



Evacuating Trauma Victims: To the Nearest or the Appropriate Hospital?

Debate Moderator:

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The care of the trauma victim can be divided into five to six phases, none of which can be bypassed. These stages are:

- Initial prehospital care by bystanders to be followed by evaluation and treatment by paramedics
- Primary triage and evacuation, which means bringing the patient or patients to the right hospital according to the correct priorities
- Evaluation of the injured followed by care in the trauma admitting area
- Secondary triage, i.e., transferring the patient from one hospital to another that can offer the proper services
- Continuous care of the patient in the operating room, intensive care unit, hospital wards and in-hospital rehabilitation
- Discharge, followed by continuous treatment and rehabilitation in the community [1].

Primary triage is dependent on systematic clinical criteria, the triage officer's experience, and agreements within the local and national components of the trauma system, which is sometimes affected by the convenience factor of the Emergency Medical Services and relationships between these services and local hospitals. Secondary triage as a second line of patients' defense is intended to correct mistakes or suboptimal decisions dictated by constraints during primary triage. Secondary triage is often difficult to perform due to the power play that sometimes exists between surgeons and administrators.

A nationwide trauma center in Israel was established in 1991, based on an earlier system initiated by a group of physicians called "ROLETA" (Hebrew acronym for: Doctors for Trauma). The recommendations for the structure had been institutionalized by the Revach Committee (nominated by the director general of the Ministry of Health and mandated to recommend the establishment of trauma centers in Israel), and modified, followed and developed by the Israel National Council of Trauma [2]. Guidelines were adopted from the American College of Surgeons' publication "Resources for the Optimal Care of the Injured Patient" (1987, 1993 and 1999 editions). Imperative recommendations were to establish six Level I trauma centers, and to encourage the development of Level II and

III centers. For these centers very precise criteria were adopted from those suggested by the ACS. These criteria define the structure and process for each level. Some of these elements are defined as "essentials" and some as "desirables." For Level I trauma centers practically all elements are considered "essentials."

The treatment of trauma victims, and even more so terror victims, is perceived as prestigious. Care of the wounded enhances the public relations aspect of the institution and is often associated with important visitors (VIPs, for example politicians). Therefore, everyone wants to treat trauma patients and especially to admit as many terror victims as possible. Maximal commitment and integrity are required to ensure optimal care for each patient in accordance with the relevant circumstances. Some members of the medical community regard a trauma center as equivalent to a well-designed, attractive, spacious bay in the emergency department with three modern stretchers, three modern/state-of-the-art and maybe even portable monitors and shiny ventilators. However, all this means nothing more than an empty admitting area. A Trauma Unit or Center is much more than just space. In addition to space and equipment a Trauma Center consists of a dedicated and well-trained trauma team, protocols, established long-term relationships with the community, with an emphasis on the emergency medical services, a trauma registry, a continuous quality assurance program and periodic trauma meetings [1]. The most crucial elements are the absolute commitment of the hospital staff, starting top down from the administration, and the capability to provide continuous optimal care. In Israel, an initial mapping of all centers was performed by a committee of the National Trauma Council headed by the author. The formal accreditation of all centers is presently being processed by a Ministry of Health committee chaired by the author. This committee will divide general hospitals in Israel into Level I, II and III, and a fourth group of those hospitals that is not allocated to treat trauma victims under normal circumstances. Criteria for accreditation are based on the Ministry of Health guidelines modifying those of the American College of Surgeons. These are based mainly on volume, structure and process [3].

In this issue of *IMAJ* Dr. Spira and colleagues [4] present the position of the director of the Trauma Unit at a hospital serving as "Regional Trauma Center" (actual accreditation has not yet been made). Dr. Stein [5] represents the view of director of a "Level I

ACS = American College of Surgeons

Trauma Center” (according to Revach Committee recommendations, initial mapping; awaiting formal accreditation). The authors of both articles show impressive integrity and present both the pros and cons of Level I Trauma centers, each with his expected minor bias. Both claim that the main demarcation line between Level I and II is the existence or the absence (respectively) of an active neurosurgical department. This is a too simplistic view. Even while surveying only elements of structure, additional services are indispensable in a Level I trauma unit, e.g., maxillofacial surgery and immediately available interventional radiology. Spira states, correctly, that most head injuries do not require craniotomies but conservative management only; even so this does not keep the neurosurgeons unemployed. Severe isolated head trauma has to be managed in a neurosurgical ICU, and in any case of deterioration a neurosurgeon should be available for immediate intervention. The same applies for non-operative management of intraabdominal or thoracic injuries: patients should be monitored in a surgical ICU and an experienced trauma surgeon and team should be readily available for any developing complication requiring urgent interventions.

The author believes that the essence of a Level I trauma center is the capability to provide the trauma patient with complete excellence of care, 24 hours a day and with no compromises, in one institute. It is worth mentioning that the core of the current discussion is the treatment of the single patient. In some dire situations of “mass casualty events,” circumstances may change and some compromises may have to be made. Even under these extreme conditions, the time span for these steps down in the quality of care should be the briefest possible.

Both Stein and Spira et al. emphasize the potential importance of outcome measures associated with quality of care, and both agree that it is not simple to assess outcome related to trauma patient care. Some articles relate favorable outcome to the volume of patients treated, although others fail to prove so [6]. There is also disagreement in the literature as to whether the critical mass of admitted patients makes a difference. Both authors state that for a definite small group of trauma victims with complex injuries – more specifically, those involving the liver or the cardiovascular systems and those with complex fractures of the pelvis – transfer to a Level I trauma center might improve the outcome. The author of this article stated in the past [7] that comparison of data from trauma systems in different countries is often impractical since the populations differ, mechanisms of injury diverge, operational definitions vary and components of the scheme (e.g., EMS) are different. Therefore the relevance of American data to the Israeli system should be examined with caution. Injury Severity Score can serve as a tool for acuity estimation but is imperfect since most hospitals other than Level I do not operate trauma registries and do not calculate ISS on a regular basis.

So what should we compare and measure? Or should we rely on gut feelings? Even if one accepts the premise that volume is not of high importance for the outcome, there is certainly a critical mass

of patients sufficient for the operation of an acceptable residency in some trauma related-specialties. Volume is often even more crucial for a proper trauma fellowship.

Spira emphasizes the importance of time, and therefore the significance of short evacuation distances. No trauma surgeon can argue with this principle. The question remains: what are the distances between different hospitals in Israel, and what is of higher priority – distance or expertise. Will the patient who is profusely bleeding do better in a Level II or III trauma center or in a Level I which is 5 minutes away? This is often the geographic issue in Israel. It is reasonable to assume that a patient who is not stable enough to wait another 5 minutes will not be salvageable in a trauma center of lower capabilities. I do not believe damage control surgery has anything to do with this theme. It is clear that in each trauma center the trauma team should be waiting for the arriving injured, and not vice versa. This goal is achieved by commitment and good coordination with the local EMS services. The only scenario for which 5 minutes would certainly matter is the inability to achieve an open airway by the EMS staff. In this situation of uncontrollable airway obstruction, the patient should be brought as soon as possible to the nearest medical facility with an anesthetist on site.

To summarize, during the last 15 years a nationwide trauma system has been operating in Israel. All components of the system are essential, and each element has its role: EMS, Level I, II and III trauma centers, rehabilitation facilities, and interrelation with the community and prevention programs. Prehospital and in-hospital trauma registries should be operative.

It is easy and perhaps even tempting to revert 20 years in time to the chaotic phase in which everyone was doing their best without any or with minimal coordination within and between institutes. This still exists in some components of the Israeli medical system. My solution is to keep going forwards, cooperate, find the right balance between different facilities, and continue to measure and process what we are doing. This should ensure the best training for the healthcare providers and, hopefully, better care for the trauma victims.

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ICU = intensive care unit
EMS = emergency medical services
ISS = Injury Severity Score