

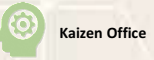
Optimisation of Inpatient Discharge for TTSH Main Ward (Weekday Discharge)

A Collaborative Study, Ideation and Implementation of Future State by Doctors, Inpatient Nursing, Pharmacy, Allied Health and Kaizen Office

Project Status as at 11 Mar 2024

Optimisation of Inpatient Discharge for TTSH Main Ward

(Weekday Discharge)



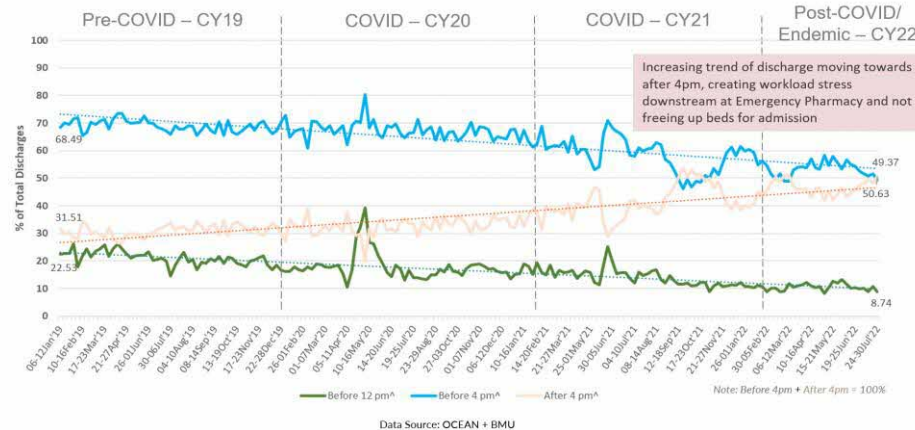
REASON FOR ACTION

A general trend has been observed of TTSH Main Wards Inpatient Discharge moving away from 11am, towards afternoon discharge, adding to the bed distress situation and surge in Emergency Pharmacy (EP) after hours workload. In addition, feedback was received of the discharge experience being less optimal.

INITIAL STATE (Jan 2019 - Jul 2022)

Increasing trend of discharge moving towards after 4pm, creating workload stress downstream at Emergency Pharmacy and not freeing up beds for admission.

Initial State: Trending of Avg. Discharge Distribution (Weekly) - Jan 2019 to Jul 2022



Optimisation of Inpatient Discharge for TTSH Main Ward

(Weekday Discharge)



APPROACH/ SOLUTIONS

Study on patients discharging to home was conducted between **26 Jul - 19 Sep 2022** (pre and post Epic) to identify possible contributing factors for discharge delays.

Amongst other findings, 2 key observations were found:

- i) Care Team requires an indication to prepare patients and NOK towards discharge i.e. AHP to plan rehab and CGT and Nurses to prepare family for patients return to home
- ii) Processes are interdependent esp on discharge day. Discharge Order needs to be received 2hours before discharge for Pharmacists to conduct bedside counselling in time for discharge





Future state workflow co-designed by Doctors, Inpatient Nursing, Pharmacy, Allied Health and Kaizen Office between 28 Sep - 21 Oct 2022 for all patients in TTSH main ward was rolled out on **1 Nov 2022**.

The new workflow placed emphasis on the following to enable timely discharge:

- i. Estimated Discharge Date (EDD) to drive communications and discharge activities
- ii. Submission of Discharge Orders and documents at D-1 to drive 11am discharge
- iii. Submission of Discharge Orders and documents by 3pm for timely same-day discharge

With its fair share of challenges faced, the project went through several iterations pertaining to EDD-entry as indicated below.

ITERATED ROLLOUT

- 26 Jul 2022  Kickstart of project study
- 1 Nov 2022  Roll out of 1st Workflow – Doctors entering EDD
- 13 Feb 2023  Roll out of 2nd Workflow - Full PSA-Supported Discharge
– Doctors enter EDD in case notes and PSA transfer projected date to EDD field and follow up with doctors on discharge at D-1
- 16 Oct 2023  Rollout of 3rd Workflow – Use of ALOS to predict EDD
- When EDD is not indicated, PSAs will use ALOS to project EDD to drive D-1 conversations

CONCURRENT INITIATIVES

1. A group of **CPIP** clinicians will be riding on the workflow to experiment with patient stratification and assigning a Discharge MO to drive before 12om discharge.
2. Conversations to automate the EDD entry with **Predictive EDD** using modified EPIC model - RLOS (Remaining Length of Stay) has kick-started. The journey to fine-tune the model for local demography will take about one year.

Optimisation of Inpatient Discharge for TTSH Main Ward

(Weekday Discharge)



HIGHLIGHTS OF KEY INDICATORS

As at Nov 2023 (when this data was captured), while overall office-hour discharges has increased (reducing the pressure at after-hours Emergency Pharmacy), the office-hour discharges is still not strong enough to alleviate the bed wait situation at ED.

With the adoption of ALOS for EDD on 16 Oct 2023, EDD will definitely hit the target of 80%. However, EDD is just an input to cue the entire care team to work towards discharge. Early discharge before 12pm still require stratified identification of patients for early discharge and close coordination between doctors and pharmacists (doctors to confirmed discharge order & prescription and pharmacists rush to conduct bedside counselling. This is evidently seen in the CPIP project whereby a Teams chat is created to form the tag team for reminders.

A Care Team model is planned to be introduced in TTSH. With that, early discharge might be driven through this Care Team model and this project can retire.

KEY INDICATORS

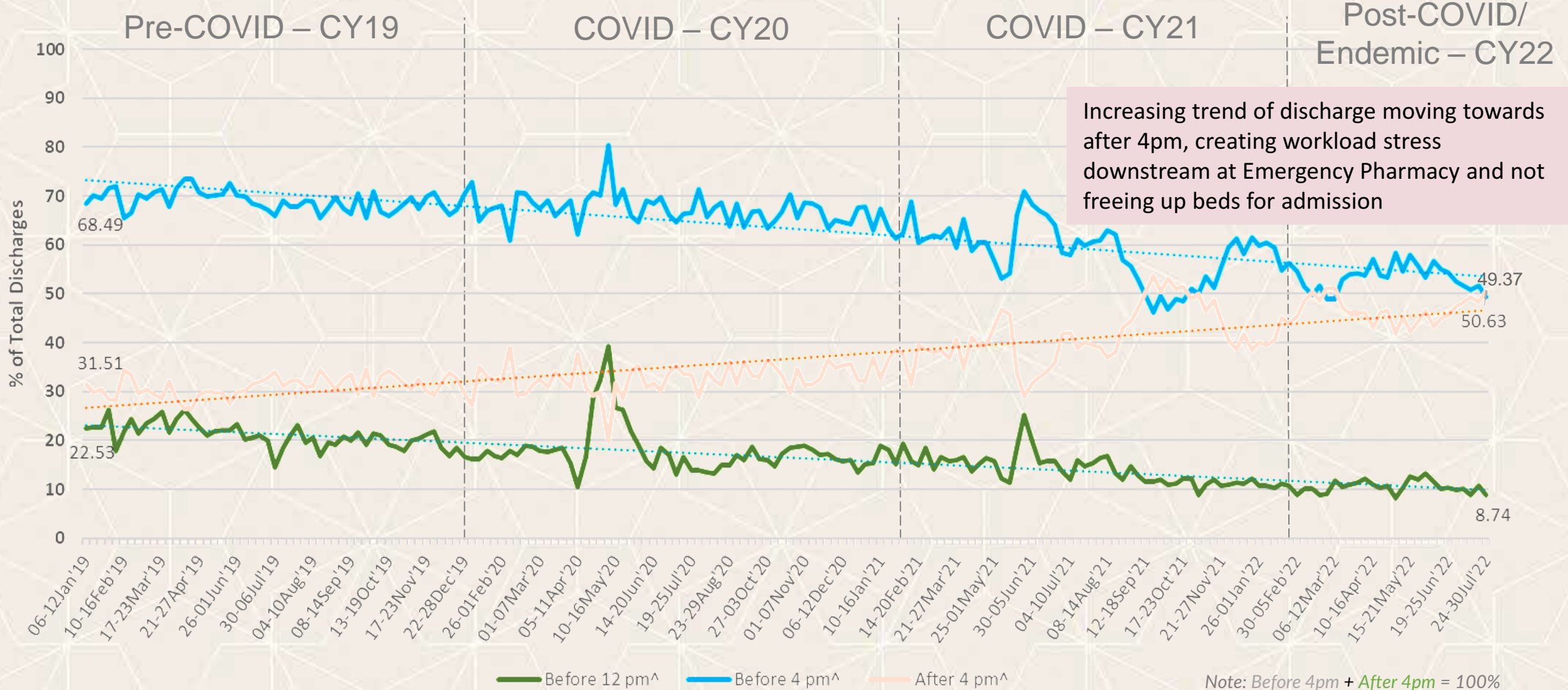
| Indicators | Initial State | Target State (Monthly Average) | Indicators Tracking | | | Impact |
|--|--|---|---|--|---|---|
| | | | Doctors enter EDD to drive D-1 conversation 1 Nov 2022 – 12 Feb 2023 | Full PSA-Supported EDD to drive D-1 conversation 13 Feb 2023 – 15 Oct 2023 | Use of ALOS to project EDD 16 Oct 2023 – 4 Nov 2023 | |
| Avg Discharge Distribution <i>Actualised Discharge</i> | Before 12pm [^] - 9.8% Before 4pm [^] - 52.2% (day's cumulative) | Before 12pm - 30% Before 4pm - 80% (day's cumulative) | Incl Discharge Chair Before 12pm – 12.5% Before 4pm – 61.9% | Incl Discharge Chair Before 12pm – 14% Before 4pm – 63% | Incl Discharge Chair Before 12pm – 14% Before 4pm – 62% | Initial Improvement and plateaued |
| Avg TTSH MN BOR Avg ED BWT P50 | 94.0% 5.8 hr | | 93.9% 5.0 hr | 96.0% 6.6 hr | 97.7% 9.5 hr | No visible improvement due to increasing BOR |
| % of Inflight with EDD indicators | <i>Daily Inflight data only available from 3 Jan 2023 onwards.</i> | 80% | <i>Not available</i> | 23.1% | 80% | Improvement |

Restricted

For Info

Restricted

Initial State: Trending of Avg. Discharge Distribution (Weekly) - Jan 2019 to Jul 2022



Data Source: OCEAN + BMU



^An estimated average bed preparation time of 30 mins was factored in to the cut-off time. So the cut-off time used to measure discharges before noon and 4pm would be 11:30:59hrs and 15:30:59hrs respectively

Key Insights from Study on Discharge to Home [26.07.2022 - 19.09.2022]

Key Insights

1. Doctor indicates readiness for discharge either by indication in the Estimated Discharge Date (EDD) field or in case notes. As patients' condition are **constantly evolving**, the care team evaluates the patients' day-to-day condition to determine and document the EDD in C-Doc when they have clearer indication e.g. KIV home in 3 days. This **indication of discharge readiness could also be as late as D-day** e.g. KIV home today. Additionally, **KIV indication does not trigger any real preparation activities** on the ground. Only when the patient is confirmed for discharge and doctors indicate "Home Today" in C-Doc, can important discharge activities then commence.
2. There are **multiple interdependent processes necessary for a discharge**; a delay in any discharge activity will cause a cascading impact downstream, lending a high impact towards discharge confirmation which is the first trigger of signal towards discharge preparation.
3. Pharmacists being the last step in the entire chain of discharge activities, face a **double whammy of upstream delays and downstream pressure** to meet discharge time that is communicated to patients.
4. There is a possibility of **double wait and longer wait time** for patients to collect medication for after office hours discharges (waiting first at the bedside then at EP).

What Each Family Group Needs from the Medical Team to Work Towards Timely Discharge

| | |
|--|--|
| All HCPs | <ul style="list-style-type: none"> · EDD to guide team towards discharge planning and help to spread out OT/PT/Nursing CGTs |
| Nursing Team (Nursing & PSAs) | <ul style="list-style-type: none"> · EDD to update headboard to facilitate communication and work towards discharge · Completed After Visit Summary (AVS), signed MC/HLs, and TCU Recon to facilitate discharge with patients |
| Pharmacists | <ul style="list-style-type: none"> · Admission Recon and confirmed discharge prescription to facilitate discharge prescription review |
| AHPs (OT, PT, MSW) | <ul style="list-style-type: none"> · Early and appropriate referrals to facilitate: <ul style="list-style-type: none"> ◦ Assessment ◦ Investigations ◦ Processes (procurement of walking aids and wheelchairs & coordination e.g. for ambulance, CH/NH and CGTs) ◦ Interventions · NOT over referring. Refer only: <ul style="list-style-type: none"> ◦ PTs/OTs - medically stable & functionally changed patients ◦ MSW - patients needing psychosocial support |

Solutions Approach

Key concepts that guided the solutioning

1. **EDD** to guide team in working towards discharge
2. **Early and appropriate AHP referrals** so that AHPs do not feel overwhelmed with last minute/wrong referrals
3. **Early confirmation of discharge** so that discharge can be triggered to kickstart discharge activities
4. **Majority** of discharge patients are **identified at D-1**
5. A **handful** of patients will be identified at **AM ward rounds** for same day discharge

Implemented Solutions

1. **Enhanced Discharge Workflow to drive timely discharge**

- Input of EDD to guide care team towards discharge
- Submission of Discharge Order and AVS at D-1 by medical team
- Full PSA support on EDD transcription → from Epic ward round case notes to EDD field

2. **Increase of EDD Visibility**

- Door hanger at patient's headboard for visibility of EDD indication

In conversations

- Predictive EDD
- Digital Discharge Dashboard

PSA-Supported EDD Input Workflow

using ALOS if EDD is not Found at D2

(Rolled out on 16 Oct 2023)

| Admission | Inflight | Trigger for Discharge | Actual Discharge |
|-----------|----------|-----------------------|------------------|
| D0 | D0 to D2 | D-1 | D-Day |

Doctor

Input EDD in Daily Epic Ward Round case notes

IMPORTANT

Update EDD in case notes if there are any changes

IMPORTANT

Submit Discharge Order with necessary discharge documents by 4pm

(discharge medication order and MC for creation of AVS)

Ensure all discharge documents/ activities are complete

Same-day discharge documents to be submitted by 3pm*

If EDD not available within 48 hours

PSA

~20%

1) Medically unfit, DIL, or waiting for CH/NH/ Hospice transfer → **no EDD input required**

If EDD available within 48 hours

Monitor EDD and check in with Primary team to **review EDD and make the appropriate changes to EDD in Epic** and headboard

Flag out to doctors to prepare the necessary documents

Ensures all discharge documents/ activities are ready by discharge time

~60%

2) Indicate EDD in Epic EDD field based on **dept ALOS** (based on dept ytd on QMIS).

[Link to QMIS](#)

IMPORTANT

Headboard to facilitate communications

~20%

3) **Transcribe:**

- EDD into Epic EDD field
- Headboard to facilitate communications

This will increase the accuracy of EDD, reducing "false alarms" on D-1

~20% → ~80%

Expected increase in number of D-1 cases, due to increase in # of cases with EDD indicated

* To allow Pharmacists and Nurses 2 hours to prepare for discharge