

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-