Project Title

Improving the Efficiency and Accuracy of Medication Delivery Services at NHG Pharmacy's Central Fill Pharmacy (CFP)

Project Lead and Members

Project lead: Ms Selvia Zhang

Project members: Fadhilah Bte Muhamad Azam, Nurafida Bte Anitudin and Gunasheela Thaygaraja

Organisation(s) Involved

National Healthcare Group Pharmacy

Healthcare Family Group(s) Involved in this Project

Allied Health, Healthcare Administration

Applicable Specialty or Discipline

Operations, Pharmacy, Informatics

Project Period

Start date: February 2020

Completed date: December 2020

Aims

To improve the efficiency and accuracy of receiving tasks and scheduling medication delivery at CFP. In order to cater for the sudden 60-fold increase in delivery workload, the following outcomes must be achieved by August 2020.

Measurable outcomes:

1. Achieve 99.8% timely supply of medication delivery orders to patients

2. Reduce delivery turnaround time from 1 week to 3 working days

3. Reduction of packing errors due to missing items for medication delivery orders by 80%

Project Attachment

See poster attached/below

Background

See poster attached/below

Methods

See poster attached/below

Results

See poster attached/below

Conclusion

See poster attached/below

Additional Information

Accorded the NHG Quality Day 2021 (Category E: Innovation in Healthcare) Best Award

Project Category

Care & Process Redesign

Quality Improvement, Lean Methodology

Productivity, Manhour Saving

Technology

Digitalization, Digitization

Keywords

FasXpress, Medication Delivery, Central Fill Pharmacy

Name and Email of Project Contact Person(s)

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IMPROVING THE EFFICIENCY AND ACCURACY OF MEDICATION DELIVERY SERVICES AT NHG PHARMACY'S CENTRAL FILL PHARMACY (CFP)

Selvia Zhang, Pharmacy Services Centre

National Healthcare Group PHARMACY — Adding years of healthy life

National Healthcare Group — Adding years of healthy life

Mission Statement

To improve the efficiency and accuracy of receiving tasks and scheduling medication delivery at CFP. In order to cater for the sudden 60-fold increase in delivery workload, the following outcomes must be achieved by August 2020.
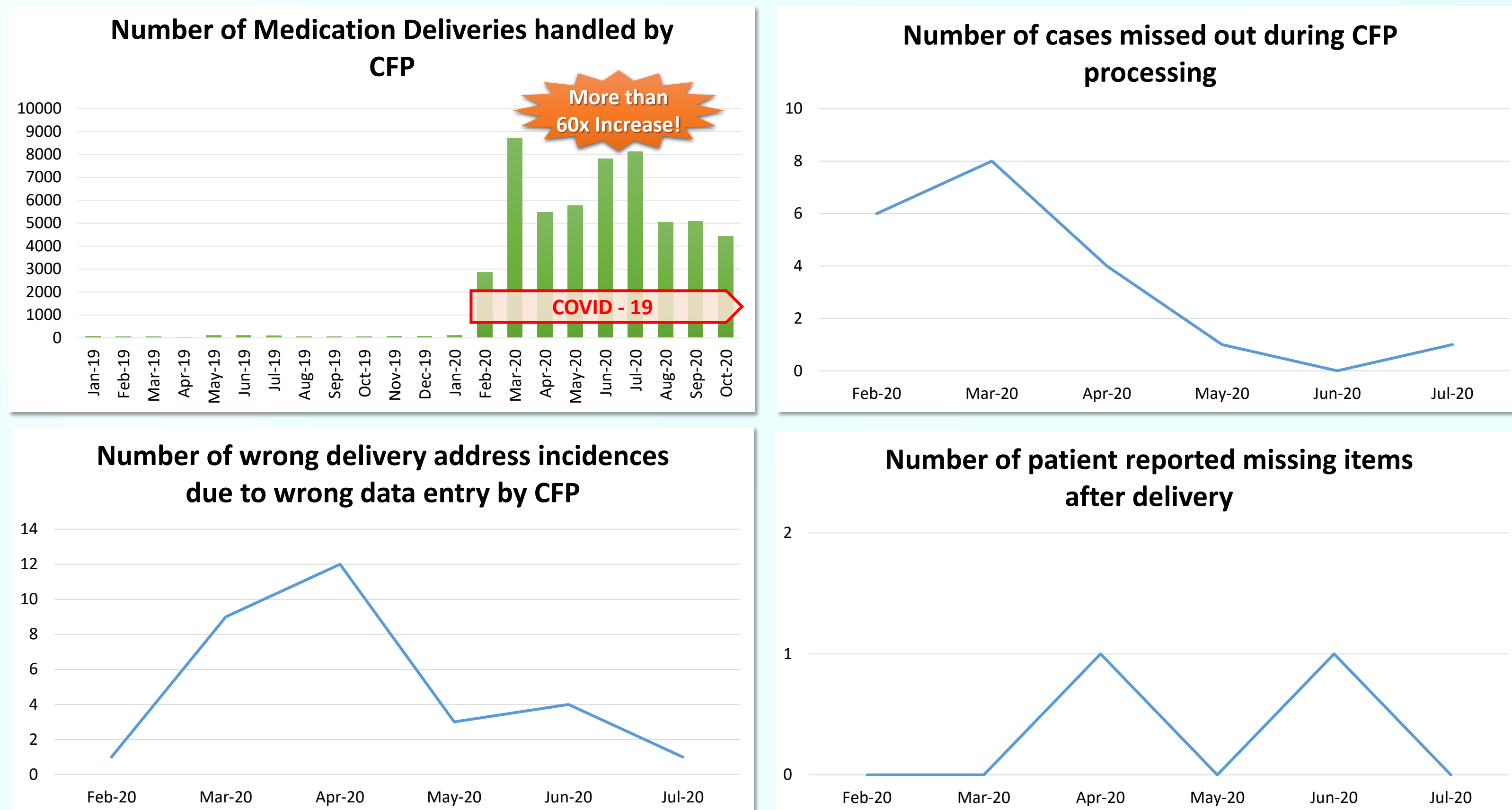
Measurable outcomes:

1. Achieve 99.8% timely supply of medication delivery orders to patients
2. Reduce delivery turnaround time from 1 week to 3 working days
3. Reduction of packing errors due to missing items for medication delivery orders by 80%

Team Members

	Name	Designation	Department
Team Leader	Selvia Zhang	Sr. Executive, Ops	NHGPh
Team members	Fadhilah Bte Muhamad Azam Nurafida Bte Anitudin Gunasheela Thaygaraja	Pharmacy Technician	NHGPh
Sponsor	Wang Hui Hui	Deputy Director, Informatics	NHGPh
Facilitator	Chong Jiun Yih	Asst. Director, PSC	NHGPh

Evidence for a Problem Worth Solving

Number of Medication Deliveries handled by CFP — More than 60x Increase! — COVID-19

Number of cases missed out during CFP processing

Number of wrong delivery address incidences due to wrong data entry by CFP

Number of patient reported missing items after delivery

With significant increase in workload, there is a need to automate key processes to reduce errors and processing time!

Current Performance of a Process

- Current tracking process are done manually. It is time consuming and error prone
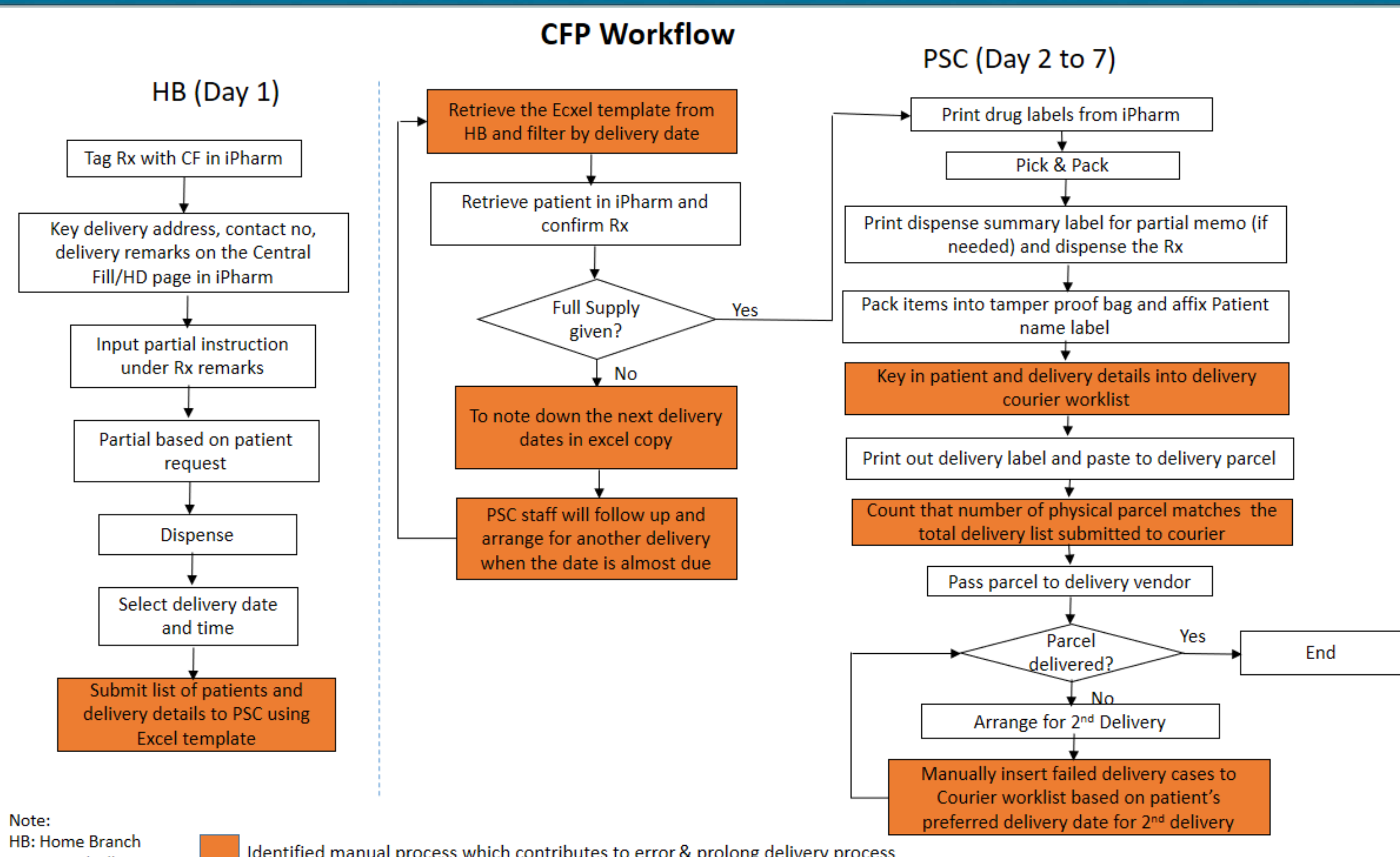
Manual tracking of delivery orders using Excel

Requesting Branch fills up the excel spreadsheet to send in orders for Medication Delivery to Central Fill Pharmacy (CFP). CFP staff will then process the orders based on the info given, manually keying in address and delivery details for submission to delivery courier. There has been instances of errors in keying and missing out of orders.

Baseline Time Study of CFP Activity

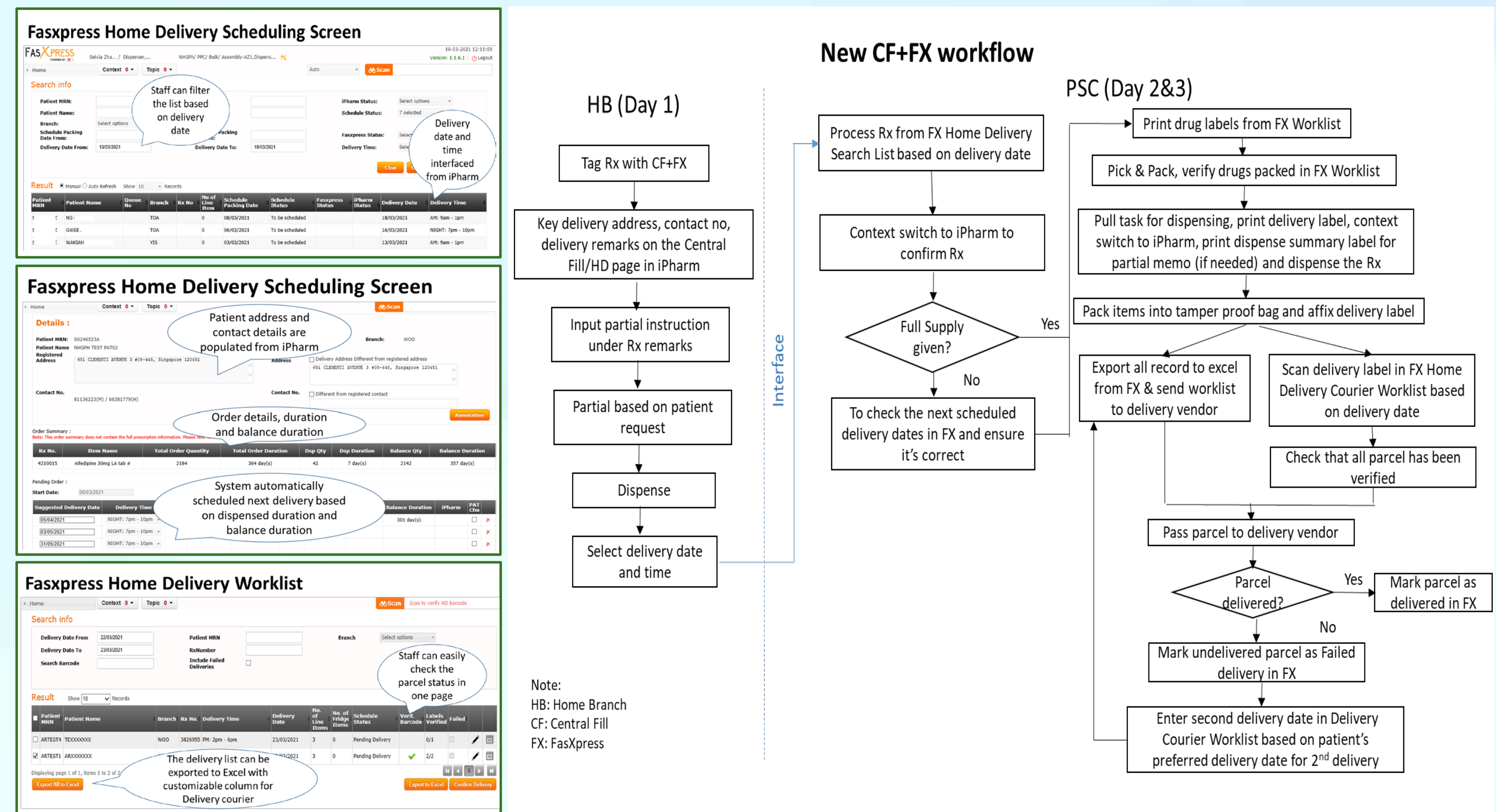| Activities	Time taken (min)
Patient registration (Keying)*	1
Prescription Receipt, Review & capturing (assume no clarifications required)*	2
Medicine picking & packing*	4
Labelling of packed medicines*	2
Prescription Checking & Sign off*	7
Upload of consignment into vendor system to generate consignment labels%	1
Pasting of consignment labels to correct package*	1
Delivery Coordination with patient*	3
Delivery Coordination with courier%	1
Payment and Billing Reconciliation with courier%	0.5
Pre-packing into ziplocks into picking bins or OPAS boxes (label with OPAS label etc)^	3
Total time	25.5

* per case (min) for an Rx with 5 line items
^ for 1 Rx with 5 line items
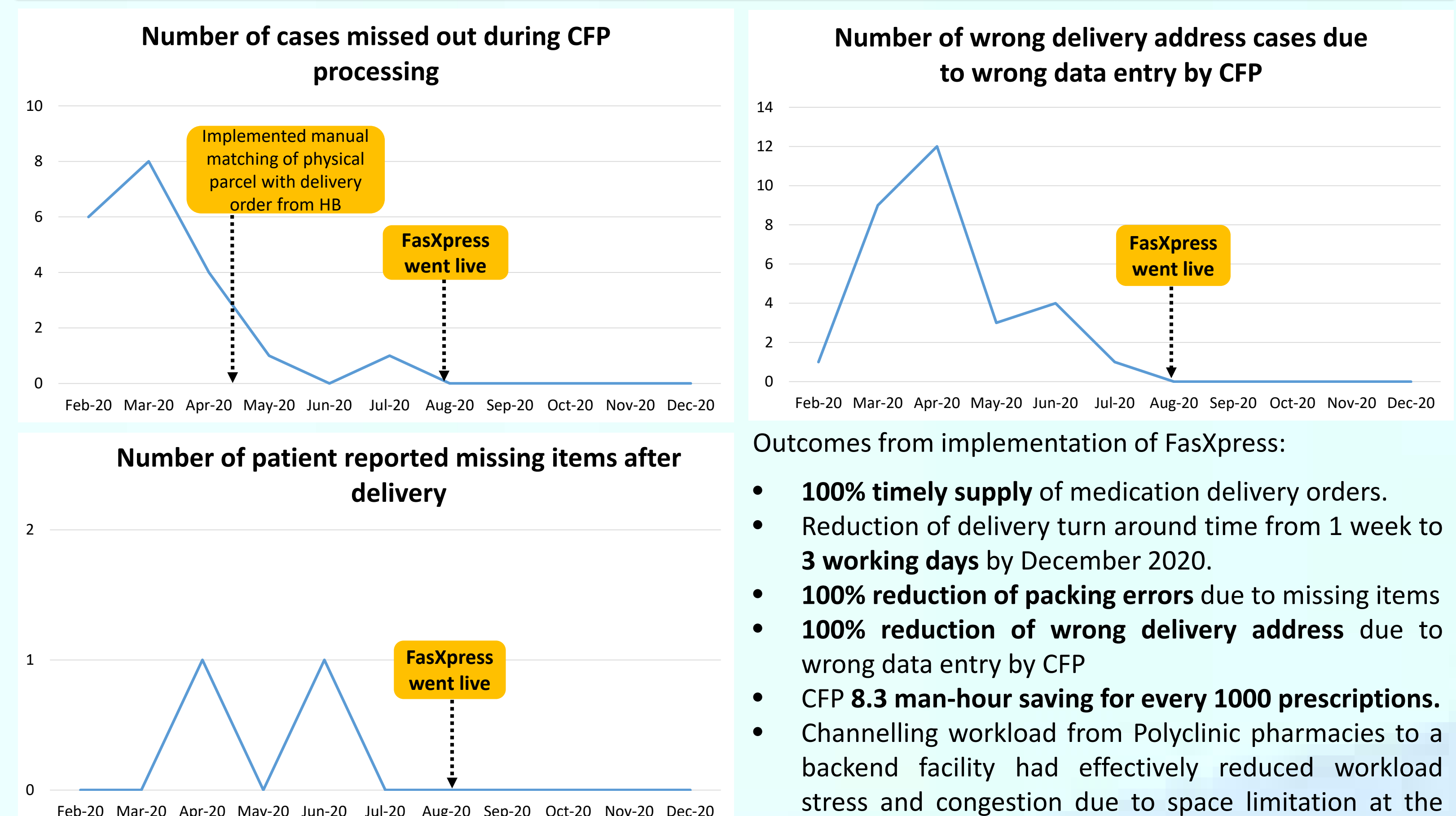%Likely constant effort regardless of the volume

Flow Chart of Process

CFP Workflow

HB (Day 1)
- Tag Rx with CF in iPharm
- Key delivery address, contact no, delivery remarks on the Central Fill/HD page in iPharm
- Input partial instruction under Rx remarks
- Partial based on patient request
- Dispense
- Select delivery date and time
- Submit list of patients and delivery details to PSC using Excel template

PSC (Day 2 to 7)
- Retrieve the Excel template from HB and filter by delivery date
- Retrieve patient in iPharm and confirm Rx
- Full Supply given? No/Yes
- To note down the next delivery dates in excel copy
- PSC staff will follow up and arrange for another delivery when the date is almost due
- Print drug labels from iPharm
- Pick & Pack
- Print dispense summary label for partial memo (if needed) and dispense the Rx
- Pack items into tamper proof bag and affix Patient name label
- Key in patient and delivery details into delivery courier worklist
- Print out delivery label and paste to delivery parcel
- Count that number of physical parcel matches the total delivery list submitted to courier
- Pass parcel to delivery vendor
- Parcel delivered? Yes → End / No → Arrange for 2nd Delivery
- Manually insert failed delivery cases to Courier worklist based on patient's preferred delivery date for 2nd delivery

Note:
HB: Home Branch
CF: Central Fill
Identified manual process which contributes to error & prolong delivery process

Implementation

Problem	Intervention	Date of Implementation
Missed out delivery cases due to manual tracking Wrong delivery due to manual input of delivery details Items missing from delivery parcel	Development of workflow engine (FasXpress) which: - Tracks cases automatically - Interfaces delivery details - Enables scanning of packed items to account for all items in a parcel	3 Aug 2020

Fasxpress Home Delivery Scheduling Screen — Staff can filter the list based on delivery date — Delivery date and time interfaced from iPharm

Fasxpress Home Delivery Scheduling Screen — Patient address and contact details are populated from iPharm — Order details, duration and balance duration — System automatically scheduled next delivery based on dispensed duration and balance duration

Fasxpress Home Delivery Worklist — Staff can easily check the parcel status in one page — The delivery list can be exported to Excel with customisable column for Delivery courier

New CF+FX workflow

HB (Day 1)
- Tag Rx with CF+FX
- Key delivery address, contact no, delivery remarks on the Central Fill/HD page in iPharm
- Input partial instruction under Rx remarks
- Partial based on patient request
- Dispense
- Select delivery date and time

PSC (Day 2&3)
- Process Rx from FX Home Delivery Search List based on delivery date
- Context switch to iPharm to confirm Rx
- Full Supply given? Yes → To check the next scheduled delivery dates in FX and ensure it's correct
- Print drug labels from FX Worklist
- Pick & Pack, verify drugs packed in FX Worklist
- Pull task for dispensing, print delivery label, context switch to iPharm, print dispense summary label for partial memo (if needed) and dispense the Rx
- Pack items into tamper proof bag and affix delivery label
- Export all record to excel from FX & send worklist to delivery vendor
- Scan delivery label in FX Home Delivery Courier Worklist based on delivery date
- Check that all parcel has been verified
- Pass parcel to delivery vendor
- Parcel delivered? Yes → Mark parcel as delivered in FX / No → Mark undelivered parcel as Failed delivery in FX
- Enter second delivery date in Delivery Courier Worklist based on patient's preferred delivery date for 2nd delivery

Note:
HB: Home Branch
CF: Central Fill
FX: FasXpress

Results

Number of cases missed out during CFP processing — Implemented manual matching of physical parcel with delivery order from HB — FasXpress went live

Number of wrong delivery address cases due to wrong data entry by CFP — FasXpress went live

Number of patient reported missing items after delivery — FasXpress went live

Outcomes from implementation of FasXpress:

- **100% timely supply** of medication delivery orders.
- Reduction of delivery turn around time from 1 week to **3 working days** by December 2020.
- **100% reduction of packing errors** due to missing items
- **100% reduction of wrong delivery address** due to wrong data entry by CFP
- CFP **8.3 man-hour saving for every 1000 prescriptions.**
- Channelling workload from Polyclinic pharmacies to a backend facility had effectively reduced workload stress and congestion due to space limitation at the branches.

Time Savings

Time Study of CFP Activity – Before and after implementation of FasXpress

Activities	Time taken, before FasXpress (min)	Time taken, after FasXpress (min)
Patient registration (Keying)*	1	1
Prescription Receipt, Review & capturing (assume no clarification)*	2	2
Medicine picking & packing*	4	4
Labelling of packed medicines*	2	2.5
Prescription Checking & Sign off*	7	7
Upload of consignment into vendor system to generate consignment labels%	1	1
Pasting of consignment labels to correct package*	1	
Delivery Coordination with patient*	3	3
Delivery Coordination with courier%	1	1
Payment and Billing Reconciliation with courier%	0.5	0.5
Pre-packing into ziplocks into picking bins or OPAS boxes (label with OPAS label etc)^	3	3
Total time	25.5	25

* per case (min) for an Rx with 5 line items
^ for 1 Rx with 5 line items
%Likely constant effort regardless of the volume

Time savings:
- ➢ 0.5 min/ prescription
- ➢ 8.3 hours/1000 prescription

Problems Encountered

- System bugs were encountered during the implementation phase
- The system was not designed with an 'unsubscribe service' function. This resulted in tedious workarounds by home branch staff when a patient decides to cancel an upcoming delivery service.

Strategies to Sustain

- Bug fixes for Fasxpress are scheduled regularly
- On-going and refresher trainings are conducted for both home branch and PSC staff
- Simpler workaround provided for home branch to cancel medication delivery from iPharm system