

076. Lesson from the Hokkaido Southwestern Offshore Earthquake

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Introduction: On 12 July 1993 at 22:17 hours, a magnitude 7.8 earthquake and a subsequent tsunami struck a wide area of the northern part of Japan. The heaviest damage occurred on the small island of Okushiri, located in the epicenter area, 30 km west of the island of Hokkaido. The majority of the casualties and damage were due to the tsunami. The problem of medical support, life lines, and the role of mass communication are discussed.

Results: As of June 1994, 229 deaths were reported. Twenty-eight people were killed by landslides; the rest were killed by drowning. A total of 83 persons were severely injured, and 240 sustained mild injuries. In the Okushiri district, four doctors in a local hospital provided treatment for 25 severely injured and 44 lightly injured patients. However, no doctors were present in the Aonae District. Medical and rescue teams of the Ground Self-Defense Force from Sapporo took eight hours to arrive at Aonae because of bad weather. We treated seven patients who were transferred by helicopter. The majority of cases sustained bone fractures. They also needed counseling for emotionally induced "mental" scars. In this disaster, mass communications played an important role to announce these patients' present condition and necessity for rescue.

Conclusions: 1) Confusion on the appropriate use of the communication network such as telephone and wireless was extreme. Therefore, the exclusive use of the wireless is necessary for medical communications. 2) Dispatch of medical teams to those areas without doctors by helicopter is needed as soon as possible to perform triage, treatment, and transportation. 3) There is a need to establish a national organization for disaster such as the FEMA (Federal Emergency Management Agency) in the USA. 4) The Ground Self-Defense Force should play an important role in disaster management.

026. The Tasks of the Swedish Rescue Services Agency

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The Swedish Rescue Services Agency is the central authority which, together with the municipal rescue service, is responsible for population protection and rescue services in society. Within this area of responsibility, the agency promotes work to prevent accidents and reduce damage. In this way, the agency contributes to make our society safer.

The Swedish Rescue Service Agency participates not only in

national safety work, but also on the international scene. The need for humanitarian efforts is expected to rise. By maintaining a high level of preparedness for aid in case of disasters internationally, the agency supports the people and those responsible for rescue service in other countries. This is done, for example, by supporting the Baltic States. To contribute to developing rescue service and safety work in other countries, the agency has an increasing export of services. To be able to perform these activities, the Swedish Rescue Service Agency has divided its operation into five branches: 1) public rescue services; 2) safety of operations involving special risks; 3) capability of the individual; 4) population protection in times of war; and 5) international activities.

The agency's preparedness in aid/disaster relief within the framework of UNHCR is organized into four fields according to aid required: 1) "Rescue Team" for rescue operations; 2) "Support Team" for relief operations at acute refugee-producing disasters; 3) "Emergency Team" for supply operations; and 4) "Expert Team" for expert operations.

100. The Prehospital Rescue Organization: A New Way to Integrate Resources

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A prehospital emergency always has represented a crucial point in the health-care system. Human and technical resources should be used rationally to improve the efficiency of a prehospital rescue system. An efficient system must be able to provide equipment, means of transport, and an experienced staff at the scene of the accident as soon as possible.

The Savona Emergency Department has had a modern assistance vehicle (rescue car) for several years. It's a small, but easy-to-handle Fiat Panda with four-wheel drive that is well equipped in anticipation of a necessary prehospital resuscitation. The rescue car is dispatched from the hospital and guarantees a fast intervention only within our territorial area.

There is considerable summer tourism in our region (also present in 1994) that required a potentate prehospital emergency service. This is why we had to set up decentralized first-aid centers. Because of the number of tourists and the problem of distances, three peripheral centers have been established. Every center was provided with a rescue car, a specially trained physician, and a specially trained nurse who was called during an emergency. The physicians working in the above-mentioned centers staffed the first-aid stations and the nurses came from the emergency staff or were part of other departments. The activities of these peripheral centers from the 01 July to 31 August 1994 are listed in the following table:

Global Analysis	
Total services	2,772
Ambulatory services	2,657
(53% internal medicine and 47% surgical)	
Rescue-car service	121

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

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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

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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

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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.