

Objective: To use the main primary health care concepts and messages of the *World Health Report 2008* to discuss how primary health care fits into health emergency risk management and vice versa.

Methods: Key primary health care concepts will be reviewed and primary health care reform will be discussed. Characteristics of health systems which have been shown in high-income countries and low-income countries to be good indicators of the strength of a primary healthcare system will be reviewed. These will all be linked to the knowledge of disaster management as it pertains to health.

Results: The literature about primary health care in disasters is sparse. The primary healthcare model does provide more emphasis on equity, community participation, and intersectoral approaches, and understanding these links is important to those involved in health and disasters. Developing the strategies to apply these concepts and principles is paramount.

Conclusions: Primary health care can help strengthen health in risk reduction, emergency preparedness, disaster response, and recovery, particularly in low resource areas.

Keywords: disaster health management; high-income country; low-income country; primary health care; World Health Report

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Keynote 7

Displaced and Migrating Persons and Health Issues

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Migration always has been an essential and key part of social and economic development and there are countries such as the US, Canada, and Australia that have been built on human migration. Migration today, however, has assumed a far less structured character than in the past; it involves far more irregular migrants and in some parts of the world, migrants also tends to take more difficult and hazardous routes. As a result of this and the growing hardening of attitudes and policies on migration, they are being exposed to more precarious health and social environments and are exposed to new social and physical insults to well being. Even when they arrive in their countries of final destination, the type of work they are expected to do, the conditions in which they are expected to live, and the indirect health hazards they are exposed to, place them at serious risk of accidents and illnesses of different kinds. As more data become available, it is becoming clear that the frequency and, in many cases, the severity of the psychosocial problems, and communicable and non-communicable diseases that a large proportion of migrants are faced with, constitute a major threat to national health profiles as well as to the migrants themselves. Because of legal and insurance problems, and cultural and linguistic differences, or simply because they are often unaware of what services they might have access to, migrant health is becoming a greater matter of concern than ever. The situation also is becoming more pressing because of the rapidly growing number of

migrants. Adapting many of the well-tried principles and practices of disaster and emergency medicine to these situations could go far in helping resolve the problems and meet the challenge. Sensitizing healthcare personnel to the principles and philosophy of disaster and emergency medicine and its relevance to the cause of migrants also would be a major step forward. The challenge will be how best to do this, how best to train national and international staff, and how to promote work in this area.

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Keynote 8

Public Health Emergencies: The Common Thread

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Public health emergencies are disasters that adversely impact the public health system and its protective infrastructure; and occur when this protective threshold is destroyed, overwhelmed, not recovered or maintained, or denied to populations in need. They are represented and measured, not by direct health indices, but rather by indirect indices that have been found to be larger and more profound than those resulting from the initial effect of the disaster itself in most situations. Several examples of public health emergencies will be presented to illustrate the common thread that has emerged across all major disasters whether they be war, pandemics, or large-scale natural disasters. Environmental, population-based factors, and other contributors to the rising consequences of public health emergencies will be discussed. When public health emergencies are properly recognized, improved prevention, preparedness and planning will occur, resulting in a measured decline in both excess mortality and morbidity.

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Oral Presentations—CBRNE

Decontamination and Treatment of Injured Persons during Chemical Agent Incidents

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Introduction: The creation of a medical incident response plan for the treatment of injured victims contaminated during a chemical incident challenges more than one of the rescue services involved in civil emergency response. Our main objective was to create an incident management plan compatible with existing rescue service logistics and resources.

Methods: Under the supervision of the Schutzkommission des Inneren and with delegates from emergency medical services, fire, technical rescue services, and the German Army, a consensus conference to investigate the general conditions necessary and the existing structure available for managing victims of chemical incidents, was created. Typical injury patterns and their treatment in respect to decontamination

procedures were considered, the necessary structure for casualty treatment and decontamination areas were derived, and commercially available products were tested for their usefulness in this situation. Standard operating procedures and algorithms were developed to aid realization of the concept. The suitability of the personal protective equipment and the question, if under these conditions the procedures of advanced life support can be performed, was evaluated in a standardized simulator model. The necessary training for rescue personnel involved was defined. To validate the concept, an exercise was performed.

Results: All persons present at a chemical incident are to be classified as being contaminated. Injured persons must be separated into triage categories, and life threatening conditions treated before being decontaminated. Decontamination at the incident scene is necessary to prevent the transportation of the contaminant away from the incident scene. The principles of the decontamination of injured persons are based on the following pillars: triage, early removal of clothing, management of personal belongings and valuables, basic life support, spot decontamination, management and sealing of open wounds, application of antidotes, and primary decontamination of ambulant and non-ambulant victims.

The cooperation and the definition of roles between fire services (decontamination) and emergency medical services (triage and treatment) are necessary.

The concept uses existing decontamination vehicles used for the decontamination of fire fighters, by expanding its inventory with medical equipment, and extra technical apparatus. Using a modular approach, the system can be easily augmented by further units to treat multiple numbers of victims. However, demands on all rescue services involved are high, and must be complemented with an equally high standard of training, especially where rescue services have to learn skills not akin to their standard duties. An implementation of the system covering all geographical areas with specialized units is not possible, therefore a risk analysis to optimally position limited resources has to be conducted. Legislative bodies must strive to allow for an uncomplicated integration and disposition of disaster management resources.

Keywords: chemical agent; decontamination; treatment

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Mass-Decontamination Gate for Hospitals: A Swiss Western State Model

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Introduction: Accidental or voluntary chemical incidents create many health and environmental problems. According to the physico-chemical properties of the released agent, risks are present for all involved persons (victims, rescuers),

either by primary contamination (contact with skin or mucosal surfaces, respiratory tract inhalation), or by secondary contamination from close contact with exposed victims. Recent descriptions of mass-chemical accidents with numerous spontaneous evacuations from the contaminated zone to nearby hospitals represent an important risk for secondary contamination to these hospitals.

Methods: The use of an easy-to-set-up decontamination gate to protect or preserve hospitals from contamination of their site and personnel following a massive influx of contaminated patients was evaluated. A multi-disciplinary team equipped six regional hospitals with mass-decontamination gates without mobilizing excessive human or material resources.

Results: Basic formation of hospital personnel took two hours; attaching the gate to a local fire hydrant took <10 minutes.

Conclusions: This decontamination gate has several advantages and limitations that will be discussed. However, it does have merit as an autonomous protection for non-specialized and equipped hospitals to prevent secondary contamination.

Keywords: chemical, biological, radiological, nuclear, or explosive; decontamination; mass decontamination; model

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Problems in Delivering Emergency Medical Care in Chemically Contaminated Environments

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Early advanced life support measures may be required for victims of a chemical agent release where the main life-threatening hazard is respiratory failure and arrest. If the chemical is persistent, life support should be provided before decontamination by suitably protected emergency responders. The level of chemical contamination often is not known, and this uncertainty has led to the recommendation of the use of self-contained protective suits (Level A or B) to provide maximum security. However, most hazardous materials protocols envisage a rapid removal of casualties from the hot zone to a decontamination point in the warm zone where the level of risk is lower. Wearing personal protective equipment has consequences for medical responders and their ability to provide essential life support skills. Higher levels of protection are of limited duration and may present significant risks for the wearers. Level-C protection with a filtration respirator is more appropriate. In the medical management of chemical casualties, there must be a rational balance between perceived risk, the appropriate level of protection, and the ability to deliver medical care. This presentation will examine: (1) the factors that should be considered in providing a balance between an acceptable level of risk to responders facing secondary contamination and the delivery of essential medical care for the victims; and (2) key medical competences that must be preserved while wearing protective equipment.

Keywords: chemical, biological, radiological, nuclear and explosive; contamination; disaster management; emergency medical care services systems; personal protective equipment

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