

Planning for Children in Disasters: Education and Strategies for the Best Outcomes

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Longstanding Gaps in Pediatric Disaster Preparedness

Disasters overwhelm health care resources and endanger everyone in a community. Children are more vulnerable to disasters than healthy adults for several reasons. They lack the problem-solving skills, strength, and self-advocacy to ensure personal safety. They are more prone to injury and heat- and cold-related illnesses. Children are more likely to live in areas subject to damage, and certain disaster events occur more frequently for pediatric patients, posing significant risks. Children lack a broad array of coping skills, making them vulnerable to acute and chronic mental health consequences of disasters. Despite decades of work to mitigate the risks of disasters, significant gaps in pediatric readiness remain, including real-time tracking of pediatric hospital beds and emergency department capacity, telehealth resources, and assessments of pediatric disaster readiness. National organizations have identified these gaps and taken steps to improve outcomes and reduce the impact on pediatric patients (Kappy et al., 2022).

Federal efforts have included the 2010 National Commission on Children and Disasters report identifying gaps and providing recommendations for pediatric disaster preparedness and response (NCCD, 2010). Now, under the direction of the Secretary of Health and Human Services, the National Advisory Committee on Children and Disasters (NACCD), established by the Pandemic and All Hazard Preparedness Act (PAHPA 2006), aims to improve preparedness, response, and recovery from all disasters by issuing timely recommendations. The NACCD was reestablished under current legislation and has recently issued its first report (Schonfeld et al., 2023). In the private sector, the American Academy of Pediatrics (AAP) has strengthened its efforts to address the needs of children before, during, and after disasters, and partners with health

care coalitions, professional organizations, and local efforts to improve pediatric preparedness across the United States.

This commentary will explore ongoing efforts to improve pediatric disaster readiness. Three means to improve readiness are education, strategies that promote disaster preparedness across the continuum of care, and community engagement. It will also highlight opportunities to close gaps and improve outcomes when communities and children are impacted by disasters.

Education for Preparedness, Response, and Recovery across the Continuum

Professional and federal organizations promote education to improve disaster mitigation, preparedness, response, and recovery. Recognizing that medical homes are the center of health care maintenance and prevention, the AAP provides disaster education to improve readiness through a curated growing repository of vetted, current curricula and maintenance of certification (MOC) offerings for physicians and other health care professionals who may care for children in disasters. There is increasing recognition that this education is most beneficial when it is interdisciplinary and when there is input from family advocates and youth (Pickering et al., 2022).

Recognizing that the majority of pediatric emergency care in the United States is provided in community settings, the AAP collaborates with federal efforts to strengthen all hospital and Emergency Medical Services (EMS) disaster response systems. Simply stated, medical teams must be able to assess and manage critically ill or injured individual pediatric patients before they can effectively scale this ability and respond to a mass casualty event involving multiple high-risk, demanding patients. Finally, when disaster looms, the AAP provides just-in-time training for health care workers readying themselves to care for pediatric survivors.

There are significant opportunities for improvement in provider education and practice advancement surrounding disaster events. Clinical simulations demonstrate areas for improved resource allocation, communication, and staff utilization. Simulations range from small groups of people training for events directly applicable to their practice, to large-scale events comprised of government officials, corporations, emergency medical services, and multiple health systems. Clinical simulation is an established field of specialized research that can guide safe and effective response efforts during disaster events.

A Call to Action across the Care Continuum

A tenet of preparedness is this: *all disasters happen locally*. Identifying opportunities to improve readiness now and closing those gaps in communities is crucial.

Beyond education, there is a need for the development and dissemination of proven disaster mitigation, preparedness, response, and recovery strategies. Systematic analysis of these strategies, and an understanding of the consequences they produce, will facilitate optimal local readiness. Some established pediatric disaster strategies include those offered by the Emergency Medical Services for Children Innovation and Improvement Center (Barrett et al., 2022). This resource supplements existing disaster planning resources and policies for all acute-care hospitals and emphasizes the inclusion of pediatric considerations in every aspect of disaster planning, including evacuation and surge capacity.

EMS and Pediatric Disaster Planning

A strategy to close gaps in pediatric disaster readiness is to ensure that local, county, and state disaster plans include first responders and EMS. Integrating prehospital clinicians' response protocols with those of hospitals and other receiving facilities strengthens the continuum of care. As a result, children are more likely to receive timely treatment and have improved outcomes than when prehospital care is separate from hospital protocols. Additionally, reaching consensus in the planning period on triage method, criteria for patient release from the disaster site, and patient prioritization for transport to facilities can ensure that EMS personnel achieve the best outcomes for pediatric disaster survivors.

Pediatric Disaster Readiness for Hospitals

Improving local understanding of the pediatric readiness of community hospitals is another strategy. This includes hospital *capability* for receiving critically ill and injured children, and real-time dashboards of hospital *capacity* for accepting new patients. Part of this strategy to optimize local resource utilization is the identification of receiving

facilities for pediatric patients. Additionally, alternate care sites such as urgent care centers, pediatrician offices, and clinics may be predesignated as EMS receiving facilities for stable patients. The creation of an implementation toolkit is also necessary. Such a toolkit would be scalable based on available resources, hazard vulnerability, and population density. Ideally, the toolkit would be developed with implementation science methods, include means for cyclical evaluation and metrics of health system readiness, and integrate pediatric readiness with general readiness.

Community Engagement and Readiness

Professionals in the medical field have the unique opportunity to provide guidance and leadership for their community. On the individual level, frontline pediatric providers can encourage and support their patients and families to identify their specific vulnerabilities prior to disaster events. Once these vulnerabilities are identified, pediatric providers can help develop disaster preparedness plans and toolkits for patients and their families. It is beneficial to have templates available that identify areas for consideration such as evacuation, shelter-in-place, and emergency response.

Families should be encouraged to develop plans for reunification if separated. Furthermore, medical homes can develop a more formalized strategy for the reunification of persons separated during disaster events. Hospitals and health care organizations are often a haven during disaster events and should have disaster readiness toolkits for their systems. The development of pediatric preparedness checklists, toolkits, and best practice strategies, for various populations, provides a great opportunity for further research.

Families and communities should be encouraged to stockpile extra food, water, medicine, power sources, and attire for environmental protection. These may be unobtainable luxuries for families that lack the resources to meet basic needs in non-disaster times. Before a catastrophic event occurs, it is critical to identify populations that may not be able to create these stores due to socioeconomic disadvantage. This identification allows for the expeditious allocation of critical resources during a disaster response.

Studies identifying populations in need of resources during disaster events, the best practices for the distribution of resources, and the outcomes associated with the allocation of resources to the appropriate populations are all areas that require further investigation. Additionally, public education, including campaigns like hands-only CPR, STOP THE BLEED®, and school disaster drills can also enhance the continuity of care and further improve patient outcomes.

Conclusion

The last three decades have underscored the persistent unique vulnerabilities that plague pediatric disaster response and preparedness. All the proposed strategies require the study of the best implementation practices and their effectiveness. They should also include the identification of barriers, in both rural and urban settings. A shared set of priorities for pediatric disaster research, along with appropriate, ongoing funding to achieve research goals, is key. The entire health care system, including academic institutions and governmental agencies, must collaborate and build a shared concept of operations for pediatric disaster readiness. Rigorous study of disaster response that uses the strategies presented here will show associations between preparedness and improved pediatric disaster outcomes. Completely integrating pediatric disaster education and preparedness efforts into the whole of national emergency preparedness is the definitive way to ensure the best outcomes for children in the United States.

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