Emergency medical services transport safety has become an increased focus in both developed and underdeveloped worlds with new innovations and developments. Identifying new initiatives and advances is complex. There is a need for communication between EMS research and development teams across environments and a need for enhanced communication with automotive safety and systems safety engineering.

Keywords: ambulance transport; emergency medical services; developed countries, developing countries; innovations
Prehosp Disast Med 2007;22(2):ss33–34

Session 5: Resusciation

Chairs: Darren Walter; R. Koster

Strategies for Rescuing Patients from Building Collapses

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Introduction: A large number of different tools to extricate victims out of difficult positions after accidents or disasters is available. Therefore, sufficient instruction and training are necessary. Furthermore, the strategic use of these tools and the physical and psychological stress to victims and rescuers are important factors.
Methods: Different rescue team members who participated in international missions were interviewed. Reports from medical and rescue teams involved in urban search-and-rescue (USAR) activities were collected and analyzed. Further experience was gained during exercises and training courses.
Results: A structured approach is necessary in order to rescue injured persons or persons trapped after a building collapse. Safety issues are crucial because many victims and rescuers have been killed during USAR operations. Furthermore, the psychological stress to the rescuers is high, since in international disaster operations, the number of victims rescued alive is low. In many cases, when persons were rescued alive, an insufficient medical infrastructure to meet their needs finally resulting in their deaths.
Conclusions: These observations must have a bearing on the composition of rescue teams. To reduce the risks to victims and rescuers, specialized safety advisors are necessary. Standard procedures not always are sufficient. Flexible solutions and an accurate reconnaissance of the situation are vital for a safe operation. Cultural empathy is necessary, especially during disaster operations, when persons with different cultural background are affected. The medical treatment of the extricated victims must be organized in advance. The collaboration of USAR teams and medical teams must be standardized.

Keywords: building collapse; extrication; humanitarian crisis; rescue teams; search-and-rescue
Prehosp Disast Med 2007;22(2):s34

Evaluation Strategy in the Prehospital Emergency Care Coordination Centre in Crete

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Introduction: In addition to accepting calls, the coordination dispatch centre (DC) of the Emergency Care Department in Crete dispatches available recourses and evaluates calls according to severity for efficient management. In Greece, the Crete DC is unique in using computerized information systems (IS) for triage, coordination and call management. The IS has been operational since 1997 replacing the use of handwritten cards.
Objective: The aim of this study was to evaluate the effectiveness and efficiency of the Crete DC regarding the quality of call management and triage. The questions investigated were: (1) how does the severity score of an incident evaluated by the DC correlate with the onsite physician's diagnosis?; and (2) how do the computerized triage protocols contribute to effective triage?
Methods: The severity color-coding of incidents (red, orange, yellow, green) was correlated with the Hector Emergency Score (HES), and the physician diagnosis. The HES is calculated based on the Glasgow scale, vital signs, arterial pressure, oxygen saturation, and cardiac and respiratory frequency.
Results: In a preliminary analysis of 1,052 incidents, >55% of the severity scores given by the DC agree with those calculated onsite. Categorizing calls using both the HES and physician diagnosis increases the specificity of evaluation taking into account severe incidents with normal vital signs.
Conclusions: In Crete, the quality of incident triage can be attributed to a variety of factors including computerized triage protocols, intensive continuing education, leadership and skills. Evaluation results contribute to the continuous improvement of the dispatch centre of the emergency care department in Crete and the application of similar methods in Greece and abroad.

Keywords: coordination; Crete; dispatch centre; emergency medical services (EMS); severity
Prehosp Disast Med 2007;22(2):s34

Multi-Disciplinary Special Teams Provide Emergency Medical Services Systems with the Capability to Handle Disaster Situations in a Reliable, Safe, and Economical Manner

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The formation of special teams within emergency medical services (EMS) and its allied agencies provides a solid foundation for responding to disaster situations. By focus-

ing resources on a group of highly motivated, cross-trained individuals, responding agencies can reap rewards not typically seen in pre-hospital response.

Few EMS systems have the necessary funding to equip and continuously train all of their staff in the specialized response to large-scale events. A Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) Response team, Heavy Urban Search-and-Rescue (HUSAR) team, and Tactical Response team, which includes tactically trained paramedics (TEMS), can quickly send an expertly trained and equipped team of individuals into an austere environment.

The continuous, multi-agency training within these teams provides strong communication channels that are far superior to typical day-to-day responses. Yearly, on a rotating basis, and in conjunction with the local teaching hospitals, each special team participates in a mass casualty training exercise to simulate patient care from onset of injury to definitive care within the hospital setting. A website is created to incorporate the benefit of online education into the pre-exercise portion of these events. Each agency has input into the educational content so as to maximize the training potential of everyone involved.

The use of special teams in hot and warm zones should minimize the unnecessary exposure of front-line workers to events that are beyond their level of training.

Keywords: chemical, biological, radiological, nuclear, and explosive (CBRNE); disaster; emergency medical services (EMS) systems; special training; teams
Prehosp Disast Med 2007;22(2):s34–35

Case Study of Issues Related to Emergency Rescue Efforts in Engineering Disasters under Low Temperature Conditions Based on Experience from the Chorzow Disaster

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On 28 January 2006, an engineering disaster occurred at the exhibition hall of the International Katowice Fair. The roof of the exhibition hall buckled under the weight snow accumulated on top it. More than 700 participants in a pigeon racing exhibition were inside the hall, and upon the collapse of the room more than half were trapped and immobilized. Furthermore, there was a sudden change in the victims' thermal exposure, from about 20°C to as low as -19°C. Many of those victims suffered crush-types of trauma. The toll of the incident came to a total of 65 dead (including two deaths in the hospital) and 173 injured who were hospitalised. Autopsy results characterised the injuries suffered by the victims as severe trauma and suffocation caused by the inability to breathe due to being crushed under the structure. Most of the wounded suffered from various degrees of hypothermia. Those trapped under the rubble were evacuated within between 15 and 330 minutes.

The consequences of the low temperature's impact on the victims were characterized, as well as the specific problems related to carrying out rescue operations under extreme temperature conditions. The main conclusions drawn from the almost 31-hour rescue effort have been analysed. The rescue efforts involved elements of Urban Search and Rescue and emergency medicine in mass-casualty incidents under extreme weather conditions. The rescue was exceptionally technical and challenging, since it was necessary to search for people confined by the collapsed metal and glass structure blanketed by snow.

Keywords: collapse; crush syndrome; extreme weather rescue; hypothermia; Poland
Prehosp Disast Med 2007;22(2):s35

The Okaloosa Experience: Developing an Evidence-Based Emergency Medical Services System, Based on Common Sense

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As a major tourist destination and an area that routinely entertains mass gatherings and often is hit by hurricanes and floods, the Okaloosa County Florida Department of Public Safety and the Division of Emergency Medical Services (OCEMS) began looking for functional solutions to their disaster risks. They sought solutions that brought forth tangible, long-term methods that facilitated greater EMS system development as well as disaster preparedness and response.

In doing so, the OCEMS implemented the first 100% evidence-based, casualty and disaster triage methodology and resource management process in the world. This award winning EMS service piloted the methodology as part of its ongoing efforts to continually improve the value of EMS provided to their residents and guests.

The pros and cons the OCEMS encountered in implementing measures beyond routine chaos reduction, currently called "disaster triage" will be discussed. The OCEMS looks towards a national standard for patient outcome-driven triage and disaster resource management.

At the end of this presentation, the participants will be able to: (1) identify two or more issues related to advancing EMS, especially when it goes against the national psyche; (2) contrast current EMS practices with evidence-based EMS practices; and (3) demonstrate how validated operational protocols eliminate many of the subjective variables common in the provision of emergency care.

Keywords: emergency medical services; evidence-based system; floods; hurricanes; tourism
Prehosp Disast Med 2007;22(2):s35