Disaster Planning: Preparing for Pediatric Surges

ENA Topic Brief

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Key Information

- Resources are available to assist emergency departments in assessing and improving their facilities' preparedness for a pediatric surge event (McBride, 2015).
- Interprofessional and interagency collaboration is critical for the successful response to a pediatric surge.
- Surge plans should incorporate both short- and longer-term elements designed to meet patients' immediate needs and provide them with extended care until they can be transferred safely to pediatric facilities.
- Exercising the plan prior to any actual event prepares the healthcare facility and staff, enabling planners and frontline staff to address weaknesses, strengths, opportunities, and threats.
- An important consideration for pediatric patients in disasters is the reunification with legal guardians (Chiu et al., 2022).

Disaster Planning: Preparing for Pediatric Surges

Purpose

Pediatric surge plans for healthcare facilities are developed to maintain triage, treatment, and tracking of outpatients and inpatients when their numbers exceed capacity during events such as natural disasters, infectious disease outbreaks, hazardous materials exposures, natural catastrophes, and mass casualty incidents (Gausche-Hill et al., 2015).

A mass casualty event can result in an overwhelming number of seriously injured pediatric patients that exceeds the number of pediatric beds at the local, regional, and state level (Frogel et al., 2017). Recent national data reveal that children account for 20% of all emergency department (ED) visits, which represents 27 million children in the United States. The majority of these visits are outside of a pediatric medical center. Pediatric care exhibits significant geographic variation. Variability in access and other areas disproportionately affect children in rural areas with long transport times (Brown et al., 2021). It is important for a facility's surge plan to address pediatric patients as a vulnerable population because children differ from adults physically, psychologically, and psychosocially (Substance Abuse and Mental Health Services Administration, 2018). Historically, the vulnerability of children and their needs are underrepresented in preparedness planning. A disaster event for a child is much different than for an adult. An estimated 69 million children are in schools and childcare settings on weekdays and are especially vulnerable during a disaster because they are away from their families (Centers for Disease Control and Prevention, n.d.). Disaster planning for pediatric surges must include children's unique physical, psychological and communication needs.

This topic brief addresses the need for pediatric surge planning and provides information for facilities converting from a standard operating capacity to a pediatric surge capacity. Multi-generational EDs (those caring for both adult and pediatric patients) should develop plans to modify current supplemental surge policies to include management of events involving large numbers of ill or injured pediatric patients. Healthcare organizations should engage in state-wide, regional, and local coalitions to evaluate and plan for a surge of pediatric patients.

Overview

Terrorist attacks, pandemics, and outbreaks of foodborne illness in the United States have triggered the development of guidelines for hospital responses to patient surges, but few include pediatric specific guidelines (McBride, 2015). In disaster surge planning, it is important to see pediatric patients as a vulnerable population who require special planning and response (Vulnerable Populations, 2016). Approximately 23 to 25% of individuals injured in a disaster are children (Chiu et al., 2022). Emergency healthcare providers require specialized training to understand a child's response to illness and injury as well as to recognize the need for monitoring and frequent assessment. Competency in weight-based calculation and administration of medications and fluid resuscitation is also necessary; clinical pharmacists who specialize in pediatric care and fully understand weight-based dosing are a helpful resource. Further, pediatric patients require size-specific equipment and caregivers trained to use that equipment (Joseph et al., 2022a or b?). Surge plans should include methods for reuniting families who are often separated during rescue operations.

The National Health Security Preparedness index measures the nations readiness for disasters, disease outbreaks, and other emergencies. The results from 2020 show a national preparedness level of 6.8 out of 10. Although this represents an increase of 3.1%, current levels of health security remain far from optimal. Healthcare delivery during and after emergency events reflects the lowest domain with a national average of 5 on the scale of 10 in 2020 (Colorado School of Public Health, 2021).

Research has shown continued growth in ED visits that has outpaced population growth. Increased patient acuity and inpatient bed capacity result in boarding admitted patients in the ED. These factors exacerbate ED crowding and a significant delay in evaluation and treatment of emergency patients (Moskop et al., 2019). In October of 2022, twenty-three countries reported severe acute respiratory infection (SARI) data and high levels of respiratory syncytial virus (RSV) activity and influenza viruses (A and B) affecting emergency departments and hospitalizations (European Centre for Disease Prevention and Control [ECDC], 2022, November, December). To optimize patient care in the event of a natural disaster, disease outbreak, or terrorist attack it is recommended that hospital leadership use a crowding-assessment tool to consistently quantify saturation events and analyze data to identify specific mitigation actions that involve the entire hospital (Robert Wood Johnson Foundation, 2019).

Pediatric surge capacity and planning is especially important given the decrease in overall pediatric inpatient units and beds and the demand for pediatric intensive care unit (PICU) care (Li et al., 2023). In the event of a pediatric surge, all affected hospitals may be required to care for children until the system is decompressed. Plans that involve all levels of a healthcare facility, not just the ED, will contribute to the delivery of this care.

Common impediments to an effective response include the following (Emergency Medical Services Agency, 2016):

- Pediatric bed capacity
- Geographic variability (e.g., longer travel times, fewer resources)
- Pediatric intensive care capacity
- Limited availability of healthcare staff educated and competent to care for pediatric patients
- Pediatric-specific emergency care supplies
- Limited ability of facilities to accept children
- Transportation of children across jurisdictions

Healthcare leadership and frontline staff should collaborate in the development of an internal pediatric surge plan that addresses the unique needs of the organization across multiple internal departments and includes external agencies. Plans for resource allocation and transition to crisis standards of care require collaboration across the entire organization, as well as with jurisdictional partners, to minimize duplication of effort and fragmentation of the chain of command (Ginter et al., 2010). Healthcare facilities should participate on jurisdictional disaster planning committees to improve communication and collaboration between the multiple agencies involved in pediatric surge planning (Furin, 2018). Federal partners include the Emergency Medical Services for Children (EMSC) program, funded by the Department of Health and Human Services (DHHS) via the Health Resources and Services Administration (HRSA), and the Department of Defense (DOD). The DOD leads in the coordination of national pediatric transport resources and serves as a valuable national stakeholder with the potential to support pediatric transport, including the provision of military aircraft, especially when normal means of transport are interrupted during prolonged, large-scale events (U.S. Department of Health and Human Services [HHS], 2015).

Recommendations include the following (American Academy of Pediatrics, 2009; HHS, n.d., 2015):

- All EDs brought up to established guidelines with regard to staff competencies, equipment, and supplies-
- Strategic planning to free up inpatient beds by identifying patients who can be triaged, relocated, or discharged
- Plans for just-in-time training for pediatric-specific care and triage systems (see source in the “Resources” section)
- Development of policies for emergency credentialing of outside personnel using an effective and efficient program such as the Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP); establishment of memoranda of understanding permitting telephonic or internet access of external specialists, for example, pharmacists, pediatricians, pediatric intensivists
- Flexibility of multigenerational facilities to accommodate an influx of pediatric inpatients
- Plans for conversion of outpatient procedure beds to inpatient beds
- Family reunification center strategies at the time of patient and family reunion (Security will be needed to protect patients, including an identity verification process prior to their discharge.)
- Designated alternate care treatment areas (e.g., post-anesthesia care unit, surgical outpatient care unit, clinics, employee health, other)
- Recognition of ethical considerations (e.g., special needs patients, emancipated youth, HIV status)
- Implementation of appropriate security personnel and procedures ensuring the safety of patients, family members, staff, and the ongoing operations of the facility
- Behavioral health professionals (e.g., short-term counseling, referrals)

The Assistant Secretary for Preparedness and Response (ASPR) recommends hospitals conduct exercises involving family separation and reunification. These exercises should involve the whole of the community, including healthcare and mental health care providers, public health personnel, emergency managers, law enforcement and other responders, shelter staff, education and childcare personnel, parents and children of all ages. The should incorporate scenarios involving children with disabilities or functional and access needs (National Advisory Committee on Children and Disasters, 2018).

Conclusion

Children may be affected disproportionately by a disaster. Disaster planning must include the unique needs of

children, especially those with functional needs and complex medical conditions, as well as recognition of physical, developmental, and psychosocial differences (Substance Abuse and Mental Health Services, 2018). The challenge is to accommodate the special requirements of this group given the limited capabilities likely to be available following a mass casualty event. Adequate response to the needs of children during a surge event is challenging because of the increased need for pediatric-specialty personnel, appropriately sized equipment, and pediatric inpatient and specialty beds. In order to meet these specialized needs, the first step is to maintain a constant state of preparedness to care for children. The next step is to plan for the supply and maintenance of resources to care for a surge of pediatric patients because a catastrophic event may prevent the timely transfer of these patients to a specialty care center as well as disrupt the supply chain.

Emergency nurses play an integral role in preparing for the response to events that precipitate the influx of large numbers of ill or injured children. EDs that make the commitment toward becoming "pediatric ready" will be better prepared to safely and effectively respond to the needs of children during disasters (Joseph et al., 2022a or b?).

Resources

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Pediatric Surge Planning and Annex Resources

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Children and Disasters Research, Reports, and Toolkits

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Pediatric Disaster Care Centers of Excellence

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