

CHAPTER II

LITERATURE REVIEW

2.1 Concept of the Emergency Department

2.1.1 Definition of the Emergency Department

In the Great Dictionary of the Indonesian Language, the word "Gawat" means urgent; dangerous; critical; concerning; close to death; difficult; threatened, while the word "darurat" means a difficult (hard) situation that is unexpected and requires immediate handling. According to the Ministry of Health of the Republic of Indonesia (Kemenkes, 2018), the definition of emergency is a clinical condition of a patient that requires rapid and precise medical intervention to save lives and prevent disability. Based on the explanation above, it can be concluded that the definition of an emergency is a condition that endangers and threatens life, requiring swift action to save lives and prevent disability.

The Emergency Room (ER) is one of the units in a hospital that serves as the main gateway for providing rapid and appropriate care for patients experiencing conditions or injuries that pose a threat to their survival (Merliyanti et al., 2024). The ER is the primary unit responsible for receiving, stabilizing, and managing patients who require urgent medical attention, while considering efficiency and effectiveness in their treatment (Fadhilah & Dhamanti, 2024).

2.1.2 Service in the Emergency Room

Services in the Emergency Department (ED) are a series of medical services provided to patients who require immediate attention due to emergency conditions threatening life, health, or bodily function (Aliun et al., 2024). In emergency

services at hospital facilities, emergency service categories are divided into four levels, namely Level I, Level II, Level III, and Level IV. The types of ED services (management and facilities) in Indonesian hospitals are differentiated based on the hospital's level, as stipulated in the Minister of Health Regulation number 47 of 2008 concerning Emergency Services:

Table 2. 1 Types of Services in the ED Based on the Minister of Health Regulation Number 47 of 2008 concerning Emergency Services

Level I	Level II	Level III	Level IV
Provides the following services:	Provides the following services:	Provides the following services:	Provides the following services:
1. Diagnosis & management of problems related to: A: airway, B: breathing (ventilation), and C: circulation.	1. Diagnosis & management of problems related to airway, breathing (ventilation), and circulation.	1. Diagnosis & management of problems related to A, B, C, with more complete equipment including ventilators.	1. Diagnosis & management of problems related to A, B, C, with complete equipment including ventilators.
2. Performing basic resuscitation, stabilization, and evacuation.	2. Performing basic disability assessment, medication administration, EKG, and defibrillation.	2. Performing basic resuscitation, disability assessment, medication administration, EKG, and defibrillation.	2. Performing basic resuscitation, disability assessment, medication administration, EKG, and defibrillation.
	3. Evacuation and referral between healthcare facilities.	3. Evacuation and referral between healthcare facilities.	3. ROE
	4. Emergency surgery.	4. ROE (Emergency Observation Room).	(Emergency Observation Room) observation.
		5. Emergency surgery.	4. Emergency surgery.
			5. Emergency anesthesia.

2.1.3 Minimum Service Standards in the Emergency Department

Minimum service standards (SPM) are provisions that regulate the type and quality of basic services which are the mandatory responsibility of local

governments, as well as the right of every citizen to receive them as a minimum standard. Furthermore, these provisions also include technical specifications as a reference for minimum services that must be provided by Public Service Agencies to the community. The minimum service standards for ED are provisions that establish the minimum level of health services used to ensure the quality, safety, and effectiveness of services provided to patients in emergency conditions. These minimum service standards for ED are stipulated by the Minister of Health of the Republic of Indonesia Regulation Number 129/Menkes/Sk/II/2008:

Table 2. 2 Minimum Service Standards in the ED Based on the Minister of Health of the Republic of Indonesia Regulation Number 129/Menkes/Sk/II/2008

Indicator	Standard
Ability to handle lifesaving procedures for children and adults	100%
Emergency Service Hours	24 hour
Emergency Service Providers with Valid BLS/PPGD/GELS/ALS Certifications	100%
Availability of disaster management team	One team
Doctor's response time in the ED	≤ five minutes of service, after the patient arrives
Customer Satisfaction	≥ 70%
Patient Deaths <24 Hours	≤ two per thousand (transfer to inpatient care after 8 hours)
For Mental Health Hospitals, patients can be resuscitated within <24 hours	100%
No patients are required to pay a deposit	100%

2.1.4 Service Flow in the Emergency Department

Emergency care focuses on providing prompt and appropriate interventions to minimize mortality and unwanted disability. The emergency department (ED) patient care flow is a process designed to facilitate the provision of prompt, precise, and accurate healthcare services to both staff and patients. The ED service flow also reflects the quality of existing medical services, and therefore, it must be

implemented properly and correctly to achieve service goals and objectives (Purnamasari Eka Putri et al., 2022).

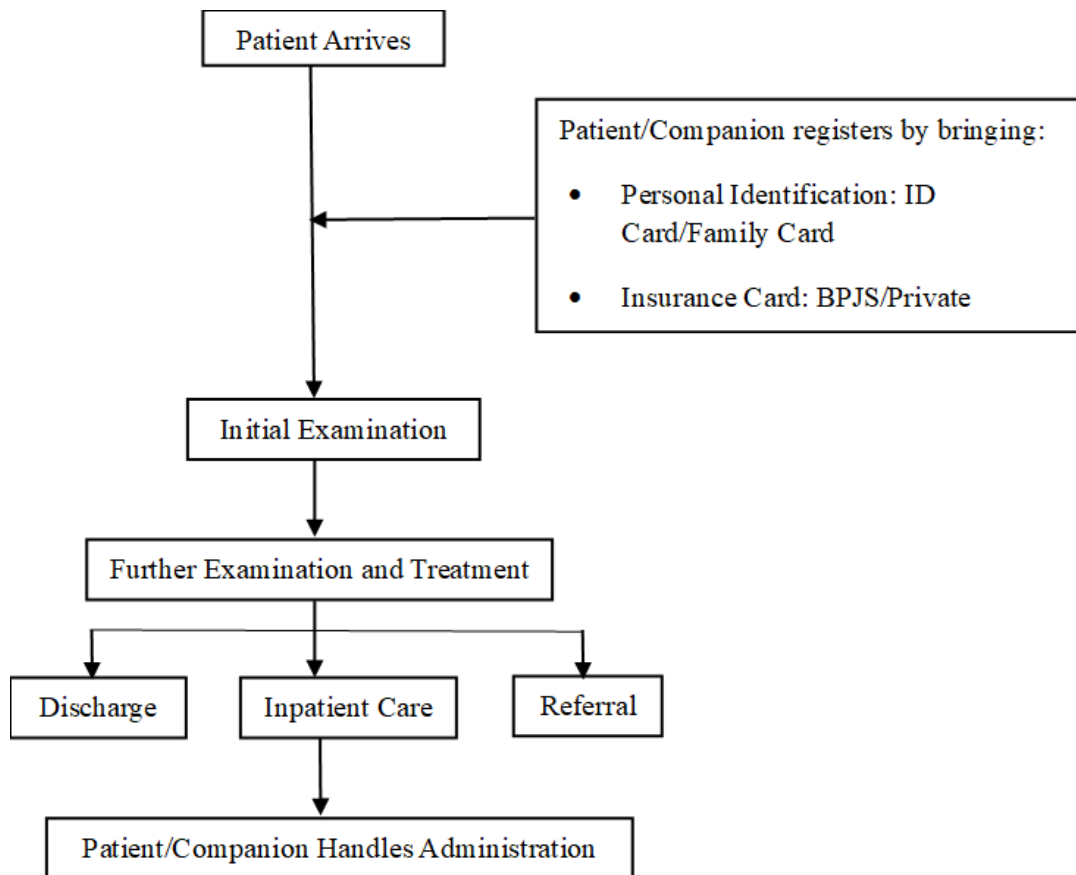


Figure 2. 1 Emergency Room service flow at Ngudi Waluyo Wlingi Regional Hospital

2.2 Emergency Departement Crowding

2.2.1 Definition of Emergency Department Overcrowding

According to the American College of Emergency Physicians (2019), Emergency Department (ED) overcrowding is defined as the demand for emergency services exceeding the available resource capacity, whether in terms of patient care within the ED, inpatient care, or both. Meanwhile, the Australasian College for Emergency Medicine (2023) defines Emergency Department crowding as a condition in which the function of the ED is compromised due to the number

of patients waiting to receive care, undergoing assessment and treatment, or awaiting discharge from the ED, exceeding the physical and/or workforce capacity available. Based on these definitions, it can be concluded that Emergency Department overcrowding is a condition in which the number of patients requiring emergency care exceeds the available resources, thereby impairing the overall function of the ED.

2.2.2 Causes of Emergency Department Overcrowding

The factors contributing to overcrowding, according to Savioli et al. (2022), are classified into three main categories. These three categories are independent yet interrelated and influenced by underlying contributors, making overcrowding a multifactorial and complex phenomenon. The three main categories of overcrowding causes according to (Savioli et al., 2022) are:

1. Input Factors

Input factors encompass various conditions that lead to an increased demand for emergency services, such as a rise in patient volume and the acuity level of patients visiting the Emergency Department (ED). According to this model, there are three general categories of services provided in the ED: (1) Emergency care; (2) Unscheduled urgent care; and (3) Safety net care.

1) Emergency Care

Emergency care refers to health services provided to patients experiencing life-threatening medical conditions or those requiring immediate attention. This service ensures rapid access for individuals in critical situations, guaranteeing timely delivery of necessary care. However, if emergency care is

not well-managed, it may result in a surge in patient volume within the ED, especially during emergency spikes or systemic referral issues.

2) Unscheduled Urgent Care

Unscheduled urgent care refers to health services offered to patients who require prompt medical attention but are not in immediate life-threatening conditions. These services often involve walk-in visits to clinics or healthcare facilities, where patients receive care for conditions needing rapid attention without necessarily requiring treatment in the ED. Within the conceptual model of ED crowding, unscheduled urgent care is considered a significant contributing factor.

3) Safety Net Care

Safety net care refers to healthcare services intended for individuals and populations with limited or no access to adequate medical care. Barriers to specialist care often force patients to seek assistance in the ED for conditions that could be managed in less urgent settings. This type of care is particularly critical for patients who are uninsured, underinsured, or without a regular source of medical care, causing them to rely heavily on the ED to meet all their healthcare needs.

2. Throughput Factors

Throughput factors refer to issues within the ED itself that lead to overcrowding. This part of the model emphasizes the need for internal evaluation and adjustment of ED care processes to enhance efficiency and effectiveness, especially in aspects that significantly affect patient length of stay and resource utilization. According to

Savioli et al. (2022), throughput consists of two crucial phases: the first phase includes triage, room placement, and provider assessment, while the second phase includes diagnostic testing and ED treatment (Savioli et al., 2022).

3. Output Factors

Output factors relate to patients who remain boarded in the ED, the availability of hospital beds, and delays in patient transfer both internally and externally. A shortage of inpatient beds, along with limited home care services, represents one of the primary causes. The reduction in hospital bed availability by more than 50% in some cases over the past two decades is a global issue that hampers patient discharge and decreases inpatient capacity. Consequently, overcrowding occurs when patients who should be admitted to inpatient wards must remain in the ED for continued medical care (Savioli et al., 2022).

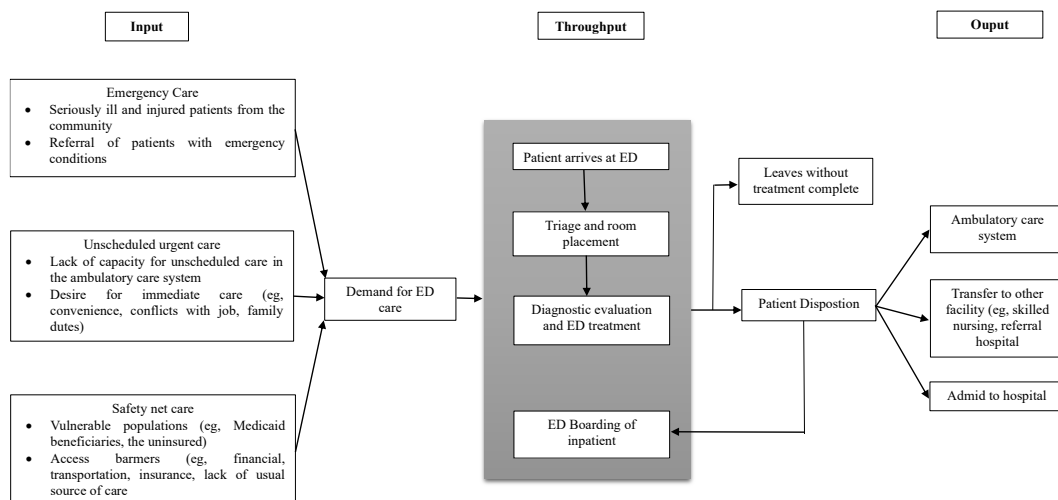


Figure 2. 2 Conceptual Model of Input, Throughput, and Output in Overcrowding Emergency Room (Asplin et al., 2003)

2.2.3 Impact of Emergency Department Overcrowding

Overcrowding in the Emergency Department (ED) is considered one of the primary factors hindering the provision of high-quality emergency healthcare and patient care services (Puspitasari et al., 2024). Moreover, ED performance is often evaluated based on overcrowding indicators such as patient wait times, visit duration, and the proportion of patients treated within triage targets (Hidayah et al., 2020). Overcrowding leads to a demand for care that exceeds the capacity of physicians and nurses to deliver high-quality services. The high demand for emergency services results in a decline in care quality, which in turn decreases patient satisfaction and increases ED mortality rates (Rindiana Putri et al., 2023).

According to a study by Morley et al. (2018), ED overcrowding negatively impacts patients, staff, and the hospital system. For patients, the consequences include delays in assessment and initiation of care, increased risk of errors including medication errors reduced patient satisfaction, prolonged ED Length of Stay (LOS), deterioration in clinical condition, and increased mortality rates. For ED staff, overcrowding contributes to higher stress levels and fatigue, increased exposure to workplace violence, and the inability to adhere to established standard operating procedures. Meanwhile, the impact on the hospital system includes prolonged Emergency Department Length of Stay (EDLOS) as well as increased Inpatient Length of Stay (IPLOS) (Jung et al., 2021).

2.3 Concept of Emergency Department Length of Stay (EDLOS)

2.3.1 Definition of Emergency Department Length of Stay (EDLOS)

Emergency Department Length of Stay (EDLOS) is defined as the total duration a patient remains in the Emergency Department, starting from the time of registration until the patient physically leaves the emergency room—either to be admitted to an inpatient ward or discharged home (Asman Harahap et al., 2022a). EDLOS serves as an indicator to assess the efficiency and effectiveness of emergency medical services (Dwisari & Sari, 2024). According to the Electronic National Ambulatory Care Reporting System (eNACRS), EDLOS is the interval between the time of registration or triage and the actual time the patient exits the ED, either for hospital admission or following the physician's disposition for discharge (Mailani Fitri & Sari, 2024).

2.3.2 Target Emergency Department Length of Stay (EDLOS)

International targets for Emergency Department Length of Stay (EDLOS) vary significantly depending on national guidelines and patient needs in each region. The National Emergency Access Target (NEAT) in Australia stipulates that the time from a patient's arrival to their departure from the Emergency Department whether through hospital admission, discharge, or transfer should occur within 4 hours. The New South Wales Ministry of Health also sets an emergency access target of 4 hours, divided into 2 hours for assessment and clinical management and/or stabilization, 1 hour for specialist intervention, and 1 hour for transfer of care. This target framework developed by the New South Wales Ministry of Health has also been adopted in countries such as Australia, New Zealand, and the United

Kingdom (Sookmee et al., 2024). In Indonesia, the implementation of ED Length of Stay (LOS) targets has not been fully established. However, according to the Regulation of the Minister of Health No. 856 of 2009 on Emergency Nursing Service Standards, in conditions of ED overcrowding, ED management is permitted to extend a patient's stay up to 6–8 hours. At RSUD Ngudi Waluyo Wlingi, the targeted LOS for ED patients is greater than 6 hours (Pakpahan et al., 2017).

2.4 Concept of Time Frame Guide Emergency Model of Care

2.4.1 Definition of Emergency Model of Care

The Emergency Model of Care (MOC) was created by the New South Wales (NSW) Ministry of Health in 2006 and updated on July 12, 2013. The Emergency Model of Care (MOC) seeks to address key issues in emergency services by establishing guidelines for an "ideal patient journey" in the emergency department to ensure that emergency care is provided in a timely and high-quality manner (NSW Ministry of Health, 2012). According to the model proposed by the NSW Ministry of Health (2012), to achieve the ideal patient journey, serious attention needs to be given to:

1. Directing the right patient to the right place for care, supported by adequate resources to ensure smooth patient flow in the ED;
2. Conducting initial assessments and diverting patients to appropriate care models, both within and outside the ED;
3. Developing specialized care models for specific patients;
4. Providing patient care with a team-based approach;

5. Ensuring that tasks are performed by the most efficient care providers (where "efficiency" means a balance between cost, quality, and duplication of effort);
6. Providing coordinated patient care, including collaboration among consulting specialists, diagnostic services, and community care;
7. Implementing effective monitoring and evaluation measures

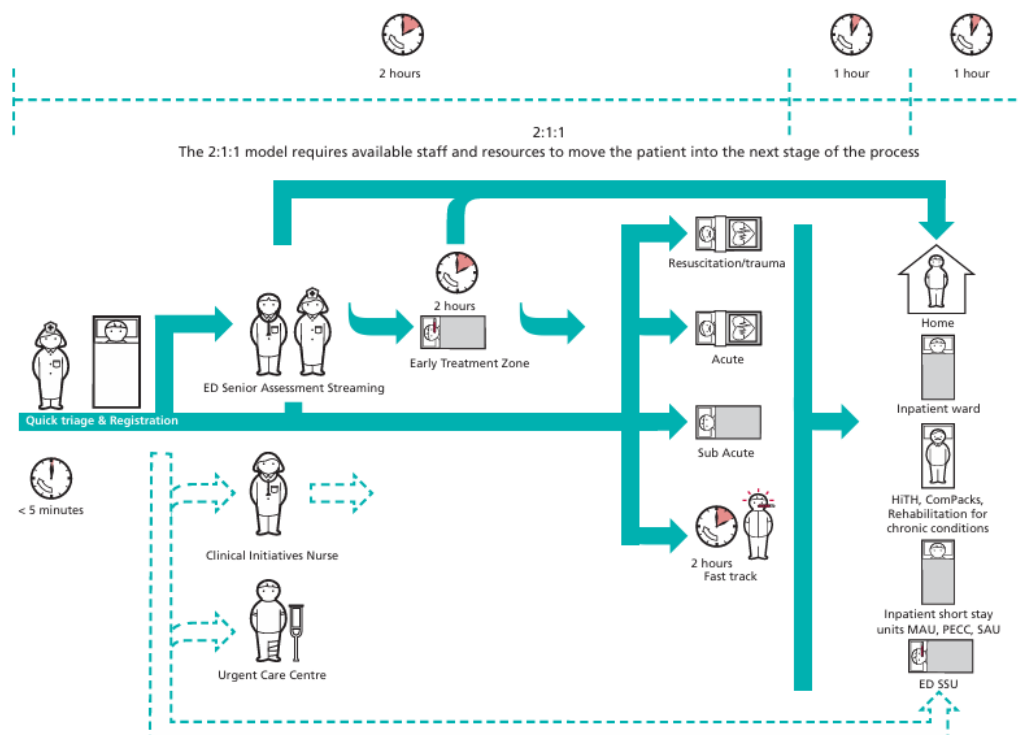


Figure 2. 3 The ideal patient journey in the ED and the concept of the emergency model of care (NSW Ministry of Health, 2012)

2.4.2 Time Frame Guide Emergency Model of Care (2:1:1)

Time Frame Guide Emergency Model of Care is a process that divides the 4-hour timeframe of the emergency access target for patients treated in the ED into three manageable time frames, namely:

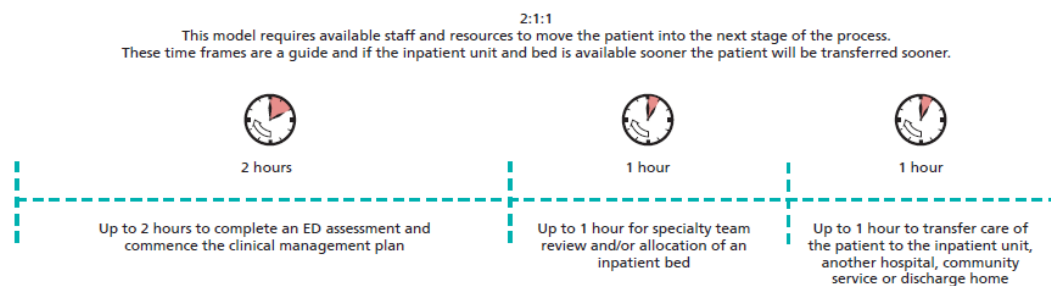


Figure 2. 4 Time Frame Guide Emergency Model of Care (2:1:1)

1. Assessment Time in the ED (Time Frame 1)

Time frame 1 is a 2-hour period calculated from the patient's arrival at the ED, followed by triage, ED assessment, diagnostic examinations (laboratory/radiology), and the provision of clinical management and/or patient stabilization. Triage is the rapid and accurate initial assessment of patients upon arrival at the Emergency Department (ED). In the triage process, rapid and accurate handling is required to determine the criteria for patients needing immediate attention (Purnamasari Eka Putri et al., 2022).

After patients undergo triage, they are assigned priorities: red indicates priority 1 (P1), yellow indicates priority 2 (P2), and green indicates priority 3 (P3). P1 requires management within 0 minutes (as quickly as possible), P2 requires management within <30 minutes, and P3 requires management within <60 minutes. Clients then undergo an initial assessment, which aims to evaluate

the patient's health condition more deeply. The initial assessment process includes evaluating vital signs, assessing the level of consciousness, and identifying injuries or medical conditions that could be life-threatening (Aklima et al., 2023; Puspitasari et al., 2024).

After the initial assessment, diagnostic examinations are performed to identify, diagnose, or evaluate potential medical conditions. Thus, the results of the initial assessment provide a strong basis for selecting appropriate diagnostic tests, enabling doctors to gain a clearer understanding of the patient's health and plan suitable care (Pines et al., 2023). Diagnostic or supporting examinations include several types of tests such as laboratory tests and radiology.

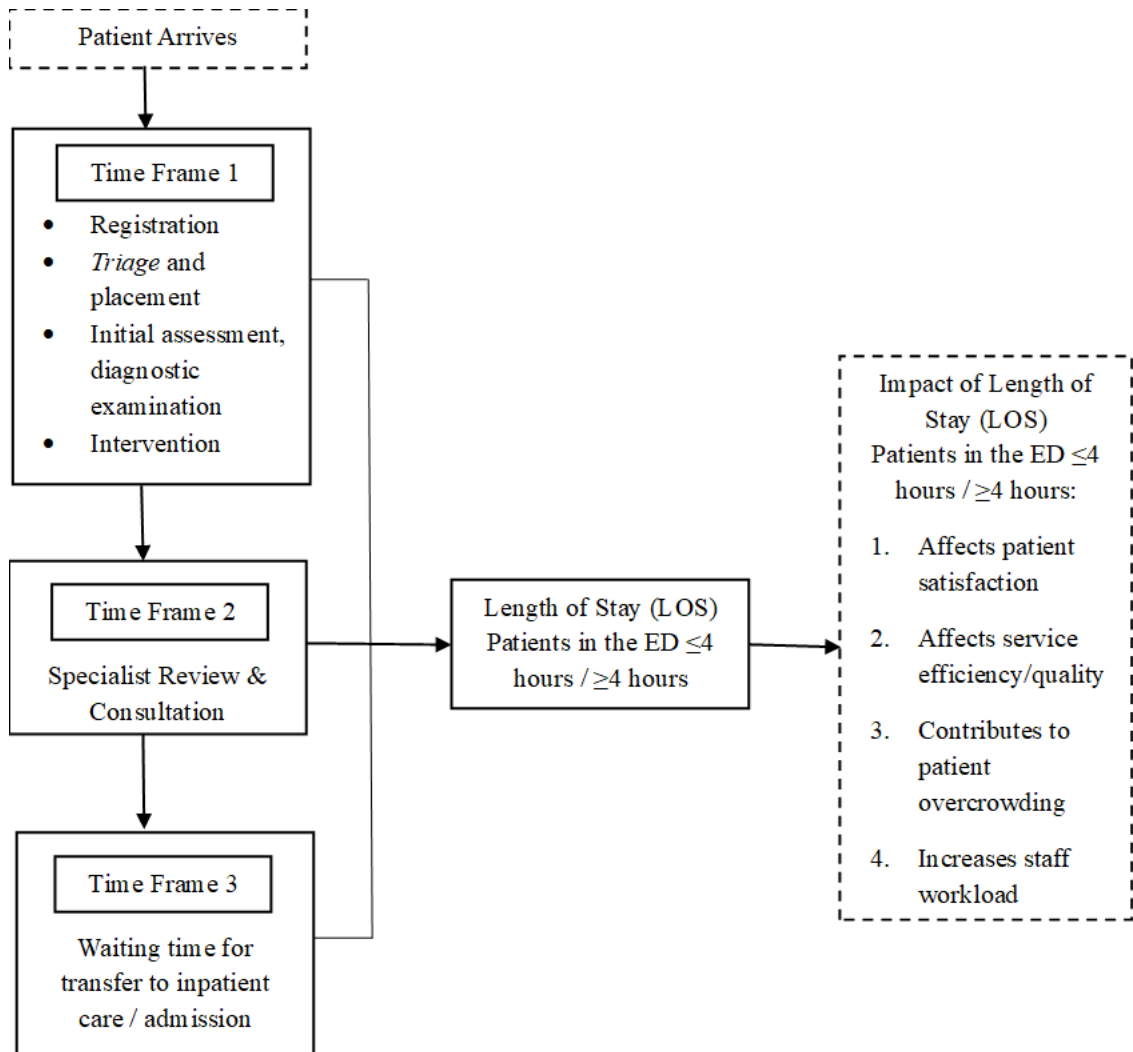
2. Review and Specialist Doctor Consultation Time (Time Frame 2)

Within Time Frame 2, a 1-hour period is allocated for review and specialist doctor consultation. Review and specialist doctor consultation are carried out to determine a more accurate diagnosis, enabling appropriate care to be provided to support the patient's health. Time Frame 2 refers to the duration required by the doctor or specialist team from the start of the patient's initial assessment until the patient receives a diagnosis or medical decision from the specialist doctor, either directly or online (Ismail, 2018; Tamasoleng et al., 2023). Consultation time is measured by calculating the duration from when the ED doctor first consults until the patient's disposition decision is made (Novita et al., 2023).

3. Patient Transfer Time (Time Frame 3)

Within Time Frame 3, 1 hour is allocated for patient transfer. Patient transfer time is the duration required to transfer a patient from the ED to another unit or facility, such as an inpatient ward, operating room, ICU, or external facility if referral or patient discharge is required. Patient transfer time encompasses the entire process from the decision to move the patient until the patient physically leaves the ED room and is received at the destination location (Asman Harahap et al., 2022).

2.5 Theoretical Framework



Explanation:

	: Researched
	: Not Researched
	: Has an effect

Figure 2. 5 Conceptual framework of analysis of factors related to length of stay in the ER based on the Time Frame Guide Emergency Model of Care approach

2.6 Hypotheses

In this study, the following hypotheses can be proposed:

Hypothesis H1:

1. There is a relationship between assessment time and the Length of Stay of non-trauma Category P2 patients using the Time Frame Guide Emergency Model of Care approach in the ED of Ngudi Waluyo Wlingi Regional General Hospital.
2. There is a relationship between review and consultation time and the Length of Stay of non-trauma Category P2 patients using the Time Frame Guide Emergency Model of Care approach in the ED of Ngudi Waluyo Wlingi Regional General Hospital.
3. There is a relationship between patient transfer time and the Length of Stay of non-trauma Category P2 patients using the Time Frame Guide Emergency Model of Care approach in the ED of Ngudi Waluyo Wlingi Regional General Hospital.
4. There is a dominant factor associated with the Length of Stay of non-trauma Category P2 patients using the Time Frame Guide Emergency Model of Care approach in the ED of Ngudi Waluyo Wlingi Regional General Hospital.