AMERICAN ACADEMY OF PEDIATRICS

PEDIATRIC DISASTER PREPAREDNESS AND RESPONSE

TOPICAL COLLECTION: PART ONE
January 2019

EDITORS
Sarita Chung, MD, FAAP
George Foltin, MD, FAAP
David J. Schonfeld, MD, FAAP

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®

Published by the American Academy of Pediatrics
345 Park Boulevard
Itasca, IL 60143
Telephone: 630-626-6000
Facsimile: 847-434-8000
www.aap.org
www.healthychildren.org
www.aap.org/disaster/manual

The recommendations in this publication do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

Listing of resources does not imply an endorsement by the American Academy of Pediatrics (AAP). The AAP is not responsible for the content of external resources. Information was current at the time of publication.

Products and Web sites are mentioned for informational purposes only and do not imply an endorsement by the AAP. Web site addresses are as current as possible but may change at any time.

Brand names are furnished for identification purposes only. No endorsement of the manufacturers or products mentioned is implied.

The publishers have made every effort to trace the copyright holders for borrowed materials. If they have inadvertently overlooked any, they will be pleased to make the necessary arrangements at the first opportunity.

This publication has been developed by the AAP. The contributors are expert authorities in the field of pediatrics. No commercial involvement of any kind has been solicited or accepted in development of the content of this publication.

Every effort is made to keep the *Pediatric Disaster Preparedness and Response Topical Collection* consistent with the most recent advice and information available from the AAP.

REVIEWERS/CONTRIBUTORS

EDITORS
Sarita Chung, MD, FAAP
George Foltin, MD, FAAP
David J. Schonfeld, MD, FAAP

EDITORIAL CONSULTANT
Marsha Treiber, MPS

EDITORIAL OVERSIGHT
Steven E. Krug, MD, FAAP

CONTRIBUTORS
ASPR TRACIE Staff
Amy Arrington, MD, FAAP
Michael K. Bouton, MD, MBA
Michelle Burns, MD
Anne Butler, MD
Takuyo Chiba, MD
Dennis Cooley, MD, FAAP
Arthur Cooper, MD, MS, FACS, FAAP, FCCM, FAHA
Carl Eriksson, MD, MPH, FAAP
Avram Flamm, DO
Lorraine Giordano, MD, ABDM
Shana E. Godfred-Cato, DO, FAAP
Nicole Gubbins, MD
Kristina Gustafson, MD, MSCR
Marvin Harper, MD, FAAP
Brent Kaziny, MD, MA, FAAP
Michelle Lee
Helen Miller, MD, FAAP
Flor Munoz, MD, FAAP
Scott Needle, MD, FAAP
Mobeen Rathore, MD, FAAP
James Roberts, MD, MPH
Christine San Giovanni, MD, MSCR
David J. Schonfeld, MD, FAAP
Jeffrey Schor, MD, FAAP
David Szydlo, MD, PhD
Michael Tunik, MD, FAAP

AMERICAN ACADEMY OF PEDIATRICS BOARD OF DIRECTORS REVIEWER
Warren M. Siegel, MD, FAAP

AMERICAN ACADEMY OF PEDIATRICS STAFF
V. Fan Tait, MD, FAAP, *Chief Medical Officer*
Laura Aird, MS, *Manager, Disaster Preparedness and Response, CMO Administration*
Sean Diederich, *Program Manager, Disaster Preparedness and Response, CMO Administration*
Breanna Smith, *Program Coordinator, Emergency Readiness, CMO Administration*

CONTENTS

INTRODUCTION

Disaster planning should address the needs of all populations for all potential hazards, yet as a health care system and a nation, we remain suboptimally prepared for disasters. This assessment particularly holds true regarding readiness for the needs of children. All components within the chain of care for those affected by disasters can benefit from additional knowledge and guidance to improve pediatric preparedness. These entities include health care providers, clinics (private practice, hospital-run, state, and federal), emergency medical services and interhospital transport, hospitals, urgent care centers, schools and child care settings, shelters, local communities, states, and regions. Children are often an afterthought in disaster planning; children may not even be mentioned in some disaster plans or exercises, or they may be considered only in a separate plan annex. Even when mentioned, plan elements addressing the care of children may not have been reviewed by pediatric subject matter experts.

To close the remaining gaps and to ensure the health of children during public health emergencies or disasters, the American Academy of Pediatrics (AAP), with its Disaster Preparedness Advisory Council, offers policy recommendations in several critical policy documents:

- *Ensuring the Health of Children in Disasters*
- *Providing Psychosocial Support to Children and Families in the Aftermath of Disasters and Crises*
- *Medical Countermeasures for Children in Public Health Emergencies, Disasters, or Terrorism*
- *Chemical-Biological Terrorism and its Impact on Children*

Although designed for use by pediatricians and other health care providers who would likely care for children in a disaster, this topical collection could also be useful for first responders; shelter, school, and child care personnel; volunteers; emergency planners; and policy makers who aspire to be prepared to meet the unique needs of children in times of crisis/disaster and to train the next generations of professionals.

To be fully prepared for disasters, the best strategy is an all-hazards approach. A comprehensive preparedness plan should cover all potential sources and types of disasters, both natural and man-made causes, including pandemics. A preparedness plan for one event shares many of the same elements that can be used for other events. Some crises, such as large building fires and mass casualty shootings, are not specifically highlighted in this resource. Injuries from fires and gunfire are unfortunately common in the emergency medical setting; they become a crisis when the number of those injured exceeds the local capacity to provide care (and that threshold varies greatly from one community to another). The concepts and practical advice to address surge needs in other crises are equally relevant for the context of large scale building fires and mass casualty shootings. So even though there are not chapter headings specifically for all possible crises, the totality of this resource, which adopts an all-hazards approach, should include guidance relevant to all potential crisis events.

A well-conceived all-hazards plan should include consideration of steps to take in the various phases of the disaster response cycle: mitigation, preparedness, response, and recovery (short- and long-term). The Federal Emergency Management Agency (FEMA) describes these terms in its glossary (https://emilms.fema.gov/IS700aNEW/glossary.htm#R). Disaster planning in many settings has typically focused on response, yet preparing for recovery is equally important, as this helps the health care system or community to effectively return to a state of normal. The behavioral and mental health impact of a disaster can represent the event's greatest and longest-lasting manifestation, and recovery may be limited if this is not well planned for. The ultimate goal of a well-developed and practiced plan is a health care system that supports community resiliency. The Office of the Assistant Secretary for Preparedness and Response (ASPR) extends these concepts by describing *community health resilience,* which refers to the ability of a community to use its assets to strengthen public health and health care systems and to improve the community's physical, behavioral, and social health to withstand, adapt to, and recover from adversity. Community health resilience is a subset of community resilience, but it encompasses a broad area given the interrelated nature of health with other domains of resilience (www.phe.gov/Preparedness/planning/abc/Pages/community-resilience.aspx).

Every location where children visit should have a disaster plan that includes consideration of their specific needs. Such settings include but are not limited to: hospitals, clinics, schools, child care facilities, camps, faith-based institutions, shelters, and community locations (eg, libraries, shopping malls, theaters, amusement parks, sports facilities, concert venues). Anywhere that children congregate is a potential site for them to become the intended or incidental victims of violence, a terrorist attack, a natural disaster, or a pandemic. According to the results of the National Pediatric Readiness Survey, less than half of US hospital emergency departments have disaster plans that include specific considerations for children (www.ncbi.nlm.nih.gov/pubmed/25867088). All hospitals should be prepared to provide day-to-day pediatric emergency care and, likewise, should be prepared to care for children of all ages during a catastrophe.

This topical collection is an update of select material and information included in *Pediatric Terrorism and Disaster Preparedness and Response: A Resource for Pediatricians* (https://archive.ahrq.gov/research/pedprep/). The updated material contains new and pertinent information. There has been significant progress made in the field of disaster readiness including advances and new information regarding the care of children. Although the aim is to include all significant information, the goal has been to make the material readily accessible and practical. References and links are offered for those seeking further details and background. This version is more succinct to improve and increase accessibility, and the material provides links to where the interested reader can find more information.

The first edition of the *Pediatric Terrorism and Disaster Preparedness and Response: A Resource for Pediatricians* manual was developed with funding from the Agency for Healthcare Research and Quality, and this topical collection is funded by generous donations to the AAP Friends of Children fund. Two of the first edition's editors, George Foltin, MD, FAAP, and David Schonfeld, MD, FAAP, have returned as coeditors of this material. The untimely passing of Michael Shannon, MD, MPH, FAAP, in 2009 was a terrible loss to the fields of pediatric emergency medicine, toxicology, and disaster medicine. We will be forever grateful for the

enormous contributions he made as a subject matter expert, clinician, educator, researcher, mentor, leader and child advocate. Appropriately, one of Dr. Shannon's mentees, Sarita Chung, MD, FAAP, serves as the third coeditor for this edition. Steven E. Krug, MD, FAAP, as the current chairperson of the AAP Disaster Preparedness Advisory Council, has joined this editorial team.

This resource endeavors to inform and guide pediatricians as well as planners, responders, care providers, and volunteers to be better prepared to deal with children affected by disasters. Additional information can be found on the comprehensive Children and Disasters Web site managed by the AAP (www.aap.org/disasters).

BIBLIOGRAPHY

Fagbuyi DB, Schonfeld DJ; American Academy of Pediatrics, Disaster Preparedness Advisory Council. Policy statement: Medical countermeasures for children in public health emergencies, disasters, or terrorism. *Pediatrics*. 2016;137(2):e20154273

American Academy of Pediatrics. *Pediatric Terrorism and Disaster Preparedness: A Resource for Pediatricians*. Foltin GL, Schonfeld DJ, Shannon MW, eds. AHRQ Publication No. 06-0056-EF. Rockville, MD: Agency for Healthcare Research and Quality; October 2006

Needle S, Wright J; American Academy of Pediatrics, Disaster Preparedness Advisory Council, Committee on Pediatric Emergency Medicine. Policy statement: Ensuring the health of children in disasters. *Pediatrics*. 2015;136(5):e1407-e1417

Schonfeld DS, Demaria T; American Academy of Pediatrics, Disaster Preparedness Advisory Council, Committee on Psychosocial Aspects of Child and Family Health. Clinical report: Providing psychosocial support to children and families in the aftermath of disasters and crises. *Pediatrics*. 2015;136(4):e1120-1130

TRIBUTE TO MICHAEL SHANNON, MD, MPH, FAAP
By Sarita Chung, MD, FAAP

A Reflection on Dr Michael Shannon (1953–2009)

As we approach the 10th anniversary of Michael Shannon's passing it remains difficult for me to recall this painful event. In 2009, I was a junior attending with a young family pursuing an interest in this new area loosely referred to as "disaster medicine." I remember feeling lucky and honored to be practicing emergency medicine at Boston Children's Hospital—but even more privileged to have Dr Michael Shannon as my mentor. We had just received an EMSC grant to analyze and create a family reunification system using leading edge computer science algorithms for photo identification.

For those who may not have known him, it is hard to separate the visceral impact of Michael's magnetic, physical presence from his leadership style. With his perfect dancers' posture, ready smile, and colorful bow ties, he always seemed to energize and motivate those around him with warm words of encouragement as well as setting the highest standards through his own personal example. But in his physical absence, it remains telling that Michael Shannon's true legacy lies in the quality, prescience, and lasting impact of his ideas and advocacy. Among many, many examples that validate this point is the evolution of this important book: *Pediatric Terrorism and Disaster Preparedness,* a book for which Michael was one of the three original editors and for which I am deeply honored and humbled to join George Foltin and David Schonfeld as a coeditor.

Many critical ideas put forth in this book today are continuations of concepts that Michael helped develop and for which he passionately and articulately advocated. One such example—the critical importance of integrating the needs of children throughout all phases of a disaster cycle—is now more commonly understood by federal, state, and local governments. By extension, the need for hospitals to implement pediatric-specific disaster plans that include carefully considered protocols for decontamination, triage, and family reunification remains particularly urgent as the number of mass casualty events continues to rise. Michael was one of the strongest voices of advocacy for the research and development of effective pediatric countermeasures to better protect children from biological, chemical, and radiological events.

Michael was also a role model for life. He impressed upon me and my colleagues that while practicing academic medicine at the highest level was important, other aspects of life also needed to take priority. Michael was devoted to his family. He always found ways to be available for his children's activities and performances and would occasionally leave national meetings or events to fly home, so he could have dinner with his family. His love of dancing showed the importance of sustaining interests and passions outside of medicine. And when everything simply got too complicated with overscheduling, Michael taught me the importance of flexibility—on a few occasions, impromptu meetings at the gym turned into brief work sessions (with exercise). Whether for a complex academic question or a simple parenting tip like how to better coax a fussy infant to sleep, Michael's door was always open.

As I now play my own role in the tradition of teaching and mentoring each new group of PEM Fellows and junior staff, I seek to emulate Michael in all the ways I possibly can (though perhaps not as a dancer!). While I will always carry with me the sad memory of his passing, the weight of this sadness dissipates with time and slowly but gradually, transforms into a feeling of deep and sustaining gratitude to have been taught by a mentor as gifted, visionary, and big-hearted as Michael Shannon.

Sarita Chung, MD, FAAP

CHAPTER ONE:
HOW CHILDREN ARE DIFFERENT

As all pediatric care providers know, one cannot treat children as small adults. Children have many unique anatomic, physiologic, immunologic, developmental, and psychologic considerations that potentially affect their vulnerability to injury and response in a disaster. Pediatricians can and should ensure that the needs of children are met in triage, diagnosis, and management in times of catastrophic occurrences.

ANATOMIC DIFFERENCES

Size

A smaller body has smaller circulating blood volume and less fluid reserve. Volumes of blood loss that would be easily handled by an adult can produce hemorrhagic shock in children. Therefore, infections that might cause mild symptoms of vomiting and diarrhea in adults could lead to hypovolemic dehydration and shock in infants, small children, or children and youth with special health care needs. These are urgent emergency situations that can very quickly lead to organ failure or death.

A child's smaller mass means greater force applied per unit of body area. The energy imparted from flying objects, falls, or other blunt or blast trauma is transmitted to a body with less fat, less elastic connective tissue, and closer proximity of chest and abdominal organs. The result is a higher frequency of multiple-organ injury.

A child's small size makes him or her more vulnerable to exposure and toxicity from agents that are heavier than air such as sarin gas and chlorine. These agents accumulate close to the ground in the breathing zone of infants, toddlers, and children.

Structure

Head injury is common in children. The head is a larger, heavier portion of a child's body compared with the head of an adult. A child's head is supported by a short neck that lacks well-developed musculature. The calvarium (skullcap) is thin and vulnerable to penetrating injury, thus allowing greater transmission of force to the growing brain of a child.

The pediatric cervical spine is subject to distracting forces that are more likely to disrupt the upper cervical vertebra and ligaments; however, interpretation of diagnostic imaging is potentially confusing, and children can have spinal cord injury without radiographic abnormality.

The child's skeleton is more pliable than that of adults, and it is incompletely calcified with active growth centers that are more susceptible to fracture. Orthopedic injuries with subtle symptoms and physical findings are easily missed, especially in preverbal children.

Internal organ damage can occur without overlying bony fracture. It is common to have serious cardiac or lung injuries without having incurred rib fractures. The thoracic cage of a child does not provide as much protection of upper abdominal organs as that of an adult. Hepatic or splenic

injuries from blunt trauma can go unrecognized and produce significant blood loss leading to hypovolemic shock.

The mediastinum is very mobile in children. Subsequently, a tension pneumothorax can become quickly life-threatening when the mediastinum is forced to the opposite side compromising venous return and cardiac function.

Body Surface Area
The ratio of body surface area (BSA) to mass is highest at birth and gradually diminishes as the child matures. The distribution of BSA also differs between children and adults. Children have a higher percentage of BSA devoted to the head relative to the lower extremities, and this must be taken into account when determining the percentage of BSA involved for burn injuries and in situations of hypothermia treatment or prevention.

PHYSIOLOGIC DIFFERENCES
Children can compensate and maintain heart rate during the early phases of hypovolemic shock, which creates a false impression of normalcy resulting in resuscitation with too little fluid administration. This can be followed by a swift deterioration with little warning.

Pediatric care providers must be able to quickly interpret whether a child's vital signs are normal or abnormal for age. Temperature is an often forgotten but important vital sign in injured children. The child's ability to control body temperature is affected not only by BSA-to-mass ratio but also by thin skin and lack of substantial subcutaneous tissue. These factors increase evaporative heat loss and caloric expenditure. Considerations of methods to maintain and restore normal body temperature are critical to the resuscitation of children. Supportive methods can include thermal blankets and *warmed* resuscitation rooms, intravenous fluids, and inhaled gases.

Children have a higher minute ventilation than adults, which means that over the same period of time, they are exposed to relatively larger doses of aerosolized biological and chemical agents than are adults. The result is that children suffer the effects of these agents much more rapidly. Children are also more likely to absorb more of the substance from the lungs before it is cleared or diffused through ventilation.

IMMUNOLOGIC DIFFERENCES
Children have immature immunologic systems, placing them at higher risk of infection. Immunologically, children have less herd immunity from infections and a unique susceptibility to many infectious agents.

DEVELOPMENTAL DIFFERENCES
Children rely on parents or other adult caregivers for food, clothing, and shelter. In disasters, these caregivers can be injured, killed in the incident, or not present. Children, especially infants and toddlers:
- Are limited in their verbal ability to communicate their wants and needs;
- Do not always have the motor skills needed to escape from the site of the incident;
- May be limited in their ability to figure out how to flee from danger or to follow directions from others; or

- May not even recognize a threat, and because of their curious nature, may move toward a risky situation.

PSYCHOLOGICAL DIFFERENCES

The psychological effects of disaster on children are neither uniform nor universal in nature (see the section on mental health).

BIBLIOGRAPHY

Bachrach LK. Bare-bones fact – children are not small adults. *New Engl J Med*. 2004;351(9):924-926

Centers for Disease Control and Prevention. How are children different from adults? Available at: www.cdc.gov/childrenindisasters/differences.html. Updated February 11, 2015. Accessed September 4, 2018

Peck GQ. The youngest victims: disaster preparedness to meet children's needs. *Pediatr Rev*. 2008;29(11):Appendix

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).

BIBLIOGRAPHY

Gausche-Hill MS. Pediatric preparedness of US emergency departments: a 2003 survey. *Pediatrics*. 2007;120(6):1229-1237

National Biodefense Science Board Community Health Resilience Report. 2014. Accessed September 4, 2018

National Commission on Children and Disasters. *2010 Report to the President and Congress*. AHRQ Publication No. 10-M037. Rockville, MD: Agency for Healthcare Research and Quality; 2010

CHAPTER THREE:
PREPAREDNESS PLANNING IN SPECIFIC PRACTICE SETTINGS

PLANNING

Historically, planning for disasters, terrorist incidents, and public health crises has focused on hospitals and emergency departments. In recent years, there has been a growing realization that preparedness needs to reflect the whole community, and public health preparedness needs to address the entire continuum of health care delivery. Office-based pediatricians are recognized as having a vital role in planning for and responding to disasters. In the immediate aftermath of a catastrophic event, complications of baseline chronic medical needs are one of the primary reasons for people seeking medical care. As response transitions to recovery, disaster-related screening, support and intervention, and follow-up increasingly falls to the medical home and other ambulatory settings.

All pediatricians should be engaged in disaster planning. This includes personal/family preparedness and encouraging patients to prepare. Pediatricians should attend to the continuity of practice operations to provide services in time of need and stay abreast of disaster and public health developments to be active participants in community planning efforts. Many health care professionals will find this challenging to achieve. Pediatricians may not know where to find preparedness resources, what activities to start first, or how to engage with public health and other disaster response organizations. Conversely, existing response organizations may not know how to reach and engage community pediatricians, or how to utilize their expertise. Efforts need to be bidirectional, and one party should not wait for the other to make the first step. As the saying goes, "a disaster is not the time to start exchanging business cards"—connections and collaboration are best established well in advance of a crisis event. Simple "getting to know you" introductions over coffee, for example, are one way to establish professional relationships, whereby the pediatrician and the community or public health representative learn each other's potential roles, responsibilities, resources, challenges, and interests.

The ideal disaster response starts with the vision of the community meeting all needs of all children. If the community accepts this goal, it will quickly realize that a broad coalition of many medical, mental health, social service, and educational providers is required. This has been reflected in the changing role of the HHS ASPR Hospital Preparedness Program (HPP). As the name implies, the program initially awarded funding to hospitals to improve their ability to respond to disasters and public health emergencies. The HPP has since evolved with a current focus on community-based health care coalitions (www.phe.gov/preparedness/planning/hpp/pages/default.aspx).

Many pediatricians work in small to mid-size group practices, and they will need to collaborate with their competitors to achieve preparedness planning and work with physicians in other pediatric subspecialties. Nonpediatric physicians and care providers also should be engaged in disaster planning discussions, because a mass casualty event involving children will likely require their assistance. Pediatricians will need to be steadfast advocates for the needs of children in the face of other competing priorities.

Community partners who care for children can and should participate in the preparedness effort (eg, schools, child care facilities, after-school programs, camps, and scouting programs). A list of the various agencies and groups that may be relevant or could have resources include:

Local Resources
- AAP District and State Chapter offices
- Behavioral health services and organizations
- Camps (eg, before-/after-school programs, specialty)
- Child care programs
- Community-based organizations
- Emergency management organizations
- Emergency medical services
- Faith-based groups (eg, churches, mosques, synagogues)
- Fire department
- Head Start programs
- Health care coalitions
- Health care facilities
- Infrastructure companies (eg, communications, sanitation, utilities)
- Law enforcement
- Local government
- Medical Reserve Corps/other community volunteer groups
- Nongovernmental organizations (eg, amateur radio operators, American Red Cross Chapter, voluntary organizations)
- Public health agencies
- Public recreation (eg, amusement parks, parks, sports stadiums, museums, YMCA, zoos)
- Schools (colleges/universities, private, public)
- Service groups (eg, Kiwanis, parent-teacher associations/organizations, Rotary, Salvation Army)
- Shelters
- Social works services
- State hospital associations
- Support service providers
  - Blood banks
  - Clinical laboratories
  - Pharmacies
  - Poison Control
  - Radiology

National Resources
- American Academy of Pediatrics
- American Academy of Urgent Care Medicine
- American Red Cross
- US Department of Education
- US Department of Health and Human Services
  - Centers for Disease Control and Prevention

- o   Centers for Medicare and Medicaid Services
- o   Health Resources and Services Administration
- o   Office of the Assistant Secretary for Preparedness and Response
- US Department of Homeland Security/FEMA
- US Department of Transportation
- US Department of Veterans Affairs Medical Centers
- US Occupational Safety Health Administration
- Urgent Care Association of America

It is recognized that this list of partners is lengthy; no one expects any one individual or entity to connect with all of these groups. Pediatricians should remember to view the community as a resource. Because governmental emergency response capabilities are limited, community resources play an important role in a community's response to and recovery from disasters. For example, in previous disaster situations, members of a community have joined together to help in search and rescue efforts and deliver first aid to victims. Community programs that provide disaster response training have the potential to assist government efforts in many ways, including:

- Improving response time and effectiveness
- Providing culturally sensitive information
- Promoting the medical home
- Connecting with key community leaders
- Improving recovery and promoting resiliency

CONSIDERATIONS IN VARIOUS PRACTICE SETTINGS

Disaster planning involves an all-hazards approach, and when planning for the office practice (practice) response, this method should also be followed. But all-hazards planning does not mean that every practice preparedness plan is identical. Although basic planning frameworks can and should be shared, each practice is unique, requiring special thought and considerations when developing the plan, and this is most obvious when considering the different practice settings in which pediatricians work. Pediatricians provide care in a wide variety of settings, including:

- Primary care practices
- Multispecialty groups
- Federally qualified health centers
- Freestanding ambulatory centers
- Hospital-based ambulatory centers
- Urgent care centers
- Hospital emergency departments
- Hospital inpatient units, neonatal intensive care units, and regular/term nurseries

The setting obviously has a tremendous effect on how preparations should be made. For example, finding an alternate practice facility for a solo or small practice will be much different than for a hospital-owned practice that is off-site from the main campus. These differences in practice settings will be discussed in more detail as different planning areas are covered.

OFFICE OR PRACTICE-BASED PEDIATRICIANS

According to the AAP policy statement "Ensuring the Health of Children in Disasters," all pediatricians, including primary care pediatricians, pediatric medical subspecialists, and pediatric surgical specialists, have key roles to play in preparing and treating families in cases of disasters. Pediatricians are the experts in providing developmentally and physiologically appropriate care to children. In the chaos of a disaster and its aftermath, it is important for pediatricians to ensure that their patient's medical needs are appropriately met. A majority of the medical care that children receive occurs in the outpatient setting, and this does not change during a disaster. There are ways that office- or practice-based pediatricians can maintain the continuity of their practices in times of disasters and in the often-overlooked recovery stage that may last for months. Having a written office preparedness plan is critical. Integrating the office's response within the federal, state, regional, and community response is essential.

Internal Operations of the Practice: Office Readiness

The underlying principle of pediatric disaster preparedness is to ensure that the medical and psychological needs of children are met during and after disaster events. Proper planning can help a practice provide the necessary care to their patients. Pediatric providers are the experts in managing children's health. Maintaining outpatient capabilities will offer children and families access to their typical sources of pediatric care and will help to reduce surges in demand for emergency care, allowing hospital emergency departments to focus resources on what they do best, taking care of the seriously ill and injured. In addition, recovery after a disaster can take months if not years. Maintaining a functioning outpatient practice facility helps restore stability and access to the medical home for needed preventative services. The AAP has captured relevant information in its Preparedness Checklist for Pediatric Practices (www.aap.org/disasters/checklist).

Basic Office Readiness

All disaster plans start with a hazard vulnerability assessment. This assessment identifies and prioritizes potential disasters and risks that could occur to a health care facility or the community. Conducting an office hazard vulnerability assessment should be one of the first steps in writing an office-based disaster preparedness plan. Geography, climate, population size and makeup, and surrounding industry all will factor into the assessment. The likelihood of certain disasters will affect the offices' preparations. For example, if the office is more likely to experience a flood, then important equipment and records will need to be stored in higher levels of the facility, whereas if a tornado is more likely, then basement storage may be a better option.

Facilities

Disasters can occur suddenly with little or no warning, or they may be anticipated for days in advance. In either case, during a disaster proper facility planning can mitigate, and in some cases, prevent damage to the building structure. Facility management during a disaster will be greatly affected by the type of facility in which the practice is housed and who owns the property. A solo or small practice housed in a single-occupancy structure may have primary responsibility for mitigation efforts. In a larger building, facility management may be the responsibility of a maintenance group or team. Even in these larger facilities, the staff of an office-based practice may be able to assist in mitigation efforts. Communicating with the

building manager and coordinating these efforts can mean the difference in whether a practice continues its operations or not.

Whether a large multistory structure or single-occupancy building, there are a few general considerations that every practice needs to consider and include in their facility plans.

Preparedness: Facility Considerations	
POWER	What is the power source? Is there a generator available? Where are circuit breakers located? Where is the gas shutoff?
WATER	Where are water shutoff valves? What are sources of water?
FIRE	Where are fire extinguishers located? Is there a sprinkler system? What is the plan for evacuation?
HEATING/COOLING	How will the temperature be controlled?
VACCINE STORAGE	What is the vaccine storage plan? Vaccines in refrigerated storage areas need special monitoring and attention to protect these supplies during disasters.

When developing mitigation planning, one should always remember that mitigation is secondary to the safety of patients and staff. It is the responsibility of all practices to have a facility evacuation plan in place. There should be periodic drills to review and practice these plans.

Damage to the facility, parking lot, or roads may make access to or use of the practice's building impossible for an indeterminate amount of time. Office practices should prepare to relocate in these instances. Practice type will make a difference in planning for being unable to access the office. Hospital-owned practices and larger multisite practices may have alternate locations available in which to move the office practice immediately. Electronic health records can be maintained with minimal, if any, disruption in these cases. For the solo or small practice, relocation may be much more difficult. Options include sharing or renting space with another local practice, area hospital, county health department, or other health clinics. There may be rental office space available in the community. There are mobile medical units that can be rented or purchased. Remember that if the disaster is widespread, other businesses will be vying for office space also. Considering these options in advance of a disaster is essential.

Equipment

Most of the equipment in a pediatric office is relatively inexpensive, however, some equipment can be costly to replace. The office preparedness plan should make a notation of any such equipment and make preparations to store it in the safest location possible should there be sufficient warning of an impending disaster. The most important equipment for continuity of the practice can be kept in an office disaster kit. Having an office disaster kit located both on-site and off-site will help ensure that the practice will be able to continue operations as quickly as

possible. The core contents of this kit are listed below. A more extensive list is included in the AAP Preparedness Checklist for Pediatric Practices.

Items to Include in Office Disaster Kit
Stethoscope
Otoscope/ophthalmoscope (with specula)
Tongue depressors
Blood pressure cuffs
Tape measure
Gloves
Disposable personal and protective equipment (PPE) gowns
Masks
Thermometer/covers
Small scale
Prescription pads/clinic note pads

Consider what other equipment may be required to provide services at another location. These could include items such as portable suction, mobile generators, batteries, chargers, two-way radios, medications, nebulizers, bag-valve-masks, and suture kits. You may want to include these supplies in additional kits to which you have access.

Records
Copies of important records, including patient medical records and additional patient information, need to be stored off-site. The advent of electronic health record systems and the use of the cloud and Web-based storage sites has made such storage much easier for providers. For smaller or independent practices, any information or records that would assist the practice in continuing to function should be maintained off-site. These include financial and other information, such as bank statements, loan documents, tax returns, and corporation documents. Insurance and malpractice insurance information, hospital identification badge(s), lease agreements, state medical licenses, Drug Enforcement Administration documents, and related contact numbers are also important and need to be readily available. Keeping lists of repair service numbers along with vendor contact information will accelerate the recovery process. Although these may not be as important to larger multisite and hospital-affiliated practices, pediatricians and their staff still need to be aware of what their larger institutions have planned and how they can access the information they need.

Communication Systems
Having reliable communication during and immediately after a disaster is paramount for saving lives. Reliable communication shares knowledge and provides information to first responders, support systems, medical services, and the public. Unfortunately, one of the first breakdowns during a disaster is the communications infrastructure. The success of an office's business continuity plan will center on the communications protocols that have been set in place. These protocols should include a chain of command, contact information for the staff, and specific responsibilities of each staff member.

Chain of Command

As mentioned, the Incident Command System and the chain of command is a key feature of effective disaster response. The office preparedness plan should institute a similar organizational structure. Knowing who is in charge and specific delineation of duties for staff members will result in a more reliable response. This information should be reviewed with staff members on a routine basis. This is especially important as office personnel may change frequently. Practices that are within larger organizational structures will need to coordinate the chain of command with the organization's broader preparedness plan.

Contact List

The office preparedness plan should include methods to notify staff and provide accurate information on the situation. A confidential list of contact information for the staff should be kept in a number of secure locations accessible by members in the chain of command. This information should include telephone numbers, text messaging information, and Web-based contact details (e-mail addresses or social media accounts). During a disaster, telephone communication is usually disrupted. However, text messages can often be made even in these conditions. The Internet is another source of communication that may still function during disasters. Satellite telephones and radios are other, although somewhat limited, options to consider. A "calling tree" can be used to provide rapid notification and ensure that everyone is accounted for and receives important information.

Staff Responsibilities

The office staff have professional responsibilities of which they need to be aware. Availability during disasters is one of these duties. Unfortunately, these professional responsibilities may conflict with responsibilities that these staff members have for their own families. Each staff member should be encouraged to prepare and share his or her own family preparedness plan. Frank discussion of expectations with the staff prior to an event is important to alleviate concerns and to anticipate problems. This will also prevent any misunderstandings about staff roles and responsibilities. Duties for consideration include mitigation activities to the structure, evacuation and safety of patients, notifying fire or police officials, rescheduling patient appointments, communication to patients and the public, and proper maintenance and storage of vaccines. Periodic exercises can ensure that staff members know their responsibilities and also become familiar with those of other staff members.

Vaccines

Vaccines are fragile biological products that are very sensitive to light and temperature. If vaccines are not carefully stored and protected from these elements, then they can lose potency. Vaccines are also very expensive to purchase or replace. Office practices can have thousands of dollars in vaccine inventory. Proper storage and monitoring of vaccines requires special refrigerator and freezer units to maintain specific temperatures. These units require power to maintain the appropriate conditions. Power outages must be addressed immediately to maintain the cold chain and prevent spoilage of the vaccines. In disasters, power outages do occur, and therefore a plan to maintain vaccine storage and handling needs to be in place.

Every office preparedness plan should emphasize that once an outage occurs, the doors to the units where the vaccines are stored must be kept closed. This will buy some time (approximately 2 hours) while the vaccine recovery plan is instituted. Primary and secondary persons with 24-hour access responsible for instituting the vaccine recovery plan should be determined. The office may consider having a generator to use in the case of power outages, but this is not a guarantee that vaccines will be safely maintained. A person needs to be sure that the generator is functioning properly and that the temperatures in the refrigerators are maintained at an appropriate level. If the office has no generator and the outage is anticipated to last more than 2 hours, consideration should be given to transporting the vaccines to another facility. Transfer of vaccines must be made to a facility with proper storage equipment and back-up power. These arrangements should be made with a facility in advance of any power outage or disaster. These plans need to be revisited frequently to prevent misunderstandings and to ensure acceptance of the vaccines. Once the decision is made to transfer the vaccines, the receiving facility needs to be contacted. Vaccines must be transferred with proper coolers, packing, and monitoring of temperatures. The AAP offers updated information on vaccine storage and handling (www.aap.org/vaccinestorage). More specific information on the transport of vaccines during emergencies is available from the CDC (www.cdc.gov/vaccines/recs/storage/downloads/emergency-transport.pdf).

Infectious Disease and Other Surveillance
Public health surveillance is a key function of the office-based pediatrician during times of epidemics or acts of bioterrorism. Community-based pediatricians may be the first point of contact for a victim of a biological, chemical, or radiological incident or an emerging infection or outbreak. Pediatricians should have a general knowledge of bioterrorism agents. Early identification will significantly mitigate the impact of these agents to the community. Referral procedures including required information to report to public health agencies should be part of the preparedness plan. In addition, the office preparedness plan must include proper protocols for isolation and infection control in the office. Correct use of PPE and waste management and patient transfer protocols are topics to be addressed in the plan. Community pediatricians can improve disaster response by recognizing that referring patients to emergency departments can increase the burden on an already overwhelmed setting, so they should do whatever is reasonable to treat patients in their practice setting. State Departments of Health (www.cdc.gov/mmwr/international/relres.html) along with the CDC can be excellent sources of information. Anyone can call or e-mail the CDC via CDC-INFO (www.cdc.gov/cdc-info/). Physicians should identify themselves as such. Anyone with a question about a child should also clarify this when contacting the CDC.

Triage, Screening, and Prioritization
Emergency personnel generally have little experience in managing the health care of children, especially infants and toddlers. Pediatricians are the experts in caring for children of all ages. As such, office-based pediatricians can serve important roles in their communities by stepping outside of their role in the office and assisting hospitals and emergency services in planning to care for children. Community pediatricians can help with triage, screening, and prioritization of children who are injured or become ill in an emergency. Appropriate triage and prioritization is especially important when resources are scarce, such as in the periods during and immediately following a disaster. In the aftermath of disasters, large numbers of patients may seek care at

primary care medical offices, so triage skills will be needed to determine whether these patients need hospital care or can be managed in the office setting. Pediatricians and others (including child life specialists) can help hospitals and other entities develop plans to care for children who have been separated from their parents. (See the AAP Family Separation and Reunification in Disasters resources www.aap.org/disasters/reunification.) Also, all disasters result in psychological stress. Pediatricians should be familiar with the normal developmental responses to stress and be able to screen for more serious problems and provide effective support for the vast majority of children. Having an appropriate referral system of mental health providers who can manage children in these special situations can be part of the preparedness plan.

Practice Readiness and Staff Development
Staff education and exercises are important to allow the office to function efficiently in a disaster. Staff education programs can be developed by the office staff or through connections with another organization. Besides the information that is included in the office preparedness plan, these programs should include basic information on the incident command system, community response, and the role of the practice in this response.

Insurance
After a disaster, it can take some time before the office practice or the community is able to return to business as usual. Insurance coverage is vital to maintain your business and ensure continuity of the practice. In major disasters, prepare for income to be significantly diminished for an extended period of time. Business interruption insurance policies can help, but to prepare effectively, the practice needs to determine how much revenue it can afford to lose and establish a line of credit with a bank. Also, staff should look very closely at the details of any insurance policy. Many standard policies may not cover certain disaster situations such as flooding. Inventory documentation will be required. Digital images or a video of the office contents is quick and useful for this documentation. Remember to update these recordings frequently. Separate vaccine insurance should be considered, because vaccines are likely the most expensive inventory in an office. Finally, an annual review of all policies should be performed.

External Operations: Communications and Coordination with Other Agencies
Communication Systems: Communication and coordination among community agencies is essential to provide efficient and consistent care to the community during disasters. Unfortunately, in many communities, the schools, hospitals, medical agencies, and businesses may all have separate preparedness plans but little coordination or communication during the planning process. The local Office of Emergency Management can serve as a conduit for coordination of various local, state, and federal agencies. The office-based pediatrician is a resource to the community that is often overlooked. One of the challenges to the office-based pediatrician is becoming integrated into these community-wide plans. A good place to start is by contacting local and state departments of health and local hospitals. Pediatricians in larger health systems can contact their system's preparedness director or team. Office-based pediatricians should also coordinate their planning with local school districts. Once it is known there is an interest, these groups may readily incorporate the pediatrician and the office practice into their response plans. The office-based pediatrician can become involved with community partners either actively or by offering to help with the education of its volunteers.

The office-based pediatrician plays a central role in providing accurate, timely information to patients and their families prior to, during, and after disasters. Pediatricians are considered trusted sources of information by patients and families, and they are expected to be knowledgeable in the areas of their concern.

Anticipatory Guidance: Family preparedness should be part of the anticipatory guidance provided during well-child care visits. The AAP offers a Family Readiness Kit (www.aap.org/disasters/kit) and a comprehensive Web site for families (www.healthychildren.org). HealthyChildren.org provides valuable information concerning not only family disaster plans, but also tips about discussing disasters with children and ways to reduce the fear and anxiety associated with the event (www.healthychildren.org/English/safety-prevention/at-home/Pages/Getting-Your-Family-Prepared-for-a-Disaster.aspx).

Communicating With Patients During Events: As mentioned, communication systems, especially telephone lines, are likely to be disrupted during disaster situations. Not only does this affect communications with office staff, but it also affects the practice's ability to provide accurate and timely information to the families of patients. Web sites and social media sites can be used to notify patients and families of transportation disruptions, contact information, and changes in office location and operation times. These communication avenues can be used to provide information about health concerns and relief efforts to the public, during the disaster and the immediate aftermath. The office preparedness plan should include details on which methods of communication will be used and how staff will respond to general questions and also provide responses to questions concerning individual patients. During these events, families may receive both good and bad information from a number of sources that can include the Internet, the media, and even public officials. The practice must make sure that it is providing accurate information and should strive to align its communications with messaging from other sources. Misinformation can result in panic, overreaction, and misuse of community resources and emergency services. One member of the office staff should be responsible for ensuring disseminated information is correct, and that all members of the staff are giving consistent messages. It is also important that the practice relays information that is consistent with the messages the public receives from state and local public health agencies and emergency management personnel. Contact information for these organizations' informational/public relations services should be included in the office preparedness plan.

HOSPITAL-BASED PEDIATRICIANS

In mass-casualty incidents (including those involving chemical and biological agents), casualties among children and adults could be significant. Because children are likely to become victims in many disaster events, pediatricians should assist in preparedness planning to ensure the coordinated responses of local hospitals. In addition to patients, health care facilities may be overwhelmed by massive numbers of anxious individuals and families. Whether or not a hospital routinely cares for children, all hospitals must be prepared to care for children in a disaster. Pediatricians working in or supporting hospitals can play a vital role in ensuring appropriate care of the pediatric disaster victim by participating in all levels of disaster preparedness planning.

Emergency Department Readiness
The AAP offers several critical policy statements and resources specific to EMS and hospital preparedness and pediatric emergency medicine (www.aap.org/en-us/Documents/Current_COPEM_Policy_Statements_2018.pdf). Pediatricians should review these policy statements, with a priority of becoming familiar with the "Joint Policy Statement—Pediatric Readiness in the Emergency Department" (http://pediatrics.aappublications.org/content/142/5/e20182459) and the National Pediatric Readiness Project (https://emscimprovement.center/projects/pediatricreadiness/about/what-is-the-national-pediatric-readiness-project/) before proceeding to take steps to improve preparedness.

The prehospital disaster system is designed to triage victims in the field and carefully distribute them among available facilities to match patient needs with resources and keep a single facility from being overwhelmed. However, in many crisis situations, facilities are vulnerable to inundation with patients who arrive in large numbers without EMS transport and before entry triage. Often, these are the first patients to arrive at hospitals after mass-casualty events. Pediatricians working in or supporting hospitals should interact with hospital emergency management leaders to ensure adequate training and preparation of supplies and treatment areas in the emergency department. Pediatricians in hospitals can be key facilitators between emergency department services, critical care services, and regular inpatient services. Institutions should be ready to triage large numbers of pediatric patients, however, limited pediatric resources may necessitate pediatric triage even when adult needs can be adequately met. Hospitals and emergency departments should establish pediatric transfer and transport protocols with other facilities. Coordination with the local community should involve primary/prehospital/infrastructure response (with liaison planning to state and federal agencies) and community/citizen response.

Inpatient Service Readiness
Anticipating surge capacity for inpatient care is vital in preparedness planning. A tiered approach to pediatric care in disasters may be most efficient. This type of approach concentrates care for the most critically ill or injured children at hospitals with greater pediatric capabilities, and it uses nonpediatric care areas to provide care to children who are less ill.

Consider:
- Increasing surge capacity within hospitals that normally provide services for children (eg, by instituting rapid discharge protocols, using areas that are not typically part of intensive care units [ICUs] to increase ICU capacity [eg, postanesthesia care unit, procedure areas]). This process can also increase inpatient capacity and leverage available staff.
- Increasing pediatric capabilities at hospitals that do not normally provide services to children (implement recommendations within the "Joint Policy Statement—Guidelines for Care of Children in the Emergency Department").
- Increasing the number of inpatient beds within a community. This can be accomplished by converting available space into ward units (eg, cafeterias, meeting spaces) or making arrangements to use space in nearby hospitals. Areas such as local hotels or school gymnasiums can be converted into low-acuity medical facilities with some planning.
- Preparing in advance for emergency mass critical care for both neonatal and pediatric ICUs.

- Contingency plans for acquiring or maintaining essential services, such as water, electricity, portable oxygen, garbage/trash removal, Internet, medical records, etc.
- Planning for stockpiling or readily acquiring medical supplies such as antibiotics, antitoxins, and vaccines (in dosages and formulations appropriate for pediatric patients). In addition, pediatric-specific supplies and equipment in a full range of sizes to accommodate pediatric patients should be available.
- Networking with community resources to have plans in place for supervision of or caregiving for orphaned and unaccompanied children.

Hospital Infrastructure Needs

Emergency Operations Plans: Hospital emergency operations plans need to include plans for caring for children, even in hospitals that primarily care for adults. In addition, the plans must be sufficiently thorough and detailed to provide meaningful guidance in an emergency. Pediatricians can work with hospital emergency preparedness leaders to ensure that these plans contain guidance for:

- Age-appropriate decontamination of children
- Moving between conventional, contingency, and crisis responses to a surge of pediatric patients
- Rapidly increasing pediatric critical care capacity by 20% above baseline capacity in a conventional response, by 100% in a contingency response, and by 200% in a crisis response
- Stabilizing and caring for critically ill or injured children in nonpediatric hospitals when access to pediatric hospitals is limited
- Accessing pediatric experts (including experts in burn care, critical care, infectious diseases, and toxicology) to support hospitals that do not employ or have experts on active staff
- Limiting spread of infection to patients, staff, and family members through robust infection-control practices
- Consideration of parental presence protocols
- Reunification planning (which includes tracking and identifying pediatric patients, caring for unaccompanied minors in pediatric safe areas, and reuniting separated families)
- Providing appropriate psychosocial support to children and families
- Developing a consistent approach to patient triage in situations with limited resources
- Ensuring that guidelines for crisis care incorporate children and are ethically sound
- Encouraging health care personal to have personal preparedness plans so that expectations are clear for times when health care workers provide services versus when they tend to personal needs
- Using pediatric interfacility transfer agreements to appropriately transfer children to higher or more specialized levels of care when needed

Exercises and Drills: Hospital and community-wide exercises are essential to preparedness planning. These drills need to be detailed enough to test emergency plans, and scenarios and goals should align with the hospitals' hazard vulnerability analyses and test areas where there are gaps, areas of concern, or unknown preparedness (eg, the ability to evacuate a neonatal ICU during a power outage). Drills should include not only initial triage and decontamination but also continuing care in inpatient areas, including ICUs. Every disaster drill should include pediatric patients; this is especially important for hospitals that do not normally provide care to children. See additional information in the Pediatric Preparedness Exercises section.

Staff Training: Staff training should, at a minimum, include:
- Decontamination of younger children, including the use of warm water and chaperones
- Emergency stabilization of children in nonpediatric emergency departments
- Provision of critical care to children in nonpediatric ICUs
- Appropriate infection control practices, specific to the care of children and their families
- Personal emergency preparedness
- Orientation to the Incident Command System for those who will staff or interact with the hospital's EOC
- Understanding of "Access and Functional Needs" or the mechanism by which FEMA addresses at-risk individuals who might need additional assistance in a disaster (www.phe.gov/Preparedness/planning/abc/Pages/afn-guidance.aspx)
- Strategies for coping with family demands, developmental concerns, behavioral health, and provider self-care

PEDIATRICIANS IN AMBULATORY OR URGENT CARE SETTINGS

Community-based (nonhospital) health centers with capabilities in pediatric urgent care can play an important role in a disaster. Urgent care, including pediatric urgent care, is a rapidly evolving presence in the community and, with the necessary resources and training, could serve as sites to care for certain ill or injured children in a disaster. Pediatric urgent care centers are prepared to efficiently care for children with higher acuity injuries and illness when hospital emergency departments are unable to handle surge capacity. These centers can evaluate and reassure families that become concerned in the aftermath of a disaster (ie, the "worried well"), and are prepared to evaluate and treat a more severely ill or injured child. Many sites have laboratory and imaging services available as well as the ability to splint, suture, provide intravenous fluids, and perform minor procedures. In this capacity, many urgent care centers can offload patients from the emergency department, allowing the emergency department to more effectively care for the most critically ill or injured children. However, limitations must also be considered as capabilities will likely vary from site to site. Most recommendations for office practices (see above) apply to these settings.

Communication

Effective communication in a disaster is crucial and plans must be established prior to an event. This includes both internal communication (within an urgent care center or among multiple sites within an urgent care system) and communication with external community resources and organizations.

Establishing relationships in advance and understanding the capabilities and expectations of outside resources and vice versa is critical to a successful effort. A written memorandum of understanding with these outside agencies will clearly define roles and expectations in advance of a disaster. Communication should be ongoing and bidirectional throughout an event.

Multiple means of communication and a backup plan may be necessary given risk for power outages and overwhelmed systems (such as telephone service). In the event of a power failure, cellular telephone communication may still be possible, but communication via e-mail systems

would likely not be accessible right away. Portable cellular telephone chargers should be available.

The following options for communication should be considered:
- Telephone landlines
- Cellular telephones (voice calls and text messaging)
- Internet (facility Web site and social media)
- Two-way radio
- Satellite telephones
- Runners
- Posting of written notices in places where constituents might see these

Both electronic and paper lists of all key contacts should be readily accessible to staff members. A designated person within the urgent care center or system should know how to access and disseminate information from the local public health departments and the CDC, particularly when and Health Alert Network (HAN) messaging occurs.

Internal communication is also important for both activation of an emergency plan and ongoing communication during a disaster. Group e-mails or texts are efficient means of conveying information regarding plans and updates and are simple ways to receive a response. Intranet, if available, is also an easy way to communicate. Direct telephone landline communication is not as efficient as sending group messages but is still an option for one-on-one communication, although telephone landlines may be the first means of communication to break down. Group conference calls for daily updates can work well, once connectivity is available. Electronic (cellular telephone, hard drive, USB flash drive) and paper lists with staff contact information (telephone numbers, e-mail addresses, emergency contacts) should be available for all staff members and updated on a regular basis. Staff members should know key contacts in advance as well as their preferred means of communication.

Ongoing information to the community regarding hours of operation (extended hours or early closing) can be communicated via social media, telephone voice message, Web site postings, e-mail blasts, and posting of printed materials. Communication with primary care providers in the community may facilitate referral of their patients if their offices are inoperable or if higher level of care is needed. Again, these relationships are best established before a disaster occurs. Larger facilities may have a department responsible for regular and crisis communications.

Resources are available to assist businesses with many of these functions (www.ready.gov/business).

All-Hazards Approach
An all-hazards approach is most effective when creating a disaster management plan for an urgent care center. The disaster plan should account for response to both natural and manmade disasters, including those caused by chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) events. Additionally, all possible hazards that could affect the region including natural disasters (weather-related or environmental), man-made disasters

(transportation events, fires, structural collapse, terrorist attacks, weapons of mass destruction) and epidemics/pandemics should be considered and planned for accordingly.

Urgent care centers will vary in their ability to respond to injuries and illnesses caused by a disaster but should be aware of the potential for presentation of victims from a variety of disaster situations. An urgent care center may be the first place a victim presents, and early identification is critical to mitigate damage. For example, a person contaminated with a chemical or ill with a highly infective agent may present to an urgent care center unknowingly, and the etiology must be rapidly identified. Screening for potential infectious diseases by assessing symptoms and travel history early in the visit is helpful. Each facility should assess capabilities, understand limitations, screen patients, and have a plan in place for avoiding contamination or rapidly transferring patients who require care beyond the capabilities of the urgent care center.

Leadership

Leadership during an event should follow the National Incident Management System (NIMS) guidelines (www.fema.gov/national-incident-management-system), allowing for consistency across multiple organizations. The Incident Command System [ICS] (www.fema.gov/incident-command-system-resources) is an important component of any disaster response, and ICS staff should include an incident commander along with a public information officer, safety officer, and liaison officer. In a smaller urgent care setting, a single person may be responsible for multiple roles. Sections include operations (doers), planning (thinkers), logistics (getters), finance and administration (payers). Leadership will be responsible for distributing job action sheets to staff with instructions allowing for just-in-time preparation.

Logistics and Operations

Assessing the operational capabilities of an urgent care center and recognizing the necessary supplies for an incident prior to the event is critical. Urgent care centers will likely have varying capabilities for handling pediatric patients with pediatric urgent care centers being most capable of caring for acutely ill or injured pediatric patients. With proper planning and practice, however, most facilities should be able to provide initial care and stabilization of urgent needs in pediatric patients and have a plan in place to transfer patients to the facility where they are most likely to receive the care they need. A pediatric urgent care center may need to anticipate ramping up the level of care provided as hospital emergency departments reach surge capacity. For example, patients with burns or fractures that might normally be transferred out might need to remain in the urgent care center for treatment. Transportation options and resources may be limited. Again, potential capabilities should be determined prior to an event along with establishment of clinical guidelines for managing these patients.

Rapid triage assessment using medical personnel trained in recognizing acutely ill or injured children should be in place. Triage space should be near the entrance to the facility to allow for screening for potentially contagious infectious diseases by asking key questions about symptoms and travel. Urgent care centers may not have the capacity for decontamination. However, patients needing decontamination may present to the facility, and therefore, there should be protocols for handling these situations. Patients who might require decontamination need to wait outside the facility in a designated area so as not to contaminate others. The agency responsible for decontamination should be notified. A written plan for staff protocols should be in place.

The number of patients that might arrive at an urgent care center in a disaster can be difficult to predict. It is important to determine surge capacity for the facility. Can patient treatment areas be expanded by using chairs or cots? Can hours of operation be extended? Can staffing be increased? How can patients be moved through the facility most efficiently (one-way flow is often most efficient)?

Staffing during a disaster is likely to be difficult to manage. Of utmost consideration is staff safety and well-being. Additional staffing will be needed to accommodate extended hours and surge capacity. However, staff may be ill or injured or unable to travel safely to work. Staff members may also have ill or injured family members that need care at home or children that cannot be left alone. These issues provide additional stress for staff making it more difficult for them to perform their job effectively and efficiently. Having someone available to care for staff dependents at the urgent care center could relieve this burden and allow staff to come to work.

Consider using staff from other facilities within the organization. Another location may have staff willing to travel to the affected site. For staff working long hours, food, water, and a place for rest should be available. Providing staff with necessary support and rest time is critical for keeping the team functioning optimally. All of these issues, including plans for paying staff (ie, amounts, overtime) for their work should be discussed in advance. It is also important to predetermine the policy for paying staff if they are unable to get to work or if the facility needs to shut down. A sick leave or paid time off policy should be considered.

The most effective way to prepare staff for a disaster is to have exercises and simulations at regular intervals. Staff should know where to find procedures and plans for an event, have readily accessible contact information, be able to rapidly locate equipment, and understand expected roles.

Supplies and Medical Records
Supplies necessary to handle surge capacity and higher acuity of ill or injured children need to be maintained. Supplies should also be readily accessible, clearly labeled, checked on a regular basis, rotated, and checked for expiration dates. Supplies and equipment should be kept in a safe area free from possible damage yet readily accessible. Relationships should be established in advance with vendors who can rapidly replenish supplies in an ongoing disaster. In addition to medical supplies, food and water should be available for sheltering in place for up to 72 to 96 hours. A pediatric crash cart with airway equipment, emergency medications, and intravenous (IV)/intraosseous access should also be maintained. Readily available supplies include the following:
- Alcohol wipes
- Bandages, gauze, elastic wrap bandages
- Batteries
- Calculator
- Cold packs
- Exam equipment (stethoscope, otoscope/ophthalmoscope, tongue depressors, thermometer, blood pressure cuff, etc)
- Flashlight

- Hand sanitizer
- Medications/fluids (eg, acetaminophen, ibuprofen, albuterol, oral/intramuscular/topical antibiotics, ondansetron, diphenhydramine, steroids, epinephrine 1:1000, 1% lidocaine)
- Nebulizers (including battery operated), metered-dose inhalers and spacers
- Needles, syringes
- Oral rehydration solution (liquid and powder)
- Oxygen tanks
- Personal protective equipment (including masks, gowns, gloves, face shields)
- Radio
- Reference book
- Splinting material
- Suture material
- Trauma scissors

Keeping an urgent care disaster kit on hand that can be grabbed quickly to assist with emergencies outside the facility or taken to another center if the urgent care center cannot remain open because of structural damage or power failure is also part of an emergency preparation plan. The kit should be stocked with most of the items noted above. Be aware of what supplies require refrigeration in case of a power outage. Some urgent care centers may have access to a power generator that would allow for the facility to remain operational.

Because most facilities have electronic health records, loss of electricity or computer/Internet access can present a real problem. Flow for downtime should be determined in advance and paper forms for registration, evaluation, and discharge should be readily available. Knowing the downtime flow for registration, charting, and tracking patients will allow for minimal interruption in patient care. The downtime recovery process should include a procedure for billing and integrating paper charts into the electronic medical record.

BIBLIOGRAPHY

Barfield WD, Krug SE; American Academy of Pediatrics, Committee on Fetus and Newborn, Disaster Preparedness Advisory Council. Clinical report: Disaster preparedness in neonatal intensive care units. *Pediatrics*. 2017;139(5):e20170507

Centers for Disease Control and Prevention. Planning resources by setting: pediatric offices and hospitals. CDC Web Site. Updated July 31, 2017. Available at: www.cdc.gov/phpr/readiness/healthcare/pediatric.htm. Accessed September 4, 2018

Conners GP; American Academy of Pediatrics, Committee on Pediatric Emergency Medicine. Policy statement: Pediatric care recommendations for freestanding urgent care facilities. *Pediatrics*. 2014;133(5):950-953

Gausche-Hill M, Ely M, Schmuhl P, et al. A national assessment of pediatric readiness of emergency departments. *JAMA Pediatr*. 2015;169(6):527-534

US Government Publishing Office. Pandemic and All-Hazards Preparedness Reauthorization Act. 42 USC Chapter 6A § 201 et seq (2013)

CHAPTER FOUR:
MENTAL HEALTH ISSUES

MENTAL HEALTH AND THE ROLE OF THE PEDIATRICIAN

Schools and pediatricians have generally become the de facto mental health providers for children. Children are most likely to receive treatment from primary care physicians for symptoms associated with mental disorders, and most psychotropic drug prescriptions for children and adolescents are prescribed by primary care physicians. In a disaster or terrorist event, the need for mental health services will be far greater and the resources even less adequate. Pediatricians and other health professionals that care for children will play many critical roles in identifying and addressing the mental health needs of children and families in a disaster or terrorist event.

For many, if not most, children affected by a critical event, pediatricians and other health care providers for children will be the first responders. Therefore, pediatricians need to be able to identify psychological symptoms, perform timely and effective triage of mental health complaints, initiate brief supportive interventions, and make appropriate referrals when necessary. Many children (and their parents) with emotional reactions to a disaster (manmade or otherwise) will not identify their problems as psychological in nature. Pediatricians will have to be vigilant for somatization and help children, and their families, recognize and address the underlying psychological cause of these physical complaints. Because children's adjustment depends to a great extent on their parents' own ability to cope with the situation, pediatricians should also attempt to identify parents who are having difficulties adjusting to the event and encourage them to seek support for themselves. Pediatricians can also help families identify and access appropriate supportive or counseling services, and they can help support families who are reluctant to seek mental health services because of misunderstandings related to the nature of the treatment or associated stigma.

PEDIATRIC TRAUMA-RELATED DISORDERS

Children are not immune to the emotional and behavioral consequences of disasters and terrorism. Their reactions depend on their own inherent characteristics and experiences, their developmental level, and family and social influences as well as the nature and magnitude of the event and their exposure to it.

Exposure to disasters and terrorism can be direct, interpersonal, or indirect. Children who are physically present during an incident are directly exposed. Interpersonal exposure occurs when relatives or close associates are directly affected. Indirect exposure occurs through secondary negative consequences of an event, such as chaos and disruption in daily activities. Children who are far away from an incident may be remotely affected with fear and generalized distress as they perceive the societal impact of these experiences.

Exposure to media coverage may play a role in the child's reaction to an event. Studies have documented an association between viewing television coverage of terrorist incidents and post-traumatic stress reactions, but these associations do not establish a causal relationship. Aroused children may be drawn to the information provided by the media, and it is possible

that other factors are responsible for the link between exposure to media coverage and these emotional states.

Reaction to Disasters and Terrorism
There are a wide range of adjustment reactions that may generally be seen in children after a disaster or act of terrorism, as outlined in **Table 4.1: Common Symptoms of Adjustment Reactions in Children after a Disaster or Act of Terrorism.** Children may develop psychiatric symptoms and disorders—including post-traumatic stress disorder (PTSD), anxiety, depression, and behavioral problems—after exposure to disasters or terrorist incidents. Grief in these situations can be compounded by the traumatic circumstances associated with the loss.

Table 4.1: Common Symptoms of Adjustment Reactions in Children after a Disaster or Act of Terrorism
Sleep problems: difficulty falling or staying asleep, frequent night awakenings or difficulty awakening in the morning, nightmares, or other sleep disruptions
Eating problems: loss of appetite or increased eating
Sadness or depression: may result in a reluctance to engage in previously enjoyed activities or a withdrawal from peers and adults
Anxiety, worries, or fears: children may be concerned about a repetition of the traumatic event (eg, become afraid during storms after surviving a tornado) or show an increase in unrelated fears (eg, become more fearful of the dark even if the disaster occurred during daylight); this may present as separation anxiety or school avoidance
Difficulties in concentration: the ability to learn and retain new information or to otherwise progress academically
Substance abuse: the new onset or exacerbation of alcohol, tobacco, or other substance use may be seen in children and adults after a disaster
Risk-taking behavior: increased sexual behavior or other reactive risk-taking can occur, especially among older children and adolescents
Somatization: children with adjustment difficulties may present instead with physical symptoms suggesting a physical condition
Developmental or social regression: children (and adults) may become less patient or tolerant of change or become irritable and disruptive
Post-traumatic reactions and disorders: see Table 2: Symptoms of Post-traumatic Stress Disorder)

Risk Factors for Adjustment Difficulties: The following factors are associated with an increased risk of post-traumatic symptoms and other adjustment difficulties:
- The children themselves, or others close to them, are direct victims, especially if injury is involved (or the death of significant others).
- Children directly witness the event, especially if there was exposure to horrific scenes (indirect exposure through the media to these scenes is also associated with increased risk).
- Children perceive during the event that their life is in jeopardy (even if the perception is inaccurate).
- Event results in separation from parents or other caregivers.

- Event results in loss of personal property or other disruption in regular environment.
- Children have a history of prior traumatic experiences.
- Children have a history of prior psychopathology.
- Parents have difficulty coping with the aftermath of the event.
- Family lacks a supportive communication style.
- Community lacks the resources to support children after the event.

Post-traumatic Stress Disorder: The essential feature of PTSD is the development of characteristic symptoms after exposure to a traumatic event that arouse intense fear, helplessness, or horror or that lead to disorganized or agitated behavior. Current diagnostic criteria are outlined in **Table 4.2: Symptoms of Post-Traumatic Stress Disorder.** Clinicians should note that children with other adjustment difficulties (eg, bereavement) may appear to meet these current diagnostic criteria.

Table 4.2: Symptoms of Post-Traumatic Stress Disorder
Exposure: The child is exposed to actual or threatened death, serious injury, or sexual violence. This exposure may be through the child's direct experience; by witnessing the traumatic event, especially when involving a caregiver; or by the child learning that the traumatic event occurred involving a close family member or friend without any direct experience or witnessing of the event by the child.
The following symptoms must occur for more than 1 month's time:
1. Intrusive symptoms: • The child has repeated distressing memories and/or dreams (nightmares) about the traumatic event; it is not required for children to remember the content of these distressing dreams. For some children, repetitive play activities may involve themes or aspects of the traumatic event. • The child may display a loss of awareness of present surroundings (dissociation) and act as if the traumatic event is reoccurring (flashbacks). • The child may experience intense or prolonged psychological distress and/or physiological reactions at exposure to internal or external cues that symbolize or resemble the traumatic event.
2. Avoidance • The child attempts to avoid distressing memories, thoughts, feelings, activities and/or places that remind him or her of the traumatic event.
3. Negative alterations in cognitions and mood • The child has problems remembering important aspects of the traumatic event. • The child maintains negative beliefs or expectations about oneself, others, or the world. • The child has thoughts about the cause or consequences of the traumatic event that lead to blame of self/others. • The child experiences negative emotional states, such as depression, and has trouble experiencing and expressing positive emotions. • The child shows a markedly diminished interest or participation in significant activities including play. • The child feels distant from others, which may lead the child to become socially withdrawn and avoid people, conversations, or interpersonal situations.
4. Increased arousal and reactivity associated with the traumatic event: • Irritable and angry outbursts (extreme temper tantrums) • Reckless or self-destructive behavior • Hypervigilance • Exaggerated startle response • Problems with concentration • Sleep disturbance

The symptoms must last for more than 1 month and must cause clinically significant distress or impaired functioning. Because of developmental influences, symptoms in young children may not correspond exactly to those in adults.

Other Conditions: Other conditions, especially anxiety and affective disorders, are common after crisis events and may occur independently or together with PTSD. These conditions may precede, follow, or develop at the same time as PTSD. Establishing the temporal relationship in onset of disorders may aid in treatment. For example, PTSD stems from the primary traumatic event, whereas depression may result secondarily from persistent severe PTSD symptoms or intervening stresses. Fear and avoidance of situations reminiscent of the trauma may persist for years.

Behavioral Reactions: Signs of trauma may be evident in children's behavior, mood, and interactions with others. Traumatized children may adopt behavior more appropriate of younger children. Although they may not share their concerns and they may be especially compliant in the aftermath of an incident, compliant behavior does not mean the child is unaffected. Withdrawal is a cause for concern as it may represent a symptom of PTSD, and it potentially distances the child from adults who could provide support and assistance. Girls are more likely to express anxiety and sadness; boys tend to exhibit more behavior problems.

The child's reaction will reflect his or her developmental level. Infants may experience sleep and feeding problems, irritability, and failure to achieve developmental milestones. Problems in preschool children include separation anxiety, dependence, clinginess, irritability, misbehavior, sleep disturbance, and withdrawal. Problems in school-aged children and adolescents includes those seen in younger children as well as somatic complaints, anxiety, change in academic performance, guilt, anger and hate, and preoccupation with death.

Grief and Traumatic Grief: Although grief is not a mental disorder, it may require professional attention, especially if it is complicated by depression or PTSD. Traumatic deaths are of particular concern in disasters because of the implications for assessment, which should include an evaluation of the circumstances of the death and the child's exposure, and for treatment, which should address trauma symptoms as well as grief. In some ways, any death may be perceived by survivors as subjectively traumatic; however, 5 factors have been described that are likely to be present in death circumstances that are considered "traumatic deaths":

- Sudden, unanticipated deaths
- Deaths involving violence, mutilation, and destruction
- Deaths that are perceived as random and/or preventable
- Multiple deaths
- Deaths witnessed by the survivor that are associated with a significant threat to personal survival or a massive or shocking confrontation with the death and mutilation

Deaths that occur in the context of a disaster or terrorist situation often meet these criteria and pose an increased risk of traumatic grief. Referral to a pediatric mental health professional is often indicated in these situations, but this approach may also be of benefit when grief reactions are extreme, atypical, prolonged, or disrupting daily functioning.

ASSESSMENT AND TREATMENT OF TRAUMA-RELATED DISORDERS
Assessment and treatment of trauma-related disorders in children after a disaster will vary, depending on the characteristics of the disaster and the child's exposure, the setting, and the length of time since the event.

Early Interventions
In the acute-impact and early postimpact phases, supportive interventions should ensure the child's safety and protection from additional harm, address immediate physical needs, provide reassurance, minimize exposure to traumatic aspects of the event, validate experiences and feelings, and restore routine. Children benefit from accurate information, but it should be age-appropriate and measured, avoiding unnecessary or graphic details. If possible, pediatric mental health professionals can help other health professionals and family members with the process of death notification. Reuniting family members is a priority.

Assessment and Screening
Assessment should include a history of the child's exposure and reactions. When children or their close family members have been directly exposed, the children may require more comprehensive assessment. Children with less direct exposure may also need attention. Children and their parents should be educated about trauma reactions and coping and may welcome opportunities to ask questions and correct misperceptions. Children may not spontaneously describe their feelings, and adults may underestimate trauma in children. Therefore, it is essential to ask children directly about their experiences. Observation and the use of projective techniques, such as play and the use of art, aid in assessment and are useful in treatment as well.

Screening to identify children at risk and those needing referral can be conducted with symptom rating scales, which typically measure the type and degree of exposure, subjective reactions, personal consequences, and PTSD symptoms, and inquire about other related symptoms such as fear and depression, grief, and functioning.

Treatment
Treatment should be guided by the child's exposure and reactions. Cognitive behavioral therapy and psychoeducation provide structure and support and may be used in individual or group sessions after disasters.

Group sessions can be used to provide age-appropriate explanations of acute and longer-term reactions, reactions to traumatic reminders, secondary effects, anniversary reactions, and coping. Parallel parent groups provide a means to address parental reactions and concerns and to discuss effective management. These groups also provide an opportunity to teach parents how to parent their children who have been traumatized.

The family has a major role in the child's adjustment to trauma, and parents should be included in treatment. Often, more than one family member will be traumatized, although specific aspects of exposure may differ among family members. Helping parents resolve their own emotional distress can increase their perceptiveness and responsiveness to their children. Parents may also

benefit from psychoeducation about symptoms, how to manage symptoms effectively, and ways to decrease traumatic reminders and secondary stresses.

Medication is rarely indicated in children after disasters but might be used for those with severe reactions. Consultation with a child psychiatrist is recommended when medication is being considered. When used, medication should be coupled with psychotherapeutic interventions such as play therapy or cognitive behavioral approaches. Specific symptoms determine whether to use a drug, which drug to use, and how long to use it. Comorbid conditions should be considered in selecting an agent. Selective serotonin reuptake inhibitors may be effective in treating childhood PTSD and comorbid anxiety and depression.

School-Based Interventions
Schools are an excellent setting to deliver mental health services to children and families after a disaster. They provide access to children, encourage normalcy, and minimize stigma. PTSD and associated symptoms are likely to emerge in the school setting. For example, intrusive thoughts and difficulty concentrating may interfere with academic performance and social adaptation. Therefore, school consultation about the consequences of trauma and the recovery process may be indicated. School-based interventions, which can include curricular materials and activities, should be appropriate for the setting and should not supplant efforts to identify and refer children in need of more intensive individual evaluation and treatment. Manualized group interventions based on cognitive behavioral approaches, such as CBITS (Cognitive Behavioral Intervention for Trauma in Schools), can be delivered in schools by mental health professionals and have been shown to be effective in treating symptoms of PTSD.

Long-term and Staged Interventions
Long-term interventions may be necessary, especially for children with direct or interpersonal exposure and for those with enduring symptoms, pre-existing or comorbid conditions, prior or subsequent trauma, or family problems. New issues related to trauma may emerge as children mature. Thus, developmentally-appropriate staged interventions, which anticipate and address the course of recovery, should be considered during developmental transitions and at marker events such as anniversaries.

DEATH NOTIFICATION AND PEDIATRIC BEREAVEMENT
Considerations in Notifying Individuals About an Unexpected Death
At the time of a large-scale disaster or terrorist attack, it is very unlikely that pediatric health care providers will have the time and resources to deliver death notification in an optimal manner. Nonetheless, sensitivity to the issues discussed here can help minimize the short- and long-term impact on survivors.

Before Notification: Consider these issues before initiating the notification process:
- Verify the identity of the deceased and identify the next of kin.
- Establish contact as soon as possible. Do not delay contact waiting for a time thought to be more convenient for the survivors (eg, if the death occurs in the middle of the night, do not wait until the following morning).

- Contact the next of kin. Phone calls can be used to contact next of kin, but death notification is preferably done in person. Alternatively, someone (eg, police) can be sent to the home of the next of kin to ask them to come to the hospital for notification purposes.
- Minimize the likelihood that you will be compelled to notify the family members of the death over the phone. If you contact the survivor(s) by phone to request they come to the hospital, try to contact the family before the death has been declared (ie, during resuscitation) or have someone else who has not been directly involved in the care call on your behalf. Someone not directly involved in the care could make a statement such as: "I know that your husband was seriously hurt in the bombing, but I don't have any further information. If you come to the hospital now, someone who has been taking care of your husband will be available to talk with you when you arrive." If family members demand information on the phone, the caller can state: "I would prefer to talk with you about this in person when you arrive at the hospital."
- Consider inviting additional family members or friends to accompany the next of kin to the hospital for notification. If a child has died, it is best to notify both parents at the same time. When any family member has died, survivors may benefit from being told with at least one other family member or friend present. Family members and friends can provide support to the next of kin and help notify other relatives and friends (instead of the entire burden being placed on one survivor).
- Before notifying the family, briefly review the basic facts, including the name of the deceased, the relationship to individual(s) that will be notified, the basic circumstances of injury and death, and the nature of medical care provided. For example, the individual was in a building when a bomb detonated and was found under rubble; CPR was performed until arrival in the emergency department, where after an attempt at resuscitation, he was pronounced dead. Identify who else will participate in the notification, and consider planning in advance for how to initiate the conversation.

At the Hospital: Once the family arrives at the hospital, consider the following:
- When the family arrives at the hospital (or site where death notification will be occurring), have them escorted to a private location, if possible. Try to inform them in as private a site as possible; if there is no opportunity for a private room, make every reasonable effort to maximize privacy (eg, use a curtain or notify the family while standing behind the building instead of in front). Do not inform family members in view of the media; anticipate the presence of media or members of the public who might otherwise photograph or videotape family members and try to offer survivors the opportunity to maintain their privacy as much as possible immediately after notification.
- If possible, have the notification conducted by a physician who was involved in the care, especially if he or she knows the family or had some direct involvement. Comments such as "I was with your husband when he first arrived at the hospital. He was not conscious at the time and therefore was not feeling any pain" can be very helpful to families. Inform the patient's primary care provider whenever possible.
- Consider involving at least one other professional on the health care team, such as a social worker, chaplain, nurse, etc. If more than one family member is receiving the notification, conducting the notification with another professional is especially helpful; however, one staff person should be in charge of the discussion. Try to include at least 2 staff people for notification, even when notification is conducted in the field, but limit the number of staff to

those directly involved. It can be overwhelming for a family member to be notified by a large team.

- Just before and during the notification process, try to assess whether the survivors have any physical (eg, severe heart disease) or psychological (eg, major depression) risk factors, and assess their status after notification has been completed.

During Notification: When it is time to notify the family in person, remember to:

- Introduce yourself and any other member(s) of the health care team who are participating by name and title and offer to shake hands.
- Offer seating to the survivors. Sit close to them and face them so that eye-to-eye contact can be easily maintained.
- Refer to the deceased by name and/or relationship to the survivor (eg, "Mr. Smith" or "your husband"). Avoid referring to the person as "the deceased" or "the victim." If children are included, involve professionals with training and experience in working with children in the notification process. Notification of the death of a family member is preferably provided to children by family members (such as the surviving parent) soon after the parent is informed, rather than having notification be provided by professionals unknown to the child. However, parents may wish for professionals to be present when children are told to provide support and to help answer questions.
- Remember that informing survivors of a death is a process, not an act. Pacing of the discussion is important. Do not start by stating that the individual is dead, because survivors are unlikely to hear any further information.
- Start by asking the family what they have already been told or know. Then provide a brief description of the circumstances of the injury and the relief efforts. This information helps the survivors understand the context of the death; not knowing what happened introduces a discontinuity in the history that impairs adjustment. After giving brief background information, it is useful to give a "warning notice" and then proceed fairly quickly to stating that the individual died. Ideally, the family will be present during the resuscitation efforts, and medical staff can provide the background information when the resuscitation begins and return to deliver updates that may serve as a "warning notice." For example, "The team has given several medications to try to get your husband's heart starting again, but so far there has not been any response."
- An example of a notification initiated after a death might be: "There was an explosion 2 hours ago that we believe was caused by a bomb in the building where your husband works. The explosion started a fire that spread rapidly. Firefighters arrived on the scene within several minutes, but the exits were blocked and flames spread quickly. Many individuals were unable to get out of the building before they were overwhelmed by smoke. I am sorry to say that your husband did not get out of the building in time. We believe he died as a result of the smoke from the fire. His body was recovered by a firefighter, and we identified him by the wallet that we found in his pocket. We found your phone number in the wallet. I am very sorry to have to be telling you this news."
- After notifying the survivor(s) of the death, pause to allow both the information to be processed and emotions to be expressed. Do not try to fill the silence, even though it may seem awkward. Listen more than you speak. Silence is often better than anything you can say. Stay with the family members as they are reacting to the news, even if they are not talking.

- Use clear and simple language. Avoid euphemisms such as terminated, expired, or passed away. State that the individual died or is dead.
- Do not provide unnecessary graphic details. Begin by providing basic information and allow the individual to ask questions for more details.
- Do not lie or speculate. If you do not know the answer to a question, say so. Try to get the answer if possible.
- Be conscious of nonverbal communication and cues, both those of the family as well as your own.
- Be aware of and sensitive to cultural differences. If you do not know how a particular culture deals with a death, it is fine to ask the family. Be particularly attentive to difficulty speaking or understanding English. If there is any doubt whether the family members are fluent in English, make sure to have a professional translator present unless you are fluent in the family's preferred language. Using family and friends as unofficial translators often leads to inadequate translation in the general medical setting. Such reliance on family and friends as translators for death notification is particularly burdensome to them and should be avoided.
- Consider the use of limited physical contact (eg, placing a hand on the family member's shoulder or providing a shoulder to cry on). Monitor the individual's body language and if at all in doubt whether such contact would be well received, ask first.

Additional Considerations: Below are a few additional issues to keep in mind:
- Realize that the individual may initially appear to be in shock or denial. Expect additional reactions, such as sadness, anger, guilt, or blame. Acknowledge emotions and allow them to be expressed without judgment.
- Do not ignore or dismiss suicidal or homicidal statements or threats. Investigate any such statements (often this will be facilitated by the involvement of mental health professionals), and if concerns persist, take appropriate action.
- If possible, write down your name and contact information in case the family wants further information at a later time. If the situation is not appropriate for providing your name and contact information, then consider how the family may be able to obtain additional information in the future (even months later). For example: "I work as a volunteer for the Red Cross. Here is my name and the contact information for the Red Cross Chapter. If later you wish more information about what happened to your husband, you can call them at this number and they should be able to look at the records." Survivors may not be ready to think of or ask questions and may later regret not asking for critical information.
- Do not try to "cheer-up" survivors by making statements such as "I know it hurts very much right now, but I know you will feel better within a short period of time." Instead, allow them their grief. Do not encourage them to be strong or to cover up their emotions by saying "You need to be strong for your children; you don't want them to see you crying, do you?"
- Feel free to express your own feelings and to demonstrate empathy, but do not state you know exactly how family members feel. Comments such as "I realize this must be extremely difficult for you" or "I can only begin to imagine how painful this must be to hear" can demonstrate empathy. Avoid statements such as "I know exactly what you are going through" (you can't know this) or "You must be angry" (let the individual express his or her own feelings; don't tell the person how to feel) or "Both my parents died when I was your age" (don't compete with the survivor for sympathy). Provide whatever reassuring information you may be able to, such as "It appears your husband died immediately after the

explosion. It is unlikely he was even aware of what happened and did not suffer before he died." However, do not appear to use such information as an attempt to "cheer-up" family members (eg, "You should be happy, many people suffered painful burns or were trapped under rubble for an hour before they died. At least your husband didn't experience that.")

- Feel free to demonstrate that you are upset as well—it is fine to get choked-up or become tearful. If you feel, though, that you are likely to become overwhelmed (eg, sobbing or hysterical), then try to identify someone else to do the notification.

After Notification: Consider the following as discussions conclude:

- After you have provided the information to the family and allowed adequate time for them to process the information, you may wish to ask questions to verify comprehension.
- Offer the family the opportunity to view the body of the deceased and to spend some time with their loved one. Before allowing the family to view the body, the health care team should prepare it for viewing by others. A member of the health care team should escort the family to the viewing and remain present, at least initially. Tell them what needs to be done regarding the disposition of the body. For further information about preparation of the body for viewing, as well as additional recommendations about the death notification process, see *Death Notification: A Practical Guide to the Process* by R.M Leash (Hinesburg, VT: Upper Access, 1994).
- Help families figure out what to do next. Offer to help them notify additional family members or close friends. Check to see whether they have a means to get home safely (if they have driven to the notification, they may not feel able to drive back safely). Ask if they have someone they can be with when they return home.
- Help survivors identify potential sources of support within the community (eg, member of the clergy, their pediatrician, family members, or close friends).
- Take care of yourself. Death notification can be very stressful to health care providers. Health care providers need to explore and come to understand their own reactions to patient death and associated emotions, which may include sadness, anger, guilt, or a sense of responsibility. It is important to provide support to professionals who provide death notification, especially if related to tragic deaths or when multiple deaths are involved (as would be anticipated in a major disaster or terrorist event).

Explaining Death to Children

Children's understanding of death may be very different from that of adults. Children have had far less personal experience of loss and have accumulated less information about death. They can also have difficulty understanding what they have seen and what they are told unless the basic concepts related to death are explained to them. Adults will need to provide especially young children with both the basic facts about what happens to people after they die, as well as the concepts that help them to explain those facts. For example, young children may be told that after people have died, their body is buried in a cemetery or turned to ashes that can then be buried or scattered. Children can be very distressed by these facts unless they are helped to understand the concept that at the time of death, all life functions end completely and permanently—the body can no longer move, and the person is no longer able to feel pain. That is why it is okay to bury or cremate the body.

Children need to understand 4 concepts about death to comprehend what death means and to adjust to a personal loss: irreversibility, finality, inevitability, and causality **(Table 4.3: Concepts of Death and Implications of Incomplete Understanding for Adjustment to Loss).** Most children will develop an understanding of these concepts between ages 5 and 7, but this varies widely among children of the same age or developmental level, based in part on their experience and what others have taught them. When faced with a personal loss, some children 2 years or younger may demonstrate at least some comprehension of these concepts. Adults should not underestimate the ability of young children to understand what death means if it is explained to them appropriately. Therefore, it is best to ask children what they understand about death, instead of assuming a level of comprehension based on their age. As children explain what they already understand, it will be possible to identify their misunderstandings and misinformation and to correct them accordingly.

	Table 4.3: Concepts of Death and Implications of Incomplete Understanding for Adjustment to Loss	
Concept	**Example of Incomplete Understanding**	**Implication**
Irreversibility		
Death is seen as a permanent phenomenon from which there is no recovery or return.	Child expects the deceased to return, as if from a trip.	Failure to comprehend this concept prevents child from taking the first step in the mourning process, that of appreciating the permanence of the loss and the need to adjust ties to the deceased.
Finality (Nonfunctionality)		
Death is seen as a state in which all life functions cease completely.	Child worries about a buried relative being in pain or trying to dig himself or herself out of the grave; child wishes to bury food with the deceased.	Can lead to preoccupation with physical suffering of the deceased and may impair readjustment; serves as the basis for many horror stories and films directed at children and youth (eg, zombies, vampires, and other "living dead").
Inevitability (Universality)		
Death is seen as a natural phenomenon that no living being can escape indefinitely.	Child views significant individuals (ie, self, parents) as immortal.	If child does not view death as inevitable, he or she is likely to view death as a punishment (either for actions or thoughts of the child or the deceased), leading to excessive guilt and shame.
Causality		
A realistic understanding of the causes of death is developed.	Child who relies on magical thinking is apt to assume responsibility for death of a loved one by assuming bad thoughts or unrelated actions were causative.	Tends to lead to excessive guilt that is difficult for child to resolve.

When providing explanations to children, use simple and direct terms. Be sure to use the words "dead" or "died" instead of euphemisms that children may find confusing. If young children are told that the person who died is in "eternal sleep," they may expect the deceased to later awaken and be afraid to go to sleep themselves. This description does little to help children understand death and may cause more confusion and distress. Religious explanations can be shared with

children of any age, but adults should appreciate that religious explanations are generally very abstract and therefore difficult for young children to comprehend. It is best to present both the facts about what happens to the physical body after death, as well as the religious beliefs that are held by the family.

Even when children are given appropriate explanations, they still may misinterpret what they have been told. For example, some children who have been told that the body is placed in a casket worry about where the head has been placed. After explanations have been given to children, it is helpful to ask them to review what they now understand about the death.

Common Reactions Among Children Who Have Experienced a Personal Loss
Like adults, children may be reluctant to talk about a death. They may at first be shocked by the news or fail to understand its implications. Young children have difficulty sustaining strong emotions, so they may appear upset for a brief period of time and then return to play. They may also use play or other creative activities, such as artwork or writing, to both express and work through their feelings associated with a loss. By observing play and the products of children's creative activities, we may find some clues as to what is bothering them, but it is important not to jump to conclusions about the meaning or relevance of what is observed.

Soon after notification, children often ask questions about the deceased and the meaning the death has for them personally. These questions may cause surviving family members' distress because they often are particularly poignant. Children pick up readily on the cues from others in their family that adults are made uncomfortable by these inquiries. They may conclude that such questions are unwelcome, inappropriate, or even represent misbehavior and stop asking. The silence that results is not an indication that children do not understand what has happened or have already coped. Rather, it may be a sign that they are trying to protect their parents who appear overwhelmed or that they do not feel comfortable asking questions or expressing their emotions, leaving them to deal with both alone. Therefore, it is important for adults to explicitly invite children to share their questions and feelings. Often it is helpful for an adult who is familiar with child development and who knows the child personally to provide an additional outlet for discussion. The child's pediatrician or a social worker from the child's school, for example, may be in a good position to start such a conversation.

Older children and adolescents may initially decline the assistance of adults because they are more accustomed to turning to peers for support and to address issues of concern. It is important to extend an open invitation to these young people to talk with you when they have questions or want to talk about the situation and to help them identify other adults in their lives they can turn to for support and assistance (eg, a chaplain, coach, or teacher).

Even in the setting of a natural disaster or terrorist event, children may still wonder if they were in some way responsible for the death. After a traumatic death, such guilt feelings may increase post-traumatic symptoms and complicate the grieving process. Young children, in particular, have a very limited understanding of why things occur and tend to be self-centered. As a result, they often use magical thinking to explain situations that they do not understand. This may result in extreme feelings of personal responsibility for a death that has occurred, even in situations when there is absolutely no logical reason why the child should feel responsible.

Often, such feelings of guilt are irrational. "If only I hadn't gone to school that day, my dad would never have gone to the office and wouldn't have been killed by the bomb," "I was mean to my father yesterday and that's probably why he died," etc. Understandably, children are often reluctant to share their guilt feelings with adults; adults may not anticipate these feelings (or be burdened with their own guilt feelings). It may be helpful to reassure children of their complete lack of responsibility, even if they do not express feelings of guilt, and there is no logical reason why you might anticipate they would feel guilty.

At the time of a traumatic loss, children often think first about their own needs. Parents should be warned that this self-centeredness is not a sign that children are selfish; more likely, it is a sign that they are under considerable stress and in need of more support and assistance.

Children often regress in response to the stress of a personal loss. Children who had been successfully toilet-trained may now begin to wet their bed; children who had not had difficulty attending child care may now begin to show separation problems; children who had good social skills may now argue more or have difficulty getting along with peers. Children and adolescents may also develop somatic complaints, such as headaches, stomach aches, or generalized fatigue.

A disaster or terrorist event may uncover children's concerns about another loss or personal crisis that has not been fully resolved. Children may react strongly to the death of someone that they did not know well or perhaps did not know at all. Or, children may be more preoccupied with their own personal crises than they are affected by the death of someone in their community.

A resource offering free multimedia training materials on how to support grieving children is available through the Coalition to Support Grieving Students at www.grievingstudents.org.

Indications of the Need for Referral
Not every child who has experienced the death of a family member or friend requires professional counseling, and in the setting of a major disaster or terrorist event, such resources are unlikely to be available for all those affected. It generally is helpful, however, for children who have experienced the death of a family member or friend to speak with someone outside of the immediate family who understands child development and can attend to the child's needs (without being burdened with his or her own grief), such as their pediatrician or a school counselor or social worker. When a community disaster or crisis has occurred, it is important to help establish access to supportive services within community sites, such as schools, to provide services to larger numbers of children.

Significant stigma continues to be associated with receiving mental health services, and this stigma remains even in the setting of a major crisis event. Parents and other caregivers need to understand that even though bereavement is a normative experience, it still can be profoundly difficult. People, including children, can be helped through supportive services and, when indicated, group or individual counseling.

Children who have extreme reactions (eg, anxiety, post-traumatic symptoms, depression, or thoughts of suicide), atypical reactions (eg, appearing happy or disinterested), or prolonged reactions (eg, prolonged sleep problems or somatization) should be evaluated by their pediatrician and likely referred to a mental health professional experienced in the management of pediatric bereavement. Children who are having difficulty returning to their normal daily routines several weeks after the death or are demonstrating the new onset or worsening of problems interacting with peers should be referred. Children who are experiencing traumatic grief may require treatment of post-traumatic symptomatology before they are able to continue with normal grieving.

Soon after a death has occurred, many children may find comfort in returning to school, spending time with their friends, and taking part in the same activities that they did before the death. Allowances and adjustments should be made for a time (such as extra help with homework because of difficulty concentrating and learning) so that they can return to their day-to-day life as soon as possible. Some children may resist returning to school or resuming their regular daily activities. They may be fearful to leave other family members, worrying that they themselves—or their family members—may die in their absence or that grieving family members may need their support. These children require reassurance of the safety and well-being of surviving family members and encouragement to return to school. Other grieving family members, especially parents or guardians, should receive the support and assistance they need so children do not feel it is their responsibility.

Attendance of Children at Funerals and Memorial Services
Children can be told in simple terms what to expect at a funeral or memorial service. If an open casket or gravesite ceremony is planned, children should be told and given explanations about what this involves. Children can be invited to participate to their level of comfort but should not be forced or coerced to attend. They should be encouraged to ask questions, which should be answered simply and honestly but without unnecessary details. At the ceremony, children should be accompanied by an adult they know and like (who is not personally grieving to the same extent as close family members) who can monitor the child's reactions, answer questions, and step out of the ceremony with the child if the child appears distressed or indicates a desire to leave. Even if children play quietly in the lobby of a funeral home, they may still have a sense of having participated in the ritual. Children who are not allowed to attend the funeral or memorial service often feel angry and hurt and lose out on the benefits of religious, family, and community support. They also may create fantasies about what occurs during funerals that are actually more frightening than the reality. It is also helpful if children can perform a small task at the funeral, such as handing out Mass cards at the entrance of the funeral home or selecting flowers to be placed near the coffin. Such tasks should be predominantly symbolic, of the child's choosing, and not overwhelming for the child.

THERAPIES FOR PSYCHIC TRAUMA

Crisis Response
Mass violence presents unique issues that differ from other episodes of interpersonal, community, and other forms of violence. Responding to individuals who are directly affected by the event is not enough—a multilevel strategy is required and should include victims and

witnesses, individuals with whom they are associated, and the broader community. Although crisis response providers do not have to perform all of these roles, they should work closely and collaborate with a number of individuals and agencies to ensure that the psychological impact of mass violence is addressed.

The first and foremost response to mass events is both directed and performed by the government and its agents, which are usually under the auspices of law enforcement, fire personnel, and/or emergency medical services and are typically managed by an Incident Command System (ICS). Mental health early responders should have pre-existing relationships with the ICS to perform their duties effectively. In most states and other jurisdictions, ICS staff members meet regularly to ensure efficient operation when needed. During episodes of mass violence, mental health providers need to be part of the ICS staff whenever possible. The pre-existing relationship with emergency response commanders permits more expeditious access to affected individuals and for the community's psychological needs to be considered consonant with emergency responses.

In addition, when mental health providers are members of the ICS, access to and allocation of resources for mental health crisis responders in situations of mass violence improves. Situating providers in the most useful locations, ensuring the flow of needed information and communications, and preventing well-intended but inexperienced and unlinked clinicians from arriving in masses in an attempt to provide services are essential to lessen the general confusion and chaos that accompany disasters.

A useful way of defining and understanding a response to a traumatic event is that the affected individual experiences the loss of both internal and external control. Therefore, maximizing organization and structure is a necessary prerequisite in providing mental health crisis response and early intervention. Mental health crisis models are best equipped to achieve this organization and structure when they are firmly rooted in the ICS.

Crisis Response for Children and Families
Unfortunately, there is limited empirical evidence for the effectiveness of any crisis response intervention. The frequently used and previously heralded Critical Incident Stress Debriefing or Management (CISD or CISM) strategies have not been demonstrated to be effective, and in some studies, they have been shown to be detrimental. Indeed, it has been recommended that compulsory debriefing of victims of trauma should cease. However, it is possible that an alternative method of early crisis intervention may be helpful for assisting people who may be recently traumatized. The following recommendations and guidelines for early intervention strategies are based on evidence from research on the risk factors for PTSD as well as some intervention research. Thus, they provide an empirical foundation for appropriate and useful approaches to assist potentially traumatized individuals.

Currently, there is no evidence that global intervention for all trauma survivors serves a function in preventing subsequent psychopathology. However, there is consensus that providing comfort, information, and support and meeting the immediate practical and emotional needs of affected individuals can help people cope with a highly stressful event. This intervention should be conceptualized as supportive and noninterventional and not as a

therapy or treatment. This suggestion recognizes that most people do not develop PTSD. Instead, they usually will experience transient stress reactions that will abate with time. The goal of early intervention is to create a supportive (but not intrusive) relationship that will result in the exposed individual being open to follow-up, further assessment, and referral to treatment when necessary. Inherent in this early intervention is the recognition that interpretation or directive interventions are not to be provided.

After ensuring that basic necessities are available and are not a pressing concern, the basic principles of intervention should be followed. These principles should ensure that no harm is being done in the intervention process and hopefully prevent or reduce symptomatology and impairment.

- Interventions should be grounded in the basic principles of child development, and providers should be experienced in working with children of different ages and levels of development.
- Mental health providers should have collaborative relationships with community providers to ensure access and community support for children and families.
- Children and families should be assessed for risk factors and symptoms, and interventions should be crafted to address the findings.
- An essential objective is to improve parental attention and family cohesion through assessment, psychoeducation, and treatment, when necessary, to parents and primary caregivers.
- Providers should make concerted efforts to prevent social disruption and displacement.
- Providers should identify, assess, and attempt to ameliorate or remove children and families from the continued threat of danger.
- Providers should have continued contact and monitor children for symptoms or impairment.

Handouts or flyers that describe trauma and if indicated bereavement, what to expect, and where to get help should be made available. Individuals should be given an array of intervention options that may best meet their needs. The goal is not to maximize emotional processing of horrific events, as in exposure therapy, but rather to respond to the acute need that arises in many to share their experience, while at the same time respecting those who do not wish to discuss what happened.

Medication
There is not yet clear evidence to support the use of pharmacotherapy in the treatment of post-traumatic symptoms in children. The first line of treatment for post-traumatic symptoms in children is trauma-focused cognitive behavioral treatments (CBTs), which include such interventions as graded desensitization and others. For children with severe reactions or comorbid conditions such as depression or anxiety (for whom selective serotonin reuptake inhibitors may be indicated), consultation with a child psychiatrist experienced in the treatment of PTSD would be helpful to determine whether medication should be considered an adjunct to psychotherapeutic interventions.

SCHOOL CRISIS RESPONSE

Most children benefit from receiving supportive services in the aftermath of a disaster or terrorist attack. Pediatricians can play a vital role in advocating for, consulting for, and actively participating in school crisis response teams to ensure that such supportive services can be provided to children within schools and other community sites.

School administrators, teachers, and other school staff will be affected by the same crisis event that is affecting their students. During such times, organizing and implementing an effective crisis response can be difficult or even impossible. Therefore, it is imperative that schools begin planning for potential crisis events before they occur, both to avert disasters whenever possible and to decrease the negative impact on students and staff when disasters cannot be prevented.

The school crisis response plan should include generic protocols for the following:
- Notification of team members, school staff, students, and parents of a crisis event
- Delivery of psychoeducational services and brief crisis-oriented counseling, such as through support rooms or short-term support groups
- Memorialization and commemoration
- Follow-up

The structure provided by a pre-existing plan can be very comforting in times of crisis and helps to ensure that key issues are considered, appropriate steps are taken, and necessary resources are in place.

In addition, the crisis response plan should include guidelines on the following:
- Crisis team membership
- Roles of crisis team members
- Protocols for delivery of crisis intervention services
- Specific guidelines for responding to unique situations, such as large-scale natural disasters or a terrorist attack
- Physical safety and security
- Rapid dissemination of accurate and appropriate information
- Attention to the emotional impact of the events and the crisis response; all areas should be addressed concurrently and in a coordinated fashion

Delivery of supportive services to children during a crisis can be demanding work for school staff and community mental health providers working within the schools. Plans should also include mechanisms to ensure that supportive services for staff are included as a key component of a crisis response.

Free resources for training and guidance for schools responding to crisis can be found at the Web site for the National Center for School Crisis and Bereavement (www.schoolcrisiscenter.org).

ANNIVERSARY REACTIONS AND COMMEMORATIVE ACTIVITIES

As the anniversaries of stressful, critical, or traumatic events approach, many children and adults will have significant reactions. Throughout the year, reminders of the original crisis may

add to children's sense of further danger and emotional distress. Those reminders of the events may also increase the reactions of peers, parents, teachers, and other adults.

Remember:
- Memorial activities can further the process of healing and learning.
- The planning process is as important as the memorial activities themselves and should actively include children.
- Health and mental health care professionals, teachers, parents, and children all benefit from the planning process.
- Symptoms and reactions vary from child to child.
- There is no one "best way" to acknowledge an anniversary.
- Helping children deal with a difficult event is hard work; adults need to take care of themselves as well.

Anniversaries
At the time of the anniversary, children frequently experience a recurrence of some of the feelings associated with a loss or tragedy. These reactions vary widely, and they can be seen in both children and adults. Some children may not be interested in revisiting the events. For these children, it may be more appropriate that they are occupied with the typical concerns of childhood.

It is important to find ways within the school to recognize the anniversary of such an important event without imposing personal emotions or expectations on either students or staff.

Some children directly affected by the traumatic event may appear to be "back to normal" but may still be feeling sad, scared, anxious, or angry. Children do not always demonstrate their feelings directly, and we should pay special attention to signs of concern or distress. Children who are known to have histories or ongoing exposure to trauma or loss, even if they are not directly related to the traumatic event, may be especially vulnerable in the days and weeks surrounding the anniversary.

Heightened media coverage and publicity of memorial events may increase reactions in children. Parents should monitor and supervise their watching of television and, especially for younger children, consider limiting the amount of television exposure.

Some signs of distress to look for include the sudden appearance of or noticeable change in the following:
- Depressed or irritable mood
- Oppositional and defiant attitude
- Attention-getting or other behavioral problems
- Difficulties getting along with classmates and peer group
- Social isolation or withdrawal
- Deterioration in academic performance
- Physical complaints
- Changes in appetite
- Sleep disturbances

The extent and nature of potential difficulties may be related to many factors, including the following:
- Age and developmental level
- Personal history (eg, prior trauma, loss, or emotional difficulties)
- Support from peers, parents, and school staff

Memorialization
Memorialization is any activity designed to formally mark the anniversary or memory of a significant event. Memorial events can help children express and cope with their feelings that might otherwise seem overwhelming to deal with alone. By actively planning and participating in a memorial event, children can exercise some control over how they will remember the disturbing event.

Children may have needs similar to those of adults in times of crisis, but they often meet those needs in very different ways. It is important to find out from the children what they would like to remember and what they think would be the best way to acknowledge the anniversary. Children need to be part of the planning process for memorial events. A memorial planned by adults for children is likely to be more helpful to the adults and not necessarily meet the children's needs. The planning of a memorial activity can be more therapeutic than participating in the activity itself.

Remember also that different groups of children and adults will have different needs and wishes at the time of the anniversary. Memorial activities do not need to be formal or elaborate. It is best to take cues from children, considering their age and developmental level, when planning memorial activities. Discussion allows children to explore how they are feeling and to think about what might help them feel better.

Some children may wish to acknowledge the anniversary in a personally meaningful way (eg, drawing a picture, writing a poem or essay) but resist a group activity centered around the anniversary. Some children may prefer not to mark the anniversary with any formal or even informal activity. It is important to remember that those children who are grieving their own personal losses may resent or feel frustrated if the memorial event focuses only on the heroic efforts of rescue workers.

Planning a Memorial Activity
Memorial activities can be planned at various levels, including individual consultation with the pediatrician, with family members, in small student groups, or in larger community or school-wide committees. Children should be involved in the planning process, but it is equally important for adults to provide guidance, structure, and support.
- Consider the children's ages and developmental levels when planning activities.
- Some children may wish to involve other friends or family members in the planning process.
- Coordinate the planned events with the family and the school.
- Not all children will want to be involved in the planning process, and participation should be voluntary.

- Do not feel pressured to plan the "perfect event." Any memorial event or activity, big or small, may be a helpful means for children to understand and mark an anniversary.
- Activities within a school or individual classroom may affect other students and staff within the school as well as children's families at home. Therefore, other families should be informed about plans for memorial events within a school.
- Other adults will benefit from additional support and guidance on how to mark an anniversary in a sensitive manner.
- Awareness of school activities and plans often can help to initiate discussions at home, where children may be most comfortable talking about critical events and anniversaries.
- Parents should be invited to share any concerns related to the anniversary or relevant family experiences with the pediatrician, teachers, and school staff. Pediatricians, teachers, and school personnel should keep the lines of communication open with parents throughout the planning process. Parents should be encouraged to continue to discuss the planned activities with their children at home.
- Open discussion communicates to children that adults are available for further discussion and support.
- Look for signs of distress in students, such as agitation, acting out, or other unexpected behaviors, and help teachers, parents, and school personnel to be aware of them.

SUPPORTING SCHOOL STAFF

Some adults may find it difficult to discuss traumatic events, especially if dealing with their own losses. Adults should seek out support from other adults and colleagues when needed. This is difficult work for everyone, and it is important for staff to think about what their own feelings are in relation to the events. Providing an opportunity for staff to talk about their own reactions may be useful to them personally and may better prepare them to meet the children's needs.

Remember that children look to adults for guidance and support during difficult times. We need to think about how our own reactions may impact children. Children's questions may sometimes take us off guard and make us confront issues we would rather not think about.

Having a plan to address these concerns in advance will help make the task easier. If the task seems too difficult, staff should share the responsibility with a colleague or invite someone else to help with the planning and process of memorialization.

PROFESSIONAL SELF-CARE

Pediatricians and other pediatric health care providers often live in the same community as their patients and, as such, may be affected, directly or indirectly, by the crisis event themselves—their homes may have been damaged or destroyed by a natural disaster, or family members or friends may have died or been injured by a mass casualty event. In addition, family and friends they care about, as well as colleagues with whom they work, may be affected. Despite these challenges, they may be expected to function in austere conditions and/or to address increased medical and mental health needs of their patients and their families at a time when colleagues and/or staff are unavailable or overwhelmed and the infrastructure and resources for the delivery of medical care may be compromised or over capacity. Pediatricians may need to devote significant—and generally uncompensated—time helping families navigate complex systems to

obtain needed financial or psychosocial support and encouraging families to seek often stigmatized mental health services that may be limited or virtually unavailable. Pediatricians may, by default, assume the primary or sole responsibility for the delivery of mental health services to patients and families in this setting, even though many pediatricians feel that they lack adequate training and confidence in their clinical skills in this area.

Listening to the stories of family, friends, colleagues, and patients who have experienced trauma or loss can be emotionally draining and may trigger memories of the pediatrician's own prior trauma or loss and increase a sense of personal vulnerability. Vivid narratives by patients and their families may contribute to the development of vicarious traumatization of the pediatrician. Pediatricians should help initiate discussion with their patients and families but refer to mental health professionals with trauma expertise for further processing and should limit what is shared with the pediatrician accordingly. Joining with families to experience their distress can also contribute to compassion fatigue, especially when the disaster is already jointly experienced by the patient and pediatrician. This does not mean that pediatricians have a finite reserve of compassion or that compassionate care will ultimately lead to burnout; indeed, the provision of compassionate care can bring a sense of meaning to clinical work and buffer against the development of provider burnout. But pediatricians should monitor the impact on themselves of providing such psychosocial support and allow themselves to limit such support to a level that feels comfortable and manageable at the time. Pediatricians should help ensure that patients and families get the support that is needed, but they should not feel compelled or obligated to provide all such support themselves.

If patients or their families are upset or overwhelmed, it can be hard to recognize that you are helping them, even when you are. In such a context, pediatricians may question their ability to meet the needs of patients and families and fail to see the important positive impact of their actions. Taking active steps to collaborate as a health care delivery team with shared responsibility and decision making and consciously working to share stories of positive contributions within the practice can be particularly important during the recovery period.

Pediatricians should establish realistic expectations for professional workload and outcomes during the recovery period, incorporate accommodations and flexibility in hours and work conditions as necessary and to the extent possible, and work to foster increased communication and social cohesion among members of the health care team. Adults who are under stress may experience the same adjustment reactions described above for children and youth. They may experience anxiety, confusion, anger, irritability, and distrust or suspiciousness. They may feel exhausted and become less tolerant of change, unpredictability, and increases in work load—all of which may be required by the changing work conditions and community need. Individual pediatricians should monitor themselves for negative thoughts, practice ongoing stress management and self-care, and seek to establish realistic boundaries between personal and professional time, recognizing that although the need may seem (and to an extent actually be) limitless, the pediatrician's capacity to provide service to patients and families is not.

There are many challenges to professional self-care in the context of a disaster. It is difficult for pediatricians to find the time to attend to their own needs when the needs of their patients and the community are so extensive. The reality is that pediatricians will need to "make" time rather than

wait to "find" it. Professionals often assume that others are having less difficulty adjusting and may feel shame or guilt for attending to their own needs ahead of those of their patients. Pediatricians should model a willingness to accept personal and professional assistance and support and seek resources to meet such needs for themselves and others within the practice.

RISK COMMUNICATION AND MEDIA ISSUES
Information should be communicated to the public in timely, accurate ways that do not heighten concern and fear. Communicating effectively during a crisis requires the following:
- Planning
- Preparation
- An understanding of communications protocols, messaging, and the media
- The ability to manage the flow of information

Each element is a challenge that can be met effectively, to the benefit of those receiving messages in times of crisis.

Developing Goals and Key Messages
People often fail to communicate effectively because of a lack of clear communications goals and key messages to support them. Setting such goals and identifying support messages are tasks that should be accomplished before issuing any public comment and are especially important in a crisis.

A communications goal of "educating the public on the complexities of bioterrorism and preparing them for any eventuality" is not realistic. Informing the public of the problem and specific dangers, providing guidance on appropriate responses, and easing concerns are achievable goals. Messages in support of these goals should also be direct and speak effectively to the audience.

A risk message is a written, verbal, or visual statement containing information about risk that may or may not include advice about behaviors to reduce risk. A formal risk message is a structured written, audio, or visual package developed with the express purpose of presenting information about risk. Risk messages may aim to ease public concern or provide guidance on how to respond.

Messages to Ease Public Concern: Examples of messages to ease public concern are:
- The risk is low.
- The illness is treatable.
- It is not easily contracted.
- Symptoms are easily recognized.

Messages on How to Respond: Examples of messages that give guidance on how to respond include:
- Take these precautions.
- If possibly exposed, contact a physician.
- If symptomatic, contact a physician.
- Note possible symptoms in others.

If the goal is to ease concern and the message in support of that goal is "the risk to the public is low," that message should be clearly stated at the outset and returned to as often as possible.

- Raise points often enough that the audience leaves with a clear understanding of the message you wanted them to hear.
- Take opportunities to begin or end statements with a reiteration of your message.
- Do not be so repetitious with a single message that you appear to be trying to convince people of something that is not true.
- Do not repeat messages word-for-word every time you answer a question.

Exercise some control over the conversation you are having, be it an interview, press conference, or questions from an audience. Do not allow the conversation to be led down paths that are not pertinent to the goals or message—no matter how persistent the questioner might be in pursuing a line of inquiry.

Delivering Accurate and Timely Information: In a risk-communication situation, there is constant tension between providing accurate information and providing information quickly. Both demands pose challenges. To wait for all information to be complete and verified before releasing it to the public can create an information vacuum that will almost certainly be filled with rumor and speculation. To release information that has not been confirmed and turns out to be inaccurate, however, runs the risk of misleading the public and undermining your credibility as a spokesperson.

- Goals and messages should be simple, straightforward, and realistic.
- Information should be delivered with brevity, clarity, and effectiveness.

Provide statistics and key information to the media in written form. In presenting information, always know how the information was gathered and how any conclusions were reached.

BIBLIOGRAPHY

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*. Washington, DC: American Psychiatric Association; 2013

American Red Cross. *Foundations of Disaster Mental Health*. Washington, DC: American Red Cross; 2006

Bolton D, O'Ryan D, Udwin O, Boyle S, Yule W. The long-term psychological effects of a disaster experienced in adolescence: II: general psychopathology. *J Child Psychol Psychiatry.* 2000;41(4):513–523

Cohen JA, Bernet W, Dunne JE, et al. Practice parameters for the assessment and treatment of children and adolescents with posttraumatic stress disorder. *J Am Acad Child Adolesc Psychiatry.* 1998;37(Suppl 10):4S–26S

Elzouki AY, Harfi HA, Nazer H, Oh W, Stapleton FB, Whitley RJ. *Textbook of Clinical Pediatrics.* 2nd ed. New York, NY: Springer-Verlag Berlin Heidelberg; 2012

Grant L, Schonfeld D. Emergency and disaster preparedness in schools. In: *School Health: Policy and Practice.* 7th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2016:261-272

Leash RM. *Death Notification: A Practical Guide to the Process*. Hinesburg, VT: Upper Access; 1994

Pfefferbaum B, Flynn B, Schonfeld D, et al. The integration of mental and behavioral health into disaster preparedness, response, and recovery. *Disaster Med Public Health Prep*. 2012;6(1):60-66

Schonfeld D. Crisis intervention for bereavement support: a model of intervention in the children's school. *Clin Pediatr (Phila)*. 1989;28(1):27-33

Schonfeld D, Demaria T. Supporting grieving students in the aftermath of a school crisis. In: *Clinical Handbook of Bereavement and Grief Reactions*. Cham, Switzerland: Springer; 2018:217-240

Schonfeld DJ, Demaria T. Supporting the grieving child and family. *Pediatrics*. 2016;138(3):e20162147

CHAPTER FIVE:
EMERGING INFECTIOUS DISEASES

"People are beginning to understand there is nothing in the world so remote that it can't impact you as a person."—William H. Foege, Director, US Centers for Disease Control, 1977–1983

As the global community becomes smaller and more interconnected with the ease of international travel, the spread of emerging or re-emerging infectious diseases becomes an ever-growing threat to the medical community, and it is critical that the pediatric health care community be prepared to safely manage patients with highly infectious and highly contagious infectious diseases (also referred to as highly hazardous communicable diseases [HHCDs]). These diseases, such as Ebola virus, avian influenza, severe acute respiratory syndrome (SARS), and Middle Eastern respiratory syndrome (MERS), can be spread from human to human from a variety of ways, depending on the pathogen, and most carry with them a high mortality rate and no available vaccine or cure.

In the case of Ebola virus, the virus is spread via contact, and although the virus is considered highly infectious, it is not highly contagious. In contrast, MERS is a contagious respiratory pathogen spread via respiratory droplets and requires strict airborne precautions **(Table 5.1: Examples of Highly Hazardous Diseases Requiring Special Isolation).** Preparing for HHCDs in pediatrics must include not only hospital environments but also outpatient facilities, where a majority of pediatric care is delivered. Care of these unique patients is labor intensive and requires extensive specialized training and should occur in biocontainment facilities when possible. However, *all* institutions caring for children should be capable of mastering the tenets of infection prevention and control, biocontainment, and isolation of children with a suspected or confirmed HHCD. This section will review the basic guidelines for recognizing, isolating, and safely managing children with highly hazardous infectious diseases.

Table 5.1: Examples of Highly Hazardous Diseases Requiring Special Isolation	
Pathogen	**Transmission-Based Precaution**
Pandemic influenzas (including avian influenza)	**Standard, Contact, Airborne** (www.cdc.gov/flu/avianflu/novel-flu-infection-control.htm)
Viral hemorrhagic fevers • Ebola virus • Marburg virus • Lassa fever • Crimean-Congo fever	**Standard, Contact, Airborne** (www.cdc.gov/vhf/ebola/healthcare-us/ppe/index.html)
Coronaviruses • Severe acute respiratory syndrome (SARS-CoV) • Middle Eastern respiratory syndrome (MERS-CoV)	**Standard, Contact, Airborne** (www.cdc.gov/coronavirus/mers/infection-prevention-control.html)
Smallpox	**Standard, Contact, Airborne** (www.cdc.gov/smallpox/clinicians/diagnosis-evaluation.html)
Monkeypox	**Standard, Contact, Airborne** (www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-hospital.html)
Multidrug-resistant tuberculosis (MDR-TB)	**Standard, Airborne** (www.cdc.gov/tb/publications/factsheets/prevention/ichcs.htm)

MAJOR PRINCIPLES IN PEDIATRIC BIOCONTAINMENT

Infectious diseases remain among the leading causes of morbidity and mortality worldwide, especially in resource-limited countries. Reasons for this continued threat include the emergence of new infectious diseases as well as re-emergence of known infectious diseases after significant decline in the population. Examples of pathogens appropriate for special isolation are included in **Table 5.1: Examples of Highly Hazardous Diseases Requiring Special Isolation.** When preparing for these HHCDs, there are special issues facing children and their families that must be carefully considered. These issues include processes to screen and identify patients, appropriately isolate patients of concern, arrange for the optimum level of care for these unique patients, and communicate with and include family members in care delivery **(Table 5.2: Preparedness Steps for a Child with a Suspected EID: Identify, Isolate, and Inform).**

Table 5.2: Preparedness Steps for a Child With a Suspected EID: Identify, Isolate, and Inform		
Preparedness Steps	**Possible Challenges**	**Potential Solutions**
Identify Relevant signs and symptoms and travel history	• Cocirculating and seasonal infections may have similar presentations as HHCDs • Many competing priorities in institutions make screening difficult • Language/cultural barriers exist • Sustaining interest and enthusiasm • Keeping up to date on relevant HHCDs	• Practice triage questions signs and symptoms and travel history that trigger appropriate actions to isolate and inform • Keep up-to-date information readily available (websites, designated infectious disease experts) • Simple signage in multiple languages at entry points for patients/help families to self-identify • Prioritize simple simulations: Mystery patient and tabletop drills
Isolate Mask patient, separate from other patients, place in pre-designated isolation room	• Accompanying family members may also be infectious • Designated isolation room may be occupied • Disease-specific clinical manifestation and developmental and behavioral issues may impact efforts to contain secretions	• Mask accompanying family members (they could be infectious) • Pediatric and adult masks readily available with loops to secure • Consider security issues • Drill rapid turnover of occupied isolation room to facilitate availability
Inform Internal and external stakeholders	• Requires both internal and external communication structure • Rapid turnover of trained health care worker staff and administration • Unfamiliar with local health department staff	• Tabletop drills • Up-to-date phone trees • Testing of communication pathways • Protocol to alert local health department • Easy access to contact information

Although several highly specialized biocontainment units have been created in the United States, there are few beds available for pediatric patients with confirmed HHCDs.

INFECTION PREVENTION AND CONTROL AND PERSONAL PROTECTIVE EQUIPMENT
The first step in managing patients suspected of HHCD is identifying those at high-risk for infection on the basis of travel and symptom screening. Patients who are identified with a potential HHCD should be immediately placed in isolation, preferably in a negative-pressure

ventilation room, until a full assessment and diagnostic testing, if indicated, can be performed. For viral hemorrhagic fevers, the personal protective equipment (PPE), as well as the process for donning and doffing, is well outlined by the CDC and should be strictly followed in the event there is a suspected patient. A tiered approach was developed for hospitals during the Ebola outbreak, and is outlined on the CDC Web site (www.cdc.gov/vhf/ebola/healthcare-us/preparing/hospitals.html).

The first tier includes all frontline health care facilities, which should be equipped with PPE, identify and isolate suspected patients in a private room (preferably with a private bathroom or covered commode; a negative-pressure ventilation room should be used whenever possible), initiate testing in low-risk patients, and transfer high-risk patients, if needed, for further care.

Tier 2 hospitals are Ebola assessment facilities that have the capacity to care for the patient for up to 5 days until confirmatory testing is performed. These facilities should have sufficient PPE for staff to safely care for a possible Ebola-positive patient for these 5 days.

Lastly, tier 3 includes Ebola treatment centers, capable of caring for confirmed cases for the duration of illness. In each of these settings, standard contact and droplet precautions should be employed.

In all settings, staff should be appropriately trained in the proper use of PPE and should have a plan in place for how they will manage and dispose of biohazardous trash, safely clean and disinfect patient care areas, and care for staff who are involved in patient care. Additional infection prevention and control measures when evaluating patients under investigation or those confirmed as having Ebola virus disease include the following key components:
- Patient placement in a single room (with an attached bathroom) with log maintained of all persons entering the room
- PPE to be used by health care workers
- Dedicated or disposable medical equipment
- Hand hygiene (includes consistent and appropriate handwashing after removing gloves),
- Active monitoring of all personnel for exposure and signs and symptoms
- Environmental cleaning and management of waste

The specific type of PPE varies, and guidelines are available on the CDC Web site (www.cdc.gov/vhf/ebola/hcp/ppe-training/index.html).

Regardless of which type of PPE each institution chooses, it has been shown that the proficiency of use and specific training and practice in donning and doffing PPE is most important. This requires active and consistent, ongoing training (at least quarterly), including computer simulation and spoken instructions. Compared with passive training, active training leads to fewer errors among health care staff.

SCREENING AND IDENTIFICATION
Whether patients are being seen in the emergency department or in another outpatient setting, travel screening should be a part of every child's intake questionnaire as well as a general symptom screen. Although this can be an understandably daunting task with the large amount of

international travel that occurs in today's world, encouraging frontline staff to incorporate travel screening into initial history taking is key in identifying patients with possible HHCDs. It is reported that 34% of children with recent travel are diagnosed with infections, and travel screening is important in diagnosing even common febrile illnesses associated with the pediatric traveler.

When considering HHCDs, each institution should work closely with their own infection control and infectious disease staff to identify key screening questions, and frontline staff should be kept up-to-date if possible on the current "hot spots" for emerging infections and outbreaks, which will change over time. All frontline providers caring for children should be prepared to screen, identify, and isolate suspected patients and rapidly inform the proper authorities (eg, infection control and infectious disease teams, local/state health department, CDC) if they are faced with a pediatric patient suspected of having an HHCD. This requires having not only an established screening protocol but also well-established and up-to-date phone trees of "who to call" in the event of a patient with a suspected HHCD.

Identification of these children with potential exposure to high-risk pathogens can be extremely challenging, particularly in the height of influenza and respiratory virus seasons, when seemingly every child evaluated has symptoms including cough, fever, and/or diarrhea. Hospitals and clinics should use appropriate travel screening algorithms, ideally built into the electronic health record admission process and available at all possible points of entry in pediatric centers, including emergency departments, and ambulatory and inpatient settings. Pediatric-specific triage screening questions should be developed with the help of infectious diseases experts, and these questions should be updated with new outbreaks as needed. It is critical to realize that as the international climate changes, outbreaks and diseases will change as well, and frontline staff will require re-education, making travel screening challenging and requiring flexibility and dedication to training and education. The CDC travel advisory Web site can provide quick assistance if needed in a triage setting: wwwnc.cdc.gov/travel/notices.

Example screening questions include:
- *"In the past 3 weeks, have you or your child traveled outside the US or had close contact with someone who traveled outside the US?"*
- *"Has your child had a fever, rash, diarrhea, or cough?*
- "*Are there ill family members with these symptoms to whom your child was exposed prior to travel?"*

ISOLATION
Pediatric patients and their caregiver(s) must be promptly isolated if the screen for potential HHCD exposure is positive, and they should be evaluated by appropriate experts to determine whether the child is indeed at risk for an HHCD requiring special isolation. Immediate isolation may require masking the patient and recognizing that the accompanying family members may also be infected. Patients believed to be at significant risk for an HHCD should, when possible, be placed in a negative-pressure ventilation room with their family member/caregiver to limit exposure to other patients and staff.

Although limited data exist on triage and isolation of patients with HHCDs, lessons can be

learned from examining previous outbreaks, including the 2003 SARS outbreak, the ongoing MERS outbreak, and the Ebola outbreak from 2014-2015. For example, triage and isolation data from the SARS outbreak from China and Toronto show that in larger outbreaks, it may not be feasible to isolate patients in the few rooms available in small hospital emergency departments, and in these cases, entire floors of hospitals were evacuated and dedicated as SARS triage wards to prevent the nosocomial spread of the virus. Additionally, a dedicated team of clinicians was assigned to evaluate patients presenting with these symptoms to limit the spread of the virus.

Although it may not be feasible in many institutions, it may be wise to consider a safe and effective isolation and triage plan in advance, which does work. This may involve designating a set of rooms that can be isolated from the remaining rooms, and care providers for these patients, or discussing with key stakeholders how patients would be transferred to other wards or facilities to make room for isolation patients. Regardless, these plans should be developed and practiced (simulated) in advance.

When a patient does present with a suspected HHCD, only a single nurse and attending physician should assess the patient, and contact should be limited. Ideally, learners should be limited from seeing high-risk patients. Once a patient has been identified, isolated, and assessed, internal and external stakeholders must be promptly informed to facilitate testing and, if needed, transport specimens and/or the patient. The challenges and potentially solutions are outlined in **Table 2: Preparedness Steps for a Child with a Suspected EID: Identify, Isolate, and Inform.**

FAMILY INCLUSION
It is important to have a plan in place to screen family members for symptoms to reduce the risk of disease spread. *It must be presumed that if a child is infected with an HHCD, family members are at high risk for exposure as well.* At the same time, it is critical to address the complex social and ethical considerations for family members when dealing with pediatric patients in special isolation, and protocols for how these issues will be handled will vary from institution to institution. The AAP offers guidelines for such issues ("Parental Presence During Treatment of Ebola or Other Highly Consequential Infection," available at: http://pediatrics.aappublications.org/content/early/2016/08/18/peds.2016-1891). Adults will also require screening, evaluation, and potentially specialized treatment at an adult treatment center. For this reason, the local health department should immediately be involved in all suspected cases of HHCDs.

The complex needs of family members of isolated pediatric patients, including family visitation policies, requires advanced planning, and each institution must decide on their own policies *before* facing this situation. Ideally, these plans should be vetted with state/local public health authorities.

These policies can range from a "zero tolerance" visitation policy, in which families are not allowed any contact with the patient while in isolation, to an "all or nothing approach," in which a caregiver may choose to remain at the patient's bedside for the entirety of the admission after demonstrating proper technique in both donning and doffing PPE. These decisions should be made in consultation with a team including infectious diseases experts, state and/or local public health authorities, risk management, and the clinical care staff who will be involved in caring for

the child. All decisions should be made with the safety of the staff and community at large in mind, and if the decision is made to allow family visitation, this should be closely observed at all times. The impact of family visitation must also be balanced with the risk it may pose to staff members caring for the patient. The ability of families to follow instructions, including appropriate donning and doffing of PPE, should be carefully considered, and may require a case-by-case evaluation. Lastly, the decision to allow families to visit children in strict isolation may differ depending on the pathogen.

Regardless of institutional policies, it is critical to address the obvious stress these issues will have on family members as well as on staff. Working with professionals such as social workers, child life specialists, chaplains, and behavioral health specialists to develop policies and procedures is key to ensure both families and staff are supported in the best possible manner. Parents should be given information on how to obtain updates 24 hours a day, with a way to easily communicate with the team caring for their child. Establishing a comfortable, secure and private space where a family can find solace is recommended. Additionally, family members should be screened daily for symptoms and isolated immediately if there is suspicion of infection.

Although local health departments should be partners in the screening of family members, it is critical to establish institutional protocols regarding how family will be cared for while their children are patients in special isolation. Protocols should include how family will be entering and exiting the hospital, ensuring families are provided adequate privacy, and monitoring family movements within the hospital to ensure family members who may in fact be contagious are confined to specific, controlled areas. These points are particularly important with respiratory pathogens, for which symptoms may be vague, and patients may be contagious before they are identified.

EMERGING INFECTIOUS DISEASES CONCLUSIONS
Being prepared to safely care for pediatric patients with HHCDs is a necessity for every institution in the United States that provides care for children, as emerging and re-emerging infectious diseases are a constant threat to pediatric health care worldwide. It takes a system-wide dedication to continued training and education; it is only with sufficient preparation and training that safe, high-quality care can be provided to both pediatric patients with HHCDs and their families, while at the same time ensuring the staff dedicated to caring for them, as well as our greater communities, stay safe. This requires that all health care facilities, at all points of entry, be prepared to identify, isolate, inform, and provide care for these vulnerable patients and their families. Steps to help facilities prepare and relevant resources are included in Tables 5.3 and 5.4.

Table 5.3: The Basic Steps in Preparing for Highly Infectious Patients
1. Develop an institutional personal protective equipment (PPE) plan in which frontline providers are consistently trained (ER, clinics, ICUs).
2. Develop a consistent screening plan feasible for your institution at the triage level.
3. Develop a plan on how patients of concern will be rapidly isolated for each frontline facility (emergency departments, clinics, etc): identify a room and a general protocol.
4. Develop a phone tree: include leadership, consults/specialists, and local health department contacts. Keep this up-to-date.
5. Know where to find up-to-date information, and keep this material available for frontline staff (Table 4: Where to Find Up-To-Date Information).
6. Identify your local and state partners, including Ebola assessment and treatment centers (www.cdc.gov/vhf/ebola/healthcare-us/preparing/current-treatment-centers.html).
7. Develop a plan for highly biohazardous waste now. Where will the waste be safely stored until it can be removed? (www.cdc.gov/vhf/ebola/healthcare-us/cleaning/handling-waste.html)
8. PRACTICE these plans: quarterly training recommended, twice yearly at minimum.

Table 5.4: Where to Find Up-To-Date Information
CDC Emerging Infectious Diseases and Travel Notices: • www.cdc.gov/niosh/topics/emerginfectdiseases/default.html   • wwwnc.cdc.gov/travel/notices
CDC Influenza Web page: • www.cdc.gov/flu/
World Health Organization (WHO) Outbreaks and Emergencies: • www.who.int/en/
National Ebola Training and Education Center: • https://netec.org
American Academy of Pediatrics: • www.aap.org
The Society for Healthcare Epidemiology of America: • www.shea-online.org
Infectious Disease Society of America: • www.idsociety.org/Index.aspx
AAP *Red Book: Report of the Committee on Infectious Diseases*:   • https://redbook.solutions.aap.org/redbook.aspx

BIBLIOGRAPHY

Chan-Yeung M. Severe acute respiratory syndrome (SARS) and healthcare workers. *Int J Occup Environ Health*. 2014;10(4):421-427

Davies HD, Byington CL; American Academy of Pediatrics, Committee on Infectious Diseases. Parental presence during treatment of Ebola or other highly consequential infection. *Pediatrics*. 2016;138(3):e20161891

Hinton CF, Davies HD, Hocevar SN, et al. Parental presence at the bedside of a child with suspected ebola: an expert discussion. *Clin Pediatr Emerg Med*. 2016;17(1):81-86

Kortepeter MG, Kwon EH, Hewlett AL, Smith PW, Cieslak TJ. Containment care units for managing patients with highly hazardous infectious diseases: a concept whose time has come. *J Infect Dis*. 2016;214(Suppl 3):S127-S141

Mehrotra P, Shane AL, Milstone AM. Family-centered care and high-consequence pathogens: thinking outside the room. *JAMA Pediatr*. 2015;169(11):985–986

Rathore MH, Jackson MA. American Academy of Pediatrics, Committee on Infectious Diseases. Infection prevention and control in pediatric ambulatory settings. *Pediatrics*. 2007;120(3):650-665

Saiman L, Arrington AS, Bell M. Preparing for emerging infectious diseases. *JAMA Pediatr*. 2017;171(5):411-412

Scaggs Huang FA, Schlaudecker E. Fever in the returning traveler. *Infect Dis Clin North Am*. 2018;32(1):163-188

Verbeek JH, Ijaz S, Mischke C, et al. Personal protective equipment for preventing highly infectious diseases due to exposure to contaminated body fluids in healthcare staff. *Cochrane Database Syst Rev*. 2016;4:CD011621

CHAPTER SIX:
PEDIATRIC PREPAREDNESS EXERCISES

WHAT IS AN EXERCISE?

Exercises are designed to help an organization test a hypothetical situation, such as a natural or man-made disaster, and evaluate the group's ability to cooperate and work together and to test their readiness to respond. Some exercises "test out" components of a written preparedness plan. Exercises can enhance knowledge of plans, allow members to improve their own performance, and identify opportunities to improve capabilities to respond to real events. Exercise objectives provide the framework for addressing gaps or developing or improving the pediatric plan.

Exercises and their objectives can focus on:
- Testing a plan, protocol, or new procedure
- Practicing skills (such as those used for patient triage or tracking)
- Preparing for more complex exercises
- Training on new equipment (such as radio equipment or devices used during patient evacuation)
- Assessing/improving ways in which stakeholders work with each other in various situations

Exercises can be conducted in-person or virtually. Virtual exercises are options to enhance response capability and conserve resources.

Pediatric Exercises Are Different

Although hospital and community exercises concentrate on various aspects of operations and medical treatment and provide an opportunity to prepare for disasters and enhance disaster planning and preparedness, in many cases exercises lack specific planning for the pediatric population and may not include children in sufficient numbers to test the system. During disasters, pediatric patients may represent a significant portion of the casualties. Children may need specialized resources related to their needs on the basis of anatomic, developmental, immunologic, and psychosocial differences from the general population. Pediatric patients may present to community providers and hospitals that do not routinely care for children. In conducting exercises specifically geared toward pediatric populations, hospitals and community-based providers can identify gaps in preparedness, training, response, and recovery for children in disasters and address issues such as:
1. Treating children who arrive without a parent or caregiver;
2. Identifying and reuniting children with their families;
3. Pediatric triage;
4. Utilizing pediatric-sized equipment; and
5. Addressing disaster mental health problems in pediatric patients.

Optimally, all disaster-related exercises should include a component or subset of pediatric victims based on their representation in the population and likelihood of being affected by mass-casualty events.

Pediatric-Specific Exercise Versus Incorporating Pediatrics Into General Exercises

Most hospitals conduct exercises to meet requirements, such as those of The Joint Commission or Centers for Medicaid and Medicare Emergency Preparedness Rule (www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertEmergPrep/Emergency-Prep-Rule.html). Planning exercises to simulate 25% of the casualties as pediatric patients allows for a response that is a more realistic mix of the entire patient population. Some hospitals may choose to conduct a pediatric-specific exercise. This type of exercise is most suitable for pediatric hospitals, but pediatric-specific exercises can also be a good tool for hospitals who wish to develop or improve their pediatric-specific disaster plan. Community, state, and federal disaster exercises and drills should include community pediatricians, pediatric casualties, and pediatric scenarios as part of a "whole community" approach to preparedness. Although those typically involved in disaster planning and response may have little experience or comfort with children's issues, exercises provide opportunities for education and discovery of potential problems in advance of a disaster.

It should be noted that for the vast majority of pediatricians in non-hospital-based practice, there may not be much of an opportunity to participate in these kinds of exercises. Hospitals and coalitions involved in exercise planning can consider ways to specifically include community pediatricians in private practice in exercises as a way to promote the importance of disaster preparedness. Schools and child care programs are required to conduct exercises and drills, and there are opportunities for pediatricians to have input into these exercises and disaster planning.

EXERCISE CYCLE
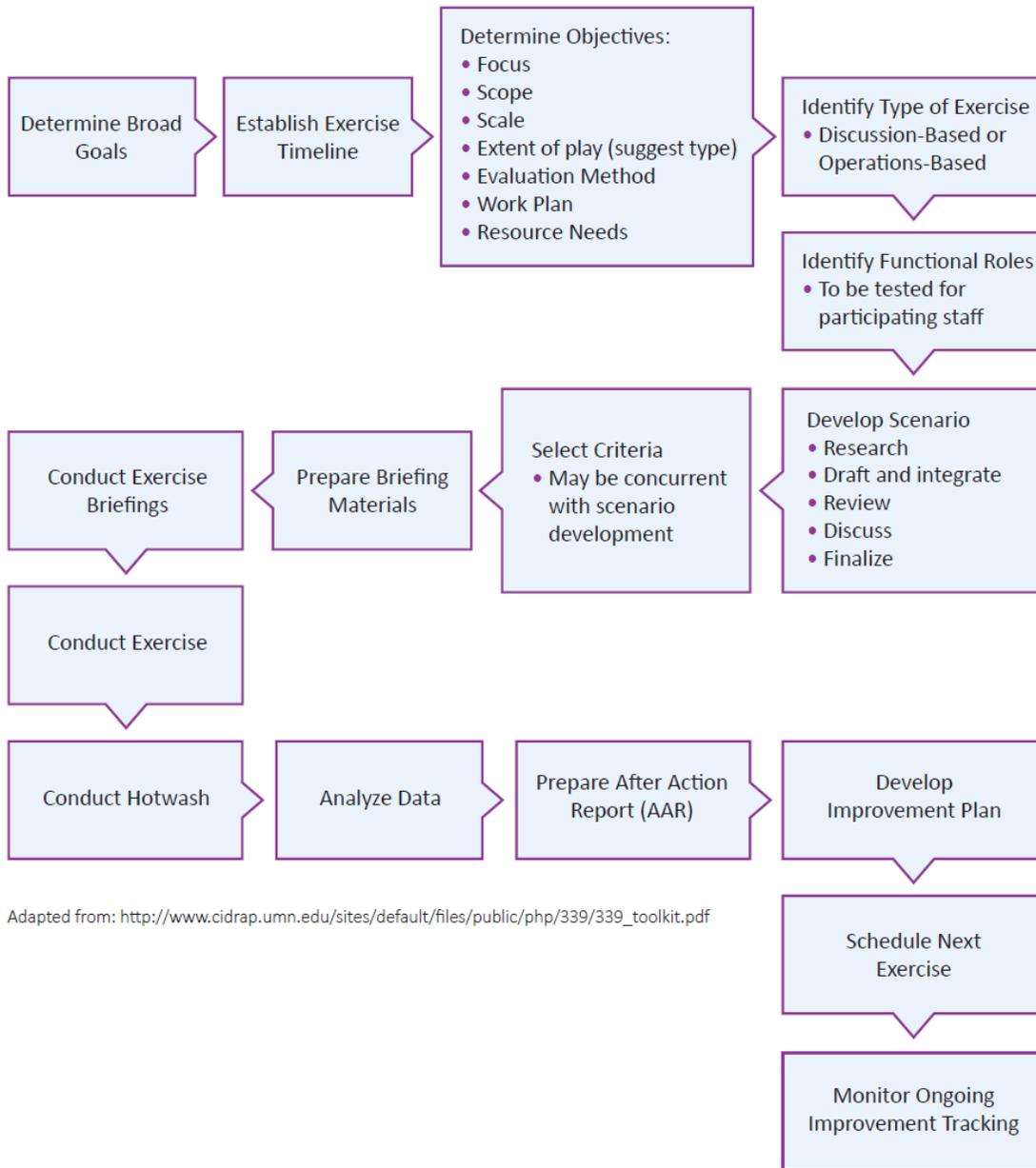
Adapted from: http://www.cidrap.umn.edu/sites/default/files/public/php/339/339_toolkit.pdf

GENERAL EXERCISE GUIDELINES AND TYPES

The Homeland Security Exercise and Evaluation Program
The Homeland Security Exercise and Evaluation Program (HSEEP) provides a standardized policy, methodology, and terminology for exercise design, development, conduct, evaluation, and improvement planning. Exercises that use or receive Homeland Security Grant Program funds require HSEEP compliance. The New York State Division of Homeland Security and Emergency Services provides resources and training on designing and conducting HSEEP-compliant exercises (www.dhses.ny.gov/oem/exercise/hseep.cfm).

The HSEEP suggests a progressive approach: as exercises escalate in complexity and planning, they also increase the hospital's or the community's ability to respond to the type of scenario for which they are preparing.

There are various types of exercises. Typically, exercises are discussion-based (meeting-type format held in 1 location, with all participants in the room together) or operational in nature (can be held in various locations; a real-time simulation with participants serving as "players"). A basic description of various exercise types is provided below. Additional information about each of these exercises can be found in the HSEEP manual (https://preptoolkit.fema.gov/web/hseep-resources). Although the hospital or community group that is planning the exercise can skip a step, the HSEEP guidance recommends that exercises proceed upward from discussion to operations-based exercises, depending on existing capabilities and the stage of plan development.

Discussion-Based Exercises
- *Seminars:* Orient participants to authorities, strategies, plans, policies, and protocols.
- *Workshops:* Like seminars with increased participant interaction and a focused product. The purpose of a workshop is to fine-tune a protocol, plan outline, portion of a plan, or a full plan.
- *Tabletop Exercises:* Generate discussion around a hypothetical emergency to facilitate conceptual understanding. Can enhance general awareness, validate plans and procedures, rehearse concepts, and assess systems needed to guide preparedness for a defined incident. The AAP offers a Pediatric and Public Health Preparedness Exercise Resource Kit (www.aap.org/en-us/Documents/Tabletop_Exercise_Resource_Kit.pdf) that provides tools and templates to make it easier for states, communities, hospitals, or health care coalitions to conduct a pediatric tabletop exercise. This kit was based on implementation of an AAP and CDC virtual exercise, using the Zoom platform.
- *Games:* Simulation of operations with 2 or more teams to use rules, data, and procedures to depict a hypothetical situation and explore the consequences of player decisions and actions.

Operations-Based Exercises
- *Drill:* Designed to test a specific operation with a single entity. Only one procedure or plan aspect is exercised to determine whether the plan will work as designed or if training is required.
- *Functional Exercises:* Designed to validate and evaluate capabilities and various functions. Functional exercises are focused on exercising plans, policies, procedures, and staff involvement in management, direction, command, and control functions. The events are

projected through an exercise scenario with updates that drive activity. These exercises are conducted in a realistic, real-time environment with some aspects simulated.

- *Full-Scale Exercise:* This is the most complex and resource-intensive type of exercise and involves multiple agencies, organizations, and jurisdictions and validates many facets of preparedness. A full-scale exercise includes many players operating under cooperative systems such as the Incident Command System or Unified Command. Events are projected through an exercise scenario with event updates that drive activity at the operational level. Full-scale exercises are conducted in a real-time, stressful environment that mirrors a real incident. Personnel and resources may be mobilized and deployed to the scene, where actions are performed as if a real incident had occurred. The exercise simulates reality by presenting complex and realistic problems that require critical thinking, rapid problem solving, and effective responses by trained personnel. A summary of the various exercise types and the respective components is shown below. However, it is important to keep in mind that depending on the objectives and planning team input for each exercise, the components vary.

Table 6.1 provides an overview of the different types of exercises and respective components.

Table 6.1: Comparison of Exercise Types							
	Discussion-Based Exercise				Operation-Based Exercise		
Component • = YES	Seminar	Workshop	Tabletop Exercise	Game	Drill	Functional Exercise	Full-Scale Exercise
Length*	2-5 hours	3-8 hours	4-8 hours	2-5 hours	2-4 hours	Varies	1 to 5 days
Planning Time	Minimal	1 month	5 months	Varies	Varies	6-12 months	6-12 months
Planning Team	Presenter	Small group	•	•	•	•	•
Objectives	•	•	•	•	•	•	•
Planning Meetings			•	•	•	•	•
Scenario			•	•	•	•	•
PowerPoint	•	•	•			•	•
Moderator		•	•			•	•
Facilitator	•	•	•	•	Controller	Controller	Controller
Facilitator Guide	Optional	Optional	•	•			
Situation Manual	Optional	Optional	•				
Participant Feedback Form	•	•	•	•	•	•	•

The length of an exercise will depend on the capability being tested, the preferences of organizational leaders, and input from the planning team. Refer to the subject matter experts and the planning team to determine the proper length for each exercise.

STEPS FOR PLANNING AN EXERCISE

Although the word "hospital" is used throughout the sections below, it is recognized that another community organization could be taking the lead on planning an exercise.

Selecting Exercise Participants
Participants should be invited to participate in an exercise based on the capabilities being exercised. Too many participants can be unmanageable and can make the exercise difficult to evaluate. Too few participants may place a burden on those who are playing and can make the exercise seem unrealistic. Defer to the planning team and the plan to strike the right balance and mixture of the type and number of players.

Creating a Planning Team
The exercise planning team designs and conducts the exercise. If the hospital is planning to conduct series of exercises, the planning team should remain the same throughout the entire process.

The planning team should include people who are integral to the hospital's response operations (see **Table 6.2: Exercise Planning Team Representatives Within a Hospital**). This is not an exhaustive list of participating departments. Hospitals or organizations can create the planning team at their own discretion. Designate one person on this team—usually the hospital's Emergency Preparedness Coordinator—to lead the project and manage the planning team.

Table 6.2: Exercise Planning Team Representatives Within a Hospital		
Emergency Preparedness Coordinator	Hospital Administration	Social Work
Pediatric and/or Neonatal Intensive Care Unit (medical and nursing)	Respiratory Therapy	Facilities/Engineering
Emergency Management or Emergency Medical Services (if applicable)	Emergency Department	Admitting/Patient Tracking/Bed Management
Security/Safety	Labor and Delivery	Surgery
Trauma Team	Patient Safety/Quality Risk	Child Life (if applicable)

The planning team's responsibilities include conducting the meetings outlined in the HSEEP manual and the steps below:
- Creating objectives for the exercise
- Preparing a dynamic scenario for the exercise
- Identifying a date and location for the exercise
- Inviting participants
- Deciding on evaluation activities
- Creating various guides, such as a situation manual, facilitator's guide, or evaluation guide
- Developing a PowerPoint presentation to guide presentations and discussions
- Choosing and training exercise evaluators

- Conducting a hot wash, if planned (described below)
- Holding an after action meeting, if relevant (described below)
- Drafting a postexercise report and/or improvement plan

Conducting Planning Team Meetings
Table 6.3 provides an overview of the exercise planning meetings referenced in the HSEEP manual and relevant actions to be taken during each one:

Table 6.3: Overview of Exercise Planning Meetings	
Meeting	**Purpose**
1. **Scenario, Concept, and Objectives Meeting**	- Determine exercise objectives - Create a scenario - Define circumstances/triggers that set the plan in motion
2. **Initial Planning Meeting**	- Choose date and location - Designate team members - Review objectives and scenario - Discuss next steps for drafting the situation manual, exercise evaluation guide, and PowerPoint presentation
3. **Midterm Planning Meeting**	Review draft situation manual, exercise evaluation guide, and presentation
4. **Final Planning Meeting**	- Complete final review of all documents - Verify exercise logistics - Review planning team roles (eg, facilitators, evaluators)

Conduct Exercise Evaluation
There are various evaluation aspects that can be considered by the exercise planning team. Evaluations can address the logistical aspects of the exercise (like a meeting evaluation) as well as whether the exercise led to increased topical awareness or skills.

Questions to consider for the evaluation plan include:
1. Should participant awareness of certain topics or protocols be assessed before and/or after the exercise to document changes in awareness or skills?
2. If participant awareness or skill level is part of the evaluation plan, should a participant feedback form or pre- and postexercise survey be used?
3. Should the exercise include a hot wash?
4. Should the planning team hold an after action meeting?

What is a Hot Wash? A hot wash is a briefing or an opportunity for exercise participants to share their thoughts on the exercise, including feedback, concerns, and what they think was accomplished. Participants can discuss exercise strengths and areas for improvement together with the planning team. The hospital can use this information to identify gaps in the response and

to learn about what worked or did not work well in the exercise The hot wash is held immediately following the conclusion of the exercise.

What is an After Action? An after action is a meeting that is held among elected and appointed officials or their designees from the exercising organizations, as well as the lead evaluator and members of the exercise planning team, to debrief on the exercise, decide on needed improvements, and review and refine written recommendations that could be included within a report or follow-up action plan.

It is recommended to conduct an after action meeting within 3 weeks after the exercise. After the exercise is completed, the responsible parties can update any protocol or plan documents as needed and create a report or improvement plan. The report should include an outline of the exercise as well as strengths and weaknesses. The improvement plan should include recommendations and designate staff members to follow up on those recommendations. Sometimes these are considered "summary reports" or "after action reports." Planning team members can use the after action meeting to review draft reports and improvement plans for accuracy and to determine who will follow up on the recommendations in the improvement plan by when. Members of the leadership should make sure to address any recommendations before moving on to the next exercise, and they should also hold staff accountable for the improvements. Exercise participants can be invited to attend or participate in the after action meeting if that is desired.

Information on the evaluation mechanisms and assessments used during AAP tabletop exercises is summarized in the literature. The *Disaster Medicine and Public Health Preparedness Journal* published an article titled "Addressing Children's Needs in Disasters: A Regional Pediatric Tabletop Exercise," which describes the activities and outcomes specific to the 2016 tabletop exercise (www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/article/addressing-childrens-needs-in-disasters-a-regional-pediatric-tabletop-exercise/EC4FF759A0119768D355D5C475F1AAC1). An article titled "Extending the Reach of Pediatric Preparedness: A Virtual Tabletop Exercise Targeting Children's Needs" is pending publication in *Public Health Reports*. The AAP can provide evaluation instruments on request.

Developing a Situation Manual
A situation manual is developed by the planning team and used by this team and all participants. The situation manual is generally used in discussion-based exercises, and it serves as the core document that provides the textual background for a facilitated exercise. The situation manual supports the scenario narrative and serves as the primary reference material for all participants during exercises. The situation manual generally includes the following information:
- Exercise scope, objectives, and core capabilities
- Exercise assumptions and artificialities
- Instructions for exercise participants
- Exercise structure (ie, order of the modules)
- Exercise scenario background (including scenario location information)
- Discussion questions and key issues
- Schedule of events

The AAP can provide a sample situation manual that was developed for the in-person and virtual AAP/CDC Pediatric and Public Health Tabletop Exercises (www.aap.org/disasters/tabletop).

Determining Facilitator Guidelines
During a discussion-based exercise, the facilitator(s) are responsible for keeping participant discussions on track with exercise objectives and ensuring all issues and objectives are explored as thoroughly as possible within time constraints. If an exercise uses breakout groups, more than one facilitator may be needed.

It is recommended that facilitators:
• Attend an HSEEP training program.
• Support the development of realistic and solvable scenarios.
• Prepare injects (adjustments to scenarios) to keep the exercise moving forward.
• Set "ground rules" to encourage participants to stay on task and remain "in role."
• Aim for full participation from all participants.
• Discourage individuals from dominating the conversation. The exercise should be a collaborative effort, and the facilitator should aim to control the pace and tenor of the exchanges.
• Incorporate new information into the exercise to get or keep participates engaged, if needed.

According to the HSEEP guidelines, a facilitator guide is designed to help facilitators to manage a discussion-based exercise. The facilitator guide usually outlines instructions and key issues for discussion during the event and provides background information to help the facilitator answer questions from participants or players. This guide may also include an evaluation section that provides evaluation staff members with guidance and instructions on evaluation or observation methodology to be used as well as essential materials required to execute their specific functions.

Determining Exercise Ground Rules
The AAP conducted exercises in 2016 and 2017 (www.aap.org/disasters/tabletop). An example of exercise ground rules can be found in the 2016 AAP Pediatric and Public Health Preparedness Exercise meeting proceedings on page 7 (www.aap.org/en-us/Documents/disasters_meeting_proceedings.pdf).

Developing Controller Guidelines
According to the HSEEP manual, in operations-based exercises and some games, "controllers" plan and manage exercise play and set up and operate the exercise incident site. Controllers can represent or assume the roles of individuals and agencies not actually participating in the exercise. Controllers direct the pace of exercise play, provide key data to players, and may prompt or initiate certain player actions and injects to the players as described in the master scenario events list to ensure exercise continuity. Controllers issue exercise materials to players as required, monitor the exercise timeline, and supervise the safety of all exercise participants. Controllers are the only participants who should provide information or direction to players. All controllers should be accountable to an exercise director or senior controller.

Choose controllers who are familiar with the processes being evaluated. Controllers should use both the exercise evaluation guide and the master scenario events list to control the exercise

flow. They should also be very familiar with the exercise process and how it is meant to unfold. It is recommended that facilities choose members of the planning team to work as controllers. Be sure to train controllers before the exercise to ensure that they understand their responsibilities, the scenario, and the objectives of the exercise.

Determining the Room Set-up
The discussion-based exercises can be set up using a conference table or by arranging tables/chairs in a U-shape so that everyone can see and interact with each other and view the presentations.

WORKSHOP
A workshop resembles a seminar in how it is conducted, but it aims to build a specific product, such as a draft plan or policy. Some planning team members recommend not using time within a workshop to draft written policies, but instead suggest that participants review, update, or test written policies already developed. The workshop objectives provide the framework for developing or improving the pediatric plan. Conducting a workshop is the first exercise in a series. If the hospital is not conducting any operations-based exercises, it is possible to use discussion-based exercises for both plan writing/revision and plan socialization purposes. It is recommended that hospitals conduct a workshop once a year to review and update their plan.

One of the first steps in developing a workshop (see **Table 6.4: Steps to Conduct a Workshop**) will be to designate an exercise facilitator. This person should be familiar with emergency preparedness and with the plan, if one exists. The exercise facilitator should be able to engage the audience in a discussion about any shortfalls or gaps in the plan. To do this, the facilitator will need to create a stress-free environment where people feel comfortable expressing their opinions. If feasible, give participants a hard copy of the plan for editing, and encourage everyone to actively engage in plan revision and recommendations. At the end of the workshop, exercise evaluation staff should collect and analyze participants' suggested revisions. The exercise evaluation staff can include members of the planning team or others brought in to assist with evaluating and an analyzing the exercise. Encourage participants to read the plan in advance of, and during the workshop, and discuss gaps in planning as well as potential solutions. Instruct participants to refrain from dwelling on details that cannot be addressed during the exercise series. Workshops are not performance-based and therefore can require a significant amount of moderating by the facilitator. Group discussions and problem solving should occur with the guidance of the facilitator and without time pressures.

Workshop Logistics

Who Should Be Involved? The following groups of people should participate in the workshop:
- Managers from departments who have a role in the plan
- People who would support or inform decision makers in writing or editing the plan
- People who are able to make decisions during an actual event

If any of the above participants were not involved in the process when the plan was developed, be sure to get their input early on in the exercise design process.

| Table 6.4: Steps to Conduct a Workshop ||
Day Before the Workshop	Day of the Workshop
Review the list of attendees	Confirm room set-up (tables, chairs, etc)
Send an e-mail reminder to participants	Check audiovisual connections and set-up
Confirm room reservation	Load presentations
Confirm catering order and set-up	Position all documents (eg, plans, table tents, sign-in sheets, forms)
Review and organize printed materials	Ensure caterers are set up before the event
Designate a notetaker and timekeeper	Confirm responsibilities with planning team

After the Workshop
Plan Revision or Creation: After the workshop is completed, the planning team (or relevant designee) should be sure to update or create the plan that was exercised or discussed. It is recommended that hospitals complete this step within 1 month after the workshop to keep up momentum and handle revisions while the information is still fresh. The timeline will, of course, depend on when any after action meetings are scheduled to review the plan updates or improvement steps.

Summary Report: A summary report outlines the workshop's main discussion items, observations, and any necessary follow-up. It also serves as a written record of any decisions, identified gaps, and/or established goals. The summary report should be based on the workshop structure and objectives, as well as information from the participant evaluations. The report can either be presented as a formal report or as meeting minutes with action items (if applicable), to be shared with individuals who were unable to attend the workshop. It is important to share the summary report with department heads and interested parties.

TABLETOP EXERCISES
As mentioned previously, the AAP offers a Pediatric and Public Health Preparedness Exercise Resource Kit (www.aap.org/en-us/Documents/Tabletop_Exercise_Resource_Kit.pdf) to provide tools and templates to make it easier for states, communities, hospitals, or health care coalitions to conduct a pediatric tabletop exercise. Additional items to consider when conducting a tabletop exercise can be found below.

During a tabletop exercise, key personnel discuss simulated scenarios and assess plans, policies, and procedures. The main difference between a tabletop exercise and a workshop is that in the tabletop exercise, participants are expected to perform or play out actions and decisions based on the well-developed scenario provided by the facilitator. There is an expectation that participants will utilize the plan and identify any practical or operational issues that impede the facility's capacity to respond to the scenario as prescribed in the plan.

A tabletop exercise is the second exercise in the series, after the workshop has been completed. If the hospital is planning a drill and/or full-scale exercise, the tabletop exercise should be conducted once the planning team has decided on the objectives for the drill or full-scale exercise. Tabletop exercises allow the exercise planning group or facility to test objectives to

determine whether they are appropriate for a drill or full-scale exercise. Planners should allow enough time between the workshop and the tabletop to make any necessary plan and exercise design changes. A tabletop exercise should be held once a year to update and review the plan, unless this is occurring during a functional or full-scale exercise.

If the hospital is planning an exercise series or using the progressive approach, it is suggested that the same scenario be used throughout the entire process. If desired, hospitals can increase the complexity of the scenario as they progress in the exercise series.

Scenario
The scenario is the driving force behind the tabletop exercise. Exercise planners must develop a plausible scenario that is solvable within the timeframe allotted for the tabletop exercise. It will be the facilitator's job to make the participants feel as if the exercise is realistic. This is accomplished only through synergy between the scenario, the presentation, and the delivery of the facilitator. The scenario should not make the participants feel as though they are in a "no win" situation; realistic hazards and numbers of patients are crucial to getting the most out of the tabletop exercise. Lastly, the scenario can unfold in waves or phases in which the situation progressively gets a little worse. This allows the group to build confidence in each other and themselves as they solve increasingly complex situations. See sample scenarios in the AAP Pediatric and Public Health Preparedness Exercise Resource Kit (www.aap.org/en-us/Documents/Tabletop_Exercise_Resource_Kit.pdf).

Developing Presentation Materials
The tabletop exercise designer and facilitator should work hard to create not only a plausible scenario, but also a realistic PowerPoint presentation that will simulate the stressful conditions that the facility is perceived to encounter. The presentation should include as many visual images and details as required to stimulate the discussion. High-quality images should be used from simulated scenarios or from previous exercises to help participants "feel" like they are actually experiencing the crisis being simulated. The AAP can provide the presentation materials used for its tabletop exercises on request.

What to Bring to the Tabletop Exercise
- PowerPoint presentation
- A copy or outline of the existing plan for participants to reference
- Sign-in sheets
- Name tents
- Participant feedback forms (if appropriate)
- Writing pads, pens, and highlighters for participants
- Situation manual
- Exercise evaluation guides
- Controller/evaluator handbook

Conducting a Tabletop Exercise
The HSEEP manual and the AAP Resource Kit provide many details on the process of planning and conducting a tabletop exercise (see **Table 6.5: Conducting a Tabletop Exercise**).

Table 6.5: Conducting a Tabletop Exercise	
Week Before the Tabletop	**Day of the Tabletop**
Review the list of attendees	Confirm that the room is properly set up (tables, chairs, etc)
Send an e-mail reminder	Confirm audiovisual connections work
Confirm room reservation	Load presentations
Confirm catering order, if applicable	Set up table tents (if used)
Ensure print materials are ready	Set up all documents, including plans, sign-in sheets, and feedback forms
Designate a note taker or person to draft any necessary reports	Ensure caterers set up before the event

The following are guidelines for a successful tabletop exercise:

The facilitator can begin the tabletop exercise with these steps:
- Introduce themselves and give the participants an idea of their background and what they bring to the exercise.
- Ask participants to briefly introduce themselves; make sure to ask them if they have read the pediatric plan that is being exercised. Consider the level of detail participants should include in their introductions. Examples are: name, current profession, organization/department they work for, why they wanted to attend the session, and what they hope to gain.
- Use the information gleaned from the introductions to help facilitate the session.
- Read the exercise ground rules out loud. Explain that participants are operating in a **"no-fault environment,"** in which all participants' feedback is respected, and comments or suggestions should be constructive.
- Fully articulate the exercise goal and objectives.
- Provide a brief overview of the schedule or timeline for the tabletop exercise schedule.
- Encourage participants to speak up, and explain that this will add to their learning experience.
- Reading the scenario and offering directions on next steps for the participants.

End the tabletop exercise by:
- Conducting the hot wash.
- Summarize key points illustrated by the exercise; tie these points back to the learning objectives.
- Acknowledging gaps in the plan or the hospital's ability to operationalize certain aspects of the plan.
- Listing "parking lot" issues and how they will be captured and/or addressed.
- Ensuring that participant feedback or evaluation forms are completed and collected.
- Discussing next steps (ie, after action report, future exercises, etc).
- Thank the group and end the exercise.

FULL-SCALE EXERCISES

A full-scale exercise is a multiagency, multijurisdictional, and multidisciplinary exercise involving functional (eg, emergency operation centers) and frontline (eg, firefighters) response officials. Once the hospital or other facility is confident in the plan and the staff's ability to execute it, it can consider conducting an full-scale exercise to test plan components and coordination among hospital decision makers, unit-level staff, partners, and public health and/or government officials. These exercises require a significant amount of planning and should be as realistic as possible (consider using props, mannequins, and actors). A full-scale exercise should be the last exercise in the exercise series. Hospitals should not plan a full-scale exercise without first conducting a workshop and tabletop exercise.

Exercise Director Guidelines for Full-Scale Exercises

There are often gaps in the following capabilities during full-scale exercises at various hospitals. Consider these gaps when setting objectives for a pediatric disaster-based full-scale exercise:

- *Notifications:* The ability to effectively provide internal emergency communications during a crisis is a leading cause of concern for many hospitals that conduct full-scale exercises. Consider testing for timely notifications, call trees that show the correct individual to contact, and reliable notification methods.
- *Communications:* Hospitals often experience challenges with in-house communications. When choosing an alternate evacuation location or surge space, note the available phones, write down the numbers, and identify any "dead zones" (areas where portable radios or cell phones do not work).
- ***Establishment of an Emergency Operations Center (EOC):*** In certain circumstances, EOCs are not set up quickly enough to respond to an event. In rapidly expanding situations, assign a liaison to affected areas. This person can provide critical information to the EOC once it has been set up to help leadership maintain situational awareness and give guidance as soon as possible.
- ***Security and Patient Tracking:*** Pediatric intensive care units (PICUs) and neonatal intensive care units (NICUs) have some of the most intensive security in hospitals. Although these systems prevent problems in daily operations, many hospitals found that the systems either did not work or hindered operations during an emergency. It is recommended that hospitals meet with security and patient tracking experts in their facility to review existing plans and devise mechanisms to properly track and secure pediatric patients during a crisis.

Master Scenario Events List Planning Meeting

For a full-scale exercise, an additional meeting is recommended for the planning team. The master scenario events list is a chronologic outline of event synopses, including expected participant responses, objectives, and responsible personnel. It includes specific scenario events (or "injects") that will prompt participants to implement plans, policies, and procedures that require testing during the exercise. The master scenario events list also records the methods (eg, phone call, facsimile, radio call, e-mail) that will be used to provide injects. This meeting should take approximately 3 hours and should include all members of the planning team.

Consider the following when drafting the master scenario events list:
- Is the event directly related to meeting an exercise objective?

- What is the desired task?
- Who will demonstrate the task?
- Who or what will provide inject(s) (eg, course of play, phone call, actor, video) and who will receive it/them?
- What tasks are the participants expected to complete?
- What are the back-up injects in case the participants fail to complete a task?

Controller and Evaluator (C/E) Training
The C/E training should be held no more than a week before the exercise date. Use this meeting to train the designated controllers and evaluators on how to use the master scenario events list, exercise evaluation guide, and communication device(s). If controllers and evaluators are using cellular telephones to communicate, be sure to distribute a list of everyone's phone numbers at this meeting. This meeting should take approximately 2 hours and should include all members of the planning team as well as any additional controllers or evaluators selected.

DEVELOPING A DRILL OR A FULL-SCALE EXERCISE

Exercise Director Guidelines
For every drill, clearly define protocols, concepts, and objective and areas of play, and make sure that personnel are familiar with the plans and trained in the procedures to be drilled.

Determine Areas of Play
The planning team should identify which locations will be drilled and/or affected during a full-scale exercise on the basis of what capabilities the hospital is exercising. Areas of play are particular physical locations where the hospital wants to test, practice, and evaluate a process or function. When deciding areas of play, special attention should be paid to exercise play and its effect on operations or functions in nearby areas.

Develop Drill and Full-Scale Exercise Documents
To conduct an organized and HSEEP-compliant exercise (see **Table 6.6: Conducting a Full-Scale Exercise**), planners will need to develop and utilize standardized documents.
- Master scenario events list
- Exercise evaluation guide
- Player handout
- Exercise plan
- Controller/evaluator handbook
- Controller/evaluator training
- Participant briefing
- Exercise badges
- Participant feedback forms
- Sign-in sheets

Table 6.6: Conducting a Full-Scale Exercise	
Week Before the Full-Scale Exercise	**Day of the Full-Scale Exercise**
Review the list of attendees	Confirm that the room is properly set up (tables, chairs, etc)
Send an email reminder	If multiple spaces are being exercised, make sure all spaces are prepared
Confirm catering order, if applicable	Confirm audiovisual connections work
Ensure print materials are ready	Load presentations
Prepare signage for public spaces (if needed)	Set up table tents
Conduct a controller and evaluator training and walkthrough. Make sure that all controller and evaluation staff: • Have reviewed and understand the exercise evaluation guide and the master scenario events list • Have no questions or concerns • Are capable of communicating with the entire exercise staff or lead exercise controller • Have received their assignments and documentation	Set up all documents, including plans, sign-in sheets, and feedback forms
	Ensure caterers set up before the event

NEXT STEPS AFTER COMPLETION OF EXERCISES

After an exercise is completed, be sure to update or create the plan that was exercised or discussed. It is recommended that hospitals complete this step within a month after the workshop to keep up momentum and while the information is still fresh. Most plans are written by a small group of people with an idealistic mindset of how the actual event will be handled. This can lead to problems when it comes to operationalizing the plan. The purpose of certain exercises is to share the plan with exercise participants who can offer input to improve the plan and the professionals' abilities to use plan concepts in a real-world situation.

BIBLIOGRAPHY

Center for Pediatric Emergency Medicine for New York City. *Pediatric Tabletop Exercise Toolkit for Hospitals*. 2nd ed. New York, NY: Center for Pediatric Emergency Medicine for New York City; 2008

Chung S, Gardner AH, Schonfeld DJ, Franks JL. Addressing children's needs in disasters: a regional pediatric tabletop exercise. *Disaster Med Public Health Prep*. Published online January 15, 2018. doi: 10.1017/dmp.2017.137

Extending the Reach of Pediatric Preparedness: A Virtual Tabletop Exercise Targeting Children's Needs. *Public Health Reports*. (in press)

Espirtu M, Patil U, Cruz H, et al. Evacuation of a neonatal intensive care unit in a disaster: lessons from hurricane sandy. *Pediatrics*. 2014;134(6):e1662-e1669

Frogel M, Flamm A, Sagy M, et al. Utilizing a pediatric disaster coalition model to increase pediatric critical care surge capacity in New York city. *Disaster Med Public Health Prep*. 2017;11(4):473-478

Columbia University School of Nursing, Center for Health Policy. Public Health Emergency Exercise Toolkit. New York, NY: Columbia University; June 2016. Available at: www.cidrap.umn.edu/sites/default/files/public/php/339/339_toolkit.pdf. Accessed September 4, 2018

RESOURCES

AAP Children & Disasters Web Site
www.aap.org/disasters

AAP Clinical Report: Providing Psychosocial Support to Children and Families in the Aftermath of Disasters and Crises
http://pediatrics.aappublications.org/content/136/4/e1120

AAP Clinical Report: Disaster Preparedness in Neonatal Intensive Care Units
http://pediatrics.aappublications.org/content/139/5/e20170507

AAP Establishing Pediatric Advisory Councils or Children's Preparedness Coalitions
www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Children-and-Disasters/Pages/Establishing-Pediatric-Advisory-Councils-or-Childrens-Preparedness-Coalitions.aspx

AAP Family Readiness Kit
www.aap.org/en-us/Documents/disasters_family_readiness_kit.pdf

AAP Family Reunification Following Disasters: A Planning Tool for Health Care Facilities
https://www.aap.org/en-us/Documents/AAP-Reunification-Toolkit.pdf

AAP Pediatric Preparedness Resource Kit
www.aap.org/disasters/resourcekit

AAP Policy Statement: Emergency Information Forms and Emergency Preparedness for Children with Special Health Care Needs
http://pediatrics.aappublications.org/content/125/4/829

AAP Policy Statement: Ensuring the Health of Children and Disasters
http://pediatrics.aappublications.org/content/early/2015/10/13/peds.2015-3112

AAP Policy Statement: Pediatric Readiness in the Emergency Department
http://pediatrics.aappublications.org/content/142/5/e20182459

AAP Policy Statement: Medical Countermeasures for Children in Public Health Emergencies, Disasters, or Terrorism
http://pediatrics.aappublications.org/content/early/2015/12/31/peds.2015-4273

AAP Policy Statement: Pediatric Care Recommendations for Freestanding Urgent Care Facilities
http://pediatrics.aappublications.org/content/133/5/950

AAP Preparedness Checklist for Pediatric Practices
www.aap.org/disasters/checklist

CDC Disaster Planning Guide for Healthcare Facilities
www.cdc.gov/phpr/readiness/healthcare/planning.htm

CDC Framework for Expanding EMS System Capacity During Medical Surge
www.cdc.gov/phpr/readiness/healthcare/Expanding-EMS-Systems.htm

CDC Planning Resources by Setting: Pediatric Offices and Hospitals
www.cdc.gov/phpr/readiness/healthcare/pediatric.htm

CDC Resources for Emergency Health Professionals
https://emergency.cdc.gov/health-professionals.asp

EMSC Innovation and Improvement Center, Disaster Domain
https://emscimprovement.center/ or https://emscimprovement.center/categories/disaster/

FEMA Homeland Security Exercise and Evaluation Program (HSEEP)
www.fema.gov/media-library/assets/documents/32326

FEMA National Response Framework
www.fema.gov/media-library/assets/documents/32230

FEMA Post-Disaster Reunification of Children: A Nationwide Approach
www.fema.gov/media-library-data/1384376663394-
eef4a1b4269de14faff40390e4e2f2d3/Post+Disaster+Reunification+of+Children+-
+A+Nationwide+Approach.pdf

National Center for School Crisis and Bereavement
www.schoolcrisiscenter.org/

National Advisory Committee on Children and Disasters
www.phe.gov/Preparedness/legal/boards/naccd/Pages/default.aspx

New York State Health Emergency Preparedness Coalition
https://www.urmc.rochester.edu/emergency-preparedness/preparedness-and-response-tools-
resources/pediatric.aspx

**Office of the Assistant Secretary for Preparedness and Response Technical Resources,
Assistance Center, and Information Exchange Pediatric Topical Collection**
https://asprtracie.hhs.gov/technical-resources/31/Pediatric/27

Society for Critical Care Medicine Pediatric Fundamental Critical Care Support
https://ssc.sccm.org/Fundamentals/PFCCS/Pages/default.aspx

**Texas A&M Engineering Extension Service Pediatric Disaster Response and Emergency
Preparedness Course**

https://teex.org/Pages/Class.aspx?course=MGT439&courseTitle=Pediatric+Disaster+Response+and+Emergency+Preparedness

US Food and Drug Administration Pediatric Medical Countermeasures
www.fda.gov/EmergencyPreparedness/Counterterrorism/MedicalCountermeasures/MCMIssues/ucm470308.htm