

## LITERATURE REVIEW : THE EFFECTIVENESS OF AUSTRALASIAN TRIAGE SCALE TO TREATMENT IN THE EMERGENCY DEPARTMENT

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**Abstract: Literature Review : The Effectiveness of Australasian Triage Scale To Treatment In The Emergency Department.** As a triage assessment instrument, the Australasian Triage Scale (ATS) displays acceptable validity and reliability. However, its ability in appropriately judging lower triage groups is limited. The study reveals that the ATS successfully assesses the right level of urgency for patient treatment, as evidenced by the maximum waiting times. However, the applicability of these durations differs based on the triage category. Triage tools have not been shown to be effective in assessing criteria other than urgency, such as patient complexity and resource allocation. As a result, the study indicates that, while the ATS accurately and authentically categorizes patients based on their acute character, it fails to effectively analyze aspects such as complexity and workload in the emergency department (ED).

**Keywords:** triage, urgency, emergency department

**Abstrak: Kajian Pustaka : Efektivitas Skala Australasian Triage Terhadap Perawatan di Departemen Kegawatdaruratan.** Sebagai instrumen penilaian triase, Australasian Triage Scale (ATS) menampilkan validitas dan reliabilitas yang dapat diterima. Namun, kemampuannya dalam menilai kelompok triase yang lebih rendah terbatas. Studi mengungkapkan bahwa ATS berhasil menilai tingkat urgensi yang tepat untuk perawatan pasien, terbukti dengan waktu tunggu yang maksimal. Namun, penerapan durasi ini berbeda berdasarkan kategori triase. Alat triase belum terbukti efektif dalam menilai kriteria selain urgensi, seperti kompleksitas pasien dan alokasi sumber daya. Akibatnya, studi ini menunjukkan bahwa, sementara ATS secara akurat dan otentik mengkategorikan pasien berdasarkan karakter akutnya, ATS gagal menganalisis aspek-aspek seperti kompleksitas dan beban kerja di departemen gawat darurat (ED) secara efektif.

**Kata Kunci:** triase, urgensi, gawat darurat

### INTRODUCTION

The term "triage" is derived from the French word "trier," which refers to the categorization and organizing of medical problems. Triage in medicine refers to the systematic categorizing of patients based on the severity of their diseases, with the goal of defining the priority and order of care for many patients (Yancey & O'Rourke, 2022).

The concept of emergency triage originated in military medicine for battlefield physicians. Historical documents from the 18th century show how doctors in the field would quickly examine troops and determine whether or not medical treatment could be provided to the injured individual. Baron Dominique Jean Larrey, a distinguished French military surgeon who served as

the senior physician of Napoleon Bonaparte's imperial guard, established a method based on the immediate evaluation and identification of injured troops in the middle of combat turmoil (Crumplin, 2002).

The earliest triage approaches prioritized dealing with circumstances involving a large number of victims. Numerous core triage ideas, such as classifying patients as immediate, urgent, or non-urgent, as well as the addition of a holding category in combat scenarios, remain relevant and useful in today's mass casualty crises and military contexts. The triage sieve is still extant and used by military organizations in several countries, including NATO military organisations, the United Kingdom, the Netherlands, Sweden, India, and Australia (Robertson-Steel, 2006).

Weinerman et al. conducted the first thorough study of civilian emergency departments using triage in 1964. Triage is still widely used in the medical field today. Triage is divided into three stages: prehospital triage, incident site triage, and triage upon admission to the emergency department. Triage systems are used all around the world, but the fundamental goal of triage is to provide patients with efficient and focused medical treatment while maximizing resource usage and scheduling (Iserson & Moskop, 2006).

The World Health Organization (WHO) has produced recommendations for Emergency Triage Assessment and Treatment (ETAT) to identify life-threatening diseases in children, which are especially common in poor nations. These diseases include airway blockage, respiratory infections, shock, altered central nervous system function (such as coma or convulsions), and severe dehydration. These suggestions have been derived from the Advanced Paediatric Life Support guidelines that are routinely utilized in industrialized countries (WHO, 2005). According to Yancey CC et al emergency triage evaluation and treatment procedures vary around the globe, however there are five typical assessment categories.

Examples include the Emergency Severity Index (ESI) in the United States, the Australasian Triage Scale, the Canadian Triage System, and the Manchester Triage System (Yancey & O'Rourke, 2022).

In the United States, the START (Simple Triage and Rapid Treatment) triage approach is extensively used, especially for patients aged 8 (eight) and above. This method seeks to establish the triage category within one minute by examining the patient's pulse, respiration rate, capillary refill time, presence of bleeding, and capacity to follow instructions. For children, the Jump-START (Simple Triage and Rapid Treatment) triage approach is widely used, which is based on the previously described START triage algorithm. However, it takes into account the increased possibility of respiratory failure in young patients as well as their reduced ability to interpret spoken directions. It is critical to understand that triage is a dynamic process, which means that a patient's triage category might change over time (Krafft *et al*, 2003).

In Indonesia, the triage procedure adheres to the criteria provided in Minister of Health Regulation Number 47 of 2018. The Australasian Triage Scale (ATS) or the Emergency Severity Index (ESI) are the main triage methods used for evaluating hospital accreditation. The primary goal of the ATS is to guarantee that patients who come at emergency departments (EDs) receive medical attention according on their level of clinical urgency and are assigned to the appropriate location for examination and treatment. Furthermore, the ATS aids in describing the variety of cases observed in the department (Triage, 2023).

## **METHOD**

This research was descriptive research that using a literature review design which was aims to describe the effectiveness of Australasian Triage scale to treatment in the emergency department.

## DISCUSSION

### Review of ATS

The Australasian Triage Scale (ATS) was developed in Australia, and it puts patients into five categories based on their level of urgency, ranging from emergency life-threatening diseases (Category 1) to less urgent situations (Category 5) (At Table 1). The ATS is a significant tool for healthcare personnel in the Emergency Department (ED) to assess the severity of arriving patients

(Christ *et al*, 2010; Yousif *et al*, 2005). While the ATS typically performs well in the ED, reaching total unanimity still necessitates improvements (Ebrahimi *et al*, 2015). The triage decision-making process utilizing the ATS is highly variable. Furthermore, a variance analysis revealed a possible association between parameters such as healthcare professionals, patient characteristics, and environmental conditions and the time of the triage procedure (Gerdtz & Bucknall, 2001).

**Table 1. An Examination of The Emergency Department Triage System**

System	Grades	References
Canadian Triage and Acuity Scale	<ul style="list-style-type: none"> <li>• CTAS 1: Immediate physician assessment and life-saving interventions</li> <li>• CTAS 2: Urgent medical examination within 15 minutes</li> <li>• CTAS 3: Required medical evaluation within 30 minutes</li> <li>• CTAS 4: Less urgent, medical assessment within 60 minutes</li> <li>• CTAS 5: Non-emergency physician evaluation within 120 minutes</li> </ul>	<p>Beveridge R, Clarke B, Janes L, et al. 1999. Canadian Emergency Department and Triage Scale: implementation guidelines. <i>Can J Emerg Med</i>, 1(3 Suppl): S1–24</p> <p>Beveridge R, Ducharme J, Janes L, Beaulieu S, Walter S. 1999. Reliability of the Canadian emergency department triage and acuity scale: interrater agreement. <i>Ann Emerg Med</i>, 34(2):155–9</p>
Emergency Severity Index	<ul style="list-style-type: none"> <li>• ESI 1: An immediate resuscitation intervention is required.</li> <li>• ESI 2: A serious condition with a high risk level.</li> <li>• ESI 3: A variety of healthcare resources are required.</li> <li>• ESI 4: A single healthcare resource is required.</li> <li>• ESI 5: There are insufficient healthcare resources.</li> </ul>	<p>Gilboy N, Tanabe P, Travers D, Rosenau A, Eitel DR. 2005. Emergency Severity Index, Version 4: Implementation Handbook. Agency for Healthcare Research and Quality, Rockville, MD.</p>
Australian Triage Scale	<ul style="list-style-type: none"> <li>• Category 1: Immediate risk to life requiring urgent assessment</li> <li>• Category 2: Time-critical intervention, evaluation, and treatment within 10 minutes</li> <li>• Category 3: Evaluation and treatment within 30 minutes for emergencies with potential life-</li> </ul>	<p>Australasian College for Emergency Medicine. 2006. P06 Policy on the Australasian Triage Scale. West Melbourne, Australia, revised 2006. Available at <a href="http://www.acem.org.au">http://www.acem.org.au</a>.</p> <p>Australasian College for Emergency Medicine. 2016. Guidelines on the Implementation of the Australasian Triage Scale in Emergency</p>

	<p>threatening consequences or situational urgency</p> <ul style="list-style-type: none"> <li>• Category 4: Evaluation and treatment within 60 minutes for potentially critical or urgent conditions, involving significant complexity or severity</li> <li>• Category 5: Non-urgent cases requiring evaluation and treatment within 120 minutes</li> </ul>	<p>Departments. Australasian College for Emergency Medicine: West Melbourne.</p>
Manchester Triage Scale	<ul style="list-style-type: none"> <li>• Category 1: emergent = red</li> <li>• Category 2: critical = orange</li> <li>• Category 3: high-priority = yellow</li> <li>• Category 4: routine = green</li> <li>• Category 5: low-priority = blue</li> </ul>	<p>Mackway-Jones K, Marsden J, Windle J, Manchester Triage Group. 2006. Emergency Triage, 2nd edn. Blackwell Publications: Oxford</p>

### Triage Assesment

Triage acts as the first point of contact between the general public and the Emergency Department (ED). It seeks to strike a compromise between efficiency and comprehensiveness, with a goal assessment duration of two to five minutes. In addition to analyzing the patient's presenting complaint and general look, the triage examination may include critical physiological findings. Vital signs should only be examined during triage if essential to establish urgency or if time allows. Patients classified as ATS Category 1 or 2 need to be sent immediately to an appropriate institution for assessment and treatment. The attending nurse should do a more extensive nursing evaluation on these patients. A diagnosis is not made during a triage evaluation. It is not banned to initiate investigations or make referrals from triage if time allows (Australasian College for Emergency Medicine, 2016). There are four conditions that must be met for there to be a triage system (Mackway-Jones K, Marsden J, Windle J, Manchester Triage Group. 2006):

a. There should be a resource shortfall compared to the need.

- b. In such cases, a method established by the health authorities should be used (point A).
- c. The persons in charge of carrying out the system have received enough training. There is no need for triage when there is no shortage; instead, the medical institution will make every attempt to treat each patient. Any staff involved in this procedure must follow a triage policy set up by facility management or health authorities. The goal of this stage is to evaluate the possible advantages for the entire community and population as a whole, rather than simply a section of it.
- d. Skilled professionals who continuously use triage to assure fairness and avoid prejudice.

### Time To Treatment

The indicated time to treatment for each ATS Category is the longest length of time a patient in that category may have to wait before being assessed and obtaining medical care. In the more severe categories, examination and

therapy should take place concurrently. Patients should be seen as soon as possible and no longer than the stated maximum time restrictions. The descriptions of Categories 1-4 imply that examinations and treatments may be delayed beyond the specified intervals, which may impair the therapeutic result. The maximum waiting period stated for Category 5 establishes a benchmark for medical service delivery (At Table 2).

When a patient's waiting time falls within or below the stated maximum waiting time permitted depending on their ATS Category, the Emergency Department is regarded to have satisfied the performance standards for that specific instance. It is critical to track and evaluate indicator performance across multiple patient presentations (Aljazairi, 2019).

**Table 2. Relationship Between Treatment Time and ATS Type**

ATS Category	Treatment Intensity	Performance Indicator Limit
ATS 1	Immediate	100 %
ATS 2	10 Minutes	80 %
ATS 3	30 Minutes	75 %
ATS 4	60 Minutes	70 %
ATS 5	120 Minutes	70 %

The triage phase of patient care is distinguished by the start of essential examinations and treatments, signaling the start of the patient's medical attention.

- a. It acts as the first point of contact between the patient and the physician in charge of their treatment, and is usually referred to as the "Time seen by doctor."
- b. It depicts the first encounter between a patient in the emergency department (ED) and nursing personnel working under the clinical supervision of a physician. This is frequently referred to as the "Time seen by nurse."
- c. When a patient is handled according to a documented, problem-specific clinical route, protocol, or guideline authorized by the Director of Emergency Medicine, it acts as the initial point of contact between the patient and the healthcare personnel carrying out the protocol. This is often recorded as the first instance of "Time seen by nurse," "Time seen

by nurse practitioner," or "Time seen by doctor."

#### **Validity of ATS**

The clinical urgency, which refers to the time range in which a patient requires medical intervention, may be distinguished using the ATS (Acute Triage Scale), a valid grading system. According to the research, ATS categories 1 and 2 are trustworthy indications. The vast majority of cases seen in emergency departments are classed as ATS categories 3 and 4, whereas patients designated as ATS category 5 are frequently treated and identified consistently. As a result, the ATS is regarded as reliable and valid for the most severe triage groups (ATS 1 and 2). However, its dependability decreases for lower triage groups (ATS 3, 4, and 5) (Gerdtz *et al*, 2008).

#### **Comparison to Other Triage System**

The ATS's use of many categories to rank patients is one of the main distinctions it makes from previous triage methods. Other triage systems may utilize fewer or more categories than the five color-coded categories used by the

ATS (Resuscitation, Emergent, Urgent, Semi-urgent, and Non-urgent). The criterion applied to determine how serious a patient's condition is also another distinction. To award a score to each category, the ATS considers a number of elements, including the patient's vital signs, state of awareness, and anticipated time to treatment. The criteria used by other triage systems may be different, such as the patient's symptoms or the likelihood that the disease would get worse. Triage methods can also vary in terms of the amount of education and experience needed for

efficient triage. As an instance, whereas some alternative triage systems may have more liberal training requirements, the ATS stipulates a specific degree of training and continual education for healthcare professionals. In the end, the selection of a triage system will rely on the unique requirements and available resources of a hospital environment. Healthcare providers should carefully weigh the benefits and drawbacks of the various triage systems before selecting the one that best suits their requirements (Forero & Nugus, 2012).

**Table 3. Characteristics of the ATS in ED**

<b>Parameter</b>	<b>ATS</b>
Time for the preliminary evaluation	10 min
Time to make a medical appointment	Immediate / 10 / 30 / 60 / 120 min
Re-Triage	n.s.
Scale of Pain	Four-point scale
Pediatric cases	n. s., but recognized as important factor
List of the most likely diagnosis or prominent symptoms	Yes
Expected rates of admission	Based on recent reports
Materials for use or instruction	Limited

In terms of the amount of immediacy, there were only minor differences between the automated triage system (ATS) and the final conclusion. Triage transitions are critical in examining the measurement of input and output components in emergency department (ED) processes. Fitzgerald and colleagues argue that it is past time to recognise the differences in educational institutions and practices between countries. They also suggest the creation and assessment of an Intelligent Triage System (ITS) supported by an international collaborative approach aiming at building a triage research agenda. This undertaking would result in useful tools and assessment instruments for worldwide benchmarking and research activities (FitzGerarld *et al*, 2010; Jelinek, 2001; Jelinek, 2008).

### **CONCLUSION**

In summary, the findings imply that creative solutions for dealing with

the complexities of medical circumstances, as well as the seriousness of ailments, workload constraints, and staffing issues, are required. It is possible that relying on a single tool is not practicable. To measure the standard of care, it is necessary to analyze indicators for both system and clinical quality independently. During the triage phase, extra data may be collected for this assessment. However, developing such a system would take time and might lose relevance as more information is obtained, thus delaying triage and causing delays in obtaining care. Many of these data pieces may have been gathered previously.

Work may be categorised into four main categories in the medical environment to aid in the triage process. The first phase in the evaluation is to decide if the existing ATS (Australian Triage System) should be depended on simply to determine urgency, or if adjustments or a completely new

instrument are necessary. One concept is to use supplemental instructions, known as addenda, to give direction for specific activities, such as designating patients or locations in the triage process as "fast-track" or depending on the expected outcome (e.g., likelihood of hospital admission or discharge).

Second, it may be possible to develop a different workload indicator that can be used to compare medical departments and help in the development of staff profiles. Patient volume, acuity level, severity, complexity, and temporal patterns of patient visits are only a few of the non-comprehensive aspects that this indicator may detect.

Furthermore, a novel parameter could be employed to assess the overall effectiveness of the Emergency Department (ED) in terms of both clinical outcomes and system-wide performance. This could be presented in the form of a "balanced scorecard" that considers various factors such as procedural measurements and efficiency (e.g., time taken to provide care, Did Not Wait [DNW] rates, and length of hospital stay) along with quality measures of clinical care (e.g., time taken to administer pain relief; time taken for thrombolysis or catheterization procedures, accounting for overlapping processes). Other approaches, such as standardized definitions for cases and outcomes, could be utilized, and performance could be evaluated based on variables including, but not limited to, the ratio of complaints to compliments, incidences of falls and injuries within the ED, and rates of patients re-presenting to the ED after initial treatment.

An alternative metric for assessing the "comprehensive excellence" of an Emergency Department (ED) might be developed to recognize outcomes other than immediate patient treatment. For example, the aforementioned indicators of ED performance, educational accomplishments (such as trainee success rates in assessments, participation in conferences, publications, and teaching medical students), system-wide contributions

(such as involvement in committees at the institutional, hospital, state, and federal levels), and staff satisfaction index (including levels of contentment, leave utilization, and sick leave rates) could all be viewed as macroscopial.

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