

over civilian populations at risk. Qualitative and quantitative methods need to be developed for measuring quality and effectiveness in the educational and reporting processes proposed in this model.

Keywords: assessment; early medical response; education; health workers; model; resources; surveillance

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Reevaluation of the Swedish Chemical/Biological/Radiological/Nuclear (CBRN) Program—Decontamination and Personal Protective Equipment (PPE)

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Sweden is known for its high standards of preparation for chemical incidents. Resources on chemical incidents were allocated from the preparedness during the Cold War.

Two main parts of the system are the personal protective equipment (PPE) and the mobile units for decontamination. One part includes the stationary decontamination units in hospitals. Studies have been performed on these parts of the program. The results are under evaluation and will be presented. The PPE has been tested in different ways, was found to resist chemicals for a limited time, and is recommended to be used in combination with the charcoal garment. The test procedure and the results will be presented.

The Swedish healthcare system and Swedish rescue services use both stationary and mobile decontamination units. The stationary units have been studied earlier with results pinpointing the need of strict regime while performing decontamination to obtain good results. In the case of mobile units, a corresponding study has been performed. The results indicate that those units have limitations: the time to assemble the unit, the flow of patients through the unit, the technical problems, and, most importantly, the results in terms of decontamination efficiency.

In light of the above results, a new strategy to handle casualties contaminated by chemicals is being located. Strict rules will be developed for when and how decontamination should be done. Smaller units to perform a fast decontamination will be created, as well as techniques to transport still-contaminated patients to a hospital, and a final decontamination will be performed before entering the hospital, which will be of no risk to ambulance personnel.

Keywords: assessment; casualties; decontamination; mobile units; personal protective equipment (PPE); Sweden

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How to Confront Chemical Terrorism: Medical Management of Nerve Agent Casualties (Lessons Learned from the Iran-Iraq War and the First OPCW Exercise on Delivery of Assistance (ASSISTEX 1))

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Terrorists have used chemical warfare agents in the past and may use them again. These agents range from those

that cause death quickly, such as nerve agents and cyanide, to those with effects beginning hours after exposure, such as mustard gas and other pulmonary effecting agents. Although prevention of such an attack would be the best strategy, this may not be possible. Medical personnel must be prepared to diagnose, manage, and triage casualties. To do this, they must have equipment and knowledge.

Medical care to a large number of critical patients during a mass-casualty situation can also be a challenge in terms of patients, providers, and priorities. The large number of patients often exceeds the medical community's ability to provide timely treatment. Because of the specific nature of chemical warfare agents in terms of their lethal or disabling effects and the overwhelming number of casualties needing medical treatment in chemical attacks or after terrorist use of chemical warfare agents, an effective medical system for management of chemical casualties can save the lives of many patients.

Nerve agents, organophosphates, first were used by Iraqi forces against Iranian troops during the 1980–1988 war, and caused thousands of casualties among military personnel as well as civilians; these agents also were used by terrorists as the weapon of choice in the Tokyo subway Sarin attack.

This presentation describes several recommended methods for management of nerve agent casualties including: (1) triage system; (2) antidote therapy; and (3) mass-casualty management. These recommendations are based on the experiences of medical teams during the Iran–Iraq War as well as the first international exercise on the delivery of assistance in the case of a chemo-terrorist attack (ASSISTEX 1).

Keywords: agents; chemical; mass casualty; management; nerve; preparedness; recommendations; terrorist

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Theme 8: Children in Disasters

Chair: Leonid Roshal

Psychosocial Recovery and Functioning of Children Exposed to Violence: Implications for Prevention and Intervention

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Within the United States, increasing attention now is being paid to the psychosocial needs of children traumatized by terrorism, violence, and disasters. While terrorism is a newer phenomenon within United States borders, millions of North American children are exposed to family or community violence every year as victims or witnesses. While the sources, nature, and context of violent incidents vary greatly, evidence suggests that children's responses to these extreme forms of traumatic stress may be similar. Cross-sectional and limited longitudinal evidence points to associations between exposure to violence (as victim or witness) and both internal (distress, post-traumatic, depressive) and external (conduct and behavioral) symptoms in children. Despite this, there is very little knowledge regard-

ing children's recovery in the aftermath of violent incidents. This presentation summarizes initial results from a short-term, longitudinal study that aims to elucidate the factors predicting recovery over the first six months following children's exposure to an incident of traumatic, intimate partner violence. Following their calls for emergency police services for domestic violence, 30 mother-child dyads were recruited and interviewed three times within the six months following the violent incident. Applying a developmental risk and resilience perspective, it is hypothesized that factors influencing recovery of children following traumatic exposure include: (1) violence-related factors (ongoing violence exposure, dangerousness and proximity of the perpetrator); (2) child factors (psychopathology, IQ); (3) parenting factors (effective parenting of the non-abusive parent, and parent-child relationship factors), and (4) cumulative risk factors (history of exposure to violence and other significant risks, such as parental loss, poverty, homelessness, parent's mental illness, etc.).

Implications for the development of acute interventions for children exposed to violence and terrorism are discussed. There is a dearth of research on the utility of indicated prevention/crisis outreach efforts in the immediate aftermath of violence. Nonetheless, it is suggested that intervening as early as possible following exposure to violence may provide a valuable opportunity to improve the trajectory of recovery for traumatized children.

Keywords: children; domestic violence; intervention; prevention; psychosocial; terrorism; victim; violence; witness

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Pediatric Surgical Patients in the Bam Earthquake

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Introduction: In December 2003, one of the most catastrophic natural disasters in recent years struck Bam, a city in southeast Iran. Due to the high vulnerability of children in natural disasters, the assessment has been focused on pediatric surgical injuries. Also, the general requirements for preparedness in a referral hospital that should admit pediatric patients in the aftermath of a natural disaster were assessed. **Methods:** The cases include all patients under 16 years old, who were referred from Bam to three hospitals in Tehran (Milad, Imam Hossein, and Baqiyatallah Hospital) within one week of the Bam earthquake. Data on demographic characteristics, types of injury, and operative/non-operative treatment of patients were collected through visiting the cases and use of their medical records. Such data were applied to a questionnaire. Injuries of chest/abdomen, head, and spinal column were discussed as surgical injuries and classified in the same three groups. Patients also were classified in three age groups: (1) <6 years; (2) 6–10 years; and (3) 11–16 years.

Results: A total of 119 patients under 16 years old were admitted during the period of the study. Thirty-three patients (27.7%) were <6 years old, 26 patients (21.8%)

were 6–10 years old, and 60 patients (50.4%) were 11–16 years old. A total of 27 patients (22.6%) had head trauma, 19 patients (15.9%) had chest/abdomen injury, and 11 patients (9.2%) had spinal column injury. It should be noted that eight cases belong to more than one of the injury groups. In total, according to our definition for surgical injuries, which excludes injuries of limbs and pelvis, 41 patients (34.4%) had surgical injuries.

Of the patients with chest/abdomen trauma, eight cases (42.1%) underwent abdominal surgery, a chest tube was inserted for patients (21.0%), and one patient underwent a thoracotomy. Of the 33 patients with head trauma and/or spinal column injury, neurosurgical procedures were done in five cases (15.1%). There was a much higher frequency of chest/abdomen injury in the two older age groups than in the youngest group. The oldest age group had a much higher need for neurosurgery than the two younger groups.

Conclusions: The higher frequency of chest/abdomen injury and need for neurosurgery in older age groups might be related to the death of younger patients in earlier stages. However, it should be noted that as a hospital admits older children, non-orthopedic surgeries could be needed more than a hospital with younger pediatric patients. Also, a pediatric patient with chest/abdomen trauma, head and/or spinal column injury may be in need for an operation.

Keywords: Bam; earthquake; injury; Iran; pediatric; surgery

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Children during the 1999 Kosovo War—An Experience of the Polish Medical Mission in the Field Hospital of Ndroq, Albania

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Objective: To present of pediatric problems among children in the refugee camp supervised by members of the Polish Medical Mission.

Methods: A retrospective analysis was done of medical records for 536 Kosovo children seen by medical volunteers—doctors, nurses, and paramedics—in the field hospital attached to the refugee camp of Ndroq, Albania, during two months (out of five) of work by the Polish Medical Mission.

Results: Medical records were incomplete for the majority of young patients. The majority of children belonged to the preschool or early-school-age groups. A total of 163 children underwent vaccination against hepatitis B. Medical problems were related to acute viral or bacterial infection, exacerbation of chronic diseases, and common hygiene problems.

Conclusion: Even during wartime, only a minority of pediatric problems seen in the field hospital located near the refugee camp were related to the war itself. There is a growing need for pediatric practitioners among volunteer medical staff of refugee camps.

Keywords: Albania; children; field hospital; Kosovo; pediatric practitioners; refugee; war

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