

The Impact of Prehospital Triage in Trauma Patients

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- the most common causes of mortality throughout the world
- traffic accidents, disaster moments, CBRN events, terrorist attacks and fires are can be turned into chaos if not managed properly



Trauma



- In 2015, the number of patients who died at the scene of traffic accidents was 3831 while the number of patients who died within 30 days was 3699
- For 2016, these numbers are 3493-3907 respectively
- According to a study by Nathens and colleagues, there is a 9% difference in traffic accident death rates among states with and without a trauma system.

Traffic Accident

- arising from the need to define the urgent care priority of the wounded soldiers in the battlefield
- was applied with the idea of providing emergency care at the beginning of the 1800's
- began to practice in emergency department's of big cities in the early 1900's



Triage

- No matter how high or intense the number or demand is in urgent health services, there is no need for triage in capacity and sufficiency where available facilities can respond



- In the absence of adequate medical personnel and limited available resources, triage is necessary



Triage



- Before making contact with the patient, the prehospital care provider can evaluate the scene by
 - obtaining a general impression of the situation for scene safety
 - looking at the cause and results of the incident
 - observing family members and bystanders
- During the triage, provider should be informed about the infrastructure and possibilities of the region

Triage

- Protect the life of the injured patient
- Prevent possible loss of life or severe injuries
- Provide efficient use of limited resources at hand (personnel, materials, equipment, etc.)
- Provide the immediate first intervention, early and effective
- Ensure the transfer of the injured patient to the appropriate hospital

Purpose





- Should be less than 1 minute for each wounded
- Maximum 1 minute for on walk injured patients, maximum 3 minutes for lying injured patients
- There is no interest with the number of sick or wounded.

Rules

RULES

- The system is concerned with the instantaneous response capacity
 - The given code can not be replaced with better one
 - Should be re-done in each stage (incident place, transport, emergency service)
-



- The primary consideration when approaching any scene is the safety of the medical and rescue personnel
- When medical personnel become victims, they will no longer be able to assist other injured people
- Patient care needs to wait until the scene is secured.

Safety



- Threatening conditions to patient or rescuer safety include fire, downed electrical lines, explosives, hazardous materials (including blood or body fluid, traffic, floodwater, and weapons such as guns, knives), and environmental conditions
- Patients in a hazardous situation should be moved to a safe area before assessment and treatment begin

Rescuer Safety

- Ensure safety of work area with obstacles and positions so that emergency vehicles do not interrupt traffic flow (Right and Left Blocking)
- Shadowing, securing the workspace
- Routing, collapsing the path to the portion with less flow
- Illumination of all markings at night

These are the preventive movements for the road safety

Road safety



Dead heroes can not save lives



- is commander on the scene
- is not concerned with emergency care of patients or wounded
- is responsible for the general definition of the scene, the identification of all the additional capacity needed and the need for any kind of personnel at the scene

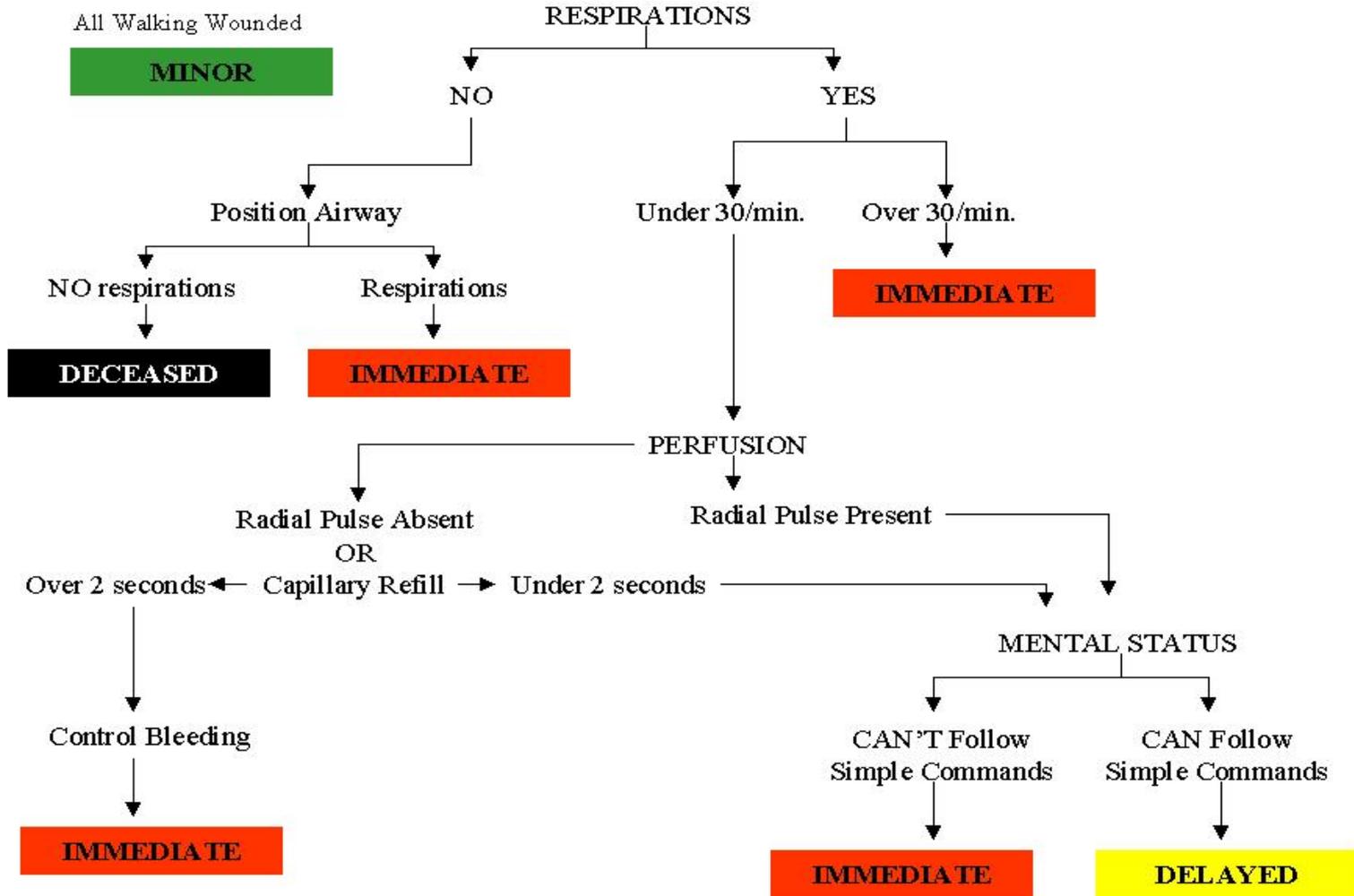


Triage Officer



The most current disaster triage model used today in the world is the triage system START (Simple Triage and Rapid Treatment).

START



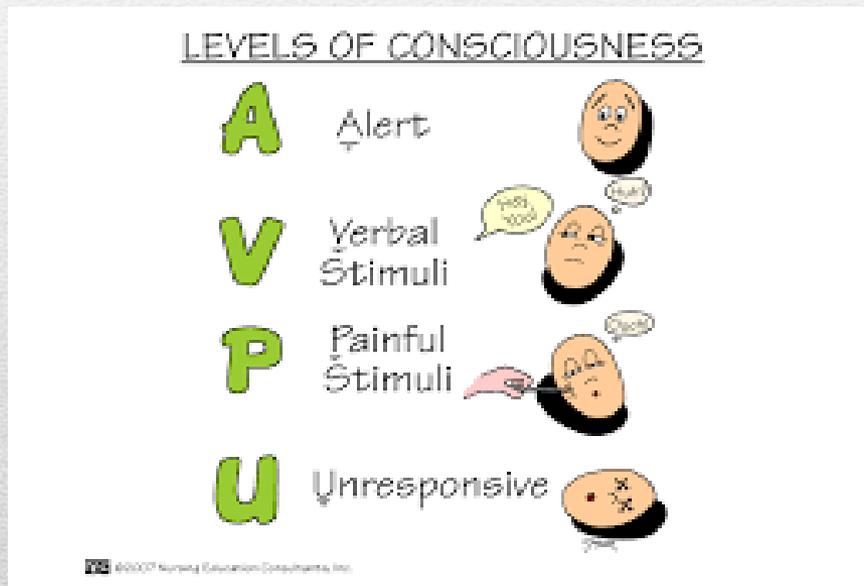
START

- Breathing
- Circulation
- Mental Status



red code identification

Consciousness control, which precedes the ABC of the first aid in normal circumstances, is the last evaluation criterion in the START Triage model.



In trauma triage, the possibility that even a survivor capable of giving reasonable answers to questions and completing simple commands can be coded as RED can easily escape from the eye.

red code identification



Central to an ideal trauma system is the proper number and location of large, resource-rich trauma centers.

TRAUMA LEVELS



Hospitals achieve different trauma levels by meeting standards set by the American College of Surgeons.

LEVEL I

- Provides total care for every aspect of injury
- 24-hour in-house general surgeons
- Prompt availability of care in all Level II specialties as well as internal medicine, plastic surgery, pediatrics
- Operates organized teaching, research effort

LEVEL II

- Can initiate definitive care for injured patients
- 24-hour immediate care by general surgeons
- Specialties in orthopedic surgery, neurosurgery, anesthesiology, emergency medicine, radiology, critical care
- Continuing education programs for staff

LEVEL III

- Prompt assessment, resuscitation, surgery, intensive care and stabilization
- 24-hour immediate care by emergency physicians
- Provides prompt availability of general surgeons and anesthesiologists

SOURCE: AMERICAN TRAUMA SOCIETY/COMMUNITY IMPACT NEWSPAPER

JAMA Surg. 2017 Nov 1. doi: 10.1001/jamasurg.2017.4472. [Epub ahead of print]

Accuracy of Prehospital Triage in Selecting Severely Injured Trauma Patients.

Voskens FJ¹, van Rein EAJ¹, van der Sluijs R¹, Houwert RM^{1,2}, Lichtveld RA³, Verleisdonk EJ⁴, Segers M⁵, van Olden G⁶, Dijkgraaf M⁷, Leenen LPH¹, van Heijl M¹.

Result: A total of 4950 trauma patients were evaluated of which 436 (8.8%) patients were severely injured.

Conclusion: More than 20% of the patients with severe injuries were not transported to a level I trauma center. These patients are at risk for preventable morbidity and mortality. This finding indicates the need for improvement of the prehospital triage protocol.



Studies

Am J Emerg Med. 2018 Jan 27. pii: S0735-6757(18)30056-1. doi: 10.1016/j.ajem.2018.01.055. [Epub ahead of print]

Effectiveness of prehospital trauma triage systems in selecting severely injured patients: Is comparative analysis possible?

van Rein EAJ¹, van der Sluijs R², Houwert RM³, Gunning AC², Lichtveld RA⁴, Leenen LPH², van Heijl M⁵.



Studies

In an optimal trauma system, prehospital trauma triage ensures transport of the right patient to the right hospital. Incorrect triage results in undertriage and overtriage

Result: Older age and increased geographical distance were associated with undertriage. Mortality was lower for severely injured patients transferred to a higher-level trauma center

Conclusion: In most of the evaluated trauma systems, a substantial part of the severely injured patients is not transported to the appropriate level trauma center

Better compliance with triage criteria in trauma would reduced costs with maintained patient safety.

Linder F¹, Holmberg L¹, Eklöf H², Björck M¹, Juhlin C¹, Mani K¹.



- To evaluate trauma triage criteria in terms of compliance, undertriage, and overtriage and identify risk factors for mistriage
- **Results:** A total of 1424 trauma patients were included in the study. Seventy-three (5.1%) patients activated a full trauma team, 732 (51.4%) a limited trauma team, and 619 (43.5%) did not activate any trauma team. Undertriage was 2.7% [95% confidence interval (CI): 1.9-3.8%] and overtriage was 34.2% (95% CI: 23.5-46.3%) in the complete cohort.
- **Conclusion:** The overtriage and undertriage in this study is in line with the recommendations of the American College of Surgeons Committee on Trauma. However, better compliance with trauma alert criteria would result in fewer trauma team activations without affecting patient safety

Studies

J Surg Res. 2014 Apr;187(2):371-6. doi: 10.1016/j.jss.2013.06.037. Epub 2013 Jul 13.

Prehospital triage of trauma patients using the Random Forest computer algorithm.

Scerbo M¹, Radhakrishnan H¹, Cotton B¹, Dua A¹, Del Junco D¹, Wade C¹, Holcomb JB².



- Over triage not only wastes resources but displaces the patient from their community and causes delay of treatment for the more seriously injured
- **Discussion:** While under-triage can have devastating consequences, over-triage can be equally problematic by forcing patients out of their community unnecessarily, wasting resources, and delays in treatment for those critically injured

Studies

- a nice map that will allow us to reach the treasure island right when we use it properly and healthy
- use triage
- save more people's lives
- do it as soon as possible
- do it by making sure that the most appropriate hospital is used most effectively

Result

