services by European first responders. It helps to clarify and recognize the roles of others fundamental crisis actors (e.g., radical terrorists, government, state/EU organs and management, habitants, military forces, police, fire brigades, rescue services, disaster medicine, and humanitarian organizations) in the future.

Evaluation of Prehospital Triage through Outcome Assessments and Lessons Learned from Mass-Casualty Events

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Introduction: Triage is used to direct medical care to the patients whose outcome would be improved by prompt treatment and evacuation to the hospital. The purpose of this study is to assess mass-casualty triage algorithms discussed in the literature.

Methods: A review of the literature of articles that assessed triage was performed using Medline.

Results: Of the physiologic variables, the motor component of the Glasgow Coma Scale followed by the systolic blood pressure has the strongest association with severe injury.

A retrospective comparison of algorithms demonstrated that the START and CareFlight are similar in sensitivity (82%-85%) and specificity (86%-96%). In a review of a train crash in which the START algorithm was used, the sensitivity of diagnosis of immediate, life-threatening conditions was 100% although over-triage was frequent. Care Flight triage algorithm is the fastest because it measures the respiration and radial pulse qualitatively. There is a linear correlation between over-triage and critical mortality.

Discussion: The limitations of the algorithms reviewed indicate that there is no consideration of resource availability, there is no consideration of the mechanism of trauma and deterioration and they may cause over triaging and resources to be spent on victims.

The ability to walk is a useful approach for triage in situations with large numbers of people affected and limited resources. During non-MCEs, patients affected by high-risk mechanisms would be immobilized and given high priority for treatment and evacuation to the hospital. During a MCE, this would waste resources on patients who probably would not benefit from the high priority given to them.

There is a linear correlation between over-triage and critical mortality. The limitations of the START method and similar methods are that there is no consideration of resource availability, there is no consideration of the mechanism of trauma and deterioration and they may cause over-triage and resources to be spent on victims who are unsalvable or who are stable and neglect victims who can deteriorate.

Conclusions: All algorithms assess the respiratory and cardiovascular system, consciousness, and the ability to walk. There are not enough data to support preference of either algorithm. A triage algorithm for MCE should be used, but the triage decisions might be altered by the proximity to hospitals, the availability of resources, and the mechanism of injury.

Lessons Learned from Prehospital Management by Magen David Adom Teams from 36 Terrorism-Related Multi-Casualty Incidents: May 2001–December 2004

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Introduction: From May 2001–December 2004, Magen David Adom (MDA) teams responded to 36 explosions, and treated 2,048 victims. A total of 247 were dead-on-scene, and 410 were triaged as urgent. The per incident average was 57 injured, 116 emergency medical services (EMS) personnel, 42 ambulances. On average, the first ambulance arrived 3.9 minutes after the expolosion, the first injured victim was evacuated 10.7 minutes after the explosion, and the last severely injured victim was evacuated 25.2 minutes after the explosion.

Methods: A thorough medical debriefing is the source for data collection, and the understanding of problems and challenges for EMS teams responding to terrorism-related multi-casualty incidents (MCIs).

Results: Problems and challenges included:

1. *Upon arriving to the scene*—Team safety, first ambulances to arrive were mobbed by hysteric bystanders.
   Injured—Should the first paramedic to arrive command or treat? Should they wait for advanced life support (ALS) teams or begin triage and evacuation using basic life support teams?
   Early arrival of paramedics to scene—Unsalvageable injured still have vital signs, futile lifesaving procedures, and increased numbers of dead-on-arrival.

2. *Mechanism of trauma*—The severity of blast injury depends on: size of bomb, pressure of wave, and the distance from explosion. None of this is known in the prehospital setting. Some life-threatening injuries are caused by small shrapnel, but the patients are conscious and walking, only to deteriorate later. Their injuries only can be diagnosed by x-ray.

3. *Medical treatment on-scene*—When a MCI is declared, the focus is on the number of ambulances and personnel; therefore, the level of medical treatment decreases. There are not enough ALS providers to triage and treat urgent injuries, causing a lack of continuity.
   MCIs in remote regions—Fewer paramedics, more volunteering community physicians.

4. *Evacuation to hospitals*—Should ALS teams evacuate more severe injuries to a nearby hospital or to a distant trauma center?

Conclusions: This partial summary of MDA experiences can be a usful tool for every EMS Medical Director to plan the organizational response to a MCI.