AMERICAN ACADEMY OF PEDIATRICS

PEDIATRIC DISASTER PREPAREDNESS AND RESPONSE

TOPICAL COLLECTION

CHAPTER 2: DISASTER PLANNING FOR PEDIATRICIANS

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CHAPTER TWO:
DISASTER PLANNING FOR PEDIATRICIANS

The United States has established a robust emergency medical support infrastructure to respond to disasters at local, state, regional, and federal government levels. Populations with specific emergency medical needs in disasters—such as neonatal, adolescent, or other pediatric populations—have limited support that is quickly available and specifically designed to meet their urgent life-sustaining needs. Despite greater awareness, resources dedicated to pediatric populations continue to be inadequate for most emergency medical response activities related to disasters, even though victims often include children. Children and youth with special health care needs will require extra planning efforts in advance of a disaster. Parents know their child best and can greatly benefit from their pediatrician's help with planning before an emergency or disaster.

A disaster is an event or situation that overwhelms available resources and results in injury, death, and/or destruction of property.

TYPES OF DISASTERS

There are different types of disasters; some occur without warning, and with others there is time for preparation. Examples include:

- Biological, chemical, explosive, nuclear or radiation threat/attack
- Drought
- Earthquake
- Extreme temperatures (heat or cold)
- Fire
- Flood
- Hurricane
- Infectious disease outbreak or pandemic
- Landslide
- Terrorism/violence
- Tornado
- Tsunami
- Volcano
- Wildfires
- Winter storms

DISASTER SUPPORT MECHANISMS

The disaster declaration process involves the state (through the governor) asking the President of the United States to approve a major disaster declaration (www.fema.gov/disaster-declaration-process). The FEMA tracks disasters by year, type, and location (www.fema.gov/disasters/). Public health emergencies, which typically relate to infectious diseases or other situations that put the public's health at risk, are managed by the Secretary of the US Department of Health and Human Services (HHS) (www.phe.gov/Preparedness/legal/Pages/phedeclaration.aspx).

The National Response Framework (NRF) guides how the nation responds to disasters and emergencies (www.fema.gov/media-library/assets/documents/117791) and is based on the National Incident Management System (www.fema.gov/national-incident-management-system).

The National Disaster Medical System or NDMS (www.phe.gov/Preparedness/responders/ndms/ndms-teams/Pages/default.aspx) deploys pre-credentialed Disaster Medical Assistance Teams (DMATs) and other professionals to assist with disaster medical response at a national level. Other opportunities for pediatricians include signing up for Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP)[www.phe.gov/esarvhp/Pages/about.aspx] or Medical Reserve Corps (MRC) teams (https://mrc.hhs.gov/HomePage) in advance of a disaster.

A common instinct after a disaster is for pediatricians or other medical professionals to want to travel to a disaster-affected area and help by providing medical relief services. However, for various reasons, including the need to protect victims and volunteers and pre-credential medical professionals, this is rarely possible or advisable. Pediatricians and others who do travel to help in a disaster may find themselves taking resources from disaster victims, especially in austere areas. The AAP recommends that pediatricians sign up in advance through the DMAT, ESAR-VHP, and MRC options referenced above. It is also sometimes possible for pediatricians to assist in disaster response via the American Red Cross (www.redcross.org/take-a-class/disaster-training) or National Voluntary Agencies Active in Disasters (www.nvoad.org/voad-members/national-members/). State connections are also available (www.nvoad.org/voad-members/stateterritory-members/).

The AAP does not send teams to disaster-affected areas or endorse/approve any particular means of traveling to or volunteering in disaster-affected areas, yet the organization hopes to continue to keep its members informed of relevant opportunities. The security and safety of members continues to be a high priority, and members are urged to educate themselves about the reality of travel details, security issues, liability insurance, living conditions, and other details regarding the provision of medical care in austere conditions. The CDC offers travel health notices (wwwnc.cdc.gov/travel/notices). It is important that health care professionals carry copies of licenses and board certifications when traveling and become knowledgeable about documentation needed when taking medicines into a foreign country.

DISASTER PHASES: PEDIATRICIAN INVOLVEMENT

The exact terminology for disaster phases differs, and the terms used seem to change frequently. For example, FEMA references: prevention, protection, mitigation, response, and recovery.

For the purposes of this resources, the AAP will reference 4 basic phases related to a disaster:

1. Mitigation
2. Preparedness
3. Response
4. Recovery (short- and long-term)

Mitigation Phase
During mitigation, actions are taken to eliminate or reduce the probability of a disaster or reduce the impact of unavoidable disasters (www.fema.gov/what-mitigation). Mitigation preparedness measures include building codes, vulnerability analyses, tax incentives and disincentives, zoning and land use management, building-use regulations, safety codes, sharing of resources among states, vaccination, preventive health care, and public education.

Information resources, data, and services important in mitigation activities include: geographic information systems-based risk assessment, claims history data, facility/resource identification, land use/zoning, building code information, and modeling/prediction tools for trend and risk analysis.

The pediatrician's role in mitigation is typically what is done on a day-to-day basis (eg, immunizations, vaccine storage, preventive health care, health education, and outreach to community and public health specific to routine health and safety efforts). A key resource is the AAP policy "Pediatricians and Public Health: Optimizing the Health and Well-being of the Nation's Children" (http://pediatrics.aappublications.org/content/early/2018/01/18/peds.2017-3848).

Preparedness Phase
Although disasters cannot usually be predicted, sometimes it is possible to control their impact through prevention and planning efforts. Preparedness is probably the most important phase of response in emergency management (www.dhs.gov/topic/plan-and-prepare-disasters). During the preparedness phase, governments, organizations, and individuals conduct risk assessments to recognize which disasters are most likely to occur in particular geographical areas, and then they develop plans to save lives, minimize disaster damage, enhance disaster response, and facilitate short- and long-term recovery. Preparedness efforts include developing written disaster plans; evacuation planning; emergency exercises and training; emergency communications and warning systems; public information and education; and development of resource inventories, personnel contact lists, and mutual aid agreements.

Pediatricians can participate in disaster preparedness in many ways. They can:
- Advise local disaster planners and hospital and health system administrators on the considerations of children and families
- Advocate for children's needs
- Educate disaster response teams on pediatric issues
- Join disaster or health care coalitions
- Participate in and help to plan exercises and drills
- Support partners in disaster planning:
  - Child care facilities and schools
  - Emergency medical services (EMS) and EMS for Children (EMSC)
  - Law enforcement (offer guidance on the impact scenarios would have on children)
  - Public health
- Help families with preparedness planning
- Participate in medical surveillance efforts to alert public health officials of suspicious trends
- Seek education on disaster topics

- Initiate or get involved in disaster preparedness initiatives
- Form a communications network to enhance messaging/information sharing in a disaster
- Advise others on how best to educate and create awareness in school personnel and among parents without causing panic
- Develop a written plan for their practice setting (office practice, hospital, urgent care center)
- Prepare their own family disaster plan

A critical way for pediatricians to make a difference in pediatric disaster preparedness is to advocate for the needs of children by speaking directly to hospital administrators. This is especially important in general or community hospitals, where most planning will likely relate to adults. In addition, in a disaster, hospital personnel will prioritize the needs of their own family/children, and this could affect their ability to work. So, taking steps to meet with hospital administrators and discuss disaster preparedness is a win-win for everyone. (Also see Chapter 4: Mental Health Issues.)

Additional details on the role of the pediatrician in disaster preparedness are included in the AAP policy "Ensuring the Health of Children in Disasters" (http://pediatrics.aappublications.org/content/136/5/e1407). Also see the AAP Family Readiness Kit, which pediatricians can provide to families (www.aap.org/en-us/Documents/disasters_family_readiness_kit.pdf).

Relationship building during the preparedness process is critical. The leaders involved in community disaster planning should routinely meet with each other to develop familiarity and to facilitate communication during a crisis. Communication is a key element for success. If leaders can communicate successfully during routine circumstances, it will be more likely that they will communicate effectively during times of crisis.

Pediatricians might find that community connections to other groups that are involved in disaster planning and response can supplement their efforts. Some may not be relevant to most office-based pediatricians (in terms of applying this resource to their setting); however, it is advisable for pediatricians to be aware that others in their community might be involved in these efforts.

Citizen Corps: The Citizen Corps program brings together local government, business, and community leaders who work to prepare their communities for disasters and to make them more resilient. It includes a national network of more than 1200 state, local, and tribal Citizen Corps Councils. The Citizen Corps is coordinated by FEMA. In this capacity, FEMA works closely with other federal entities, state, and local governments; first responders and emergency managers; the volunteer community; and the Corporation for National and Community Service (www.ready.gov/citizen-corps).

Community Emergency Response Team: The Community Emergency Response Team (CERT) program educates people about disaster preparedness and trains them in basic disaster response skills, such as fire safety, light search and rescue, and disaster medical operations. Using their training, CERT members can assist others in their neighborhood or workplace following an event

and can take a more active role in preparing their community. The program is administered by FEMA (www.ready.gov/community-emergency-response-team).

Medical Reserve Corps: The Medical Reserve Corps (MRC) is a national network of locally organized volunteers who are integrated into the community's disaster response plan. The MRC network includes about 190,000 volunteers in 900 community-based units in the United States and its territories. These volunteers include medical and public health professionals, as well as other community members without health care backgrounds. The MRC units prepare for and respond to disasters as well as other emergencies affecting public health. This program is an ideal way for office-based pediatrician to become more active in local disaster response (https://mrc.hhs.gov/pageviewfldr/About).

National Volunteer Organizations Active in Disasters: The National Volunteer Organizations Active in Disasters (NVOAD) is a forum where organizations share knowledge and resources throughout the disaster cycle to help disaster survivors and their communities. The NVOAD uses cooperation, coordination, communication, and collaboration as guiding principles for how it operates, and the partner organizations work to better serve communities and the nation (www.nvoad.org/).

Once preparedness plans are developed, these written plans should be reviewed, tested, and refined on a regular basis. For a plan to work efficiently and effectively during a crisis, it must be well-rehearsed. Plans that have been tested on a regular basis enable the responders to know and understand their roles. Careful review and personal communication with all involved in both incident management and potential disaster response can always help to identify more opportunities for improvement. Because disasters are dynamic events, plans must be flexible so that they can be adapted to an incident as it evolves. People involved in the planning process should stay current regarding new trends, technologies, and intelligence information that becomes available. For pediatricians, this can mean signing up in advance to monitor messaging and updates from federal agencies such as the ASPR, Centers for Disease Control and Prevention (CDC), FEMA, and local and state public health agencies.

Response Phase

The next phase is the response to the actual event. Response activities provide emergency assistance for casualties, reduce the probability of secondary damage, and enhance recovery. Response activities can include activating public warning systems, declaring disasters, mobilizing emergency personnel and equipment, providing emergency medical assistance, activating and managing emergency operation centers, evacuating the public, mobilizing security forces, and providing search and rescue operations.

Response to a mass casualty incident (MCI) begins at the scene by the first responders. An integral role of the first responder is coordination with agencies able to recognize characteristics of MCIs secondary to explosive devices or to biological, chemical, or radiological agents, such that ongoing risk is minimized. First responders collect casualties, triage survivors, institute treatment (including decontamination), and transport victims to hospital emergency departments or other treatment areas. In blast trauma, first responders should convey field information to hospital personnel so that management of casualties can be

facilitated. This information should include the sorts of injuries that are expected, initial estimates of the number of casualties, and any additional risks to personnel from toxic substances. Involvement of hazardous substances such as chemical or biological agents, fires, collapsed structures, or the possibility of a radiation dispersal device (dirty bomb) should initiate specific response protocols.

Disaster events can change quickly, so personnel should be able to adapt plans to deal with the incident as needed. The Incident Command System (www.fema.gov/incident-command-system-resources) is a core component of any disaster response. There should be an incident commander—a qualified, visible leader—who can take charge of the response and direct the responders. The incident commander must be able to think quickly, make rapid assessments, and switch direction as needed. The incident commander should be surrounded by competent, knowledgeable, and trusted people. The people who support the incident commander will be called on to provide complete and accurate information to the incident commander so that he or she has the tools needed to make rapid, informed decisions. The National Incident Management System, or NIMS (www.fema.gov/national-incident-management-system), provides a common, nationwide approach to enable the whole community to work together to manage all threats and hazards. The NIMS applies to all incidents, regardless of cause, size, location, or complexity.

The individual pediatrician may be involved in disaster response in various ways:

- Continue to care for patients, even when business is disrupted
- Direct families and colleagues to disaster assistance resources
- Assess and help to address pediatric needs in shelters
- Ask families how they are coping
- Join in the medical response through participation in national or state opportunities
- Support family reunification
- Monitor public health messages
- Tend to professional self-care

Pediatricians must make their own professional self-care a priority to effectively help those children and their families who are affected by disasters. Providing psychological support or "psychological first aid" will be a critical consideration for pediatricians after a disaster. (Also see Chapter 4 Mental Health Issues.)

Recovery Phase

The recovery phase evolves as steps are taken to mitigate the impact of the disaster event. The objective of recovery is to support the affected area to return to normal as quickly as possible and for recovery activities continue until all systems have been returned to normal or better. Depending on the scope of the incident, the recovery period can range from hours to years. During recovery, damage assessments are made, financial needs are identified, and timelines and plans to support disaster recovery are developed and implemented.

Short- and long-term recovery measures include returning vital life-support systems to minimum operating standards; reconstruction; temporary housing; ongoing medical care; and public information, health and safety education, and counseling. One aspect of long-term recovery involves assessing the infrastructure, how it held up during the incident, what the cost of the

response was, and how that cost can be recovered. Recovery efforts in economic support include paying out insurance/loans and grants to cover damage, providing disaster unemployment insurance, and performing economic impact studies. Information resources and services related to recovery include data collection related to rebuilding, claims processing, and documentation of lessons learned.

During disaster recovery, pediatricians can:

- Connect with their AAP chapter
- Continue self-care and support colleagues and families affected by the disaster
- Restore access to medical care
- Serve as a pediatric advisor or child advocate, especially for disaster recovery Children and Youth Task Forces, often initiated by HHS after a disaster
- Support clean-up and continuation of child care facilities, schools, and safe play areas for children

During long-term recovery, participants review and critique the response, evaluating how the overall plan worked in a real event. This allows them to determine what needs to be done to update the plan and educate responders and to make changes necessary to improve the original response plan and prevent a recurrence.

The AAP offers resource and support to AAP chapters (www.aap.org/disasters/chapters), including a Chapter Preparedness Checklist, a Chapter Planning Template, and access to AAP Disaster Recovery Funds and AAP Chapter Contacts.

FEDERAL AGENCIES INVOLVED IN DISASTER EFFORTS

The federal agencies that have primary responsibility for addressing children's needs in disasters include the HHS ASPR, the CDC, the Department of Homeland Security/FEMA, and the Administration for Children and Families/Office of Human Services Emergency Preparedness and Response. Details on these agencies and select activities follow.

Administration for Children and Families/Office of Human Services Emergency Preparedness and Response

(www.acf.hhs.gov/ohsepr)

The Administration for Children and Families is a division of HHS that promotes the economic and social well-being of children, families, individuals and communities with leadership and resources for compassionate, effective delivery of human services. The Office of Human Services Emergency Preparedness and Response promotes resilience for individuals, families, and communities affected by disasters and public health emergencies by providing expertise in human services policy, planning, operations, and partnerships.

Centers for Disease Control and Prevention

(www.cdc.gov/)

The CDC strives to protect America from health, safety, and security threats by conducting critical science efforts, providing health information, and responding to diseases or threats as they occur. Within the CDC, the Emergency Operations Center (EOC) operates 24 hours a day, 7 days a week to provide emergency consultation and assistance to state and local health

agencies, clinicians, and citizens. The EOC can be reached at 770-488-7100. The Clinician Information Line (877-554-4625) is available to clinicians 24 hours a day to provide guidance on the management of patients. The CDC EOC can also refer pediatricians to agent-specific subject matter experts. The CDC National Center on Birth Defects and Developmental Disabilities works in partnership with the CDC Office of Public Health Preparedness and Response to support the CDC Children's Preparedness Unit (www.cdc.gov/childrenindisasters/). The CDC also oversees the CDC Public Health Emergency Preparedness (PHEP) cooperative agreement program (www.cdc.gov/phpr/readiness/phep.htm). This program offers funding to enable health departments to strengthen their capabilities to respond to various threats, such as infectious diseases, natural disasters, and biological, chemical, nuclear, and radiological events. Preparedness activities funded by the PHEP cooperative agreement are "emergency ready" as well as flexible and adaptable. The CDC mission, role, and pledge emphasizes its role in nurturing state and local public health (www.cdc.gov/about/organization/mission.htm). The need for a strong connection between pediatricians and public health officials is emphasized in the AAP Pediatric Preparedness Resource Kit (www.aap.org/disasters/resourcekit).

Department of Homeland Security
(www.dhs.gov/)
The Department of Homeland Security strives to keep Americans safe and secure the nation from many threats related to areas such as aviation, border security, cyber security, and emergency response. Mission areas include preventing terrorism and enhancing security, managing the US borders, administering immigration laws, securing cyberspace, and ensuring disaster resilience.

Office of the Assistant Secretary for Preparedness and Response
(www.phe.gov/preparedness/pages/default.aspx)
The mission of the HHS ASPR is to save lives and protect the nation from current threats to health security. The ASPR leads the nation's medical and public health preparedness for, response to, and recovery from disasters and public health emergencies at the federal level. The ASPR collaborates with academia; biotechnology firms; communities; hospitals; health care coalitions; as well as state, local, tribal, and territorial governments and other partners across the country to improve readiness and response capabilities. The ASPR continuously identifies and addresses gaps in coordinating patient care and transportation in disasters, especially specific to coalitions and states. The ASPR is working to implement a Regional Disaster Health Response System, and pediatrics is a critical component of this effort. The ASPR also offers support in this area through the federally funded Hospital Preparedness Program, which is now focused on Health Care Coalition Preparedness efforts (www.phe.gov/preparedness/planning/hpp/pages/default.aspx).

Technical Resources, Assistance Center, and Information Exchange (TRACIE): The ASPR offers technical assistant and support through TRACIE, which was created to meet the information and technical assistance needs of regional ASPR staff; health care coalitions, entities, and providers; emergency managers; public health practitioners; and others working in disaster medicine, health care system preparedness, and public health emergency preparedness. Pediatricians and others can visit https://asprtracie.hhs.gov/ or reach TRACIE staff via telephone (844-587-2243) or e-mail (askasprtracie@hhs.gov).

Federal Advisory Councils: The ASPR and other areas of HHS oversee various federal advisory councils that provide guidance and recommendations to the assistant secretaries.

National Commission on Children and Disasters: The National Commission on Children and Disasters (which was sunset in 2015) identified many recommendations to improve disaster preparedness and response in its 2010 Report to the President and Congress (https://cybercemetery.unt.edu/archive/nccd/20110427002908/http:/www.childrenanddisasters.acf.hhs.gov/index.html).

National Advisory Committee on Children and Disasters: The National Advisory Committee on Children and Disasters (NACCD) was established after the National Commission on Children and Disasters was sunset to provide advice and consultation to the HHS Secretary and/or ASPR on issues related to the medical and public health needs of children as they relate to disasters. (www.phe.gov/Preparedness/legal/boards/naccd/Pages/default.aspx). The mission of the NACCD is to:

- Provide advice and consultation
- Evaluate and provide input with respect to the medical and public needs of children as they relate to preparation for, response to, and recovery from all-hazards emergencies
- Provide advice and consultation with respect to state emergency preparedness and response activities for children, including related drills and exercises pursuant to the preparedness goals
- Provide advice and recommendations to the HHS Secretary with respect to children and the medical and public health grants and cooperative agreements

The NACCD also issued recommendations specific to children in several reports (www.phe.gov/Preparedness/legal/boards/naccd/Pages/recommendations.aspx).

National Preparedness and Response Science Board: The National Preparedness and Response Science Board (NPRSB) provides expert advice and guidance to the Assistant Secretary of HHS and the Assistant Secretary for Preparedness and Response on scientific, technical, and other matters related to public health emergency preparedness and response (www.phe.gov/Preparedness/legal/boards/nprsb/Pages/default.aspx).

FEDERAL AND STATE COORDINATION

Communication and information sharing are key parts of successful disaster management, both before and during an actual event. Although each area of the country handles emergency responses in somewhat different ways, all emergency response agencies use some form of an incident management system, generally NIMS. When a disaster happens, each state serves as the primary point of contact with the federal government. Communications typically occur through the governor (www.phe.gov/Preparedness/responders/soc/Pages/coordination.aspx). The best way for pediatricians to get involved in regional efforts is to join existing disaster-related health care coalitions. The ASPR offers state points of contact (www.phe.gov/Preparedness/planning/hpp/Pages/find-hc-coalition.aspx).

Emergency Medical Services

Emergency Medical Services, or EMS, in the United States is a coordinated system of disaster response and emergency medical care that involves multiple people and agencies. The availability and capabilities of EMS in the United States have undergone explosive growth throughout its history. Congress passed the Highway Safety Act of 1966, establishing the National Highway Traffic Safety Administration (NHTSA). The agency's purpose was to help states start coordinated EMS programs. When Congress passed the Emergency Medical Services Systems Act of 1973, this established the regional basis for coordination of emergency medical care throughout the United States.

In its series on the *Future of Emergency Care* (2007), the Institute of Medicine (IOM) reported deficiencies in the quality of prehospital pediatric emergency care resulting from the infrequent encounters with critical pediatric patients coupled with inadequate initial and continuing pediatric education (www.nationalacademies.org/hmd/Activities/Quality/emergencycare.aspx). These deficiencies resulted in prehospital care providers expressing discomfort when rendering care to children, especially infants. On the basis of these findings, the IOM recommended that "every pediatric- and emergency care-related health professional credentialing and certification body should define pediatric emergency care competencies and require practitioners to receive the level of initial and continuing education necessary to achieve and maintain those competencies."

The draft *EMS Agenda 2050* (www.ems.gov/projects/ems-agenda-2050.html) concluded:

- Patients' age should not affect the quality of care they receive.
- EMS initial and continuing education and simulation should ensure providers are as comfortable treating infants and children as they are treating adults.
- Systems should develop evidence-based protocols and have equipment appropriate for every age range in the patient spectrum.
- Medical research should include safe ways of assessing the treatment of, and equipment used, for patients of all ages from neonates to the elderly.
- Industry should be incentivized to develop equipment that can be adjusted to the age and size of patients to safely assess, treat, and transport patients of any age.

A comprehensive EMS system is ready for all emergencies and disasters (www.ems.gov/whatisems.html).

Emergency Medical Services for Children

In 1984, Congress first appropriated funds to support the EMSC program. The EMSC program did not promote the development of a separate EMS system for children, but instead EMSC focused on enhancing the pediatric capability of existing EMS systems. During the past 25 years, the scope and complexity of care rendered by prehospital EMS providers have expanded greatly. The NHTSA oversees EMS, and a relevant history of the evolution of these activities is available online (www.ems.gov/OEMShistory.html). The AAP offers information on the evolution of the EMSC program (www.aap.org/en-us/Documents/EMSC_Historical_Perspective2125.pdf). The AAP offers many policy documents with recommendations on pediatric emergency care (http://pediatrics.aappublications.org/collection/committee-pediatric-emergency-medicine). Of special significance are the "Joint Policy Statement—Pediatric Readiness in the Emergency

Department" (http://pediatrics.aappublications.org/content/142/5/e20182459) and "Emergency Information Forms and Emergency Preparedness for Children With Special Health Care Needs" (http://pediatrics.aappublications.org/content/125/4/829).

The EMSC Innovation and Improvement Center (IIC) was initiated in 2015 to offer support to state EMSC projects and to improve outcomes for children in emergency situations by using improvement science as the basis for collaborative efforts to address known gaps in the US health care system. The EMSC IIC offers a comprehensive Web site (https://emscimprovement.center/) with targeted resources on disaster planning (https://emscimprovement.center/categories/disaster/).

The AAP encourages AAP chapter leaders to get involved in pediatric disaster preparedness discussions through connections with public health as well as EMSC, CDC PHEP, and ASPR HPP program contacts. The AAP has identified pediatricians to serve as Chapter contacts for disaster preparedness in all states (www.aap.org/disasters/chaptercontacts).

Hospital Preparedness

The Hospital Preparedness Program is supplemented by other initiatives. The National Pediatric Readiness Project (https://emscimprovement.center/projects/pediatricreadiness/) was established to ensure that all US hospital emergency departments have the essential guidelines and resources in place to provide effective emergency care to children. Of the 4146 emergency departments that participated in the 2013 National Pediatric Readiness assessment, only 47% responded that they have a disaster preparedness plan in place that addressed the unique needs of children. The AAP, in partnership with the EMSC IIC, has developed checklists, toolkits, and other resources to improve pediatric readiness within hospitals. A follow-up data collection and assessment will begin in 2019.

In MCIs, including those involving release of biological or chemical agents, both children and adults are likely to be significantly affected. Children would probably be disproportionately affected by such an incident, so pediatricians should assist in planning coordinated responses for local hospitals that may have limited pediatric resources. Health care facilities could also be a primary or secondary target. At the very least, facilities will be overwhelmed by a massive number of anxious and worried individuals.

The problems associated with terrorist incidents differ from those usually faced by hospital disaster alert systems. In the typical scenario, most victims are triaged in the field and then carefully distributed among available resources to avoid a single facility from being overwhelmed. In a terrorist attack or after a sudden unexpected mass casualty event, facilities will be particularly vulnerable to inundation with many victims who have not been triaged or transported by EMS. Arrivals without full notification could interfere with attempts to isolate contaminated victims and ensure protection of health care personnel. In addition, terrorist events will be further complicated by the issues of security and forensics.

Hospital emergency department personnel become involved both before and after the arrival of victims. For example, emergency departments must be able to accommodate large numbers of patients, inpatient units must be prepared to surge, operating rooms must move patients through

more quickly, and nonmedical areas must be prepared to set up to care for the less serious patients presenting themselves. Activities prior to arrival include processing current patients in the emergency department to prepare for new arrivals, checking all equipment, activating additional personnel, assigning team leaders, and possibly assigning liaisons to government agencies. Information and recommendations are contained within the AAP policy statement, "Chemical-Biological Terrorism and its Impact on Children" (http://pediatrics.aappublications.org/content/118/3/1267).

Hospital preparedness planning is often based on a gap analysis or risk or hazard vulnerability assessments.

Risk Assessment: The objective of conducting a hospital risk assessment is to estimate the likelihood that an incident will have an impact on the hospital. Considerations in risk assessment include the following:

- Size of the incident and the hospital's ability to respond
- Whether the incident has the *potential* to generate large number of causalities
- Whether effects are immediate or may be delayed
- What types of specialized equipment, procedures (decontamination), and medications, all adapted to pediatric needs, will be required for the response
- Awareness that hospitals may be targets of secondary attacks to amplify effect

Situations with both high probability and the potential for high impact (eg, an earthquake in California or a tornado in the Midwest) should receive more attention in preparedness planning than either situations of low probability with the potential for high impact (eg, industrial plant chemical leak) or situations of high probability and the potential for low impact (eg, community outbreak of infectious gastroenteritis).

Hazard Vulnerability Analysis: The Hazard Vulnerability Analysis (HVA) is an aspect of risk analysis that considers the hospital's capabilities regarding the traditional elements of risk. This analysis allows a comparison between the potential risk factor (hazard) and the hospital's ability to cope. The action plan resulting from this type of risk analysis should be directed toward those hazards against which the hospital is less able to cope (ie, vulnerabilities). Areas of vulnerability may include issues such as an attack on hospital information systems, inadequate ventilation systems (negative pressure, contained exhaust) for decontamination procedures in toxic exposures, power and water supplies, or hospital staff untrained in the proper use of personal protective equipment (PPE).

The key benefit of HVA is the ability to prioritize planning for the hospital in any given situation. The key to effective HVA is a good, frequently updated inventory of the resources and capabilities (within both the hospital and the community) that are available for dealing with a particular hazard-related emergency.

The ASPR TRACIE offers relevant tools and resources specific to risk assessment and HVA (https://asprtracie.hhs.gov/technical-resources/3/Hazard-Vulnerability-Risk-Assessment/1).

COALITION BUILDING

There has been increasing recognition of the importance of coalitions as the cornerstone for meaningful preparedness in this country. Examples of this recognition are mandatory inclusions of coalition building for federal funding and in federal, state and local planning documents. Pediatric Disaster Coalitions, incorporated into overall disaster planning and management, can be an effective mechanism to match resources to needs during catastrophic events. They can thereby improve outcomes for pediatric victims and their families. These coalitions have grown from grassroots efforts of 2 to 3 health care providers and agencies planning together to more formal structured entities that include the full gamut of pediatric disaster response. The AAP offers information on establishing pediatric advisory councils or children's preparedness coalitions (www.aap.org/disasters/EstablishingPreparednessCoalitions) and disaster-related coalitions (www.aap.org/disasters/coalitions).

The National Pediatric Disaster Coalition was established in 2016 to engage multidisciplinary organizations and subject matter experts to harness collaborative ideas and technologies that promote the best outcomes for children in disasters (www.npdcoalition.org/).

REGIONAL COORDINATION OF HEALTH CARE SYSTEM RESPONSE

Emergency incidents require coordination of the health care system within the local community and region. Coordination with community stakeholders includes liaison and planning with various local, state, and national agencies/organizations. The ASPR has identified regional coordinators (www.phe.gov/Preparedness/responders/rec/Pages/default.aspx).

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