Optimising Drug Inventory Level Using Excel VBA on Daily and Weekly Stock Ordering to Reduce the Number of Ad hoc Stock Transfer (SIVs) and Lines Items ordered in Tan Tock Seng B2 and Satellites Pharmacies.

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INTRODUCTION:

TTSH Outpatient Pharmacy is located at various areas in the hospital that serves patients from the outpatient specialist clinics. Due to high patient load and demand, pharmacy sections are unable to cope with the supply and sometimes face the difficulties of stock shortage.

These shortages are attributed mainly to the following reasons: insufficient par level, patient requiring large quantity, sudden surge in usage. The task of determining the amount of inventory to keep is relatively challenging. Par level determination is done and computed manually and is based on average consumption and varies from each section needs.

When pharmacy sections have insufficient quantity of a drug to supply to patients, inventory personnel have to do stock transfer from store. To be able to fulfil the required quantity, stock transfer is done through the **Store Issue Voucher (SIV)**.

AIM:

Reduce the number of SIVs (orders) sent and the number of lines items ordered from Store by 50% for at least 4 to 6 months or longer post-implementation.
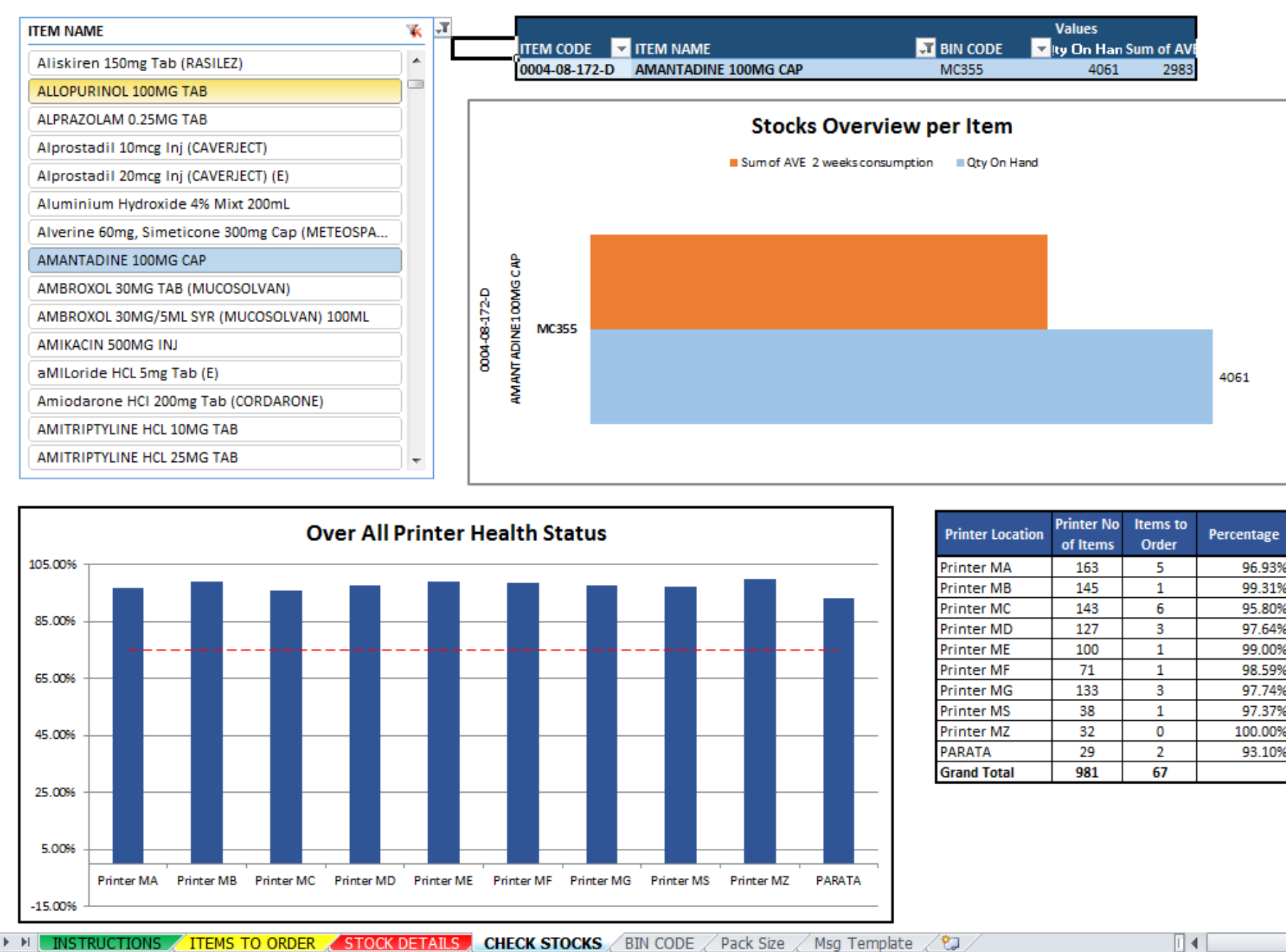
METHODOLOGY:

1) Excel Daily/Weekly Order Template

Sequence of events:

OP
- **Outpatient Pharmacy, Basement 2 – Daily Order Template**
- Implementation Date: August 2015 (Aug 2014 - July 2015 VS Aug 2015 -July 2016)

L4P
- **Level 4 Pharmacy – Weekly Order Template**
- Implementation Date: August 2015 (Aug 2014 - July 2015 VS Aug 2015 -July 2016)

C2BP
- **Clinic 2B Pearl Pharmacy, Level 2 – Weekly Order Template**
- Implementation Date: June 2017 (June -Dec 2016 VS June -Dec 2017)

C4BP
- **Clinic 4B Pearl Pharmacy, Level 4 – Weekly Order Template**
- Implementation Date: June 2017 (June -Dec 2016 VS June -Dec 2017)

CB1B
- **Clinic B1B Pearl Pharmacy, Basement 1 – Weekly Order Template**
- Implementation Date: August 2017 (Aug-Dec 2016 VS Aug-Dec 2017)

L2P
- **Level 2 Pharmacy – Weekly Order Template**
- Implementation Date: Sept -2017 (Sept-Dec 2016 VS Sept-Dec 2017)

- ❖ With built in formula to auto-compute for the par level dynamically based from average 2 weeks usage of the 6 months running usage or pre-set par level.
- ❖ By clicking command buttons users can generate the order list and automatically attach and submit it yo Pharmacy Store via email.
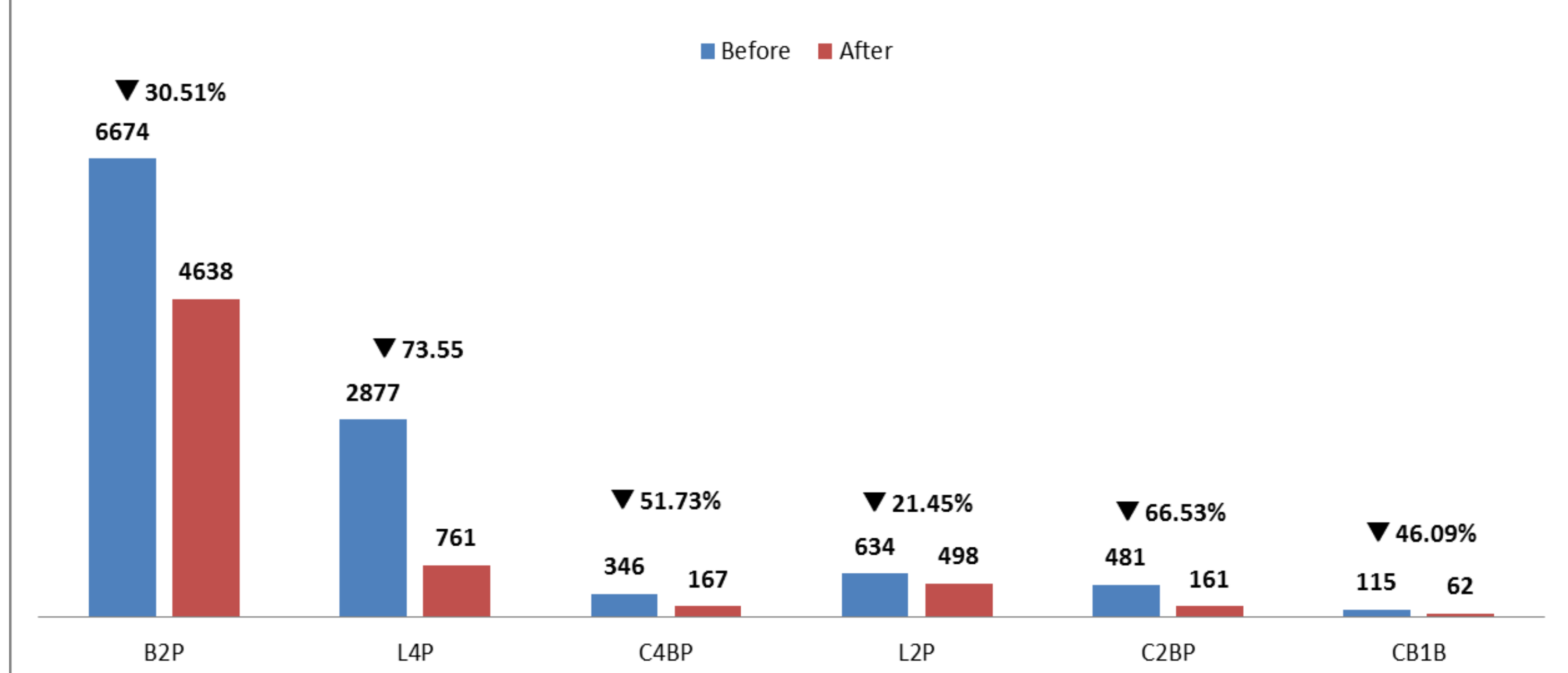

2) Stock Overview Dashboard

- ❖ The Order Template can also be used daily to check, assess, forecast and order the items that is below stock par level due to patient requiring large quantity.
- ❖ The spreadsheet also gives an option to the section inventory in charge to review and set par levels weekly instead of every 6 months.
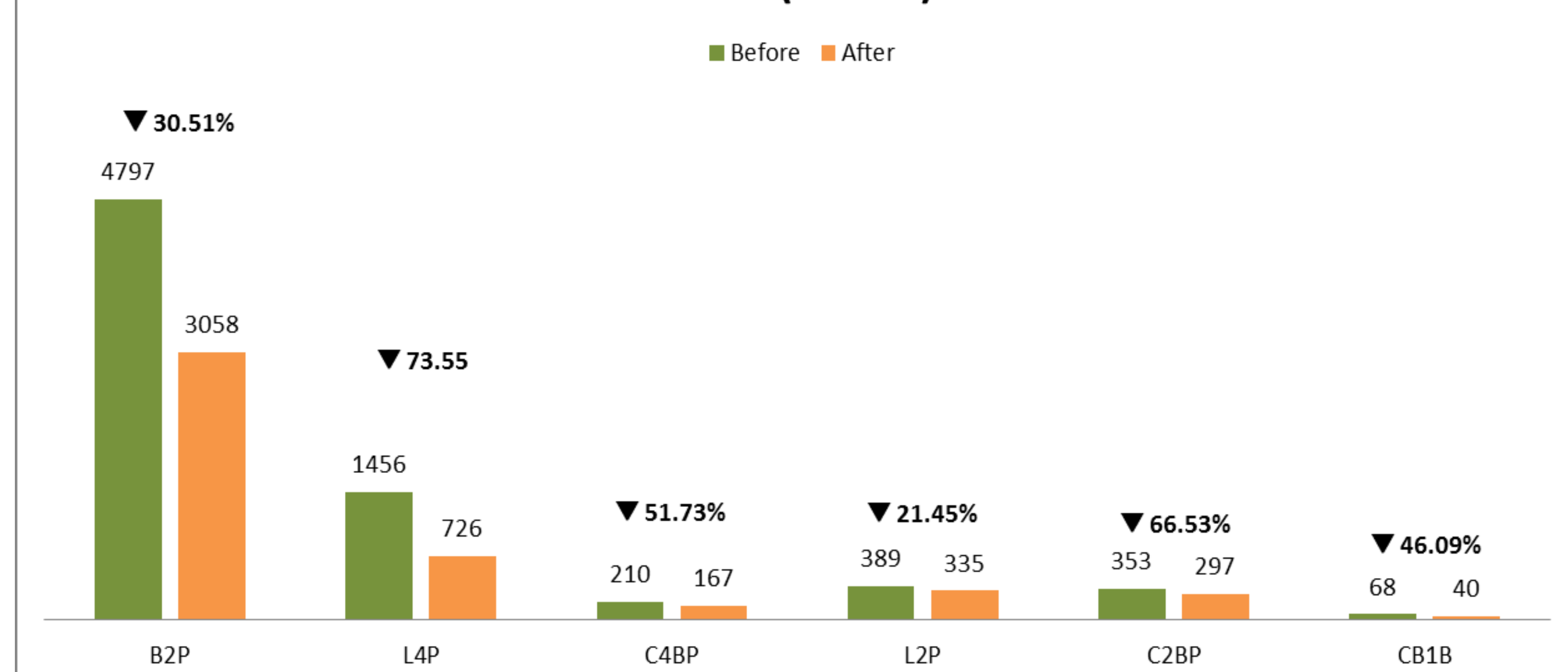
RESULTS:

FTE saved per Pharmacy Section

PHARMACY SECTION	Before	After	Total Number of Reduction	% Improvement	Period (in Months)	Est. time to complete SIV process	Time Saved per Week (hrs/week)	Time Saved per Week (FTE/week)
B2P, B2 Pharmacy	4797	3058	1739	36.25%	24 months	10 mins	5.57	0.1328
L4P, Level 4 Pharmacy	1456	726	730	50.14%	24 months	16 mins	3.75	0.0892
C4BP, Clinic 4B Pharmacy	210	167	43	20.48%	7 months	16 mins	0.38	0.0090
L2P, Level 2 Pharmacy	389	335	54	13.88%	4 months	16 mins	0.83	0.0197
C2BP, Clinic 2B Pharmacy	353	297	56	15.86%	7 months	16 mins	0.49	0.0117
CB1B, Clinic B1B Pharmacy	68	40	28	41.18%	5 months	10 mins	0.22	0.0051

No of line items ordered — Before / After

- B2P: 6674 / 4638 ▼30.51%
- L4P: 2877 / 761 ▼73.55
- C4BP: 346 / 167 ▼51.73%
- L2P: 634 / 498 ▼21.45%
- C2BP: 481 / 161 ▼66.53%
- CB1B: 115 / 62 ▼46.09%

No of SIVs (orders) sent — Before / After

- B2P: 4797 / 3058 ▼30.51%
- L4P: 1456 / 726 ▼73.55
- C4BP: 210 / 167 ▼51.73%
- L2P: 389 / 335 ▼21.45%
- C2BP: 353 / 297 ▼66.53%
- CB1B: 68 / 40 ▼46.09%

The VBA integrated ordering template is rolled to 6 out of 9 sections. Total of FTE savings across 6/9 sections = **0.268 FTE/week.** Across all section there is a reduction on both No of line items ordered and number of SIVs sent. The potential FTE saving is projected to exceed **0.4/week once all sections is using.**

CONCLUSIONS:

The inventory section in charges has reported significant improvement in fewer patients waiting for stocks. This is on top of better utilization of ground staff helping in the pharmacy instead of walking over to Store to collect stocks.