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May 2012

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## Recommended Citation

Ajani, K. (2012). Triage; a literature review of key concepts. *Journal of the Pakistan Medical Association*, 62(5), 487-9.  
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## Triage; a literature review of key concepts

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### Abstract

The emergency department (ED) - sometimes termed the emergency room (ER), or the accident & emergency (A&E) department - in a hospital or primary care facility that provides initial treatment to patients with a broad spectrum of illnesses and injuries, some of which may be life-threatening or requiring immediate attention. The earliest patients-physician encounter is the triage doctor/nurse who completes the preliminary evaluation before transferring care to another area of the ED or a different department in the hospital. A strong triage system is the backbone of an efficient ED. It indicates that the staff is capable of differentiating critically ill from the sick, and, consequently, of segregating patients who may need admission from those who will not. Thus it is essential for the health professionals to be well-versed with the concepts of triaging. This paper intends to review the basic definitions and the common types of triaging that is used commonly in hospitals.

**Keywords:** Triage, ER, Definitions.

### Introduction

The emergency department (ED)- sometimes termed as the emergency room (ER), or the accident & emergency (A&E) department, in a hospital or primary care department that provides initial treatment to patients with a broad spectrum of illnesses and injuries, some of which may be life-threatening or requiring immediate attention. In some countries, emergency departments have become important entry points for those without other means of access to medical care. It is the place which receives the sickest patients and is, undoubtedly, the main portal of entry for patients to be admitted to hospitals. It is the busiest unit in the hospital, catering to a high number of patients per day. It is very important, therefore, that patients are dealt with in the most efficient way possible during an ED encounter.

The earliest patient-physician encounter is the triage doctor/nurse, who completes the preliminary evaluation before transferring care to another area of the ED or a different department in the hospital. Triage comes from a French word 'Tier' which means to sort out or choose.<sup>1</sup> Triage in the emergency department is the process by which a patient is assessed upon arrival to determine the urgency and the type of

the problem and to designate appropriate healthcare resources to care for the identified problem.<sup>2</sup> The purpose is to put the right patient in the right area for the right treatment at the right time.

Functions performed by triage staff include initial assessment, physical examination, initial diagnostic studies, documentation and disposition. The expansion of the tasks required by triage staff extends the time required to assess each patient and slows the patient flow and, therefore, any system that is adapted must be designed to balance triage activity with the patient flow.

Emphasising the importance of triage, Blank, Santoro, Maynard, Provost and Keyes, 2007, say that the process of triage and acuity assignment is dynamic and should involve multiple re-assessments and possible re-assignments of acuity level.<sup>3</sup>

There are many types of triage systems that are being used by different kinds of hospitals. As a part of the 2001 Emergency Nurses Association (ENA) benchmarking survey, EDs were asked to identify the type of triage systems in place at their facility<sup>4</sup> (Table-1).

Type III is the comprehensive type of triage used by the majority of the institutions. Typical categories in type III are emergent, urgent or non-urgent. Further scales have been described using four or five categories,<sup>5</sup> which add immediate or life threatening category as the first or assess patients on a scale of 1-5 where 1 is the most sick and 5, the least. The typical common categories of any triage system are:

Priority-1 (Immediate) includes patients who are in a state of cardiovascular arrest or imminent collapse. These patients are attended to immediately in the Resuscitation Area. The presenting issue is a threat to life, limb or organ.

**Table-1: ENA survey of triage systems.**

Triage system used	% of respondents
No triage system	5.1%
Type I, (traffic director)	3.7%
Type II, (Spot check)	23.5%
Type III, (comprehensive)	63.1%
Other systems	1.1%
Did not respond	3.6%

ENA: Emergency Nurses Association.

**Table-2: Examples of prehospital triage scoring systems.<sup>7</sup>**

Name	Parameters	Notes
Prehospital Index	Systolic BP Pulse rate Respiratory rate Consciousness Penetrating wounds (chest or abdomen)	Scale is 0 to 24 (>3: major trauma)
CRAMS (Circulation, Respiration, Abdomen/Thorax, Motor, Speech)	Systolic BP or capillary refill Respirations Examination of trunk Motor function Speech pattern	Scale is 0 to 10 (<8: major trauma) Each parameter rated as normal, mildly abnormal, or highly abnormal
Revised Trauma Score	Systolic BP Respiratory rate GCS	0 to 7.8408 (<4: major trauma) GCS more heavily weighted
START (Simple triage and rapid treatment)	Ambulation Respiratory rate Capillary refill Consciousness	Stepwise algorithm designed for ease of use in mass casualty incident
GCS (Glasgow Coma Scale)	Eye response Verbal response Motor response	Scale is 3 to 15 (<8: severe brain injury)
MGAP (Mechanism, GCS, Age, arterial Pressure)	Mechanism (blunt) GCS Age (60 years) Systolic BP	Scale is 3 to 29 (<18: high risk)

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Examples of priority 1 include heart attack, severe injuries, severe bleeding, shock, etc. Priority-2 (emergent) includes patients with acute medical conditions that must be initially treated in the hospital. The patient is in a stable condition and does not require resuscitation. Examples include major limb fracture/dislocation, moderate injuries, severe abdominal pain and other severe medical illnesses like asthma. Priority-3 (urgent) covers patients with acute symptoms who are in a stable condition. Examples include minor abdominal pain, diarrhoea with mild dehydration, depression, non-cardiac chest pain, etc. Priority-4 (non-urgent) relates to patients who are stable and have complaints including earache, toothache, sore throat, suture removal and others. Such patients may be asked to visit the family physicians during the day hours.

Overall, triage tools should err on the side of reducing under-triage (i.e., increasing sensitivity), at the risk of encouraging over-triage (i.e., decreasing specificity). According to the American College of Surgeons, 5 percent is an acceptable under-triage rate, while acceptable over-triage rates may be as high as 50 percent.<sup>6</sup>

Stated above is a general guideline of triage at an ED. However, many other methods and types of triage exist worldwide. It is important that the basic rules and guidelines

meet similar outcomes for patient benefit. Different concepts and scoring systems used for triage of trauma patients at an ED and the pre-hospital stage are discussed below:

Triage of trauma victims, like the general triage, is the process of rapidly and accurately evaluating patients to determine the extent of their injuries and the appropriate level of medical care required. The goal is to transport the seriously injured patients to the area capable of providing appropriate care, while avoiding unnecessary transport of patients without critical injuries to critical or urgent health centres.

Proper pre-hospital triage of trauma victims depends on a number of factors, including the nature of the incident, the number of victims, available resources, transport time, and the clinical judgment of pre-hospital caretakers or first aiders. As an example, triage for a motor vehicle accident with multiple victims involves determining which patients are most severely injured and ensuring that they are immediately transported to the nearest hospital.

Triage scoring systems have been developed and are used to help healthcare personnel who attend to the patients before they are transported to a hospital. The ideal pre-hospital triage tool should be user-friendly, should result in consistent findings when applied by different clinicians, and

should accurately differentiate between victims with different priorities of care and treatment. No single best scoring system exists, but the scoring system selected should be based upon the type of incident, personnel, available resources and the preference of the institution.

Most scoring systems incorporate several types of criteria to differentiate major from minor trauma, including:

- ◆ Physiologic (e.g., blood pressure, level of consciousness)
- ◆ Anatomic (e.g., long bone fracture, surface area of burn)
- ◆ Mechanistic (e.g., height of fall, pedestrian hit by car)
- ◆ Age and co-morbidities

Most incorporate simple assessments of neurologic, respiratory and circulatory functions. Examples of such triage scoring tools include the Pre hospital Index, CRAMS score, Revised Trauma Score, START and MGAP (Table-2).

Respiration, Abdomen/Thorax, Motor, Speech), Revised Trauma Score, START and MGAP (Mechanism, GCS, Age, arterial Pressure) (Table-2).

Paramedic judgment is an important component of triage. One observational study found that assessment by experienced urban paramedics is as accurate in identifying critically ill trauma patients as three commonly used scoring systems.<sup>7</sup> Another observational study concluded that pre-hospital personnel can use a trauma triage tool to identify major trauma victims accurately.<sup>8</sup> Regardless of the triage system adopted, all pre-hospital and hospital personnel should be oriented with the system and periodic drills and exercises should be conducted to retain knowledge and skill. University hospitals can, and should, take a lead in providing hands-on training for pre-hospital personnel through NGOs to ensure development of competent and confident workers who can perform pre-hospital triaging. This would benefit the

EDs to control overcrowding and at large to reduce mortality and morbidity secondary to trauma.

## Conclusion

The emergency room (ER) is one of the main portals of entry to the hospital, and, thus, performs a significant role in the overall functioning of the hospital. The length of stay of a patient in the ER determines the overall quality of care administered to the client. The factors that affect the length of stay are varied, and are diverse for different institutions. A strong triage system is the backbone of an efficient ED. It indicates that the staff is capable of differentiating the critically ill from the sick, and, consequently, of segregating patients who may need admission from those who will not. It ensures that the ED staff does not ignore sick patients in fast track areas, or, alternatively, does not treat non-critical patients on a critical bed, thus denying healthcare to a needy patient. At best, even if patient care is not compromised, needless time is wasted in appropriate room placement of patients if triage is not proper.

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