

ABSTRACTS OF
SCIENTIFIC PAPERS
ORAL PRESENTATIONS

Disaster Medicine Issues 2nd Annual Symposium
University of New Mexico and the World Association
for Disaster and Emergency Medicine

Albuquerque, N.M., 14–15 October 1994

1. A Mass-Casualty Incident Involving Multiple Patients with Penetrating Trauma in a High-Rise Office Tower

S. Marshall Issacs, MD, Pippa Amick, EMT-P, Charles Saunders, MD, Paul Hansen, MD

San Francisco Paramedic Division, San Francisco General Hospital, San Francisco, Calif., USA

Purpose: To describe the events that occurred on 1 July 1993 when a man entered a high-rise office tower in downtown San Francisco armed with semi-automatic handguns. Traveling through four floors of the 48-story building, the assailant shot 14 people before turning the gun on himself.

Methods: Debriefings and interviews were performed with pre-hospital care providers, managers, dispatchers, trauma and emergency department physicians and staff, and police and fire personnel.

Results: This multiple casualty incident (MCI) avoided the usual lack of central coordination that often impedes effective dispersal of victims to definitive care in a timely manner. However, communications problems secondary to radio reception voids as well as structural and logistical challenges related to the vertically oriented tactical situation were identified and reviewed.

Conclusion: This event and its management provided a real-life test of the city's prehospital MCI plan as well as a test of the city's sole trauma center's and emergency department readiness to handle a MCI. The implications for prehospital disaster planning and trauma/emergency services was presented.

2. Analysis of Patient Satisfaction with One DMAT's Performance during Hurricane Andrew Relief Efforts

Kelly Burkholder-Allen, RN, MsEd, CEN, Paul Rega, MD, FACEP, Churton Budd, RN, EMT-P

Toledo, Ohio, USA

Background: The Toledo Area DMAT (TADMAT), a National Disaster Medical System (NDMS) Level-I DMAT, was deployed to Dade County, Florida, to provide medical care following Hurricane Andrew. The team provided care at three sites and maintained a medical outreach program. This was the team's first deployment.

Purpose: Although patient satisfaction surveys are accepted evaluation instruments in most medical practices, they have not been utilized in disaster situations. The purpose of this study was to develop and evaluate a disaster patient satisfaction survey for victims of Hurricane Andrew treated by the Toledo Area DMAT.

Methods: A retrospective review of treatment records from two austere medical treatment sites was initiated. From these, 318 patients with complete demographic information were mailed a cover letter and satisfaction survey.

Results: Seventy-six surveys were returned as undeliverable. Forty-eight surveys were completed, returned and analyzed. Responding patients ages ranged from 4–87 years, with a mean of 44 years, 40% males and 60% females. Their diagnoses were reviewed for severity with 97% nonurgent and 3% urgent. Sixty-two percent of the responders were treated for traumatic injuries and 38% for medical illnesses. Eighty-four percent had established medical care prior to the disaster. Ninety-eight percent felt that they were treated courteously and received easily understood discharge instructions. All were convinced that the TADMAT had acted professionally, and had been satisfied with their overall care. All of the respondents would want the team or one similar to return again in the event of another disaster. Two specific questions were made: 1) more bilingual staff; and 2) stress management assistance.

Conclusions: Patient satisfaction surveys can be an important evaluation tool for any disaster agency providing medical care. They should be distributed at the point-of-care to improve response rate. They can serve as a morale booster when shared with the team, as well as functioning as a catalyst for systems modifications at all levels. The return rate was much higher than had been anticipated and suggested a cathartic benefit to the victims of the disaster. In spite of the team delivering health care in an informal and austere fashion, they still were perceived as professionals.

3. Three Hurricanes in Comparison and Contrast

Robert Gougelet, MD

University of New Mexico

Purpose: Comparison of medical aspects of Hurricanes Hugo, Andrew, and Iniki.

Methods: Retrospective review of medical records.

Results:

*Total Number of Patients and Most Prominent Diagnoses—*By far, Hurricane Andrew was the most devastating of the three hurricanes. The total number of patients seen in the health-care system was more than double those for both Hugo and Iniki. The three most frequently encountered diagnoses were miscellaneous medical, URI/OM/bronchitis, and lacerations accounted for 50.7%, 30.3%, and 20.2%, respectively. These were followed by tetanus immunizations and medication refills at 20.1% and 12.9%, respectively.

Hurricane	Total Number	Most Frequent Dx	% Total Pts
Hugo	Approx 300	Soft tissue injury	5.6
		Misc. medical	50.7
		Eye, ear, nose, throat	4.5
Andrew	668	Medication refill	12.9
		URI/OM/bronchitis	11.8
		Lacerations	10.9
Iniki	399	Tetanus immunizations	20.1
		URI/OM/bronchitis	18.5
		Lacerations	9.3

Outreach Programs—The outreach programs came into existence during Hurricane Andrew. The Perrine Outreach Program evaluated 514 patients. During Hurricane Iniki, 54 patients were seen at the Kalaheo Outreach. For both of these outreach programs, tetanus immunizations led the list of required care followed by hypertension blood pressure checks and medication refills (83.3%, 34.0%, and 18.0%, respectively). In contrast, strains, sprains, abrasions, and contusions accounted for 1.9% and 4.1% of the total number of outreach patients evaluated.

Hurricane	No. Patients Evaluated	Most Frequent Dx	% Total Pts
Andrew	514	Tetanus immunizations	31.4
		Medication refill	12.4
		HTN/BP check	13.6
Iniki	54	Tetanus immunizations	51.9
		HTN/BP check	20.4
		Medication refill	5.6

Triage information—By far the greatest patient numbers were classified into the Green Triage category with a combined total of 886 patients for both Andrew and Iniki. By comparison, for the same two hurricanes, 38 patients were classified into the Red Triage category.

TRIAGE CATEGORY

Hurricane	Green	Yellow	Red
Andrew	507	128	32
Iniki	379	14	6

Comparative Costs—Hurricane Andrew, at a cost of [US] \$20 billion was the most costly. Accounts for Hurricane Hugo totaled \$6.3 billion, and Iniki cost \$1.8 billion.

Summary: Hurricane Hugo struck St. Croix on 18 September 1989. The 70-member DMAT team was activated on 28 September 1989 and remained on the island for 11 days. During that time, approximately 300 patients were seen. Hurricane Andrew touched down in Florida on 24 August 1992. A 71-member DMAT team was deployed on 27 August 1992 for a total of 10 days. A total of 1,182 patients were evaluated (includes those by the outreach program). Hurricane Iniki struck the Hawaiian Islands on 11 September 1992. A smaller DMAT team, consisting of 47 members, was deployed on 19 September 1992 and remained for eight days. A total of 453 patients were evaluated (including those contacted by the outreach program).

4. Development of a Disaster Emergency Medical Services (DEMS) Rotation at an Emergency Medicine Residency

David E. Hogan, DO

University of Oklahoma Health Sciences Center
Emergency Medicine Residency Program.

This system is designed to introduce the resident to the field of Disaster Emergency Medical Services (DEMS), providing basic skills in disaster required for emergency medicine and exposure to other aspects of this growing field.

Methods: The Instructional Systems Design approach was used to create the disaster rotation. A brief educational survey was taken to judge the basic DEMS knowledge of the residents. A nominal group technique was used to arrive at a core content for the one-month rotation stressing the elements of DEMS thought to be most useful for the practicing emergency physician. A self-paced, programmed educational module was developed with individual goals and objectives for each content section. Two mentor discussion sessions are carried-out during the rotation for evaluation.

Results: Residents enrolled in the rotation have completed the requirements in an efficient manner. Several residents have extended participation in the rotation beyond the basic requirements to include research.

Conclusions: Development of a formal DEMS rotation in the framework of an Emergency Medicine Residency Program can serve to introduce residents to DEMS and strengthen local DEMS programs.

5. Requirements for Hazardous Materials Incidents: A Statewide Plan

Steven M. Joyce, MD, FACEP, Deborah H. Kim, MSN, RN, CEN, Jeffrey G. Rylee, EMT

University of Oklahoma Health Sciences Center

Purpose: Conflicting information from a number of federal and state agencies has led to a lack of uniform statewide standards for hazardous materials operating materials operating procedures, equipment, and training. An ad hoc committee consisting of emergency medical services (EMS) physicians and nurses, EMS hazardous materials experts, and state emergency planners addressed this problem.

Methods: The committee drew on sources including but not limited to: 1) OSHA Hazwoper 1910.120 ruling, the Superfund Amendment Title III, HHS publications “Managing Hazardous Materials Incidents,” Volumes 1 and 2, NFPA Document No. 3473, and documents related to the chemical weapons stockpile elimination’s program (CSEPP). The committee then formulated a curriculum, operational standards, and equipment list that were both practical and affordable.

Results: The finished document addresses: 1) definition of hazardous materials; 2) classification of hazardous materials; 3) operating procedures for emergency medical services (EMS) and emergency department (ED) providers (analyzing the incident, planning and implementing the response, and terminating the incident); 4) a training curriculum for both groups; 5) a list of referenced publications; 6) recommended equipment lists (for personal protective equipment, decontamination equipment and facilities); 7) a respiratory program checklist (including fit-testing); 8) exposure logs; 9) guidelines for