

road collisions to terrorism-related shootings and bombings. The aim of this study was to characterize childhood injuries resulting from different types of MCEs in Israel.

**Methods:** A retrospective study of MCE-related injuries among hospitalized children (0–17 years) between the years 1998–2007 and recorded in the Israel Trauma Registry (ITR) was conducted. For this study, a MCE included any event in which  $\geq 10$  persons were injured. Study parameters included demographic characteristics, injury type and mechanism, hospital utilization, and injury outcome. Findings were compared with non-MCE pediatric hospitalizations during the same period.

**Results:** During the study period, 158 MCEs were recorded in Israel, of which, 75 (47%) involved children (mean age 11.3 years, 52% girls). The majority of MCEs were terrorism-related (63.4%); followed by motor vehicle collisions (buses or trains) (32%); a collapsed building (2.6%); and other mechanisms (2%). Teenagers (ages 10–17 years) were injured twice that of younger children (ages 0–9 years), (67% and 33%, respectively;  $p = 0.05$ ). Head and neck were the most common body regions to be injured (67%). Most children sustained mild injuries (55%; Injury Severity Scale Score (ISS) 1–8), however, a significant percentage had severe to fatal injuries (29%; ISS  $> 16$ ). In comparison to non-MCE injuries, MCE-related injuries were more severe: ISS  $> 16$  (8% vs. 29%, respectively;  $p < 0.0001$ ); in-hospital mortality (0.4% vs. 3.4%, respectively;  $p < 0.0001$ ); underwent surgical procedures (20% vs. 50%, respectively,  $p < 0.05$ ); and intensive care unit admission rate (6% vs 31%,  $p < 0.0001$ ), and longer hospital stay (median length of stay 3.5 vs. 8.9 days, respectively;  $p < 0.0001$ ).

**Conclusions:** Morbidity and mortality are significantly higher among children injured in MCEs than by other mechanisms. In an effort to improve future pediatric MCE-related injuries, medical staff should be better prepared and resources should be improved for dealing with pediatric pre-hospital and hospital care following a MCE.

**Keywords:** injury severity; mass-casualty incident; pediatrics; traffic collision; terrorism

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### Plan for Increasing Pediatric Critical Care Surge Capacity in New York City

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**Introduction:** A mass-casualty event may result in an overwhelming number of critically ill pediatric victims that exceed available pediatric critical care (PCC) capacity.

Therefore, the New York City Department of Health and Mental Hygiene (DOHMH) has sponsored a Pediatric Disaster Coalition (PDC) comprised of representation from New York City (NYC) pediatric hospitals and city agencies involved in disaster preparedness and response. One of the PDC's tasks was to develop guidelines for hospitals in NYC to increase their PCC bed surge capacity. The ultimate goal was to increase NYC's total pediatric critical care capacity during disasters by 200 beds above baseline.

**Methods:** The PDC members met twice monthly for 10 months. They first defined a PCC "surge bed" as a unit that requires the following: physical space to accommodate a bed or a stretcher; staffing required for continued critical care; and equipment and supplies to manage critical care pediatric victims of CBRNE events. The PDC developed guidelines to address the aforementioned "surge bed" requirements and reached a consensus on their merits.

**Results:** The PDC established the following PCC surge guidelines for: (1) using existing clinical space in pediatric intensive care units to accommodate more patients on stretchers than originally intended; (2) modifying tools for "rapid patient discharge" and for "PCC rapid expansion", enabling more admissions to the PCC, as well as to other clinical and non-clinical areas within a hospital; (3) developing an efficient process for enlisting additional staff and assigning them specific roles; and (4) developing processes for obtaining the necessary equipment and supplies to self sustain for 96 hours.

**Conclusions:** The PDC guidelines for a pediatric critical care surge plan now is ready for a pilot study to ascertain whether it enables hospitals with PCC services to increase their bed capacity by developing their own surge plans.

**Keywords:** critical care; New York City; pediatrics; preparedness; surge capacity

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### Trauma in a Child's World—An Asian Perspective: A Case Series of Three Hospitalized Singaporean Children with Post-Traumatic Stress Symptomatology Post-Accidental Injury

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Studies in America and Europe have consistently found that a significant proportion (10–15%) of children and their families develop post-traumatic stress disorder (PTSD) after accidental injuries. Despite important socio-cultural differences, there currently are no published studies in Singapore or other Asian countries examining the prevalence of distressing emotional symptoms among children hospitalized for accidental trauma injuries or the emotional impact on their parents.

This presentation describes the cases of three Singaporean children who were hospitalized in a Pediatric Tertiary Hospital for accidental trauma and were identified as having developed PTSD symptomatology upon a follow-

up three months after the injury. This presentation also describes a multi-disciplinary approach to the care and management of these children and their families.

Prospective, observational research on the prevalence of traumatic stress reaction post-accidental trauma and local validation of the STEPP tool (modified) for risk assessment of the development of PTSD currently are being performed.

**Keywords:** accidental injury; children; family; post-traumatic stress disorder (PTSD); trauma

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### Lessons Learned from a Terrorist Attack in Beslan: Necessity of Prepared Pediatricians

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**Introduction:** More than 800 children were held hostage at a school in Beslan in 2004. A total of 365 children were wounded and 146 died.

**Methods:** Medical care for the victims was performed at three levels: (1) the children's field hospital (CFH) in Beslan; (2) hospitals in Vladikavkaz; and (3) specialized clinics in Moscow, Rostov-Don, St. Petersburg, and Orel. The medical staff consisted of 20 doctors and nurses. Seventy ambulance teams evacuated the wounded to the clinics of Vladikavkaz.

**Results:** A total of 311 children were taken to the CFH: 52 children needed intensive care treatment for live support; 199 children required immediate evacuation to hospitals in Vladikavkaz after receiving primary medical care. A total of 139 urgent surgical interventions were performed at the hospital in Vladikavkaz. Later, 146 children were transported by air to Moscow and other clinics in Russia. Ten percent were transported using life support systems. No children died during evacuation. Children were treated in 16 hospitals in Moscow, and >100 different specialized surgical interventions were performed. Five children died at the CFH, four children died in hospitals in Vladikavkaz, one died in Moscow. Wounded children transported to different Russian and foreign clinics required a long rehabilitation period.

**Conclusions:** When responding to acts of terrorism involving children, it is necessary to:

1. Have nationwide mobile medical capabilities (i.e., children's field hospital);
2. Train special medical staff and supply automobiles with pediatric models of respiratory equipment in the ambulance system and disaster medicine regional centers; and
3. Perform regular trainings of children's hospitals personnel to admit a large number of children with gunshot wounds.

**Keywords:** Beslan; lessons learned; pediatrics; preparedness; terrorism

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### Responsibility of Community and Municipal Government in Planning and Responding to Disasters

#### Medical Reserve Corps: Volunteers Building Strong, Healthy, and Prepared Communities

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The Medical Reserve Corps (MRC) is a United States-based national network of local groups of volunteers committed to improving the health, safety, and resiliency of their communities. Medical Reserve Corps volunteers include medical and public health professionals as well as others interested in improving the public health and response infrastructure of their local jurisdiction. Medical Reserve Corps units identify, screen, train, and organize the volunteers, then utilize them to support routine public health activities and augment preparedness and response efforts. To date, the MRC program has grown to >800 MRC units in 50 states, Washington, DC, Puerto Rico, Palau, Guam, and the US Virgin Islands; and >180,000 volunteers nationwide.

The Office of the Civilian Volunteer Medical Reserve Corps (OCVMRC) is headquartered in the Office of the US Surgeon General. Its mission is to support local efforts to establish, implement, and sustain MRC units nationwide. In order to carry out this mission, the OCVMRC serves as the national voice of the MRC network, promotes MRC participation in response efforts at all levels, supports the growth and maintenance of the nationwide network of MRC units, and strengthens its internal capacity to support MRC units.

This session will provide a forum for preparedness and response experts from across the globe to explore key principles and promising practices of the MRC program. While presenters from the OCVMRC hope to share proven practices that the international preparedness and response community can learn and adopt in their given circumstance, they also look to this session as an opportunity to learn lessons and practices from outside the US that can be adapted for the MRC program.

**Keywords:** Medical Reserve Corps; preparedness; volunteer

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