

## Session 7: Planning 2

Chairs: TBA

### Emergency Health System Evaluation Using Combined Simulation and Global Information System

#### Methodology

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When a major incident occurs, transportation and hospital capacities become critical resources. Their availability has a crucial impact on the number of casualties and the severity of injuries. It is necessary to test the response tactics and assess the efficiency of the rescue efforts using the resources available and number of victims. Due to the high cost of real-life exercises, the use of a computer simulation seems appropriate. A methodology combining simulation approaches and the visualization capabilities of geographical information systems is suggested.

The primary input parameter of a running simulation is the number of casualties that can be separated into individual priority classes. Estimated times are assigned to all of the activities within the chain of care. Based on the input parameters, defined circumstances, and tested procedures, the simulation deterministically computes the total time required for the complete response to the situation. The simulation is rerun for all the  $n$  km map squares of the area of interest—this way, a map with the estimated response times for the defined territory is obtained. The map is colored-coded according to chosen criteria, (e.g., time scale or number of casualties). High risk areas, such as highways, railways, and industrial zones are projected onto the map. Areas chosen can be evaluated in more detail.

The suggested simulation methodology is flexible and allows the users to efficiently test standard operational procedures and assess the preparedness of emergency services.

**Keywords:** computer simulation; global information systems; healthcare; preparedness; simulation

*Prehosp Disast Med 2007;22(2):s110*

### Mass-Casualty Incident Contingency Plan: Hospital Preparedness and Medical Protocols

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Between September 2000 and September 2006, 8,000 casualties resulting from terrorist attacks were treated in Israel. Of these casualties, there were around 650 severe injured civilians, around 950 moderately injured civilians, and >5,100 minimally injured civilians, including those with Acute Stress Reactions (ASR). There were 1,115 deaths recorded. Most of these casualties were treated in the Israeli hospitals that were operating in a Mass-Casualty Incident (MCI) Mode.

By definition, a MCI involves at least a temporary imbalance of resources. Staff involved in patient care may have little experience. The most experienced caregivers may be absent or devoting their attention to the logistics of the event, making them unable to devote their time to casual-

ties. In order to save many lives as possible during a MCI, medical personnel should follow clear and predetermined orders, with the ability to be flexible as needed ad-hoc. The national doctrine related to management was developed by national committees including key personnel from hospitals, prehospital, and the Medical Corps of the Home Front Command (HFC) of the Israeli Defense Forces (IDF). The doctrine included topics related to: (1) the training of personnel for immediate response; (2) medical equipment maintenance; (3) manpower control; and (4) a nationwide information system.

This paper will present the national contingency plan and hospital preparedness for a MCI, including medical protocols developed in order to provide the best care during a MCI.

**Keywords:** contingency plan; injured civilians; Israel; mass-casualty incidents; terrorist attacks

*Prehosp Disast Med 2007;22(2):s110*

### Disaster Response Plan of Iranian Blood Transfusion

#### Organization

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Blood transfusion can be a major health need in the aftermath of disasters. The availability of units of blood in the disaster zone could affect the outcome of the emergency care of victims. The potential destruction of the health infrastructures along with the large number of victims as a result of a disaster necessitate preparedness of the national transfusion system. Important considerations of blood transfusion in disasters include the availability of blood units, the need for emergent donation, a large number of first-time donors and over collection, the safety of blood, and finding new, regular donors.

Iran is one of the most disaster-prone countries in the world. Learning from the previous experiences, particularly the Bam earthquake, the Iranian Blood Transfusion Organization has prepared a disaster response plan. This presentation provides the experience of the Iranian Blood Transfusion Organization in the Bam earthquake, lessons learned from the experience, and blood transfusion data during the event including the number of blood units used, the number of blood units donated, the Provinces that provided blood units, etc. The current disaster response plan of the Iranian Blood Transfusion Organization, based on previous experiences, is explained.

**Keywords:** earthquakes; disasters; Iran; transfusions; response plan

*Prehosp Disast Med 2007;22(2):s110*

### Tangible User Interfaces in Order to Improve Collaborative Interactions and Decision-Making during Disaster Management

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Often times, people must cooperate and interact in teams or discussion groups to achieve a common purpose, such as decision-making, analyzing a problem, or developing an