Analysis of an operational process:

Using appropriate operational management tools, analyse a process with which you are familiar in order to make recommendations for improvement.

Word count: 3531

Optimising Patient Flow Management in a Psychiatric Ward: An Operational Analysis

Executive Summary

This operational analysis examines patient flow management at a 920-bed capacity public psychiatric hospital in Hong Kong. The critical inefficiencies identified in the discharge process include prolonged hospital stays, underutilisation of resources, and lack of access to care by new patients. The analysis revealed severe issues through process mapping, lean analysis, and capacity planning methodologies. Inadequate interdisciplinary communication during shift handovers, inconsistent discharge planning, insufficient bed management practices, and suboptimal staff staffing schedules were some of the issues identified.

The report recommends three focused and feasible interventions. First, implementing structured daily discharge planning huddles involving all relevant disciplines, supported by a dedicated discharge coordinator, would improve communication and accelerate decision-making. Second, establishing a pre-

Introduction

The Hospital Authority (HA) operates a comprehensive public psychiatric hospital in Hong Kong, which is an important mental health resource for the community. The 920-bed facility employs 1,280 people and offers specialised psychiatric care for both acute and chronic mental illnesses. The hospital provides a continuum of care that includes inpatient and outpatient consultations and community-based mental health programmes. The ward being analysed team consists of 8 psychiatrists, 20 psychiatric nurses with 6-8

[redacted]

difficulties despite its critical role in mental health infrastructure. The most significant problem is the prolonged patient stays. Discharge planning delays increase hospital costs by 58% and hospitalisation by approximately 2.6 days beyond clinical necessity (Rojas-García et al. 2017). In addition, this causes financial strain and impairs the overall efficiency of patient turnover. Another important issue is the bottlenecks in the discharge process. As discharges are delayed, capacity constraints arise almost immediately, and the occupancy

rates can be high during peak hours, with over 95% at times. The high level of occupancy puts pressure on the system; hence, managing both planned and emergency admissions becomes difficult. These bottlenecks result in new patients waiting up to 18 hours from referral to assignment to bed. Prolonged [redacted] increase the risk of errors, thus compromising patient safety (Howick et al. 2024).

The objective of this analysis is to identify operational improvement opportunities in the patient flow process in the discharge planning and execution pathway. The assignment aims to improve service delivery and optimise resource utilisation and outcomes in psychiatric care from an operations perspective.

Strategic Context

The organisation of patient flow management in this psychiatric ward is consistent with the Hospital Authority's strategic priorities and the other mental health policy framework in Hong Kong. Currently, the strategic plan that is being [redacted] illness (Hospital Authority 2024).

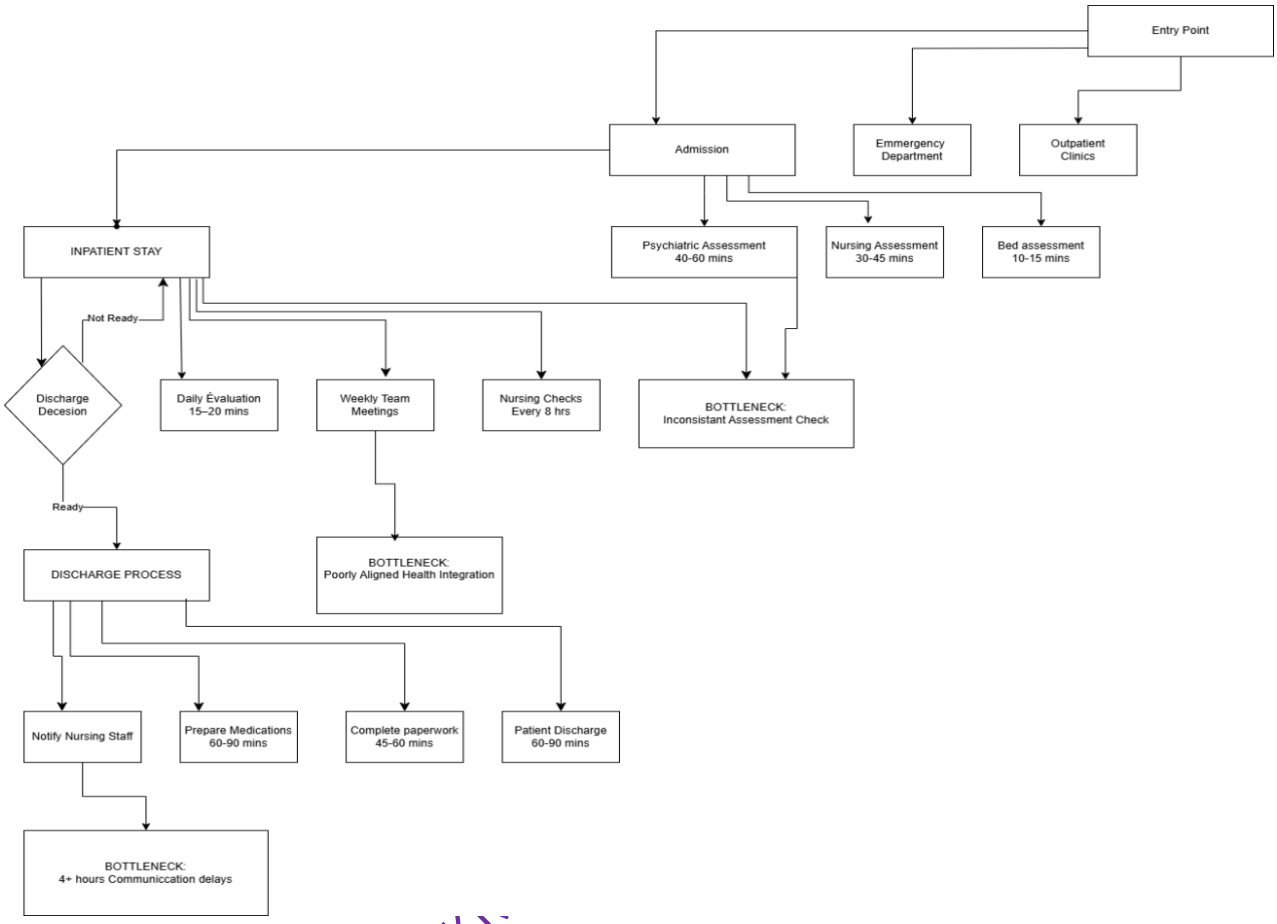
These strategic objectives are supported by direct support for efficient patient flow processes in several ways. The hospital can increase the accessibility of inpatient psychiatric services for patients with acute episodes due to a more rapid bed turnover and reduced administrative delays (La et al. 2016). [redacted] patient flow efficiency-based performance indicators, such as targets for average length of stay, bed occupancy rates, and readmission rates (Wu et al. 2022). Improving the discharge processes as well as the management of overall flow would have a significant impact on these performance metrics that determine resource allocation decisions within the public healthcare system. The Mental Health Review Report, commissioned by the Food and Health Bureau, has further pointed out operational inefficiencies in psychiatric services as a major obstacle to good service delivery (Health Bureau 2022). This report stresses the need for better teamwork and well-coordinated discharge planning protocols between various disciplines to optimise the use of resources and improve patient outcomes.

Operations Management Analysis

1. Process Mapping Analysis

The current patient flow pathway from admission to treatment and discharge in the psychiatric inpatient setting was visualised and analysed using process mapping techniques (*Figure 1a)*. There are multiple entry points, including emergency departments that receive referrals for acute psychiatric crises, [redacted] intake assessment that lasts between 30-45 minutes, documenting vital signs, suicide risk, physical health concerns, and immediate care requirements.

Figure 1a: Patient Flow Pathway



An additional 15-20 minutes of clinical time are required to document the admission orders, followed by bed assignment and physical transfer of the patient to the most appropriate unit, which will take at least 30 minutes but may take longer. The admission process takes approximately 45 minutes of clinical time, during which medication reconciliation and formulation of an initial [redacted]

[redacted]

roughly 10 to 15 minutes are spent discussing each patient. Nursing assessment is done every 8 hours to monitor the mental status and response

to treatment. Allied health professional interventions are also scheduled as dictated by patients' needs, changes to treatment plans based on observations of clinical progress, and responses to interventions (Dwamena et al. 2012).

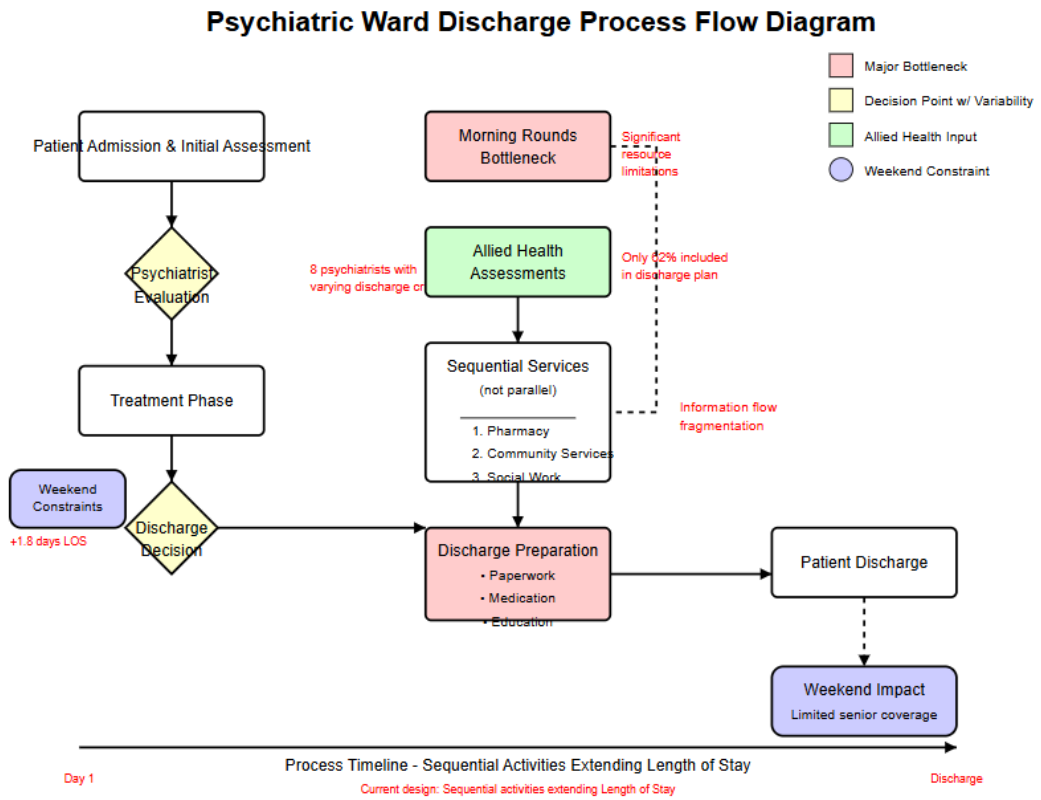
The discharge process consists of several sequential steps, starting with a psychiatrist's determination of discharge readiness, which takes place during daily rounds. The nursing staff is then informed of this decision within variable durations, thus causing delays. Following the decision to discharge, staff members must prepare the discharge medications within 60-90 minutes and complete the discharge paperwork in 45-60 minutes. They then spend another 30-45 minutes offering patient education regarding continuation of care to both the patient and their family. They finally discharge the patient and achieve a bed turnover in 60-90 minutes.

The temporal analysis of this process revealed several bottlenecks in the handover points and communication gaps. Six critical handover points were identified where frequent failures in the information transfer process led to long delays and inefficiencies in patient flow in the process map. During a one-month [redacted] nursing, resulting in an unnecessarily prolonged hospital stay.

Since allied health professionals typically operate independently within the medical team core, integrating multidisciplinary teams is the second significant

challenge. Only 62% of cases included their assessments and recommendations in discharge planning, representing a significant loss of clinical input. Weekend coverage proved difficult, especially when discharge planning started on Fridays. Over the weekend, discharge planning would stall because of inadequate staff and discontinuities in case knowledge. According to the data analysed, patients who could have been released on the weekends stayed an average of 1.8 days longer than necessary, wasting the limited number of beds available.

Figure 1b: Discharge Process Flow Diagram



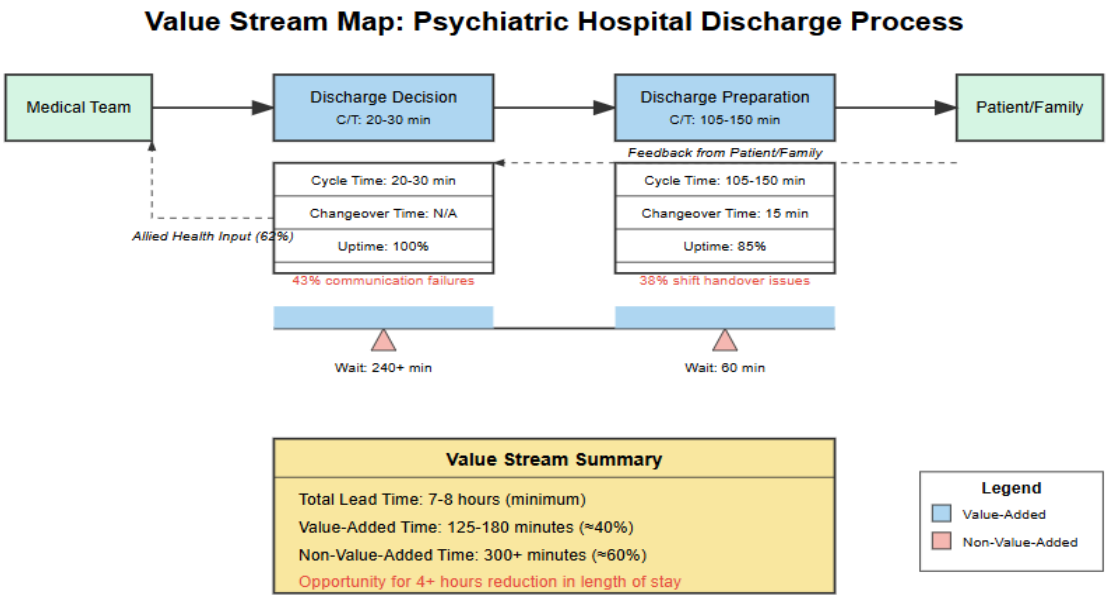
Critical points in the process where delays are common were identified by decision node analysis. The eight psychiatrists' practices differ in the criteria used to make discharge decisions. A case review revealed that the same

clinical scenarios resulted in varying lengths of stay for patients depending on the psychiatrist who treated them, indicating the need for standardisation (*Figure 1b)*. Even though the discharge paperwork, medication preparation, [redacted] hospital discharge choices due to lower senior health insurance coverage and restricted access to auxiliary services like pharmacies, which results in artificial delays that extend to the following week.

2. Lean Analysis

As a systematic methodology, value stream mapping was applied to review value-adding and non-value-adding activities in the patient journey through the psychiatric inpatient unit with an emphasis on the discharge planning process *(Figure 2a)*. To achieve these results, an evidence-based approach using the [redacted], motion and extra processing.

Figure 2a: Value Stream Map: Psychiatric Hospital Discharge Process



The lean analysis classified the components of the patient care process into three distinct categories, allowing the potential for analysis and improvement to be targeted to specific groups of components. Value-adding activities are those that directly contribute to patient care, recovery, or therapeutic benefit. They included direct psychiatric assessment and treatment planning, therapeutic interventions, medication administration, psychoeducation sessions, and direct clinical monitoring to improve symptoms (Maddock et al., 2021). These activities represented the core purpose of psychiatric hospitalisation and were the focus of preservation and enhancement efforts.

The necessary non-value-adding activities include all those that require administrative or procedural steps that do not directly contribute to clinical improvement because they are mandated by regulatory requirements, organisational policy, or risk management protocol (Shou et al., 2019). They include routine documentation for legal and regulatory, medication verification

protocols, and administrative procedures aimed at assuring continuity of care and the proper functions of the system. These activities can be simplified or even eliminated without any adverse effect on the quality of care or treatment compliance.

Detailed time-motion studies on a representative sample of 50 patient journeys revealed how they wasted time in the system. Only 32% of the total process

[redacted]

hospitalisation period during which no recovery work or administrative tasks were performed. When specifically looking at the discharge process, the amount of waste was even higher, as 43% of the discharge process was non-value-adding. This finding indicated that the discharge process represents a high return for waste reduction, as nearly half the time spent could be eliminated without affecting care quality by employing waste reduction strategies.

Waste Analysis of the Discharge Process

Waste Category	Description	Specific Issues	Identified Impact

Defects	Errors in discharge paperwork requiring rework	• **22%** of discharge paperwork was defective
		• **Causes:**
		  ○ Inconsistent documenting templates
		  ○ Lack of standardised protocols
		  ○ Inadequate verification steps
		  ○ Poor electronic system integration
			• Prolonged hospitalisation
			• Medication reconciliation errors
			• Patient safety risks
			• Poor community follow-up arrangements
			• Increased liability exposure
			• Additional staff workload for corrections

Overproduction	Redundant or excessive documentation and tasks	• **68%** of cases had duplicate medication reconciliations • Physicians and nurses working independently without cross-referencing • Excessive documentation beyond regulatory requirements • Multiple copies of discharge instructions for various departments • Unnecessary detailed care plans for immediate discharge patients	[redacted]
Waiting	Delays between discharge decision and patient departure	• **8.2 hours** from discharge decision to medication preparation initiation • **4.5 hours** from medication preparation completion to actual departure • **Total: 31 hours** average waiting time post-discharge decision • Discharge medications batched with inpatient orders • Prioritisation systems favour inpatient over discharge orders	[redacted]
Underutilisation	Inefficient use of multidisciplinary staff skills and patient feedback	[redacted]	• Suboptimal discharge planning quality • Reduced staff engagement and job satisfaction • Missed clinical insights from continuous patient contact

		[redacted]	• Incomplete assessment of patient readiness • Higher readmission risk • Underutilised professional expertise
Transportation	Unnecessary movement of patients and materials	[redacted]	• Time and labor wasted on unnecessary trips • Patient discomfort from excessive movement • Inefficient workflow patterns • Increased staff travel time • Higher risk of medication errors during transport • Reduced staff productivity
Inventory	Imbalances and inconsistencies in required supplies and documentation	• Excessive inventory of admission paperwork • Frequent unavailability of discharge records when needed • Discharge medication requirements not aligned with typical stock levels • Inconsistent stocking of equipment required for discharge processes • Equipment shortages during peak discharge times	• Delays in discharge processes • Emergency shortages of critical supplies • Increased staff frustration and stress • Higher inventory carrying costs • Inefficient storage utilisation • Last-minute procurement at premium costs

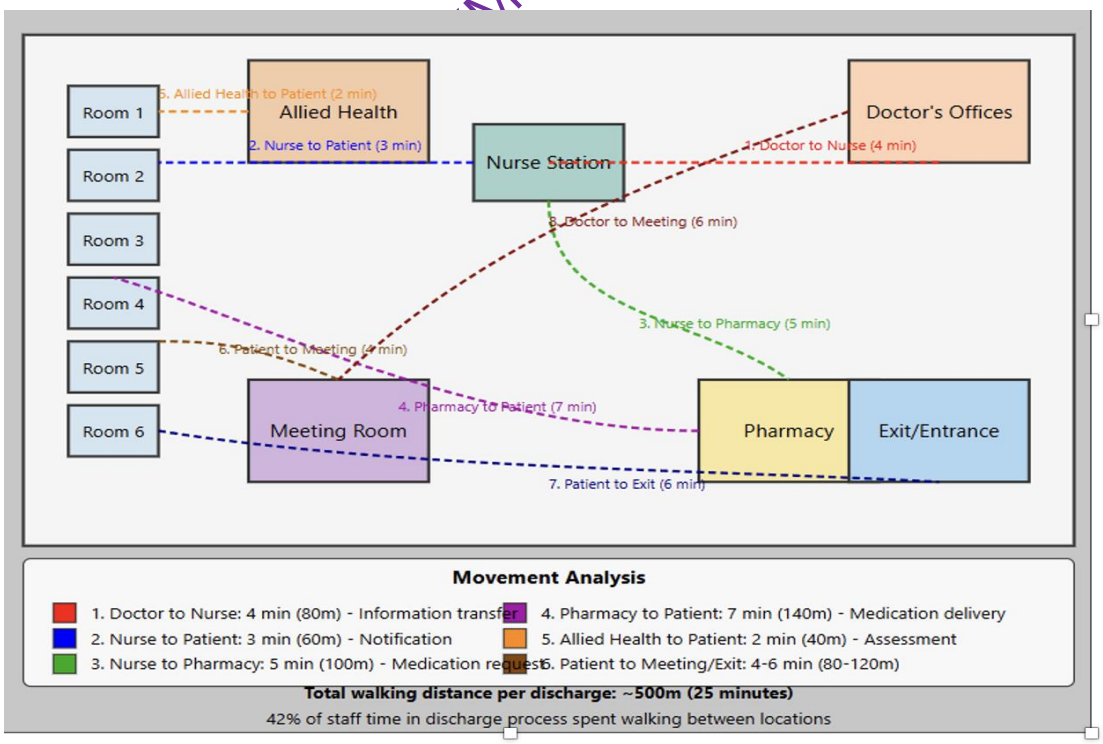
Discharge paperwork was defective in 22% of the cases. They required rework, hence prolonging hospitalisation. Causes included inconsistent documenting templates, lack of standardised protocols, inadequate verification steps, and suboptimal electronic integration into the system (Hussamadin et al., 2023). Defects sometimes lead to medication reconciliation errors with safety implications to the patient and poor community follow-up arrangements.

Overproduction resulted from duplicate assessments that occurred as physicians and nurses independently did their medication reconciliation in 68% of cases without cross-referencing. Other ways included excessive documentation beyond regulatory requirements, the creation of several copies of discharge instructions for various departments, and detailed care plans for [redacted] orders (Winasti et al. 2018). Between the receipt of completed discharge medication preparation and the actual departure, an additional 4.5 hours were required. Patients had to wait an average of 31 hours from the decision to discharge to actually leaving the hospital. That is an entire day of hospitalisation for no good reason.

Underutilisation was evident from the inefficient use of multidisciplinary expertise. Discharge planning did not include Allied health professionals' specialised assessments (Ward-Stockham et al., 2024). Only 58% of cases included nursing assessments of discharge readiness as part of the decision-making process. Unfortunately, the only thing the junior clinical staff could do was execute tasks based on the valuable insights gained from continuous patient contact. Patient and family feedback on readiness for discharge was typically underutilised.

Unnecessary movement of patients, staff and materials made up much of the transportation waste (Bharsakade et al. 2021). On average, three separate trips were needed from the pharmacy to the ward to deliver medication for a [redacted] were frequently unavailable. Discharge requirements were not consistent with typical medication stocks. There was usually a lack of equipment required for the discharge processes, which was inconsistently stocked and frequently needed in an emergency.

Figure 2c: Psychiatric Ward Layout and Movement



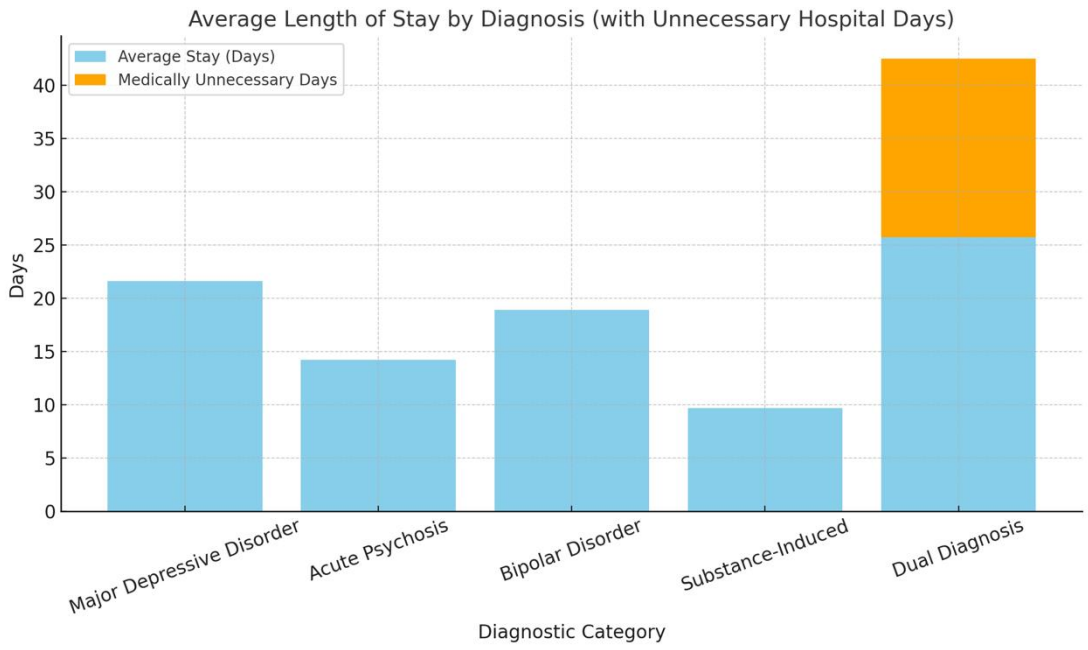
Discharge medications with ordinary error risk, such as low-risk discharge medications, took an average of three separate verification steps, thus manifesting as excess processing. Multiple reviews of standard discharge instructions did not add additional value. In many cases of documentation requirements, it was required to enter similar information across multiple systems, and in the approval process, it was often unnecessary to go through many levels of signoffs.

3 Capacity Planning Analysis

Capacity planning was used to evaluate how well the ward's existing resources align with patient demand, with a focus on bed utilisation, length of stay by diagnostic category, and staffing patterns across shifts. The average bed occupancy rate was consistently maintained at 89.7 % or higher with seasonal [redacted] category. For instance, patients with major depressive disorder (31% of admissions) had an average stay of 21.6 days, while those with acute psychosis (23%) averaged only 14.2 days. Bipolar disorder patients averaged 18.9 days with wide variability, and substance-induced psychiatric conditions (14%) averaged just 9.7 days. Most critically, patients with dual diagnoses (29%) had the longest stays at 42.5 days, including 16.8 days of medically unnecessary hospitalisation due to delays in post-discharge placement. Figure (3a) visualises these disparities, highlighting how prolonged stays especially among

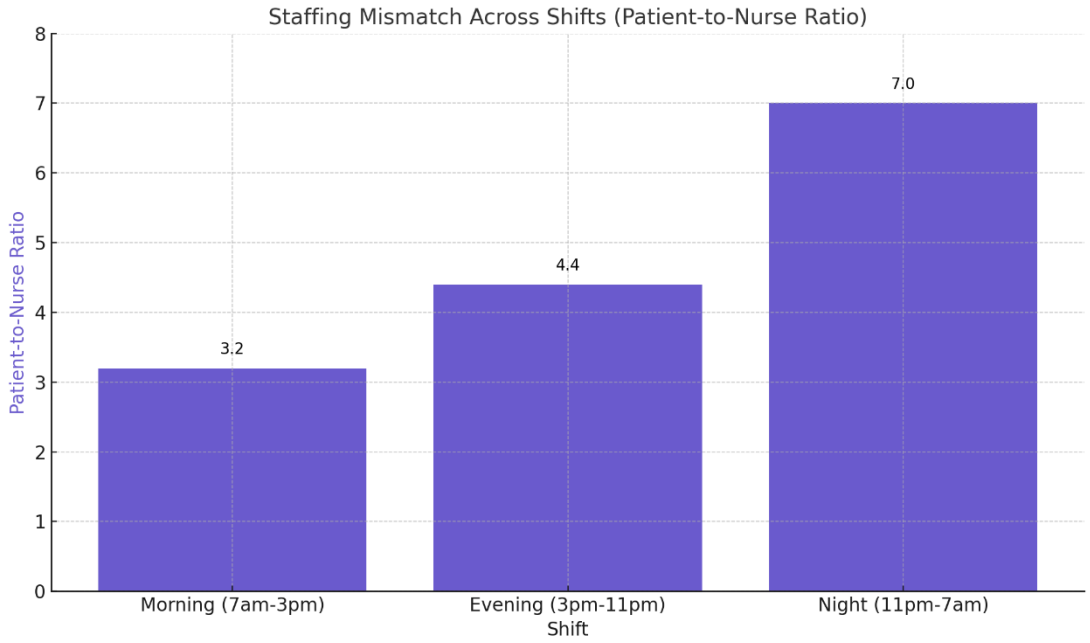
dual diagnosis cases contribute to capacity bottlenecks and reduce availability for incoming acute cases.

Figure 3a: Average Length of Stay by Diagnosis



A staff capacity analysis revealed that resources were not meeting process demands. There was massive variation in psychiatric staff, although there was [redacted] was limited to business hours, Monday through Friday. Allied health professional availability was primarily limited to weekday business hours. The current staffing patterns were compared against workload distribution (Griffiths et al. 2020).

Figure 3b: Staffing vs. Patient Flow Mismatch



Shift	Patients	Psychiatrists	Nurses	Staff Ratio
Morning (7 am-3 pm)	35	3	8	1:3.2
Evening (3 pm-11 pm)	35	2	6	1:4.4
Night (11 pm-7 am)	35	1	4	1:7.0

The analysis of the workload distribution showed a high mismatch between staffing levels and the flow of patients. About 68 % of the admissions happened on evening shifts, when staffing ratios were significantly lower with fewer resources available. 72% of all discharges were processed during morning shifts, resulting in workload peaks that exceeded staff capacity. Clinical workload decreased by 12% only, but staffing was reduced by 30% on weekends, causing operational inefficiencies in the hospital.

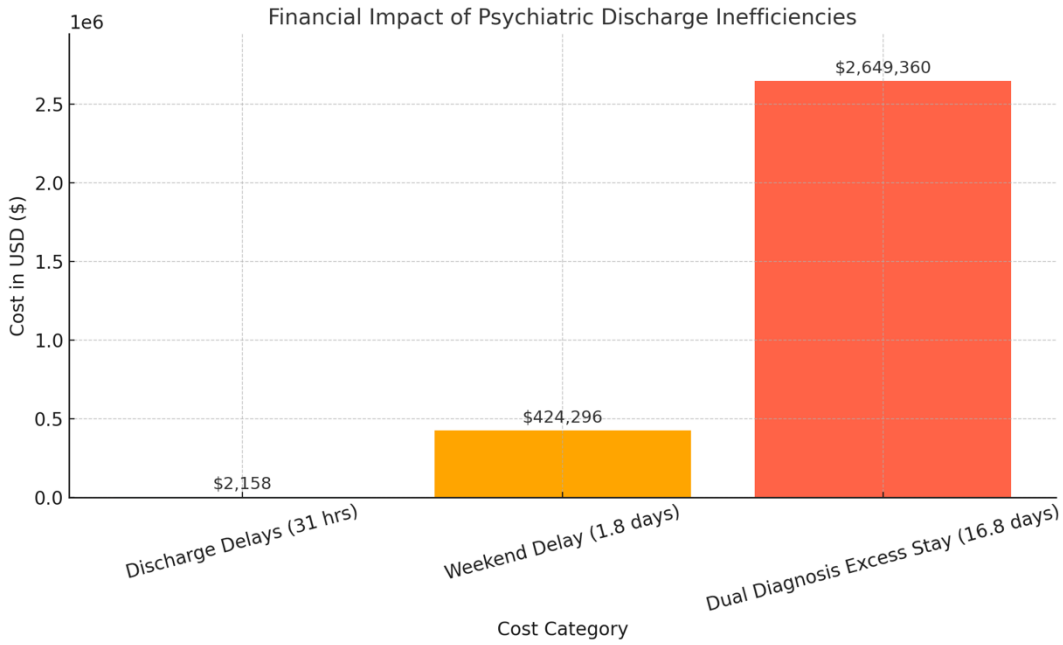
capacity is not elastic enough to adapt to variable patient needs, resulting in unnecessary hospital days, prolonged waiting times, and reduced efficiency.

Financial Impact Analysis

The total cost per psychiatric bed was $1,660 per day, on average (Hospital Authority, 2017). Individually, the 31-hour average discharge delay costs $2,158

avoidable annual costs. Opportunity costs in dollars annually for the extended 42.5-day average stay for dual diagnosis patients, including the 16.8 days of medically unnecessary hospitalisation, amounted to $2,649,360 (*Figure 3c*). The analysis shows that bed constraints follow patterns that could be handled proactively by better staffing realignment and process optimisation strategies that differ by patient subpopulation and problems in the workflow.

Figure 3c: Cost Impact



Recommendation

Based on the extensive analysis conducted, the most effective and practical recommendations focus on streamlining discharge decision-making, enhancing coordination with community services, and standardising documentation processes. First, implementing structured daily discharge planning huddles with [redacted] system with Community Psychiatric Nurses (CPNS) and adopting a shared digital platform will improve handover efficiency and avoid unnecessary inpatient days. Third, introducing a standardised discharge checklist embedded into the electronic health record, along with delegating routine administrative

documentation to support staff, can significantly reduce errors, redundant tasks, and waiting times. These focused recommendations are both cost-conscious and logistically feasible and directly respond to the most frequent and disruptive delays identified in the process mapping, lean analysis, and capacity planning.

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