The New York City Pediatric Disaster Coalition: A Readily Replicable Model for Multidisciplinary Regional Pediatric Prehospital Triage and Transport Planning

Arthur Cooper, MD, MS;[1] Michael Frogel, MD;[2,3] Dario Gonzalez, MD;[4] Katherine Uraneck, MD;[5] David Prezant, MD;[4] Mordechai Goldfeder, MPA, EMT-P;[6] Avram Flamm, BEMS;[3] Marsha Treiber, MPS;[7] George Foltin, MD[7]

1. Columbia University Medical Center, Affiliation at Harlem Hospital, New York, New York USA
2. Albert Einstein College of Medicine, New York, New York USA
3. North Shore-Long Island Jewish Health System, Schneider Children's Hospital, New York, New York USA
4. Office of Medical Affairs, Fire Department, City of New York, New York, New York USA
5. Department of Health and Mental Hygiene, City of New York, New York, New York USA
6. Office of Emergency Management, City of New York, New York, New York USA
7. Center for Pediatric Emergency Medicine, New York University School of Medicine, Bellevue Hospital,New York, New York USA

Introduction: A mass-casualty event (MCE) involving pediatric patients within the New York City metropolitan region could overwhelm existing pediatric resources. Because "children are not small adults", their different physiology and behavior require specialized triage, transport, and treatment. The New York City Department of Health and Mental Hygiene (NYCDOHMH), recognizing the need to plan for MCEs with large numbers of pediatric victims, created and funded the New York City Pediatric Disaster Coalition (PDC). The PDC's goal is to establish an ongoing collaboration that addresses gaps in the ability and infrastructure of the NYC regional health care system to provide effective and timely, large-scale pediatric care during a MCE.

Methods: The PDC involves experts in pediatric emergency preparedness, emergency medicine, trauma surgery, and intensive care from 11 of 43 NYC Pediatric and Children's Hospital Services, the NYCDOHMH, NYC Office of Emergency Management, and the New York City Fire Department Office of Medical Affairs. Under the aegis of a Central Leadership Council, two committees met twice monthly to develop Pediatric Prehospital Triage/Transport and PICU Surge Capacity plans.

Results: After extensive literature review and multiple draft revisions, a Pediatric Triage/Transport Plan was formulated. The plan includes: (1) a modified START algorithm that adds rescue breaths and an uptriage option; (2) priority evacuation and transport; (3) pediatric disaster receiving hospitals; and (4) a pediatric transfer consultant. Once implemented, it will provide specific pediatric triage criteria for transport that matches acuity/severity of illness to appropriate tiered resources.

Conclusions: The PDC has provided an effective multidisciplinary approach to planning for a large scale regional MCE involving pediatric patients. Specific Pediatric Triage and Transport Protocols were created, and are being integrated into regional EMS system protocols. This approach, and the EMS protocols it has generated, could be used as a model for other large urban centers.

Keywords: coalition; disaster; New York City; pediatrics; preparedness; triage

Prehosp Disaster Med

Israel Trauma Coalition Resillience Centers

Talia Levanon
Israel Trauma Coalition, Israel

Introduction: Terrorism, war, disasters caused by natural hazards, tragedy, and bereavement are global phenomena of which the Israeli people are exposed to regularly, leading to an accumulation of knowledge and experience in emergency preparedness and real-time coping mechanisms.

Over the years, mass-casualty events and emergencies presented the need for a comprehensive, multi-disciplinary continuum of care, based on cross-sector cooperation and a proactive approach to emergency preparedness.

Conceptualized, developed and adopted by the Ministries of Health and Welfare, the Israel Trauma Coalition and the Prime Minister's Office, the city-wide model of resilience and preparedness is an excellent example of inter-sector cooperation. This model operates in nine local councils with resilience centers in North and South Israel.

Developed in the Israeli context, this model can be adapted, and adopted to any global situation that calls for resilience, emergency preparedness, and crisis management.

Methods: The Resilience Centers reflect this mode of collaboration by combining a clinical response to psycho-trauma on three levels: (1) individual; (2) teams; and (3) local councils, from the acute phase to rehabilitation. The work includes direct care, team training and support for volunteers and professionals, community resilience, and—most critically for Israel's homeland security—coordination of emergency response plans within local municipalities.

Results: Resilience results from preparedness. This collaborative model has several advantages, including a comprehensive overview of the field, cost-effectiveness, and the provision of continuum of care with follow-up in the local community. The model has passed the "test of fire" during Operation Cast Lead, and played a pivotal role in the provision of a seamless combination of trauma care.

Keywords: Israel Trauma Coalition; resilience

Prehosp Disaster Med

Training and Drills

Mass-Casualty Paradox in Environments with Limited Healthcare Resources

Susan I. Brundage, MD, MPH;[1] Sabine Girod, MD, DDS, PhD;[1] Adam L. Kushner, MD, MPH;[2,3] T.B. Kamara, MD;[2,3] Eva Hancilies, MD;[2,3] T. Peter Kingham, MD[2,3]

1. Stanford University, Palo Alto, California USA
2. Connaught Hospital, Freetown, Sierra Leone
3. Society of International Humanitarian Surgeons, New York, New York USA

Introduction: The definition of a mass-casualty incident (MCI) is any event the number and severity of casualties

overwhelms emergency medical services personnel and equipment. In limited-resource environments, e.g., low- to middle-income countries (LMCIs), where healthcare systems already are constrained severely, training needs adaptation and adequate response principles need redefinition.
Methods: Several MCIs during a one-year period in Freetown, Sierra Leone were reviewed. Assessment of personnel, supplies, procedures, and infrastructure was applied to MCI responses in order understand the modifications required for effective training in limited-resources systems. The MCIs included stadium stampedes, multi-vehicle collisions, and several fires.
Results: In 2008, a needs assessment of surgical capacity at 10 government hospitals in Sierra Leone showed that Connaught, the 267-bed referral center in Freetown, suffered interruptions in oxygen and electricity and lacked basic supplies/equipment. The hospital had six operating rooms; but only two functioned. An analysis of a fire indicated that 40 patients were transported by private vehicles and the fire brigade. While surgeons were knowledgeable regarding essential procedures including cricothyroidotomy, tube thoracostomy, and fracture reduction; supplies were scarce. No surgeries were performed within the first six hours of the event. Chest x-rays were not available until the following day; subsequently two chest tubes were placed. Twenty-six patients died (mortality = 65%).
Conclusions: Pre-existing MCI training programs do not meet challenges found in caring for victims where resources are severely constrained. Based on the analysis of the Freetown MCIs, a training course taking resource availability into consideration was developed. The prerequisites of implementing command/control/coordination/communication (C4) remain identical in systems with varying resources. Course curriculum and pertinent adaptations of MCI response training should focus on: (1) resource deployment; (2) evaluating C4 operations; (3) application of skills/professionalism; (4) casualty management; (5) evacuation through traffic; and (6) ascertaining Ministry of Health/local government capacity for handling mass casualties. Finally, LMIC governments should prepare by conducting drills and stockpiling supplies needed for adequate emergency response.
Keywords: developing countries; disaster; limited resources; mass-casualty incident; Sierra Leone
Prehosp Disaster Med

Time Standing Still: Adding Realism to Tabletop Exercises

John Kimball
Chief of Special Operations (ret), Fairfax County Fire and Rescue Department, Virginia USA

One of the greatest challenges in preparing for mass-casualty incidents is adding the realism of time-driven decision-making while fostering the training message. A close second to this challenge is minimizing stress and pressure and avowing bruised egos. While practicing decision making under the pressure of time is a necessity of incident preparation, real life never gives us the opportunity during an incident to call "time out" before continuing to the next phase.

A mechanism to achieve this sense of urgency is a tabletop exercise in which the incident is parceled into time blocks and the incident management team is divided by function and/or location. Examples of functional groups are incident site, communications, hospital network, and mutual-aid organizations. The incident scenario is introduced in three phases: (1) initial response or stabilization; (2) continued response and operations; and (3) demobilization.

After the real-time period of exercise play, incident time is suspended and the functional groups discuss within their groups the actions taken, what they might have done differently, and what needs to be completed. After the discussion, the functional groups report to the group as a whole. At any point, discrete skills can be reinforced by training reminders. Among these are the development of incident objectives, adjusting assignments, and site management.

This exercise method can be employed to enhance and refine Incident Action Planning, transition of command, and other incident management skills, as well as validating plans and procedures. The method also may be employed to pre-plan emergency resource requirements. In this session, the participants will employ this methodology and focus on the development of the Incident Action Plan and the transition from response to demobilization or long-term operations.
Keywords: functional group; management; mass-casualty incident; planning; tabletop exercise
Prehosp Disaster Med

Notification and Communication: Critical Initial Steps in Mass-Casualty Incident Drills

Carlton Barnett, MD; Jeffry Kashuk, MD; Ernest E. Moore, MD; Christopher Colwell, MD; Jeffrey Johnson, MD; Walter Biffl, MD; Clay C. Berlew, MD; Aaron Brody, MD; Allison Sabel, MD, PhD
Denver Health Medical Center and University of Colorado, Denver Health Sciences Center, Denver, Colorado USA

Background: The global terrorism epidemic and recent disasters caused by natural hazards have underscored the sudden loss of standard methods of communication, which may seriously compromise a hospital's ability to implement the mass-casualty incident (MCI) plan. After initiating hospital-wide drills based on the Israeli approach, it was theorized that notification and communication could be improved with an MCI-specific notification system and a dedicated back-up radio plan.
Methods: Hospital staff completed post-exercise questionnaires evaluating the Regional Level-1 Trauma Center's most recent MCI drill using Likert-scaled items from 1–10 (worst to best). Participants were instructed to answer 26 items that applied to their experience. Notification and communication issues were assessed specifically in the most recent drill after the implementation of a computerized, one-touch notification system that simultaneously notified staff via beeper, e-mail, and cellular telephone, as well as overhead paging of the occurrence of the drill. Leadership personnel evaluated communication through the use of designated frequency radios distributed to key areas (triage, red area, operating room) of the drill. Responses were compared using the median and interquartile range (IQR).