

ment of capacity for preparedness and response; (4) provision of technical guide for structural integrity of health facilities; and (5) advocacy and awareness of safe health facilities campaign. Target countries included Cambodia, Lao PDR, Philippines, and Vietnam.

Conclusions: The strategy has provided positive results in terms of advocacy, technical resources on preparedness of hospitals, assessment of health facilities, and capability enhancement of health emergency managers at the national and local levels. Building strong infrastructures with a prepared staff that could remain functional during natural hazards is an integral part of disaster risk reduction. Advocacy, sharing of experiences, partnership with donors and private sectors, participation of civil society, and development of national policies will be enhanced as a next step. **Keywords:** Asia; disaster; health; preparedness; public health; risk reduction; Western Pacific

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Education and Training in Disaster Medicine in Belgium

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Introduction: In Belgium, as in many other countries, the courses of disaster medicine vary considerably in terms of objectives, basic requirements, acquired skills, learning methods, and content. The lack of coherence leads to two types of problems:

1. The various trainings do not supply skills and qualifications at the same level; and
2. The authorities cannot use the acquired skills and knowledge as functioning standards.

Methods: Representatives of the seven Belgian universities and representatives of scientific and professional societies in emergency medicine came together to:

1. Make an inventory of the existing training programs; and
2. Define a common vision for the future.

Results: A consensus was agreed upon to determine four levels of education:

1. A basic level for each relief professional in different disciplines. The objective is to allow those professionals to understand the organization of emergency medical services and to collaborate with it: theoretical course of four hours;
2. A basic level for doctors and specialized nurses working in an emergency department. The objective is to train them in case they are faced with a large number of victims, pending the arrival of reinforcements: 20 hours, with a field exercise;
3. A basic level for emergency physicians and nurses for the responsibility function of operational director of emergency medical services including risk assessment: 15 days of courses with a tabletop exercise, a field exercise, and an evaluation; and
4. A higher level for doctors in education, research, and risk analysis: Master after Master: one year.

Conclusions: It was decided unanimously that harmonization of training is necessary in Belgium. A large medical consensus

was researched to keep four levels of education and to harmonize the contents and duration of the different trainings.

Keywords: Belgium; disaster medicine; education; training

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Bio-Terror Interactive Software and its Impact on the Knowledge of First Responders

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Preparedness for a bioterrorist attack depends, among other things, on the early identification of the event by a group of *sentinels*, which by definition, includes physicians, paramedics, and nurses who first encounter affected individuals.

Data indicated that the knowledge and awareness level of medical staff regarding bioterrorist agents is low—a fact that may have a negative impact on the speed with which the agents are identified, and thus, the ability to affect the course of the diseases they cause.

In order to improve the knowledge of medical staff regarding bioterrorism agents, interactive software was developed and into four units, each one dealing with one of the four bioterrorism agents: (1) anthrax; (2) plague; (3) smallpox; and (4) botulinum.

The software was designed for use by medical personnel in hospitals or community clinics, and features a convenient and user-friendly work interface that independently manages clinical cases and provides feedback. Similarly, the software was designed for use in any large institution: (hospitals, military medical schools, etc.), so it can be used at a time that is convenient for the attending physician, in almost any place without the need for a trained instructor.

The results of surveys and tests administered among physicians and paramedics who sampled the software at the military medical school indicate substantial student satisfaction with the new learning method as well as a significant increase in knowledge regarding bioterrorism agents.

Since this learning tool is intended to increase knowledge and awareness among physicians and paramedics, we anticipate that the guide ultimately will improve the preparedness of the medical system for a bioterrorist attack.

Keywords: bioterrorism; computer; first responders; software

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Managing Surge Capacity—Lessons Learned from a National, Mass-Casualty Simulation Exercise

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Introduction: Surge capacity is a challenge that all emergency departments face during a mass-casualty situation. A full-scale, mass-casualty simulation exercise at Singapore General Hospital and the lessons learned will be presented. The hospital's experience in creating temporary intensive care unit beds and the presence of a forward deployed anesthesiologist and surgeon at the emergency department also will be presented.

Methods: A real-time simulation exercise with trained volunteers acting as casualties was conducted by the Ministry of Health. The hospital had to submit its mass-casualty

protocol prior to the exercise. A best-practice guideline on various hospital processes was provided by the Ministry. Exercise controllers and peer observers from other hospitals were assigned to evaluate the various system processes and utilized a graded scoring system. The casualty load was timed to simulate surge capacity. The scenario was a bomb blast at a mass transportation system station.

Results: A total of 180 casualty simulators were managed from the emergency department to their final inpatient disposition. The hospital's operational readiness and capabilities were validated and assessed. A four-tiered State of Readiness Score (fully ready, high state, acceptable state, barely ready) was given at the end of the exercise.

Conclusions: Mass-casualty simulation exercises provide realism for rehearsing hospital disaster plans. The presence of anesthesia and surgical teams in the emergency department, and the direct command of operating theater space and intensive care beds helps in the timely disposition of critically injured casualties.

Keywords: drill; lessons learned; management; mass-casualty incident; simulation; surge capacity

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Emergency Medicine at Mass Gatherings

Lessons Learned from the 2008 Democratic National Convention

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Background: The 2008 Democratic National Convention (DNC) was held in Denver, Colorado, from 25 August through 28 August 2008. The influx of people created unique challenges for the Denver Health Paramedic Division (DHPD) and Denver Health's Emergency Department that resulted in planning, training, and other preparations for more than a year and a half prior to the event.

Methods: Preparations for the DNC resulted in a number of changes to protocols, disaster plans, and management approaches. The additions and changes made in preparation for the DNC and how they impacted implementation and management in this urban system will be summarized.

Results: The lessons learned from the management of the DNC will be reviewed along with recommendations for others called upon to manage similar events. Multiple areas for improvement in preparation and management were identified. Some of these were successful, while others did not yield the expected results. The operational period of the DNC provided the opportunity to test a number of changes to the system, both in terms of planning and preparedness. For example, strategically placed strike teams eliminated the need for >250 ambulance responses and allowed for the allocation of those resources to other areas.

Conclusions: Relationships and cooperation played key roles in the planning and execution of this event. Partnerships with local, state, and federal agencies were extremely beneficial. An integrated health and medical planning approach is crucial to effective implementation. Balancing realistic planning assumptions with worst-case

scenarios is necessary to derive real resource needs and develop a scalable plan. Extensive preparations resulted in successful management; legacy of the DNC is the improved level of preparedness in Denver.

Keywords: cooperation; Democratic National Convention; lessons learned; mass gathering; preparedness

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Resilience

Resilience of Israeli Rescue Workers—ZAKA Body Handlers

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Introduction: Rescue workers routinely are exposed to horrific sights and direct physical contact with bodies. Studies in various contexts, including war, accidents, and disasters indicate that exposure to bodies may cause psychological disturbances. However, these studies also have shown a wide range of psychological distress that may stem from various circumstantial or personal sources. This study examines the implications of the level of exposure to stress, professional experience, and repressive coping style on post-traumatic stress disorder (PTSD) and psychiatric symptomatology of Israeli volunteer body handlers following suicide terrorist attacks.

Methods: The sample comprised 87 male ZAKA volunteers with an age range of 28–72 years; most of them married (96.5%) and gainfully employed (82.5%). They were asked to complete anonymous, self-report questionnaires that included socio-demographic background, professional and personal exposure, perception of threat, PTSD Inventory, psychological distress, and a coping scale.

Results: Despite massive exposure to extremely aversive stimuli, only 2% of the sample reported PTSD symptom clusters. This rate is substantially lower than the 13–20% incidence of PTSD referenced in most studies of rescue workers as well as lower than the estimated rate of approximately 8% in the general population. Furthermore, the ZAKA workers' mean levels of psychiatric symptoms also were significantly lower than Israeli norms. In terms of coping, most frequently used the styles were religious and repression.

Conclusions: These findings contradict the expectation that ZAKA volunteers would manifest high levels of PTSD and general psychiatric symptomatology, demonstrating high level of resilience. Based on this evidence, therapeutic interventions should not be provided on a universal basis but be based on need. Further study should examine personality characteristics of resilient emergency workers like Zaka's volunteers. Repressive coping style may be considered as a stress-buffering resource.

Keywords: body handlers; dead bodies; Israel; rescue workers; resilience

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