

The Medical Society in Osaka should have responded more rapidly as it does for natural disasters or large scale accidents. The response was not so immediate because food poisoning was not recognized as a disaster. If a doctor who is trained on disaster management would have seen the chaotic situations in Sakai, the response of the Medical Society of Osaka could have changed.

**Key Words:** epidemic; escherichia coli; food poisoning; hemolytic uremic syndrome

### Disaster Planning for Kinshasa City

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The natural, accidental, and/or human disasters disrupt the public health all over the world. Disasters can happen either in rich or in poor countries. Only good planning will allow the control of the consequences and decrease the effects.

Kinshasa is a metropolis in Africa, but hasn't evolved enough ways to resolve these problems. The crash disaster of type-K Market had shown that we were not sufficiently able to overcome these difficulties. In this study, the authors describe the disaster planning of Kinshasa City by using human and material resources. The basic management of this plan is to gather the hospitals and establish interventional areas.

Kinshasa has twenty-four zones. In each of them, a check of material resources (medical center, church, school, ambulances, ways of communications, etc.) had been done. Human resources (physicians, nurses, red cross rescuer, scouts, development's group) also has been checked. In a disaster, each of the twenty-four zones must begin to work itself before receiving any help. In this kind of management, Emergencies and Disaster problems must be resolved by local planning.

**Key Words:** Disaster; Kinshasa City; Planning

### Session 4: Children—Training—Trauma

Chairpersons:

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### Recurrent Neurogenic Pulmonary Edema Following Grand Mal Seizures in a 13-Year-Old Boy: A Case Report

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**Introduction:** Neurogenic pulmonary edema (NPE) occurs with several neurologic disorders including head injury, subarachnoid and intra-cerebral haemorrhage, intracranial tumor, and epileptic seizures. We report two well-documented episodes of NPE in a 13-year-old boy with idiopathic epilepsy.

**Case report:** The child was admitted to the hospital following a grand mal seizure at home. On admission, he

was in a stable post-ictal condition and was transferred to the pediatric ward. Three hours later, he developed a second episode of tonic-clonic seizures with severe respiratory distress and was transferred to the ICU. Respiratory rate was 45/minute (min.), pulse rate was 140/min., SpO<sub>2</sub> with room air was 75%, PaO<sub>2</sub> was 45 mmHg. Chest examination revealed diffuse inspiratory rates. Continuous positive pressure ventilation (CPPV) was started immediately, and chest x-ray showed right-sided diffuse alveolar and interstitial infiltration with no cardiac enlargement. With a body temperature of 39.5°C, the patient was diagnosed as having aspiration pneumonia, and he was treated with penicillin and clindamycin. Bronchoscopy showed diffuse bronchial haemorrhage without signs of aspiration. The CPPV was continued, and during the next 10 h, the respiratory distress syndrome disappeared. The chest x-ray was normal 24 h later, compatible with alveolar edema. Two days later, the boy was completely well and transferred to the pediatric ward.

One month later, the same child developed a second episode of NPE following a tonic-clonic seizure. He was treated with oxygen and furosemide, and again, the pulmonary edema resolved rapidly. With a different anti-epileptic therapy, no further episodes of NPE occurred.

**Conclusion:** NPE represents a rare but serious complication of generalized seizures. Aspiration pneumonia is the most important differential diagnosis in this context. It seems reasonable to initiate treatment for aspiration pneumonia until repeated chest x-rays and the clinical course clarify the diagnosis.

**Key Words:** aspiration; pulmonary edema; seizures

### Assessment of the Teaching of First-Aid Practices

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A total of 40,000 first-aiders working principally on high-risk sites (traumatology, electrification, burns) were assessed in order to define the problems of perception, integration, and restitution of their training. A specific computer programme was designed in order to allow a reliable assessment, accessible through several items.

Of the 12,000 persons trained in 1995–1996, almost 11,000 first-aiders were being retrained. From a sample of 10,262 assessment forms, several criteria were studied: 1) length of time since completion of the initial training; 2) number of subsequent training courses attended; 3) professional categorization; and 4) level of responsibility within the business. The answers to the questions on first-aid were analyzed for each of these criteria. The analyses brought to light proposals on specific teaching methods according to the socio-professional activity of the persons concerned. The first-aiders with a low academic level possessed an excellent level of practical acquisition, but had a very weak capacity for decision-making. From the third training course attended onwards, these persons displayed a high level of knowledge and capacity to intervene.

First-aiders with intellectual abilities (researchers, teachers, etc.) conversely displayed a low level of deci-

siveness when faced with multiple choices because of the dilemma posed by this choice. These persons need a developed theoretical grounding in order to justify their choice.

An evaluation programme of the teaching of emergency practices has been developed in order to exploit the answers to a questionnaire offered to more than 7,000 first-aiders trained each year. This programme was designed for a MacIntosh computer. It analyses four types of information: 1) personal details (profession, age) which remain confidential; 2) information concerning the training of the individual; 3) training course, quality, organization, teaching methods used, etc.; 4) answers to 10 questions concerning their knowledge of the CPR programme; the assessment of a victim, recovery position, mouth-to-mouth ventilation, chest compressions; and 5) steps to take when faced with: a) haemorrhage; b) heart attack; c) suffocation; d) electrocution; etc. The questions relating to the assessment of the level of knowledge can be modified without disrupting the comparative analysis from year to year.

Thus, with the help of the programme, it is possible to devise a validation or non-validation of the choice of teaching practices.

**Key Words:** academic level; CPR; evaluation; first-aid; training

#### **Training in Disaster Medicine: How to Simulate Pathologies and Treatments and How to Evaluate Efficiency of Medical Care**

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**Introduction:** Teaching Disaster Medicine requires a minimum of theoretical lectures and practical exercises. The Emergency Department of the Catholic University of Louvain organized a course on Disaster Medicine for physicians working in Emergency Departments and in prehospital medical teams. During the last course, a simulation demonstrated two difficulties: 1) How to efficiently simulate the evolution of pathologies, i.e., vital signs and clinical findings according to the applied treatments; and 2) How to efficiently evaluate triage, medical cares, and the regulation of evacuations.

**Methods:** To improve the communication between victims and medical staff, we separated 50 attending physicians into two groups: 15 "medical personal" and 35 "victims" (10 T1; 12 T2; 13 T3, and one dead). Each victim received a data-sheet containing information including history, vital signs, and clinical findings at sequential times and the effectiveness of the applied treatments or actions. Efficiency of triage, medical care, and regulation of evacuation can be evaluated "a posteriori" following these two parameters: 1) the avoidable mortality: number of deceased patients who did not benefit of a "just in time" treatment; and 2) the excess of treatment: based on medical actions without influence on the clinical evolution. At the end of the exercise, each victim completed a debrief-

ing-sheet concerning the adequacy of "his" management. **Rules**—We defined three categories of rules: 1) General and Security rules; 2) Diagnostic rules (measuring vital signs, clinical examination); and 3) Therapeutic rules (intravenous lines, endotracheal intubation, oxygen, ventilation).

**Results:** Amongst the 35 victims, 6 died (17.1%) due to late treatment, 2; excess of medication, 1; or lack of ventilation, 3.

**Conclusion:** Using physicians as victims in a disaster simulation improves the reliability of the evaluation of clinical evolutions. A retrospective analysis comparing the victim's data-sheets and the METTAG of each patient allows the evaluation of the efficiency of the provided cares in disaster simulations.

**Key Words:** disaster; efficiency; evaluation; mortality; physician; simulation

#### **Experience and Problems of Disaster Drills and Education for Medical Teams Using a Disaster Manual**

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The roles of the Clinical Research Institute of the National Hospital Tokyo Disaster Medical Center include education and promotion of disaster drills, as well as development of disaster handling manuals and studies of treatment of casualties resulting from a disaster.

Disaster simulation drills were repeated twice before a disaster handling manual was developed in March 1996. The disaster manual was designed to be as simple and practicable as is possible. After that time, the disaster manual and the education course were used on two occasions. These exercises and education apparently attracted a great deal of attention for disasters and deepened the knowledge of Disaster Medicine of medical teams from the main hospitals that were dispatched from almost all prefectures in Japan.

Many problems remain in our disaster handling manual, such as the lack of a section describing avoidance of a secondary exposure to toxic substances and treatment of patients of chronic diseases. However, a more practical disaster manual is thought to be essential for use in the training and education of appropriate personnel for Disaster Medicine as an adjunct to repeated disaster drills.

**Key Words:** disaster drill; disaster education; disaster manual

#### **Systems and Problems of Disaster Drills in the National Hospitals of Japan**

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In case of a disaster, the National Hospital Tokyo Disaster Medical Center acts as headquarters of all of the National Hospitals in Japan. All National Hospitals are divided into 9 blocks, and set-up main base hospitals