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Letter to Editor

A Critical Review of the START and Jump START Triage Protocols in Emergencies and Disasters: Challenges and Suggestions

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Dear Editor

The Simple Triage and Rapid Treatment (START) protocol is one of the often employed strategies for allocating the injured for treatment priority and transferring them to medical facilities. The United States of America, Canada, Australia, and Iran are among the countries that now employ this protocol (1). This protocol evaluates every injury within 60 seconds or less, preferably 30 seconds. The criteria examined in this protocol include walking ability, breathing rate, radial pulse, and obedience to commands. START triage is utilized for injured individuals aged 8 years and older, while the jump START method is employed for those under 8 years old (2). Several studies have been conducted regarding the sensitivity and efficiency of this method in real-life incidents or exercises; they have reported different results. In a study conducted by Lin et al. in 2022, this algorithm was introduced as a sensitive and reliable method for triaging mass casualty incidents (MCIs) referred to the emergency department (3). However, in some studies, there have been objections to performing this method in the triage of the injured, especially in pre-hospital conditions, which is worth considering (4). Although this protocol is utilized in most disaster management systems worldwide, these approaches appear to have some underlying problems that cannot be disregarded. Therefore, this commentary describes the challenges and suggestions of using the START and jump START triage algorithms in disasters.

The first issue is related to the respiration rate index in the START algorithm. Tachypnea and bradypnea are both life-threatening situations. In the START triage algorithm, only the upper limit of breathing (more than 30 breaths per minute) is defined as a critical condition. In comparison, the lower limit (less than 10 breaths per minute), which causes a decrease in ventilation and eventually hypoxia, is not considered. Therefore, the casualty whose breathing rate is less than 10/minute should also get a red tag in the first encounter. The most critical causes of bradypnea

are head, neck, and chest injuries, which are, respectively, the most common causes of death in trauma patients (5). It is suggested that the lower breathing rate limit (less than 10/minute) be considered in this algorithm.

In the START triage, a red tag is assigned to the respiratory rate of more than 30/minute in the first moment. However, many non-acute factors, including emotional and psychological reactions, can cause this labeling. These factors will have undesirable consequences. Because the incident scenes are stressful, most of the injured have psychological and physiological reactions. These physiological responses include tachycardia, tachypnea, and other hemodynamic changes that may overshadow the triage process and cause over-triage. Although these symptoms require attention, they are often not life-threatening. These symptoms might make it difficult for first responders to prioritize patients, which would cause them to put off giving critically ill patients treatments. Generally, the respiratory rate and depth are frequently monitored together to assess the breathing state. In some situations, the breathing depth is insufficient, and the respiration rate is less than 30 breaths per minute. In this algorithm, the depth of respiration, an essential measure of breathing quality, is not considered. A general revision regarding the breathing index in this algorithm is suggested.

Another challenge is the respiratory rate of 45/minute in the jump START algorithm. Without sophisticated digital technology at the disaster scene, how can a first responder precisely determine the number of breaths (based on the number of 45/minute)? This concern will deteriorate if the incident happens at night or in adverse weather conditions. Utilizing portable and simple digital tools in the triage bag is recommended to evaluate the respiratory rate.

The next challenge is related to the ability of green patients to walk. Any movement of trauma patients is prohibited before examining the symptoms of the spinal cord and skeletal injury. Nervous shock and psychological reactions caused by trauma may mask some skeletal and spinal injuries. Although this method may be used in major disasters or when rapid extrication is needed, it may lead to irreversible complications in incidents with fewer casualties. Another problem is that the START and jump START triage methods do not check trauma severity. For example, in the scene where there are five patients with red labels, it is not clear which one of these victims has more serious injuries and needs more medical services. Therefore, due to the lack of a trauma severity index to determine the priority of the injured with a standard label, these triage methods are not suitable, and the wounded do not receive fair services. This challenge is more visible in pre-hospital triage because it is crucial to determine the priority of transferring patients to hospitals. Employing experienced and trained triage personnel and using a simple tool to determine the severity of trauma and the prognosis of the injured may help solve this challenge. Despite these challenges, this triage protocol is used in disaster management and MCIs where resources are limited. One of the most significant obstacles to studying disasters is the difficulty of gathering reliable data because of unstable incident scenes and ethical issues. Therefore, the developed protocols may have many differences from what exists in real-life incidents. Although the employment of experienced operational personnel in the triage process is very important and has been mentioned in studies (6), strong and accurate protocols are inevitable.

Conclusion

The START and jump START triage methods are used when the medical resources at the incident scene are limited. Incident managers experienced operational personnel, and disaster experts can help optimize these protocols. In addition, evidence-based and scientific study methods should be adopted in actual incidents to measure the effectiveness of these protocols and optimize them.

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