

(11) “treat and leave” model; (12) alternate dispositions models; (13) professional autonomy model; (14) the World Health Organization global model; and (15) emergency preparedness and disaster health model. The review suggests that policy makers are attempting to achieve the goals of an EMS system through a range of emerging models. However, the evidence base of their effectiveness and efficiency is yet to be established.

Conclusions: This review suggests a range of emerging diversity in EMS models that may provide useful input into discussions in various EMS systems that are finding themselves under threat from an increasing workload. One key question is proposed as an outcome of this review, namely, “is EMS delivery a new mono-discipline, or is it multi-disciplinary”?

Keywords: alternate model; demand; emergency medical services; future; model

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Evidence-Based Case Development for Blast Injury Assessment and Management

Robert D. Furberg,¹ Paul N. Kizakevich,¹
R.T. Dombroski,² John W. Holloway,¹ Kevin Merino¹

1. RTI International, Research Triangle Park, North Carolina USA
2. United States Army Asymmetric Warfare Office, Washington, DC USA

Introduction: The traumatic sequelae associated with blast injuries from improvised explosive device (IED) detonation, including barotrauma, traumatic brain injury (TBI), traumatic amputations, thermal burns, and shrapnel injuries, have changed the face of combat medicine. The mission of this study was to develop an evidence-based instructional aid for combat casualty assessment and initial management, with case design based on the reality of injuries encountered in-theater. Training material also included new trauma management protocols, including advancements in hemorrhage control, intraosseous fluid resuscitation, and management of war fighters with TBI.

Methods: Upon establishing core-learning objectives for each simulation, a case definition matrix was designed. Each case was linked with specific core objectives, interventions, medical devices, and outcomes. Thirty simulation cases were developed in this manner, based upon available clinical evidence from military medical reference data collected during Operation Iraqi Freedom and Operation Enduring Freedom. Descriptive case definitions, including anatomical injury pattern and acuity, were based upon abstractions of summary and categorical statistics from available casualty data. These extrapolated results were applied to the case definition framework.

Results: A virtual reality simulation platform was designed to provide pre-deployment and in-theater training to non-surgical physicians and combat medics so clinical decision-making could render improved results for patient outcomes while enhancing the assessment and management skills among these providers in the austere environment.

Conclusions: In order to determine the relevance and usability of the training cases, qualitative evaluations cur-

rently are being solicited among a cohort of military and civilian users. Full results will be presented.

Keywords: assessment; blast injury; education; evidence base; management; training

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War Injuries in the 2000s

Limor Aharonson-Daniel,^{1,2} Eran Hadad,³ Aviram Weiss,³
Gil Hirshhorn,³ Dagan Schwartz^{1,2}

1. Ben Gurion University of the Negev, Beer Sheva, Israel
2. University Center for the Research of Preparedness and Response to Emergency and Disaster Situations, Ben Gurion University, Beer Sheva, Israel
3. Israeli Defense Forces, Tel Hashomer, Israel

Introduction: The second Lebanon war lasted 33 days, during which the Israeli Defense Forces (IDF) acted in southern Lebanon while the Israeli home front absorbed a large number of missiles. Military activities resulted in 848 soldiers injured, 119 fatally. This presentation describes the type and characteristics of these injuries.

Methods: Data regarding all soldiers hospitalized or killed as a result of the second Lebanon war were collected and analyzed. Soldiers that were treated in the emergency department and discharged, as well as those with non-physical symptoms were excluded.

Results: All but two of the injured were males. The mean age was 24.1 ± 5.3 years. The majority (n = 689, 81.2%) of the casualties were hospitalized; however 63% of them had suffered only minor injuries (ISS 1–8). Sixty-three percent of injuries were penetrating. The most frequent mechanism of injury was fragments, both among fatalities and among casualties. Gunshot wounds were four times more frequent and burns were six times more prevalent among fatalities than among survivors. A total of 67% of the injuries occurred during the day. The average number of body regions injured was two; most injuries were to the limbs; 23% of the patients suffered injuries to the chest, 21% to the head, and 9% of the injuries were to the eye region. Among soldiers who were killed, there was a higher prevalence of head injuries, chest injuries, and combined head and chest injuries than among the survivors. There were no survivors among soldiers who suffered major burns (more than 20% total body surface area). The use of various procedures and the distribution among hospitals was explored and will be presented.

Conclusions: War casualties predominantly sustain penetrating injuries. The distribution of injury patterns among casualties of this war was similar to that in recent wars, except for an excess number of eye injuries that should be explored further.

Keywords: civil-military collaboration; injuries; penetrating injuries; second Lebanon war; war

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The Impact of Surgery on Global Health

K.A. Kelly McQueen

Harvard Humanitarian Initiative, Phoenix, Arizona USA

Access to surgical services is an important contributor to global public health. Surgical interventions impact morbid-

ity and mortality for many conditions, including road and birth trauma, and chronic and acute diseases. Recent assessments of the burden of surgical disease and the relative cost-effectiveness of essential surgical care have kindled international interest. Previous work suggests that 11% of the global burden of disease may be treated with surgery. Many humanitarian and non-governmental organizations provide surgical services. Although delivery of surgery by these organizations impacts the global burden of disease, the impact has yet to be formally evaluated and aggregated. Understanding the collective contribution made by the humanitarian community would further measure the “met need” for surgical services. Greater coordination between these organizations would identify the regions of greatest need and potentially provide primary data on regional surgical epidemiology and outcomes of care. This presentation will discuss the burden of surgical disease and the impact of surgical services delivered by humanitarian aid and disaster relief organizations may have on disability and premature death. The importance of surgical epidemiology and the tracking of data and outcomes also are considered.

Keywords: competencies; education; global health; surgery; training
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Value of Cranial Computed Tomography in Adult Patients with Mild Head Injuries: A Prospective Study at the University of the Philippines Philippine General Hospital

Scarlett Mia S. Tabunara,¹ Fara Jane C. Sebastian²

1. Philippine General Hospital, Quezon City, Philippines
2. Philippine General Hospital, Manila, Philippines

A descriptive method was used in order to conduct a prospective study on the value of using computed tomography (CT) scans among adult patients (≥18 years old) treated at the University of the Philippines-Philippine General Hospital emergency department from January through December 2008. The patients who underwent CT scan presented with mild head injuries with a Glasgow Coma Scale (GCS) rating of 14–15.

Among the single clinical variables included, loss of consciousness had the highest percentage of a positive CT scan. A total of 83.3% of the patients with loss of consciousness showed significant findings on the CT scan related to the trauma. Other single variables studied did not yield any significant findings in CT scans such as nausea/vomiting, headache, physical injuries related to the trauma, and neurologic deficits related to the trauma. Based on the results of logistic regression, only loss of consciousness was significant based $p = 0.05$. Therefore, when a patient presents with loss of consciousness related to head trauma, a CT scan likely will yield a positive result. Thus, a high index of suspicion should be used.

Keywords: computed tomography; emergency medicine; head injury; loss of consciousness; Philippines

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Public Health Department Training of Emergency Medical Technicians for Bioterrorism and Public Health Emergencies: Results of a National Assessment

David S. Markenson; Michael Reilly

New York Medical College, Valhalla, New York USA

Introduction: The public health system has a specialized body of knowledge and expertise in bioterrorism and public health emergency management that can assist in the development and delivery of continuing medical education (CME) programs to meet the needs of emergency medical services (EMS) providers.

Methods: A nationally representative sample of the basic and paramedic EMS providers in the United States was surveyed to assess whether they had received training in weapons of mass destruction, bioterrorism, chemical terrorism, radiological terrorism, and/or public health emergencies, and how the training was provided.

Results: Local health departments provided little in the way of training in biologic, chemical, or radiological terrorism to responders (7.4%–14.9%). State health departments provided even less training (6.3%–17.3%) on all topics to EMS providers. Training provided by the health department in bioterrorism and public health emergency response was associated with responder comfort in responding to a bioterrorism event (OR = 2.74, 95% CI 2.68, 2.81).

Conclusions: Local and state public health agencies should work with the emergency medical services systems to develop and deliver training with an all-hazards approach to disasters and other public health emergencies.

Keywords: bioterrorism; emergency medical services; public health; training; weapons of mass destruction

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Poster Presentations—Emergency Medical Services

(N27) Impact of Trauma Volume on the Effectiveness of Computed Tomography of Patients with Head Trauma

Chao-Wen Chen;¹ Yue-Wen Chen;² Yun-ting Lou;¹

Liang-chi Kuo;¹ Hsing-lin Lin;¹ Wei-che Lee;¹

Yuan-Chia Cheng¹

1. Kaohsiung Medical University Hospital, Kaohsiung, Taiwan
2. Department of Industrial Engineering and Technology Management, Dayeh University, Chan-Hwa, Taiwan

Objective: The major purposes of this study were to: (1) evaluate the association between trauma volume and the positive rate of head computed tomography (CT) scans in patients with head trauma; and (2) determine the threshold of trauma volume for determining the decreased effectiveness of emergent head CT for head trauma patients.

Methods: In a 1,300-bed tertiary care hospital, data involving trauma patient volume, head trauma patient volume, the number of emergent head CTs, and the number of positive head CTs were collected on a monthly basis. The potential influential factor of quality of care performed by different physicians was measured by calculating their rate of missed head injuries. Comparison primarily was made between the trauma patient volume and the positive rate of HCTs.