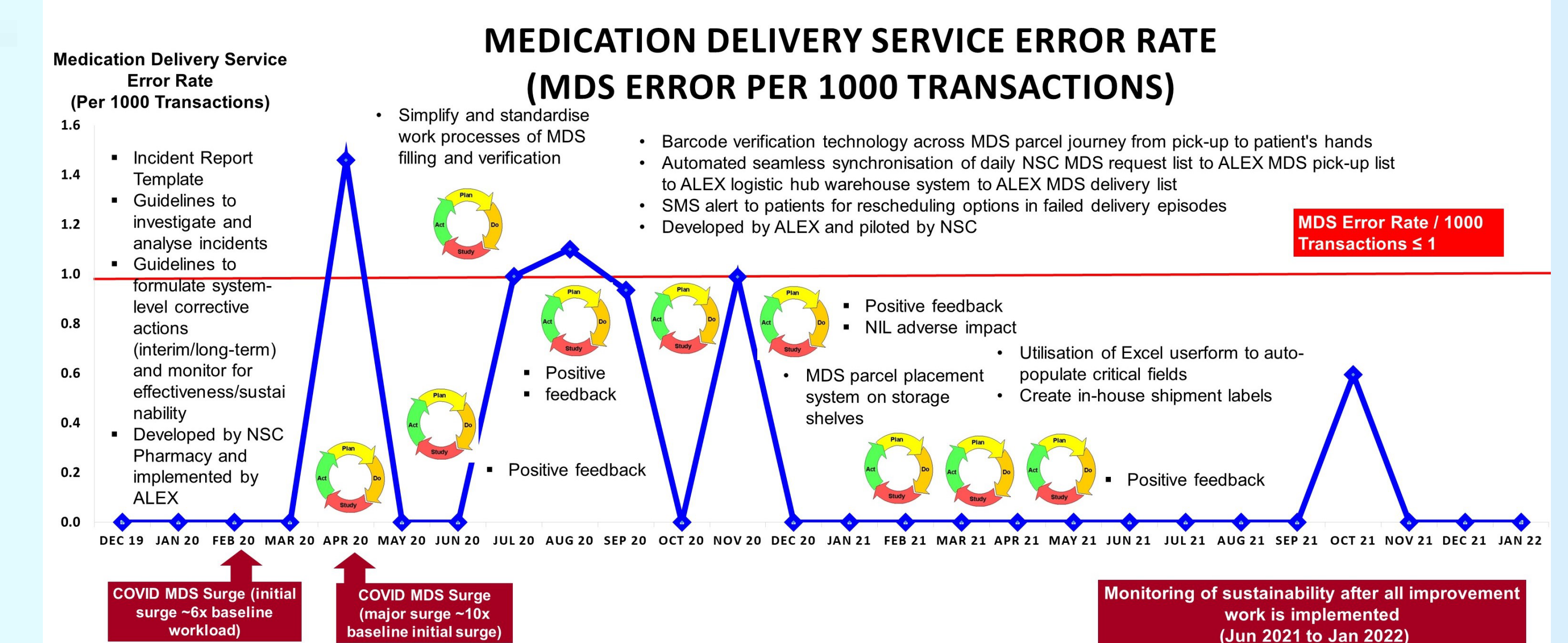
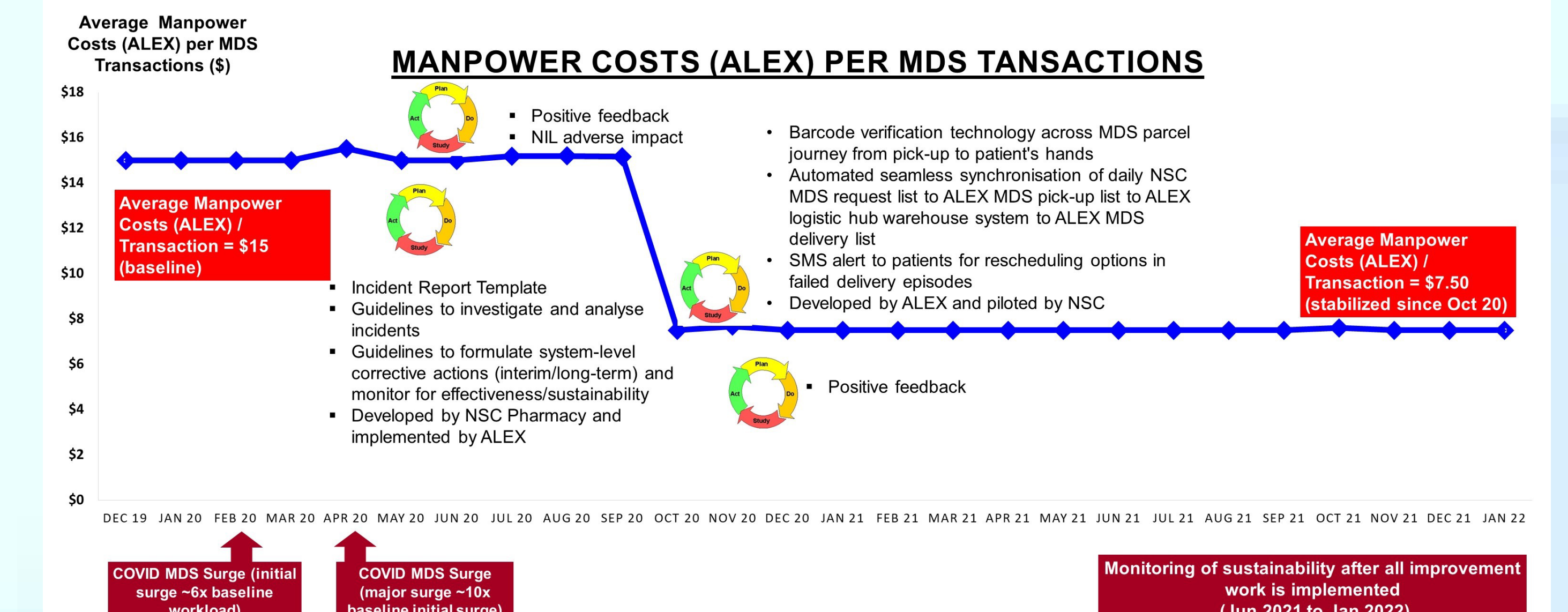
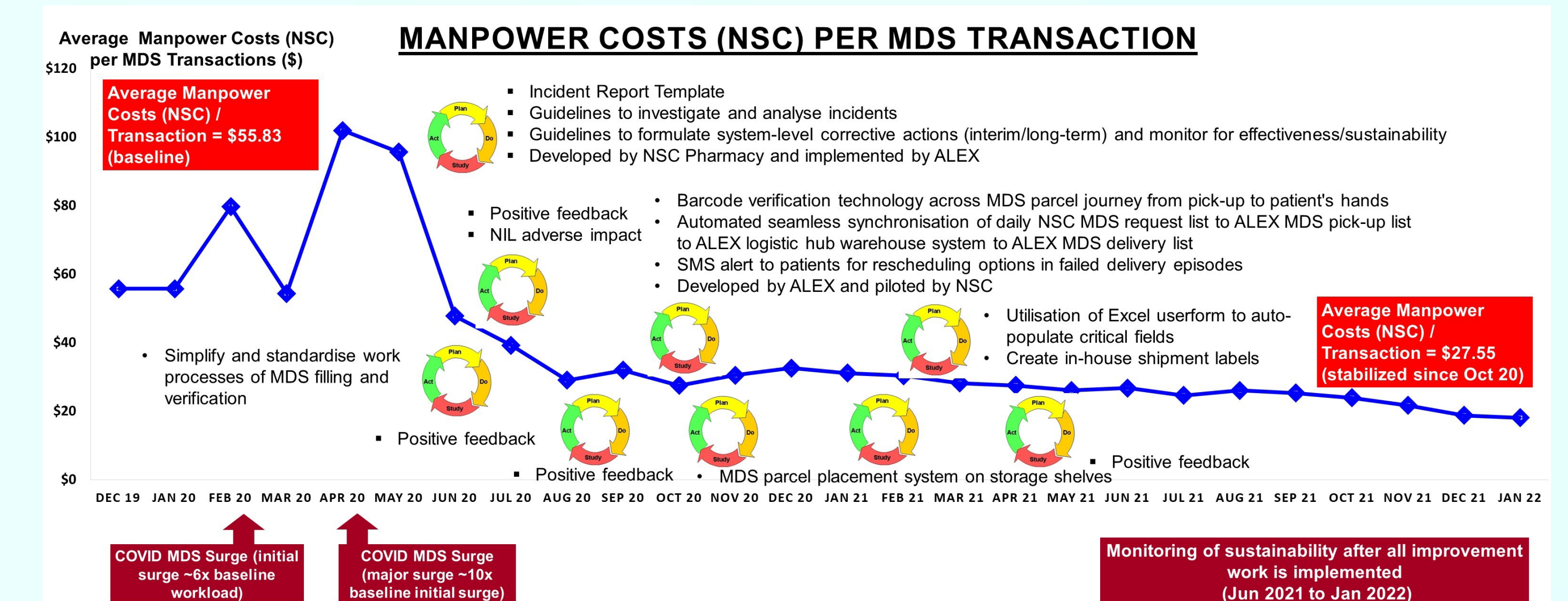
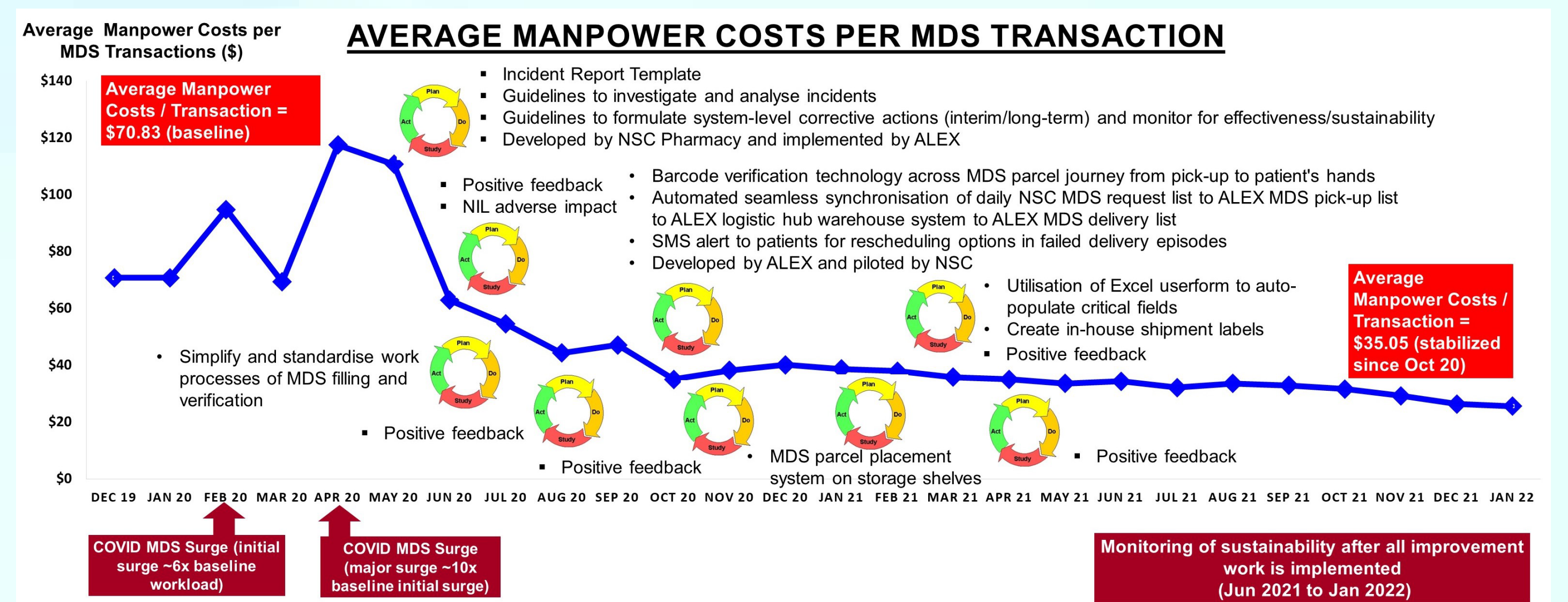
Automate in-house printing of MDS medication parcel shipment notes on sticky labels



Results

- From January 2020 to January 2022, the quantitative measures were monitored to determine the effectiveness and any potential adverse impact of the improvement actions during PDSA cycles

| Quantitative Measures (Project Outcomes) | Baseline (Dec 19) | Incident Management Bundle & Digitalisation (Nov 20) | Redesigned workflow (Project Completed in Jun 21) | Sustained till Jan 22 |
|--|-------------------|--|---|-----------------------|
| Average Manpower Cost per MDS Transaction | SGD \$70.83 | SGD \$38.23 (↓46%) | SGD \$34.33 (↓51%) | SGD \$25.63 (↓64%) |
| Manpower Costs (NSC) per MDS Transaction | SGD \$55.83 | SGD \$30.55 (↓45%) | SGD \$26.83 (↓52%) | SGD \$18.13 (↓68%) |
| Manpower Costs (ALEX) per MDS Transaction | SGD \$15.00 | SGD \$7.68 (↓49%) | SGD \$7.50 (↓50%) | SGD \$7.50 (↓50%) |
| MDS Error Rate (Per 1000 Transactions); Target: ≤1 | 1 | 1 | 1 | 1 |



Conclusion

- NSC Pharmacy and ALEX Fulfilment Services have successfully improved the operational efficiency of medication delivery services through collaborative improvement partnership.
- This successful collaborative improvement resulted in 64% reduction in average manpower cost per MDS transaction (\$70.83 to \$25.63), and maintained MDS error rate to be less than 1 error per 1000 MDS transaction.