5,200 first responders. These were village laypersons trained in basic life support techniques in 2-day courses. Their only equipment was five rolls of elastic bandages. Advanced trauma life support techniques were provided by 135 trained and well-equipped rural paramedics.

Results: The rural basic trauma system had a significant impact on trauma survival. The mortality rate dropped from a pre-intervention level of 40% to 8.8% during the study period (95% Confidence Interval (CI) for difference of 23%–39%). In 16 patients (1.5%), the paramedics used advanced techniques (airway intubations, chest tube placement, etc.); all other patients received basic support only. The outcomes of patients managed primarily by first responders (first-responder group) were compared with patients managed only by trained paramedics (paramedic group). The response time was significantly less for the first-responder group (0.9 hours) compared to the paramedic group (2.0 hours). The overall mortality rate was significantly lower in the first-responder group, 7% versus 19% (95% CI=8.2%–15.0%). Also, in major trauma victims, the mortality was lower in those treated by the first-responder group (47%) than those treated by paramedics alone, (70.2%) (95% CI=5.3%–40.5%).

Conclusion: In traumatic events with long evacuations in rural areas, the key to initial survival is doing simple things early. Time, not sophisticated procedures, is the critical factor. Contrary to this lesson, disaster rescue missions traditionally consist of high-tech interventions arriving late at the scene. This is well documented in a recent Iranian report on the Bam earthquake, where the first emergency team entered the scene at Bam 14 hours after the accident; only 12.6% of flight evacuations took place during the first 24 hours.[4] Rather than advanced and expensive external interventions, basic disaster preparedness should involve training the ABCs of trauma to thousands of lay persons inside the risk zones.

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Keywords: disaster; paramedics; preparedness; response time; training

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Japanese Red Cross Medical Activity in Iranian Earthquake (2003–2004)

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A powerful earthquake struck the remote city of Bam located in the southeast area of Iran on 26 December 2003. It killed 26,271 people and injured approximately 40,000. The Japanese Red Cross Society dispatched a medical team composed of 15 staff (one team leader, four doctors, four nurses, three administrators, and three engineers). The medical activity of this basic healthcare emergency response unit (ERU) was begun on 31 December, and treated 1,163 patients during three weeks. The medical facility was designed to provide for minor surgeries, general medicine, and primary health care including psychological support. Fourteen percent of the problems were ailments closely related to the earthquake. Victims were crushed to death or were asphyxiated due to the thick and dense dust from the collapse. Both traumatic injuries and an upper respiratory infection constituted 10% of the total problems. No endemic diseases were identified.

As an emergency system for the earthquake-victims, Japanese basic healthcare ERU was deployed first in India 2001. In Iran, it also was effective in replenishing the function of the totally damaged local hospitals, especially during the initial stage of the disaster.

The clinical data of the patients will be presented, as will the medical activities of the Japanese Red Cross Society.

Keywords: activities; Bam; diseases; earthquake; effectiveness; emergency response unit; injuries; Japanese Red Cross Society; team

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Prior Topic Knowledge and Post-Course Improvement in a Disaster Preparedness Course

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Introduction: In the last several years, there has been an increased interest in disaster preparedness and response. Based on this interest, a course in disaster preparedness was created for five countries in Southeast Asia: Bangladesh, India, Indonesia, Nepal, and the Philippines. The course initially was taught to the most experienced hospital and administration personnel in each respective country.

Objectives: To: (1) briefly describe the course; (2) assess prior knowledge aptitude with course topics; (3) determine country variability in regards to topic knowledge base; and (4) determine course content that needs to be targeted in future disaster preparedness course development.

Methods: A team of international experts developed a four-day course covering 30 topics and exercises. The course used an earthquake as the primary disaster. Participants, who were hospital administrators and senior hospital health officials, were surveyed pre- and post-course, regarding prior topic knowledge and post-course topic knowledge. Data were compiled and variability assessed on non-earthquake-related topics. To date, the course has been held in Indonesia, Nepal, and the Philippines.

Results: The improvement scores for all topics were at 1.21/5. The greatest areas of improved knowledge were in Hospital Emergency Incident Command Systems (HEICS) (1.6/5), and on-site facilities (1.5/5). Of all participants, the five lowest topic areas of pretest knowledge were HEICS, on-site medical facilities, hospital evacua-

tion, mental health, and international coordination. According to the results of the post-test, the greatest areas of improvement were in disaster epidemiology, on-site medical facilities, hospital evacuation, international coordination, and media relations. There was significant country-to-country variability.

Conclusion: A majority of the disaster preparedness course was new, even for experienced hospital personnel. There was improvement in all topic matters after the course, with a significant improvement in disaster management topics. These topics should be targeted even more in future disaster preparedness courses.

Keywords: assessment; disaster; education; hospital personnel; knowledge; management; preparedness; training
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National Strategy For Training Disaster Medicine Service Experts in Russia

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There has been an increasing incidence of technogenic accidents and disasters during the last three years in Russia. In addition, there is a greater emphasis on the problems associated with terrorism. Together, these factors indicate a great need for training Disaster Medicine service experts in order to reduce health after-effects of emergencies.

The primary institution for training Disaster Medicine experts is the Institute for Disaster Medicine located in the All Russian Centre for Disaster Medicine, "Zaschita". There also are regional institutes for advanced medical training that constitute a part of the Disaster Medicine sub-faculties in regions other than Russia.

A primary goal of the national strategy of education is training highly qualified, Disaster Medicine experts for the mitigation of the damage created by events and the realization of the benefits of medical care at both the prehospital and hospital stages, preparedness of medical institutions for mass admission of the injured patients, and the delivery of timely medical care.

Within the framework of the Institute for Disaster Medicine, the following tasks are being solved: (1) organization and implementation of occupational training and certification of Disaster Medicine experts in the areas of management, treatment, and prophylaxis; (2) implementation and coordination of scientific research relating to Disaster Medicine; (3) implementation of regional and inter-regional drills on basic Disaster Medicine (i.e., radiation and chemical accidents, terrorist attacks); (4) training scientific and teaching personnel about Disaster Medicine; and (5) development and introduction of new forms of training (i.e., modular training, telemedicine conferences). More than 6,000 students have undergone training in 20 cycles of Disaster Medicine professional skills during 2000–2003. Being the Euroasian training center, ARCDM, "Zaschita" conducts out-reach training in the Republics of the former Soviet Union.

The new standardized curricula were evaluated highly by the Russian Ministry of Health and have been recommended for higher institutions for the training of Disaster Medicine experts. The basis of the curriculum is formed by recent scientific and practical developments in Disaster Medicine. These curricula also provide new teaching aids (information and telemedicine technologies) and special attention is given to acquiring practical habits and mastering the main issues related to medical responses during an emergency.

Within the framework of a joint program with the town of Tübingen, Germany, ARCDM, "Zaschita" also conducts an international experience in training devoted to responses to chemical terrorism. This system of training facilitates the development of a highly qualified Disaster Medicine physicians, and thus, promotes the level of preparedness of medical personnel for emergency response operations.

Keywords: ARCDM; chemical; curricula; disaster medicine; education; preparedness; Russia; terrorism; training
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Treatment of Patients with Multiple Organ Failure (MOF) Due to Traumatic Injuries

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Within one year, the intensive care unit (ICU) at Zha Bei Central Hospital in China received 15 patients with multiple traumatic injuries, including 11 with injuries to three organs. Eleven persons recovered and four died. Care of the wounded consisted of physical examination soon after hospitalization and ICU monitoring.

Hemodynamic monitoring was used to determine the character of pulmonary edema and to display the hemodynamics of the patients with septic shock and pulmonary function.

Those cases complicated by acute renal failure received continue artereo-venous filtration to remove the overhydration and medium small molecule substances from the blood.

Anti-coagulant therapy also was used. The victims of multiple traumatic injuries and the multiple organ failure (MOF) usually have received massive blood transfusions and suffer from disseminated intravascular coagulation (DIC). Then, the mechanism for blood coagulation and DIC had to be determined. If the patients have delayed prothrombin time and thrombin times, then cryopricipitate and FEP are used. If diagnosis of DIC is proven heparin, then other antihemolytic substance are used.

Overwhelming infection post splenetomy is a new problem. If it is possible, the patients must be evaluated using immuno-deficiency testing and receive the most appropriate treatment. Use of the ICU to manage the critically injured victims can decrease the mortality rates.

Keywords: artero-venous filtration; critical care; disseminated intravascular coagulation (DIC); infection; intensive care; multi-organ failure (MOF); trauma
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