

eases, (2) pronounced increase in antibiotic resistant organisms and an urgent necessity to improve the control of in-hospital infections, (3) profound and targeting extension of epidemiological surveillance and vaccination control of the lay public (4) considerable spread of tuberculosis (TB) as compared with the mean level for Europe, including drug resistant forms of TB, and (5) modernization of primary medical care (WHO definition) in the treatment of communicable diseases.

A model scenario for the preparatory response stage, a process of making strategic decisions, and tactics of their implementation in the system of the Baltic Sea countries' readiness for predictable, ecosocial, epidemiological threat have been developed as a result of the situation analysis.

**Key words:** assessment; Baltic countries; biological threat; communicable diseases; critical situations; data; epidemiological threats; epidemiology; HIV; primary care; sexual transmission; surveillance; tuberculosis; vaccination

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### Management Development Process in 2001 Disaster Medicine

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Substantial growth of new technologies, the dynamics of society, and macroecological shifts connected with these processes, give rise to a great number of disasters. The main strategy of human "survival" in the next century inevitably will be associated with the formation of an international, sufficiently effective system for coping with emergencies and the provision of adequate preparedness for disasters. Otherwise, all accumulated income of the community would not be enough for emergency relief, including medico-sanitary relief and emergency aftermath operations.

The main goal of this presentation is to discuss in principal improvements in management technologies in 2001-Disaster Medicine. A brief history of international management in humanitarian responses to emergency is provided. The most effective response structures and coordination hierarchy in large-scale emergencies are given when emergency relief operations are performed under the auspices of the UN Office for Coordination of Humanitarian Operations with involvement of the EHA/WHO experience, expertise, and medical humanitarian aid.

A hierarchy of strategies at the international level of emergency humanitarian assistance and their brief characteristics is described. An original form of strategy for donation engaging, allocation, and formation of permanent committees providing management in the disaster prone countries is proposed. It also is discussed in each specific case to confirm the necessity to appoint at the level of a Prime Minister's Office, a permanent representative or coordinator-in-chief on emergency problems who is capable of managing preparedness processing and decision-making on strategies for safety promotion in emergencies. The establishment of regional task forces consisting of such representatives and working groups responsible for differ-

ent regions and main aspects of medico-sanitary prevention and emergency response is proposed. This procedure would promote a higher level of mitigation, preparedness, and mobilization of resources and manpower in the urgent phase of emergency response. Decision-making of the problem at the initial stage by incorporation of appropriate items in the conference memorandum is discussed. The possibility of developing a principal fundamental document, that can constitute a basis for the "Code of International Humanitarian Support for Medical Care in Emergencies" as a preamble in the "Guidelines on the Use of Military and Civil Defence Assets in Disaster Relief" is proposed and discussed.

**Key words:** care, medical; code; disasters; hierarchy; humanitarian assistance; international; management; organization; phases; strategies; technologies

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### Infectious Diseases during the Flood Disaster in Mozambique 2000

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**Introduction:** The types of medical care that are predominantly needed after a disaster vary and depend on its cycle or its nature. After a flood disaster, it has been pointed out that diarrhea-characterized diseases such as cholera, dysentery, and malaria are likely to break out. Therefore, accurate information to identify any occurrence of infectious diseases is essential for effective relief activities in flood disasters.

**Methods:** The Japan Disaster Relief (JDR) Medical Team was sent to Mozambique where the flood disaster occurred during a period from January to March 2000. Taking this opportunity, the Team tried to collect information that could be useful for elucidating the post-flood epidemic of the infectious diseases through the use of medical care activities, epidemiological investigation, and laboratory testing. The JDR Medical Team executed its operation for two weeks in the Hokwe region of the State of Gaza, in the mid-south section of Mozambique where the damage was the greatest. Through medical care activities, the information was collected from medical records. Through epidemiological investigation, the information was collected by accessing the data at local medical facilities, by interviewing inhabitants/evacuees, and by conducting water analysis. Through laboratory testing, information was collected on items related to malaria and diarrhea-characterized diseases.

**Results:** The number of patients who underwent medical care was enormous as shown by a figure of 2,611 patients in 9 days. Infectious diseases were detected in 85% of all patients, among them, patients with malaria, respiratory infectious diseases, and diarrhea-characterized diseases predominated. To the contrary, there was no outbreak of the cholera and dysentery.

Through epidemiological investigation, self-recognition of healthiness decreased among the flood victims after the disaster. The incidence of malaria increased between four to five-fold over non-disaster periods and the quality of drinking water deteriorated after the disaster.

**Conclusions:** The incidence of the diarrhea-characterized diseases likely to become an epidemic, such as cholera and dysentery, was not high, although the incidence of infectious diseases, particularly malaria, and diarrhea-characterized diseases was increased and the risk of infectious diseases was also increased. The medical care activities, epidemiological investigation and laboratory testing executed in the frame of the international emergency aid program were found to be a useful means to track a post-disaster trend of the outbreak of infectious diseases.

**Key words:** cholera; disaster; diarrhea; dysentery; epidemic; epidemiology; floods; infectious diseases; Japan Disaster Relief (JDR) Medical Team; malaria; medical care; risk

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### Hypermagnesemia Common in CPAOA Patients in Japan

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**Introduction:** Only in ionized form, can magnesium be physiologically active in the human body. But current discussions of hypomagnesemia in critically ill or severely injured patients and clinical trials of magnesium administration for these patients mainly depend upon the data with serum total magnesium concentration. As for ionized magnesium ( $Mg^{2+}$ ), to our knowledge, reliable data in such patients are limited. We hypothesized that the  $Mg^{2+}$  concentration of critically ill or severely injured patients in our facility might be distributed widely.

**Methods:** We retrospectively studied serum  $Mg^{2+}$  concentration and clinical features of patients who presented in the emergency room (ER) of our critical care medical center during six months. In 215 consecutive critically ill or severely injured adult patients with age >15 years (males, 124; females, 92), we measured serum  $Mg^{2+}$  concentration as a part of our routine biochemical assessment concomitant with arterial blood gas analysis immediately after arrival. The  $Mg^{2+}$  measurement was determined using NOVA Stat Profile Ultra (NOVA Biomedical, Waltham, MA, USA) with reference interval of 0.45–0.60 mmol/L. Clinical features of the patients also were examined.

**Results:** The mean age of the patients was  $55.1 \pm 21.2$  (mean  $\pm$ SD) years, and the mean value of  $Mg^{2+}$  was  $0.531 \pm 0.115$  mmol/L (range: 0.23 to 1.40 mmol/L). 148 patients (68.8%) showed  $Mg^{2+}$  values within reference range,

whereas 30 (14.0%) were with hypo-magnesemic, and 37 (17.%) were hyper-magnesemic. In 47 patients (21.9%) with cardiopulmonary arrest on arrival (CPAPA),  $Mg^{2+}$  ( $0.575 \pm 0.140$  mmol/L) was significantly higher than for the non-CPAOA patients ( $0.519 \pm 0.103$  mmol/L) (Student's t-test:  $p < 0.05$ ). Patients with hypermagnesemia had 17 of the CPAOA (45.9%), which was significantly more frequent than for normomagnesemic (16.2%) and hypomagnesemia (20%) patients (chi-square test:  $p < 0.05$ ). Regression analysis showed no significant correlation between  $Mg^{2+}$  and  $Ca^{2+}$ ,  $Na^+$ , or  $K^+$  concentrations.

**Conclusion:** In critically ill or severely injured patients, especially in CPAOA patients, who presented in our ER, hypermagnesemia was common. Blind administration of magnesium to such patients is not advisable.

**Key words:** cardiopulmonary arrest; critically ill; emergency room; magnesium administration; magnesium levels

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### Major Aviation Disasters: EMS Strategies and Tactics

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Many airplane accidents are initially survivable. People die in the subsequent fire, smoke, and heat conditions. If a major cargo or passenger jet crashes, either on airport premises or miles away into a municipality, the final decision of life or death for the plane's occupants and people on the ground is made by fast, skilled responses. Considering that fire, rescue, and EMS responders will have only minutes to start successful lifesaving operations, it is crucial that even local emergency departments are prepared.

Using recent aviation disasters, the presentation demonstrates Comprehensive Emergency Management, Fire/Rescue/EMS Response Strategies and Tactics, Recovery and Investigative Operations, Airport-Community Disaster Planning, "Working Together TM," Common Challenges and Specific Hazards. The Family Assistance Act and the rules of different parties (i.e., hospitals, air carrier, Red Cross, NTSB, Law enforcement, aviation authority, coroner) are explained.

**Key words:** aircraft; aviation; crashes; fire; heat; lifesaving; responses; smoke; strategies; tactics

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### Meeting the Challenge of Catastrophic Domestic Terrorism: A Systems Approach to Local Jurisdiction Preparedness, and Development of Stand-alone Capabilities

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**Introduction:** History clearly illustrates that catastrophic terrorism can occur in any community at any time. Incidents such as the sarin releases in Matsumoto and