Modular Intelligent Life-Line System (MILS) was planned primarily for safety systems in passages of cruise ships and fast ferries so that in case of an accident, all passengers can find a safe way out of their cabins to ship's deck and lifeboats. This computer-controlled light guidance can be adjusted easily to meet the actual needs and conditions. The intelligent light guidance system also has been installed to airports and aircraft.

Because the Life-Line is produced as strips in reels, it can be installed easily and readily moved in accordance with the needs. Its intrinsic features also make this product suitable for use at the scene of an accident or disaster.

Polyurethane, the basic material for Life-Lines, makes the product easy to handle and offers superior resistance to tearing and abrasion. It can be installed in the field even in extreme situations, because the product is resistant to tension, abrasion, and moisture. It also is essential that the consumption of energy is very small. All of these features make Life-Line a good fit for use in disasters. This light guidance system earns the epithet, "Intelligent", because it can be controlled from a portable computer located in the command centre.

Important and actual alphanumeric information can be transmitted in the form of safety guidance panels. These information texts can be controlled using the computer network. Thus, these texts can form an essential element in leading of different groups and individuals to their targets and goals instead of or beside the use of verbal communication.

Modular Intelligent Life-Line System will improve the coordination and efficiency of different groups engaged in rescue work, thus enabling the more optimal utilisation of resources. This improves the potential for saving human lives and decreasing the prolonged suffering of untreated casualties. There is a need to learn how to utilise this technique of intelligent light guidance in exercises, so that the rescue teams can get maximal benefit from this guidance system immediately as the first rescue groups arrive at a real accident scene.

Keywords: command; communications; computers; control; coordination; disaster; guidance system; information management; lighting in; resource utilisation; verbal communications

G-4
Telemedical Support Onboard a Large Passenger Ferry: Experiences from M/S Stena Germanica

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HECTOR is an European Union-sponsored project aimed at improving management of health emergencies through multimedia and telecommunication. One test site is located on M/S Stena Germanica — a ferry with a capacity of 2,200 passengers sailing between Göteborg and Kiel. About 500,000 passengers are transported annually. The traditional approach in cases of medical emergencies, has been radio contact (VHF) between the ship and MRCC, with medical assistance given by Radio Medical.

In December 1997, a telemedical system was installed on the ship. The system consists of a Mobimed Pegasus unit that can transmit 12-lead electrocardiogram (ECGs), as well as other vital signs (blood pressure, pulse, SaO_2). This unit is interfaced with a video conferencing system, enabling the officer caring for the patient to be in dual voice and video contact with the Emergency Department at SU/Östra Hospital. The physician answering the call can be chosen pending the nature of the emergency. All communications are relayed via the Inmarsat-B satellites to a ground station in Eik, Norway, and from there on by ISDN.

The system was evaluated during 1998. The impression, so far, has been an improvement of diagnostic accuracy and medical decision-making, especially for patients suffering from cardiac emergencies.

Keywords: boats; electrocardiogram; radio communications; satellites; telecommunications; telemedical system; video conferencing

General Session-III
Trauma-I
Monday, 10 May, 13:00–14:15 hours
Chair: ***Carlos M. Santiago, Kunio Kobayashi***

G-10: Medical Assortment of Patients with Multiple and Combined Trauma

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Introduction: In cases of technogenic disasters, car accidents, and earthquakes, the patients with poly-trauma make up from 50% to 80% of all victims. In such situations, the definition of gravity of the patient's condition, diagnostics of injuries, order of priority, and volume of antishock therapy both in the prehospital and hospital stages, play decisive roles and affect the mortality rate. All of these measures together are called medical assortment.

Aim of Investigation: The aim was to make a universal sorting card that could be used at the assembly point on the edge of site of the disaster, in ambulance cars, and in emergency rooms of hospitals. There should be kept sequence and continuity of diagnostics and treatment measures that are based on evaluation of the gravity and shockogenics of the injuries, using primary blocks for the therapy of shock.

Results: The sorting card is being tested in Emergency Hospital No. 2 of Rostov-On-Don, both in sporadic and mass numbers of admissions. Within the period of six years in the Department of Multiple and Combined Trauma, there were treated 9,861 patients with combined injuries. Patients requiring intensive and critical care comprised 72%. Mortality in this group was 25.5%. There were performed 14,480 surgical operations. The difference between clinical and forensic medical diagnoses comprised 1.6% of 1,025 autopsies. According to the study, the sorting card is handy for physicians and nurses. It takes minimum time to fill it in while a patient moves through the diagnostic conveyor. The data on the card are correlated easily with the data recorded at discharge using statistical analysis. This analysis provides a comparative picture at all the stages of treatment. There have to be carried out the main principles of treating patients with polytrauma: the therapy of shock precedes the diagnostics of injuries.

Conclusion: We hope our experience will be useful for the specialists of WADEM, and probably it will help to improve the quality of medical aid for patients with poly-trauma in disasters.

Keywords: assortment, medical; autopsies; card, sorting; care, critical; care, intensive; diagnostics; poly-trauma; shockogenics; trauma; treatment

G-11

An Analysis of 129 Trauma Victims Transferred to an Emergency and Critical Care Medical Center in a Middle-Size City

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Introduction: Most patients in a Trauma Center in a middle city are transferred from regional hospitals. On the other hand, in a big city, most cases are transported directly to the Center by ambulance-car. Thus, the clinical features of the patients hospitalized in a middle city hospital would differ from those observed in a big city center.

Purpose: To investigate the clinical features of trauma victims transferred to the Trauma Center in a middle-size city, Kurume.

Results: Between January 1994 and December 1998, 129 trauma patients who were transferred to this Center from regional hospitals died. The mean time between the accident and admission to the Center was 248 ±509 minutes. Eighty-one victims were injured in traffic accidents (29 car passengers, 19 motorcycle passengers, 11 bicycle passengers, and 22 pedestrians); 30 were injured by free fall, seven fell down; six with compression injuries; two were stabbed, and three from other reasons. The Injury Severity Score (ISS) of elderly victims (≥65yo) was 38.1 ±16.5, and the ISS of younger victims (<65yo) was 31.1 ±12.9. Bicycle passengers and pedestrians were chief causes of trauma for the elderly victims, while car passengers and motorcycle passengers were the principal causes for the younger victims. The chief causes of death were brain injury (74 cases), prolonged severe hemorrhagic shock (33 cases), and infection (9 cases). Especially, the fact that 32 of 33 patients with hemorrhagic shock died within 24 hours is drawing special attention. Several cases might be saved with earlier transportation to the Center.

Conclusion: The problems associated with the present transport network system in a middle-size city were revealed. We will discuss the factors of life-saving in a middle city.

Keywords: causes of injuries; injuries; hemorrhagic shock; shock; transfers; trauma centers; trauma deaths

G-12

Trauma Outcome: Review of Results in Urban Hospital in Southern Pakistan

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Introduction: It is now accepted that deaths in the trauma setting can be prevented by an organized approach to care. Little has been reported on outcome of trauma patients treated at a low volume, urban hospital in a developing nation with a commitment to provide trauma care. Karachi has a population of nine million, there has been rapid urbanization leading to unemployment, there has been influx of refuges from Afghanistan leading to Kalashnikov culture. Prehospital care is limited to a voluntary ambulance service with limited equipment for resuscitation and communication. The process of trauma care is poorly organized in the hospital settings. We have attempted to look at the outcome of patients and factors leading to poor outcome.

Methods: In-hospital care of these patients was reorganized. A trauma team was developed consisting of emergency room physicians, surgery residents, anesthesia, nurses, and other ancillary services; in addition, organization of care was streamlined by removing various hitches. The findings for all trauma patients were carefully documented and the data maintained in trauma registry. The outcome of each individual patient was evaluated using the TRISS method; also the process of care was evaluated.

Results: Seventy-three patients were admitted from 01 January to 30 September, 1998. Of these 33 (45.2%) had penetrating injuries. Sixty-two patients were transported by means other than ambulances consequently had not received any prehospital care.

The mean injury severity score was 16.52 with a range of 1–51. There were seven deaths; the mean ISS of the patients who died was 25. The predicted number of deaths for our population based on major trauma outcome study was 4.8. The M-statistic of the data set was 0.95 indicating an excellent match. The individual moralities were analyzed further in mortality conferences and attempts were made to categorize the deaths.

Conclusions: The outcome of patients was less than optimal because of non-existent prehospital care and a poor communication infrastructure. Improved care in the hospital can improve outcome by developing trauma teams, which in our context, was possible, by reorganizing hospital resources.

Keywords: deaths; in-hospital; organization; outcome; prehospital; process; severity score; team; trauma; urban hospital; volunteers