

ROOT CAUSE ANALYSIS AND COMPLETION TIME ESTIMATION OF INPATIENT ADMINISTRATION AT ROYAL PRIMA HOSPITAL MEDAN

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Abstrak

Proses pemulangan pasien rawat inap mencakup aktivitas mulai dari saat pasien dinyatakan layak untuk dipulangkan secara medis hingga mereka meninggalkan rumah sakit secara administratif. Studi ini bertujuan untuk menganalisis penyebab utama dan waktu yang diperlukan untuk menyelesaikan administrasi pemulangan pasien rawat inap di Rumah Sakit Umum Royal Prima Medan. Penelitian ini menggunakan pendekatan analitis kualitatif dengan desain studi kasus. Informan terdiri dari 55 orang, termasuk 5 staf rumah sakit dan 50 pasien. Data dikumpulkan melalui wawancara mendalam, pengamatan langsung, dan tinjauan dokumen untuk memastikan triangulasi data dan validitas. Teknik analisis data meliputi reduksi data, analisis induktif dan deduktif, penyajian data, dan penarikan kesimpulan. Hasil menunjukkan bahwa waktu tunggu rata-rata untuk pemulangan rawat inap adalah 53,39 menit, yang sesuai dengan Standar Pelayanan Minimum (SPM). Namun, beberapa unit tidak memenuhi standar, terutama departemen farmasi (61,12 menit). Penyebab utama yang diidentifikasi meliputi prosedur administratif yang panjang, laporan pemeriksaan yang tertunda, sumber daya manusia yang terbatas, kekurangan obat, dan masalah jaringan sistem. meskipun waktu tunggu secara keseluruhan memenuhi SPM, perbaikan diperlukan di unit farmasi dan administratif untuk meningkatkan efisiensi dan mempercepat proses pemulangan.

Kata Kunci: *Rawat Inap, Administrasi Pasien, Waktu Tunggu, Farmasi, Pelayanan Rumah Sakit*

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Abstract

The discharge process of inpatient care includes activities from when a patient is medically declared fit for discharge until they leave the hospital administratively. This study aims to analyze the root causes and time required for completing inpatient discharge administration at Royal Prima General Hospital Medan. This research used a qualitative analytical approach with a case study design. The informants consisted of 55 people, including 5 hospital staff and 50 patients. Data were collected through in-depth interviews, direct observation, and document review to ensure data triangulation and validity. Data analysis techniques included data reduction, inductive and deductive analysis, data presentation, and conclusion drawing. The results showed that the average waiting time for inpatient discharge was 53.39 minutes, which is in accordance with the Minimum Service Standards (SPM). However, some units did not meet the standards, particularly the pharmacy department (61.12 minutes). The identified root causes included lengthy administrative procedures, delayed examination reports, limited human resources, drug shortages, and system network issues. In conclusion, although the overall waiting time met the SPM, improvements are needed in pharmacy and administrative units to enhance efficiency and accelerate the discharge process.

Keywords: Inpatient care, patient administration, waiting time, pharmacy, hospital services

INTRODUCTION

Hospitals play a crucial role in the provision of comprehensive healthcare, integrating multidisciplinary teams and processes to deliver inpatient, outpatient, and emergency care. As both labor- and capital-intensive institutions, hospitals depend on robust administrative systems not only to support clinical operations, but also to enhance patient satisfaction and service quality (Fitria Dwi Ayuningtyas & Indrajati Wibowo, 2024). Effective hospital administration encompasses tasks ranging from medical record management to patient discharge procedures (Leslie et al., 2025), directly influencing operational efficiency and public perception of healthcare quality (Purba et al., 2025).

Hospital administrative services play a vital role as a key indicator of healthcare quality from the public's perspective. The efficiency, speed, and accuracy of administrative processes—particularly during patient admission and discharge—reflect the hospital's overall service performance



(Liambo et al., 2025). Effective administration therefore requires continuous planning, implementation, and evaluation to ensure optimal service quality (Elizah et al., 2024). According to the Ministry of Health (2024), the Minimum Service Standard (SPM) stipulates that inpatient billing information should be provided within two hours, and the total discharge process should not exceed 60 minutes. Delays beyond these limits may indicate inefficiency and decrease patient satisfaction (Djulaeha, 2024).

Despite these standards, many hospitals still face challenges in meeting discharge efficiency expectations. Coordination among multidisciplinary teams—such as doctors, nurses, pharmacists, and administrative staff—often experiences obstacles due to limited human resources, technical system disruptions, and inconsistent workflow integration (Wiryawan et al., 2022; Wirajaya & Rettobjaan, 2022). Preliminary observations at Royal Prima General Hospital in Medan indicate that discharge procedures remain longer than expected, revealing a persistent gap between policy standards and actual performance.

This unresolved issue underscores the need for a root cause analysis to identify underlying factors contributing to discharge inefficiency. Therefore, this study aims to analyze the main causes and estimate the time required to complete inpatient discharge administration at Royal Prima General Hospital Medan, providing insights for improving hospital administrative performance and patient satisfaction.

LITERATURE REVIEW

Efficient hospital discharge administration represents a vital dimension of healthcare quality, directly influencing operational performance and patient satisfaction (Donabedian, 1988; Smith et al., 2021). Several studies have emphasized the impact of administrative workflow on patient discharge time, showing that fragmented coordination, insufficient documentation systems, and poor information flow contribute to discharge delays (Smith et al., 2021; Zhang & Kim, 2022). Prolonged waiting times are frequently associated with fragmented information systems, inadequate human resources, and poor interdepartmental coordination (Ng'andu & Haabazoka, 2024; Ronald et al., 2021). However, limited research in Indonesia has analyzed the root causes of prolonged discharge procedures through an integrated, system-based perspective that links human resources, digital infrastructure, and organizational management. This study aims to address that gap by identifying the underlying factors contributing to extended inpatient discharge times at Royal Prima General Hospital Medan.



Inpatient care is a form of comprehensive individual healthcare provided in hospitals, offering accommodation and medical services 24 hours a day. According to the Minister of Health Regulation (2020), inpatient care includes observation, diagnosis, treatment, care, and medical rehabilitation. Inpatient facilities are differentiated based on care classes, such as Class I, II, III, and VIP, tailored to patients' needs and financial capabilities. Each inpatient room has its own standards regarding the number of beds, lighting, ventilation, room temperature, and the availability of supporting facilities such as nurse call and patient bathrooms. Quality inpatient services must meet standards for infection prevention and patient safety, and be supported by competent health personnel and adequate medical facilities (Kementerian Kesehatan Republik Indonesia, 2020).

Waiting time is a critical indicator of hospital service quality, as it reflects both operational efficiency and patient satisfaction (Aprillia et al., 2021). According to the Donabedian (1988) Structure–Process–Outcome Model, healthcare quality is influenced by organizational structures, the processes implemented, and the resulting outcomes. The Ministry of Health of the Republic of Indonesia (2020) stipulates that inpatient billing information must be provided within two hours, and the total discharge process should not exceed 60 minutes. However, many hospitals struggle to meet these standards due to inefficiencies in administrative structure, limited human resources, and weak interdepartmental coordination (Ronald et al., 2021; Ng'andu & Haabazoka, 2024). Recent international studies also emphasize that long discharge waiting times often arise from fragmented workflows, unclear role assignments, and delays in digital data exchange between units (Abdullah et al., 2023; O'Neill et al., 2022).

To address these challenges, Lean Management principles have been increasingly applied in healthcare to minimize non-value-added activities, standardize administrative procedures, and enhance service flow efficiency (Khorasani et al., 2022). Furthermore, the Technology Acceptance Model (TAM) provides a theoretical foundation for understanding the barriers to information system adoption, suggesting that perceived usefulness and ease of use are key factors determining staff acceptance of digital technologies (Al-Kahtani et al., 2021; Pejić Bach et al., 2024). In line with recent findings, the integration of electronic discharge management systems, multidisciplinary coordination, and continuous process evaluation has been shown to significantly reduce waiting times and improve patient experience (Kim & Kim, 2024; Ward-Stockham et al., 2024). Strengthening hospital information systems through a Lean and



TAM-based approach is therefore essential to enhance both the quality and efficiency of inpatient discharge administration.

Hospital administration plays a vital role in supporting the smooth running of healthcare services. Administration is not only a matter of recording and reporting, but also includes the systematic management of patient information to support medical and managerial decision-making (Saerang et al., 2025). According to (Andi Mu'tiah Sari, 2022), hospital administration includes patient admission, financial data management, patient transfers between units, and the discharge process. Its main objectives are to ensure data completeness, time efficiency, and transparency in service delivery. Therefore, well-managed hospital administration can improve operational efficiency and provide a better service experience for patients and their families.

This study focuses on analyzing the root causes and time required to complete the administrative procedures for inpatients who are discharged from Royal Prima General Hospital in Medan. Based on preliminary observations, the length of time required to complete administrative procedures is due to limited human resources, information system constraints, and suboptimal coordination between units. This indicates the need to evaluate the workflow and capacity of administrative staff in each service unit, including the treatment room, medical support, pharmacy, and financial administration. By comprehensively analyzing the root causes, it is hoped that the hospital can implement appropriate improvement strategies to reduce patient discharge waiting times and increase satisfaction with the quality of hospital services.

RESEARCH METHODS

This study employed a qualitative analytical approach with a case study design to gain an in-depth understanding of administrative processes related to inpatient discharge at Royal Prima General Hospital Medan (Hendryadi & Irsan, 2019). Qualitative methods were selected to explore phenomena naturally through detailed narratives derived from the direct experiences of informants (Hardani et al., 2020). The study involved 55 informants, consisting of hospital staff and inpatients, and was conducted from March 2024 until completion.

Ethical approval was obtained from the Health Research Ethics Committee of Prima Indonesia University under No. 067/KEPK/UNPRI/2024. The research utilized both primary and secondary data. Primary data were collected through direct observation

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and in-depth interviews, while secondary data were gathered from hospital documents, reports, and supporting literature (Wiratna, 2020).

Data analysis followed the Miles and Huberman (1994) interactive model, involving continuous and iterative processes of data reduction, data display, and conclusion verification to refine emerging themes. NVivo 11.0 software supported data organization and coding. Data credibility was ensured through methodological and source triangulation, with ethical considerations upheld through informed consent, anonymity, and confidentiality. This methodological approach provides a comprehensive understanding of the root causes and process duration of inpatient discharge administration at the research site.

RESULTS AND DISCUSSION

Results

The study analyzed the administrative process of inpatient discharge at Royal Prima General Hospital Medan using a qualitative case study approach involving 55 informants, including 5 hospital staff and 50 inpatients. Observational and interview data revealed that the average total waiting time for completing the discharge process was 53.39 minutes, which still met the Minimum Service Standards (SPM) of less than 60 minutes. However, among the four units involved—nursing, medical support, pharmacy, and administration—the pharmacy unit exceeded the standard, taking an average of 61.12 minutes. This suggests that although the overall performance meets expectations, there are unit-specific inefficiencies that require targeted improvement.

In the nursing unit, the average waiting time was 51.7 minutes. Delays primarily occurred in the coordination between nurses and the finance department, especially in preparing the patient's final medical report and discharge summary. Nurses reported that communication with other departments sometimes took longer due to manual processes and incomplete documentation. Furthermore, high patient volumes during peak hours led to overlapping tasks, reducing time efficiency. Although nurses adhered to discharge protocols, the process of obtaining final approval from physicians and administrators caused time extensions.

The medical support unit demonstrated the fastest service, with an average waiting time of 47.12 minutes. However, this speed was occasionally disrupted when laboratory and radiology results were delayed due to an overload of samples. Limited analytical staff and a shortage of diagnostic reagents contributed to these delays. Interviews with medical technicians revealed that certain test results required manual verification, which extended processing time. Despite these limitations, the medical

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support unit maintained relatively stable turnaround times compared to other departments.

In contrast, the pharmacy unit was identified as the primary bottleneck. With an average waiting time of 61.12 minutes, the pharmacy exceeded the SPM threshold. Several factors contributed to this delay, including the large number of compounded prescriptions, limited drug stock, and restrictions from the National Formulary that required substitutions for unavailable medicines. Pharmacists also noted that network disruptions in the Hospital Information System (SIMRS) occasionally delayed data transmission from doctors and billing departments. This condition demonstrates the interdependence of administrative and clinical systems in determining overall efficiency.

The administration department performed moderately well, with an average discharge waiting time of 53.64 minutes. The main challenges were related to increased patient loads, system downtimes, and a lack of administrative officers during certain shifts. Patients often had to wait for billing verification and discharge letters to be printed and signed by supervisors. The hospital used both manual and digital systems, but synchronization between them was inconsistent, leading to short but significant administrative backlogs.

Root Cause Analysis (RCA) identified five primary issues causing discharge delays: (1) lengthy administrative workflows, (2) delayed laboratory and radiology reports, (3) insufficient human resources, (4) limited drug availability, and (5) unstable hospital network systems. These findings were consistent with patterns observed during direct observations and validated through triangulation of staff and patient interviews. The study also found that inter-unit communication gaps were a recurrent theme contributing to delays in every stage of the discharge process.

Figure 1 below illustrates the root cause hierarchy using a fishbone diagram. The analysis categorizes contributing factors under Manpower, Methods, Materials, Machines, and Environment. The most critical factor was human resource limitations, followed by technical and procedural issues. Interviews emphasized the need for workflow standardization and periodic system maintenance to minimize administrative interruptions and optimize efficiency.

Patient perceptions further reinforced the importance of service speed. Of the 50 patients interviewed, 80% expressed satisfaction with the discharge process but recommended improvements in communication and waiting transparency. They appreciated the courteous behavior of staff but were dissatisfied with waiting time at the pharmacy. This suggests that



while hospital staff exhibit good service attitudes, operational efficiency remains an area for improvement, especially in digital integration and real-time information updates.

Finally, statistical data compiled from direct observations and document reviews confirmed that service variability between units influenced total discharge duration. While certain units performed well individually, the absence of an integrated discharge coordination system led to cumulative time losses. Overall, the study demonstrates that administrative discharge efficiency can be substantially improved through cross-departmental collaboration, optimized resource allocation, and the expansion of digital systems for real-time data synchronization.

Table 1: Average Waiting Time for Discharge of Inpatients at Royal Prima General Hospital, Medan

Service Process	Average Waiting Time (minutes)	SPM Description (<60 minutes)
Nursing	51,7	Suitable
Medical Support	47,12	Suitable
Pharmacy	61,12	Not suitable
Inpatient Administration	53,64	Suitable
Average Total	53,39	Suitable

Table 1 shows the comparison of average waiting times across four major units involved in inpatient discharge. The results reveal that the pharmacy department is the only unit exceeding the SPM limit, indicating that this area is the key focus for improvement. Meanwhile, medical support is the most time-efficient unit. The overall average of 53.39 minutes confirms that the hospital still complies with national service standards but demonstrates potential for optimization, especially in pharmacy and administrative coordination.

Discussion

The study findings demonstrate that the overall discharge process at Royal Prima General Hospital Medan aligns with the Minimum Service Standard but exhibits inter-unit disparities. The pharmacy's delay is not an isolated incident but part of a systemic coordination issue that affects downstream processes. This is consistent with Ng'andu & Haabazoka (2024), who emphasized that delays in healthcare operations often stem from fragmented digital systems and inadequate communication channels



between units. Therefore, enhancing hospital workflow integration through digital connectivity is crucial to minimizing administrative latency.

Human resources emerged as the most influential factor affecting discharge speed. Staff shortages and multitasking led to fatigue, reduced accuracy, and prolonged turnaround times. Ronald et al. (2021) similarly reported that insufficient staffing levels are a key determinant of inefficiency in health service delivery. In Royal Prima Hospital, each administrative officer was responsible for multiple functions, which increased workload and contributed to longer waiting periods (Sihombing et al., 2025; Wijaya, 2024). Investment in HR capacity-building, workload redistribution, and time management training is therefore vital to improve discharge flow.

The delay in pharmacy processing times also underscores the need for supply chain and inventory optimization. Shortages of key medications forced staff to seek substitutions or coordinate with suppliers, leading to additional delays. Wirajaya & Rettobjaan (2022) noted that drug availability and efficient pharmaceutical logistics directly affect patient discharge speed. Integrating real-time drug inventory systems with administrative records could significantly reduce manual verification time and improve service predictability. From a managerial standpoint, the findings highlight that systemic improvement requires both technological and procedural interventions. The hospital's dual system (manual and digital) caused synchronization errors that delayed billing and discharge documentation. Aligning with Siregar et al. (2024), the use of a fully integrated Hospital Information Management System (HIMS) would allow real-time data updates across departments, reduce redundant processes, and ensure transparency in patient billing. Moreover, continuous evaluation of workflow efficiency through regular performance audits can help maintain compliance with SPM.

Lastly, from a patient-centered perspective, satisfaction is influenced not only by speed but also communication and transparency. Patients who understood the discharge process reported higher satisfaction despite moderate waiting times. This finding is aligned with Suspenti Dewi et al. (2019), who found that clear communication mitigates negative perceptions of waiting. Hospitals should thus implement real-time queue monitoring systems and public display boards showing discharge progress to improve patient trust and satisfaction. Overall, a holistic, technology-driven, and human-centered approach is essential to sustain hospital service excellence and achieve efficient inpatient discharge processes (Gotham et al., 2022; Oluoch et al., 2025; Sihombing et al., 2025; Wijaya, 2024).



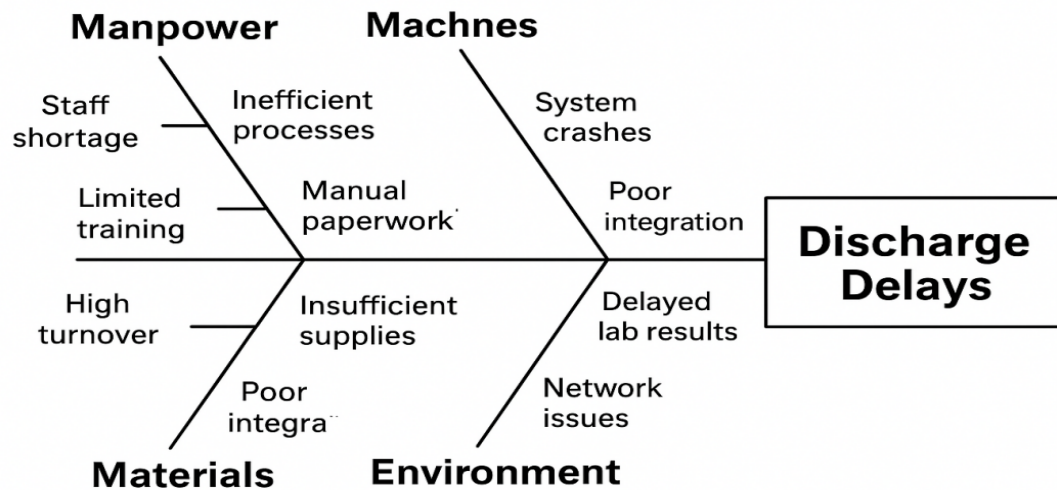


Figure 1. Root Cause Analysis (Fishbone Diagram) of Discharge Delays

This diagram visualizes the five major factors—Manpower, Methods, Machines, Materials, and Environment—contributing to delays in the inpatient discharge process. Human resource shortages and system failures are the primary sources of inefficiency.

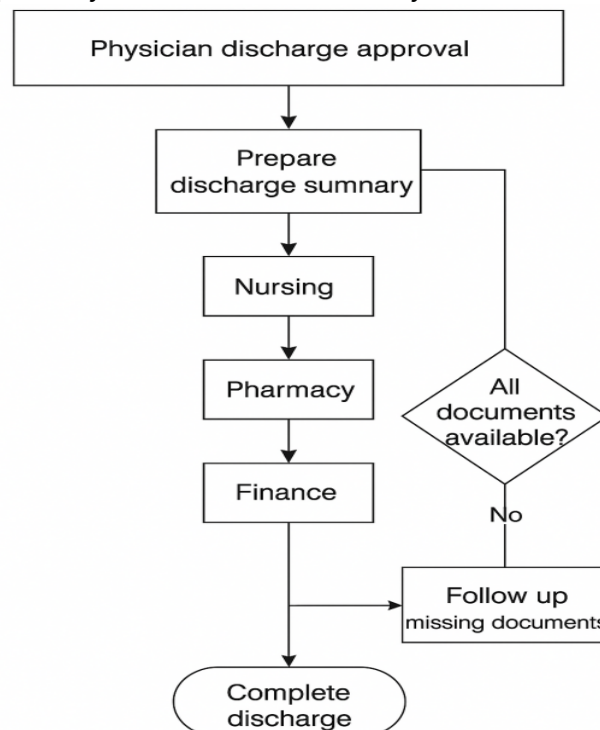


Figure 2. Workflow of the Inpatient Discharge Administration Process



A flowchart showing the discharge steps from physician approval to billing completion. It highlights the interconnection between the nursing, pharmacy, and finance departments and identifies key bottlenecks.

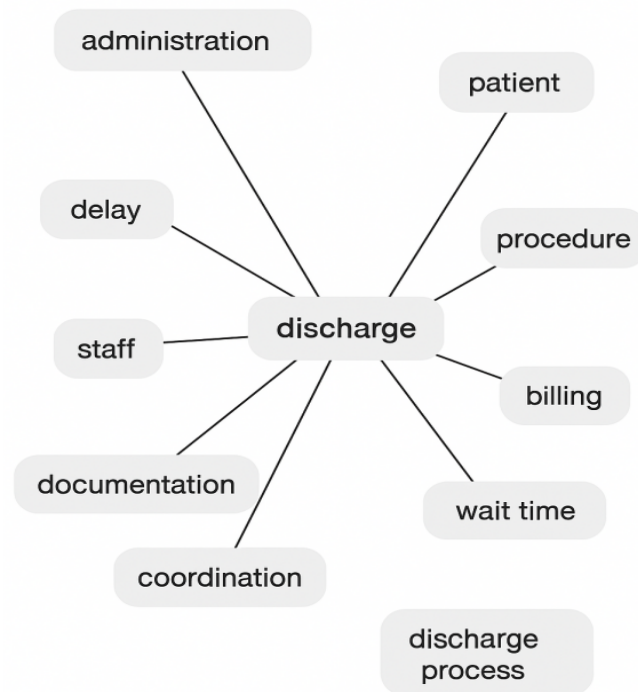


Figure 3. NVivo 11 Qualitative Coding Map from Interview Analysis

This figure presents thematic clusters derived from staff and patient interviews, showing patterns of administrative delay, communication barriers, and satisfaction determinants. It visually supports the qualitative interpretation of the study.

CONCLUSION

Based on the results of research on Root Cause Analysis and Time Required for the Completion of Administration for Inpatients Discharged from Royal Prima General Hospital in Medan, it can be concluded that the administrative process for discharging inpatients has generally been running quite well and is still in accordance with the Minimum Service Standards (SPM). The average overall waiting time was recorded at 53.39 minutes, which is below the MSS limit of 60 minutes. However, several service units were found to be less than fully efficient, particularly the pharmacy, with a waiting time of 61.12 minutes, indicating obstacles in the speed of administrative services and drug logistics.



The results of the study show that each unit has different root causes that affect the duration of administrative completion. In the treatment room, delays are caused by the length of the internal administrative process. In medical support, the main obstacles stem from delays in the release of test results, a lack of analysts, and the large number of patients waiting for test results. Meanwhile, in the pharmacy, the contributing factors include a limited number of pharmacists, a large number of compounded prescriptions, limitations in the national formulary, and a lack of drug stock. As for the administration room, an increase in the number of patient visits and system network disruptions are the dominant factors causing longer waiting times.

Overall, the results of this study confirm that improving the efficiency of the patient discharge administration process requires a systemic approach involving improved coordination between units, optimization of human resources, and strengthening of the hospital information system. The implementation of a digital-based administrative system and routine evaluation of service flows are expected to reduce waiting times in all service units. Thus, Royal Prima General Hospital in Medan can consistently maintain waiting times that meet SPM standards, improve service quality, and strengthen patient satisfaction as users of health services.

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