

Conclusion: Rapid intervention by the advanced rescue car units certainly has improved the prognosis of patients. The large number of services provided proved that our decentralized first-aid station satisfies the requirements of a large number of tourists. With the use of the present system that has been operational for three years, we have achieved good results. The system has met our expectations.

149. Traumatic Asphyxia (TA) following Stadium Crowd Surge: Outcomes and Recommendations for Stadium Management

David A. DeAngeles, MD, Marvin L. Birnbaum, MD, PhD,
Bruce A. Harms, MD

Departments of Surgery and Medicine, University of
Wisconsin-Madison, Madison Wisconsin USA

Frequently, stadium athletic events end with the crowd rushing onto the playing field. However, secondary morbidity seldom is a problem. Traumatic asphyxia (TA) and severe injuries as a result of crowd surge activity are rare, but potentially lethal events. When they do occur, they present unique and specific injury patterns. Little data are available relative to these types of injuries and the factors important in the survival of this complex patient group.

Methods: On 30 October 1993, a stadium crowd surge occurred following a [U.S.] football game that culminated in 86 persons being transported for treatment of mild to severe and potentially life-threatening injuries. Sixty-nine patients were treated for minor injuries and released. Nineteen patients were admitted to a hospital for management of crush-related injuries.

Results: Seventeen of 19 patients (89.5%) admitted for treatment were female. Three sustained mild TA (not requiring intubation and with prompt return of normal neurologic status). Eight required intubation for treatment of severe TA. Additional injuries included: grade II liver fracture ($n = 1$); major musculoskeletal extremity strains ($n = 2$); transient upper extremity neurologic injuries ($n = 1$); and pneumothorax ($n = 1$). Six of the eight patients who sustained severe TA injuries were endotracheally intubated at the scene. Transport time from the incident to emergency department arrival for the severely injured patients averaged 38 minutes (range 32 to 47 min.). Manifestations of severe TA were evident in all intubated patients with the most critical patient arriving with a pH of 6.8 and $p\text{CO}_2$ of 140 torr (18.6 kPa). Initial Glasgow Coma Scale scores for the severe TA group averaged seven (range 3 to 9). Five of eight patients with severe TA presentation had placement of ICP monitors with an average opening pressure of 15 mmHg (range 7 to 25 mmHg). All patients recovered with no long-term neurologic sequelae. Additional factors that minimized morbidity and mortality included rapid unstacking of crush patients, availability of experienced medical personnel who promptly intubated the most severely injured at the scene, and relatively short triage and transport times.

Conclusion: Stadium crowd surge can result in disastrous outcomes if systems for crowd management are not in place. Stadium and medical personnel will be presented with a unique

population of predominantly female patients with mild to severe TA manifestations that may have favorable outcomes if promptly transported and treated.

080. Primary Health-Care in Disaster

Rannveig Bremer Fjaer

Joint Medical Military Services, Oslo, Norway

When the infrastructure in a community is destroyed by man-made or natural disaster, even the simplest health services may be difficult to maintain. By the Alma Ata declaration, the World Health Organization (WHO) proclaimed health for all by the year 2000. The program is supposed to cover the basic health needs as defined by the Primary Health Care (PHC) system. A most important objective in disaster management, is to support, maintain, and rebuild the PHC to secure basic health services for the population.

Relevant and rapid aid is of great importance in a disaster. Traditionally, surgical equipment and service are given priority, though surgery may not be the most important health problem in all types of disasters. Groups like women and children often are put far down on the priority list. Child mortality and maternal complications will rise during disaster. Many of the 12 million children dying every year die because of war, refugee conditions, and other types of disaster.

The NORAID system is equipment composed to provide PHC with special emphasis on vulnerable groups like women and children. The system already has been tested in many countries and found to be relevant, practical, and relatively inexpensive compared to the benefit derived.

009. Woodstock '94: An Emergency Medical Services Perspective

Raymond Florida, MPS, EMT-P, Edward Horton, RN, EMT-P
Rockland Paramedic Services, Orangeburg NY USA

This multimedia presentation will address the planning, implementation, and review of the role of EMS at Woodstock '94. The event was a three-day, rock-and-roll concert on an 850-acre farm in New York, attended by more than 350,000 people. The presenters will focus on the development of the overall medical plan and the inclusion of Incident Command System when the plan was implemented. We will address the interaction of security, the on-site hospital, the first-aid stations, emergency medical services, and the event promoters with the medical plan, and how the plan was modified based on security and volume of patients concerns. The Incident Command System outline will review: unified command post, incident command team, medical control, triage/treatment, staging, ground and helicopter transportation, logistics, communications, personnel, safety, housing and feeding of personnel, and critical incident stress debriefing.