

the last few years with groups of patients who had to be admitted immediately. Several systems of tracking these patients were evaluated and the most simple and practical applicable system was a bar-code system using the EAN (European Article Numbering) 128 symbol technique. This system is called the ABC (Automation Bar-code and Chaos) system. Using this system, the team that is in charge of command and control has been able to maintain a continuous overview of the situation. Apart from patient identification and tracking, the system also includes in the registration process indicators of urgency and primary diagnoses.

This system has been used during several accidents associated with the admission of multiple victims. The highest number of patients admitted using this system was 143 during the evacuation of another hospital because of the threat of a flood.

It seems that less errors were made in comparison with manual registration while more information was stored. Pilot studies are being performed to evaluate this method by using it first in a prehospital environment.

The ABC system already has attracted national and international attention. In principle, bar-codes can be used for regular care, replacing the existing hospital punch cards. In the Emergency Hospital, the system already has proven its value.

Key Words: automatic data processing; bar-codes; disaster management and planning; patient registration; triage systems

Organization of Emergency Medical Aid in Patients with Polytrauma in a Specialized Department of Multiple and Combined Trauma of Emergency Hospital

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The Department of Multiple and Combined Trauma contains 75 beds in a city of 1.5 million population and has been functioning for five years. The team includes: 33 general surgeons, 2 orthopedic surgeons, and one neurosurgeon on-call 24 hours per day. The examination period which parallels the beginning of liquidation of severe disturbances of the cardiovascular system lasts 30 minutes. Examination includes: pleural puncture and drainage, peritoneal lavage, laparoscopy, ultrasound examination, echoencephalography, CT-scanning, X-ray and laboratory examinations. Videolaparoscopy and videothoracoscopy are used widely in cases of superficial ruptures of abdominal solid organs, for stopping of hemorrhage from injured intercostal vessels, for sewing lung ruptures, and for liquification of curdled haemothorax, etc. There were 12,242 operations performed in the Department of Multiple and Combined Trauma during the five years. There were 6,393 patients with polytrauma treated, of which 49.8% were severe cases. The mortality rate decreased progressively from 37.2% in 1991 to 26.5% in 1996, due to the improvement of the organization of medical aid and the use of modern equipment.

By the year 2000, we plan to set up the City Center of Disaster Medicine which will include the Departments of Multiple and Combined Trauma, Burn Trauma, Toxicology, as well as Department of Gravitation Surgery, and Critical Care Department on the base of Emergency Hospital.

Key Words: efficacy; emergency aid; organizational perspective; polytrauma

An Organizational Model of a Hospital Information Center

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This presentation describes an organizational model of an information center developed by the Social Work Department of Tel Aviv Sourasky Medical Center based on our experience with mass disasters. The Information Center is designed to provide information upon the arrival of mass casualties at the hospital following terrorist attacks or other catastrophes. The Information Center is comprised of a number of inter-related units within the hospital, and is in contact with a range of organizations in the community. The structure and activities of the various units is described. A number of aspects relevant to personnel organization in crisis intervention is discussed.

Key Words: information center; organizational preparation; terrorist attacks

Session 3B: Hospitals and Disaster

Chairpersons:

E. Šock (Slovenia)

K.O. Sundnes (Norway)

An Interhospital Disaster Mutual-Aid Plan

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Introduction: The United States (US) health care system is an integral part of its national response to disasters. Thus, all acute care hospitals are required to have internal and external disaster plans. Formalized agreements for the exchange of emergency resources on a reciprocal basis, known as mutual aid, are considered mandatory in the Fire/Rescue/Emergency Medical Services and law enforcement communities. Curiously, mutual-aid plans rarely are found among civilian U.S. hospitals.

Objective: To design a disaster mutual-aid agreement for the 18 District of Columbia Hospital Association facilities.

Methods: A task force of representatives from the disaster committees of the acute care hospitals and appropriate municipal authorities within the District of Columbia met monthly for one year. Their assignment was to create a document that provided a common language

pre-plan for how hospitals would respond to calls for or offers of assistance during internal or external disasters. This task force was chaired by a university-based, emergency physician with expertise in disaster response.

Results: A mutual-aid memorandum-of-understanding was created and endorsed by the Chief Executive Officers from all member institutions in the District of Columbia Hospital Association. This agreement authorizes the exchange of medical personnel, supplies, pharmaceuticals, and equipment between these hospitals. It also addresses evacuation or admission of patients to or from any member facility in the event of a disaster. The mutual-aid plan is supplemented by an interrogatory format to enable hospital administrators to incorporate components of the agreement into their individual disaster response plans.

Conclusion: We report the first mutual-aid agreement among civilian hospitals within the U.S. A multi-disciplinary approach with strong emergency medicine input was utilized to facilitate the process to its successful conclusion. We urge all hospitals in urban areas to consider similar developing agreements to improve the delivery of emergency health-care during disasters.

Key Words: disaster planning, hospitals, mutual aid

Catastrophe Contingency Plan of the Hospital for Accident Surgery in Graz (UKH)

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The preparation and organization of a Civilian Hospital in case of mass casualties and catastrophe is complicated. Most Central European hospitals do not have a computerized system at their disposal.

The Catastrophe Alarm Plan of the Hospital for Accident Surgery in Graz was developed in order to achieve immediate alarming of the employees via telephone. Since November 1995, this system has been available in our hospital. To our knowledge, this is the first organized alarm system in Central Europe.

In case of a mass casualty, any authorized person can trigger the alarm in a most simple way. After the identification of the person within the computer program, the appropriate alarm plan must be selected. Several alarm schedules are available in case of catastrophe:

1) Mass casualty, Grade I; 2) Mass casualty, Grade II; 3) Internal alarm; 4) Fire alarm; and 5) Special alarms. Afterwards, the requested persons are called via telephone and a computerized text can be heard on the phone. The employees are requested to dial a certain telephone number and to proceed immediately to the hospital. The input of that number confirms that the subscriber has understood the message. The head of the operation gives the instruction for releasing the alarm, and s/he is able to pursue the cause of the alarm on the screen of the computer.

Some 500 calls/minute can be carried out and eight recalls can be made simultaneously.

The costs of this system range between \$100,000 and \$120,000. The alarming and recall PC is a 486, 66 MHz

with 16 MB of memory. The telephone server is a UNIX-PC with ISDN card using the Austrian Teleconnect System. During the last 18 months, four practice alarms were released and a mass casualty Grade II was simulated.

Our preliminary experiences and results of these practice alarms will be focus of the presentation.

The Hospital for Accident Surgery is a Trauma Center with 200 beds and 9 ICU beds staffed by 33 Trauma Surgeons, 8 General Surgeons, and 13 Anesthetists who cover all the fields of Trauma and Pediatric Surgery.

Key Words: catastrophe contingency plan; computerized alarming system

The Role of University Hospitals in a Catastrophe

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Introduction: In 1995, 6,348 people were killed and close to 40,000 were injured by the Great Hanshin Earthquake in Japan. Because many affected people seek medical care in a catastrophe, dispatch of medical care teams becomes necessary. The aim of this study was to analyze mobilization of medical personnel at medical facilities in the affected region by the earthquake and to discuss how to deal with the shortage of human resources.

Material and Methods: We surveyed the number of patients and medical doctors at hospitals in Kobe City during the first week after the Great Hanshin Earthquake.

Results: Sixty-seven hospitals replied to the survey. On the first day, 11,396 affected people visited the 67 hospitals. The number of patients gradually declined day by day. Only 68% of doctors on duty were available on the first day because of personal difficulties in access. The ratio of emergency patients to doctors ranged from 0 to 148 (mean = 25.8) on the first day. At a private hospital in the most devastated area, only seven doctors had to take care of 1,033 patients, that was the largest in the city on that day. On the other hand, 112 was the largest number of doctors who could take part in medical care at an emergency room. That was at Kobe University Hospital, where 363 patients were treated by doctors including additional 94 doctors such as clinical fellows and residents of other departments, research fellows, medical and graduate students who were called out to deal with the patients.

Conclusion: Imbalance between medical resources and patients was observed in the affected region. University hospitals should recognize their advantage of abundant medical doctors to be dispatched to their own emergency room or other hospitals from the phase 0 in a disaster.

Key Words: disaster; earthquake; latch; physician: patient ratios; staffing; university hospital