

## IMPLEMENTATION OF LEAN HOSPITAL AS AN EFFORT TO IMPROVE HEALTH SERVICES IN THE EMERGENCY UNIT OF THE HOSPITAL

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### Abstract

Service emergency emergency at home Sick often face challenge like overcrowded and false emergencies, which resulted in a decline quality service and improvement time Wait patient. Research This aiming For analyze implementation Lean Hospital as effort improvement efficiency and quality services in the Emergency Unit Emergency (ER). Lean hospital adopt principles subtraction waste includes time excessive waiting, usage source suboptimal power, and administrative processes that are not own mark add. Method study This use source from journal scientific, articles, books scientific, as well as guidelines House sick. Study results show that implementation lean hospital capable reduce time Wait up to 30%, increasing flow work, and optimize utilization source power that has an impact on increasing satisfaction patients and decline risk error medical. In conclusion, Lean Hospital is a approach effective management in increase efficiency and quality service health in the ER, as well as capable face challenge operational House the pain is getting worse complex in this modern era.

**Keywords:** *Lean Hospital, Emergency Unit Emergency*

### INTRODUCTION

Healthcare service quality refers to the ability to satisfy every service user by providing appropriate care that meets the average level of public satisfaction while adhering to established professional standards and ethical codes. One of the key methods for delivering high-quality healthcare services is ensuring that hospitals effectively manage and maximize their available resources. According to the Regulation of the Minister of Health (*Permenkes*), a hospital is a healthcare service institution that provides comprehensive individual healthcare services, including inpatient care, outpatient care, and emergency services. As the number of hospitals increases, competition in healthcare services has intensified, further driven by rising public demands for higher service standards (Grabau, 2016; Kementerian Sekretariat Negara Republik Indonesia, 2023).

Emergency Room (ER) services play a crucial role in a hospital's overall performance, as the ER serves as one of the primary entry points for patients seeking medical attention. However, in recent years, ERs have faced increasingly complex challenges, particularly in dealing with overcrowding and false emergencies. Overcrowding occurs when the number of incoming patients exceeds the ER's bed capacity, leading to difficulties in providing timely and effective medical care. This situation results in prolonged waiting times and a higher likelihood of medical errors. ER services operate on the principle of "Time Saving is Life Saving," meaning that every action in an emergency situation must be optimized for efficiency and effectiveness. The issue of false emergencies, where patients with non-critical conditions seek treatment in the ER, further exacerbates the problem by diverting resources away from patients with genuine medical crises (Grabau, 2016; Putri, 2024).

The impact of overcrowding is significant, affecting both hospital operations and the well-being of medical staff, including doctors and nurses. Studies indicate that hospitals experiencing overcrowding often see a decline in service quality and an increased workload for healthcare providers, leading to exhaustion and reduced performance. ER personnel must manage a high patient volume, including non-emergency cases, which heightens their risk of experiencing stress and burnout. This, in turn, can compromise patient safety and the quality of care provided. Research from *The American Journal of Emergency Medicine (AJEM)* highlights that overcrowding directly contributes to increased mortality rates due to delays in treating critical patients (Putri, 2024; Ratnaningrum et al., 2023).

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To address these challenges, the implementation of *Lean Hospital* principles in ER services has emerged as a widely adopted solution in hospitals across Indonesia. Lean methodology focuses on reducing waste in various operational aspects, including minimizing waiting times, optimizing resource utilization, and eliminating unnecessary administrative processes that hinder efficiency in healthcare delivery. This approach enhances workflow efficiency, alleviates the burden on medical personnel, and ensures that patients receive timely care. Studies have shown that implementing *Lean Hospital* in ER settings can reduce patient turnaround time by up to 30%, thereby improving patient satisfaction and reducing medical errors. This ultimately has a positive impact on patient safety and the overall quality of hospital healthcare services (Grabau, 2016; Ratnaningrum et al., 2023; Womack & Jones, 2010).

Given these challenges, this study aims to further explore the implementation of *Lean Hospital* in ER services and assess its potential to bring positive transformations to healthcare delivery. The purpose of this paper is to gather information, develop a deeper understanding, summarize key findings, and analyze the application of *Lean Hospital* as a strategic effort to enhance ER healthcare services amid existing challenges.

## LITERATURE REVIEW

### Lean Hospital

Lean Hospital is a management approach that adapts Lean principles from the manufacturing industry to healthcare services to improve efficiency, reduce waste, and enhance patient care quality. This concept was introduced by Womack and Jones (2010) in *Lean Thinking*, emphasizing the reduction of activities that do not add value to patients. Grabau (2016) explains that the implementation of Lean in hospitals aims to streamline workflows, reduce waiting times, and improve patient safety and satisfaction. Several studies have shown that Lean Hospital implementation contributes to service effectiveness, particularly in emergency units, as discussed by Putri Amanda (2024) and Usman & Ardiyana (2019), who examined Lean applications in enhancing emergency care services in hospitals.

The implementation of Lean Hospital has been applied in various aspects of healthcare services, including outpatient units and emergency departments. Muthia et al. (2020) studied the optimization of Lean in outpatient units, which positively impacted service efficiency. Additionally, research by Ratnaningrum et al. found that implementing Lean Management in the emergency department of Hospital X in Central Java positively influenced patient satisfaction. However, challenges in implementing Lean Hospital remain, such as resistance to change, lack of staff understanding, and resource limitations (Wati et al., 2021).

## METHOD

This paper is based on a systematic literature review, utilizing journal articles collected from various sources such as scientific journals, Google Scholar, PubMed, Scopus, international journals, and nationally indexed journals published within the last five years. Other sources include scientific books, textbooks, national guidelines, and hospital guidelines, which were also used in compiling the content of this paper. Both Indonesian and English-language sources were referenced to facilitate the author's understanding of the information presented. Additional sources were retrieved from the internet using keywords such as "hospital management strategy," "lean hospital," "lean hospital concept," and "emergency room healthcare services." The collected sources were then screened and filtered to ensure their relevance and alignment with the topic of this paper.

## RESULTS AND DISCUSSION

### Definition and Concept of Lean Hospital

Lean Hospital is an adaptive management approach that applies Lean Manufacturing principles to the healthcare industry. The primary goal of Lean Hospital is to improve the quality and efficiency of healthcare services by eliminating waste and creating a sustainable workflow. This approach enhances diagnostic accuracy, reduces medical errors, increases patient satisfaction, shortens patient waiting times, optimizes resource utilization, and lowers operational costs. Lean Hospital is recognized as an effective management strategy for enhancing the quality and efficiency of healthcare services in hospitals. Numerous studies have confirmed the effectiveness of Lean Hospital implementation in improving healthcare service quality and efficiency. By identifying and eliminating waste, Lean Hospital is expected to help control costs while maintaining service quality and production processes within hospitals (Grabau, 2016; Putri, 2024; Muthia et al., 2020).

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The lean methodology is used in hospitals to improve service quality for patients by addressing two main issues: reducing errors and minimizing waiting times. Based on these two aspects, Graban defines lean in two key principles: (1) Total Elimination of Waste, where waste refers to all activities that do not contribute to the patient healing process. All forms of waste must be eliminated or minimized to reduce hospital costs, improve patient satisfaction, and enhance both patient and staff safety. (2) Respect for People, which involves motivating employees to perform better through constructive methods while ensuring respect for patients, employees, doctors, and all stakeholders within the hospital environment. Graban also defines five key principles of lean that are adapted to hospital healthcare service systems, as outlined in the table (Usman & Ardiyana, 2019).

**Table 1.** Principles Lean by Graban.

Principles	Lean Hospital
Value	Value in terms of specific must seen from corner view consumer end (patient).
Value Stream	Identification all process stages that provide mark add to all and across department (the value stream), eliminate stages that are not create mark.
Flow	Keeping the process running fluent with remove factors reason problem quality service or allocation source Power.
Pull	Avoid push a work based on availability source existing power, let it be a process of aging happen Because existence need or a request from patient (so that created efficiency and suitability with need patient).
Perfection	Chase perfection service through repair sustainable.

## Emergency Healthcare Services in the Emergency Department

The Emergency Department (ED) is a crucial hospital unit that serves as the primary entry point for patients in critical conditions. It is responsible for providing immediate care to individuals suffering from acute illnesses and injuries, following established healthcare standards. Emergency services in the ED are essential, as they provide rapid intervention for patients requiring urgent medical attention and act as the first point of contact for individuals in emergencies.

## Patient Flow in the Emergency Department

The patient journey in the ED begins with their arrival, where they are received by security personnel. The process then continues with screening, patient triage, registration, medical examination by a doctor, counseling, pharmacy services (medication dispensing), and payment at the cashier.

## Types of Waste in Emergency Healthcare Services

Waste refers to any activity that does not add value to the service. Examples include corrections due to errors, production of unnecessary items, excessive inventory, unnecessary processing steps, inefficient movement of people or materials, delays due to untimely deliveries, and goods or services that fail to meet patient expectations.

Several types of waste in the ED include:

### 1. Waste of Waiting

Waiting time is one of the most common types of waste in emergency care and significantly impacts patient satisfaction. This includes delays in patient registration, medical examination, and medication collection at the pharmacy. Prolonged waiting times can cause patient discomfort and dissatisfaction. The implementation of *lean hospital* management has proven effective in reducing waiting times. For instance, at RSI PKU Muhammadiyah Tegal in 2020, waiting times were reduced from 69.9 minutes to 51.5 minutes.

A study conducted at RSA UGM in 2022 identified major sources of waiting time waste, including waiting for laboratory and radiology results, consultation with the attending physician, inpatient room availability, and readiness of inpatient nurses to receive patients from the ED. These delays were primarily caused by limited healthcare personnel and inpatient room shortages, as well as healthcare staff not adhering to schedules.

### 2. Waste of Motion

Waste of motion refers to inefficient and unnecessary movements that consume time and energy without adding value to the healthcare process. This waste can result from human (staff) movements or machine

operations. It includes small movements like bending and reaching, as well as larger actions like retrieving medical supplies from distant locations.

A 2020 study found significant motion waste among ED nurses due to excessive computerization of patient data entry and reconciliation of prescriptions with pharmacy staff. Similarly, pharmacy staff experienced inefficiencies in checking medication availability and preparing prescriptions.

### 3. Waste of Overprocessing

Overprocessing occurs when additional work is performed beyond what is necessary or valuable to the patient. This waste involves excessive labor, unnecessary components, or redundant steps in the service process.

Common examples in emergency care include unnecessary steps during patient registration and observation. Inefficient task allocation among healthcare staff can further contribute to overprocessing. For instance, a nurse delaying patient documentation because they need to search for an oxygen cylinder elsewhere increases observation time and delays patient transition.

## Implementation of Lean Hospital in Emergency Healthcare Services

The *lean hospital* approach aims to reduce waste, medical errors, and inefficiencies while enhancing hospital service quality. Its implementation involves three key stages:

1. Training and Awareness – Providing education and training on *lean hospital* management to align staff understanding of the concept.
2. Waste Identification – Using the PDSA (Plan, Do, Study, Act) approach to identify and prioritize inefficiencies. The 5S method (*Sort, Set, Shine, Standardize, Sustain*) is used to streamline hospital processes.
3. Practical Application – Implementing *lean hospital* principles through structured tools to achieve efficiency goals.

A study by Matthew et al. (2013) highlighted the impact of prolonged waiting times on patient frustration and dissatisfaction. To enhance emergency healthcare services, the following strategies should be adopted:

1. Reducing patient waiting times.
2. Implementing a tiered referral system from primary healthcare facilities (FKTP) to higher-level hospitals (FKRTL), prioritizing FKTP patients.
3. Ensuring proper referral procedures are followed.
4. Increasing inpatient bed availability, especially in Class 3 wards, to improve healthcare access in underserved areas.
5. Enhancing the speed and accuracy of emergency response based on standardized protocols.
6. Improving hospital infrastructure, human resources, and management systems in accordance with operational standards.
7. Ensuring a sense of safety and security for patients seeking treatment.

## CONCLUSION

The implementation of *lean hospital* principles in the ED has demonstrated significant improvements in service efficiency and quality. The *lean* approach focuses on minimizing waste, reducing patient waiting times, optimizing resource utilization, and eliminating unnecessary administrative procedures. Studies have shown that *lean hospital* management can accelerate workflows, increase patient capacity without compromising care quality, and reduce medical errors.

For instance, hospitals that have adopted *lean hospital* management have reported a 30% reduction in waiting times, leading to higher patient satisfaction and fewer medical errors. Additionally, *lean* enhances teamwork and coordination among healthcare providers, improving emergency response effectiveness. A 2021 study at RSUD Bayu Asih confirmed that *lean hospital* implementation not only shortened patient waiting times but also improved triage efficiency, ensuring critically ill patients receive timely and appropriate care.

Thus, *lean hospital* management is a highly relevant and effective approach for enhancing emergency healthcare services, particularly in addressing issues such as overcrowding and false emergencies in the ED.

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