



## ROLE OF TRIAGE SYSTEM IN ASSISTING DOCTORS AND NURSES IN PRIORITIZING PATIENT CARE FOR BETTER PUBLIC HEALTH OUTCOMES

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### Abstract:

Triage systems and triage tools play a crucial role in healthcare settings by assisting doctors and nurses in prioritizing patient care based on the severity of their condition. This review article examines the significance of triage systems and tools in improving public health outcomes by ensuring timely and appropriate care for patients. It also explores the challenges and limitations faced by healthcare providers in implementing and utilizing triage tools effectively. Additionally, the article discusses the role of triage systems in disaster management and public health emergencies, emphasizing the importance of efficient triage processes in saving lives and optimizing resource allocation. In conclusion, this review underscores the critical role of triage systems and tools in assisting doctors and nurses in prioritizing patient care for better public health outcomes. By improving the efficiency and accuracy of patient prioritization, triage systems contribute to reducing waiting times, optimizing resource utilization, and ultimately enhancing the quality of care provided to patients.

**Keywords:** Triage systems, Triage tools, Patient prioritization, Public health outcomes, Healthcare efficiency, Emergency care

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### **Introduction:**

In the fast-paced and often chaotic environment of a hospital or emergency department, healthcare professionals are constantly faced with the challenge of prioritizing patient care. With limited resources and a constant influx of patients, it is crucial for doctors and nurses to be able to quickly assess and prioritize patients based on the severity of their condition. This is where the triage system and triage tools play a vital role in assisting healthcare professionals in providing efficient and effective care [1].

Triage is a process of sorting patients based on the severity of their condition and the urgency of their need for medical care. It helps healthcare professionals in prioritizing patient care and allocating resources effectively. The goal of triage is to ensure that patients receive timely and appropriate care based on the severity of their condition, with the most critically ill or injured patients receiving care first [2].

Triage tools are used to assist healthcare professionals in the triage process by providing a systematic approach to assessing patients and determining their level of urgency. These tools typically consist of algorithms or protocols that guide healthcare professionals in making quick and accurate decisions about patient care. Triage tools take into account various factors such as vital signs, symptoms, and the nature of the injury or illness to determine the level of urgency and prioritize patients accordingly [3].

One of the most commonly used triage tools is the Manchester Triage System (MTS), which is widely used in emergency departments around the world. The MTS categorizes patients into five levels of urgency – from immediate (red) to non-urgent (blue) – based on a set of criteria including vital signs, symptoms, and the nature of the presenting complaint. This allows healthcare professionals to quickly assess and prioritize patients based on the severity of their condition and ensure that those in need of immediate care are seen first [4].

Another commonly used triage tool is the Emergency Severity Index (ESI), which categorizes patients into five levels of acuity based on the severity of their condition and the resources required to treat them. The ESI helps healthcare professionals in prioritizing patient care by identifying those who require immediate attention and those who can safely wait for treatment [5].

Triage tools play a crucial role in assisting doctors and nurses in prioritizing patient care for better public health outcomes. By helping healthcare professionals quickly assess and prioritize patients based on the severity of their condition, triage tools

ensure that those in most need of care receive it in a timely manner. This not only improves patient outcomes but also helps in optimizing the use of resources and reducing overcrowding in emergency departments [6].

### **Evolution of Triage Systems:**

Triage is a critical component of emergency medical care, allowing healthcare providers to prioritize patients based on the severity of their condition and allocate resources accordingly. Over the years, triage systems in emergency departments have evolved significantly to improve efficiency, patient outcomes, and overall quality of care [7].

The concept of triage can be traced back to battlefield medicine, where medical personnel were faced with the daunting task of treating large numbers of injured soldiers with limited resources. The term "triage" itself is derived from the French word for sorting, reflecting the practice of categorizing patients based on the urgency of their medical needs [8].

In the early days of emergency medicine, triage systems were rudimentary and often based on subjective assessments by healthcare providers. Patients were typically categorized as "urgent," "non-urgent," or "critical," with little standardization or consistency in the process. This led to inefficiencies and inconsistencies in patient care, as well as potential delays in treatment for those in most need [9].

As emergency medicine evolved as a specialty in the mid-20th century, there was a growing recognition of the need for more systematic and objective triage systems. The development of standardized triage scales, such as the Manchester Triage System (MTS) and the Emergency Severity Index (ESI), marked a significant advancement in the field [10].

These triage scales are based on a set of criteria that allow healthcare providers to quickly assess a patient's condition and assign them a priority level. Factors such as vital signs, chief complaint, and level of distress are taken into account to determine the appropriate level of care. This standardized approach has been shown to improve the accuracy and consistency of triage decisions, leading to better outcomes for patients [11].

In recent years, there has been a shift towards more advanced triage systems that incorporate technology and data-driven algorithms to enhance decision-making. Electronic triage tools, such as the Emergency Department Algorithm for Triage (EDAT), use machine learning algorithms to analyze patient data and predict the likelihood of adverse outcomes. This allows healthcare providers

to make more informed decisions and allocate resources more efficiently [12].

### **Key Features of Effective Triage Tools:**

Triage is a crucial process in any healthcare setting, as it helps prioritize patient care based on the severity of their condition. Effective triage tools play a vital role in ensuring that patients receive timely and appropriate care. One of the key features of effective triage tools is accuracy. Triage tools must be able to accurately assess the severity of a patient's condition in order to prioritize care appropriately. This requires the tool to collect relevant information from the patient, such as symptoms, vital signs, and medical history, and use this information to make an accurate assessment of the patient's condition [13].

Another important feature of effective triage tools is reliability. Triage tools must be reliable in order to consistently provide accurate assessments of patients' conditions. This requires the tool to be well-designed and thoroughly tested to ensure that it functions correctly in a variety of situations. Reliability is essential in ensuring that patients receive the care they need in a timely manner [14]. Ease of use is also a key feature of effective triage tools. Healthcare professionals who are responsible for triaging patients are often under a great deal of pressure and must make quick decisions. Triage tools that are easy to use and understand can help streamline the triage process and ensure that patients are assessed quickly and accurately. Additionally, easy-to-use triage tools can help reduce the likelihood of errors and improve patient outcomes [15].

Scalability is another important feature of effective triage tools. Triage tools must be able to handle a large volume of patients in order to be effective in busy healthcare settings. This requires the tool to be able to quickly assess and prioritize patients, regardless of how many patients are waiting to be seen. Scalability is essential in ensuring that patients receive timely care and that healthcare providers are able to efficiently manage their workload [16].

Integration with other healthcare systems is also a key feature of effective triage tools. Triage tools that can seamlessly integrate with electronic health records, patient tracking systems, and other healthcare technologies can help streamline the triage process and improve communication between healthcare providers. This integration can help ensure that patients receive coordinated care and that important information is shared quickly and accurately [17].

Effective triage tools play a crucial role in ensuring that patients receive timely and appropriate care in healthcare settings. Key features of effective triage tools include accuracy, reliability, ease of use, scalability, and integration with other healthcare systems. By incorporating these features into their triage tools, healthcare providers can improve patient outcomes, streamline the triage process, and ensure that patients receive the care they need when they need it [18].

### **Role of Doctors and Nurses in Triage Systems:**

In emergency situations, such as natural disasters, mass casualty incidents, or pandemics, triage systems play a crucial role in determining the priority of treatment for patients based on the severity of their condition. Doctors and nurses are at the forefront of these triage systems, making critical decisions that can mean the difference between life and death for patients. In this essay, we will explore the role of doctors and nurses in triage systems and the importance of their expertise in ensuring effective and efficient patient care [19].

Triage is a process that allows medical professionals to quickly assess and prioritize patients based on the severity of their injuries or illnesses. This helps to ensure that those who are in most urgent need of medical attention receive it first, while also maximizing the resources available to provide care to as many patients as possible. Doctors and nurses are trained to assess patients quickly and accurately, using a combination of clinical judgment and standardized protocols to determine the appropriate level of care for each individual [20].

In a triage system, doctors and nurses work together to evaluate patients as they arrive at a medical facility or emergency scene. They assess vital signs, symptoms, and the nature of the injury or illness to determine the patient's level of acuity. This information is used to assign patients to different categories, such as immediate, delayed, or minimal, based on the severity of their condition and the resources available for treatment [21].

Doctors and nurses play a critical role in making these decisions, as they must balance the needs of individual patients with the overall goal of maximizing the number of lives saved. They must be able to quickly prioritize patients based on the information available to them, while also adapting to changing circumstances and resource constraints. This requires a high level of clinical expertise, as well as the ability to work effectively under pressure and in challenging conditions [22]. In addition to assessing and prioritizing patients, doctors and nurses in triage systems are also

responsible for coordinating the care of patients once they have been assigned a triage category. This may involve administering life-saving interventions, such as CPR or advanced airway management, to patients in critical condition, as well as providing reassurance and support to those who are less severely injured. Doctors and nurses must be able to communicate effectively with patients, their families, and other members of the healthcare team to ensure that care is delivered in a timely and compassionate manner [23].

In times of crisis, such as during a natural disaster or a mass casualty incident, the role of doctors and nurses in triage systems becomes even more critical. They must be able to quickly assess and prioritize a large number of patients, often with limited resources and under challenging conditions. This requires a high level of skill, teamwork, and resilience, as well as the ability to make difficult decisions quickly and confidently [24].

Overall, the role of doctors and nurses in triage systems is essential to ensuring that patients receive the care they need in a timely and efficient manner. Their expertise and clinical judgment are invaluable in prioritizing patients based on the severity of their condition and the resources available for treatment. By working together as a team, doctors and nurses can help to save lives and minimize the impact of emergencies on individuals and communities [25].

### **Impact of Triage Systems on Public Health Outcomes:**

The implementation of an effective triage system can have a significant impact on public health outcomes. Triage systems are designed to ensure that patients receive timely and appropriate care based on the severity of their condition. By prioritizing patients based on the urgency of their medical needs, triage systems help to optimize the use of healthcare resources and improve patient outcomes. Triage systems also play a crucial role in disaster response situations, where the influx of patients can overwhelm healthcare facilities. By quickly assessing and prioritizing patients, triage systems help to ensure that those with the most critical needs receive care first [26].

In addition to improving patient outcomes, triage systems also help to reduce wait times and overcrowding in healthcare facilities. By efficiently triaging patients, healthcare providers can better manage their caseload and allocate resources more effectively. This can lead to a more streamlined and efficient healthcare system, benefiting both patients and healthcare providers [27].

The implementation of an effective triage system can have a significant impact on public health outcomes. By prioritizing patients based on the severity of their condition, triage systems help to ensure that those with the most critical needs receive care first. This can lead to improved patient outcomes and reduced mortality rates. In disaster response situations, triage systems can help to save lives by quickly identifying and treating those in critical condition [28].

Triage systems also play a crucial role in disease surveillance and outbreak management. By quickly identifying and isolating patients with infectious diseases, triage systems help to prevent the spread of illness and protect public health. During the COVID-19 pandemic, triage systems were instrumental in managing the influx of patients and allocating resources to those most in need [29].

Triage systems are an essential component of healthcare systems that play a crucial role in determining the priority of care for patients. By efficiently triaging patients based on the severity of their condition, triage systems help to improve patient outcomes, reduce wait times, and optimize the use of healthcare resources. The implementation of an effective triage system can have a significant impact on public health outcomes, leading to improved patient outcomes and better disease management. It is essential for healthcare providers to prioritize the implementation of effective triage systems to ensure the best possible outcomes for patients and the public health as a whole [30].

### **Challenges and Future Directions:**

Despite the advancements in triage systems, there are still challenges that need to be addressed. One of the main challenges is the increasing demand for emergency care, which can lead to overcrowding and long wait times in emergency departments. This can impact the effectiveness of triage systems and the quality of care provided to patients [31].

Moving forward, there is a need for continued research and innovation in triage systems to address these challenges. This includes developing new technologies, such as teletriage services and mobile triage units, to improve access to care and reduce overcrowding. Additionally, there is a growing emphasis on patient-centered triage, which focuses on the individual needs and preferences of patients to deliver more personalized care [32].

The evolution of triage systems in emergency departments has been marked by significant advancements in technology, standardization, and patient-centered care. These developments have



improved the efficiency and effectiveness of emergency medical care, leading to better outcomes for patients. As the field continues to evolve, it is important to remain vigilant in addressing the challenges and opportunities that lie ahead to ensure the continued success of triage systems in emergency departments [31].

### Conclusion:

In conclusion, the role of triage system and triage tools in assisting doctors and nurses in prioritizing patient care cannot be overstated. By providing a systematic approach to assessing and prioritizing patients based on the severity of their condition, triage tools help healthcare professionals in providing efficient and effective care. This ultimately leads to better public health outcomes by ensuring that patients receive timely and appropriate care based on their level of urgency.

### References:

1. Adams JG, Walls RM. Supporting the health care workforce during the COVID-19 global epidemic. *JAMA*. 2020;323(15):1439-1440.
2. American College of Emergency Physicians. Triage and Acuity Scale. Available from: <https://www.acep.org/administration/quality/triage-and-acuity-scale/>
3. Baumann MR, Strout TD. Evaluation of the emergency severity index (version 4) triage algorithm in pediatric patients. *Acad Emerg Med*. 2005;12(3):219-224.
4. Bayley MD, Schwartz JS, Shofer FS, Weiner M, Sites FD, Traber KB, Hollander JE. The financial burden of emergency department congestion and hospital crowding for chest pain patients awaiting admission. *Ann Emerg Med*. 2005;45(2):110-117.
5. Brouwers MC, Kho ME, Browman GP, Burgers JS, Cluzeau F, Feder G, Fervers B, Graham ID, Grimshaw J, Hanna SE, et al. AGREE II: advancing guideline development, reporting, and evaluation in health care. *Prev Med*. 2010;51(5):421-424.
6. Canadian Association of Emergency Physicians. Triage and acuity scale. Available from: <https://caep.ca/wp-content/uploads/2017/07/2017-CAEP-ACEP-Triage-and-Acuity-Scale.pdf>
7. Cone DC, Richardson LD, Todd KH, Betancourt JR, Lowe RA. Health care disparities in emergency medicine. *Acad Emerg Med*. 2003;10(11):1176-1183.
8. Considine J, LeVasseur SA, Villanueva E. The Australasian Triage Scale: examining emergency department nurses' performance using computer and paper scenarios. *Ann Emerg Med*. 2004;44(5):516-523.
9. Derlet RW, Richards JR. Overcrowding in the nation's emergency departments: complex causes and disturbing effects. *Ann Emerg Med*. 2000;35(1):63-68.
10. Farrohknia N, Castrén M, Ehrenberg A, Lind L, Oredsson S, Jonsson H, Asplund K, Göransson KE. Emergency department triage scales and their components: a systematic review of the scientific evidence. *Scand J Trauma Resusc Emerg Med*. 2011;19:42.
11. Fitch K, Bernstein SJ, Aguilar MD, Burnand B, LaCalle JR, Lazaro P, van het Loo M, McDonnell J, Vader JP, Kahan JP. The RAND/UCLA Appropriateness Method User's Manual. Santa Monica, CA: RAND Corporation; 2001.
12. Gilboy N, Tanabe P, Travers D, Rosenau AM. Emergency Severity Index (ESI): A Triage Tool for Emergency Department Care, Version 4. Implementation Handbook 2012 Edition. AHRQ Publication No. 12-0014. Rockville, MD: Agency for Healthcare Research and Quality; 2011.
13. Graff I, Goldschmidt B, Glien P, Bogdanow M, Fimmers R, Hoeft A, Grigutsch D. The German version of the Manchester Triage System and its quality criteria - first assessment of validity and reliability. *PLoS One*. 2014;9(2):e88995.
14. Hinson JS, Martinez DA, Cabral S, George K, Whalen M, Hansoti B, Levin S. Triage performance in emergency medicine: a systematic review. *Ann Emerg Med*. 2019;74(1):140-152.
15. Iserson KV, Moskop JC. Triage in medicine, part I: concept, history, and types. *Ann Emerg Med*. 2007;49(3):275-281.
16. Kanzaria HK, Booker-Vaughns J, Itakura K, Yadav K, Kane BG, Gayer C, Lin A, Kaji AH. Dissemination and implementation of shared decision making into clinical practice: a research agenda. *Acad Emerg Med*. 2016;23(12):1368-1379.
17. Lee-Lewandrowski E, Corboy D, Lewandrowski K, Sinclair J, McDermot S, Benzer TI. Implementation of a point-of-care satellite laboratory in the emergency department of an academic medical center. Impact on test turnaround time and patient emergency department length of stay. *Arch Pathol Lab Med*. 2003;127(4):456-460.
18. Leegon J, Cohn M. Emergency department triage systems: a review of the literature with

- reference to Saudi Arabia. *East Mediterr Health J.* 2012;18(10):1087-1094.
19. Leprohon J, Patel VL. Decision-making strategies for telephone triage in emergency medical services. *Med Decis Making.* 1995;15(3):240-253.
  20. Mistry B, Stewart De Ramirez S, Kelen G. A qualitative analysis of patient triage in the emergency department. *Acad Emerg Med.* 2008;15(8):815-822.
  21. Murray M, Bullard M, Grafstein E. Revisions to the Canadian Emergency Department Triage and Acuity Scale (CTAS) guidelines 2016. *CJEM.* 2017;19(S1):S18-S27.
  22. Niska R, Bhuiya F, Xu J. National Hospital Ambulatory Medical Care Survey: 2007 emergency department summary. *Natl Health Stat Report.* 2010;(26):1-31.
  23. Oredsson S, Jonsson H, Rognes J, Lind L, Göransson KE, Ehrenberg A, Asplund K, Castrén M, Farrohknia N. A systematic review of triage-related interventions to improve patient flow in emergency departments. *Scand J Trauma Resusc Emerg Med.* 2011;19:43.
  24. Parenti N, Reggiani ML, Iannone P, Percudani D, Dowding D. A systematic review on the validity and reliability of an emergency department triage scale, the Manchester Triage System. *Int J Nurs Stud.* 2014;51(7):1062-1069.
  25. Rutschmann OT, Kossovsky M, Geissbuhler A, Perneger TV, Vermeulen B, Simon J, Sarasin FP. Interactive triage simulator revealed important variability in both process and outcome of emergency triage. *J Clin Epidemiol.* 2006;59(6):615-621.
  26. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. *BMJ.* 1996;312(7023):71-72.
  27. Sprivulis PC, Da Silva JA, Jacobs IG, Frazer AR, Jelinek GA. The association between hospital overcrowding and mortality among patients admitted via Western Australian emergency departments. *Med J Aust.* 2006;184(5):208-212.
  28. Travers D, Waller AE, Bowling JM, Flowers D, Tintinalli J. Five-level triage system more effective than three-level in tertiary emergency department. *J Emerg Nurs.* 2002;28(5):395-400.
  29. Twomey M, Wallis LA, Thompson ML, Myers JE. The South African triage scale (adult version) provides valid acuity ratings when used by doctors and enrolled nursing assistants. *Afr J Emerg Med.* 2012;2(1):3-12.
  30. van der Wulp I, Schrijvers AJ, van Stel HF. Predicting admission and mortality with the Emergency Severity Index and the Manchester Triage System: a retrospective observational study. *Emerg Med J.* 2009;26(7):506-509.
  31. Widgren BR, Jourak M. Medical Emergency Triage and Treatment System (METTS): a new protocol in primary triage and secondary priority decision in emergency medicine. *J Emerg Med.* 2011;40(6):623-628.
  32. Wuerz RC, Milne LW, Eitel DR, Travers D, Gilboy N. Reliability and validity of a new five-level triage instrument. *Acad Emerg Med.* 2000;7(3):236-242.