

lishing a support system to provide appropriate emergency dental care to victims of large-scale, natural disasters in cities.

**Keywords:** dental care; dentists; disaster; earthquake; infections; maxillofacial trauma; mobile offices; periodontitis; pulpitis; support systems

#### General Session VIII

#### Flood Disasters

Tuesday, 11, May, 8:00–9:00 hours

Chair: K. Joanne McGlown, Tadashi Yashuda

#### G-38

#### Consideration of Social Property on the Disaster Medicine of Flood and Waterlogging

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Natural disasters such as floods, droughts, earthquakes, hailstones, storms, forest fires, and so on usually cause great destruction that affects the living of humankind and social development. The floods of 1991 in the low reach, and in 1998 in the upper and middle reaches of Yangtze River as well as in Northeast China's Nenjiang and Songhua Rivers, have resulted in huge, direct economic losses, personnel injuries, and deaths. On the one hand, implementation of Disaster Medicine can reduce effectively the mortality rate of victims in the flooded areas. On the other hand, Disaster Medicine not only consists of the performance of cardiopulmonary resuscitation (CPR) on the site, but also to provide for disaster relief under strong, organized leadership, unified command, and effective coordination. From the experience of the battle against floods in 1998, the authors believe that the following essential factors must be observed in order to strive for victory against floods:

- 1) Establish a lead group that consists of health administration, the departments of medicine, and the Logistic Health Unit of the related military command that is responsible for implementation of first aid on-site, hygiene, medical supplies, patient transportation, etc.;
- 2) Foster a dedicated spirit among medical team members and other volunteers, and to assume the responsibility for the life and the belongings of victims;
- 3) Popularize training in CPR methods, and raise the consciousness of self- and mutual-aid in the whole population;
- 4) Conduct a series of hygiene measures as early as possible in order to prevent epidemic outbreaks; and
- 5) Guarantee communications and logistic support.

In summary, we should emphasize the social property of Disaster Medicine, and organize and mobilize every effort into the action of disaster relief.

**Keywords:** cardiopulmonary resuscitation (CPR); communications; coordination; disaster; disaster medicine; first aid; epidemics; floods; lead agency; logistic health units; mutual aid; organization; supplies; transportation

#### G-39

#### A Clinical Analysis of Hospitalized Patients during the Flood in Uijungbu City, Korea

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**Background:** Flood is the most common natural disaster in Korea, but few descriptions about the flood-related injury, illness, and medical requirements are noted. We will describe the type of medical care provided to a community in the chaos caused by flood.

**Methods:** Five emergency physicians reviewed the medical records of and interviewed the patients who were admitted from 05 August to 14 August 1998 in eight hospitals in Uijungbu City.

**Results:** This study involved 102 patients, 53 male and 49 women, age from one to eighty-two years. Most of the patients had minor problems, and <3% of them required critical care. Based on the principal diagnosis, the proportion of patients who were admitted was as follows: 1) lacerations, 39.2%; 2) contusions, 22.5%; 3) fractures, 13.7%; 4) infectious disease, 7.8%; 5) ligament rupture, 7.8%; 6) aggravation of chronic illness, 5.9%; 7) dermatitis, 2.0%; and 8) traumatic hyphema, 1.0%. The lacerations occurred in the: 1) foot, 37.9%; 2) lower leg, 27.0%; 3) thigh, 16.2%; 4) hand, 10.8%; and 5) head, 8.1%. The Achilles tendon was the most frequently injured ligament (62.5%), followed by the hand, 25%, and the knee, 12.5%. Of the flood-related laceration patients, 67.5% had progressed to cellulitis, especially sutured wounds, and a patient developed typical tetanus. Of the hospitalized patients, two patients were suspected to have developed post-traumatic stress disorder (PTSD).

**Conclusion:** Most of the flood-related illnesses and injuries were not critical and education about injury prevention such as wearing of shoes and clothes in the submerged area might lower the incidence of accidents. Even simple lacerated wounds should be irrigated and debrided thoroughly and left for delayed closure with tetanus immunization. Although of low incidence, psychological health support also is needed.

**Keywords:** floods; hospitals; illnesses; incidence; injuries; Korea; post-traumatic stress disorder (PTSD)

#### G-40

#### Facing Disasters: Hurricane Mitch: The Costa Rican Experience

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Costa Rica is located in the narrow Central American isthmus and was indirectly affected by Hurricane Mitch

with continual heavy rain from 22 October to 02 November, 1998. Although the eye of the storm did not make landfall in our territory, the huge area of rainfall included the entire country. The rains were most severe in the coastal areas. Costa Rica had developed an integral and coordinated plan to face disasters and major emergencies. This plan was activated as soon as information was available regarding the potential risk to our country by Hurricane Mitch.

Close and continual monitoring of previously identified flood-prone areas and a timely evacuation of people in those areas was coordinated through the National Emergency Commission.

#### Results:

- 1) 16,500 people had to be evacuated, 5,500 to 99 shelters and the rest to friend's or relatives homes;
- 2) Four people were reported dead and four were missing;
- 3) 10 people suffered injuries that required medical care;
- 4) 74 major roads were either blocked by landslides or damaged by flooding;
- 5) 36 bridges were destroyed;
- 6) 39 schools were damaged;
- 7) 740 houses were destroyed or damaged; and
- 8) Agricultural production was affected, particularly rice, sugar cane, bananas, coffee, corn; dairy products, and fishing.

**Conclusion:** Although Costa Rica was not directly affected by Hurricane winds, it suffered moderate to severe rains for 12 days. In spite of significant damage to crops and infrastructure, there were only minor consequences to human life and health.

We believe that emergency and disaster reduction, preparedness, and planning, as well as increasing public awareness and education must play a significant role in the end results from a phenomenon such as Hurricane Mitch; and that this accounts for the minor death and injury toll that we experienced.

**Keywords:** Costa Rica; disaster planning; Hurricane Mitch; infrastructure; preparedness; rain

#### G-41

##### Domestic Disaster Relief Activities in the Japanese Red Cross Society

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Disaster relief has been one of the Japanese Red Cross Society's (JRCS) primary activities since it first dispatched a medical relief team to assist victims of the terrible Mt. Bandai eruption in 1888. The JRCS demonstrated its strength in disaster relief after the Great Kanto (1923) and the Great Hanshin-Awaji (1995) earthquakes, the Unzen-Fugen volcanic eruption (1991), and various other natural disasters. The JRCS also is involved in rescue operations in cases of major accidents, for example, plane and train

crashes, gas explosions, and fires in public places such as hotels and department stores.

Under the Disaster Relief Law and the Disaster Countermeasures Basic Act, the JRCS is required to give medical care, manage the handling of corpses, and also to play a role as the coordinating organization to cooperate with the government and other public agencies in relief operation.

The author presents the JRCS disaster relief operations undertaken with the advanced cooperation of the other chapters in this forum during the heavy rain and flood disasters Japan encountered during the summer of 1998.

**Keywords:** accidents; cooperation; Disaster Countermeasure Basic act; disaster relief; Disaster Relief Law; Japanese Red Cross Society (JRCS); Great Hanshin-Awaji (1995) earthquake; Great Kanto (1923) earthquake; rescue

*General Session-X*  
**Prehospital Care**  
**Tuesday, 11 May, 8:00-9:00**  
**Chair: Michael Oles, Kei-ichi Tanaka**

#### G-48

##### Mobile ICU for Transport of Critically Ill — The Whangarei Experience

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**Introduction:** The transport of critically ill patients is a necessity the world over. With centralisation of Critical Care Medicine and Emergency Medicine resources, effective and quick transport of the critically ill becomes an integral part of modern medicine. Efficient transport of the critically ill and provision of ongoing transit intensive care for the critically ill are of great importance to New Zealand — a country with a land area the size of Japan and a population of 3.4 million. Northland is New Zealand's northern-most province with a population of 140,000. The density of population is 14 people per square kilometre.

**Results:** The nursing and medical staff at the Intensive Care Unit in Whangarei Hospital, New Zealand have been involved in transit care of the critically ill for 10 years. Health resources are centralised largely to the Whangarei Area Hospital, the base hospital for the region. The terrain is tough and subjected to the vagaries of weather. A mobile intensive care unit (ICU) provides transit care of the critically ill that facilitates movement of patients within the region and, in appropriate cases, transfer to a tertiary centre for cardiothoracic and neurosurgical management.

We use an effective mobile ICU — the bridge — that locks onto the patient stretcher, and is an efficient contraption for holding all the basic requirements of an ICU in a compact manner. The patient-bridge unit is