COVID response have been important to creating more partnerships with federal agencies around situational awareness and considering social and physical determinants of health that effect children and families. The partnerships with state agencies and other key stakeholders have been valuable to close the gaps in the pediatric/family disaster cycle. There has been a multitude of tools and products that have been created and disseminated from this PCOE, including educational tools, behavioral health training and tools, virtual exercises and quality improvement projects. The best practices and ongoing projects highlight how to improve coordinated care for children and families within a region and is an example for the United States and beyond. There are also challenges to coordinated preparedness due to jurisdictional barriers and these are as important to highlight and create mitigation strategies.

**Conclusion:** This US supported PCOE is an example of a regional disaster coordination to mitigate and prepare for response concentrating on the needs of children and families in the larger disaster cycle.

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# Pediatric Disaster Science: Pediatric Specific Considerations, A Global Imperative, A WADEM Opportunity

Debra Weiner MD, PhD<sup>1,2,3</sup>, Christopher Newton MD<sup>4</sup>, Lori Peek PhD<sup>5</sup>, Jeffery Upperman<sup>6,7</sup>, Cinnamon Dixon DO, MPH<sup>8</sup>

- 1. Boston Children's Hospital, Boston, USA
- 2. Beth Israel Deaconess Medical Center, Boston, USA
- 3. Harvard Medical School, Boston, USA
- 4. University California San Francisco, San Francisco, USA
- 5. University of Colorado, Boulder, USA
- 6. Monroe Carell Jr. Children's Hospital, Nashville, USA
- 7. Vanderbilt University Medical Center, Nashville, USA
- 8. National Institutes of Health, Bethesda, USA

**Introduction:** Pediatric disaster science is critical to provide data and discovery to guide evidence-based preparedness, response, mitigation and recovery to best serve children, families and society. With the increasing frequency, severity and global scope of disasters, there is now an unprecedented imperative and opportunity to build a sustained pediatric disaster science workforce and infrastructure. The expertise, perspective and collaboration of the international, multidisciplinary community, including WADEM members, is integral to supporting effective, efficient, ethical, high quality pediatric disaster science and its implementation.

**Method:** A landmark Pediatric Disaster Science Symposium was convened in-person/virtually by the US National Academies of Science Engineering and Medicine in August 2022. Forty-eight pediatric disaster focused invited speakers, collectively representing government, non-governmental organizations, academia and community attended, and online. Attendees were polled during the two-day meeting to assign priority ratings to the topics discussed.

**Results:** Symposium topics included the importance, history and scope of pediatric disaster science, and research across

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the disaster management cycle. Research considerations specific to children included medical and psychosocial vulnerabilities and manifestations; ethics and protections; protocol development and deployment; research tools; and data collection/integration. Scientific methodology topics addressed pediatric considerations for basic science, surveillance, clinical trials, applied sciences, community-engaged research, dissemination and implementation. Infrastructure needs described leveraging disaster centers, research networks, disaster response teams, government agencies and professional societies integratively across disciplines. Building a sustainable workforce, including training and engaging pediatric scientists with disasterfocused/disaster-relevant research, funding streams, regulation and advocacy were also discussed. Research priority ratings yielded preliminary data to inform pediatric disaster science priorities.

**Conclusion:** The meeting provided insights that can further guide discussions among global disaster experts and scientists, including WADEM members, to prioritize, build and scale sustainable pediatric disaster science that yields evidence-based strategies, plans, resources, and actions that improve disaster preparedness, response, mitigation, and recovery for children, families and societies worldwide.

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## Pediatric Casualties in Terrorist Attacks: A Semi-Quantitative Analysis of Global Events through the Lens of Counter-Terrorism Medicine

Lea Ohana Sarna Cahan MD<sup>1</sup>, Derrick Tin MBBS<sup>1</sup>, Vesna Markovic Ph.D.<sup>2</sup>, Robert Ciottone BA Post Baccalaureate Pre-Medical Student<sup>3</sup>, Fadi Issa MD, JBEM<sup>1</sup>, Ashley Kane MD, MSCR<sup>1</sup>, Alexander Hart MD, FACEP<sup>1</sup>, Debra Weiner MD, PhD<sup>1</sup>, Gregory Ciottone MD<sup>1</sup>

- BIDMC Disaster Medicine Fellowship Department of Emergency Medicine, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, USA
- 2. Professor, Justice, Law and Public Safety Studies Lewis University, Romeoville, USA
- 3. Northeastern University, Boston, USA

**Introduction:** Terrorism remains a major threat and concern in many countries around the world. Children represent approximately 30% of the world population and in the event of a terrorist attack can either be primary targets, to include the possibility of abduction, or unintended victims. Children are unique in their vulnerabilities and therefore, require special consideration.

**Method:** This study is a semi-quantitative epidemiological analysis of all terrorism-related pediatric fatalities and injuries sustained between 1970-2019. Data collection was performed using a retrospective database search through the Global Terrorism Database (GTD). Summaries of events including search terms associated with children were individually reviewed and those describing the deaths, injuries, or abduction of children were tallied.

**Results:** Of the over 200,000 terror events, 2,302 events met inclusion criteria. This represented 1.14% of total events which



involved death, injury, or abduction of children. Of 2,032 events a total of 2,275 pediatric fatal injuries (FI) were recorded, as well as 2,280 pediatric non-fatal injuries (NFI). The most common weapons used in all attacks involving the pediatric population were explosives (1539[66.8%]), firearms (543 [23.5%]), other (169 [7.3%]) and melee (83 [3.6%]). 275 of the 2,032 were related to abductions, with 71 cases involving the abduction of ten children or more.

**Conclusion:** Pediatric casualties in terrorist events represent a small proportion of overall victims, however, they have unique vulnerabilities, and when directly impacted by terrorism, can have long term physical and psychosocial sequelae, as well as a devastating emotional impact on the community.

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#### Lessons Learned from 28 Hospitals and City Agencies: Pediatric Disaster Exercise

Michael Frogel MD, John Jermyn, George Foltin MD, Arthur Cooper MD

New York City Pediatric Disaster Coalition, Brooklyn, USA

**Introduction:** Children are frequently victims of disasters. However, gaps remain in pediatric disaster preparedness. The New York City Pediatric Disaster Coalition (NYCPDC) is funded by the NYC Department of Health and Mental Hygiene (DOHMH) to prepare NYC for mass casualty events that involve large numbers of children. The NYC PDC conducted a functional exercise testing surge, communications, and secondary transport. Participants included 28 NYC hospitals, the NYC Fire Department-Emergency Medical Services (FDNY-EMS), NYC Emergency Management (NYCEM), NYC DOHMH and the NYC Medical Reserve Corps (MRC).

**Method:** The hospitals and agencies participated in group and individual planning meetings. Scenario-driven, operationsbased activities challenged participants to employ their facility's existing pediatric surge and secondary transport plans during an event. The exercise assessed: Communications, Emergency Operation Plans, Surge, Patient Tracking, Patient Transfer, Supplies, and Staffing. Internal and external evaluators assessed the exercise performance.

**Results:** An After-Action Report was written based on information from evaluation data, site-specific and group hotwashes, and an after-action conference. Strengths included meaningful improvement of plans before/after the exercise and doubling pediatric critical care capacity through the implementation of the exercise objectives. Challenges included: gaps in communication/patient tracking, lack of sufficient sub-specialty support, the need for "babysitters" and inadequate supplies of blood products and ventilators.

**Conclusion:** Conducting a multi-hospital and agency pediatric specific exercise demonstrated current planning and produced lessons learned to address planning and training gaps that can improve citywide planning and capabilities during future full-scale exercise and real-time events.

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### Pediatric Outpatient, Urgent-care Emergency and Disaster Planning

Michael Frogel MD, John Jermyn, George Foltin MD, Arthur Cooper MD New York City Pediatric Disaster Coalition, Brooklyn, USA

**Introduction:** Children are frequently victims of disasters; however important gaps remain in pediatric disaster planning. This includes a lack of resources for pediatric preparedness planning for patients in outpatient/urgent-care facilities. The New York City Pediatric Disaster Coalition (NYCPDC) is funded by the NYC Department of Health and Mental Hygiene (DOHMH) to improve NYC's pediatric disaster preparedness and response.

After creating planning resources in Pediatric Long-Term Care Facilities, Hospital Pediatric Departments, Pediatric and Neonatal Intensive Care Units, and Obstetric/ Newborn Services within NYC hospitals, the NYCPDC partnered with leaders and experts from outpatient/urgentcare facilities caring for pediatric patients and created the Pediatric Outpatient Disaster Planning Committee (PODPC). PODPC's goal was to create guidelines and templates for use in disaster planning for pediatric patients at outpatient/urgent-care facilities.

**Method:** The PODPC includes physicians, nurses, administrators and emergency planning experts who have experience working with outpatient facilities. There were 21 committee members from eight organizations (the NYCPDC, DOHMH, Community Healthcare Association of NY State, NY State DOH, NYC Health and Hospitals, Maimonides Medical Center and Presbyterian/Columbia University Medical Center). The committee met six times over a fourmonth period and shared information to create disaster planning tools that meet the specific pediatric challenges in the outpatient setting.

**Results:** Utilizing an iterative process including literature review, participant presentations, discussions review and improvement of working documents, the final guidelines and templates for surge and evacuation of pediatric patients in outpatient/urgent care facilities were created in 2018. Subsequently model plans were completed and implemented at five NYC Outpatient/Urgent-care facilities.

**Conclusion:** An expert committee utilizing an iterative process successfully created disaster guidelines and templates for pediatric outpatient/urgent care facilities. They addressed the importance of matching the special needs of children to available space, staff and equipment needs and created model plans for site-specific use.

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### Systems of Care Approach to Improve Care for Children During Public Health Emergencies

Shana Godfred-Cato DO<sup>1</sup>, Heather Fitzpatrick MPH<sup>2</sup>, Stephanie Smiley MA<sup>2</sup>, Kara Polen MPH<sup>1</sup>

1. CDC, Atlanta, USA

2. American Academy of Pediatrics, Itasca, USA

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