

A Study on Turnaround Time (TAT) in Shifting Patients from the Emergency Department to the Ward or ICU at Medanta Hospital, Gurgaon

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INTRODUCTION

Medanta– The Medicity is the India's best and one of the largest private multi-super specialty hospital located in the bustling town of National Capital Region which is Gurugram. The hospital is founded by eminent cardiac surgeon Dr Naresh Trehan and is aimed at bringing together in our country, the highest level of medical care, clinical research, education, and training. The hospital boasts of winning the private hospital award of the country for five consecutive years now from 2020-2024. To promote collaborative, multidisciplinary research and more quickly translate scientific advances into new methods of diagnosis and treatment of patients for disease prevention, Medanta- The Medicity has an exceptional pool of physicians, scientists, and clinical researchers. Medanta is a one-of-a-kind facility that is ranked among the top 250 hospitals in the world. Through scientific research, Medanta- The Medicity proposes to investigate the viability of fusing traditional and alternative medical knowledge with that of modern medicine. The hospital is led by Dr Naresh Trehan who is an Indian surgeon born on August 12, 1945 and specializes in cardiothoracic surgery. He is Medanta-The Medicity's chairman, managing director, and chief heart

surgeon. Since 1991, he has been the president of India's personal physician. He is the recipient of many international and national Honors.

The purpose of this study is to investigate the factors that influence TAT in patient transfers and to propose strategies aimed at enhancing the efficiency of this process within the context of Medanta Hospital located in Gurgaon.

Decongesting the Emergency Department (ED) holds multifaceted importance across various dimensions of healthcare delivery. Timely shifting of patients from the ED to appropriate care units, such as wards or the Intensive Care Unit (ICU), plays a pivotal role in reducing morbidity and mortality rates. Delays in patient transfers can exacerbate existing medical conditions, increase the risk of complications, and compromise patient outcomes. By expediting these transfers, healthcare providers can promptly initiate necessary treatments, interventions, and monitoring protocols, thereby mitigating the severity of illnesses and improving overall patient prognosis.

Furthermore, reducing congestion in the ED contributes to alleviating the financial burden on patients and healthcare systems. Prolonged ED stays not only increase healthcare costs for patients but also strain hospital resources, leading to inefficiencies in resource allocation and utilization. By streamlining patient flow and minimizing turnaround times, hospitals can optimize

resource utilization, enhance operational efficiency, and mitigate unnecessary healthcare expenditures.

Moreover, prompt patient transfers from the ED positively impact the length of ICU stays, as timely access to specialized care and interventions can prevent disease progression and reduce the need for prolonged critical care interventions. This not only improves patient outcomes but also optimizes ICU bed utilization and enhances the capacity to accommodate critically ill patients in need of urgent care.

Additionally, decongesting the ED enhances the overall patient experience by reducing wait times, minimizing overcrowding, and improving access to timely and appropriate care. Patients receive the required attention and treatment in a more efficient manner, leading to higher levels of satisfaction and better patient-provider interactions.

Furthermore, by freeing up space in the ED, hospitals can better accommodate incoming patients in need of urgent medical attention, ensuring timely access to care and reducing the risk of treatment delays or adverse outcomes. This facilitates the delivery of comprehensive and timely healthcare services to all patients, ultimately contributing to improved population health outcomes and

healthcare system sustainability.

Several factors can potentially influence TAT in patient disposition, including but not limited to, hospital resource availability, ED crowding, staffing levels, communication protocols, bed availability in the receiving units, and the complexity of patients' conditions. Each of these factors may interact in intricate ways, affecting the overall efficiency of the transfer process. Therefore, a comprehensive examination of these factors is essential to develop effective strategies for reducing TAT and streamlining patient flow.

RESEARCH QUESTION:

What are the key factors influencing the turnaround time (TAT) in shifting patients from the Emergency Department to the ward at Medanta Hospital, Gurgaon?

OBJECTIVES

1. To study the current process of patient transfer from the ED to wards/ICU at Medanta Hospital.
2. To identify factors affecting TAT in patient shifting.
3. To trace the reason for delays, if any.

LITERATURE REVIEW

S.No	AUTHOR	YEAR	TITLE	FINDINGS
1.	Thakur A, Gupta S, Sharma R	2020	Study of patient flow and turnaround time in the ER in a tertiary care hospital	The retrospective study analyzed data from 1,128 patients over a six-month period. The study identified delays in triage, inadequate staffing during peak hours, longer waiting times for diagnostic tests, and delays in decision-making for patient disposition as factors contributing to prolonged TAT. The authors recommended interventions such as optimizing staffing levels, streamlining triage processes, improving communication and coordination, and expediting diagnostic testing and decision-making to improve TAT and enhance the efficiency of care in ED.
2.	Gupta S, Singh S, Kashyap A	2020	Reducing turnaround time for critical patients in the emergency department .	This study focused on improving the efficiency of the ED workflow to provide prompt and timely care to critical patients and Implementing interventions to reduce TAT for critical patients in the ED. The interventions resulted in significant improvements, leading to a reduction in TAT and better management of

				critical patients. The findings highlight the importance of process optimization and targeted interventions to enhance the delivery of emergency care in the ED
3.	Ramani S, Devi L, Yedidi RS	2019	Analysis of factors affecting emergency department turnaround time: a study from a tertiary care hospital in South India	The study analyzed data from 1,300 patients over a one-year period. Identified several factors that significantly impacted TAT, including the mode of arrival (ambulance arrivals had longer TAT) patient category (referrals from other hospitals had longer TAT), time of arrival (night-time arrivals had longer IT), and time of physician assessment (assessments during night shifts led to longer TAT). Challenges related to staffing, diagnostic testing delays, and patient referrals were also identified. The study recommended interventions such as optimizing staffing during night shifts, improving coordination with referring hospitals and expediting

				diagnostic testing to reduce TAT and enhance the efficiency of care in the ED.
4.	George M, Jose J, Varughese J	2019	Determinants of emergency department turnaround time: A study from a tertiary care hospital in South India	The study analyzed 1,010 patients in a South Indian tertiary care hospital's emergency department and found factors affecting turnaround time (TAT). Patients arriving by ambulance had longer TAT, while higher triage category and night shift assessment were associated with longer TAT. Age and gender did not significantly impact TAT. Interventions include streamlining triage, optimizing physician staffing, and improving coordination between emergency medical services and the ED
5.	Puneet Freibott DNP, RN, NEA-BC, CCRN-K'S	2017	Optimizing Emergency Department Throughput Using Best Practices to Improve	The project aimed to improve Emergency Department (ED) throughput in a tertiary acute care hospital by tackling crowding and inefficiencies. It introduced evidence-based interventions and structural changes. ED charge nurses

			Patient Flow atient Flow	were trained as patient flow coordinators to prioritize evaluations in the waiting room, supported by communication tactics and collaboration. Structural adjustments included establishing an assessment area in the ED waiting room and reallocating resources. Methods involved auditing patient charts per CMS guidelines and analyzing throughput data, resulting in significant improvements: reduced time to diagnostic evaluation, decreased ED diversion rates, and fewer patients leaving without being seen. The collaborative effort, cultural shifts among ED physicians, and strategies to address barriers were highlighted. Implications stressed the global issue of crowded EDs and the importance of throughput for care quality. In conclusion, the project effectively enhanced ED operations, offering insights into optimizing care delivery
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6.	La Vonne A. Downey and Leslie S. Zun	2007	Determinates of Throughput Times in the Emergency Department	The study delves into the determinants of throughput times in an inner-city level 1 adult and pediatric trauma Emergency Department (ED). It addresses the global concern of prolonged ED wait times, attributed to increasing patient volumes and system-wide challenges. Previous research highlights a rise in ED visits alongside a decrease in ED availability, leading to overcrowding and extended wait times. Patients' perceptions of care quality often hinge on wait times, staff attitudes, and information provision, with satisfaction linked to perceived rather than actual throughput times. Studies underscore the multifaceted nature of ED throughput challenges, including non-urgent cases, system-wide issues like bed availability, and access to ancillary services.

				Improvements in ancillary services, particularly laboratory turnaround, and collaborative team approaches to patient flow redesign show promise in reducing wait times and enhancing satisfaction levels. The current study adopts a retrospective approach, examining various factors affecting throughput, including presenting illness, triage level, wait times, and patient demographics. Findings reveal differential throughput times across different priority levels, with certain patient groups experiencing longer wait times due to higher reliance on ancillary services. Overall, the study contributes valuable insights into the specific factors impacting inner-city ED throughput, informing targeted interventions to optimize ED operations and improve patient outcomes
7.	Paul Richard	2016	Improving	Emergency Department, Calderdale & Huddersfield

	Edwin Jarvis		emergency department patient flow	NHS Foundation Trust, West Yorkshire, UK literature review was performed by Paul Richard Edwin Jarvis to identify evidence-based strategies to reduce the amount of time patients spend in the ED in order to improve patient flow and reduce crowding in the ED. Use of doctor triage, rapid assessment, streaming and the co-location of a primary care clinician in the ED have all been shown to improve patient flow. In addition, when used effectively point of care testing has been shown to reduce patient time in the ED. Patient flow and departmental crowding can be improved by implementing new patterns of working and introducing new technologies such as point of care testing in the ED
8.	Bukhari , H., Albazli, K.,	2014	Analysis of Waiting Time in Emergency	Bukhari H, Albazli K et al. (2014) found a mean LOS of 3:02 hour (SD - 5:03 hour). They further claimed

	Almaslmani, S., Attiah, A., Bukhary, E., Najjar, F., et al.		Department of Al-Noor Specialist Hospital, Makkah, Saudi Arabia	that*23.4% of visits to ED had a delay in LOS more than four hours. Prolonged LOS was associated with prolonged laboratory and consultation time, patient admission to observation or trauma areas, critical care management patients, and prolonged final decision time to time of physical response to the final decision
9.	Alison Day and Carol Oldroyd	2012	Attempting to reduce the maximum emergency waiting time to 4 hours in England: was the initiative successful?	Alison Day and Carol Oldroyd (2012) in their study titled "Attempting to reduce the maximum Emergency waiting time to four hours in England: Was the initiative successful?" stated that "Long wait times in the emergency department have been recognized as a concern throughout the world demand on services increases. A prolonged ED wait time reduces quality of care and can adversely affect outcome for patients with serious illness. In addition extended wait times and ED crowding contribute to patient

				dissatisfaction and staff frustration. In response to these issues, The Department of health, England proposed, as a part of National Health Service (NHS) Plan, a maximum waiting time of 4 hours to admission, transfer or discharge."
10.	Renaud , Santin, Coma, Camus, Van Pelt, Hayon, Gurgui, Roupie, Herve, Fine, BrunBui sson, &Labar ere	200 9	Association between timing of intensive care unit admission and outcomes for emergency department patients with community-acquired pneumonia	The study reports that delayed-transfer patients had a higher 28-16 day mortality rate (23.4% vs. 11.7%) and a longer median hospital length of stay (13 days vs. 7 days) than direct-transfer patients. Patients who were directly transferred to the ICU from the ED had a mortality rate of 13.6% and patients who had a delayed transfer of at least 3 days had a mortality rate of 19.6% (Renaud et al., 2009).
11.	Halland Press, and Fernand	199 6	Factors affecting the service quality of	"Apart from Turnaround Time, other factors that affect ED service quality are the delays (Halland Press,

	es et al.		ED	1996 and Fernandes et al. 1994) that patients experience while being treated. These include waiting for resources such as nurses, physicians, experts and logistics personnel, waiting for a bed, waiting for test results, etc
12.	Diercks DB, Roe MT, Chen AY, et al	2007	Prolonged ED wait time and length of visit	As Liew D, Kennedy MP (2003) opined "Prolonged ED wait time and length of visit reduce quality of care and increase adverse events for patients with serious illnesses. "To support the statement, Diercks DB, Roe MT, Chen AY, et al (2007) in their study cited that "For example, patients presenting with non-ST-elevation myocardial infarction (MI) who have an ED stay of more than 8 hours are more likely to have recurrent in-hospital MI than patients with an average ED stay.

HYPOTHESIS

Our hypothesis posits that several key factors play pivotal roles in influencing the turnaround time (TAT) for patient transfers from the Emergency Department (ED) to the ward at Medanta Hospital. Specifically, we anticipate that bed availability, staffing levels, communication gaps, and administrative delays will emerge as significant determinants impacting TAT within the hospital's patient flow dynamics.

MATERIALS AND METHODS

This study adopts an observational approach, entailing real-time analysis of patient flow within the Emergency Department (ED) of Medanta Hospital, Gurgaon, from March 2024 to June 2024. The research focuses on patients recommended for admission to either wards or the Intensive Care Unit (ICU) by attending physicians within the ED. Real-time data collection will be executed through direct observation of patient movements, meticulously recorded in an Excel spreadsheet, from the point of physician recommendation for admission to the subsequent transfer to either the ward or ICU. A total of 100 patients admitted to the ED and subsequently recommended for admission to either wards or the ICU will be included in the study sample, selected through convenience sampling for practicality and feasibility within the ED setting.

Inclusions:

* Patients arriving to ER between 9:00 am to 5:30 pm

Exclusions:

- * Patient arriving to ER before 9:00 am and after 5:30 pm and Sundays
- * Brought death cases

Data analysis will be conducted utilizing Microsoft Excel software, employing descriptive statistics such as mean, median, and standard deviation to summarize turnaround times and identify any notable patterns or trends.

Additionally, inferential statistical methods may be employed to assess the significance of any factors influencing turnaround times, if applicable. By adhering to this meticulously designed methodology, the study aims to provide valuable insights into the factors influencing patient flow and turnaround times within the ED of Medanta Hospital, Gurgaon. The findings are expected to contribute to the enhancement of healthcare delivery efficiency and patient outcomes, ultimately benefiting both the hospital and its patients.

ETHICAL CONSIDERATIONS

In the context of our study on turnaround time (TAT) in patient transfers from the Emergency Department (ED) to the ward/ ICU at Medanta Hospital, several ethical considerations must be carefully addressed.

Firstly, ensuring patient confidentiality and privacy is paramount throughout the data collection process. Patient information, including medical records and personal identifiers, must be handled with utmost confidentiality, and stored securely to prevent unauthorized access or disclosure.

Secondly, obtaining informed consent from participants or their legal representatives is essential, given the observational nature of the study. Patients should be informed about the study's objectives, procedures, and potential risks or benefits before their inclusion in the research.

Additionally, measures should be implemented to minimize any potential harm or discomfort to participants during data collection, such as ensuring non-intrusive observation methods and respecting patients' autonomy and dignity.

IMPLICATIONS OF THE RESEARCH

The findings of this research hold significant implications for optimizing patient flow, reducing turnaround time (TAT), and enhancing overall healthcare delivery at Medanta Hospital, Gurgaon. By identifying the key factors influencing TAT in patient transfers from the Emergency Department (ED) to the ward, this study can provide actionable insights that inform strategic interventions aimed at improving efficiency and quality of care.

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