

During the period of work, depending on the specific medico-tactical situation, the FMHs tasks, the principals of its operation, and the variants of deployment have been amended accordingly.

By summarizing the experience gained, three basic variants of the FMHs operation in an armed conflict were identified:

- 1) Deployment of a surgical hospital on the basis of a local medical facility;
- 2) Deployment of a self-supported surgical hospital; and
- 3) Deployment of a self-supported multiprofile hospital.

Our experience indicates that the FMH of ARCDM "Zaschita" is well adapted for operation under such conditions, as its organizational and staff structure and medical equipment promote administering any type of medical care, including secondary care. The chief of FMH is capable of urgent responses to the changing situation, and can modify the task set to that medical unit in a timely fashion.

**Keywords:** armed conflicts; casualties; deployment; evacuation; field multiprofile hospital; hospital; military operations; organization; war

#### G-21

##### Effect of a Refugee Crisis on District Health Care: A Case Study from Karagwe District, Tanzania

*Mrs. Monica Andersson*

Senior Medical Coordinating Officer, Karlstad, Sweden

**Background:** In April 1994, approximately 160,000 Rwandan refugees suddenly arrived in the Karagwe District in NorthWestern. The refugees settled in large refugee camps in the district where they stayed until their sudden repatriation in December 1996. Medical assistance to the refugees was provided by several international organizations in co-operations with the United Nations High Commissioner for Refugees (UNHCR). The crisis had profound positive and negative socio-economic effects on the host society. Less is known about the impacts on the health care of the host society. The present study focuses on the effects of the crisis on Nyakahanga Hospital, the district hospital of Karagwe.

**Methods:** During a field visit to Nyakahanga in February–March 1998, statistical data from hospital records were collected and analysed. Structured and unstructured interviews were conducted with key informants and staff who had worked at Nyakahanga throughout the crisis. The following indicators of quality of obstetric care were analysed: 1) in-hospital maternal deaths; 2) stillbirth rates; 3) the percentage of deliveries done by Caesarian sections; and 4) the number of uterine ruptures.

**Results:** The most striking effects of the refugee crisis on the hospital was a severe loss of experienced medical personnel, especially qualified midwives. Most of these health workers left for better-paying employment in the refugee camps. Thus, an increased workload, including obstetric emergencies and major surgery, had to be dealt with by a reduced number of experienced staff. The findings suggest that this situation led to a deterioration

of quality of care at the hospital reflected by a statistically significant ( $p < 0.001$ ) increase in both hospital maternal mortality rates and stillbirth rates. The material support received by the hospital from various aid organizations was insufficient, poorly coordinated, and was received too late to be of value. The negative effects of the crisis on hospital care persisted for more than one year following the repatriation of the refugees.

**Conclusions:** As a result of the refugee crisis, the quality of medical services at the district hospital level deteriorated despite some support from relief agencies. Low-income countries with fragile health-care systems and a permanent shortage of qualified medical personnel host most of the world's refugees. In planning for future interventions in refugee catastrophes, it is essential that relief organisations give appropriate assistance not only to the refugees, but also to the existing health-care system of the host country.

**Keywords:** aid; health care; host countries; obstetrics; quality; refugee camps; refugees; relief; repatriation; socio-economic effects; Tanzania; UNHCR

#### G-22

##### Contribution to the Study of International Law Concerning Natural and Technologic Disasters: Problems Posed by Unidentified Patients Crossing National Boundaries after Large-Scale Disasters

*Jean Marie Fonrouge, MD, LLD,<sup>1</sup>*

*S. William A. Gunn, MD<sup>2</sup>*

1. Universitary Hospital Edouard Herriot, Lyon, France
2. WADEM, Genève, Suisse

This study deals with legal problems posed by organising aid as a result of natural or technologic disasters. Such disasters not only require exceptional medical organisation, but also specific international co-ordination, so that emergency teams may arrive early on the scene.

Moreover, these teams need to be managed properly on site, so that efficient co-operation allows the victims to be treated, and the injured who need it, to be transported to the medical institutions of neighbouring countries. While the sending of international medical aid is now well-understood, the crossing of frontiers by unidentified victims in peace time remains a major problem of international law. Any decision to allow such a victim to cross a boundary must respect all of the established identification techniques, of which the Interpol formula is the reference. Bilateral and multilateral agreements should be designed to allow such crossings in circumstances of force majeure.

This study presents model agreements such as those existing between France and Switzerland and those defined in the Convention of American States. Planning ahead for an appropriate response to the inevitable disasters of the future implies the definition of new specific agreements, so that efficient international aid may become a reality for all victims of large-scale natural and

technologic disasters.

**Keywords:** disaster, natural; disaster, technological; international law;

### G-23

#### Identification File and Guidelines for Identifying Disaster Victims Before Evacuations

*Bogdan Floréa, MD; Isabelle Mons;*

*Jean Marie Fonrouge, MD, LLD*

SAMU 69, Prehospital Medical Service, Cedex, France

The concept of evacuating comatose victims is valid in disaster situations, particularly in fire disasters (Los Alfaques-Spain, Dabwali-India, Mecca) because burn patients require care in a specialized hospital unit in a neighbouring country.

Each emergency unit should have both evacuation and identification files at its disposal. Such files must:

- 1) Enable simple, rapid comparable identification (Interpol);
- 2) Allow comparison with information supplied by teams investigating close families and structures possessing useful information; and
- 3) Enable follow-up of this identification by the medical unit receiving the patient.

For this, it is necessary to organise, in each emergency service, an initial training in identification data for all physicians, nurses, emergency medical technicians, and paramedics who might be the first on-site at a disaster. This organization requires the coordination with the forensic physicians.

This lecture presents the different examples of files (USA, Austria, France, and Interpol) and the programme of this teaching for the emergency and prehospital medical team.

**Keywords:** disaster; identification; prehospital medicine

### G-24

#### Complex Emergency and Its Health Impact in Indonesia

*Bagus Mulyadi, MD; Emil Agustiono, MD*

Directorate General of Medical Care/Crisis Center, Ministry of Health, Republic of Indonesia, Jakarta, Indonesia

**Introduction:** Recently, the people of Indonesia have been plagued by an economic crisis, political instability, imbalance, and unequal people's welfare as well as decreasing ability of the people to pay. Indonesia has shifted from a peaceful country to one that is vulnerable and prone to man-made disasters such as civil unrest, terrorism, social/ethnic conflict, as well as other conditions that tend to create a high tension environment. Since the 1998, riots have killed more than 2,000 people, injured approximately 50,000 persons, and more than 2,000,000 people suffered from psycho-traumatic diseases, and, thousands of people were homeless. Pre-hospital and hospital emergency services in Indonesia

have functioned normally during the crises.

**Purpose:** To observe and identify emergency and disaster medical services problems at the affected provinces.

**Methods:** Observation and site visits were conducted in some affected areas in Indonesia by personnel from the Crisis Center to collect information about emergency medical relief activities during one month after the disaster from hospitals, health centre administrations, police departments, and the local governments.

**Results:** The existing hazards and economic crisis have caused budget constraints. Thus, funds were not available for drugs including emergency drugs, medical supplies/consumable goods, laboratory reagents, emergency operations, and maintenance costs of medical equipment.

**Conclusion:** The integrated Emergency Medical Services System did not function well at hospitals surrounding the emergency and disaster site. The public health problems in the affected areas should be controlled soon after disaster, because of the possibility for outbreaks of infectious diseases.

**Keywords:** budget; civil unrest; complex emergency; disaster; economic constraints; economic crisis; emergency medical services; health; Indonesia; public health; riots; terrorism

### G-25

#### 15 Multi-Casualty Incidents Caused by Terrorist Bombing Explosions — Treated by Magen David Adom in Israel

*Zvi Feigenberg, MD*

Medical Director, Magen David Adom in Israel, Tel Aviv, Israel

Ever since the Oslo agreement, scores of terrorists bombing explosions have been perpetrated by Palestinian terrorists. Fifteen of these incidents were multi-casualty events in that in each event, at least 20 casualties were treated and evacuated from the scene. In all these incidents, the prehospital treatment was provided by Magen David Adom.

In the 15 incidents that occurred in urban localities, there was a total of 143 persons killed, and 678 wounded (an average of 45 per incident). About one-third of the wounded were urgent cases (ISS: 9–75). The average number of medical teams per incident was 62 consisting of all levels — physicians, paramedics, emergency medical technicians (EMTs), and volunteers. The average number of evacuating vehicles per incident was 23 ambulances and mobile intensive care units (MICUs). Total evacuation time (until the last casualty was evacuated from the scene) averaged 38.4 minutes.

The main conclusions regarding treatment, evacuation, and channeling of casualties from these terrorist incidents include:

- 1) Despite the short length of treatment time on the scene, lifesaving procedures were carried out (intubations and clearance of airways, tourniquets, and chest drainage) in 30% of the severely injured;
- 2) A correct dispersion of the casualties was carried out