

PRQC DISASTER BUNDLE - DISASTER DOMAIN 2, 3, 4 Local Coalition Building, Pediatric Surge Capacity and Essential Pediatric Resources

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Addressing the Needs of Children in Disaster Preparedness Exercises

2nd Edition









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Addressing the Needs of Children in Disaster Preparedness Exercises 2nd Edition

September 2016



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Acknowledgements

This document was developed by Illinois Emergency Medical Services for Children under the direction of the Pediatric Preparedness Workgroup. The first edition of this document targeted health care entities (EMS and hospitals) and grew out of a draft by Marsha A. Caulkins, R.N., M.P.H., COHN-S-CM, CPHRM, risk manager/ educator, Evanston Northwestern Healthcare during a public health field project practicum with Illinois EMSC. Developed in 2006, it was titled, *Disaster Preparedness Exercises Addressing the Pediatric Population*. This second edition has expanded the target audience to all response agencies, which prompted the retitling of this edition to reflect the broader scope of the document.

Illinois Emergency Medical Services for Children is a collaborative program between the Illinois Department of Public Health and Ann & Robert H. Lurie Children's Hospital of Chicago. The Pediatric Preparedness Workgroup is composed of physicians, nurses, paramedics, pharmacologists, psychologists, state/local health department personnel as well as representatives from key organizations, such as the American Red Cross, Illinois Association of School Nurses, Illinois Chapter of the American Academy of Pediatrics, Illinois College of Emergency Physicians, Illinois Hospital Association, Illinois State Council of the Emergency Nurses Association, Illinois Medical Emergency Response Team and Illinois Poison Center, among others.

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How to Use This Document

This document is offered as a resource to agencies/organizations as they plan and conduct disaster drills and exercises. Inclusion of infants and children in disaster drills and exercises is an essential component in preparedness efforts, and can assist in preparing agencies/organizations to meet the needs of children during an actual disaster or mass casualty incident (MCI).

A glossary on page 32 can assist with defining common terms used in this document.

Please note that any recommendations in this document are based on current information and guidelines found within the medical literature at the time of publication.

NOTE: This document defines the age of a child as 15 years of age and younger in accordance with the Emergency Medical Services and Trauma Center Code adopted by the Illinois Department of Public Health. Exceptions may include the population of children with special healthcare needs/children with functional access needs.

This document is available on-line at www.luriechildrens.org/emsc.

Overview

Although disaster preparedness has been a major focus in the United States since the events of September 11, 2001, disaster preparedness drills/exercises have not consistently included or addressed the needs and special vulnerabilities of children. Unique considerations for children in planning and preparing for disasters of any type include the following factors:¹

- Infants, toddlers, and young children do not have the motor skills or strength to escape from a disaster area. Younger children also lack cognitive decision-making skills to determine how to flee from danger or to follow directions from others. Developmental and cognitive levels of children may impede their ability to escape danger.
- ♦ Triage guidelines differ for children.
- Appropriately sized equipment/supplies as well as age and weight appropriate medications, including antibiotics and antidotes, are required.
- Physiologic differences such as thinner skin, faster breathing, and a higher sensitivity to certain agents can lead to more severe symptoms in children when exposed to chemical, biological, or radiological agents.
 - * Higher respiratory rates per minute put children at risk for greater exposure to aerosolized agents.
 - * More permeable skin and larger skin surface to mass ratio increases the exposure risk in children to some agents.
 - * Children have an increased vulnerability to the effects of radiation exposure, requiring a more vigorous medical response than adults.
- Children are more susceptible to dehydration and shock. A child's condition can shift from stable to lifethreatening rapidly due to their smaller circulating blood volume and fluid reserves. If treatment is not immediate, even relatively small amounts of blood/fluid loss can lead to irreversible shock or death.
- Children are more sensitive to changes in body temperature and have a faster metabolism. This can lead to hypothermia/hyperthermia more rapidly than adults. Adult decontamination processes/procedures are not ideal for children and they are more vulnerable to hypothermia during the decontamination process.
- Children with special health-care needs (CSHCN)/children with functional access needs (CFAN) are particularly at risk if their survival depends upon medications or technology such as respirators.
- Children have unique psychological vulnerabilities. Children's lives and routines are oftentimes disrupted during a disaster, making it particularly difficult for them to adjust within a changing and often unstable environment.
- ♦ Children are at higher risk for abduction and abuse during disasters.
- Children typically do not carry identification and may become separated from parents/caregivers.
 Depending upon age and cognitive development, they may not be capable of readily conveying medical history.

Because of these unique vulnerabilities, it is essential that the special needs of children are addressed in every stage of disaster management (prevention/mitigation, preparation, response, and recovery). Often, children and children with special health care needs (CSHCN)/children with functional access needs (CFAN) are not included in drills/exercises. This lack of inclusion leaves responders and organizations/agencies unprepared. By setting a standard practice to include children and CSHCN/CFAN in every drill and exercise, organizations/agencies can adequately test the capacity of the system to handle a disaster with child victims.

Any type of disaster will likely impact children since they comprise a significant percentage of the population. In the United States, children age 17 years and younger, represent approximately 23% of the population.² Illinois' population is comprised of approximately 3 million children and adolescents, with nearly 800,000 of those children age 5 or younger³. Thus, it is critical that all response agencies, including health care organizations, first responders (EMS, Fire and Law Enforcement), public health, schools, child care centers, and emergency management agencies, become more aware of where children are located within their community by identifying places where children congregate in large numbers, such as schools, child care centers, recreational facilities, sports arenas, juvenile detention centers and health care/live-in facilities for those children with chronic conditions and special health care needs. Knowing where children are in the community before an incident can help response agencies plan for the needs of children during disasters.

In the years since September 11, 2001, many groups have advocated for the inclusion of children in disaster planning and response. These groups have developed reports based on their evaluations of federal, state and local planning, policies and procedures, as well as exercises and training to ensure the needs of children are addressed on all levels. Most of these reports also contain recommendations that can assist with plan improvement. The following are a few key reports that have been released since 2001. Although each of these reports provides many recommendations on the overall care of children in disasters, below are the recommendations specifically related to the inclusion of children in exercises and drills.

- 2003: National Advisory Committee on Children and Terrorism (NACCT): Recommendations to the Secretary: ⁴
 - "Develop training programs to prepare a pediatric healthcare workforce to gain the knowledge, skills and abilities to address the special needs of children and that can be readily integrated into the public health network. Training should include:
 - Recognizing indications of a terrorist event in their infant, child and adolescent patients;
 - Treating infant, child and adolescent patients in a safe and appropriate manner; and
 - Rapidly and effectively alerting the public health system of such an event at the community, state and national level."
- 2010: National Commission on Children and Disasters (NCCD): 2010 Report to the President and Congress ⁵
 - "Entities (federal, state and local level; health care, schools, child care, juvenile justice, child welfare facilities, and response teams) should include the needs of children in disaster training, exercises, and equipment purchases.
 - Conduct regular staff training and exercises of the plans that address the needs of children.
 - Exercises test capabilities and training around more common and realistic events faced by State and local responders, rather than just catastrophic events.
 - * Evaluate performance in meeting the needs of children during exercises/drills and in after action reports and improvement and corrective action plans."
- 2015: National Advisory Committee on Children and Disasters (NACCD): Healthcare Preparedness for Children in Disasters: A Report of the NACCD Healthcare Preparedness Working Group.⁶ HHS/ASPR should:
 - * Promote Incident Command System (ICS) training and exercises/drills for healthcare professionals that provide care to children.
 - Include all appropriate types of first responders in pediatric disaster preparedness training,

including school nurses and child care providers and encourage participation and involvement of community and primary care pediatricians.

- Issue federal recommendations/guidelines for all hospitals to conduct exercises and drills that include children and children with special needs as well as work with regulatory bodies to design and enforce mandatory pediatric disaster management training and exercises for hospitals.
- Work to develop pediatric disaster training standards for physicians, nurses, school nurses, and federal response teams.

Although progress has been made over the years to include the needs of children in disaster exercises/drills, it is clearly still a component of disaster preparedness that responders struggle with. The goal of this document is to assist with incorporating children in all exercises/drills. There are three sections in this document:

- The first section outlines the types of exercises that various agencies/organizations should conduct that include children, along with a brief description of components to test within each of those exercises.
- 2) The second section reviews how to include children in exercises/drills and provides information such as how to obtain volunteer children for "disaster victims," or how to simulate children in exercises.
- The final section provides sample scenarios for several common exercises and includes sample objectives and victim lists to assist with exercise planning.

Disaster Drill/Exercise Components to Address the Needs of Children

Individual agencies/organizations that respond in a disaster all have different roles and responsibilities during the overall response to an incident. Disaster drills/exercises should be tailored to the specific roles/responsibilities of each individual agency/organization as well as how they will address the needs of children within their scope of the incident.

This next section outlines general response activities and roles specific to children that each different agency/ organization may be responsible for during an incident. Therefore, it is encouraged that all agencies/ organizations consider addressing and including children in drills/exercises.

Addressing the Needs of Children in Disaster Preparedness Exercises

AGENCY/ ORGANIZATION	CONSIDERATION	RESPONSE ACTIVITIES/ROLES TO INCLUDE IN EXERCISES	SAMPLE EXERCISES SCENARIO #
Clinics/ Physician Offices/Urgent Care Facilities	Evacuation	 Planned versus immediate evacuation Secured staging areas Patient tracking and reunification Obtaining medical records during evacuation Transport resources to assist with safe transport of patients during evacuation (if injured/ill or parental transport no longer available) 	Scenario # 3
	Recovery	 Re-establishing care with patients/community/ health care system Providing resources to family Addressing mental health needs Accepting new patients who have been displaced 	Scenario # 3
	Reunification	1. Process to assist local hospitals with reunification of family	Scenario # 3
	Surge during outbreaks Mass vaccination/ prophylaxis	 Receiving/obtaining accurate information Communicating accurate information to parents Communicating with staff & colleagues Surveillance and reporting/communicating with local health department Obtaining supplies Scheduling increased number of patients Accepting non-established patients to receive vaccinations Keeping well patients who arrive for prophylaxis separate from ill patients 	Scenario # 4
Emergency Management Agencies	Community evacuation	 Resources to transport children safely during evacuation (e.g. MOU with bus companies, accessing car seats) 	Scenario # 3
	Shelter set up	 Obtaining supplies for children in shelters (e.g. bedding, food, formula, distraction devices) Obtaining supplies for CSHCN/CFAN (e.g. refrigeration, power sources) 	Scenario # 3
	Supply request coordination	 Identify where to obtain requested supplies for children Request for medical resources (RFMR) process Illinois ESF-8 Plan: Pediatric and Neonatal Surge Annex 	Scenario # 2
EMS/Fire	Decontamination/ Hazmat	 Use of warm water (98°-110° F) with low pressure/high volume flow Keeping families together Process to safely move non-ambulatory (e.g. infants/young children/CSHCN/CFAN) to avoid carrying children through the decon shower 	Scenario # 2

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Addressing the Needs of	f Children in Disaster	Preparedness Exercises
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AGENCY/ ORGANIZATION	CONSIDERATION	RESPONSE ACTIVITIES/ROLES TO INCLUDE IN EXERCISES	SAMPLE EXERCISES SCENARIO #
EMS/Fire (continued)	Mass Casualty Incident (MCI)	 Casualty Collection sites Safety of pediatric patients Obtaining additional pediatric supplies Transporting children to non-hospital locations (e.g. alternate treatment sites {ATS}, alternate care sites {ACS} or temporary medical treatment sites {TMTS}) Transporting children between hospitals Release of non-injured children Disaster equipment resources (e.g. MCI EMS Bus) to adequately care for and transport children 	Scenario # 1
	MCI Triage	 Use of JumpSTART and START MCI triage MCI triage tags 	Scenario # 1 Scenario # 2
	Mass Fatality	 Standard Operating Procedures (SOPs) to withdraw or terminate resuscitation efforts in the field 	Scenario # 1
	Patient Tracking	 Use of tracking system/protocols Transporting family members together 	Scenario # 2
Hospital	Decontamination/ Hazmat	 Use of warm water (98-110° F) with low pressure/high volume flow Accessing warming devices Use of device to safely move infants/young children through decon shower to avoid carrying children through shower Keeping families together Process to track family members if parents need to be separated from their children Additional staff/resources/time needed to decon children, CSHCN/CFAN 	Scenario # 2
	Evacuation	 Planned versus immediate evacuation of high risk, secured units (nursery, NICU, pediatrics, PICU, adult med/surg areas that admit children, pediatric psychiatric unit) Reverse triage process specific to children Use of evacuation equipment to safely evacuate hospital units that admit pediatric/neonatal patients Ability to access resuscitation equipment during an evacuation of hospital units that admit pediatric/ neonatal patients Securing the staging areas for those hospital units that admit pediatric/neonatal patients Patient tracking and reunification Obtaining medical records during evacuation Transport resources to assist with safe transfer of pediatric and neonatal patients to another facility during an evacuation 	Scenario # 3

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Addressing the Needs of Children in Disaster Preparedness Exercises

AGENCY/ ORGANIZATION	CONSIDERATION	RESPONSE ACTIVITIES/ROLES TO INCLUDE IN EXERCISES	SAMPLE EXERCISES SCENARIO #
Hospitals (Continued)	MCI Surge	 Influx of children that tests surge capacity and stresses resources Space: Where children receive care (traditional areas and alternate treatment sites {ATS}) Space: Set up and use of Pediatric Safe Areas for non-injured/non-ill children who do not need medical care Supplies: Obtaining needed pediatric and neonatal supplies from both on-site stockpiles and MOUs Supplies: Obtaining needed pediatric and neonatal supplies to establish and use in alternate treatment sites Staff: Trained staff to care for pediatric patients, including mental health professionals System: Incident Command System System: Process of admitting pediatric and neonatal patients and CSHCN/CFAN to hospitals that normally transfer these patients to tertiary care centers System: The ability to provide additional staff, space and systems to address the safety and security needs of children (e.g. lockdown, banding, reunification, security in ATS areas, etc.) 	Scenario # 1 Scenario # 2
	MCI Triage	 Use of JumpSTART and START MCI triage MCI triage tags 	Scenario # 1 Scenario # 2
	Mass fatality	 Supplies to care for mass fatality of large numbers of children (e.g. storage capabilities, memory kits/ bereavement kits for families, etc.) Identification of pediatric victims Evidence preservation vs. parental viewing 	Scenario # 5
	Reunification	 Tracking all children that arrive at a hospital during a disaster (patients, visitors, unaccompanied by parent/guardian) Process to track family members if they need to be separated (e.g. parent and child both acutely ill/ injured and unable to be transferred to the same hospital; child visitor of a parent/guardian who is sick/injured and needs to be admitted/ transferred) Reuniting children with family, including use of community partners Set up and use of Pediatric Safe Areas to care for children waiting for reunification Set up and use of a Family Information and Support Center (or equivalent) Verifying guardianship before releasing unaccompanied minors 	Scenario # 1 Scenario # 2

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AGENCY/ ORGANIZATION	CONSIDERATION	RESPONSE ACTIVITIES/ROLES TO INCLUDE IN EXERCISES	SAMPLE EXERCISES SCENARIO #	
Hospitals (continued)	Recovery	 Re-establishing care with primary care providers Providing resources to family Addressing mental health needs Accepting new patients who have been displaced 	Scenario # 3	
Law Enforcement	Reunification	 Key role officers play that is outlined in plans of community partners (EMS, hospitals) Access existing child identification kit and/or database information (e.g. fingerprint kits and/or databases that parents can voluntarily enter their child's information), if available, to assist with reunification 	Scenario # 5	
	Unaccompanied minors/non-injured children	 Protecting unaccompanied minors Placement of unaccompanied minors 	Scenario # 5	
	Interacting with children	 Identifying what children of different ages and developmental levels need 	Scenario # 1 Scenario # 5	
	Active shooter in schools/child care centers/homes	 Participate in active shooter drills in schools and child care centers/homes Provide education to schools and child care centers/homes regarding response techniques 	Scenario # 6	
	Mass fatality	 Identification of child victims Evidence preservation vs. parental viewing 	Scenario # 5	
Long Term Care Facilities	Evacuation	 Planned versus immediate evacuation Reverse triage process specific to children Use of evacuation equipment to safely evacuate Ability to access resuscitation equipment during an evacuation Securing staging areas Patient tracking and reunification Obtaining medical records during evacuation Transport resources to assist with safe transfer of patients during an evacuation to another facility (e.g. local EMS, Collaborative Healthcare Urgency Group {CHUG}, Private Provider Emergency Response System {PPERS}} Notifying families/guardians 	Scenario # 3	
	Reunification	 Tracking all children that leave facility and what facility they will be transferred to Assisting receiving facility with reuniting children with family 	Scenario # 3	
	Shelter in place	 Supplies: Obtaining needed supplies (medical equipment, food, formula, water) from both on-site stockpiles and MOUs Supplies: Back up power sources Staff: Adequate staff to care for patients Systems: Incident Command System Systems: Staff support processes Systems: Communicating with families/guardians 	Scenario # 3	

Addressing the Needs of Children in Disaster Preparedness Exercises

AGENCY/ ORGANIZATION	CONSIDERATION	RESPONSE ACTIVITIES/ROLES TO INCLUDE IN EXERCISES	SAMPLE EXERCISES SCENARIO #
Long Term Care Facilities (continued)	Recovery	 Re-establishing care with patients Providing resources to family/guardians Addressing mental health needs Accepting new patients who have been displaced 	Scenario # 3
Public Health	Alternate care sites (ACS)/ Temporary Medical Treatment Sites (TMTS)	 Triggers to establish ACS/TMTS Types of patients, especially pediatric patients, to receive care at sites Space: A designated area where children receive care Supplies: Obtaining needed pediatric supplies from stockpiles, MOUs, and state request for medical resources (RFMR) process Staff: Trained staff to care for pediatric patients, including mental health professionals Systems: Incident Command System 	Scenario # 3
	Evacuation	1. Transport resources to assist with evacuation that can safely transport community members of all ages, including CSHCN/CFAN	Scenario # 3
	Mass prophylaxis	 Receiving/obtaining accurate information Communicating accurate information to hospitals, community Communicating with staff and colleagues Activation of the Strategic National Stockpile (SNS) Obtaining supplies for children Obtaining medications for children Keeping well patients who arrive for prophylaxis separate from ill patients Staff shortages, especially staff trained to provide medications to children 	Scenario # 4
	Shelter set up/assistance	 Space: Designated child friendly areas (child safe areas/child play areas) Space: Addressing unaccompanied minors Space: Family areas Space: Quiet areas for CSHCN/CFAN Supplies: Obtaining needed pediatric supplies for children (bedding, food, formula, distraction devices) Supplies: Obtaining additional equipment needs for CSHCN/CFAN (e.g. refrigeration, power source) Staff: Trained staff to manage children, including mental health professionals System: Coordinate with sheltering organizations (e.g. ARC) for shelter set up 	Scenario # 3
	Supply request coordination	 Process to obtain additional pediatric medical supplies (RFMR process) Activation of the Strategic National Stockpile (SNS) Illinois ESF-8 Plan: Pediatric and Neonatal Surge Annex 	Scenario # 2

Addressing the Needs of Children in Disaster Preparedness Exercises

AGENCY/ ORGANIZATION	CONSIDERATION	RESPONSE ACTIVITIES/ROLES TO INCLUDE IN EXERCISES	SAMPLE EXERCISES SCENARIO #
Public Health (continued)	Surveillance	 Receiving/obtaining accurate information Communicating accurate information to partners Communicating with staff and colleagues 	Scenario # 4
Schools and Child Care Centers/Homes	Evacuation	 Test evacuation plans Evacuating to primary and secondary sites Communicating with families-test all notification methods currently in place (e.g. phone call, group text) Communicating with the media Reunification with families after evacuation For community evacuations or incidents, test the use of the school for sheltering, mass prophylaxis sites, etc., and how classes will continue in these situations 	Scenario # 5 Scenario # 6
	Recovery	 Restarting school/child care center at current location Restarting school/child care center in a temporary location Providing resources to families Addressing mental health needs 	Scenario # 5
	Reunification	 Process to reunite children with parents/guardian Process to travel with child to hospital Process to assist hospitals with reunification/ verification of guardianship Process of contacting community agencies if parent/guardian and additional identified family members unavailable after disaster to pick up child 	Scenario # 1 Scenario # 2 Scenario # 5
	Shelter in place	 Test shelter in place plans Communicating with families - test all notification methods currently in place (e.g. phone call, group text) Communicating with the media Obtaining supplies from stockpiles (e.g. bedding, food, medications/treatments for CSHCN/CFAN) 	Scenario # 5 Scenario # 6

Including Children in Disaster Drills/Exercises

Incorporating children into drills/exercises can be challenging for many reasons including:

- ♦ Lack of familiarity with the types of exercises/drills
- ◊ Uncertainty on what types of plans should be tested specific to children
- **Our Second Seco**
- ◊ Uncertainty of how to include children into the drills/exercise
- ♦ Inexperience with working around/with children on a day to day basis.

This next section will address these challenges and others by providing recommendations on how agencies/ organizations can incorporate children into their disaster drills/exercises.

Types of Drills/Exercises

The Homeland Security Exercise and Evaluation Program (HSEEP)⁶ has become the standard in disaster preparedness training exercises. It represents a capability based exercise program that includes a range of exercise activities of varying degrees of complexity and interaction. HSEEP provides a standardized methodology and consistent terminology for designing, developing, conducting, and evaluating all exercises⁷. The program provides tools and resources to assist with the building of self-sustained training and exercise programs, and it allows different groups to be able to practice and exercise together seamlessly⁷. Within HSEEP, the types of exercises range from discussion based (seminars, workshops and tabletops {TTX}) to operations based exercises (drills, functional exercises {FE} and full scale exercises {FSE}). An exercise program typically is designed as a multi-year approach to allow the agency/organization to conduct a series of exercises that increase in complexity with each exercise and provides time to address areas for improvement identified in one exercise before moving onto the next. It also allows time to train staff and test various individual components of the plan, building up to a full scale exercise that tests the plan in its entirety. This progressive approach may help improve staff's knowledge and familiarity of the plans and their participation in the exercises while preventing them from becoming overwhelmed. After exercises, an evaluation should be completed that includes the development of an After Action Report (AAR) to outline the strengths and areas for improvement identified during the exercise. An Improvement Plan (IP) should also be developed that outlines how the identified areas for improvement will be addressed. The HSEEP process is the same for drills/exercises that include children. For more information on exercise design and the HSEEP process, visit the Federal Emergency Management Agency HSEEP website at: https://www.fema.gov/medialibrary/assets/documents/32326

The increasing occurrence of disasters (both natural and human-caused) in the United States and abroad, serves as a reminder of the need to conduct emergency preparedness activities to minimize risk, prepare for response and lessen the overall effects that an incident will have on communities and its population. The scenarios used in drills/exercises should be based on the hazards that the community, agency or organization is at higher risk for. For example, Illinois has experienced flooding, tornadoes, blizzards and other weather-related emergencies. In addition, Illinois communities are at risk for a number of other types of disasters since Illinois:

- has more nuclear power sites than any other state;
- has the third largest city in the country (Chicago), which may be a target for terrorists;
- is a major thoroughfare with multiple highways and railways crisscrossing the state that frequently are routes for transporting hazardous materials, including Bakken Crude Oil;
- is located along major waterways (Lake Michigan and Mississippi River) which provide for large container movement;
- comprises a significant agricultural community with fertilization and crop dusting practices which can provide avenues for potential disasters and terrorist activities;
- ◊ is vulnerable to earthquake activity.

Using scenarios based on hazards that a community, agency or organization is at risk for brings realism to the drill/exercise and helps to better prepare those involved in the training.

Testing Disaster Plans

The table on the previous pages (Disaster Drill/Exercise Components to Address the Needs of Children) outlines examples of the types of drills/exercises to incorporate children into as well as response activities/ roles based on each agency/organization type. It is important to note that in order to test these response activities/roles in drills/exercises, they must first be written into the agency/organization's disaster plans. For example, a hospital's decontamination plan should contain the following information to address the needs of children:

- \diamond Use of warm water (98° -110° F) with low pressure/high volume flow
- Use of a device(s) to safely move infants/young children through the decon shower to avoid carrying children through the shower, which is a safety risk



- Our Process to keep families together
- OPProcess to track family members if they need to be separated from each other
- Outline the additional staff/resources/time that will be needed to decon children, especially CSHCN/ CFAN
- Our Process to access warming devices

Regardless of how an agency/organization chooses to arrange their disaster plans and include considerations for children, the detail response activities/roles should be outlined within the plans. Once this information has been incorporated, the plans (and the details within those plans) are what should be tested in drills/ exercises.

If there is equipment available to assist staff with implementing components of the plan, this equipment should be utilized during the drills/exercises. Using the example outlined above, if a laundry basket is part of the hospital's decon equipment to safely decon infants, the basket should be available and used during decontamination related drills/exercises.

If the agency/organization functions through the use of multiple shifts (e.g. hospitals, LTC, EMS/Fire agencies), it is vital that drills/exercises involve staff from all shifts to ensure, no matter what time of day or day of the week a disaster occurs, all staff have been trained to respond.

Child "Victims" in Disaster Drills/Exercises

How Many Children Should Be Included

The exact number of children that should be included in drills/exercises will vary based on considerations such as the type of exercise, the size of the agency/organization, and the overall goals and objectives of the drill/exercise. If the goal/objective of the drill is to allow staff on the decon team to become more familiar with a new piece of equipment to assist with decontaminating young children and CSHCN/CFAN, having one or two child "victims" would be sufficient. When conducting drills/ exercises to test sections of a plan or the entire plan, agencies/ organizations should develop the drill/ exercise so that it stresses the system in order to identify gaps that might exist. For example, if a local health department (LHD) is conducting a mass prophylaxis/vaccination exercise for an outbreak affecting the pediatric population in a large urban area, simulating that the LHD provides vaccinations to four children would not provide adequate stress on the system compared to simulating the need to vaccinate 100 children. One method to identify the minimum number of child "victims" for a drill/exercise is to

ensure the number of "victims" represents an accurate percentage of children in the population. If 25% of the population in a community is children, then 25% of the total number of victims in the drill/ exercise should be children.

Age groups of children to incorporate into exercises

- Infants (≤ 1 year old)
- Toddlers (1-3 years old)
- Pre-school (4-6 years old)
- School age (7-12 years old)
- Adolescent (≥ 13 years old)
- CSHCN/CFAN: Children who have physical, sensory, mental health, cognitive and/ or intellectual disabilities affecting their ability to function independently without assistance.

such as:

The child "victims" in an exercise should vary by age. Ensuring that exercises include children within the age groups outlined to the left is ideal. In addition, it is important to ensure that CSHCN/CFAN are included as well.

Options for Incorporating Child "Victims"

Ideally, live volunteers (including children) should be used as "victims" in every disaster drill/exercise. Incorporating the use of live volunteers into drills/exercises will provide greater insight as to how a plan will unfold compared to using manikins or paper (e.g. Flat Stanleys) to simulate victims. Live volunteers can also provide feedback on the plan/processes being tested. Although there are significant benefits in using live volunteers, including children, in drills/exercises, there are challenges

- Additional time and resources are needed to recruit and coordinate live volunteers.
- Approval from administration and risk management for use of live volunteers, especially children, may be difficult to obtain due to liability concerns.
- There are possible safety concerns that need to be addressed with live volunteers, especially children. For example, identifying who is responsible for the supervision of the volunteer children (e.g. staff, parents/guardians, and teachers/chaperones).

To address these barriers, work with administration/risk management to outline the benefits that would occur by including live volunteers and the processes that have been put in place to address liability concerns. Speak with other agencies/organizations that use live volunteers to identify how they have addressed safety issues (e.g. obtaining consent/release forms, assigning extra staff to the volunteers, requiring parents/chaperone to be present during the drill/exercise). Sample consent/release forms can be found in Appendix A of this document.

An important consideration when including child volunteers in drills/exercises is that children, especially younger children, may become scared, resistant and even uncooperative during the drill/ exercise. A child's reaction to the scenario of the drill/exercise and what they are expected to do as a result of the scenario will be dependent on many factors such as: age, developmental level, their understanding of the circumstances within the scenario (e.g. staged incident versus a real incident), and previous experience with a similar scenario. For example, a child who was involved in a real tornado may have a traumatic reaction during a

Sources for child volunteers:

- \Rightarrow Employees' children
- \Rightarrow Boy scout/girl scout troops
- \Rightarrow Local drama clubs
- \Rightarrow Local schools and child care centers
- ⇒ Other local child based community programs

tornado drill at their school. Be prepared (and prepare staff) to encounter these reactions and address

their needs in order to prevent the drill/exercise from being traumatic.



If it is not possible to incorporate live child volunteers into the drills/exercises, it is still crucial that children are represented in other ways. Manikins, dolls and/or paper victims (e.g. Flat Stanley's) should be utilized to simulate child victims within the drill/exercise. Cards or a similar system could be attached to the "victim" that provides the responders with information about the victim and their needs. In addition to using cards, exercise designers can pair the simulated child victim with an adult victim, especially if the adult is a live volunteer. For example, a doll can be paired with an adult volunteer who can simulate that child's parent/caregiver, school administrator or child care center director. Another option would be to use a doll/manikin as an unaccompanied minor and have a live adult volunteer simulate a distraught parent/guardian arriving at the scene, school or hospital, looking for that child.

Other Considerations

Agencies/organizations may feel that it is not necessary to incorporate children in their drills/exercises. Children comprise nearly a quarter of the population in most communities. Therefore, in most incidents that occur in a community, children will be affected and need assistance. Each agency/organization has a responsibility to ensure that they are prepared to provide assistance to all victims, regardless of how many children their agency/organization interacts with on a daily basis.

Children with special healthcare needs (CSHCN)/children with functional access (CFAN) needs also comprise a significant portion of a community. The range of conditions/disorders that are included in the definition of CSHCN/CFAN is quite extensive and can be challenging to prepare for. Agencies/ organizations should attempt to identify common childhood conditions/disorders in their community and ensure they are simulating what these children will need during drills/exercises. For example, if a community has a resource center for children with autism, agencies/communities should incorporate the needs of autistic children in their drills/exercises since during a real incident, they will likely need to provide these children and their families with assistance.

After every drill/exercise, a debriefing session or "hot wash" typically is conducted. Be sure to include your volunteer victims in this session to gather their feedback on the process that was tested. Child volunteers can also be included, if age appropriate to do so. Obtaining feedback from a child's viewpoint may provide valuable learning opportunities and assist with addressing their needs in response plans.



Each agency/organization has a responsibility to ensure they are prepared to provide assistance to all victims, regardless of how many children their agency/organization interact with on a daily basis.

Sample Exercise Scenarios

Exercise Scenario # 1: School bus accident

Scenario:

A group of first and second grade students with their teacher/chaperones are enroute via school busses on a field trip. As the caravan of busses, filled to capacity, slow for their exit off the highway, a speeding semi-trailer truck behind the last bus crashes into it, forcing that bus forward into the bus ahead. The back of the rear bus is crushed into the mid-section; the forward bus is overturned. The contents of several 55 gallon drums from the truck spill onto the highway. The placards on the truck read "Dangerous." The state trooper who witnessed the collision calls in that the truck driver is unconscious. Some children have been ejected from a bus, some are trapped and a few are walking along the



road appearing dazed. None of the children are carrying identification. Their luggage and box of emergency forms were housed in the back of the rear bus, which is now filling with smoke. A school nurse is one of the chaperones for the field trip.

Agency/organization and components to test:

This section outlines the involved agencies/organizations and the different components specific to children that could be tested in a drill/exercise using exercise scenario #1. Altering the scenario (e.g. changing the ages of the students to pre-school age and toddlers) would allow the scenario to test different components of each agency/organization's plans and allow the scenario to apply to specific agencies/organizations, such as child care centers. The information listed below can assist an agency/ organization in identifying the components to test within their plans and guide the development of exercise objectives.

- EMS/Fire
 - 1) Scene safety
 - 2) MCI Triage (use of START and JumpSTART[©] triage)
 - 3) Care of children at casualty collection sites
 - 4) Release of non-injured children
 - 5) Resources to transport numerous pediatric victims (e.g. MCI EMS bus)
 - 6) Withholding and/or terminating resuscitation efforts on pediatric victims triaged as Expectant
- ♦ Hospitals
 - 1) Influx of children that tests surge capacity
 - 2) MCI Triage (use of START and JumpSTART[©] triage)
 - 3) Identifying additional space within hospital to care for surge of pediatric patients
 - 4) Obtaining additional supplies and staff to care for surge of pediatric patients
 - 5) Tracking and reunification of unaccompanied minors
- Schools/Child care centers
 - 1) Notification of parents/guardians, staff and their families regarding incident

- 2) Releasing students from the care of EMS
- 3) Staff accompanying students to hospital
- 4) Reunification of students with parents/guardians
- 5) Assisting hospitals with reunification of students with their parents/guardians

Sample victim list:

The following is a sample victim list that can assist exercise designers with incorporating child victims when using exercise scenario # 1. Five child victim profiles are provided. Based on the scale of the drill/ exercise and the capabilities being tested, the information below for each victim as well of as the number of victims could be expanded upon to meet the objectives of the exercise. In addition, adult victims could be added following the same format.

VICTIM	RESPIRATORY RATE	PERFUSION	MENTAL Status	OTHER
7 y/o F	RR 10	Distal pulse present	Groans in response to painful stimuli	Lying in ditch 15 feet from accident
8 y/o M	Talking	Distal pulse present	Asking for help	Walks toward you, clothing is torn, no bleeding evident
6 y/o F	RR O	Faint distal pulse	Unresponsive	Found in rubble outside rear bus; apneic after 5 rescue breaths
8 y/o M	RR 36	Distal pulse present	Screaming	Found in ditch. Partial amputation of foot with minimal bleeding.
8 y/o F	RR 24	Distal pulse present	Asking for her wheelchair	Found wedged under bus seat

Exercise Scenario # 2: Chemical leak at a swimming pool Scenario:

The local community recreational center has an indoor swimming pool, a child care center, and a fitness center. During the week, numerous local preschools, child care centers and special needs centers bring children for swim classes and other recreational activities offered at the center. Today, there are three different groups currently in the pool receiving lessons: a group of six school aged children with special health care needs; a group of ten preschool aged children from a local preschool; and a parent/infant swim group with six mothers and infants. In addition, there are three more groups pool side, waiting for their lessons to start after the current group exits the pool. There is a loud noise that erupts from the equipment room adjacent to the pool, which houses the chlorine used to treat the pool water. A strong, pungent odor is detected in the pool area. Most of the people in the pool area begin experiencing stinging/burning to the eyes, nose, and throat. Chaperones and parents of the groups at the pool side begin to lead their children out of the pool area. Meanwhile, many of the children and adults in the pool begin coughing and having difficulty breathing as they struggle to exit the pool.

Agency/organization and components to test:

This section outlines the agencies/organizations and the different components specific to children that could be tested in a drill/exercise using exercise scenario #2. Altering the scenario (e.g. number of children in the area, age groups of those exposed, type of chemical involved in the incident, location of the incident) would allow the scenario to test different components of each agency/organization's plans and allow the scenario to apply to different agencies/organizations (for example, the emergency management agencies if the chlorine leak was less localized and affected an entire community). The information listed below can assist an agency/organization in identifying the components to test within their plans and guide the development of exercise objectives.

- ♦ EMS/Fire
 - 1) Decontamination/Hazmat
 - 2) MCI triage (Use of START and JumpSTART[©] triage)
 - Patient tracking (Use of tracking system/protocols; transporting family members together)
- ♦ Hospitals
 - 1) Decontamination/Hazmat
 - 2) MCI triage (Use of START and JumpSTART[©] triage)
 - 3) Influx of children that tests surge capacity
 - 4) Tracking and reunification of unaccompanied minors
- ♦ Schools/Child care centers
 - 1) Notification of parents/guardians, staff and their families regarding incident
 - 2) Releasing students from the care of EMS
 - 3) Reunification of students with parents/guardians
 - 4) Assisting hospitals with reunification of students with their parents/guardians
- Output Public health
 - 1) Supply request coordination



- ♦ Emergency management agency
 - 1) Supply request coordination

Sample victim list:

The following is a sample victim list that can assist exercise designers with incorporating child victims when using exercise scenario # 2. Five child victim profiles are provided. Based on the scale of the drill/ exercise and the capabilities being tested, the information below for each victim as well of as the number of victims could be expanded upon to meet the objectives of the exercise. In addition, adult victims could be added following the same format.

VICTIM	RESPIRATORY RATE	PERFUSION	MENTAL Status	OTHER
6 m/o F	RR 60	Distal pulse weak	Lethargic	Severe respiratory distress
10 y/o M	RR 32	Distal pulse present	Crying loudly, wandering about	Becomes resistant and uncooperative when led into the decon shower
3 y/o F	RR O	Faint distal pulse	Unresponsive	Found at the side of the pool; apneic after 5 rescue breaths
8 y/o F	RR 36	Distal pulse present	Screaming	Grabbing at and clinging to workers
1 y/o M	RR 28	Distal pulse present	Alert, quiet	In mother's arms who states they had just entered the locker room when incident occurred

Exercise Scenario # 3: Community flooding

Scenario:

After a very cold and snowy winter, spring has arrived and has brought significant amounts of rainfall across the Midwest region. Rivers, streams, creeks, and lakes are all nearing record levels. Flooding is imminent in many communities. One community issues a mandatory evacuation for all residents. The hospital and three long term care facilities (one of which provides services to children with special health care needs/ children with functional access needs) are all located in lower lying areas of the town and will need to be evacuated.



Agency/organization and components to test:

This section outlines the agencies/organizations and the different components specific to children that could be tested in a drill/exercise using exercise scenario #3. Altering the scenario (e.g. change the evacuation from a planned evacuation to an immediate evacuation after residents and health care facilities do not heed the evacuation warnings; flooding occurs in a rural area with limited health care resources so an alternate care site needs to be established near evacuation shelter) would allow the scenario to test different components of each agency/organization's plans and allow the scenario to apply to different agencies/organizations. The information listed below can assist an agency/ organization in identifying the components to test within their plans and guide the development of exercise objectives.

- ♦ Hospitals
 - Evacuation (evacuating high risk, secured areas; reverse triage process specific to children; use of evacuation equipment; patient tracking and reunification; transport resources to assist with evacuation; identification of hospitals to accept pediatric/neonatal patients)
 - 2) Recovery (re-establishing care of children with primary care providers; identifying when providers will return to area)
- Output Public health
 - Shelter set up {identifying spaces, supplies and staff to care for children and unaccompanied minors in shelter(s)}
 - 2) Community evacuation (transport resources to safely transport community members of all ages and including CSHCN/CFAN during an evacuation)
- Emergency management agencies
 - 1) Community evacuation (resources to transport children safely during evacuation)
 - Shelter set up (obtaining supplies for children in the shelter {e.g. bedding, food, formula, water, distraction devices}; obtaining supplies for CSHCN/CFAN {e.g. refrigeration, power sources})
- Iong term care facilities who need to evacuate
 - 1) Reunification (patient tracking and reunification; notifying families/guardians)
 - 2) Evacuation (use of evacuation equipment; obtaining medical records; transport resources to assist with safe evacuation; identification of accepting facility)
 - Recovery (re-establishing care when able to return to facility; addressing mental health needs of patients; accepting new patients who have been displaced)

- 4) Shelter in place for those who do not need to evacuate (address supply and staff issues; communicating with families/guardians)
- Clinics/physicians' offices/urgent care facilities
 - 1) Planned versus immediate evacuation
 - 2) Patient tracking and reunification
 - 3) Obtaining medical records during evacuation
 - 4) Providing services to patients at evacuation shelters
 - 5) Recovery (re-establishing care with patients, community/health care system; accepting new patients who may have been displaced; addressing the mental health needs of children and their families)

Sample victim list:

The following is a sample list of children that may be encountered during scenario # 3 that can assist exercise designers. Five child profiles are provided. Based on the scale of the drill/exercise and the capabilities being tested, the information below for each child profile as well of as the number of children could be expanded upon to meet the objectives of the exercise. In addition, adult profiles could be added following the same format.

- A mother (with her ten year old child who is autistic and developmentally delayed), signs in at the shelter. When they enter the sleeping area, the child becomes stressed and begins to yell out and rock back and forth. The mother leads the child back out of the area, calms her down and makes another attempt. Once back in the sleeping area, the child gets upset again.
- 2) A family arrives at the shelter. Their six year old son is an insulin dependent diabetic. The parents are requesting a refrigerator to store his insulin.
- 3) A mother arrives at the shelter carrying her infant son. The child is one week old. The mother asks if there is a private area where she can breast feed and if there is a refrigerator to store her milk when she pumps. Later on, the mother is seen sleeping on the cot with the newborn next to her.
- 4) A father of 4 children ranging in age from three to thirteen years old has been in the shelter for one day. The father tells staff that he needs to leave to go to work tomorrow and wants to leave the children at the shelter. He says the thirteen year old can watch the other three children.
- 5) A child care center worker pulls up to the shelter entrance and asks to speak to the shelter manager. She has six children from her child care center in the van. She states the flood water was rising in her area so she had to leave before all the parents picked up their children. She has been unable to locate the parents of these six children and needs to leave them at the shelter so she can go check on her own home.

Exercise Scenario # 4: Influenza outbreak

Scenario:

Hospitals and physician offices have been reporting to their local health department an increased number of patients seeking treatment for flu-like symptoms. This is unusual for this time of year. Communities throughout the country are reporting similar cases. The CDC has identified that the symptoms are caused by a new influenza strain. Young children, pregnant women and the elderly seem more susceptible to the strain and have been requiring admission to the hospital and intensive care management due to the severity of the symptoms. Hospitals and pharmacies are experiencing shortages of oseltamivir phosphate (Tamiflu[®]). As the number of cases increases across the country, it is determined that a public health emergency exists nationwide. The Strategic National Stockpile (SNS) begins releasing supplies to protect from and treat influenza. Hospitals and physician offices/clinics are contacting their local health departments for guidance on patient management and to obtain medications to treat their patients.

Agency/organization and components to test:

This section outlines the agencies/organizations and the different components specific to children that could be tested in a drill/exercise using exercise scenario #4. Altering the scenario (e.g. cause of the outbreak {food borne}, different populations affected by the outbreak) would allow the scenario to test different components of each agency/organization's plans. The information listed below can assist an agency/organization in identifying the components to test within their plans and guide the development of exercise objectives.

- Output Public health
 - 1) Surveillance
 - Receiving/obtaining accurate information and communicating information to hospitals, clinics, and the community
 - 3) Activation of the Strategic National Stockpile (SNS)
 - 4) Obtaining supplies and medications for children through the request for medical resource (RFMR) process
 - 5) Keeping well patients who arrive for prophylaxis separate from ill patients
 - 6) Staff shortages, especially staff trained to provide medications to children
- Clinics/physician offices/urgent care facilities
 - Receiving/obtaining accurate information and communicating this information to parents, staff and colleagues
 - 2) Surveillance and reporting/communicating with local health department
 - 3) Obtaining supplies and medications
 - 4) Scheduling an increased number of patients
 - 5) Accepting non-established patients to receive vaccinations
 - 6) Keeping well patients who arrive for prophylaxis separate from ill patients
 - 7) Staff shortages



Sample victim list:

The following is a sample list of children that may be encountered during scenario # 4 that can assist exercise designers. Five child profiles are provided. Based on the scale of the drill/exercise and the capabilities being tested, the information below for each child profile as well of as the number of children could be expanded upon to meet the objectives of the exercise. In addition, adult profiles could be added following the same format.

- 1) The stockpile of vaccinations and oseltamivir phosphate (Tamiflu[®]) has arrived at a local health department and a dispensing site has been established at a local school. As community residents begin to arrive, a family of four arrives that includes twin six month old infants. The nurses that are at the dispensing site do not feel comfortable administering IM injections to infants.
- 2) The stockpile that was received has a very limited quantity of liquid suspension of the oseltamivir phosphate (Tamiflu[®]) and the dispensing site quickly runs out. Numerous families with smaller children who need the liquid suspension formulation continue to arrive at the dispensing site requesting the prophylaxis medication.
- 3) A five year old child with multiple known allergies arrives with his parents to receive the vaccination. After verifying through multiple sources that his allergies do not exclude him from receiving the vaccination, the child receives the injection. Within fifteen minutes of receiving the injection, the parents return to the nurse who administered the injection because the child has developed hives and swelling to his face.
- 4) A woman who is six months pregnant arrives to receive the vaccination. She wants to know if the vaccination is safe for her unborn baby.
- 5) When the local news media announced information regarding the dispensing location, they included that residents can also receive their vaccination and/or prophylaxis medication from their primary physician's office. Since this announcement, the local pediatric clinic has been receiving many phone calls requesting appointments to obtain the vaccination/medications. In addition, some families are showing up to the clinic without an appointment and other families who have never been seen at the clinic have also come to the clinic requesting the vaccination and/or prophylaxis medication in a liquid.

Exercise Scenario # 5: F5 Tornado Scenario:

An F5 tornado has struck a community causing significant, devastating damage to several areas of the town. The tornado occurred at 1:00 pm on a weekday. A few of the structures that were hit directly by the tornado include: a local factory, an elementary school, several stores, a housing subdivision, and a child care center.

Agency/organization and components to test:

This section outlines the agencies/organizations and the



different components specific to children that could be tested in a drill/exercise using exercise scenario #5. Altering the scenario (e.g. different areas/structures hit by tornado, number of victims, and time of day) would allow the scenario to test different components of each agency/organization's plans and allow the scenario to apply to different agencies/organizations. The information listed below can assist an agency/organization in identifying the components to test within their plans and guide the development of exercise objectives.

- Schools/child care centers
 - 1) Shelter in place (during the storms and after the tornado strikes for those schools/child care centers not directly damaged by the tornado)
 - 2) Evacuation (evacuating students out of the building when damaged; relocating to secondary site once students are out of the building; communication with families)
 - 3) Reunification
 - 4) Recovery (restarting school either at current location or in a temporary location)
- Law enforcement
 - Reunification (protecting children and assisting hospitals, schools and child care centers with placement of unaccompanied minors - e.g. locate parents, identify if parents were injured or killed during tornado)
 - 2) Mass fatality (identification of child victims)
- ♦ Hospitals
 - 1) Influx of pediatric patients
 - 2) Reunification
 - 3) Mass fatality (supplies to care for large number of pediatric fatalities e.g. bereavement kits; identification of victims and family notification)

Sample victim list:

The following is a sample list of children that may be encountered during scenario # 5 that can assist exercise designers. Five child profiles are provided. Based on the scale of the drill/exercise and the capabilities being tested, the information below for each child profile as well as the number of children could be expanded upon to meet the objectives of the exercise. In addition, adult profiles could be added following the same format.

1) Schools (reunification): Part of the school was struck by the tornado. As students and teachers are making their way out of the school and first responders work to dig through the rubble to get additional students out, parents are arriving on scene, looking for their children. No records are

available to identify parental information. In the chaos of the incident and the amount of responders on scene, some of the parents quickly leave with their child without informing staff.

- Schools (recovery): Part of the school received significant damage during the storm. During the recovery phase, there is a push from the community and local officials to open school again as soon as possible.
- 3) Law Enforcement (reunification): The local hospital has called to ask for help with locating the parents of four children that were brought to the hospital by EMS. All four children state their parents work at the local factory. The local factory was leveled by the tornado and responders are still on scene, digging through the rubble to find survivors.
- Law Enforcement (mass fatality): Several students were killed when the tornado struck their elementary school. Parents have been directed to the police station to locate and possibly identify their children.
- 5) Hospital (mass fatality): Multiple child victims who were killed due to the injuries they sustained when the tornado struck their school were brought to the hospital by EMS. Families are starting to arrive at the hospital looking for their children. The parents were only told by school staff that their children were taken to the local hospital.

Exercise Scenario # 6: Violent intruder at an elementary school

Scenario:

A man claiming to be the father of two children who attend the elementary school is in the main office requesting staff bring his children to the office so he can leave with them. He is agitated and yelling. A staff member informs him that the children he is looking for do not attend this school and ask him to leave the school campus. A security staff member arrives at the office and the man agrees to leave. Staff notifies police. The next day, the security staff member is conducting his rounds outside the school building and notices the same man enter the building through an open door. Security calls the main office to inform them and then calls the local law enforcement agency. A few minutes later, gun fire is heard in the area of the main office. As the security staff member enters the school, he sees the man leave the main office and head toward the classrooms.

Agency/organization and components to test:

This section outlines the agencies/organizations and the different components specific to children that could be tested in a drill/exercise using exercise scenario # 6. Altering the scenario (e.g. location of the incident {type of school/child care center to vary the age groups affected}, weapons used {fire arms, explosive devices}) would allow the scenario to test different components of each agency/organization's plans. The information listed below can assist an agency/organization in identifying the components to test within their plans and guide the development of exercise objectives.

- Schools/child care centers
 - 1) Lockdown
 - 2) Violent intruder
 - 3) Shelter in place
 - 4) Evacuation
 - 5) Reunification
 - 6) Recovery (addressing mental health needs of students and staff)
- ♦ Law enforcement
 - 1) Active shooter response
 - 2) Mass fatality (identification of child victims)

Sample victim list:

The following is a sample list of children that may be encountered during scenario # 6 that can assist exercise designers. Five child profiles are provided. Based on the scale of the drill/exercise and the capabilities being tested, the information below for each child profile as well of as the number of children could be expanded upon to meet the objectives of the exercise. In addition, adult profiles could be added following the same format.

- 1) Law enforcement: As the team enters the school and begins to search for the intruder, an explosive device is found outside one of the classrooms with one teacher and 20 students inside.
- 2) Law enforcement: As the team enters one classroom, the first grade students run toward the officers and begin grabbing at and clinging to them.



- **3)** Law enforcement: The armed man has barricaded himself in the cafeteria where there are six staff members and 40 children.
- 4) Schools: The notification of the armed intruder is sent out just as a class session ends and students are in the hallways, making their way to their next classroom.
- 5) Schools: Classes are cancelled immediately following the incident. What measures are needed to ensure the staff and students feel safe to return to school when classes resume?

Conclusion

Most disasters that occur will likely impact children since children comprise a significant percentage of the population. It is critical that all response agencies, including health care organizations, first responders (EMS, Fire and law enforcement), public health, schools, child care centers, and emergency management agencies, address the needs of children in their response plans and include children when they test these plans. By making it a standard practice to include children and CSHCN/CFAN in every drill and exercise, agencies/organizations can adequately test the capacity of the system to handle a disaster with child victims.

Glossary

- Alternate care sites (ACS)/alternate treatment sites (ATS)/temporary medical treatment sites (TMTS): Sites (either at hospitals in areas not traditionally used for patient care or in non-healthcare settings) that are used to provide medical care to victims during disasters when the health care system is overwhelmed
- Children with special healthcare needs (CSHCN)/Children with functional access needs (CFAN): Children with physical, developmental, behavioral and/or emotional conditions that require health and related services of a type that is beyond what is routinely required by children.
- Disaster: A disaster is an occurrence disrupting the normal conditions of existence and causing a level of suffering that exceeds the capacity of adjustment of the affected community.
- Disaster Plan: A written plan that describes the practices and procedures used to prepare for and respond to emergency or disaster situations. Same as an Emergency Operations Plan.
- Emergency Operations Plan (EOP): A written plan that describes the practices and procedures used to prepare for and respond to emergency or disaster situations. Same as a disaster plan.
- Federal Emergency Management Agency: FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain and improve our capability to prepare for, protect against, respond to, recover from and mitigate all hazards.
- Homeland Security Exercise and Evaluation Program (HSEEP): Capabilities and performance-based exercise program which provides a standardized policy, methodology, and terminology for exercise design, development, conduct, evaluation, and improvement planning.
- Illinois Emergency Support Function (ESF) 8 Plan: Pediatric and Neonatal Surge Annex: The Illinois Department of Public Health's (IDPH) medical disaster state response plan is titled the IDPH Emergency Support Function (ESF) 8 Plan. To address the needs of specialty populations, annexes have been developed to the IDPH ESF-8 Plan. One of these annexes, the Pediatric and Neonatal Surge Annex, outlines the state response and provides local guidance during an incident that affects children. The Annex also contains patient care guidelines to assist practitioners when providing medical care to children during a disaster.
- Incident Command System (ICS) : A standardized organizational structure used to command, control, and coordinate the use of resources and personnel that have responded to the scene of an emergency. The concepts and principles for ICS include common terminology, modular organization, integrated communication, unified command structure, consolidated action plan, manageable span of control, designated incident facilities, and comprehensive resource management.
- JumpSTART MCI Triage: Pediatric disaster triage process that can be utilized during a mass casualty incident.
- Mass casualty incident (MCI): Any incident in which the medical response resources are overwhelmed by the number and severity of casualties.
- Memorandum of Understanding (MOU): Written agreement between two or more parties obtained before a disaster that outlines the relationship, establishes protocols, provides additional resources and/or assists with the coordination efforts in response to a disaster.
- Response: Activities that address the short-term, direct effects of an incident, including immediate actions

to save lives, protect property, and meet basic human needs. Response also includes the execution of emergency operations plans and incident mitigation activities designed to limit the loss of life, personal injury, property damage, and other unfavorable outcomes.

- Reverse Triage: Triage process used during the immediate evacuation of a hospital's inpatient units to determine the order in which to evacuate patients. Those patients who are ambulatory or require very few resources are evacuated first; those patients who require some resources are evacuated second; and those patients who require critical care or the most resources are evacuated last.
- START MCI Triage: Adult disaster triage process that can be utilized during a mass casualty incident.
- Strategic National Stockpile (SNS): The national repository of antibiotics, vaccines, chemical antidotes, antitoxins, and other critical medical equipment and supplies.
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Appendix A: Sample Volunteer Release for Exercise Participation

This Appendix contains two forms that can assist agencies/organizations when using live volunteers (both adults and children) in a drill or exercise. These forms can be used together or separate. The first form is a Medical Questionnaire to ensure volunteers are healthy enough to participate in the exercise. The second form is to obtain consent from volunteers to participate in the exercise.

	(insert agency/organization) MEDICAL QUESTIONNAIRE *PLEASE READ CAREFULLY*
1.	Do you consider yourself to be in good health? Yes No (If you are not feeling well on day of exercise, please do not attend)
2.	Do you have any existing medical condition(s) that would put you at risk if you participated in the exercise either causing injury to yourself or further exacerbating (making worse) your medical condition? Yes No
3.	Do you take any medication that will put you at risk? Yes No
4.	Have you had any knee or back problems? (This information will not prohibit your participation in the exercise but will aid us in giving you an appropriate assignment). Yes No
5.	In your opinion, do you have any medical conditions that would limit your ability to perform the role of "victim" safely? Yes No
6.	Do you place any limits on yourself to avoid physical or medical problems? (e.g. hearing, vision, mobility limitations). Yes No *** Please explain if you answered "Yes."
7.	Do you have any allergies to medication(s), insects, other? Yes No
9.	It yes, please list
	If yes comment:
The	If yes comment:
The Con	If yes comment:

Appendix A: Sa	ample Volunte	eer Release f	or Exercise
Participation	(continued)		

Volunteer Release for Exercise

(INSERT AGENCY/ORGANIZATION NAME) DISASTER EXERCISE Consent and Release

- 1. I, _____ (participant), consent to participate in a "mock" disaster drill conducted by _____.
- I understand that the "mock" disaster drill is required by law as to enable local government and hospitals and other health care institutions to meet their responsibilities for emergency response and the care of emergency victims in the event of any disaster.
- 3. I understand that as a participant in the 'mock" disaster exercise, ______ (name of participant) may have make-up applied so as to look like a "disaster victim"; may be transported by stretcher, wheelchair, paraslyde or some other method including a participating ambulance company vehicle. May be requested to participate in a mock decontamination and may get wet (Participant should bring swimwear if willing to be decontaminated). NO DECONTAMINATION FOR THIS EXERCISE
- 4. I _____ (name of participant) <u>does not</u> have any medical condition which would preclude participation in the "mock" disaster drill.
- 5. In consideration for being given the opportunity to participate, I voluntarily agree to release (Hospital Name, Municipal Name any other public or private participant, their officers, agents, employees, and all personnel for their heirs, dependents, and assigns from any and all liability for any participation in and observation of the "mock" disaster drill. I recognize and agree to assume any and all risks. I agree that my insurance will provide primary coverage.
 - 6. I further consent to the taking of photographs and videotapes of the disaster drill which may include pictures. I understand that these photographs or videotapes may be retouched and that no one will be identified by name without prior consent.

SIGNATURE OF PARTICIPANT	PRINT NAME	
(SIGNATURE OF LEGAL GUARDIAN IF PARTICIPANT IS UNDER 18)	PRINT NAME	
RELATIONSHIP TO PARTICIPANT	_	
ADDRESS	TELEPHONE	

NOTES





Hospital Guidelines for Pediatrics in

Disasters

2006 1st Edition Draft for Public Comment Comment Period May 1, 2006 – June 30, 2006

Created by: CBPP Pediatric Task Force & NYC DOHMH Pediatric Disaster Advisory Group



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First Edition

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Introduction

CBPP Pediatric Task Force Initiative: Hospital Guidelines for Pediatrics in Disasters Draft for Public Comment

INTRODUCTION

During of a mass casualty or terrorist event, it is recognized that all hospitals, even those that are not pediatric trauma centers or specialized pediatric hospitals, might receive critically ill or injured pediatric patients. Additionally, it is acknowledged by the health care community of New York City that there has been limited attention to the specific needs of the pediatric population and their families in disaster response preparation. This planning gap has been recognized by the New York City Department of Health and Mental Hygiene (DOHMH). The Department in turn tasked the Centers for Bioterrorism Preparedness Planning (CBPP)¹ to assist the DOHMH in preparing NYC hospitals for the needs of this special population.

Two CBPPs, the Central Brooklyn Center for Bioterrorism Preparedness Planning and the New York Center for Terrorism/Casualty Preparedness, have been the institutional leaders in this initiative. The goal of their efforts is to provide hospitals, especially those that do not normally admit children, or have no Pediatric Intensive Care Services or Obstetrical/Newborn services, some useful, proactive planning strategies and tools for providing protection, treatment, and acute care for pediatric patients during a disaster. The following hospital guidelines and recommendations for children in disasters are the first examples of the on-going work of the CBPP Pediatric Task Force.

STRUCTURE OF CBPP PEDIATRIC TASK FORCE

The CBPP Pediatric Task Force is comprised of pediatric emergency medicine and critical care physicians, social workers, emergency managers, and others with specific training, interest, and experience in pediatric specialty care. The task force met bimonthly during 2005 and 2006 to discuss hospital mass casualty preparedness planning and necessary pediatric-specific care considerations. The role of the Pediatric Task Force has been to provide a pediatric disaster preparedness focus and expert multi-disciplinary advice to hospitals to prepare for pediatric care considerations in the event of a disaster.

This group met and developed a mission statement at the beginning of 2005:

"We, the CBPP Pediatric Task Force, under the guidance/auspices of the NYC DOHMH Pediatric Disaster Advisory Group, in an effort to safe-guard the pediatric population, will advise the Healthcare community and NYC agencies on the appropriate planning necessary to ensure the proper care of children and their families in the event of a disaster." Clear specific outcomes for 2005-2006 project years were developed and agreed on by the entire task force with additional input and approval from DOHMH. It was the plan of the group to not have too large an initial set of goals so that success could be achieved. The CBPP Pediatric Task Force has been slated by the NYC DOHMH to continue for an additional year, refining and adding to the "Hospital Guidelines for Pediatrics in Disasters," and addressing other regional pediatric health issues in the future.

FOCUS OF GUIDELINES

At the first meeting of the CBPP Task Force, three groupings of "hospitals of concern" were identified: Hospitals without Pediatric Services, Hospitals without Pediatric Intensive Care Services, and Hospitals without Pediatric Trauma Services. Additionally, ten section topics related to pediatric disaster preparedness were selected:

- Staffing
- Space and Equipment Needs
- Security
- Transportation Needs
- Training Recommendations
- Psychosocial / Ethical Considerations
- Pediatric Dietary Needs
- Decontamination of Children
- Pharmaceutical Planning
- Pediatric Infection Control Considerations

Although these ten topics are not comprehensive in regard to all aspects of planning for the special needs of the pediatric population, creating some useful expertreviewed guidance documents and planning tools in these areas would greatly reduce the amount of development and planning time for each individual hospital.

Individual task members contributed draft documents in the areas of interest and expertise, including literature searches for each area, and reported back to the group. In the area of Pediatric Disaster Preparedness it was discovered that literature existed, yet most of what was found gave only generalized recommendations. Contributors have attempted to develop user-friendly "how to" documents with clear and specific suggestions. Many of the documents were created based on the group member's own hospital-based experience. Others were adapted from available resources. All drafts have been initially reviewed by task force members with several iterations being created.

REVIEW PROCESS

All documents created by the task force have had additional review by the NYC DOHMH Pediatric Disaster Advisory Group (PDAG). This advisory group was established

to support the efforts of the NYC DOHMH pediatric preparedness and response planning efforts for New York City. PDAG members include pediatric experts from multiple academic and community hospitals in the New York City metropolitan region, as well as representatives from city and state agencies. The almost 50 members of PDAG reviewed and contributed comments on the following documents, and also made suggested to topics to be addressed by the CBPP Pediatric Task Force and the NYC DOHMH in future.

General Recommendations of the CBPP Pediatric Task Force Concerning Hospital Planning for Pediatrics during a Disaster

I. All Hospitals Should Plan for Pediatric Patients Arriving during a Disaster

The following document addresses the issues surrounding pediatric emergency care during a disaster. It is presented under the supposition that all hospitals need to recognize the potential for receiving pediatric patients during a disaster and appropriately plan for pediatric mass casualty care. In a disaster event, the following may occur:

- 1. Pediatric patients might present to ANY hospital
- 2. Critically ill pediatric patients might present to ANY hospital
- 3. Transfer of patients to specialized hospitals might not be feasible

Therefore, during disasters all hospitals and all providers must be prepared to deliver care to pediatric patients. During the 9/11 terrorist event, nearly 100 different hospital received patients. While most of these patients walked, ran, took buses, taxis or boats, the minority waited to be transported by ambulance. Self-evacuating pediatric victims and their care givers will go to the nearest hospital, the most convenient hospital, or the hospital they are most familiar with regardless of the capabilities of that hospital for specialty or pediatric care.

All hospitals, even those that are not pediatric trauma centers or specialized pediatric hospitals, might receive critically ill or injured children in a mass casualty or disaster event. Pediatric patients may initially be brought to the nearest centers, as ambulances attempt to expedite their return to the disaster scene to maximize the care of patients. Even after on-scene triage is established, severely injured children may be brought to the nearest medical centers because the patient is simply too unstable to survive a longer transport time. Additionally, due to traffic congestion, unsafe conditions, or lack of appropriate vehicles, ambulances may be initially unable to perform more distant transportation.

Each hospital, even hospitals that do not routinely provide pediatric services, needs to plan for the possibility that pediatric patients arriving at their hospital during a disaster might require emergency evaluation, critical care, surgical services, inpatient care, and psychosocial support and should be prepared to offer these services accordingly.

II. Plan for Transport of Pediatric Patients

Hospital centers should address the possibility that the number of pediatric patients requiring admissions might exceed their normal patient capacity or expertise of hospital staff. For those centers without speciality pediatric services, transfer of patients to a center with specialty pediatric services may be necessary. <u>Hospitals</u>

should establish relationships with appropriate hospital facilities that do admit pediatric and obstetrical patients, and a Stabilize and Transfer Agreement should be developed with those facilities.

Consideration for agreements should go beyond traditional network relationships and should include geographical proximity due to the unpredictability of traffic obstructions during the acute phase of a disaster.

III. Plan for Pediatric In-Patient Care if Transport is Delayed

During the first 24 to 48 hours of a disaster involving much of the region, transfer might be difficult or impossible due to local conditions, lack of transport vehicles and personnel, or lack of capacity at pediatric resource hospitals. Therefore, all hospitals must be prepared to provide emergent pediatric care and in-patient admission, even for critically injured pediatric patients until such time that safe transport can be arranged. For hospitals without pediatric intensivists or pediatric trauma surgeons, it is recommended that relationships be developed with pediatric intensive care specialists and pediatric trauma surgeons at outside hospitals to provide, at the minimum, telephone consultations or support for admitting physicians.

IV. Survey Staffing for Pediatric Expertise

Physicians, nurses, Social Workers, and other staff in the emergency department (ED) and in-patient areas at a given hospital must have the necessary skill, knowledge and training to provide timely efficient care in the event of a disaster. Many levels of staffing are required including the ability to provide emergency evaluation and treatment of children who may be brought to the ED. Yet, not every hospital has a full complement of pediatric specialists and nurses.

It is recommended that individual hospitals and networks survey their own staff and admitting physicians to develop a database of personnel with pediatric experience and training. For example, the Emergency Department physicians may have considerable experience with children; Anesthesiologists and/or Otolaryngologists may be knowledgeable about intubations of children.

V. Appoint a Pediatric Physician Coordinator and a Pediatric Nursing Coordinator

It is recommended to appoint both a Physician Coordinator for Pediatrics, and a <u>Nursing Coordinator for Pediatrics</u>. These coordinators should serve as a liaison between different internal and external hospital pediatric care committees, provide assistance and support for education of hospital providers affiliated with the ED and assist in the development and use of pediatric hospital protocols and procedures. It is envisioned that these positions would advocate for children's needs during planning and responding to a disaster involving children.

VI. Increase Pediatric and Disaster Training

Increased numbers of medical staff should be trained to provide appropriate basic pediatric emergency care in Advanced Cardiac Life Support (ACLS), Advanced Trauma Life Support (ATLS), Advanced Pediatric Life Support (APLS), basic disaster education and pediatric disaster drills. Additionally, there are training courses provided by the American Heart Association, called Neonatal Advanced Life Support (NALS) and Pediatric Advanced Life Support (PALS), of which "abridged" versions may be taught to hospital staff on an ongoing basis. Updates and re-certifications should be arranged as well. New versions of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) Hazardous Materials Classes should include pediatrics and the specific needs of children and their families during a disaster involving hazardous materials.





Section 1. Security

Pediatric Security Issues during a Disaster

Draft for Public Comment

PURPOSE:

Previous literature regarding the security of the pediatric population primarily addressed preventing infant abductions. The recent Gulf Coast hurricanes of 2005 highlighted the importance of this critical need in the care of the pediatric population. The following recommendations for pediatric security during a disasters is intended to assist planning for the needs of all pediatric patients presenting to any hospital during a disaster. The recommendations included in this section focus primarily on pediatric patient/visitor tracking and creating pediatric safe areas.

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•	 Child ID Survey Form Sample survey form utilized in the Protocol to Rapidly Identify and Protect Displaced Children 	1-6				
•	 Setting Up a Pediatric Safe Area (PSA) Recommendations for establishing a supervised area within the hospital to safely cohort unaccompanied children during a disaster 	1-7				
•	 Pediatric Safe Area Checklist Steps useful to create a Pediatric Safe Area 	1-8				
•	Job Action Sheet: Pediatric Safe Area Coordinator o JAS for supervising staff for the Pediatric Safe Area	1-9				
•	 Pediatric Safe Area Registry Sheet Sample registry form for the Pediatric Safe Area, utilized to assist staff to document location and final disposition of children 	1-10				

GENERAL GUIDELINES:

All hospitals responding to a disaster are advised to:

- 1. Develop a Pediatric Tracking System that addresses both the accompanied and unaccompanied child.
- 2. Develop a protocol to rapidly identify and protect displaced children.
- 3. Create a Child ID document to record any key identifying information about children or use in later tracking or reunion with caregivers.
- 4. Create Pediatric Safe Areas that will serve as a holding area for uninjured, displaced or released children awaiting adult caregivers. A Pediatric Safe Area Checklist has been provided to assist in the establishment of such areas.
- 5. Identify a Pediatric Safe Area (PSA) Coordinator who will assume the responsibility of setting up and supervising the pediatric safe area in the event of a disaster. Included in this section is a Sample Job Action Sheet which outlines the PSA Coordinator position.
- 6. Create and use a Pediatric Safe Area registry sheet to document activity, such as transfer status, location, and final disposition, regarding the child.

PEDIATRIC PATIENT TRACKING

The issue of pediatric patient tracking has historically been restricted to maternity and pediatric wards. Much of the literature refers to the cases of infant security and the reduction of pediatric patient abductions from various hospital wards. There are specific measures discussed that can be taken to prevent the abduction of pediatric patients, such as the use of identification bands for the pediatric patient. However, there is no discussion of identification for the pediatric *visitor* in a hospital.

Hospitals have historically served as safe havens for displaced persons during a disaster. During the August 2003 Blackout, many members of the NYC community came to hospitals as secure places known to have functioning generators and supplying light, safety, and nourishment. Abandoned children are also often brought first to a hospital emergency department for evaluation. During a disaster, hospitals may again serve as safe havens and may find themselves host to displaced and unaccompanied children. As a recent example, Hurricane Katrina and the ensuing floods and chaos caused over 3,000 children to be displaced throughout the United States¹. These displaced children, if unaccompanied, are at special risk for maltreatment, neglect, exploitation, and subsequent psychological trauma. Hospitals and medical clinics will therefore need to be especially alert to the safety and mental health issues of these children.

The focus of this document is to raise the level of awareness regarding the issue of the pediatric population and security issues during an emergency or incident that would require a child to go to a hospital. Hospitals, especially those that do not routinely take care of the pediatric population, need to pay special attention to the specific security needs of this group and take the necessary precautions to ensure proper care of these individuals while they are in the hospital.

Patient Tracking - the Accompanied Child in a Disaster

There are two populations of accompanied children during a disaster that should be addressed:

- 1. The pediatric patient who is actually a patient of the hospital as a result of the disaster and who may become separated from the responsible adult; for example, if the responsible adult is also a patient.
- 2. The pediatric visitor who is <u>not</u> a patient of the hospital but who may be accompanying an adult person who is a patient; for example, a critical adult patient who was caring for a minor at the time of the disaster or event.

A possible solution to tracking these persons is to use a system of identification bands for the minors and corresponding responsible adults that are distributed as soon as these individuals make contact with ED area. Care must be taken to quickly and correctly place bands or other identification devices on both parties.

Special attention needs to be taken to ensure that this measure is completed as soon as possible at the entry point to the hospital to reduce the possibility of human error during the matching and placing of the bands.

There are hospital policies in place for the tracking of minors from pediatric and maternity wards. These identification bands are used on all patients as they enter the hospital. The specific concern raised here is minors accompanying the adults during a disaster-level event who could easily be lost during the chaos of a disaster event.

The identification bands used should include the following information which will be useful in maintaining a tight link between pediatric patient/ visitor and adult:

- Name of pediatric patient/ visitor + DOB
- Name of adult + DOB
- Admission date of adult
- Admission date of pediatric patient
- o Date of visit of pediatric visitor

In addition, a more sophisticated approach to tracking could be implemented by the use of bar coded bracelets as identifiers that can be affixed to the pediatric patient / visitor and to the adult at the time of entry to ED or other entry point of the hospital.

In this manner, the same bar code is assigned to the adult and the pediatric patient/ visitor (s) with the adult.

For further information, hospitals may also review the infant abduction protocols in place at their facility.

Patient Tracking - the Displaced or Unaccompanied Child in a Disaster

Rapid identification and protection of displaced children (less than 18 years) is imperative in order to reduce the potential for maltreatment, neglect, exploitation, and emotional injury. A critical aspect of pediatric disaster response is effectively addressing the needs of children who have been displaced from their families and legal guardians. The separation of children from significant others is a recognized factor influencing the psychological responses of children after a disaster.

All hospitals, medical clinics, and shelters providing care to child survivors of disasters should immediately implement appropriate child-safety measures in direct response to this crisis. Initiatives such as "Operation Child ID" implemented in Camp Gruber Oklahoma after Hurricane Katrina in 2005 have provided a rapid, systematic protocol for successfully identifying and protecting displaced children. The CDC has reviewed this protocol and considers it to be a useful resource to share with its partners to promote a safer and healthier environment for displaced children in shelters¹. The following protocol on page 1-5 has been adapted to address displaced children during disasters in New York City:

1. CDC Health Advisory, "Instructions for Identifying and Protecting Displaced Children." Sept. 28, 2005.

Protocol to Rapidly Identify and Protect Displaced Children

- Survey all children in your hospital, medical clinic, or shelter to identify children who are not accompanied by an adult; these children have a high probability of being listed as missing by family members. Find out where they are sleeping/being held and the name and age of person(s) who is/are supervising them, if available. A sample survey form for identifying displaced child is attached.
- Place a hospital-style identification bracelet (or, ideally, a picture identification card) on the child and a matching one on the supervising adult(s), if such an adult is available. Check frequently to make sure that the wrist band matches that of the adult(s) seen with the child in the hospital or shelter. If there is no supervising adult, the child should be taken to the hospital's pre-determined Pediatric Safe Area (see following pages) where he/she can be appropriately cared for until a safe disposition or reunification can be made.
- The names of all children identified through the survey as not being with their legal guardians or who are unaccompanied should be considered at high-risk and immediately reported to the hospital's emergency operations center. Additional reporting should also be made to the National Center for Missing and Exploited Children (NCMEC) at 1-888-544-5475. The NCMEC can then cross-check them with the names of children who have been reported missing.
- After the "high risk" children have been reported, a complete list of all children names in the hospital, clinic or shelter should be sent to NYS Hospital Emergency Resource Database System (HERDS) if activated and the information is requested. The complete list should also be sent the NCMEC in case adults and/or children have provided incorrect information about their relationship and status.
- Unaccompanied children and those who are not with their legal guardians should undergo a social and health screening taking into consideration an assessment of the relationship between the child and accompanying adult, ideally performed by a physician with pediatric experience.
- If NYS DOH, another NYC agency, or NCMEC informs you that the child has been reported as missing, locate the child and facilitate reunification of the child and his/her legal guardian.

1. CDC Health Advisory, "Instructions for Identifying and Protecting Displaced Children." Sept. 28, 2005.

Child ID Survey
Name: Hospital #
Age: Months/Years DOB
Gender: Male Female
Is the child currently accompanied by a supervising adult? Yes No
Name of currently the supervising adult?Age
Is this person a Parent? Yes No A Grandparent? Yes No
Is this parent the usual guardian? Yes No
Was the child living with this person before the disaster? Yes No
Does the supervising adult have any proof of legal guardianship or relationship to child? Yes No
If Yes, please describe or attach a copy:
If the adult(s) is not a Parent or Grandparent, what is the relationship to this child? Aunt/Uncle Age
Sibling Age
Friend Age
Other (next-of-kin, teacher) Age
Was the child treated for illness or have an injury? Yes No If yes, please describe:
Was the child admitted to the hospital? Yes No
If Yes, give room or location
If No, give location or address where child is currently (lobby, Pediatric Safe Area, sent to shelter, etc.)
Does this child have a history of medical problems? Yes No
If yes, please list:
Does this child or family members have special needs? Yes No
If yes, please list:

PEDIATRIC SAFE AREAS

Supervised areas should also be created to cohort all unaccompanied pediatric visitors or unaccompanied released pediatric patients in one central and safe location. This central location will need to be pre-assigned and secured to ensure that minors can not leave the area without appropriate escorts. Security personnel or other responsible staff will need to be trained to supervise and assist pediatric visitors who may be frightened or who have other mental health issues as a result of being involved in a disaster and separated from family members.

Included in this section are three forms that may be helpful for hospital planning required for a Pediatric Safe Area. These forms include:

- 1. Pediatric Safe Area Checklist. This form was adapted from the Chicago Department of Health, and outlines recommended steps to ensure that the Pediatric Safe Area is appropriately set-up to receive children.
- 2. Pediatric Safe Area Coordinator Job Action Sheet (JAS). Created for the staff coordinating these pediatric safe areas. By having a JAS, staff can readily review what steps need to be taken to prepare for the possible influx of pediatric patients. See JAS at the end of this chapter.
- 3. Pediatric Safe Area Register. This is a sample of a form that could potentially be used in the Pediatric Safe Area to monitor the arrival and departure of children. A copy of this register should be made available to the hospital EOC on a frequent basis.

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Pediatric Safe Area Checklist

YES	NO	ITEM
		Needle boxes are at least 48 inches off the floor?
		Do the windows open?
		Are the windows locked?
		Do you have window guards?
		Can you contain children in this area (consider stairwells, elevators, doors)?
		Do you have distractions for the children (age and gender appropriate videos, games, toys)?
		Poison-proof the area (cleaning supplies, Hemoccult
		developer, choking hazards, cords should be removed or locked)
		Are your med carts and supply carts locked?
		Do you need to create separate areas for various age groups?
		Have you conducted drills of the plans for this area with all relevant departments?
		Do you have a plan for security for the unit?
		Do you have a plan to identify the children?
		Do you have a plan for assessing mental health needs of these children?
		Are there any fans or heaters in use? Are they safe?
		Do you have an onsite or nearby daycare? Could they help you?
		Do you have enough staff to supervise the number of children (Younger children will require more staff)?
		Do you have a sign-in sign-out sheet for all children and adults
		who enter the area?
		Will children need to be escorted away from safe area to bathrooms?
		Are age appropriate snacks available for children?

Sample Job Action Sheet

PEDIATRIC SAFE AREA (PSA) COORDINATOR

You report to: Command Cer	e(PEDIATRIC SERVICES UNIT LEADER) hter
Mission:	To ensure that the pediatric safe area is properly staffed and stocked for implementation during an emergency, and to insure the safety of children requiring the PSA until an appropriate disposition can be made.
Immediate:	Receive appointment from Pediatric Services Unit Leader Read this entire job action sheet Obtain briefing from Pediatric Services Unit Leader Ascertain that the pre-designated pediatric safe area is available If not immediately available, take appropriate measures to make the area available as soon as possible Gather information about how many pediatric persons may present to the area Make sure that enough staff is available for PSA Make sure that enough security staff is available for PSA Make sure that there is adequate communication in PSA Make sure that all items in PSA checklist have been met; if there are any deficiencies, address them as soon as possible and report them the PSUL
	Ascertain the need for ongoing staff for PSA Maintain registry of children in PSA as they arrive or are released to appropriate adult Determine estimated length of time for the expected operational period of PSA Maintain communication with Pediatric Services Unit Leader for planning needs Determine if there are any medical or non-medical needs specifically needed by pediatric persons in PSA Prepare an informational session for the pediatrics persons in the PSA Prepare to make arrangements for sleeping capacities if needed Ascertain if there will be any additional needs required for this event (volunteers, staff, security, and equipment) Make sure that pediatric persons have the appropriate resources (food, water, medications, age-appropriate reading materials) and entertainment for their stay Report frequently to Pediatric Services Unit Leader concerning status of PSA
Extended: 	Make sure that PSA staff have enough breaks, water, and food during their working periods Coordinate with Psychological Support for ongoing evaluations of mental health of volunteers and pediatric persons in case of need for psychosocial resources Document all action/decisions with a copy sent to the Pediatric Services Unit Leader Other concerns:

Pediatric Safe Area Registry Sheet

#	N COUL		Arrival	Discharge	D: :/·			Contact Phone
#	Name of Child	Age	Time	Time	Disposition	Kesponsible Adult Name	Responsible Adult Signature	Number
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
Disp Res	Disposition: Admit to Hospital (A) Discharged to Parent (D-P) Discharged to relative (D-R) Discharged to Other (D-O) Social Services Placement (SS) Police (NYPD) Responsible Adult: Adult responsible for child at time of discharge. PSA Coordinator should determine if child can be discharged to this adult based on hospital policy.							





Section 2. Dietary

Pediatric Dietary Needs

Draft for Public Comment

PURPOSE:

In order to adequately prepare for an influx of pediatric patients that may result from a disaster involving children, hospitals must also consider the requirements for providing food to this population while they are patients or visitors in the facility. The Pediatric Dietary section provides nutritional guidelines for hospitals that do not typically provide pediatric in-patient services.

The recommendations in this section include: pediatric dietary recommendations for healthy children and children with special needs, and sample disaster menus for children including those that have special dietary needs. The menus focus on foods that require little to no preparation and are both easy and inexpensive to store.

SECTION CONTENTS:

•	General Guidelines	2-1
•	Table 2.1 Pediatric Dietary RecommendationsoHealthy ChildoSpecial Needs ChildoDiabetic Child	2-2 2-2 2-3 2-3
•	Sample Pediatric Disaster Menu A sample diet for pediatric patients listing foods that require a minimal amount of preparation or power supply to maintain food 	2-4

temperatures

GENERAL GUIDELINES:

The CBPP Pediatric Task Force recommends that hospitals maintain a 5-day food supply for use during an emergency. It is also recommended that each institution maintain Memorandums of Understanding (MOUs) with nearby stores, for example: local groceries, pharmacies, and medical supply stores, to provide the hospital with immediate delivery and additional supplies.

The nutritional supplies recommended for both healthy children and those with special dietary needs are listed in Table 2.1 Pediatric Dietary Recommendations found on the following pages.

TABLE 2.1 PEDIATRIC DIETARY RECOMMENDATIONS				
	0-6 months	6 months to 1 year	1 to2 years	2 years and above
Healthy Children	These children are breast fed or formula fed by bottle only. Comments: Some breast fed children may not immediately take bottle-feeding. Continue to feed; eventually the child will feed from the bottle. Recommendation: Ready-to-feed formula is preferred since it is immediately ready for use and requires no refrigeration or preparation. However, powdered baby formula may be used as well. Powdered formula will have a longer shelf life.	6-9 months - baby cereal, jarred baby food or mashed table food is appropriate - along with formula or breast milk 9-12 months - soft, bite sized pieces of foods, i.e. vegetables, mashed potatoes, and meats - along with formula or breast milk	This age group eats table food. Young children will need soft bite sized foods. Avoid foods that can cause choking such as hot dogs, grapes, chunks of meat unless cut in pea size pieces Hydration: Water, Pedialyte SEE ATTACHED SAMPLE MENU	This age group eats table food. Young children will need finger foods. Avoid foods that can cause choking such as hot dogs, grapes, for youngest children. Hydration: Water, Pedialyte SEE ATTACHED SAMPLE MENU

Children With Special Needs	Patients with feeding tubes: There are (3) types of tube feeding: Nasogastric (N/G), Orogastric, and Gastrostomy (G/T). The first two are used for acute patients; the third is used for chronic patients. N/G and O/G Tube: Used for both nasal and orogastric feedings and are temporary measures, mostly used in Pediatric Emergency Rooms or Pediatric In-Patients areas for acute feeding issues, gastric decompression, and/or delivery of oral medications such as activated charcoal.			
	G/T Tube: Used with a 60cc syringe, catheter tip and is used with a bolus continuous feed or pump.			
	Infants (0-12months): Infant formula should be used through the tube.			
	12 months to18 years of age: Pediatric formulas should be used, <i>i.e.</i> Resource Just for Kids, PediaSure or Nutren Jr. For adolescents, based on clinical judgment adult enteral product may be appropriate.			
	Hydration: Tap or bottled water.			
	 Comments: The same feeding pump used for adults can also be used to feed children Use saline water to clean the area where the feeding tube is inserted into the patient. Change feeding bags every 8 hours and clean prior to adding more formula. 			
Diabetic Children	The nutritional needs of this group will be determined by the patient's body weight and insulin requirements.			
	Recommendation: Patients may require between meal snacks to control blood glucose.			

REFERENCES:

ADA Manual of Clinical Dietetics. (2000), Sixth Edition.
SAMPLE PEDIATRIC DISASTER MENU				
The following sample diet for pediatric patients lists foods that require the minimal amount of preparation or power supply to maintain temperatures.				
	Day 1	Day 2	Day 3	
	Breakfast	Breakfast	Breakfast	
0-6 months	Regular or Soy Formula	Regular or Soy Formula	Regular or Soy Formula	
	Baby Cereal	Baby Cereal	Baby Cereal	
6 months - 1 yr.	Jarred Baby Fruit	Jarred Baby Fruit	Jarred Baby Fruit	
	Regular or Soy Formula	Regular or Soy Formula	Regular or Soy Formula	
	Cheerios (or Substitute)	Cheerios (or Substitute)	Cheerios (or Substitute)	
1 yr. and	Parmalat (1-2 years)	Parmalat (1-2 years)	Parmalat (1-2 years)	
above	Powdered Milk (> 2 years)	Powdered Milk (> 2 years)	Powdered Milk (> 2 years)	
	Diced Canned Fruit	Diced Canned Fruit	Diced Canned Fruit	
	Lunch	Lunch	Lunch	
0-6 months	Regular or Soy Formula	Regular or Soy Formula	Regular or Soy Formula	
	Jarred Baby Meat	Jarred Baby Meat	Jarred Baby Meat	
6 months - 1 vr	Jarred Baby Vegetable	Jarred Baby Vegetable	Jarred Baby Vegetable	
6 monuis - i yi.	Jarred Baby Fruit	Jarred Baby Fruit	Jarred Baby Fruit	
	Regular or Soy Formula	Regular or Soy Formula	Regular or Soy Formula	
	Cream Cheese/Jelly Sandwich	Macaroni and cheese	Cheese Wiz©	
	Jarred Baby Vegetable	Jarred Baby Vegetable	Jarred Baby Vegetable	
1 yr 2 yrs.	Diced Peaches	Diced Pears	Diced Fruit Cocktail	
	Bread/Crackers	Bread/Crackers	Bread/Crackers	
	Parmalat	Parmalat	Parmalat	
	Cream Cheese/Jelly Sandwich	Macaroni and cheese	Peanut Butter/Jelly Sandwich*	
2 vre plus	Diced Peaches	Diced Pears	Diced Fruit Cocktail	
2 yrs. pius	Graham Crackers	Graham Crackers	Graham Crackers	
	Powdered Milk	Powdered Milk	Powdered Milk	
	Dinner	Dinner	Dinner	
0-6 months	Regular or Soy Formula	Regular or Soy Formula	Regular or Soy Formula	
	Jarred Baby Meat	Jarred Baby Meat	Jarred Baby Meat	
6 months - 1 vr	Jarred Baby Vegetable	Jarred Baby Vegetable	Jarred Baby Vegetable	
o montrio i yi.	Jarred Baby Fruit	Jarred Baby Fruit	Jarred Baby Fruit	
	Regular or Soy Formula	Regular or Soy Formula	Regular or Soy Formula	
	Cheese slices - chopped	Canned Chicken - Chopped	Cheese Ravioli	
	Jarred Baby Vegetable	Jarred Baby Vegetable	Jarred Baby Vegetable	
1 yr 2 yrs.	Applesauce	Bananas	Baby Fruit	
	Bread/Crackers	Bread/Crackers	Bread/Crackers	
	Parmalat	Parmalat	Parmalat	
	Cheese Sandwich*	Canned Chicken Sandwich	Cheese Ravioli	
2 vre plus	Diced Fruit Cocktail	Diced Peaches	Diced Pears	
2 yrs. pius	Graham Crackers	Graham Crackers	Graham Crackers	
	Powered Milk	Powdered Milk	Powdered Milk	





Section 3. Surge Considerations

Emergency Department Surge Considerations and In-Patient Bed Assignments for Pediatric Patients during a Disaster Draft for Public Comment

PURPOSE:

These recommendations are intended to help hospitals prepare for surge capacity needs, such as additional bed resources and emergency department space allocation, which may arise in the event of a disaster involving children. The section presents a model disaster scenario that can be scaled according to the predicted response of each individual hospital and includes general principles that should act as guidelines for all hospital disaster plans.

SECTION CONTENTS:

•	General Guidelines	3-1
•	Transfer Considerations for Hospitals without Pediatric Intensive Care Units o Recommendations for pre-planning interfacility transport	3-3
•	Planning Scenario	3-4
•	Emergency Department Surge Considerations and In-Patient Bed Assignments • Emergency Department Surge capacity space requirements and pediatric in-patient bed assignment recommendations during a disaster are outlined for the following three types of bospitals	3-5
	I. Non-Trauma Hospitals with Pediatric Intensive Care Units II. Hospitals with General Pediatric Services but without a	3-5
	Pediatric Intensive Care Unit	3-7
	III. Hospitals without Pediatric Services	3-9

GENERAL GUIDELINES:

During a disaster the following steps should be undertaking to prepare for the reception and care of potential pediatric patients:

- 1. Trigger hospital external disaster plan
- 2. Identify and notify providers with pediatric clinical expertise
 - MD, RN from Pediatrics, Family Medicine, Emergency Medicine, Surgery

- If no pediatric expertise notify adult providers from all departments for a disaster
- 3. Identify pediatric equipment, drug dosing guidelines, ventilators, availability of operating rooms, and pediatric ICU beds
- 4. Prepare for stabilization and transfer of injured patients if more pediatric patients require admission than institution is able to handle
- 5. If hospital is receiving or expects to receive more children than institution can handle, immediately contact other hospitals with pediatric capability and capacity for possible transfer of patients
- 6. Set up a family assistance area for family of victims and a separate area for media contact
- 7. Know the hospital's pediatric surge capacity i.e. when will institution run out of clinicians, equipment, medications, OR rooms, or ICU beds for the number and severity of expected pediatric patients
- 8. Request transport teams, and more MD and RN staff to help as needed
- 9. Upon Arrival of pediatric victims:
 - Patients should be decontaminated prior to entering the hospital if chemical or radioactive contamination is suspected. If the hospital doesn't have a decontamination shower, while still outside, remove all clothing and objects from the patient and wash with water, preferably warm, for several minutes. This can be done for all age groups. See Section 7. Decontamination of the Pediatric Patient for more detailed information concerning protocols for pediatric decontamination.
- 10. It is recommended that all hospitals keep at least 5 cribs, port-a-cribs, or playpens in a storage area for use in possible pediatric disaster scenarios. However, many hospitals without a pediatric ward will be unlikely to have any cribs available. Use of adult beds may be considered if the following actions are taken:
 - Children will have to be boarded in adult beds that have side rails.
 - The bed should be set at the lowest possible height.
 - The bed should be unplugged so the buttons to adjust the bed do not work.
- 11. If pediatric patients are boarded on an adult ward, appropriate sized airway supplies (Ambu bags, face masks, endotracheal tubes, stylets, oral airways) chest tubes, Foley catheters, and over the needle IV catheters/IO needless should be available for each patient.

- 12. Hospital administration and social work must plan for news media and a rush of anxious parents and family members.
- 13. Security needs to be prepared to handle large numbers of family members and other non-medically affected individuals. Expect approximately four to five visitors/family per pediatric patient.
- 14. Consider opening a Pediatric Safe Area to temporarily care for non-injured or discharged unaccompanied children. See Section 1. Pediatric Security Issues during a Disaster.
- 15. All attempts at identifying pediatric victims need to be made. See Child ID Survey Form located in Section 1. Security Considerations. A frequently updated list should be maintained and information relayed to the hospital emergency operating center and to the hospital family assistance center.

TRANSFER CONSIDERATIONS FOR HOSPITALS WITHOUT PEDIATRIC INTENSIVE CARE UNITS

The transfer criteria for critical pediatric patients must be planned for in advance for hospitals that do not have Pediatric Intensive Care Units.

If a hospital does not have a Pediatric ED or a PICU, then any child (especially young child, infant or toddler) with a need for operative procedure or PICU care may require stabilization and transfer. These children should to be identified by predetermined criteria. For example, this may include a trauma score (Pediatric Trauma Score or Revised Trauma Score), or need for other intensive level of care, such as: intubation, assisted ventilations, comatose, increased intracranial pressure, shock, inotropic support, ongoing seizures, or other major organ failure.

Prearranged agreements with ambulance agencies and receiving hospitals should be in place.. Hospitals should have agreements with their traditional referral hospitals, but should also have agreements with those closest geographically or with the shortest transport routes since during a disaster transportation may be difficult due to traffic closure or other obstructions.

On-line Revised Trauma Score Calculator may be found at: http://www.sfar.org/scores2/triss2.html

On-line Pediatric Trauma Score Calculator may be found at: http://www.sfar.org/scores2/triss2.html

A sample of an interfacility transfer agreement can be found the California Emergency Medical Services Authority web site located at: <u>http://www.emsa.ca.gov/aboutemsa/emsa186.pdf</u>

PLANNING SCENARIO

In order to prepare for the pediatric bed needs during a disaster, the CBPP Pediatric Task Force has created a disaster scenario to better describe the necessary bed resource demands that hospitals might expect.

Assume 40 pediatric patients of all ages arrive at Hospital A following an explosive disaster.

- 5 critically ill or injured (Red Tag)
- 10 moderately ill or injured (Yellow Tag)
- 25 minimally injured or uninjured (Green Tag)

The following sets of planning recommendations for emergency department surge capacity space and in-patient bed assignments address three categories of hospitals:

- I. Non-Trauma Hospitals with a Pediatric Intensive Care Unit
- II. Hospitals with General Pediatric Units, but without Pediatric Intensive Care Units
- III. Hospitals without any Pediatric In-Patient Units

I. Non-Trauma Hospitals with a Pediatric Intensive Care Unit

The following is a suggested plan for the distribution of pediatric victims upon arrival at a hospital with pediatric intensive care unit capability, but is not a certified trauma center. Hospitals must consider their own resources and personnel when creating their pediatric disaster plan.

Emergency Department Surge Considerations

Red tagged patients, or critical patients, should be placed in the most acute beds of their pediatric emergency area.

- When this area becomes saturated, remaining critical pediatric patients should go to the adult critical care areas in the emergency department
- In the absence of a trauma team, overall responsibility will be with the emergency department attendings with appropriate transfer to the PICU / pediatric ward attendings
- Pediatric surgery should be immediately consulted in the absence of a trauma team for patients with penetrating injuries to the abdomen or thorax. All other surgical specialties (neurosurgery, orthopedics, ENT, ophthalmology, etc.) should be placed on standby

Yellow tagged patients, those moderately injured or ill, should be placed in the nonacute care area of the pediatric emergency department with overflow going to nonacute care areas of the adult emergency department.

• Yellow tagged patients need to be treated and assigned disposition in a timely manner and reevaluated frequently to insure their condition does not deteriorate and warrant immediate medical intervention

Green tagged patients, minor or non-injured patients, should be triaged to the waiting room or to the pediatric clinic area or another large room capable of handling a large number, depending on day of week and time of disaster.

- Green tagged patients need to be re-evaluated frequently to insure their condition does not deteriorate and warrant immediate medical intervention
- When medically reasonable, green tagged patients should be discharged as soon as possible to an appropriately identified adult care giver as per hospital policy

Assignment of In-Patient Bed Space

The most critical cases and / or youngest victims should receive priority for Pediatric Intensive Care Unit beds. Once the PICU is full, overflow patients could be managed by Pediatrics in the Post Anesthesia Care Unit (PACU), if the patient required surgery, or in monitored beds on the pediatric ward or in adult medical or surgical ICUs.

Moderately injured or ill patients requiring admission should be admitted to the pediatrics ward until all beds are utilized. At that point, the hospital must decide to increase the ward census (add 1 more bed per room if space allows) or board the oldest pediatric patients on adult wards. If possible, all children should board on the same adult ward for ease of nursing care and to improve the children's psychological well being.

II. Hospitals with a General Pediatric Service but without a Pediatric Intensive Care Unit

The following is a suggested plan for the distribution of pediatric victims upon arrival at a hospital without pediatric intensive care unit (PICU) capability, but does have an in-patient pediatric unit. Hospitals must consider their own resources and personnel when creating their pediatric disaster plan.

Most hospitals that do not have a PICU also do not have a dedicated pediatric emergency department. *If your hospital has a pediatric emergency department, follow guidelines above.* It is likely the hospital will have a general emergency department.

EMERGENCY DEPARTMENT SURGE CAPACITY CONSIDERATIONS

Red tagged patients, or critical patients, should be placed in the most acute care area of the emergency department.

- When that area becomes saturated, remaining critical patients should go to a monitored observation area in your emergency department.
- Overall responsibility will be with the emergency department attending and transferred to the pediatric ward attending.
- If the hospital has a trauma team, they should be immediately consulted and the trauma team attending will take responsibility for all children requiring trauma surgery.
- Pediatric surgery should be immediately consulted in the absence of a trauma team for patients with penetrating injuries to the abdomen or thorax. All other surgical specialties (neurosurgery, orthopedics, ENT, ophthalmology, etc.) should be placed on standby.

Yellow tagged patients, moderately injured or ill, should be placed in the non- acute care areas of the emergency department with yellow tag overflow going to waiting room areas, or other designated ares, that are converted to patient care areas for the duration of the disaster.

- Yellow tagged patients need to be treated and assigned disposition in a timely manner and reevaluated frequently to insure their condition does not deteriorate and warrant immediate medical intervention.
- Admitted patients should be transferred up to the pediatric ward as soon as possible.

Green tagged patients, minimally on non-injured, should be triaged to the waiting room, lobby, or to the pediatric clinic area depending on the day of the week and time of disaster.

• Green tagged patients need to be reevaluated frequently to insure their condition does not deteriorate and warrant immediate medical intervention.

• When medically reasonable, green tagged patients should be discharged as soon as possible to an appropriately identified adult care giver as per hospital policy.

ASSIGNMENT OF IN-PATIENT BED SPACE FOR HOSPITALS WITHOUT PEDIATRIC INTENSIVE CARE UNITS

Pediatric critical care patients should be transferred to a hospital that can provide a higher level of care as soon as possible. Until transfer is completed, patients can be managed by Pediatric Staff in the post-operative recovery room, if the patient required surgery, or in monitored beds on the pediatric ward or in adult medical or surgical ICUs.

Moderately injured or ill children requiring admission should be admitted to the pediatrics ward until all beds are utilized. At that point, the hospital must decide to increase the pediatric ward census (add 1 more bed per room if space allows) or board the oldest pediatric patients on adult wards. If possible, all children should board on the same adult ward for ease of nursing care and to improve the children's psychological well being.

III. Hospitals without a Pediatric Service

The following is a suggested plan for the distribution of pediatric victims upon arrival at a hospital without pediatric intensive care unit (PICU) capability or pediatric inpatient wards. Hospitals must consider their own resources and personnel when creating their pediatric disaster plan.

It is recommended that all hospitals keep at least 5 cribs or playpens in a storage area for use in possible pediatric disaster scenarios. However, many hospitals without a pediatric ward will be unlikely to have any cribs available. Use of adult beds may be considered if the following actions are taken:

- Children will have to be boarded in adult beds that have side rails.
- The bed should be set at the lowest possible height.
- The bed should be unplugged so the buttons do not function.

<u>All pediatric patients requiring admission should be transferred to a hospital that can</u> <u>provide a higher level of care as soon as it is medically and technically possible.</u> Unstable patients will require initial management at the receiving hospital where they first arrive prior to transfer.

EMERGENCY DEPARTMENT SURGE CAPACITY CONSIDERATIONS

Red tagged patients, or critical patients, should be placed in the most acute care area of the emergency department.

- When that area becomes saturated, remaining critical patients should go to a monitored observation area in your emergency department.
- Overall responsibility will be with the emergency department attending. If the hospital has a trauma team, they should be immediately consulted and the trauma team attending will take responsibility for all children requiring trauma surgery.
- Adult surgery should be immediately consulted in the absence of a trauma team for patients with penetrating injuries to the abdomen or thorax as they will be the most capable service for immediate intervention. All other surgical specialties (neurosurgery, orthopedics, ENT, ophthalmology, etc.) should be called into the hospital or placed on standby.

Yellow tagged patients, moderately injured or ill, should be placed in the non-acute care areas of the emergency department.

- Yellow tagged patients need to be reevaluated frequently to insure their condition does not deteriorate and warrant immediate medical intervention.
- Yellow tag overflow should go to waiting room or other designated area that will be converted to patient care areas for the duration of the disaster.
- Patients requiring admission should be transferred up to adult in-patient wards as soon as possible. The beds should be at the lowest possible height, have

side rails, and have the electronic bed functions disabled so the buttons will not function.

Green tagged patients, minimally or non-injured, should be triaged to the waiting room, lobby, or to the adult clinic area depending on the day of the week and time of disaster.

- Green tagged patients need to be re-evaluated frequently to insure their condition does not deteriorate and warrant immediate medical intervention
- When medically reasonable, green tagged patients should be discharged as soon as possible to an appropriately identified adult care giver as per hospital policy.

ASSIGNMENT OF IN-PATIENT BEDS FOR A HOSPITAL WITHOUT A PEDIATRIC SERVICE

Pediatric critical care patients should be transferred to a hospital that can provide a higher level of care as soon as possible. Until transfer arrangements are completed, critical patients can be managed by Anesthesia in the recovery room, if the patient required surgery, or in adult medical or surgical ICU's, or monitored beds on adult in-patient wards until the patient can be safely transferred.

Non-critical patients requiring admission can be admitted to an adult ward if appropriate transfer is delayed or unavailable. If possible, all children should board on the same adult ward for ease of nursing care and to improve the children's psychological well being.





Section 4. Equipment

Minimal Pediatric Equipment Recommendations for Emergency Departments*

Draft for Public Comment

PURPOSE:

The following chart has been modified from the New York State 911 Hospital Receiving Guidelines¹. The amounts given are the minimal recommended number of items per 1 expected critical patient in an emergency department. Each institution must determine what its expected surge capacity for pediatric critical patients is and should adjust inventory according to the number of patients for which it will plan. For example, if Hospital A decides to prepare for an influx of 4 critical pediatric patients, then the numbers in the amounts column should be multiplied by 4.

Additionally, many hospitals are creating and stocking disaster carts to be used in designated areas. It is recommended that hospitals also consider stocking a cart specifically for the emergency department for a Pediatric Critical Care Area.

*Amounts	based	on needs	expected	per 1	critical	pediatric	patient of	unknown	age or
size									

	E = essential	, D = desirable
Minimal Pediatric Equipment F Emergency Depa	Recommendations f	or
Equipment Type	Amount	Importance
Ambu Bags		
Infant	2	E
Child	2	E
Arm Boards	2	D
Blood Pressure Cuffs		
Infant/Small Child	1	E
Chest Tubes		
Sizes 12F, 16F, 20F, 24F, 28F	2 each size	E
Dosing Chart, Pediatric	1	E
ETCO ₂ Detectors (pediatric, disposable)	2	E
ET Tubes		
2.5 - 6.5	3 each size	Е
Foley Catheters		
Sizes 8F, 10F, 12F	2 each size	E
Gastrostomy tubes		
Sizes 12F, 14F, 16F	2 each size	D
Infant Scale	1 for any # patients	D
Intraosseous Needles	3	E
Intravenous Infusion Pumps	1	D

Equipment Type	Amount	Importance
		•
Laryngoscope Blades	2 each size	E
Macintosh 0,1,2	2 each size	E
Miller 0,1,2		
Laryngoscope Handles (pediatric)	2	E
Masks		
Face masks, clear self-inflating bag		
(500cc)	2	E
Infant	2	E
Child		_
Non Rebreather	2	E
Infant	2	E
Child		
Nasal cannula		
Infant	2	E
Child	2	E
Nasogastric Tubes		
Sizes 6F, 8F, 10F, 12F, 14F, 16F	2 each size	E
Nasopharyngeal Airways (all pediatric sizes)	1 each size	D
Newborn Kit / Obstetric/Delivery Kit	1	E
Oral Airways (all pediatric sizes 00, 01)	2each size	E
Over the Needle Intravenous Catheters		
Sizes 20, 22, 24	5 each size	E
Restraining Board (pediatric)	1	D
Resuscitation Tape, length based (Broselow)	2	E
Seldinger Technique Vascular Access Kit		
Sizes 4F, 5F,	3 each size	D
Catheters 15cm length	3 each size	D
Semi Rigid Cervical Spine Collars		
Infant	2	E
Small Child	2	E
Child	2	E
Suction Catheters		
5F, 8F	5 each size	E
Syringes, 60cc, catheter tip (for use with G/T	_	
tube)	2	E
Tracheostomy Tubes		_
Sizes 00 to 6	2 each size	E
Warming Device (overhead warmer for		-
newborns)	1	D

¹ Emergency Department Standards, Revised Sixth Edition, Fire Department, City of New York, Oct. 1997.





Section 5. Training

Training for Care of the Pediatric Population during a Disaster

Draft for Public Comment

PURPOSE:

The recommendations included in this section suggest training to ensure that pediatric patients receive appropriate care at all hospital facilities during a mass casualty, disaster, or terrorism related event. General medical and disaster training as well as pediatric-specific education options are included, all of which are recommended to enhance hospital response.

SECTION CONTENTS:

•	General Guidelines	5-1
•	 Training Recommendations Non-Trauma Hospitals with a PICU Hospitals with an In-Patient Pediatric Service but without a PICU Hospitals without an In-Patient Pediatric Service 	5-2 5-2 5-2 5-2
•	Training Recommendations Table	5-3
•	 List of Disaster and Emergency Training Courses Resource list of disaster and emergency training courses 	5-4

GENERAL GUIDELINES:

Disaster and emergency training includes education in both the core principles of disaster management and the emergency treatment of adult and pediatric patients requiring basic, advanced, and trauma life support.

All hospitals should address the pediatric population when planning training courses for staff who will likely respond during a disaster. Additionally, the hospital disaster committee should consider the "pediatric surge capacity" of the current staffing, whether the hospital has pediatric services or not.

TRAINING RECOMMENDATIONS

I. Non-Trauma Hospitals with Pediatric Intensive Care Units

In the hospital disaster plan, these hospitals should plan for the ability to "surge" their pediatric inpatient capacity.

Pediatric in-patient surge capacity might be accomplished through:

- Admission of additional patients to the existing pediatric unit(s)
- Utilization of non-clinical space for pediatric patient care
- Conversion of adult inpatient space (such as a surgical unit) to a temporary pediatric unit

Staffing anticipated to be assigned to these "pediatric inpatient surge capacity" areas, including but not limited to Pediatric ICU nurses and physicians, should have appropriate basic pediatric disaster training.

II. Hospitals with Pediatric Service, but no Pediatric Intensive Care Unit

Hospitals with general pediatric in-patient services should prepare for the same possibilities listed for hospitals with a PICU described above. In addition, <u>critical</u> <u>pediatric patients might require intensive care and subsequent monitoring when</u> <u>transfer is not immediately possible</u>.

Possible locations for temporary placement of critical pediatric patients include:

- Adult Medical Intensive Care Unit
- Adult Cardiac Care Unit
- Surgical Care Unit
- Post-Anesthesia Care Unit
- Other appropriate in-patient intensive care unit

The staff anticipated to be responsible for the various levels of pediatric care should have the appropriate basic pediatric disaster training. Since pediatric intensivists and pediatric critical care nurses are not available at these facilities, the applicable training recommendations are recommended for Medical and Surgical ICU nurses and physicians.

III. Hospitals without In-Patient Pediatric Services

These hospitals should develop disaster plans that address all of the possibilities for pediatric care listed above. While pediatric specialty staff may not be available normally at these facilities, it is recommended that certain staff be pre-identified and pre-designated to staff pediatric surge capacity areas. These predesignated individuals should receive appropriate training necessary to provide adequate care to the pediatric population during a disaster.

		Reco	ommended Tr	aining:	
Drovidor Lovol		ATL 5 ²		Basic Disaster	Disaster Drill including
	ACLS	AILS	PALS	Training	Pediatric Pts
Department Nurses and Physicians	Yes	Yes	Yes	Yes	Yes
Pediatric Inpatient Unit Nurses and Physicians	Yes	No	Yes	Yes	Yes
Pediatric ICU Nurses and Physicians	Yes	No	Yes	Yes	Yes
Pediatric Surge Capacity Nurses and Physicians ⁵	Yes	No	Yes	Yes	Yes
Medical and Surgical ICU Nurses and Physicians ⁶	Yes	No	Yes	Yes	Yes
Other Surgical & Medical Physicians likely to respond to emergency department during disasters	Yes	Yes	Yes	Yes	Yes

TRAINING RECOMMENDATIONS

- ¹ Advanced Cardiac Life Support
- ² Advanced Trauma Life Support
- ³ Pediatric Advanced Life Support
- ^{4.} "Basic Disaster Training" refers to an introductory or awareness level course covering the basics of individual risk assessment and response to Chemical, Biological, Radiological, Nuclear, and Explosive agents.
- ⁵ ["]Pediatric Surge Capacity Nurses and Physicians" refers those staff designated as part of the hospital disaster plan to care for pediatric patients and their families in the event the usual hospital inpatient pediatric capacity is exceeded and these patients can not be transferred
- ⁶ "Medical and Surgical ICU Nurses and Physicians" (or Recovery Room or other intensive care area) staff that might be required to care for critical pediatric patients who can not be transferred

PRIMARY DISASTER AND EMERGENCY COURSES

American Heart Association Sponsored Courses:

http://www.americanheart.org/downloadable/heart/1125608700006ECC%20Course% 20Matrix%202005.pdf

Basic Life Support for Healthcare Providers (BLS)

• 1 day, all BLS providers, focuses on Cardiopulmonary Resuscitation (CPR) & Automatic External Defibrillator (AED)

Advanced Cardiac Life Support (ACLS)

• 2 days, all ACLS providers

Pediatric Basic Life Support (PBLS)

• 1 day, all PBLS providers, focuses on CPR/AED only

Pediatric Advanced Life Support (PALS)

• 2 days, all PALS providers

American College of Surgeons (ACS) Sponsored Courses): <u>http://www.facs.org/trauma/atls/index.html</u>

Advanced Trauma Life Support (ATLS)

• 2 days, physicians and physician extenders only

DISASTER COURSES

American Medical Association/National Disaster Life Support Foundation (AMA/NDLSF) Sponsored Courses:

http://www.ama-assn.org/ama/pub/category/12606.html or http://www.bdls.com/

Core Disaster Life Support (CDLS)

• 1/2 day, non medical hospital staff

Core Disaster Life Support-Decontamination (CDLS-D)

• 1 day, hospital decontamination team personnel

Basic Disaster Life Support (BDLS)

• 1 day, all medical disaster providers, soon to be available in an online version

Advanced Disaster Life Support (ADLS)

• 2 days, all medical disaster providers

Biological, Chemical, and Nuclear Emergencies Course (BCNE) Sponsored by the Medical Society of the State of New York (MSSNY) http://www.bcnny.com/

• 1/2 day seminar, also available in an extended on line version. Non-members are eligible to enroll

Hospital Emergency Response Training (HERT) for Mass Casualty Incidents (MCI) Train-the-Trainer Course

Sponsored by Department of Homeland Security at the Alabama Noble Training Center

http://training.fema.gov/EMIWeb/NTC/B960.asp

• Hospital Administrators, doctors, nurses, physicians, security personnel and other hospital staff who would make up or manage their Hospital's Emergency Response Team, 2.5 to 3 day format

ADDITIONAL PEDIATRIC EMERGENCY COURSES

Advanced Pediatric Life Support (APLS)

Sponsored by the American Academy of Pediatrics/American College of Emergency Physicians (AAP/SCEP)

http://www.aplsonline.com/

• 2 days, physicians, nurses, paramedics, covers basics of pediatric emergency medicine

Emergency Nursing Pediatric Course (ENPC) Sponsored by the Emergency Nurses Association (ENA) http://www.ena.org/catn_enpc_tncc/enpc/

• Modular course, self taught

Pediatric Education for Prehospital Professionals (PEPP) Sponsored by the American Academy of Pediatrics (AAP) <u>http://www.peppsite.com/</u>

• 1 day, EMTs, 2 days, paramedics

Pediatric Terrorism Awareness Course Sponsored by the University of Kentucky http://www.kiprc.uky.edu/trap/peds.html

• Basic awareness course, available free and on-line, for EMS and emergency personnel

Prehospital Pediatric Care Course (PPCC) Sponsored by the New York State Department of Health http://www.health.state.ny.us/nysdoh/ems/ppcctoc.htm

• 1 day, EMTs, 2 days, paramedics

Pediatric Prehospital Care Course (PPC)

Sponsored by the National Association of Emergency Medical Technicians (NAEMT) <u>http://www.naemt.com/PPC/</u>

• 1 day, EMTs, 2 days, paramedics

Pediatric Disaster Life Support (PDLS)

Sponsored by the University of Massachusetts Medical School and Emergency Medical Services for Children (EMSC) Clearing House

http://www.ems-c.org/pie/media%5Cf6.pdf

• 1or 2-day training course for medical, EMS, and disaster professionals

ADDITIONAL TRAUMA COURSES

Trauma Nursing Core Course (TNCC) Sponsored by the Emergency Nurses Association (ENA) http://www.ena.org/catn_enpc_tncc/tncc/

• 2 days, nurses only

Advanced Trauma Care for Nurses (ATCN) Sponsored by the Society of Trauma Nurses (STN) http://www.traumanursesoc.org/edu_atcn.html

• 2 days, nurses only, run only in conjunction with a co-located ATLS course





Section 6. Transportation

Pediatric Population and Transport Issues during a Disaster Draft for Public Comment

PURPOSE:

These recommendations suggest the appropriate procedure for the transportation of pediatric patients following a disaster. The section presents guidelines for both interand intra-hospital transport of stable and unstable pediatric victims. Pediatric patients may not always be accompanied by an adult during a disaster; therefore, these patients will require additional staffing and supply needs during their transport.

SECTION CONTENTS:

•	General Guidelines	6-1
•	Transport of Pediatric Patients within the Hospital	6-2
	 Transport Personnel Transport Equipment Chaperone and Safety Personnel 	6-2 6-2 6-2
•	Transport of Pediatric Patients from Hospital to Other Facilities Stable Patients Unstable Patients 	6-3 6-3 6-3
•	Table 6.1. Appropriate Use and Type of Car Seats	6-4

GENERAL GUIDELINES:

All hospitals need to plan for the potential necessity of delivering extended care to pediatric patients during a disaster. As part of this care, patients will need to be transported from clinical area to clinical area (including inpatient units) or to diagnostic testing (such as radiology, CT scan, and ultrasound). For those centers without specialized pediatric services, transfer of pediatric patients (after initial evaluation and stabilization) to a center with advanced pediatric capacity might be desired. However, transfer might not be possible due to local conditions and safety concerns, lack of appropriate transport vehicles and personnel, and/or lack of capacity at the usual pediatric resource hospitals.

TRANSPORT OF PEDIATRIC PATIENTS WITHIN THE HOSPITAL

General guideline for transporting pediatric patients between hospitals units or diagnostic testing areas.

- I. Transport personnel:
 - a. Personnel to transport stable patients
 - i. All transport personnel should be oriented to special needs of pediatric transport
 - ii. Pediatric patients may not be left alone at any time
 - b. Personnel to transport unstable patients
 - i. Usual transport personnel
 - ii. Additional staff skilled in pediatric airway management and familiar with pediatric resuscitation
 - iii. Pediatric patients may not be left alone at any time
- II. Transport equipment:
 - a. Airway management and resuscitation supplies available which are appropriate for all age groups (see Pediatric Equipment Recommendations)
 - b. Identify appropriate transport vehicle:
 - i. Adult stretchers may be appropriate for children >8-10 year old
 - ii. Smaller children may require crib, additional transport personnel, and/or converting an adult stretcher by adding padding to inside rails assure safety during transport
- III. Chaperone and safety personnel
 - a. Parents or adult care givers should be encouraged to stay with children
 - b. If no adult care giver is available, appropriate personnel must accompany and supervise pediatric patients to assure their safety at all times
 - c. Patients on stretchers
 - i. Patients less than 6 years old and not in appropriate crib require continuous 1:1 observation
 - ii. Patients 6 years and older should be evaluated for ability to follow safety rules while on stretcher
 - iii. Individual patients separated from other pediatric patients require constant 1:1 observation by staff
 - d. Stable ambulatory patients

- i. May be co-horted in a Pediatric Safe Area with staff experienced or trained in observation of groups of children (such as school teachers, social workers, day care workers, etc.) See Section 1. Security for Pediatric Safe Area
- ii. All ambulatory patients transported individually out of the Emergency Department require 1:1 adult supervision

TRANSPORT OF PEDIATRIC PATIENTS FROM THE HOSPITAL TO OTHER FACILITIES

During a disaster, the local conditions might preclude safe or efficient travel on the streets or highways or the usual pediatric receiving centers might be overwhelmed with patient volume and unable to accept transfers. Therefore, all hospitals must be prepared to provide emergent and continued pediatric care.

Even in the event that transfer to a pediatric center might be possible, the usual mechanisms for inter-hospital transfers should not be relied upon because these staff and equipment will be utilized to respond to the actual disaster. Therefore, hospitals should consider alternative mechanisms for safe pediatric transfers.

- I. Stable patients:
 - a. Arrange for "Car Seats" including
 - i. Rear facing for < 1 year old or < 20 pounds
 - ii. Forward facing for 1-4 years old and 20-40 pounds
 - iii. Booster seat for 4-8 years old (or < 4' 9" tall)
 - iv. Rear seat with seat belts for children 8-12 years old
 - v. Children < 12 years old should not ride in the front seat
 - vi. Potential sources for appropriate car seats:
 - 1. Purchase or obtain through donation
 - 2. Identify local sources of car seats in case needed
 - 3. Survey employees to determine availability of car seats in employee vehicles
 - b. Appropriate transport vehicles if ambulance not available:
 - i. Cars, vans, city or private buses may be appropriate for children who can sit up (car seats may be necessary)
 - ii. School buses may be used for age 5 and over who can sit up
 - iii. Driver must be able to communicate with hospital emergency command center (cell phone or radio)
 - iv. Appropriate medical personnel (EMT, PA, NP, nurse, or physician) must accompany patients during transport
 - v. Mental health personnel or staff trained in pediatric psychosocial needs should ideally accompany patients
- II. Unstable Patients or Potentially Unstable Patients

- a. Appropriate transport vehicle
 - i. Emergency Medical Technician (EMT) or Paramedic ambulance augmented with:
 - 1. Hospital staff skilled in pediatric airway and resuscitation
 - 2. Equipment appropriate for age and acuity of patient (see Section 4. Equipment)
 - ii. Paramedic ambulance without additional hospital staff may be appropriate only for less critical patients
 - iii. Specialty pediatric transport teams from referral pediatric institutions
- b. Consider MOU with ambulance providers at distant locations (less likely to be involved with local disaster response)

Table 6.1. Appropriate Use and Type of Car Seats			
	Infants	Toddler	Young Children
Age & Weight	Up to 1 year old AND 20 lb. or less.	Over 1 year to 4 years old AND over 20 lb.	Ages 4-8, unless over 4' 9". AND over 40 lb.
Seat Type	Infant only or rear-facing convertible	Convertible / Forward- facing	Belt positioning booster seat
Seat Positioning	Rear-facing only	Forward-facing	Forward-facing
Cautions:	All children age 12 and under should ride in the back seat.		



Section 7. Staffing

Staffing Recommendations for Pediatrics during a Disaster Draft for Public Comment

PURPOSE:

The recommendations included in this section address the critical issue of hospital staffing for pediatrics during a disaster. Appropriate allocation of personnel and the delegation of responsibilities are critical to mitigate the confusion and chaos created by disaster situations. Staffing considerations for pediatric patients during planning and permanent pediatric interest representation on the hospital Disaster Committee will greatly assist the facility to respond to the needs of pediatric patients. The following recommendations were created to primarily to address needs of institutions that do not have significant pediatric services or pediatric staff. When applicable, the HEICS positions should also be utilized by hospitals that have pediatrics.

SECTION CONTENTS:

•	General Guidelines	7-1
•	PLANNING: Survey Staff for Pediatric Experiences	7-2
•	MITIGATION: Create Pediatric Leadership Positions Physician Coordinator for Pediatric Emergency Care in a Disaster Nursing Coordinator for Pediatric Emergency Care in a Disaster 	7-3 7-3 7-3
•	RESPONSE: Staffing for a Coordinated and Comprehensive Disaster Plan	7-5
•	Sample HEICS Job Action Sheets Pediatric Services Unit Leader Pediatric Logistics Unit Leader 	7-6 7-6 7-8

GENERAL GUIDELINES:

- Pre-identify hospital staff with specialty skills or experience in the treatment of pediatric patients.
- Develop a plan to utilize the specific skills of the above personnel, including call-down and notification procedures
- Create key pediatric positions these persons will occupy in a disaster event.
- Integrate the pediatric staffing plan into your hospital's general Disaster /Emergency Response Plan.

PLANNING: Survey Staff for Pediatric Experiences

One of the first steps in appropriate pediatric planning is identifying members of your staff with pediatric skills and/or training. These members will become the primary pediatric caregivers. Ideally, these staff members with pediatric training and skills may come from pediatric emergency medicine, emergency medicine, pediatrics, or family medicine.

Other staff members with some pediatric experience in their specialty training and experience may be consider as an additional source of staffing. These staff members may include the following, but are not limited to, personnel trained in anesthesia, otolaryngology, pediatric surgery, trauma surgery, general surgery, orthopedics, urology, neurosurgery, and thoracic surgery.

Special attention must be paid to skills required for critical resuscitation procedures during the planning phase, especially for hospitals with limited pediatric specialty providers. Airway management, resuscitation, and critical care skills may be necessary during pediatric emergencies. Staff qualified to perform such procedures will be necessary during a disaster and should be identified in advance. For example, pediatric airway management may be performed by an anesthesiologist or otolaryngologist. Resuscitation and critical care medicine may be performed by anesthesiologists and general surgeons.

Included in this cadre of staff are nurses, physician assistants, and nursing assistants who work in the hospital's emergency departments (EDs), operating rooms (ORs), post anesthesia care units (PACUs), intensive care units (ICUs), inpatient units, and outpatient clinics.

Staff members responsible for resuscitation in the EDs, ORs, PACUs, and ICUs should have the appropriate life support training certifications and corresponding hospital credentials. (See Section 6. Training.)

These pediatric response team members should be identified prior to a disaster and their names and contact information should be forwarded to the Disaster Committee and Command Center and maintained as a special call down sheet for pediatric disasters. Regular staff survey updates are needed to identify the staff member with this training and skill and to maintain current contact information. MITIGATION: Create Pediatric Leadership Positions for Key Personnel and Qualified Staff

These designated staff members will serve as the key personnel to coordinate the various elements of pediatric care and planning and serve as regular members of the Disaster Committee. Following are two key positions suggested for assignment to qualified clinical personnel:

- I. Physician Coordinator for Pediatric Emergency Care in a Disaster
 - Nominated by the ED Medical Director and approved by the Disaster Preparedness Committee should be qualified to assume the following responsibilities:
 - Ensure adequate skill and knowledge of staff physicians in emergency care and resuscitation of infants and children.
 - Assist with development and periodic review of ED medications, equipment, supplies, policies, and procedures as member of general Disaster committee.
 - Lead and assist with the development and updating of the hospital emergency response plan granting special attention to the needs of pediatric patients.
 - Serve as liaison to appropriate in-hospital and out-of-hospital pediatric care committees in the community (if they exist).
 - Serve as liaison to a definitive care hospital, which includes a regional pediatric referral hospital and trauma center, needed to integrate services or facilitate transfer for the continuum of care of the patient.
 - Facilitate pediatric emergency education for ED health care providers.
 - Identify in advance appropriately qualified staff who can accept responsibility for the immediate or extended care of pediatric patients during a disaster.
 - During a disaster, will participate directly in emergency care and resuscitation of pediatric patients, in addition to the stated responsibilities.

II. Nursing Coordinator for Pediatric Emergency Care in a Disaster

- Serve as liaison to appropriate in-hospital pediatric care committees.
- Serve as liaison to inpatient nursing as well as to a definitive care hospital, a regional pediatric referral hospital and pediatric capable trauma center for integrating services or to facilitate transfer for the continuum of care of the patient.

- Facilitate ED nursing continuing education in pediatrics and provide orientation for new staff members.
- Assist in development and periodic review of policies and procedures for pediatric care.
- Monitor pediatric equipment and medication availability.
- In a disaster, will participate actively in patient care through the emergency evaluation and management of children, in addition to stated responsibilities.

RESPONSE: Staffing for a Coordinated and Comprehensive Disaster Plan

Since many levels of staffing are required to respond adequately to a disaster involving pediatric patients, it is important that the designated team that will look after the welfare of the pediatric patients be as all-encompassing as possible. While the team will include such clinical staff as physicians, nurses and ancillary ED and in-patient personnel to provide emergency evaluation and treatment of children of all ages, additional staff may be called upon to respond to non-clinical pediatric patient needs in the hospital.

Included at the end of this chapter are Sample Job Action sheets that may be used to distribute tasks to staff designated to these ancillary leadership positions. Along with the Physician and Nursing Coordinators who will act as the point persons for clinical care in the ED, a general Pediatric Logistics Unit Leader and a Pediatric Services Unit Leader should also be assigned to monitor non-clinical areas. These Unit Leaders will facilitate accurate communication between non-clinical areas and oversee disaster response in areas such as Procurement, Materials/Supplies, Transportation, and Nutrition.

In planning to meet the immediate physical needs of the pediatric patient population during a disaster, hospitals may further prepare for child victims by considering psychological treatment that addresses their possible reactions to disaster including acute stress disorder, grief, and anger. With this in mind, it is recommended that hospitals prepare for the mental health needs of pediatric patients and coordinate a response plan that incorporates the skills of psychiatrists, psychiatric nurses, social workers and hospital chaplain. *(See Section 10. Psychosocial Considerations for additional information).*

JOB ACTION SHEET Pediatric Services Unit Leader

You report to	: (Operations Chief)
Command Cer	nter
MISSION:	To ensure that the pediatric treatment and holding areas are properly assigned, equipped, and staffed during an emergency
IMMEDIATE:	
	Receive appointment from Unit Leader
	Read this entire job action sheet
	Obtain briefing from Unit Leader
	Gather external information from Treatment Area Supervisor/ED Charge Nurse
	Number of expected pediatric patients and their conditions
	Current total number of FD natients
	Expected time of patient arrival
	Determine number of available pediatric/crib beds [in-patine] and report to
	Operations Chief for planning purposes
	Determine On-site pediatric qualified staff members
	Determine additional staff needed based on expected patient volume
	Alert Discharge Unit Leader to institute early discharge/transfer of patients
	Initiate Pediatric Response Team as per plan:
	Staff / Community
	Diality Community Dredetermined Nurses (with pediatric experience and/or DALS/ENDC
	certification)
	Predetermined ancillary technicians with pediatric experience
	Others as predetermined
	Determine need for opening of a Pediatric Safe Area (dependent on expected
	number of unaccompanied children during the disaster)
	Assign Pediatric Safe Area Coordinator
	Communicate with Operations Chief to assure coordination of non-pediatric
	ancillary/support personnel as per the disaster plan
	Assure preparation of a pre-designated Pediatric Disaster Care Areas:
	Clear area Designate each specific area per plan and based on expected casualties
	Assure support personnel are assigned to each area
	Assure delivery of medical and non-medical pediatric equipment
	Assure set-up of pediatric equipment by clinical staff
	Receive pediatric patients
	Determine pediatric patient status
	Communicate findings to Treatment Area Supervisor for dissemination as per
	disaster plan
	Following triage of all children, move uninjured/unaffected children to pre-
	designated Pediatric Safe Area
INTERMEDIAT	Έ:

- Assess on-going staffing needs based on patient status report from:
- Pediatric healthcare personnel (emergency department, in-patient, and OR) Non-pediatric ancillary /support personnel Pediatric Safe Area Coordinator

INTERMEDIATE Continued

- _____ Assess additional medical and non-medical equipment/supply needs
- Communicate with Pediatric Logistics Unit Leader via Operations Chief to Logistics Chief
- _____ Assure delivery of needed supplies to pediatric designated areas
- _____ Assess Pediatric Response Team basic needs:
- ____ Food
- ____ Rest
- _____ Psychological support
- _____ Obtain status of pediatric casualties (discharges, admissions, transfers, and Pediatric Safe Area) and report to Operations Chief
- _____ Hold information sessions with Public Information Officer as needed
- _____ Obtain Child Survey Forms (See Security Section) from all pediatric patients areas
- Report any unidentified or unaccompanied pediatric patients to Operations Chief

EXTENDED:

- ____ Debrief Pediatric Response Team and Pediatric Safe Area Coordinator regarding:
- Summary of Incident
- _____ Review of areas of success
- _____ Identify opportunities of success
- _____ Thank and congratulate team

JOB ACTION SHEET Pediatric Logistics Unit Leader

You report to	:(Logistics Chief)
Command Cer	nter
MISSION:	To ensure that the pediatric needs are addressed by Procurement, Transportation, Materials Supply, and Nutritional Supply during an
IMMEDIATE:	emergency Receive appointment from Logistics Chief Read this entire job action sheet
	Obtain briefing from Logistics Chief Number of expected pediatric patients and their conditions Timeline for supply needs Depending on the extent of HEICS activation, meet with Logistics Chief and distribute tasks to the following Unit Leaders:
	Procurement Unit Leader: Receive briefing from Logistics Chief and Pediatric Logistics Unit Leader Initiate Procurement Disaster Call list if warranted Work with vendors for pediatric supplies including hospital vendors and community resources (local pharmacies and grocery stores) for back-up resources
	Transportation Unit Leader: Receive briefing from Logistics Chief and Pediatric Logistics Unit Leader Initiate Transportation Disaster Call list if warranted Count open stretchers, carts, cribs, and wheelchairs for pediatric transportation If adult transport equipment options are used, ensure all are appropriately modified and safe for pediatric transport Report transportation options to Logistics Chief Coordinate delivery of transportation options to designated pediatric area or ED depending on scenario Designate transporters as needed from CS staff or Labor pool Ensure that all transporters are aware of pediatric safety issues and are not to leave pediatric patients unattended <i>(see Section 6. Transport for more information)</i>
	Materials/Supplies Unit Leader: Receive briefing from Logistics Chief and Pediatric Logistics Unit Leader Initiate Materials/Supplies Disaster Call list if warranted Collect and coordinate essential pediatric medical equipment and supplies Assist in preparation of pre-designated Pediatric Disaster Care Areas with Pediatric Services Unit Leader <i>(See Section 4. Equipment Recommendations for</i> <i>more information)</i> Assist in preparation of pre-designated Pediatric Safe Area with Pediatric Services Unit Leader <i>(See Section 1. Security Issues for more information)</i>

- Nutritional Supply Unit Leader: (See Section 2. Dietary for additional
- ____ Receive briefing from Logistics Chief and Pediatric Logistics Unit Leader
 ____ Initiate Nutritional Call list if warranted
- _____ Estimate number of pediatric meals needed for 48 hours (See Section 2. Dietary for more information)
- ____ Estimate pediatric food/snacks/hydration needs for Pediatric Safe Area

INTERMEDIATE:

- _____ Obtain regular updates from Logistics Chief
- _____ Assess additional equipment/supply needs for pediatrics
- _____ Address pediatric concerns, questions and issues as needed

EXTENDED:

- ____ Document actions and decisions, submit reports to Logistics Chief
- _____ Participate in debriefing
- Review areas of success
- _____ Identify opportunities for improvement
- _____ Thank and congratulate team





Section 8. Pediatric Decontamination

Decontamination of the Pediatric Patient

Draft for Public Comment

PURPOSE:

These recommendations are intended to assist planning for the needs of all children presenting to any hospital (during a disaster or terrorist attack requiring decontamination) to be properly decontaminated in a timely manner. Children require special considerations that may not be addressed in the general Hospital Decontamination Plan.

SECTION CONTENTS:

٠	General Guidelines	8-1
	 General decontamination considerations recommended for all children 	
•	 Decontamination Recommendations Based on Age of Child Recommended procedures for decontamination of ambulatory and non- ambulatory children based on estimated age 	8-2
	I. Children less than 2	8-2
	II. Children 2 to 8 years of age	8-3
	III. Children 8 to 18 years of age	8-4
•	Model Decontamination Algorithm o Graphical representation of pediatric decontamination procedures	8-5
•	References	8-6

GENERAL GUIDELINES:

Infants and children have unique needs that require special considerations during the process of hospital-based decontamination.

- Separation of families during decontamination should be avoided, especially under conditions of large number of patients in a chaotic situation but medical issues take priority.
- Older children may resist or be difficult to handle out of fear, peer pressure, and modesty issues (even in front of their parents or caregivers).
- If the water temperature is below 98°F, the risk of inducing hypothermia increases proportionately with the smaller, younger child.

- Attention to airway management is a priority throughout decontamination showers.
- It cannot be assumed that the parents or caregivers will be able to decontaminate both themselves and their children at the same time ("hot zone" personnel should recognize the need to assist them).
- Large volume, low pressure water delivery systems (e.g. handheld hose sprayers) that are "child friendly" should be incorporated into the hospital decontamination showers.
- The smaller the child, the bigger the problem regarding any of these considerations such as hypothermia, airway management, separation of families, and ability to effectively decontaminate the child.

DECONTAMINATION RECOMMENDATIONS BASED ON AGE OF CHILD:

- Children are divided into three groups by ages: 8-18 years old (school age), 2-8 years old (pre-school), and 0-2 years old (infants and toddlers).
- The following recommendations are based on the estimated child's age, since asking may be impractical due to the limitations of the PPE worn by decontamination team members or to a large influx of patients.
- The following recommendations are meant as general guidelines.

I. Children less than 2 years of age (infants and toddlers):

Infants and toddlers represent the most challenging group in which these special needs considerations are the most important.

- 1. All infants and toddlers should be placed on a stretcher and disrobed by either the child's caregiver or "hot zone" personnel. All clothes and items that cannot be decontaminated should be placed in appropriate containers or bags as provided by the hospital and labeled.
- 2. Each child should then be accompanied through the decontamination shower by either the child's caregiver or "hot zone" personnel to ensure the entire patient is properly decontaminated. It is not recommended that the child be separated from family members or adult caregiver. *It is not recommended that the caregiver carry the child due to the possibility of injury resulting from a fall, or from dropping a slippery and squirming child.* Special attention must be given to the child's airway while in the shower.
- 3. Non-ambulatory children will be placed on a stretcher by "hot zone" personnel and disrobed (using trauma shears if necessary). All clothes and items that

cannot be decontaminated should be placed in appropriate containers or bags as provided by the hospital and labeled.

- 4. Each non-ambulatory child should then be escorted through the decontamination shower by either the child's caregiver or "hot zone" personnel to ensure the entire patient is properly decontaminated. Special attention must be paid to the child's airway while in the shower.
- 5. Once through the shower, the child's caregiver or "cold zone" personnel will be given a towel and sheets to dry off the child, and a hospital gown. Immediately, the child should be given a unique identification number on a wristband and then triaged to an appropriate area for medical evaluation.
- 6. Children and their families (parents or caregivers) should not be separated unless critical medical issues take priority.

II. Children 2 to 8 years of age (pre-school):

From age 2 to 8, children should be able to walk and speak, yet will still look like a child with considerable variations in physiology and anatomy.

- 1. Ambulatory children should be assisted in disrobing by either the child's caregiver or "hot zone" personnel. All clothes and items that cannot be decontaminated should be placed in appropriate containers or bags as provided by the hospital and labeled.
- 2. Each child should be directly accompanied through the shower by either the child's caregiver or "hot zone" personnel to ensure the entire patient is properly decontaminated. It is recommended that the child not be separated from family member(s) or the adult caregiver.
- 3. Non-ambulatory children should be placed on a stretcher by "hot zone" personnel and disrobed (using trauma shears if necessary). All clothes and items that cannot be decontaminated should be placed in appropriate containers or bags as provided by the hospital and labeled.
- 4. Each non-ambulatory child on a stretcher is escorted through the decontamination shower and assisted with decontamination to ensure the entire patient is properly decontaminated.
- 5. Once through the shower, each child should be given a towel and sheets to dry, and a hospital gown. Immediately, the child should be given a unique identification number on a wristband and then triaged to an appropriate area for medical evaluation.
- 6. Children and their families (parents or caregivers) should not be separated unless critical medical issues take priority.
III. Children 8 to 18 years of age (school age):

At the age of 8 years and upward, the airway anatomy approximates that of an adult. Although it is tempting to regard this age group as "small adults" - there are special needs unique to this age group.

- 1. Ambulatory children should disrobe when instructed to do so by "hot zone" personnel. All clothes and items that cannot be decontaminated should be placed in appropriate containers or bags as provided by the hospital and labeled.
- 2. Each child should then walk through the decontamination shower, preferably in succession with their parent or caregiver, and essentially decontaminate him/herself.
- 3. Non-ambulatory children should be placed on a stretcher by "hot zone" personnel and disrobed (using trauma shears if necessary). All clothes and items that cannot be decontaminated should be placed in appropriate containers or bags as provided by the hospital and labeled.
- 4. Then each non-ambulatory child is escorted through the decontamination shower and assisted with decontamination to ensure the entire patient is properly decontaminated.
- 5. Once through the shower, each child will be given a towel and sheets to dry, and a hospital gown. Immediately, the child should be given a unique identification number on a wristband and then triaged to an appropriate area for medical evaluation.
- 6. Children and their families (parents or caregivers) should not be separated unless critical medical issues take priority.

Hospital Decontamination and the Pediatric Patient MODEL PROTOCOL ALGORITHM



REFERENCES

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- 10) Testimony before the Senate Committee on Health, Education, Labor, and Pensions Subcommittee on Children and Families Presented by Joseph L. Wright, MD, MPH, FAAP on Behalf of the American Academy of Pediatrics. <u>Senate Committee on</u> <u>Health, Education, Labor, and Pensions Subcommittee on Children and Families</u>. Washington, DC: American Academy of Pediatrics, 2001 of the <u>United States Senate</u> <u>http://www.aap.org/terrorism/resources/academy_resources.html</u>





Section 9. Pharmacy

Pharmacy Needs for Pediatrics in Disasters

Draft for Public Comment

PURPOSE:

The recommendations included in this section focus on pediatric pharmacy inventory and drugs which are likely to be used during a pediatric emergency. The list of medications and the daily pediatric dosages for relevant indications are provided to help pharmacists planning an inventory, but they cannot replace comprehensive treatment and prophylaxis guidelines. The following content is based on reference material from the CDC, AAP, FDA, the National Center for Disaster Preparedness, and the CDER at the NIH. It is recommended that hospitals consult with the CDC and regional health departments for the most up-to-date treatment guidelines. A reference section has also been included with links to clinical pathways for some important biological exposures.

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GENERAL GUIDELINES:

The following are recommendations and guidelines for the maintenance of pediatric inventories for pharmaceuticals most likely to be needed during disasters:

- 1. Establish procedures for maintenance of pharmacy disaster carts (kits/bags) for pediatric patients.
- 2. Maintain inventory of essential pharmaceuticals (72-hour supply).
- 3. Estimate supply for treatment or exposure prophylaxis of biologic agents at the facility:

Number of courses of treatment = (Daily census of pediatric patients) + (Potential pediatric disaster victims) + (Consider pediatric family members of hospital staff)

- 4. Provide appropriate facility for storage of inventory.
- 5. Inspect bags/cart monthly for integrity, quantities of drugs, record date of inspection on a maintenance record.
- 6. Plan for re-supply from local and state stockpiles; collaborate with regional emergency management planners.
- 7. Evaluate existing MOUs, network affiliations, local pharmacies, drug companies; maintain a list on the cart of these sources of additional drugs.
- 8. As per HEICS, identify unit leader/director responsible for distribution of medications in case of disaster.
- 9. Develop criteria to stop nonessential use of antibiotics until stockpile arrives and is distributed.
- 10. Regularly test pharmacy during drills.

PHARMACY INVENTORY (PEDIATRICS)

Abbreviations: E = essential, D = desired, mg = milligram, g = gram, kg = kilogram, mI = milliliter, BID = twice daily, q = every, h = hours, div = divided (for dosages based on a daily dose, which needs to be then divided into intervals), max = maximum dose, y/o = years old, IV = intravenous, IM = intramuscular, PO = by mouth, SC = subcutaneous, IO = intraosseous (note: as an alternative to the IV route in patients with vascular access problems most parenteral medications can be given via an intraosseous needle), PRN = as needed. Many of these medications may already be in hospital's pharmaceutical inventory.

Exposure/Agent	Pediatric Dose	Importance
Anthrax, pulmonary		
Ciprofloxacin ³	10-15 mg/kg IV q12h (max 1g/day)	E
Doxycycline ²	2.2 mg/kg IV q12h (max 100mg/day)	E
Clindamycin	10-15 mg/kg IV q12h	E
Penicillin G	250,000 - 600,000 units/kg/day div q4h	E
Anthrax, cutaneous		
Ciprofloxacin ³	10-15 mg/kg IV q12h (max 1g/day)	E
Doxycycline ²	2.2 mg/kg IV q12h (max 100mg/day)	E
Penicillin V 250mg/5ml oral solution	25-50 mg/kg/day PO div q6h	D
Amoxicillin 250mg/5ml suspension	40-80 mg/kg/day PO div q8h	D
Anthrax, post-exposure Prophylaxis		U
Ciprofloxacin 250mg/5ml oral	10-15 mg/kg PO g12h (max 1g/day)	F
or		L
Doxycycline ²	2.2 mg/kg PO q12h (max 200mg/day)	E
Brucellosis, serious infections		
Streptomycin	15 mg/kg IM q12h (max 2g/day)	D
Rifampin	20 mg/kg/day PO/IV div q12/24h (max 600-900mg/day)	E
or		_
Gentamicin	2.5 mg/kg IV/IM every 8 hr (term	E
	infants/children <5 y/o) 2-2.5 mg/kg	
	IV/IM every 8 hr	
and	(children 5 years and older)	
Ciprofloxacin	15 mg/kg IV q12h	E

Exposure/Agent	Pediatric Dose	Importance
Brucellosis, less serious infections Trimethoprim-Sulfamethoxazole 40mgTMP-200mgSMX /5ml suspension	5 mg/kg TMP component q12h PO	E
Influenza, prophylaxis ⁹		
Oseltamivir 12mg/ml oral suspension <i>or</i>	75 mg PO daily	D
Amantadine 50mg/kg syrup	4.4 to 8.8 mg/kg/day PO daily (max 150 mg/day) Children 1-9 yrs. 100 mg PO BID children <u>></u> 10 yrs. Or 5 mg/kg/day PO daily if weight < 40kg	D
Influenza, therapy ⁹		
Oseltamivir 12mg/ml oral suspension	See Table 3 for dosing	D
Amantadine 50mg/kg syrup	Same as prophylaxis (max 200mg/day)	D
Iodine Radionuclide Exposure		
Potassium iodide (KI)	See Table 4 for preparation ⁴	E
ThyroShield ™	See Table 5 for dosing ⁸	D
Nerve Agents		
Pralidoxime 1g/20ml	25-50mg/kg IV/IM (max 1g IV, 2g IM), repeat within 30-60min, then q1h x 1-2 doses PRN	E
Atropine sulfate Inj. 1 mg/10 ml	0.05-0.1mg/kg IV/IM (min 0.1mg, max 5mg)	E
Atropine/Pralidoxime Autoinjector (Mark-I) ⁶	see table 6 for dosing	D
Plague		
Gentamicin or	2.5 mg/kg IV q8h	E
Streptomycin or	15 mg/kg IM q12h	D
Doxycycline	2.2 mg/kg IV q12h (max 200mg/day)	D
Ciprofloxacin	5 mg/kg IV q12h	D

Exposure / Agent	Pediatric Dose	Importance
Plague meningitis		
Chloramphenicol	25 mg/kg IV q 6h (max 4g/day) ¹¹	D
Plague, post-exposure prophylaxis		
Doxycycline ²	2.2 mg/kg PO q12h (max 100mg)	E
Ciprofloxacin 250mg/5ml oral suspension	20 mg/kg PO q12h (max. 1g/day)	E
Pneumonia Plague		
Doxycycline ²	2.2 mg/kg PO q12h (max 200mg/day)	E
Ciprofloxacin 250mg/5ml oral suspension	20mg/kg PO q12h	E
Pneumonic Tularemia		
Gentamicin ¹⁰	2.5 mg/kg IV q8h	E
Streptomycin ¹⁰	15 mg/kg IM q12h	D
Doxycycline	2.2 mg/kg IV q12h (max 200mg/day)	D
Ciprofloxacin	15 mg/kg IV q12h (max 1g)	D
Chloramphenicol	15 mg/kg IV q6h (max 4g) ¹¹	D
Pulmonary Agents		
Sodium bicarbonate 4.2% and 7.5%	1mEq/kg/dose (2ml/kg of 4.2% sol. (for neonates) or 1.1ml/gk of 7.5% sol.) IV/IO	E
Sodium nitrate 3% ⁵	See table 2 for dosing	_
Sodium thiosulfate 25%	1.65 ml/kg (max 50ml)	E
		E
Viral Hemorrhagic Fever	Ribavirin ¹	D

Analgesics	Pediatric Dose	Importance
Acetaminophen 80,160mg/0.8ml	10-15 mg/kg q4h	E
Ibuprofen 100mg/5ml oral solution	5-10 mg/kg q6h	E
Morphine Inj. 1mg/ml	0.1-0.2 mg/kg IM/IV/SC q2-4h	E
	(max 15 mg/dose) PRN	
Morphine 10mg/ml oral solution	0.2-0.5mg/kg q4-6h PRN	E
Emergency Drugs	Pediatric Dose	Importance
Albuterol 2.5mg/3ml nebulizer solution	<1y: 0.05-0.15 mg/kg q4h PRN 1-5y: 1.25-2.5 mg/kg q4h PRN 5-12y: 2.5 mg/dose q4h PRN >12y: 2.5-5 mg/dose q4h PRN	E
Artificial Tears Eye Drops	Topical symptomatic care	D
Atropine sulfate Inj. 1mg/10 ml	0.02 mg/kg IV/IO/IM (min 0.1mg, max 0.5mg (child), max 1mg (adolescent)	E
Bacitracin ointment	Topical wound/burn care	D
Calcium Chloride 10% Inj. 1g/10ml	20 mg/kg (0.2ml/kg) slow IV/IO	E
Dexamethasone Inj. 4mg/ml	0.5-2mg/kg/day IV/IM div q6h	E
Dextrose 50% Inj. 25g/50ml	0.25-1g/kg (0.5-2ml/kg) IV/IO (neonates: do not exceed 12.5%, dilute 1:3 with sterile water)	E
Diazepam Inj. 10mg/2 ml	0.05-0.3mg/kg (max 10mg) IV	E
Diphenhydramine Inj. 50mg/ml	1.25mg/kg IV q6h	E
Dopamine Inj. 200mg/5ml	2-20 microgram/kg/minute IV	E
Epinephrine (1/10,000) Inj. 0.1 mg/ml for cardiac arrest	0.01mg/kg IV/IO	E
Furosemide Inj. 10mg/10ml	0.5-2mg/kg IV	E
Ketamine Inj. 10mg/ml	2-3mg/kg IM	E
Lidocaine 2% Inj., 5ml	loading dose: 1mg/kg IV/IO	E
Mannitol 25% Inj. 12.5g, 50ml	0.25g/kg/dose IV over 30 minutes	E
Midazolam Inj. 1mg/ml	0.1-0.2mg/kg (max 10mg) IV/IM	E
Phenytoin Inj. 250mg/5ml	15-20mg/kg IV loading dose	E

Prednisone 5mg/5ml syrup	2mg/kg/day PO div BID	E
Silver Sulfadiazine cream	topical burn care	E

FOOTNOTES

¹ Ribavirin IV: loading dose 30 mg/kg IV once (max. dose 2g), then 16 mg/kg IV (max. dose 500 mg) q6h for 4 days, then 8 mg/kg (max. dose 500 mg) for 6 days; Ribavirin PO: loading dose of 30 mg/kg PO once, then 15 mg/kg/day PO div q12 for 10 days

² See Table 1 for doxycycline suspension recipe

³ Ciprofloxacin is the preferred agent, safety and effectiveness for this indication have been established in children (Meyerhoff et al, 2004); it is also recommended for use in pregnant women; amoxicillin may be considered as an alternative in children (MMWR 2001)

⁴ See Table 4 for KI suspension preparation and dosing

⁵ See Table 2 for sodium nitrate dosing

⁶ See Table 6 for Autoinjector usage

⁷ See Table 5 for dosing of TyroShield[™]

⁸ See Table 3 Oseltamvir Dosing for details

⁹ Streptomycin or gentamicin is the preferred choices

¹⁰ Serum concentrations should be maintained between 5-20 microgram/ml; concentrations over 25 microgram/ml can cause reversible bone marrow suppression

DRUG PREPARATION AND DOSING

Table 8.1: Doxycycline suspension preparation (adapted from FDA reference material, 2005): The second column indicates the portion of a tablet, which needs to be crushed and suspended for an individual patient in order to achieve the desired milligram concentration indicated in column 1. Columns 3 and 4: Dosage uniformity determination: analysis of crushed tablets mixed with low fat chocolate milk.

Dosage (Mg)	Tablet Portion	Mg Doxycycline: Average and SD	Mg Doxycycline: Range
100 Mg	1	96.1+/-0.6	95.6-96.7
75 Mg	3⁄4	67.8+/-3.1	64.4-70.5
50 Mg	1⁄2	47.0+/-2.4	42.9-49.5
25 Mg	1⁄4	23.8+/-3.5	18.3-32.1

* % Desired Dosage based on an average tablet assay of 97% equating to 100% dosage.

Table 8.2: Sodium nitrate dosing (Berlin et al, 1970)

Estimated Hgb (g/dl) for average child	Sodium nitrate (3%) Dosage (ml/kg)
7	0.19
8	0.22
9	0.25
10	0.27
11	0.30
12	0.33
13	0.36
14	0.39
	Maximum 10 ml

OSELTAMIVIR DOSING RECOMMENDATIONS FOR CHILDREN

Oseltamivir is not approved in children < 13 years for prophylaxis of influenza, but is approved for treatment in children over 1 year of age. Amantadine is cheaper than oseltamivir and approved in children > 1 year, but is only active against Influenza A. See Table 3 for the dosing of oseltamivir for therapy of influenza.

Table 8.3: Influenza treatment with oseltamivir (CDC, 2002; Prod Info Tamiflu(R), 2001)

Weight*	Dose
>1 year, ≤ 15 kg	30 mg BID
> 15 kg to 23 kg	45 mg BID
> 23 kg to 40 kg	60 mg BID
> 40 kg	75 mg BID

SOLUTION PREPARATION FOR 65 MG POTASSIUM IODIDE TABLET (FDA reference material)

Preparation of mixture using 65mg KI tablets:

- 1. Grind the potassium iodide 65 mg tablet into powder
 - Put one 65mg potassium iodide tablet into a small bowl and grind it into a fine powder using the back of the metal teaspoon against the inside of the bowl. The powder should not have any large pieces.
- 2. Mix potassium iodide powder into a Drink
 - Add four teaspoonfuls of water to the potassium iodide powder in the small bowl. Use a spoon to mix them together until the potassium iodide powder is dissolved in the water.
- 3. Mix drink of choice with potassium iodide powder and water solution
 - Add four teaspoonfuls of drink to the potassium iodide powder and water mixture described in Step 2.

The amount of potassium iodide in the drink is 8.125 mg per teaspoon. The number of teaspoonfuls of the drink to give your child depends on your child's age. Table 3 shows how many teaspoonfuls of potassium iodide mixture to give to an adolescent, child, or infant.

Please pay attention to the number of teaspoonfuls recommended when using a potassium iodide 65 mg tablet as it is different from the number of teaspoonfuls given when using a potassium iodide 130 mg tablet.

Table 8.4: Recommended doses of KI for children and infants with predicted thyroid radioactivity exposures equal to or greater than 5 cGy¹, using 65 mg tablet preparations.

If your child is:	Give your child this amount of potassium iodide (KI) *	Which is
Between 4 and 12 years old	8 teaspoonfuls (NOT tablespoonfuls)	65 mg of potassium iodide (KI)
Over 1 month through 3 years	4 teaspoonfuls (NOT tablespoonfuls)	32.5 mg of potassium iodide (KI)
An infant from birth through 1 month	2 teaspoonfuls (NOT tablespoonfuls)	16.25 mg of potassium iodide (KI)

* The amount to give your child for one dose. You should give your child one dose each day.

¹ FDA, Guidance: Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies, December 2001.

THYROSHIELD[™] DOSING RECOMMENDATIONS FOR CHILDREN

Table 8.5: Manufacturer's dosing recommendation for ThyroShieldTM (table from Consumer Package Insert); available from Fleming & Company, Pharmaceuticals, Fenton, St. Louis Co., MO 63026, 1-800-343-0164

Dose: Adults over 18 years Children over 12 years to 18 years who weigh at least 150 pounds	2 mL every day (130 mg) 2 mL every day (130 mg)	1 mL +
Children over 12 years to 18 years who weigh less than 150 pounds	1 mL every day (65 mg)	1 mL
Children over 3 years to 12 years	1 mL every day (65 mg)	
Children over 1 month to 3 years	0.5 mL every day (32.5 mg)	G.5 mL
Babies at birth to 1 month	0.25 mL every day (16.25 mg)	-
Take KI every day (every 24 hours) as direc hours. More will not help you. Too much me	ted by public officials. Do not take more than 1 dos dicine may increase the chances of side effects.	e in 24 0.25 mL

MARK-1 KIT USE IN PEDIATRICS New York City Protocol for Infants and Children in a Nerve Gas Release

Most published recommendations for treatment of pediatric nerve agent poisoning are based upon standard resuscitation doses for these agents. However, certain medical and operational concerns suggest that an alternative approach may be warranted for treatment of children by emergency medical personnel following mass chemical events. 1) There is evidence both that suprapharmacologic doses may be warranted and that side effects from antidote overdosage can be tolerated. 2) There is concern that many emergency medical personnel will have difficulty determining both the age of the child and the severity of the symptoms. Therefore, the Regional Emergency Medical Advisory Committee (REMAC) of New York City and the Fire Department, City of New York (FDNY), Bureau of Emergency Medical Services, in collaboration with the Center for Pediatric Emergency Medicine (CPEM) of the New York University School of Medicine and the Bellevue Hospital Center, have developed a pediatric nerve agent antidote dosing schedule that addresses these considerations. This schedule is reproduced in the Table that follows:

Tag Color	Exposure, Respiratory Distress, Agitation, SLUDGEM	Atropin Monitor	e and 2-PAM Doses ing Interval	Atropine Repeat Dosing
RED (Pediatric)	Yes	Age <1 years Age 1-8 years	 Peds Atropine Auto-injector (0.5 mg) No 2-PAM Monitor every 3 minutes Atropine Auto-injector (2mg) 2-PAM Auto-injector (600 mg) Monitor every 3 minutes 	Atropine every 3 minutes as needed
GREEN (Pediatric)	No	None Monitor	every 10 minutes for evidence of exposure	e
NOTE: TREATMENTS LISTED ABOVE ARE FOR PATIENTS < 8 YEARS OLD ONLY				

Table 0.0. NTC FIULUCULIUL III and Sand Children in a Nerve Das Releas	Table 8.6: NYC	Protocol for	Infants and	Children in	a Nerve	Gas Release
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These doses are comparable to those being administered to adults with severe symptoms and within limits deemed tolerable following accidental nerve agent overdose in children. We conclude that the above approach is likely a safe and effective alternative to weight based dosing of children, which will be nearly impossible to attain under field conditions.^{1.}

1. Foltin G *et al.* Pediatric Nerve Agent Poisoning: Medical and Operational Considerations for Emergency Medical Services in a Large American City, Submitted for publication May 2005.

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MMWR Morb Mortal Wkly Rep. 2001;50(45):1014-6.

National Emergency Medical Services for Children Resource Alliance, Committee on Pediatric Equipment and Supplies for Emergency. Guidelines for pediatric equipment and supplies for emergency departments. Ann Emerg Med. 1998;31:54-57.

Patt HA and Feigin RD. Diagnosis and management of suspected cases of bioterrorism: A pediatric perspective. Pediatrics 2002;109:685-92.

Web sites providing information and guidelines on drugs related to pediatric disaster preparedness:

Positions and recommendations by the American Academy of Pediatrics <u>http://www.aap.org/terrorism/resources/federal_resources.html</u> (last accessed 3/29/05)

American College of Emergency Physicians http://www.acep.org/1,2669,0.html (last accessed 3/29/05)

Centers for Disease Control and Prevention <u>http://www.bt.cdc.gov/children/</u> (last accessed 6/16/05)

FDA web site on drug preparedness and bioterrorism http://www.fda.gov/cder/drugprepare/default.htm (last accessed 3/29/05)

Recommendations on flu pandemics by the Department of Health and Human Services <u>http://www.dhhs.gov/nvpo/pandemics/</u> (last accessed 3/29/05)

Overview of FDA approved antiviral drugs for influenza treatment and prophylaxis

http://www.fda.gov/cder/drug/antivirals/influenza/default.htm (last accessed 3/29/05)

CDC Information on national stockpile http://www.bt.cdc.gov/stockpile/ (last accessed 6/16/05)

"Mass casualty disaster plan checklist: A template for healthcare facilities" by the Association for Professional in Infection Control and Epidemiology <u>http://www.gnyha.org/eprc/general/templates/APIC_MassCasualtyChecklist.pdf</u> (last accessed 4/19/05)

Agency for Toxic Substances and Disease Registry (ATSDR): "Medical management guidelines" http://www.atsdr.cdc.gov/MHMI/mmg166.html#bookmark04 (last accessed 4/21/05)

Center for Infectious Disease Research and Policy Clinical pathway: Anthrax <u>http://www.cidrap.umn.edu/cidrap/files/17/anthrax-clinical-pathway.pdf</u> (last accessed 6/16/05)

Center for Infectious Disease Research and Policy Clinical pathway: Botulism <u>http://www.cidrap.umn.edu/cidrap/files/19/botulism_clinical_pathway.pdf</u> (last accessed 6/16/05)

Center for Infectious Disease Research and Policy Clinical pathway: Pneumonic Tularemia <u>http://www.cidrap.umn.edu/cidrap/files/28/tularemia-clin-path.pdf</u> (last accessed 6/16/05)

Center for Infectious Disease Research and Policy Clinical pathway: Vesicular or pustular rash illness <u>http://www.cidrap.umn.edu/cidrap/files/18/smallpox_clinical_pathway.pdf</u> (last accessed 6/16/05)

Center for Infectious Disease Research and Policy Clinical pathway: Viral hemorrhagic fever <u>http://www.cidrap.umn.edu/cidrap/files/25/vhf_clinical_pathway.pdf</u> (last accessed 6/16/05)

Center for Infectious Disease Research and Policy Clinical pathway: Pneumonic Plague <u>http://www.cidrap.umn.edu/cidrap/files/22/plague_clinical_pathway.pdf</u> (last accessed 6/16/05)





Section 10. Psychosocial Considerations

The Psychosocial Needs of Children during a Disaster Draft for Public Comment

PURPOSE:

To properly care for children in hospitals it is necessary to consider both their physical and mental health needs and treating them in the context of the family unit. Children's responses to disaster and hospitalization may share some aspects of adult responses, but are distinguished by the developmental contexts in which children of varying ages experience, mediate and communicate the impact of associated events and procedures. An unfamiliar environment such as a medical setting can be made to feel safer for pediatric visitors and patients by including familiar people, familiar things and routines. Hospitals need also note the cultural differences that may cause a group of children exposed to the same trauma to react differently and must ensure that mental health staff is sympathetic to each of these variances. Lastly, there are legal concerns regarding the treatment and release of children which each hospital should consider when creating the pediatric response portion of its disaster plan.

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GENERAL GUIDELINES

- When describing the hospital experience to children of any age, it is important to be honest in your description and in answering any questions they may have. However, it is important not to give preconceived notions about what a child may feel. Caregivers should avoid the use of the words "pain" and "scary" in describing experiences the child may have since everyone feels pain and emotions differently.
- 2. Since young children (preschool through school age) learn best by experience, provide as much information as you can to help the child learn about their upcoming experience. Describe what the child may smell, hear, touch, and feel using as many tangible items as possible, such as dolls and books.
- 3. Children's reactions and symptoms can be expressed through behavior, thoughts, emotions, and physical reactions. Children's fears about their own safety can contribute to symptoms of anxiety and depression and may also lead to oppositional and aggressive behavior. This may be an attempt to reassert some sense of control and should be recognized as such.
- 4. Don't leave children unaccompanied in front of a television, for example with the news on, but allow them to talk about what is going on if they choose. Clarify misconceptions with simple, truthful explanations.
- 5. Refrain from having conversations about the disaster in front of the children or within hearing distance. This can lead to misunderstandings and misconceptions.
- 6. Gather unit staff and develop language for describing events of disaster. Ensure that all staff is educated accordingly and then communicate this information consistently to avoid adding to the children's confusion.
- 7. Opportunities for play are important for learning, expression of feelings, normalcy, escape and mastery. Age appropriate toys and diversionary activities are helpful to have on hand. This may include puzzles, books, simple art supplies and video and audiotapes. If possible allow children to interact in groups and monitor for misconceptions.
- 8. Try not to separate from their primary caregivers for extended periods of time. Allow a parent/caregiver to accompany the child to procedures as much as possible. To encourage feelings of safety and familiarity try to limit the number of staff caregivers (*i.e.* assign same nurse to care).
- 9. Parents will be most helpful when they are/feel informed- if they are upset from not knowing what is going on that tension is going to affect the child.
- 10. Assess for any underlying mental health disorder that may require immediate psychiatric consultation such as trouble sleeping, lack of appetite and physical complaints with no medical basis.

- 11. Gather information about varying cultural responses to trauma and death.
- 12. Gather list of community resources (counseling services, etc) for distribution to parents/caregivers upon discharge.
- 13. Identify staff within hospital who can assist with addressing the emotional and psychological issues i.e. social workers, psychologists, psychiatrists, chaplains, psychiatric nurses, etc and have an on-call list available for unit staff.
- 14. Identify resources for staff support to cope with impact of seeing injured and/or dying children.
- 15. Identify community resources that may be able to donate services, supplies, etc specifically for the children.

DEVELOPMENT SPECIFIC GUIDELINES FOR TREATING CHILDREN IN THE HOSPITAL

Infants

- Try to let a parent/caregiver stay with the baby during medical procedures.
- Use familiar objects from home such as a stuffed animal, blanket, music box or toy to help comfort the baby before, during or after a procedure

Toddler and pre-school

- Try not to have conversations about your child's care in their presence unless you are including them in the conversation. Children overhear much more than adults think and without any explanation the information may seem terribly frightening.
- Let a parent/caregiver stay overnight with the child if possible. If appropriate, let other family members, including brothers and sisters, come and visit.
- Reassure child that the hospitalization is not a punishment. Try to avoid using good/bad labels particularly during a procedure. For example, instead of saying "See, you were so good, the doctor only had to do this once," you can say, "You did such a good job of sitting still, I know that was hard."
- Children learn best through play and "medical play" can be particularly useful. Allow them to handle some medical equipment such as a stethoscope, blood pressure cuff, etc. Allow them to practice the procedure on a doll.
- Allow child to make choices whenever possible but don't offer a choice when none exist. For example do not say, "Would you like to come into the treatment room now so the doctor can look at you?" It would better to say, "Do you want to bring your bear or blanket with you to the treatment room?"

School age

- School age children can be given more specific information about what is going to happen to them. Many medical terms can be confusing for children. For example, the term "I.V." could be confused with the word "ivy" or "dye" with "die." Give simple, specific explanations for procedures.
- This is a great age for medical play (communicating understanding, fears, etc. through play with medical equipment). Allow child the opportunity to reenact events through play with different kinds of toys or art materials. This is an important way for school age children to express their feelings and gain a sense of control over what is happening to them.

- Respect child's privacy and encourage others to do the same by knocking before entering the room and being sensitive to who is around when examinations are being conducted.
- Sometimes children at this age regress, or start up behaviors that they had grown out of (thumb sucking, bed wetting, etc.), when in a stressful situation like being in the hospital. Do not berate (come on, you're a big girl now...) or punish for this behavior. Encourage child to express his feelings and discharge emotions through play.

Adolescents

- Try not to have conversations about teen's care in his/her presence unless you are including him/her in the conversation. Adolescents can understand much more about their bodies and what is happening to them and may resent not being included in discussions about their condition or treatment.
- Do not assume that teens manage their emotions the same way as adults do. Give them opportunities to discuss what is happening with staff both with and without parent/caregiver being present so they can ask questions.
- Respect a teen's privacy and encourage others to do the same by knocking before entering the room and being sensitive to who is around when examinations are being conducted.

HOW CHILDREN CAN REACT TO A DISASTER

Children react differently to stressful events than adults. Their response can often be delayed and may be hard to detect. They may find it hard to talk about how they have been affected.

- Staff needs to be aware of changes in children's behavior, like extra clinging or a change in appetite. Parents, teachers and other caring adults who know the child are in the best position to notice these changes.
- Don't wait for them to come to you, ask questions like: Are they having trouble sleeping? Are they feeling less safe than before?
- Some children are more likely to have emotional reactions to the events:
 - Children who witnessed the event firsthand or whose parent, relative of friend was killed or injured
 - Children who are displaced from their home or schools
 - Children who have a past history of emotional problems
 - Children who have a past history of trauma, either as a victim or a witness to violence or abuse
 - Children with an adult in their life who is having difficulty with their emotions, a witness to violence or victim of domestic violence

Emotional Responses also vary by development stages and may include the following:

Children aged 5 and younger may:

- Have fears of being separated from a parent
- Be unusually fearful, "fussy", clingy, and have crying bouts
- Return to outgrown behavior, such as bed-wetting or baby talk
- Have nightmares or problems sleeping
- Have stomachaches, headaches or other physical complaints that do not have a medical base
- Startle easily
- Have a loss or increase in appetite

Children aged 6 to 11 may:

- Engage in repeated play that depicts the disturbing events over and over
- Have nightmares or problems sleeping
- Have unusual outbursts of anger
- Withdraw from friends and family

- Be fearful, anxious or preoccupied with safety and danger
- Return to behavior they have outgrown
- Express feelings of guilt
- Have frequent stomachaches, headaches or other physical complaints that do not have a medical base
- Have problems concentrating
- Experience persistent, disturbing feelings and memories when reminded of the event

Children aged 12 to 18 may:

- Have appetite changes
- Headaches, gastrointestinal problems
- Loss of interest in social activities
- Sadness or depression
- Feelings of inadequacy and helplessness
- Feelings of anger and aggression
- Isolation from others, less interests in friendships
- Repetitive behaviors such as hand-washing

Not all children exhibit all symptoms and their reactions may change over the first days or weeks following a crisis.

HELPFUL HINTS TO ASSIST CHILDREN DURING AND AFTER A DISASTER

For children under age 5:

- Try to keep to normal routines and favorite rituals as much as possible
- Limit exposure to TV programs and adult conversations about the events
- Ask what makes them feel better
- Give plenty of hugs and physical reassurance
- Provide opportunities for them to be creative and find other ways to express themselves

For children older than age 5:

- Don't be afraid to ask them directly what is on their mind and answer their questions honestly
- Talk to them about the news and any adult conversations they have heard

- Make sure they have opportunities to talk with peers if possible
- Set gentle but firm limits for acting out behavior
- Encourage verbal and play expression of thoughts and feelings
- Listen to child's repeated retelling of the event

WHEN TO CONSULT A MENTAL HEALTH PROFESSIONAL

Consultation with a mental health professional may be useful at any of these times. However, psychiatric consultation should be sought if any of the following is exhibited:

- Excessive fear of something terrible happening to their parents or loved ones
- Excessive and uncontrollable worry about things, such as unfamiliar people, places or activities
- Fear of not being able to escape if something goes wrong
- Suicidal thoughts or the desire to hurt others
- If the child has hallucinations
- Expressing feelings of being helpless, hopeless, and worthless

LEGAL CONSIDERATIONS

The following are legal questions and issues that may arise during a disaster. Having policies and procedures in place prior to an event should be considered.

- For unaccompanied children during a disaster, consent is not needed to treat for a life or limb-threatening situation. Is parental consent needed to treat a child victim with minor injuries? With psychological injuries?
- Is parental consent required to decontaminate an unaccompanied child? What if child is asymptomatic? What if child is refusing?
- What medical or social information can be released and to whom during a disaster?
- Check HIPAA rules and your legal counsel concerning the unidentified patient locator protocols, such as posting Polaroid photographs of unidentified children.
- Who can children be released to and if not the parent or caregiver, what permission or information is needed? What is your protocol for releasing children if no legal guardian or parent can be found or if no permission document is provided?

CULTURAL DIFFERENCES ABOUT DEATH AND DYING

Every culture has its own rituals and manner of mourning. Over time and through immigration and contact between different groups in the US, mourning patterns of ethnic groups have changed and continue to change all the time. Clinicians should be careful about definitions of "normality" in assessing families' responses to death. Additionally, health care providers should remember not to assume people within any particular cultural group fit a pattern when mourning. Each family unit, as each individual, needs to be treated and assessed on an individual case-by-case basis.

- It is important for staff to appreciate an ethnic group's particular attitudes about mourning and to find out from a family what its members believe about the nature of death, the rituals that should surround it, and the expectations of afterlife.
- Often a failure to carry out death rituals contributes to a family's experience of unresolved loss.
- Helping family members deal with a loss often means showing respect for their particular cultural heritage and encouraging them actively to determine how they will commemorate the death of a loved relative.
- While it is generally better to encourage families toward openness about death, it is also crucial to respect their cultural values and timing for dealing with the emotional aftermath of a loss.
- Staff may inquire about:
 - What are the prescribed rituals for handling dying, disposition of the body, rituals to commemorate the loss
 - What are the group's beliefs about what happens after death
 - What do they believe about appropriate emotional expressions
 - What are the gender rules for handling the death
- Staff should identify personnel in their setting who may be able to provide more details regarding specific cultural groups such as Pastoral Care, Social Work, or even particular staff members from various cultural groups.

OBTAINING MENTAL HEALTH SERVICES IN THE COMMUNITY

Every child experiences emotional difficulties from time to time, but at some point a child's problems may warrant professional attention.

LifeNet

Counseling professionals provide free, confidential information and referral services, 24 hours a day. They have the latest information and where to go for help. Anyone can call. Help is available in several languages. They can also help find resources outside of NY State.

In English: 1-800-LIFENET (1-800-543-3638) In Spanish: 1-877-AYUESE (1-877-298-3373) In Chinese: ASIAN LIFENET (1-877-990-8585)

Contacting the child's pediatrician for a referral to a mental health professional or clinic may also be helpful.

LifeNet Information may also be obtained at the NYC DOHMH web site: http://www.nyc.gov/html/doh/html/cis/cis_lifenet.shtml

FACT SHEET AFTER A DISASTER: A GUIDE FOR PARENTS AND CARE-GIVERS From the National Institute of Mental Health

Natural disasters such as tornados, or man-made tragedies such as bombings, can leave children feeling frightened, confused, and insecure.

Whether a child has personally experienced trauma or has merely seen the event on television or heard it discussed by adults, it is important for parents, care-givers, and teachers to be informed and ready to help if reactions to stress begin to occur.

Children respond to trauma in many different ways. Some may have reactions very soon after the event; others may seem to be doing fine for weeks or months, then begin to show worrisome behavior. Knowing the signs that are common at different ages can help parents and teachers to recognize problems and respond appropriately.

Preschool Age

Children from one to five years in age find it particularly hard to adjust to change and loss. In addition, these youngsters have not yet developed their own coping skills, so they must depend on parents, family members, and teachers to help them through difficult times.

Very young children may regress to an earlier behavioral stage after a traumatic event. For example, preschoolers may resume thumb sucking or bedwetting or may become afraid of strangers, animals, darkness, or "monsters." They may cling to a parent or teacher or become very attached to a place where they feel safe.

Changes in eating and sleeping habits are common, as are unexplainable aches and pains. Other symptoms to watch for are disobedience, hyperactivity, speech difficulties, and aggressive or withdrawn behavior. Preschoolers may tell exaggerated stories about the traumatic event or may speak of it over and over.

Early Childhood

Children aged five to eleven may have some of the same reactions as younger boys and girls. In addition, they may withdraw from play groups and friends, compete more for the attention of parents, fear going to school, allow school performance to drop, become aggressive, or find it hard to concentrate. These children may also return to "more childish" behaviors; for example, they may ask to be fed or dressed. Do boys and girls act differently?

Adolescence

Children twelve to fourteen are likely to have vague physical complaints when under stress and may abandon chores, school work, and other responsibilities they previously handled. While on the one hand they may compete vigorously for attention from parents and teachers, they may also withdraw, resist authority, become disruptive at home or in the classroom, or even begin to experiment with high-risk behaviors such as drinking or drug abuse. These young people are at a developmental stage in which the opinions of others are very important. They need to be thought of as "normal" by their friends and are less concerned about relating well with adults or participating in recreation or family activities they once enjoyed. In later adolescence, teens may experience feelings of helplessness and guilt because they are unable to assume full adult responsibilities as the community responds to the disaster. Older teens may also deny the extent of their emotional reactions to the traumatic event.

How to Help

Reassurance is the key to helping children through a traumatic time. Very young children need a lot of cuddling, as well as verbal support. Answer questions about the disaster honestly, but don't dwell on frightening details or allow the subject to dominate family or classroom time indefinitely. Encourage children of all ages to express emotions through conversation, drawing, or playing and to find a way to help others who were affected by the disaster.

Try to maintain normal routines and encourage children to participate in enjoyable activities. Reduce expectations temporarily about performance in school or at home, perhaps by substituting less demanding responsibilities for normal chores. Finally, acknowledge that you, too, may have reactions associated with the traumatic event, and take steps to promote your own physical and emotional healing.

When to Seek More Help

Consultation with a mental health professional may be useful at any of these times. However, psychiatric consultation should be sought if any of the following is exhibited:

- Excessive fear of something terrible happening to their parents or loved ones
- Excessive and uncontrollable worry about things, such as unfamiliar people, places or activities
- Fear of not being able to escape if something goes wrong
- Suicidal thoughts or the desire to hurt others
- If the child has hallucinations
- Expressing feelings of being helpless, hopeless, and worthless

ON-LINE RESOURCES FOR PEDIATRIC PSYCHOSOCIAL ISSUES

American Academy of Pediatrics AAP Children, Terrorism and Disaster. Web site created by AAP. Useful with multiple documents related to children's needs during disasters. http://www.aap.org/terrorism/index.html

Child Deaths Hit Communities Hard: Disasters Demand Psychological Triage AAP News Article http://www.aap.org/advocay/disarticle.htm

The Child's Loss: Death, Grief and Mourning: How Caregivers Can Help Children Exposed to Traumatic Death. *From the Child Trauma Academy* <u>http://www.childtrauma.org/ctamaterials/loss care f1 02.pdf</u>

Clinical Work with Culturally Diverse Dying Patients http://www.angelfire.com/on/NYCLTCethicsnetwork/econgress.html

Family Readiness Kit-Preparing to Handle Disaster *The American Academy of Child and Adolescent Psychiatry has suggestions for "Helping Children after a Disaster."* http://www.aacap.org/publications/factsfam/disaster.htm

Federal Emergency Management Agency (FEMA) for Kids Site with multiple games, coloring books, and materials aimed at younger, computer savvy children. www.fema.gov/kids

How Pediatricians Can Respond to the Psychosocial Implications of Disasters AAP Policy statement http://www.aap.org/policy/re9813.html

National Advisory Committee on Children and Terrorism http://www.bt.cdc.gov/children/

National Institute of Cancer - Loss, Grief and Bereavement <u>http://www.cancer.gov/cancertopics/pdq/supportivecare/bereavement/healthprofes</u> <u>sional</u>

National Child Traumatic Stress Network http://www.nctsnet.org/nccts/nav.do?pid=hom_main

National Mental Health Information Center Publications on Disaster and Trauma <u>http://store.mentalhealth.org/publications/Publications_browse.asp?ID=181&Topic=Di</u> <u>saster%2FTrauma</u>

New York State Office of Mental Health www.omh.state.ny New York University Child Study Center www.aboutourkids.org

Pediatrician's Role in Disaster Preparedness (AAP policy statement) <u>http://www.aap.org/policy/re9702.html</u>

Perry. BD. Helping Traumatized Children: A Brief Overview for Caregivers. Child Trauma Academy <u>http://www.childtrauma.org/ctamaterials/Prin tcare 03 v2.pdf</u>

Psychosocial Issues for Children and Families in Disasters: A Guide for the Primary Care Physician Joint publication between AAP and US Center for Mental Health Services http://www.mentalhealth.org/publications/allpubs/SMA95-3022/SMA3022.htm

Terrorist Attacks and Children Article found at the National Center for Post Traumatic Stress Disorder http://www.ncptsd.va.gov/facts/disasters/fs children disaster.html

Tips for Talking About Disasters National Mental Health Information Center <u>http://www.mentalhealth.samhsa.gov/cmhs/EmergencyServices/after.asp#children</u>





Section 11. Infection Control

Pediatric Infection Control Considerations

Draft for Public Comment

PURPOSE:

The following recommendations are based on limited published materials concerning infection control information that is specifically applicable to hospital management of a large influx of children (and accompanying adults) affected by a biological disaster. The very basic infection control guidance that follows is structured to address the infection control needs of two populations of concern in a pediatric emergency:

- Exposed/symptomatic children
- Exposed/asymptomatic children

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•	Co-horting Children in a Hospital Setting	10-2
•	Environmental Measures for Pediatric Units	10-3
•	Staff Child Ratio and Group Size Indicator	10-4

GENERAL GUIDELINES:

- For all children who are <u>symptomatic</u> owing to a biological event, use applicable HICPAC Guidelines (currently:<u>1996 Guidelines for Isolation</u> <u>Precautions in Hospitals);</u> @ <u>http://www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm</u>)
- For <u>asymptomatic</u> infants, toddlers, and other children requiring diapering, feeding, toileting, and assistance with hand hygiene: use guidelines that are applicable to day care settings (see: US Department of Health and Human Services web site: "13 Indicators of Quality Child Care Research Update 2002"
 @ Aspe.hhs.gov/hsp/ccquality-ind02/).

Section 11. Infection Control

Infection Control Measures for Exposed/Symptomatic children:

- HICPAC Isolation guidelines apply: appropriate to the nature of the illness/exposure;
- Cohort as necessary (same exposure/same symptoms);
- It is not practical to place masks on infants or young children to contain respiratory droplets/droplet nuclei: substitute hand hygiene/face washing/nose wiping;
- It is not practical to place infants or young children in portable isolation units alone to contain respiratory droplets/droplet nuclei;
- Young children and infants should not be left alone. Adult care givers of children placed in isolation should be instructed in appropriate infection control measures such as doffing and donning of gowns, gloves, and masks, hand hygiene and cough etiquette. Staff should insure that adult care givers are following appropriate infection control measures.

Infection Control Measures for Exposed/Asymptomatic Children:

- Promptly evaluate and separate as soon as possible from symptomatic children and symptomatic adults;
- Similarly exposed/asymptomatic children may be co-horted.
- Day Care approaches (see the DHHS document) apply;
- Hand Hygiene is paramount;
- As a priority: educate emergency care givers about sanitary considerations.

Cohorting of Children in a Hospital Setting:

- Ideally cohort according to age group to accommodate sanitary needs of infants and young children (diapering, toileting, hand hygiene, feeding; cleaning);
- Traumatized children may regress under duress and may require additional help with sanitary needs;
- Smaller group size is associated with a lower risk of infection in child care settings (DHHS document p. 16);
- Support infection control by aiming for recommended age appropriate staff: child ratios. (see DHHS p. 15: "Staff Child Ratio and Group Size Indicator)

Environmental Measures for Pediatric Units:

- Establish hand hygiene procedures and ensure adequate supplies of soap, sinks, paper towels;
- For infants/young children: establish diapering protocols;
- For infants/young children: use the HHS document (or similar) for guidance re: setting up sanitary changing stations;
- For young children: toys should be easy to clean (hard plastic not fuzzy);
- For young children: assign individual sleeping mats (if used);
- For infants/young children: adequate clean linens, disposable diapers, changes of clothing;
- Waste/soiled linen collection units should be child safe, adequate in number, constructed to permit hands free use;
 - Have adequate supplies of cleaning/disinfecting materials stored in a child safe manner;
 - Have cleaning/disinfection procedures and schedules in place for toilets, bathrooms, changing stations, sleeping mats, toys, etc. Any restrictions on disinfectant used?
 - Any reusable equipment or toys should be appropriately cleaned following hospitals Infection Control procedures, or as recommended for the agent of concern.
STAFF CHILD RATIO AND GROUP SIZE INDICATOR

From US Department of Health and Human Services web site: "13 Indicators of Quality Child Care Research Update 2002" <u>http://aspe.hhs.gov/hsp/ccquality-ind02/#Staff1</u> accessed June 15,2005.

These indicators only have one standard represented because in the national data base a specific state regulation that deals with staff child ratio and group size exists. Even so, the variation of these regulations among the states is great. While some states meet or almost meet these standards for staff child ratio and group size, many states do not. Of all the indicators, the greatest variation occurs in how state regulations match up with the national standard for staff child ratio and group size.

CFOC Standard (1992):

Age	Child-staff ratio	Maximum group size
Birth-12 months	3:1	6
13-24 months	3:1	6
25-30 months	4:1	8
31-35 months	5:1	10
3 year olds	7:1	14
4 year olds	8:1	16
5 year olds	8:1	16
6-8 year olds	10:1	20
9-12 year olds	12:1	24

ST 002—Child:staff ratios for centers and large family child care homes shall be maintained as follows during all hours of operation:

When there are mixed age groups in the same room, the child:staff ratio and group size shall be consistent with the age of the majority of the children when no infants or toddlers are in the mixed age group. When infants or toddlers are in the mixed age group, the child:staff ratio and group size for infants and toddlers shall be maintained.

Research Review/Gap Analysis:

Review of all the major research in child care clearly demonstrates the importance of maintaining appropriate child:staff ratios and group sizes. Child:staff ratios and group sizes are two of the best indicators for determining the quality of a child care program and they significantly affect many other health and safety issues. Smaller group size is associated with a lower risk of infection in child care. The risk of illness in children between the ages of one and three years of age increases as the group size increases to four or more, whereas children in groups of three or fewer have no more risk of illness than children cared for at home (Bartlett, Orton, & Turner, 1986; Bell, Gleiber, Mercer, Hifer, Guinter, Cohen, Epstein, & Narayanan, 1989). The risk of repeated ear

infections increases in one- to six-year-old children who attend child care in groups of more than six children (Hardy & Fowler, 1993).

The risk of *Haemophilus influenza* infections increases for children one year of age or older in a child care setting with four or more children, and the risk of infection peaks in settings with 21 or more children. Research indicates that group size should be limited to twice the maximum number of children allowed per adult. Smaller child care centers, not just those with smaller class sizes, have lower rates of disease. Outbreaks of Hepatitis A occur at the rate of 3% in centers that enroll less than 20 children but 53% in those that enroll 51 or more children (Hadler, Erben, Francis, Webster & Maynard, 1982). Children in small child care centers in France had two to three times the risk of repeated infections (e.g., upper respiratory tract infections, otitis media, conjunctivitis) than children in family child care settings with no more than three children (Collet, Burtin, Kramer, Bossard & Ducruet, 1994).

Lower child:staff ratios reduce the transmission of disease. Although there is little research available that examines the relationship between particular child:staff ratios and children's health (a major gap that needs to be addressed), the research that is available suggests that fewer children per adult reduces the transmission of disease because caregivers are better able to monitor and promote healthy practices and behaviors (Bredekamp, 1990; Hayes, Palmer, & Zaslow, 1990).

APPENDIX A.: NEW YORK CITY PEDIATRIC RESOURCES

Table A-1 NEW YORK CITY HOSPITAL PEDIATRIC INTENSIVE CARE UNIT BEDCAPACITY,August 2004 Critical Asset HERDS Survey

		Pediatric ICU	Pediatric ICU	Pediatric ICU
County	Hospital	Beds Certified	Beds Staffed	Bed Surge
BRONX	Jacobi Medical Center	6	4	4
BRONX	Lincoln Medical & Mental Health Center	8	8	0
BRONX	Montefiore Medical Center Henry & Lucy Moses Div	14		0
KINGS	Brookdale Hospital Medical Center	5	5	0
KINGS	Kings County Hospital Center *	87	87	0
KINGS	Long Island College Hospital	5	5	5
KINGS	Maimonides Medical Center	11	11	0
KINGS	New York Methodist	5	5	10
KINGS	University Hospital Of Brooklyn	5	5	0
NEW YORK	Bellevue Hospital Center	5	4	1
NEW YORK	Beth Israel Medical Center - Petrie Campus	5	2	0
NEW YORK	Harlem Hospital Center	6	6	2
NEW YORK	Metropolitan Hospital Center	4	4	0
NEW YORK	Mount Sinai Hospital	16	16	3
NEW YORK	New York Presbyterian Hospital Columbia Presbyterian Center**	28	28	5
NEW YORK	New York Presbyterian Hospital New York Weill Cornell Center	20	20	5
NEW YORK	NYU Hospitals Center	9	9	
NEW YORK	SVCMC-St Vincent's Manhattan	4	4	0
QUEENS	Jamaica Hospital Medical Center	3	3	1
QUEENS	Long Island Jewish Medical Center**	12	12	8
QUEENS	New York Hospital Medical Center Of Queens	4	4	1
RICHMOND	SVCMC-St Vincent's Staten Island	2	2	0
RICHMOND	Staten Island University Hospital-North	4	4	2
TOTAL	Hospitals with PICU 23	268	248	47

* KCHC included NICU in this total

** NYS Designated Pediatric Trauma Centers





PEDIATRIC & NEONATAL DISASTER/ SURGE POCKET GUIDE

Clinical checklists, guides, and just-in-time references to manage a surge of pediatric patients.

SECTIONS

Normal Values Triage and Assessment Tools Treatments and Medications Equipment Decontamination Mental Health Security



This Pocket Guide has been adapted from a 2009 collaborative effort by:

Los Angeles County Department of Public Health Los Angeles County Emergency Medical Services Agency Children's Hospital Los Angeles Pediatric Liaison Nurses of Los Angeles County Pediatric Disaster Resource Center Long Beach Department of Health and Human Services Pasadena Public Health Department



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This document is available for download at www.luriechildren.org/emsc



DISCLAIMER

This document is meant to be utilized to assist with the care of pediatric patients during times of disasters and mass casualty incidents that result in a surge of pediatric and neonatal patients. **Some of the information provided in this document is not recommended to be utilized on a day to day basis and should only be implemented if resources are scarce**. The information in this document is not meant to be all inclusive, replace any existing policy and/or procedure or substitute for clinical judgment.

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OVERVIEW

Children make up approximately 22% of the population in Illinois. In the event of a disaster, children would be one of the most vulnerable populations affected. Children are more vulnerable than adults in many ways. Please see page 9 for a summary of characteristics that increase children's risk during a disaster.

This guide is a resource to assist health care providers with addressing the medical needs of children during a disaster. The medical information provided in this guide should not be considered an exclusive course for treatment and is meant to be utilized during times of disaster and mass casualty incidents that result in a surge of pediatric and neonatal patients. Some of the information provided in this document is not recommended to be utilized on a day to day basis and should only be implemented if resources are scarce. Finally, medical knowledge is constantly changing. The information provided in this guide is based on current information and care recommendations and is not meant to replace any existing policy or procedure or substitute for clinical judgment.

PEDIATRIC RISKS DURING DISASTERS

Characteristic	Risk
Respiratory	Faster breaths/minute increases exposure to inhaled agents. Chemical, biological and radiological agents that are heavier than air settle closer to the ground and may affect children more severely.
Gastrointestinal	May be more at risk for dehydration from vomiting and diarrhea after exposure to contaminating agents.
Skin	Larger body surface area increases risk of skin exposure. Skin is thinner and more susceptible to injury from burns, chemicals and absorbable toxins.
Endocrine	Increased risk of thyroid cancer from radiation exposure
Thermoregulation	Less able to cope with temperature extremes/changes, with increased risk of hypothermia.
Developmental	Less capability to escape environmental dangers or anticipate hazards making children more susceptible to prolonged exposures and increased injuries.
Psycological	Prolonged stress from critical incidents. Susceptible to separation anxiety.

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CALCULATING KILOGRAMS

Weigh all children in kilograms.

For patient safety, all children should be weighed in kilograms. However, during a surge event, kilogram only scales may not be readily available and there might be a need to weigh in pounds and convert to kilograms.

Method to convert pounds to kilograms:

1 kg = 2.2 lbs Example: 20 lb child 20 lb divided by 2.2 = 9 kg

Method to estimate weight:

Newborn (term): usually 3 kg
1-10 yrs: age multiplied by 2 + 10 (kg)

>10 yrs: age multiplied by 2 + 20 (kg)

If available, a length/weight based tool (e.g. Broselow[™] Tape, Handtevy[™]) may be used for weight estimation.

NORMAL PEDIATRIC VITAL SIGNS*

Age	HR beats/min	RR breaths/min	BP (sys) mmHg
Newborn 0-1 month	100 - 180	30-60	>60
Infant 1-12 months	100 - 160	30-60	>70
Toddler 1-3 years	90-150	24-40	>70
Pre-School Age 3-5 years	80-140	22-34	>75
School Age 5-11 years	70-120	18-30	>80
Adolescent 13-18 years	60-100	12-16	>90

* American Academy of Pediatrics. (2016). Pediatric education for prehospital professionals-3rd edition. Massachusetts: Jones and Bartlett Publishers.

NORMAL DEVELOPMENT

Below are examples of common normal developmental milestones in children. This list is not all inclusive. Children with special health care needs may have delays in these milestones. It is important to remember that during a disaster or times of stress, children may regress in their behavior and speech. This is a normal stress response. Providers should work with family to identify what the child's developmental level was prior to the disaster or emergency.

Age	Motor Skills	Speech
2 months	Can hold head up; makes smoother movements with arms/legs	Makes cooing sounds
4 months	Begins to roll from front to back & back to side; brings object to mouth	Begins to babble; differentiated cry
6 months	Rolls over in both directions; begins to sit without support; holds bottle	Repeats sounds; vary their cry/sounds to signal specific need; responds to own name
9 months	Crawls; sits without support; holds objects in both hands	Imitates sounds they hear; makes a lot of different sounds (e.g. bababababababa)
12 months	Gets to sitting position without help; pulls up to stand; cruises	Can say few words (e.g. mama, dada); uses simple gestures (e.g. shaking head "no")

NORMAL DEVELOPMENT (continued)

Age	Motor Skills	Speech
18 months	Walks alone; pulls toys when walking; drinks from a cup/eats with spoon	Can say 8-10 single words; says and shakes head "no"; points to show what is wanted
2 years	Begins to run; can kick a ball; turns doorknobs; makes straight lines and circles	Uses simple phrases; follow simple instructions; quickly learns new words
3 years	Climbs stairs alternating feet; runs easily; pedals a tricycle; turns door handles	Speech understood by strangers; can converse using 2-3 sentences
4 years	Hops, jumps & skips on 1 foot; draws person with > 3 body parts;	Tells stories; more extensive vocabulary; can say first/last name
5 years	May be able to skip; can balance on 1 foot; prints some letters and numbers	Speaks clearly; uses complete sentences; wide vocabulary

DAILY MAINTENANCE IV FLUID AND ELECTROLYTE REQUIREMENTS

	Calculation		
Туре	D5/0.45% NS is standard for children of all ages		
IV Fluids Per Hour	<i>Children >28 days</i> 4 mL/kg/hr for first 10 kg of weight 2 mL/kg/hr for next 10 kg of weight 1mL/kg/hr for each kg over 20 kg	Example: For a 23 kg child: 4 mL/hr x 10 kg (40) + 2 mL/hr x 10 kg (20) + 1 mL/hr x 3 kg (3) = 63 mL/hr	
Fluids Per 24 Hour Period	Children ≤28 days 80-100 mL/kg/24 hrs <i>Children >28 days</i> 100 mL/kg for the first 10 kg body weight 1000 mL+ 50 mL/kg for the next 10 kg body weight 1500 mL+ 20 mL for each kg of body weight over 20 kg		
Maintenance Electrolyte Calculations for IV Fluid	Sodium: 3-4 mEq/kg/day Potassium: 2-3 mEq/kg/day		

*Potassium should only be added after renal function is proven to be adequate and patient has voided.

NORMAL BLOOD VOLUME & REPLACEMENT DOSING

Total blood volume varies by weight.

Approximate volume is 80 mL/kg.

Examples:

Newborn = \sim 3 kg x 80 mL = 240 mL

5 year old = ~25 kg x 80 mL = 2000 mL (2 L)

13 year old = \sim 50 kg x 80 mL = 4000 mL (4 L)

Replacement with PRBC/Platelet/Albumin 5%/FFP

Dose: 10 mL/kg

Administering 10 mL/kg of PRBCs will increase hemoglobin by 2 g/dL or hematocrit 4-6%

CLINICAL FEATURES OF DEHYDRATION*

Feature	Mild	Moderate	Severe
Mental Status	Normal, alert, interactive	Normal, fatigued or restless, irritable	Apathetic, lethargic, unconscious
Heart Rate	Normal to slightly increased	Increased	Rapid, weak
Systolic BP	Normal	Normal but orthostatic, >10 mmHg change	Hypotension
Urine Output	Decreased	Moderately decreased	Marked decrease, anuria
Mucous Membranes	Slightly dry	Very Dry	Parched, cracked

*The information provided in these tables is a guide. No one feature is a reliable indicator of dehydration by itself nor will every child with dehydration present with the same or all of the above features.

CLINICAL FEATURES OF DEHYDRATION* (continued)

Feature	Feature Mild		Severe
Tears	Present/Normal	Decreased	Absent
Eyes	Normal Slightly Sunken		Deeply Sunken
Skin	Skin Normal tugor		Tenting**
Skin Perfusion	Skin Perfusion Normal capillary refill (<2 seconds)		Capillary refill markedly delayed (>4 seconds); skin cool, mottled, gray
Anterior fontanel (<18 months old)	Normal	Normal to depressed	Sunken

*The information provided in these tables is a guide. No one feature is a reliable indicator of dehydration by itself nor will every child with dehydration present with the same or all of the above features.

** Skin stands up when pinched

INTRAVENOUS (IV) ADMINISTRATION TIPS

For IV infusions in children, an over-the-needle 22 to 24 gauge catheter may be used It may be possible to place a larger gauge catheter in older children

It is important to secure IV tubing to prevent infants and children from becoming entangled or from accidently pulling catheter out			
Catheter should be s	ecured with a transparent dressing and tape		
Use of a padded arm	board may be helpful to secure IV in young children		
If possible, the amount of fluid hung that can be administered to patient should be limited to 2 hours of fluid			
Always use a buretrol or IV pump			
To calculate drip rates	$\frac{\text{amount of fluid x drops/milliliter (IV set)}}{\text{hours to administer x minutes/hour (60)}}$ $\frac{1000 \text{ x } 15}{8 \text{hrs x } 60} = 31.25 (31 \text{ gtts/min})$		

INTRAOSSEOUS (IO) ADMINISTRATION TIPS

Indication:

Critically ill or injured child where immediate access is required and IV attempts are unsuccessful

Contraindication:

- Able to establish IV access
- Deformity/injury in same extremity as insertion site

Standard sites:

- Proximal tibia, distal tibia
- Distal femur (manual IO only)
- Humerus (if able to palpate landmarks)

Considerations:

- All parenteral medications, crystalloid fluids and blood products can be infused through an IO
- Infusions may not flow to gravity so may need to use an IV pump or pressure bag
- Amount of fluid hung that can be administered to patient should be limited to 2 hours of fluid
- Always use a buretrol

INTRAOSSEOUS (IO) ADMINISTRATION TIPS (continued)

Proximal Tibia*



Distal Tibia*





*Eslami, 2010

2013

INFANT NUTRITIONAL REQUIREMENTS

Age	Nutritional Needs		
Birth - 1 month	Breast or bottle fed only; 2-3 ounces (60-90 mL) every 2-3 hours		
2 - 4 months	Breast or bottle fed only; 3-4 ounces (90-120 mL) every 3-4 hours		
4 - 6 months	4-5 ounces (120-150 mL)/feeding (breast or bottle) four times/day; Begins baby food (e.g. rice cereal)		
6 - 9 months	6-8 ounces (180-240 mL)/feeding (breast or bottle) four times a day; Eats baby food and mashed table food		
10 - 12 months	6-8 ounces (180-240 mL)/feeding (breast or bottle) four times a day; Soft bite-sized pieces of food: Avoid foods that can cause a choking hazard		
Tips	Breastfeeding is recommended Formulas are either milk based or soy based Liquid pre-mixed formulas preferred if water quality is uncertain Consider need for refrigeration to store breast milk		

SECTION 2: TRIAGE AND ASSESSMENT TOOLS

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PEDIATRIC ASSESSMENT TRIANGLE

APPEARANCE

Tone Interactiveness Consolability Look (Gaze) Speech (Cry)

BREATHING

Visible movement Work of breathing (normal/increased)

CIRCULATION Color of skin

Component	Signs		
Appearance	Focus on the child's mental status and muscle tone		
Breathing	Direct attention to respiratory rate and respiratory effort		
Circulation	Use skin signs, color and capillary refill as indicators of the patient's circulatory status		

TRIAGE TOOLS: JUMPSTART PEDIATRIC MULTICASUALTY TRIAGE TOOL®



JumpSTART Pediatric MCI Triage Tool

When to use JumpSTART[®] versus START:

■ If the victim looks like an infant and or child, use JumpSTART[®].

If victim looks like a young adult, use START.

TRIAGE TOOLS: START MULTICASUALTY TRIAGE TOOL

When to use JumpSTART[®] versus START:

■ If the victim looks like an infant and or child, use JumpSTART[®].

■ If victim looks like a young adult, use START.



START Triage Flowchart

TRIAGE CATEGORY DEFINITIONS

Triage Category	Description		
IMMEDIATE	 Patients who: do not obey commands or have altered mental status (use AVPU: Alert, Verbal, Pain, Unresponsive) and/or do not have a peripheral pulse and/or are in respiratory distress and/or have uncontrolled major hemorrhage 		
DELAYED	Acute condition that is not life-threatening but requires care within 1-2 hours		
MINOR	Patients with: mild injuries that are self-limited and can tolerate a delay in care without increasing mortality risk		
EXPECTANT/ DECEASED	Expectant : Patients who have injuries incompatible with life given the currently available resources Deceased : Patients who are not breathing after life-saving interventions		

PAIN SCALES: WONG-BAKER® FACES*



*Used with permission

Recommended for children age 3 years and older.

Instructions:

- 1. Point to each face using the words to describe the pain intensity.
- 2. Ask the child to choose the face that best describes their pain and record the appropriate number.

PAIN SCALES: FLACC*

Category	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaws, quivering chin
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans, whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distractible	Difficult to console or comfort

* Used in children < 3y/o or who cannot verbalize pain.

Five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; and (C) Consolability are scored from 0-2, which results in a total score between 0-10.

APGAR SCORE

Sign	Score			
Sign	0	1	2	
A ppearance	Blue	Pink body, blue extremities	All pink	
Pulse	Absent	<100	>100	
Grimace	No response	Weak cry and grimace	Vigorous cry	
A ctivity	Flaccid, limp	Some flexion	Active motion	
R espirations	Absent	Slow, irregular	Good, vigorous cry	

* Perform APGAR score 1 and 5 minutes after birth. Repeat every 5 minutes for 20 minutes or until APGAR >7
PEDIATRIC GLASGOW COMA SCALE (PGCS)

Category	For Patients <2 Years Old	For Patients >2 Years Old
Eye Opening (E)	(4) Spontaneous (3) To speech (2) To pain (1) None	(4) Spontaneous (3) To speech (2) To pain (1) None
Verbal Response (V)	 (5) Coos, babbles, appropriate words (4) Irritable, cries but consolable (3) Cries to pain, inconsolable (2) Moans to pain (1) None 	(5) Oriented(4) Confused(3) Inappropriate words/persistent cry(2) Incomprehensible sounds(1) None
Motor Response (M)	 (6) Normal spontaneous movements (5) Withdraws from touch (4) Withdraws from pain (3) Abnormal flexion (decorticate) (2) Abnormal extension (decerebrate) (1) None 	 (6) Obeys commands (5) Localizes to pain (4) Withdraws from pain (3) Abnormal flexion (decorticate) (2) Abnormal extension (decerebrate) (1) None

Total PGCS score: 3-15

The lowest possible score is 3 (deep coma or death). The highest is 15 (fully awake and oriented/appropriate for age). $PGCS \leq 8$, consider intubation.

PEDIATRIC TRAUMA SCORE (PTS)

Component	+2	+1	-1
Size	>20 kg >5 years old	11-20 kg 1-5 years old	≤10 kg <1 year old
Airway	Normal	Maintainable	Unmaintained or intubated
Systolic BP*	>90 mmHg	50-90 mmHg	< 50 mmHg
CNS	Awake	Obtunded/lost consciousness	Coma/unresponsive
Skeletal Injury	None	Closed fracture	Open/multiple fractures
Open Wounds	None	Minor	Major/penetrating

Score range is from -6 to +12

Score of < 8 usually indicates the need for evaluation at a Trauma Center

*If a proper sized blood pressure cuff is not available, blood pressure can be rates as: +2 = palpable at wrist;

+1 = palpable at groin; -1 = no palpable pulse

BURN ASSESSMENT: PEDIATRIC RULE OF NINES

The "Rule of Nines" is a convenient, quick method to determine burn size.

First degree burns are not included when calculating percentage of total burn surface area

Alternate Method:

The size of the patient's hand, including the fingers, represents approximately 1% of their body surface. This is useful for mapping irregular areas of burns.

Pediatric Considerations

- Increased fluid requirements relative to adults (<u>See page 36 for fluid</u> resuscitation guidelines).
- Increased surface area to mass ratio
- Hypoglycemia may occur in infants due to limited glycogen reserves

BURN ASSESSMENT: PEDIATRIC RULE OF NINES





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Vaccinations	
Other Medications	

FLUID RESUSCITATION

- 1. Children \leq 28 days: Administer 10 mL/kg of 0.9 NS
- Children > 28 days: Administer 20 mL/kg of isotonic or crystalloid solution (0.9 NS or LR)
- 3. Monitor
 - Vital signs (especially heart rate)
 - Level of consciousness
 - Peripheral perfusion/capillary refill
 - Urine output
- 4. Repeat bolus if no improvement
- 5. Reassess status
- 6. Consider blood products in traumatic injuries requiring > 40-60 mL/kg of fluid
- 7. Administer PRBC, Platelet, Albumin 5%, and FFP @ 10 mL/kg

See resuscitation specific to Burn Treatment, page 36.

See Hypovolemic Shock, page 37.

FLUID RESUSCITATION: BURN TREATMENT

Formula for Estimating Fluid Needs for Pediatric Burn Patients: LR 3 mL/kg/%TBSA burn in first 24 hours. One half of this amount is given over first 8 hrs from the start of the initial injury and the balance is given over the remaining 16 hours.

For children \leq 2 years and/or less than 10 kg:

Add maintenance fluid containing Dextrose 5% Lactated Ringers to above fluid resuscitation formula

 Maintenance fluid requirements 4 mL/kg/hr for first 10 kg of weight 2 mL/kg/hr for next 10 kg of weight 1 mL/kg/hr for each kg over 20 kg 	Example: Child weight = 23 kg 4 mL/hr x 10 kg (40) + 2 mL/hr x 10 kg (20) + 1 mL/hr x 3 kg (3) = 63 mL/hr
--	---

Additional Considerations:

- Increased fluid requirements relative to adults. Adjust fluid maintenance rates to keep urine output at 1 mL/kg/hr
- Increased surface area to mass ratio
- Hypoglycemia may occur in infants due to limited glycogen reserves
- 0.9 NS can be used for fluid resuscitation if LR is unavailable

HYPOVOLEMIC SHOCK

Hypovolemic shock is the most common type of shock in children.

Blood is the ideal fluid replacement for volume losses caused by trauma in children who do not respond to 40-60 mL/kg of 0.9 NS/LR.

Children increase their cardiac output by increasing their heart rate. Therefore:

Bradycardia is an ominous sign!

Monitor for:

- Slow or irregular breathing
- Grunting
- Bradycardia (ominous sign)
- Cyanosis
- Hypotension
- Decreased LOC

MEDICATIONS: ANALGESICS & ANTIPYRETICS

Drug	Dose	Maximum Dose Limit	Route
Acetaminophen	10-15 mg/kg every 4-6 hours	3 g in 24 hours	PO/PR
Acetaminophen with hydrocodone	< 50 kg: 0.1-0.2 mg/kg/dose of hydrocodone every 4-6 hours > 50 kg: 5-10 mg of of hydrocodone every 4-6 hours	10 mg per dose	PO
lbuprofen	10 mg/kg every 6-8 hours	40 mg/kg/day	РО

Drug	Drug Dose Maximum Dose Limit		Route
Fentanyl	1 mcg/kg every 30-60 minutes as needed;	100 mcg	IV/IO
Fentanyl 1-2 mcg/kg every 30-60 minutes as needed 100 mcg		IN	
Morphine < 50 kg: 0.1-0.2 mg/kg/dose of hydrocodone every 4-6 hours 8 mg/dose		SQ/IM/IV/IO	

ANTIBIOTICS

Drug	Dose	Maximum Dose Limit	Route
Amoxicillin	Infants > 6 weeks and children: 40-90 mg/kg/day in divided doses every 12 hour	90 mg/kg/day 4 g/day	PO/IM/IV/IO
Ampicillin	Neonates (term) < 3 mos: 100 mg/kg/dose every 12 hours (administer over 3-5 minutes but at a rate \leq 100 mg/min) <i>Children</i> > 28 days: 50 mg/kg/dose every 6 hours	300 mg/kg/day	IV/IO
Cefazolin	Neonates >2000 g: 60 mg/kg/day divided every 8 hours. Infants and children: 50-100 mg/kg/day divided every 8 hours	6 g/day	IV/IO

ANTIBIOTICS (continued)

Drug	Dose	Maximum Dose Limit	Route
Ceftriaxone	<i>Infants and children</i> : 50-100 mcg/kg/day divided every 12-24 hours	4 g/day	Infants/children: PO/IM
Cefotaxime	Neonates >2000 g: 150-200 mg/kg/ day divided every 6-8 hours Infants and children, 1-12 years, <50 kg: 100-200 mg/kg/day divided every 6-8 hours Children \geq 50 kg: 1-2 g every 6-8 hours	Neonates, infants & children < 50 kg: 2 g/dose Children > 50 kg: 12 g/day	IM/IV/IO
Cefuroxime	Infants ≤ 7days: 50 mg/kg/dose every 12 hours Infants and children 8 days and older: 50 mg/kg/dose every 8 hours	2 g/dose	IV/IO

ANTIBIOTICS (continued)

Drug	Dose	Maximum Dose Limit	Route
Clindamycin Neonates >2000 g: 15-30 mg/kg/day divided every 6-8 hours Infants and children: 25-40 mg/kg/day divided every 6-8 hours		Neonat es : 20 mg/kg/day Infants/children: 40 mg/kg/day	Neonates: IM/IV/IO Infants/ children: PO/IM/IV/IO
Gentamicin	Neonates (<32 weeks gestation): Consult perinatal center for dosing Neonates (Term) 0-4 weeks: 2.5 mg/kg every 12-24 hours Infants and children>1 month: 2-2.5 mg/kg every 8 hours	7.5 mg/kg/dose	IM/IV/IO
Metronidazole	<i>Neonates</i> >2000 g: 30 mg/kg/day divided every 12 hours <i>Infants and children:</i> 30 mg/kg/day divided every 6-8 hours	4 g/day	PO/IV/IO

ANTIBIOTICS FOR MASS PROPHYLAXIS/TREATMENT

Drug	Dose	Maximum Dose Limit	Route
Amoxicillin	Children < 40 kg: 25 mg/kg every 8 hours Children ≥ 40kg: 1000 mg every 8 hours		PO/IV/IO
Ciprofloxacin	Neonates ≤ 28 days: 10 mg/kg every 12 hours (IV only) Neonates ≤ 28 days: 15 mg/kg every 12 hours (PO only) Children ≤ 33 kg: 15 mg/kg every 12 hours Children ≤ 33 kg: 500 mg every 12 hours	1 g per day	PO/IV/IO

During an event that requires mass antibiotic prophylaxis treatment (i.e. anthrax, plague), there may be an inadequate supply of pediatric liquid suspension. The following pages provide instructions for health care providers and caregivers on how to create a liquid suspension for Amoxicillin, Ciprofloxacin and Doxycycline by crushing/ dissolving adult strength tablets.

ANTIBIOTICS FOR MASS PROPHYLAXIS/TREATMENT

Drug	Dose	Maximum Dose Limit	Route
Doxycycline	<i>Children <45 kg:</i> 2.2 mg/kg every 12 hours <i>Children >45 kg:</i> 100 mg every 12 hours	100 mg	PO

During an event that requires mass antibiotic prophylaxis treatment (i.e. anthrax, plague), there may be an inadequate supply of pediatric liquid suspension. The following pages provide instructions for health care providers and caregivers on how to create a liquid suspension for Amoxicillin, Ciprofloxacin and Doxycycline by crushing/ dissolving adult strength tablets.

HOW TO MAKE LIQUID AMOXICILLIN

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How to Make Liquid Amoxicillin

400 mg per 5 mL (teaspoon)

You will need:

- Two (2) 500 mg amoxicillin capsules
- Something heavy to crush the contents of the capsule, such as a metal spoon
- Measuring teaspoon(s), regular eating teaspoon, medicine cup or medicine syringe
- Water and one of the following: sugar, flavored syrup, or dessert topping
- One (1) bowl or cup



One (1) dose of Amoxicillin liquid

Mix with: sugar, chocolate flavored syrup or flavored dessert toppings to hide the bitter taste of the medicine.

Mix well before giving.

Make sure your child eats or drinks all of the food or drink that is mixed with the medicine.

Use this medicine immediately after mixing. Do not save unused medicine for the next dose.



Carefully pull apart two (2) 500mg amoxicillin capsules.

<u>*</u>____

Carefully empty contents into bowl. Use back of spoon to crush contents in a bowl.

Add two and one-half (2.5) teaspoons (12.5mL) of water to the medicine powder.

Mix well until the powder dissolves and there is no more powder at the bottom of the bowl.

HOW TO MAKE LIQUID AMOXICILLIN (continued)

Dosage Chart

- Use this chart to find the amount for one (1) dose.
- Give this dose three (3) time(s) a day-once in the morning, one at mid-day, and once in the evening - for as many days as you were told to give this medication

Amoxicillin oral liquid			
400 mg per 5 mL (per teaspoon)			
Weight (lbs)	Dose (teaspoon)	Dose (mL)	
Less than 8 lbs	1/4 teaspoon	1.25 mL	
Over 8 lbs to 11 lbs	1/3 teaspoon	1.7 mL	
Over 11 lbs - 17 lbs	1/2 teaspoon	2.5 mL	
Over 17 lbs to 26 lbs	3/4 teaspoon	3.75 mL	
Over 26 lbs to 35 lbs	1 teaspoon	5 mL	
Over 35 lbs to 44 lbs	1 & 1/4 teaspoons or	6.25 mL	
	1 whole capsule (500mg)		
Over 44 lbs to 52 lbs	1 & ½ teaspoons	7.5 mL	
Over 52 lbs to 61 lbs	1 & 3/4 teaspoons	8.75 mL	
Over 61 lbs to 70 lbs	2 teaspoons	10 mL	
Over 70 lbs to 79 lbs	2 & 1/4 teaspoons	11.25 mL	
Over 79 lbs	2 & 1/2 teaspoons or	12.5 mL	
	2 whole capsules		
	(1000mg)		

HOW TO MAKE LIQUID CIPROFLOXACIN

How to Make Liquid Ciprofloxacin

125 mg per 5 mL (teaspoon)

You will need:

- One (1) 500 mg ciprofloxacin tablet
- Measuring teaspoon(s), regular eating teaspoon, medicine cup or medicine syringe
- One (1) small glass, bowl or cup
- Water and one of the following: sugar, chocolate or flavored syrup, apple juice or apple sauce

This medicine is very bitter. Mix the liquid with food or drink before giving it to older infants and children.



- Chocolate syrup
- Table sugar
- Apple juice or apple sauce sweetened with extra table sugar

For formula or breastfed infants, mix medicine only with water.

DO NOT mix with:

- Calcium fortified juice
- Infant formula
- Breastmilk
- Milk or any milk products such as yogurt or ice cream.

oren.





Put four (4) teaspoons (20mL) of room-temperature water into a small glass or bowl.

Put one (1) 500mg ciprofloxacin tablet into the water and let it sit for five (5) minutes until the tablet breaks apart.

Mix well until the powder dissolves and there is no more powder left in the bottom.



4 teaspoons (20mL) water



wait 5 minutes

Mix well before using.

HOW TO MAKE LIQUID CIPROFLOXACIN (continued)

Dosage Chart

- Use this chart to find the amount for one (1) dose.
- Give this dose two (2) time(s) a day once in the morning and once in the evening - for as many days as you were told to give this medication

Ciprofloxacin oral liquid				
125 mg	per 5 mL (per teaspoon)			
Weight (lbs)	Dose (teaspoon)	Dose (mL)		
Less than 7 lbs	1/4 teaspoon	1.25 mL		
7 lbs - 10 lbs	1/2 teaspoon	2.5 mL		
Over 10 lbs to 13 lbs	3/4 teaspoon	3.75 mL		
Over 13 lbs to 18 lbs	1 teaspoon	5 mL		
Over 18 lbs to 26 lbs	1 & 1/2 teaspoons	7.5 mL		
Over 26 lbs to 36 lbs	2 teaspoons	10 mL		
Over 36 lbs to 45 lbs	2 & 1/2 teaspoons	12.5 mL		
Over 45 lbs to 55 lbs 3 teaspoons		15 mL		
Over 55 lbs to 65 lbs	17.5 mL			
More than 65 lbs	20 mL			
whole tablet (500mg)				

You may use this medicine for up to 24 hours if it is kept covered and stored at room temperature or in the refrigerator. Throw away any unused liquid after 24 hours and mix fresh every day.

Important Information:

Mix well before using

Give this medicine one hour before or two hours after your child takes any of these:

- Infant formula, breast milk, milk or milk products such as yogurt or ice cream
- Calcium fortified juice, vitamins, iron, antacids or sucralfate (a medicine)

Warnings:

Do not give this medicine before talking to your doctor if your child is taking any of these medicines: theophylline, caffeine, warfarin or cyclosporine

HOW TO MAKE LIQUID DOXYCYCLINE

How to Make Liquid Doxycycline

25 mg per 5 mL (teaspoon)

You will need:

- One (1) 100 mg doxycycline tablet
- Something heavy to crush the tablet, such as a metal spoon, the bottom of a cup or glass or a hammer
- Measuring teaspoon(s), regular eating teaspoon, medicine cup or medicine syringe
- Water and one of the following: sugar, chocolate or flavored syrup, apple juice or apple sauce
- One (1) bowl or cup

This medicine tastes better mixed with table sugar or other sweet food or drink.





Chocolate foods or drinks like chocolate syrup, apple juice or apple sauce sweetened with extra table sugar.

Mix well before using.

DO NOT mix with:

- Calcium fortified juice
- Infant formula
- Breast milk
- Milk or any milk-products such as



+









Put one (1) 100mg doxycycline tablet into a small bowl. Crush into powder using the back of a metal spoon or the bottom of a cup or glass.

You can also place the tablet in a plastic bag and crush it with something heavy like a hammer or rolling pin.

The powder should not have any large pieces of medicine.

Add four (4) teaspoons (20mL) of water into the medicine powder.

Mix well until the powder dissolves and there is no more powder at the bottom of the bowl.

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HOW TO MAKE LIQUID DOXYCYCLINE (continued)

Dosage Chart

- Use this chart to find the amount for one (1) dose.
- Give this dose two (2) time(s) a day-once in the morning and once in the evening - for as many days as you were told to give this medication

Doxycycline oral liquid						
25 mg p	per 5 mL (per teaspoo	on)				
Weight (lbs)	Dose (teaspoon)	Dose (mL)				
12 pounds or less	1/2 teaspoon	2.5 mL				
13 to 25 pounds	1 teaspoon	5 mL				
26 to 50 pounds	10 mL					
51 to 75 pounds 3 teaspoons 15 mL						
76 pounds or more 4 teaspoons or 1 20 mL						
whole tablet						
	(100mg)					

You may use this medicine for up to 24 hours if it is kept at room temperature or in the refrigerator. Throw away any unused liquid after 24 hours and mix fresh every day.

Important Information:

Mix well before using

Give this medication one hour before or two hours after your child takes any of these:

- Infant formula, breast milk or milk products such as yogurt, or ice cream
- Calcium fortified juice, vitamins, antacids, or sucralfate (a medicine)

ANTIVIRAL: INFLUENZA

Recommendations for the treatment and prophylaxis of influenza change, in particular because of changes in circulating strains and their antiviral resistance. It is important to check the CDC website for the latest recommendations.

Pregnant women are at higher risk for complications from seasonal influenza viruses, and severe disease during past pandemics. For further information about influenza antiviral medications, including contraindications and adverse effects, refer to the CDC website:

http://www.cdc.gov/flu

ANTIVIRALS: INFLUENZA (continued)

Drug	Dose	Route
Oseltamivir (Tamiflu®)	<i>Children 2 weeks-1 year</i> (For treatment only): 3 mg/kg every 12 hours x 5 days <i>Children > 1</i> (For treatment and prophylaxis): 3 mg/kg every 12 hours x 5 days	РО
Zamivir	Prophylaxis: Children > 5 years: Two 5 mg inhalations (10 mg total) once per day Treatment: Children > 7 years: Two 5 mg inhalations (10 mg total) twice per day	IN

During an event that requires mass antibiotic prophylaxis treatment (i.e. anthrax, plague), there may be an inadequate supply of pediatric liquid suspension. The following pages provide instructions for health care providers and caregivers on how to create a liquid suspension for Tamiflu[®] by crushing/ dissolving adult strength tablets.

HOW TO MAKE LIQUID TAMIFLU

How to Make Liquid Tamiflu®

25 mg per 5 mL (teaspoon)

You will need:

- 75 mg Tamiflu[®] capsule
- Measuring teaspoon(s) or regular eating teaspoon or medicine cup or medicine syringe
- One (1) small bowl or cup
- Water and one of the following: sugar, chocolate or flavored syrup, flavored dessert toppings

This medicine can be given with or without food. Giving it with meals may lessen symptoms of nausea and vomiting.



One (1) dose of Tamiflu® liquid Mix with: sugar, chocolate or flavored syrup, or flavored dessert toppings to hide the bitter taste of the medicine.

Mix well before giving.

Make sure your child eats or drinks all of the food or drink that is mixed with the medicine.



Carefully pull apart one (1) 75mg Tamiflu® capsule

Empty contents into a small bowl.

Add three (3) teaspoons (15mL) of water to the medicine powder.



HOW TO MAKE LIQUID TAMIFLU (continued)

Dosage Chart

- Use this chart to find the amount for one (1) dose.
- Give this dose _____ time(s) a day (_____ in the morning; _____ at night) for 5 days.

Tamiflu [®] oral liquid					
25 mg pe	r 5mL (per teaspoo	n)			
Weight (lbs)	Dose	Dose (mL)			
weight (103)	(teaspoon)				
Up to 3 mo	onths (Treatment Or	nly)			
Up to 6lbs*	1⁄4 teaspoon	1.25 mL			
Over 6 lbs to 10 lbs*	¹∕₂ teaspoon	2.5 mL			
Over 10 lbs to 14 lbs*	¾ teaspoon	3.75 mL			
3 months and olde	er (Treatment and P	rophylaxis)			
Over 14 lbs to 18lbs*	1 teaspoon	5 mL			
Less than 33 lbs	1 ¼ teaspoons	6.25 mL			
Over 33 lbs to 50 lbs	2 teaspoons	10 mL			
Over 50 lbs to 88 lbs	12.5 mL				
Over 88 lbs 3 teaspoons or 15 mL					
1 75 mg capsule					

Note: You may use this medicine mixture for up to 24 hours if it is kept covered and stored at room temperature or in the refrigerator. Throw away any unused liquid after 24 hours and mix fresh every day.

Important Information:

Tamiflu[®] may prevent FluMist[®] from working well. If your child was given FluMist[®] within the last one to two weeks, talk to your doctor before giving your child Tamiflu[®].

ASTHMA MEDICATIONS

Drug	Dose	Maximum Dose Limit	Route
Albuterol MDI	MDI: 90 µg/ spray 4 inhalations 4 times/day (equals 1 nebulizer tx) Children < 12 yrs use a tube spacer	х	Inhalation
Albuterol Nebulizer Solution	Single dose: 2.5 mg/3 mL Continuous: 0.5 mg/kg/hr	Single: 5 mg Continuous: 25 mg/hr	Inhalation
lpratropium Nebulizer Solution	Neonates: 25 µg/kg/dose 3 times per day Children: 250-500 µg every 6-8 hours	х	Inhalation
Racemic Epinephrine, 2.25% solution**	0.5 mL/dose diluted in 3 mL over 15 minutes every 1-2 hours	0.5 mL/dose	Inhalation

**In the event that Racemic Epinephrine is not available, epinephrine 1:1000 can be used as a substitute. Use epinephrine 1:1000 0.25-0.5 mg/kg (max 5 mL/dose) in 3 mL NS and provide as a nebulizer over 15 minutes.

ASTHMA MEDICATIONS (continued)

Drug	Initial Dose	Dose	Maximum Dose Limit	Route
Magnesium Sulfate	2 mg/kg	25-50 mg/kg/dose	2 gm/dose	IV/IO
Methyl- prednisolone	2 mg/kg	1 mg/kg/dose every 6 hours	125 mg/dose	IV/IO
Prednisone	1-2 mg/kg	1-2 mg/kg/day in divided doses 1-2 times/day for 3-5 days	60 mg/day	PO

CARDIAC MEDICATIONS

Drug	Initial Dose	Repeat Dose	Maximum Dose Limit	Route
Adenosine	0.1 mg/kg	0.2 mg/kg	Initial: 6 mg Repeat:12 mg	IV/IO rapid

Drug	Initial Dose	Daily Dose	Maximum Dose Limit	Route
Furosemide	1 mg/kg	2-4 mg/kg/day	Х	IV/IO

CYANIDE TREATMENT

Sodium Nitrite and Sodium Thiosulfate

- **Step 1:** Give Sodium Nitrite 6 mg/kg (max dose 300 mg) IV at a rate of 75-150 mg/minute
- Step 2: Give Sodium Thiosulfate 412.5 mg/kg (max dose 12.5 g) IV at a rate of 0.625-1.25 g/minute

OR

Cyanokit (Hydroxocobalamin)*

■ 70 mg/kg (max single dose 5 g) IV infusion over 15 minutes

*As of the date of this publication, the safety and effectiveness of Cyanokit have not been established in the pediatric patient.

DRUG INFUSION FORMULAS

Ideally, it is recommended to use established infusion concentrations for the following medications. **However, the Rule of 6, although not typically recommended, can be utilized in a disaster situation when the standard infusion concentrations are not available**. The preparation information in the table below is based on the Rule of 6.

Drug	Dose	Preparation (USE IN DISASTER SITUATIONS ONLY! NOT FOR ROUTINE USE!)
Amiodarone	5-10 μg/kg/min (load 5 mg/kg)	[6 x (wt in kg)] = mg to add to 100 mL D5W IV/IO rate of 1 mL/hr = 1 μg/kg/min
Dobutamine	2.5-20 μg/kg/min	[6 x (wt in kg)] = mg to add to 100 mL D5W IV/IO rate of 1 mL/hr = 1 μg/kg/min
Dopamine	2-20 μg/kg/min	[6 x (wt in kg)] = mg to add to 100 mL D5W IV/IO rate of 1 mL/hr = 1 μg/kg/min

DRUG INFUSION FORMULAS (continued)

Ideally, it is recommended to use established infusion concentrations for the following medications. **However**, **the Rule of 6, although not typically recommended, can be utilized in a disaster situation when the standard infusion concentrations are not available**. The preparation information in the table below is based on the Rule of 6.

Drug	Dose	Preparation (USE IN DISASTER SITUATIONS ONLY! NOT FOR ROUTINE USE!)
Epinephrine	0.1-1 μg/kg/min	[0.6 x (wt in kg)] = mg to add to 100 mL D5W IV/IO rate of 1 mL/hr = 0.1 μ g/kg/min
Lidocaine	20-50 μg/kg/min	[120 x (wt in kg)] = mg to add to 100 mL D5W IV/IO rate of 1 mL/hr = 20 μg/kg/min
Norepinephrine	0.05-2 μg/kg/min	[0.6 x (wt in kg)] = mg to add to 100 mL D5W IV/IO rate of 1 mL/hr = 0.1 μg/kg/min

NERVE AGENT TREATMENT

Patient Age/ Weight	Dose for Mild/Moderate Exposure SOB, runny nose, wheezing, vomiting, drooling, pinpoint pupils	Dose for Severe Exposure (unconscious, cyanosis, seizures) Diazepam 0.2-0.5 mg/kg IM/IV/I0 up to 10 mg can also be given as needed to control seizures
0-6 months (<7 kg)	Atropine 0.25 mg IM/IV/IO 2 PAM (Pralidoxime*) 15 mg/kg IM/IV/IO	Atropine 0.5 mg IM/IV/IO 2 PAM (Pralidoxime*) 25 mg/kg IM/IV/IO
7 months- 2 years (7-13 kg)	Atropine 0.5 mg IM/IV/IO 2 PAM (Pralidoxime*) 15 mg/kg IM/IV/IO	Atropine 1 mg IM/IV/IO 2 PAM (Pralidoxime*) 300 mg IM/IV/IO
3-7 years (14-25 kg)	Atropine 1 mg IM/IV/IO 2 PAM (Pralidoxime*) 300 mg IM/IV/IO	Atropine 2 mg IM/IV/IO 2 PAM (Pralidoxime*) 600 mg IM/IV/IO OR Use Duodote Kit** x 1 IM/IV/IO
>8 years (>26 kg)	Atropine 2 mg IM/IV/IO 2 PAM (Pralidoxime*) 600 mg IM/IV/IO OR Use Duodote Kit** x 1 IM/IV/IO	Atropine 4 mg IM/IV/IO 2 PAM (Pralidoxime*)1200 mg IM/IV/IO OR Use Duodote Kit** x 2 IM/IV/IO

*To prepare 2 PAM from a 1 g desiccated 2 PAM vial, inject 3 mL of NS or sterile water into vial. This results in 3.3 mL of 300 mg/mL. Pralidoxime as an infusion should be given IV over 20 minutes.

**Each Duodote Kit/Auto-injector contains: Atropine 2 mg & 2 PAM (Pralidoxime Chloride) 600 mg

NEUROLOGY MEDICATIONS

Drug	Dose	Maximum Dose Limit	Route
Lorazepam	0.05-0.1 mg/kg	4 mg/dose	IV/IO slow
Fosphenytoin	Load PE** = 10-20 mg/kg (infuse over 10 minutes)	1500 mg/24 hours	IV/IO
Midazolam	0.05-0.1 mg/kg 0.2 mg/kg	Children <5 years: 6 mg/dose Children >6 years: 10 mg/dose	IV/IO IN/IM
Mannitol 20%	0.5-1 g/kg (infuse over 10 minutes)	Х	IV/IO
Phenobarbital	Load 15-20 mg/kg	40 mg/kg	IV/IO

**PE=Phenytoin Sodium Equivalent

PARALYZING AGENTS

Drug	Dose	Maximum Dose Limit	Route	
Rocuronium	1 mg/kg	1.2 mg/kg	IV/IO	
Succinylcholine	1-2 mg/kg	Х	IM/IV/IO	

RESUSCITATION MEDICATIONS: NEWBORN - 6 YRS

Drug	Dose	Route	Newborn (3 kg)	3-6 months (7 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Atropine*	0.02 mg/kg	IV/IO ETT**	0.1 mg	0.14 mg	0.2 mg	0.3 mg	0.4 mg
Amiodarone	5 mg/kg x 3 max	IV/IO	15 mg	35 mg	50 mg	75 mg	100 mg
Calcium Chloride 10%	20 mg/kg = 0.2 mL/kg	IV/IO slow	0.6 mL	1.4 mL	2 mL	3 mL	4 mL
Dextrose (D10W)	Newborns: 2 mL/kg Children >3 months: 5 mL/kg	IV/IO	6 mL	35 mL	50 mL	х	х
Dextrose (D25W)	Children >12 months: 0.5 g/kg = 2 mL/kg	IV/IO	х	Х	х	30 mL	40 mL

* Atropine: Minimum dose=0.1 mg: Maximum 1st dose=0.5 mg: Maximum 2nd dose=1 mg

** ETT dosage for Atropine is 0.04-0.06 mg/kg

RESUSCITATION MEDICATIONS: NEWBORN - 6 YRS (continued)

Drug	Dose	Route	Newborn (3 kg)	3-6 months (7 kg)	1 year (10 kg)	2-3 yrs (15 kg)	4-6 yrs (20 kg)
Epinephrine 0.1 mg/mL (1:10,000)	0.01 mg/kg = 0.1 mL/kg	IV/IO	0.3 mL	0.7 mL	1 mL	1.5 mL	2 mL
Epinephrine 1 mg/mL (1:1000)	0.1 mg/kg = 0.1 mL/kg	ETT	х	0.7 mL	1 mL	1.5 mL	2 mL
Lidocaine*	1 mg/kg	IV/IO	3 mg	7 mg	10 mg	15 mg	20 mg
Sodium Bicarbonate 4.2%	1 mEq/kg = 2 mL/kg	IV/IO	6 mL	14 mL	х	х	х
Sodium Bicarbonate 8.4 %	1 mEq/kg = 1 mL/kg	IV/IO	х	х	10 mL	15 mL	20 mL

* Use only if Amiodarone is unavailable.

RESUSCITATION MEDICATIONS: 7 YRS AND OLDER

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Atropine*	0.02 mg/kg	IV/IO/ ETT**	0.5 mg	0.6 mg	0.8 mg	1 mg
Amiodarone	5 mg/kg x 3 max	IV/IO	125 mg	150 mg	200 mg	250-300 mg
Calcium Chloride 10%	20 mg/kg = 0.2 mL/kg Max 1000 mg/day	IV/IO slow	5 mL	6 mL	8 mL	10 mL
Dextrose (D25W)	0.5 g/kg = 2 mL/kg	IV/IO	50 mL	60 mL	80 mL	100 mL
Dextrose (D50W)	1 g/kg= 1 mL/kg	IV/IO	25 mL	30 mL	40 mL	50 mL

* Atropine: Minimum dose=0.1 mg: Maximum 1st dose=0.5 mg: Maximum 2nd dose=1 mg

** ETT dosage for Atropine is 0.04-0.06 mg/kg

RESUSCITATION MEDICATIONS: 7 YRS AND OLDER (continued)

Drug	Dose	Route	7-9 yrs (25 kg)	10-12 yrs (30 kg)	13-15 yrs (40 kg)	>15 yrs (>50 kg)
Epinephrine 0.1 mg/mL (1:10,000)	0.01 mg/kg = 0.1 mL/kg Max 10 mL	IV/IO	2.5 mL	3 mL	4 mL	10 mL
Epinephrine 1 mg/mL (1:1000)	0.1 mg/kg = 0.1 mL/kg Max 10 mL	ETT	2.5 mL	3 mL	4 mL	10 mL
Lidocaine*	1 mg/kg Max 10 mg	IV/IO/ETT	25 mg	30 mg	40 mg	50 mg
Sodium Bicarbonate 8.4 %	1 mEq/kg = 1 mL/kg	IV	25 mL	30 mL	40 mL	50 mL

* Use only if Amiodarone is unavailable.
REVERSAL AGENTS

Drug	Dose	Maximum Dose Limit	Route
Flumazenil	0.01 mg/kg	0.2 mg	IV/IO
Naloxone	0.1 mg/kg	2 mg	IN/IM/IV/IO/ETT

SEDATION/ANESTHESIA MEDICATIONS

Drug	Dose	Maximum Dose Limit	Route
Etomidate	0.2 mg/kg	Х	IV/IO
Ketamine	1-2 mg/kg	100 mg	IM/IV/IO
Midazolam	0.05-0.1 mg/kg	Children < 5 years: 6 mg/dose Children >6 years:10 mg/dose	IV/IO
Midazolam	0.2 mg/kg	Children < 5 years: 6 mg/dose Children >6 years: 10 mg/dose	IN/IM

VACCINATIONS

Drug	Dose	Route
DT (Diphtheria Tetanus) or DTaP (Diptheria, Tetanus, acellular Pertussis)	Children ≤ 7 years old: 0.5 mL	IM (Do not give SubQ)
TD (Tetanus Diptheria) or TdaP (Tetanus, Diptheria or acellular Pertussis)	Children >7 years old: 0.5 mL	IM (Do not give SubQ)

OTHER MEDICATIONS

The following medications may be used in the pediatric patient as appropriate if they are available.

Drug	Туре	Dose	Route
Diazepam	Neurology medication	0.2-0.5 mg/kg	PR
Diazepam	Neurology medication	0.1 mg/kg	IV/IO
Labetalol	Cardiac medication	0.2-1.0 mg/kg	IV/IO
Nifedipine	Cardiac medication	0.25-0.5 mg/kg	PO
Propofol (children > 3 y/o)	Sedation medication	10-100 mcg/kg/min	IV/IO infusion
Vancomycin	Antibiotic	Neonates > 2000 g: 45 mg/kg/day divided every 8 hours Infants >1 month and children: 10-15 mg/kg/day divided every 6 hours	IV infusion
Vecuronium	Paralyzing agent	0.1 mg/kg	IV/IO
Xopenex	Asthma medication	Children: 0.075 mg/kg (minimum dose: 1.25 mg) every 20 minutes for 3 doses then 0.075-0.15 mg/kg (not to exceed 5 mg) every 1-4 hours as needed	Inhalation

OTHER MEDICATIONS (continued)

Ideally, it is recommended to use established infusion concentrations for the following medications. **However**, **the Rule of 6, although not typically recommended, can be utilized in a disaster situation when the standard infusion concentrations are not available**. The preparation information in the table below is based on the Rule of 6.

Drug	Туре	Dose	Preparation (USE IN DISASTER SITUATIONS ONLY! NOT FOR ROUTINE USE!)
Milrinone	Cardiac medication	0.25-0.75 mcg/kg/min (50µ/kg over 15 mins)	[0.6 x (wt in kg)] = mg to add to 100 mL D5W IV/IO rate of 1 mL/hr = 0.1 μg/kg/min
Nicardipine	Cardiac medication	0.5-3 mcg/kg/min	[6 x (wt in kg)] = mg to add to 100 mL D5W IV/IO rate of 1 mL/hr = 1 μg/kg/min
Nitroprusside	Cardiac medication	0.5-4 mcg/kg/min	[6 x (wt in kg)] = mg to add to 100 mL D5W IV/IO rate of 1 mL/hr = 1 μg/kg/min
Terbutaline	Asthma medication	0.4 mcg/kg/min	[0.6 x (wt in kg)] = mg to add to 100 mL D5W IV/IO rate of 1 mL/hr = 0.1 μg/kg/min

SECTION 4: EQUIPMENT

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EQUIPMENT ESTIMATIONS: AIRWAY

Method to estimate UNCUFFED endotracheal tube (ETT) size: Internal tube diameter (mm) = age(y)/4 + 4

Method to estimate CUFFED endotracheal tube (ETT) size: Use 0.5 size smaller than uncuffed tube OR Internal tube diameter (mm)= age(y)/4 + 3.5 **Do not use cuffed ETT in children <28 days**

ETT Depth in cm at lip = 3x ETT size

King airways (KLTD/KLTSD): (sizing based on patient's height) 4-5 ft (122-155 cm) = Size 3 5-6 ft (155-180 cm) = Size 4 >6 ft (>180 cm) = Size 5

EQUIPMENT ESTIMATIONS: CERVICAL COLLARS

Many sizes of c-collars are available. Size depends on the brand and type of collar. Follow manufacturer recommendations for proper sizing. Infants may need a modification of the c-collar or a make-shift device. Rolled towels can be used to restrict motion. Children < 8y/o typically have a large head in relation to the body. In order to maintain the spinal column in a neutral position, place a layer of padding beneath the child's body from shoulders to hips before securing the child to the spine board.

EQUIPMENT SIZES: NEWBORN - 6 YEARS OLD

Equipment	Newborn 3 kg	3-6 mos 7 kg	1 year 10 kg	2-3 yrs 15 kg	4-6 yrs 20 kg
ETT	3.0-3.5	3.5-4.0	4.0-4.5	4.5-5.0	5.0-5.5
L Blade	Miller 0-1	Miller 1	Miller 0-1	Miller 1-2	Miller 2
Suction	6-8 Fr	8-10 Fr	10 Fr	10 Fr	10 Fr
NG Tube	5-8 Fr	5-8 Fr	8-10 Fr	10-12 Fr	12-14 Fr
Foley	5-8 Fr	5-8 Fr	8-10 Fr	10-12 Fr	10-12 Fr
Chest Tube	10-12 Fr	10-12 Fr	16-20 Fr	20-24 Fr	24-32 Fr
LMA (cuff)	1 (4 mL)	1.5 (7 mL)	2 (10 mL)	2 (10 mL)	2-2.25 (14 mL)

EQUIPMENT SIZES: 7 YEARS OLD AND OLDER

Equipment	7-9 yrs 25 kg	10-12 yrs 30 kg	13-15 yrs 40 kg	>15 yrs >50 kg
ETT	5.5-6.0 cuff	6.0-6.5 cuff	7.0-7.5 cuff	7.5-8.0 cuff
L Blade	Miller/Mac 2	Miller/Mac 2-3	Miller/Mac 3	Miller/Mac 3
Suction	10 Fr	10 Fr	12 Fr	12-14 Fr
NG Tube	12-14 Fr	14-16 Fr	14-16 Fr	16-18 Fr
Foley	12 Fr	12 Fr	12-14 Fr	12-14 Fr
Chest Tube	28-32 Fr	28-32 Fr	32-40 Fr	32-40 Fr
LMA (cuff)	2.5 (17 mL)	3 (20 mL)	3 (20 mL)	4-6 (30-50 mL)

VENTILATORS: GENERAL CONSIDERATIONS

In the event of a surge of pediatric patients, if there is a shortage of ventilators, it may be necessary to request and receive ventilators from the Strategic National Stockpile (SNS). This section covers the basic information on the use of the SNS ventilators in the pediatric and neonatal patient.

 Definitions: Pressure limited ventilation: Inspiration ends when a preset maximum airway pressure is reached. Tidal volume is variable and minute volume is not guaranteed. Volume limited ventilation: Inspiration ends when a preset tidal volume is delivered. Airway pressure is variable. Time-limited ventilation: Inspiration ends after a preset inspiratory duration. 					
General Settings: If volume limited ventilating, the initial tidal volume setting should be 6-10mL/kg Set I-time generally between 0.7-1.0 Volume lost to circuit must be replaced unless measurements taken at "wye"					
Abbreviations: AC = Assist control CPAP = Continuous positive airway pressure Cwp = centimeter of water pressure (cm H2O) I-time = Inspiratory time NPPV = Noninvasive positive pressure ventilation	PEEP = Positive end-expiratory pressure PIP = Peak Inspiratory pressure SIMV = Synchronized intermittent Mandatory Ventalation VT = Tidal volume				

VENTILATORS: PEDIATRIC QUICK SET-UP GUIDE

Ventilator	Modes	Volume	Rate	l-time	FIO2	PEEP	Alarms
Uni-vent® Eagle™ Ventilation System	SIMV AC CPAP	10 mL/kg	Set based on age (range: 1-150 bpm)	0.7-1.0 seconds (default is 1:1)	21-100%	Push- button switch: 1 push = 1 cwp	Set based on average PIP
LP-10 Ventilator	SIMV AC	10 mL/kg	Set based on age	0.7-1.0 seconds	21-100%	External dial valve located on circuit exhalation valve	Set based on average PIP
LTV-1200 Ventilator	SIMV, AC, Pressure support, CPAP, NPPV (Bi-Pap)	10 mL/kg	Set based on age	0.3-9.9 seconds	21-100%	Set on machine	Set based on average PIP, spontaneous PIP and minute volume

VENTILATORS: INFANT CONSIDERATIONS

Ventilator	Volume	Pressure Ventilation	Circuit Considerations	Sensitivity
Uni-vent® Eagle™ Ventilation System	Lowest VT is 10 mL	Possible to limit volume breaths with plateau pressure. Volumes can be measured	Pediatric circuits are available	Pressure trigger only-difficult for infants to trigger breath
LP-10 Ventilator	10 kg patient weight limit: lowest VT is 100 mL	Possible to limit volume breaths to ventilated infants smaller than 10 kg but volumes are then unknown	Pediatric circuits are available	Pressure trigger only-difficult for infants to trigger breath
LTV-1200 Ventilator	Ventilator designed for patients as small as 5 kg	Has pressure ventilation capabilities. Infants traditionally ventilated with pressure modes	Pediatric circuits are available	Pressure and flow trigger available. Flow trigger easier for infants to trigger breaths

SECTION 5: DECONTAMINATION

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GENERAL PEDIATRIC DECONTAMINATION CONSIDERATIONS

The smaller the child, the bigger the concerns regarding any of these considerations.

Attention to airway management is a priority throughout decontamination.

Preventing hypothermia is critical:

- Maintain water temperature between 98°-110° F(36.6° C 43.3° C)
- It is vital to rapidly dry children once decontaminated.
- Provide warm blankets and a heated area before and after decontamination.

For young children, use high-volume, low-pressure, heated water systems.

Soap and water should be used for decontamination; bleach and other chemicals may be toxic to the sensitive skin of children.

Decontaminating children takes longer due to the additional time required to assist them. It may require as much as fifteen minutes per child.

Parents/caregivers may not be able to decontaminate themselves & children at same time.

Older children may resist decontamination out of fear, peer pressure, and modesty issues (even in front of their parents or caregivers). Decontamination process can be traumatic and mental health issues may need to be addressed.

Separation of families during decontamination should be avoided but medical and safety concerns take priority.

PEDIATRIC DECONTAMINATION



PEDIATRIC DECONTAMINATION (continued)

Considerations:

Soap and water should be used.

Attention to airway management is a priority throughout decontamination.

If the water temperature is below 98° F, the risk of hypothermia increases in the smaller, younger child.

Never carry or allow caregiver to carry infants and small children through the decon shower due to risk of injury

The smaller the child, the bigger the concerns regarding any of these considerations.

SECTION 6: MENTAL HEALTH

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MENTAL HEALTH CONSIDERATIONS

When speaking with a child, sit or crouch at a child's eye level.

Help children verbalize their feelings, concerns and questions.

- Provide simple labels for common emotions (e.g., mad, sad, scared, worried).
- Help them to feel understood and to understand themselves.
- Do not increase their distress by using extreme words (e.g., terrified, horrified)

Match your language to the child's developmental level.

- Use direct and simple language as much as possible.
 - ▲ Children ≤12 years typically have much less understanding of abstract concepts and metaphors
- Adolescents often appreciate having their feelings, concerns and questions addressed as adult-like, rather than child-like responses.

Reinforce these techniques with the child's parents to help them provide appropriate emotional support to their children.

PSYCHOLOGICAL FIRST AID: OBJECTIVES

Primary objective of Psychological First Aid (PFA):

To create and sustain an environment of:

- safety
- calmness
- connectedness to others
- self-efficacy or empowerment
- hope

PSYCHOLOGICAL FIRST AID: STEPS 1-5

Step 1: Contact and engagement – "My name is ______ and I am here to try to help you and your family. I am a ______ worker here, and I am checking with people to see how they are feeling. May I ask your name?"

Step 2: Safety and comfort – "Do you need anything to drink or eat? Is your family here with you? Do you have a place to stay? We are working hard to make you and your family safe. Do you have any questions about what we're doing to keep you safe?"

Step 3: Stabilization (if needed) – "After bad things happen, your body may have strong feelings that come and go like waves in the ocean. Even grown-ups need help at times like this. Is there anyone who can help you feel better when you talk to them? Can I help you get in touch with them?"

Step 4: Information gathering – "May I ask some questions about what you have been through? Can you tell me where you were during the disaster? Did you get hurt? Is your family safe? How scared were you? Is there anything else that you are worried about?"

Step 5: Practical Assistance – "It seems like what you are most worried about right now is ______. Can I help you figure out how to deal with this?"

PSYCHOLOGICAL FIRST AID: STEPS 6-9

Step 6: Connection with Social Support – "You are doing a great job letting grown-ups know what you need. It is important to keep letting people know how they can help you. That way, you can make things better."

Step 7: Information on Coping – "It's normal for kids to feel scared after bad things happen. You will probably start to feel better soon. If you like, I can tell you some ways to help you feel better. (Provide hotline staffed by mental health professionals trained in disaster response if appropriate).

Step 8: Other support – Provide direct referrals to local mental health services or those through private insurance, American Red Cross and/or FEMA, as appropriate.

Step 9: Continuity in Helping Relationships – Facilitate referrals: "May I help make some calls to people who can help you?" and if feasible, "I'd like to check in with you again to see how you are doing. How may I contact your parents later?"

Getting Mental Health Care – For crisis counseling and long-term mental health care resources in Illinois, contact the Illinois Department of Human Services help line at 1-800-843-6154 or online at http://www.dhs.state.il.us/page.aspx?item=30893 to find crisis psychiatric services in your community.

SECTION 7: SECURITY

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SECURITY CONSIDERATIONS

Any area where children are being cared for should have strict security access control.

Implement a method to quickly identify the parent/child unit once they have been verified, such as matching armbands.

Keep caregiver/parent and child together during decontamination, triage and treatment when possible and if parent/caregiver is capable.

Assign a staff member to supervise and escort an unattended child for duration of care.

Maintain procedures to ensure child's safety from predators (i.e. abduction, maltreatment, abuse).

Identify a Pediatric Safe Area for displaced and unaccompanied children awaiting reunification with their caregivers.

PEDIATRIC SAFE AREA CONSIDERATIONS: LOCATION

Secure area away from crowd access.

The area should be away from stairwells and other fall-risks.

Windows should be locked.

Bathrooms should be readily available to the children.

Gates or gated areas may be used when supervised to assist in providing means to contain small children in holding areas.

Secure medications and chemicals to prevent accidental poisoning.

Care should be taken to prevent children from causing a trip hazard for elderly patients.

Cribs should be provided for small children to prevent falls. If this is not available, mats on floor in supervised area may be used.

Cover electric outlets and keep electrical cords out of reach.

Remove injury-prone objects from the area (sharp objects, etc.).

PEDIATRIC SAFE AREA CONSIDERATIONS: EQUIPMENT AND SUPPLIES

Ensure adequate staff and security to provide for the safety of the children.

Use a sign-in and sign-out sheet to monitor who enters the area.

Ensure a system is in place to document the name of adult picking up the child, their contact information and time the child was released from the area.

Maintain a supply of age appropriate distraction devices such as games, DVDs, toys, art supplies, etc. to occupy children.

Maintain a supply of age appropriate snacks.

Use high chairs for infants during feeding.

Identify safe locations for fans and heaters.

PEDIATRIC IDENTIFICATION CONSIDERATIONS: ACCOMPANIED CHILDREN

During a disaster, all children that come into a hospital, either as a patient or a visitor, should have an identification document or band be placed on them. If they are with their parent or caregiver, the "accompanied" child's document/band should include the following, if available:

- Name of child and their date of birth
- Name of accompanying adult, relationship to child, and their date of birth
- Admission date of adult (if the adult is a victim)
- Admission date of child (if the child is a victim)
- Date of visit of pediatric visitor

PEDIATRIC IDENTIFICATION CONSIDERATIONS: UNACCOMPANIED CHILDREN

- Ensure safety of unaccompanied children
- Suggested adult to child supervision ratio:
 - 1 adult to 4 infants
 - 1 adult to 10 pre-school children
 - 1 adult to 20 school age children

Notify emergency operations center (EOC) of all unaccompanied children

Utilize a child identification survey form and document:

- Physical description of child (hair & eye color; race if known; gender; birthmarks, scars or other markings; clothing worn when found height/weight)
- Language spoken by child (if applicable)
- Take a picture of all unaccompanied children and post on form

Contact resources to help reunite children: (see page 91 for phone numbers)

- American Red Cross
- Police Departments
- Department of Children and Family Services
- National Center for Missing and Exploited Children

PEDIATRIC IDENTIFICATION CONSIDERATIONS: VERIFICATION OF GUARDIANSHIP

Obtain name and age of person picking up child.					
Determine relationsh Parent Friend	ip to child: ■ Grandparent ■ Sibling	GuardianOther	Aunt/Uncle		
 Sample questions to ask to verify guardianship: Is the person who the child was living with before the incident? Is the person the usual guardian of the child? Does the person have proof of guardianship? Does the person describe child to staff accurately? Does the person pick correct child out from group of pictures? 					
Information to obtain Copy of person's ID Permanent address License plate numb Phone number	before releasing child: and current/temporary a er	address			

PEDIATRIC IDENTIFICATION CONSIDERATIONS: VERIFICATION OF GUARDIANSHIP (continued)

Contact resources to help verify the most appropriate adult to care for child: (see page 91 for phone numbers)

Law enforcement

Department of Children and Family Services

National Center for Missing and Exploited Children

American Red Cross

WHEN IN DOUBT, DO NOT RELEASE THE CHILD UNTIL GUARDIANSHIP CAN BE CONFIRMED!

RESOURCE CONTACTS

Illinois American Red Cross Patient Connection Program: 1-888-659-9877

Illinois Department of Children and Family Services 24/7 hotline: 1-800-25-ABUSE (22873)

Illinois Department of Human Services Crisis Help Information Line: 1-800-843-6154

Illinois Emergency Management Agency: 1-217-782-7860

Illinois Poison Control Center 24/7 hotline: 1-800-222-1222

National Center for Missing and Exploited Children 24/7 hotline: 1-800-THE-LOST (1-800-843-5678)

USA National Suicide and Crisis Hotline 1-800-SUICIDE (784-2433) / 1-800-273-TALK (8255)

WEB LINKS

Illinois Emergency Medical Services for Children (EMSC):

www.luriechildrens.org/emsc

American Red Cross: www.redcross.org

National Center for Missing and Exploited Children: www.missingkids.com

Illinois Department of Human Services: www.dhs.state.il.us/page.aspx?item=30893

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Planning for Children in Disasters:

A Hospital Toolkit







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Introduction

Children are a highly vulnerable segment of the population in times of disaster and pandemic disease outbreaks. On

a daily basis, there are governmental and private entities which form the foundation on which children depend to help guide their development and protect them from harm. Most children also have the supervision of parents, guardians or caregivers. However once a disaster occurs, many of the people in the child's life may become unavailable. Day care centers and schools may be damaged, destroyed or used for shelters. Parents or guardians may be unable to address all their children's needs because of work or community obligations during the disaster response, or their own injuries or deaths. Pediatric patients who have physical and psychological injuries could easily overwhelm existing pediatric resources in Michigan hospitals. To accommodate the initial stabilization and treatment of these victims, the Emergency Medical System must have triage protocols in place to maximize the potential for pediatric patients being taken to a hospital that has the resources for adequate care. In



addition, all hospitals should have surge plans in place for a Mass Casualty Incident (MCI), with the aim of increasing the pediatric bed capacity.¹

The unique vulnerabilities of children make it vital that their special needs are addressed in every stage of disaster planning – prevention, preparation, response and recovery. Federal targets for hospital surge capacity recommend accommodating 500 adult and pediatric patients per million populations in a disaster.² According to the 2010 census report, 23.7% (2,344,068) of Michigan's population is between the ages 0-17 years.² The 191 hospitals in Michigan have a total of 1981 pediatric beds, and five of the eight Regional Healthcare Coalitions have Pediatric Intensive Care Units in at least one hospital in their region. Currently the State of Michigan has 849 pediatric beds per million population, well above Federal recommendations.

Although Michigan has more than the recommended number of beds, there are large rural areas with long transport times to hospitals with pediatric services, which creates challenges to accessing specialized pediatric care rapidly. It is with this idea in mind, that this document was created to assist healthcare organizations in preparing for the care of children during disasters.

Nicole Lurie, M.D., M.S.P.H., Assistant Secretary for Preparedness and Response, in her speech before The Committee on Homeland Security and Governmental Affairs Ad Hoc Subcommittee on Disaster Recovery United States Senate stated, "The Department of Health and Human Services (HHS) is committed to the highest level of response for children before, during, and after emergency incidents, and continues to focus on integrating pediatric issues into the public health and medical response to natural and human-caused emergencies and disasters, including pandemic influenza. As part of this commitment, HHS has initiated programs and policies on a number of fronts to ensure that children receive the highest level of response before, during and after an incident. HHS

^{1, 2} Health Resources and Services Administration, US Department of Health and Human Services. (2004). Continuation Guidance, National Bioterrorism Hospital Preparedness Program. Critical benchmark #2–1: surge capacity—beds.

² Census Viewer. (2010). Population by Age. Retrieved March 1, 2014, from <u>http://www.censusviewer.com/state/MI</u>

recognizes that the needs of children are different when planning for disasters. Children require different skills and resources to treat their injuries and illnesses because they are far more than just small adults."³ Children can get sicker faster, but they can also heal quicker. Determining the most beneficial treatment for children during an emergency situation requires a different set of criteria than those used for adults.

During a disaster or pandemic illness, hospitals may receive critically ill or injured children and be charged to triage, treat and stabilize them while awaiting assistance or transport to a pediatric specialty center. The State of Michigan continues to prepare. The Michigan Department of Health & Human Services (MDHHS), through the Bureau of EMS, Trauma & Preparedness (BETP) has worked with all hospitals for this possibility. In an effort to further prepare hospitals for the surge of pediatric patients that may occur during a disaster, MDHHS BETP has worked with regional pediatric leadership personnel to develop this toolkit. The goal is to provide hospitals with useful, scalable and achievable strategies and tools for providing protection, treatment and acute care for children during a disaster.

Assumptions

All plans are developed with some underlying assumptions. The following assumptions should be considered when developing the facility hospital pediatric disaster plans:

- Pediatric care, not normally available at some hospitals, may have to be provided during a disaster until transfer for definitive care can be arranged. Healthcare providers, not used to caring for critically ill or injured pediatric patients may have to provide initial stabilization and continued care, until the patient can be transferred.
- Pediatric patients are not little adults and, as such, the extent and intensity of care and resources required will vary significantly within the targeted population. This is critical in assessing existing pediatric resources as it relates to the development of pediatric preparedness plans. Hospitals without pediatric services such as pediatric critical care or a pediatric trauma service may need guidelines and recommendations to provide protection, treatment and acute care for pediatric patients in disasters.
- Healthcare providers need access to pediatric-specific training, guidance, exercises and supplies. Federal assets may not be readily available in the immediate aftermath of an incident or if all regions of the country are experiencing mass medical illness.

Medical Surge and Medical Surge Triggers

In a disaster, the number of patients presenting for care may cause a "surge". Surge is determined by the number of patients a hospital can receive while maintaining usual standards of care. For each of the critical system components needed to respond to a medical surge incident, space, staff and supplies, there are three measurements that provide guidance to overall surge capacity at each of the tiered levels. An incident does not have to overwhelm assets in all of the categories to have an impact on healthcare.

Conventional capacity is the ability for hospitals to manage a surge, while operating daily practices with little or no impact to the patients or facility.

³ Lurie, N. (2009). Children and disasters: The role of HHS in evacuation planning and mental health recovery. Testimony before the Committee on Homeland Security and Governmental Affairs Ad Hoc Subcommittee on Disaster Recovery, United States Senate. Retrieved August 1, 2014 from http://www.hhs.gov/asl/testify/2009/08/t20090804a.html

Contingency capacity affects the ability for hospital daily practices to be consistent, but has minimal impact to usual patient care. At this point, the demand for resources has not exceeded community resources.

Crisis capacity may require adjustments in care not consistent with daily practices, but the standard of care is coherent within the setting of an emergency. The best possible care is provided to patients under these circumstances. ⁴

Once contingency or crisis capacity is reached during a surge of pediatric patients, hospitals without pediatric resources will require greater assistance from regional, state and federal partners. In a mass casualty incident, it is likely that the resources to assist children will be scarce, and staff inexperience with pediatric critical injury and illness will result in an inadequate "surge capacity." Each Regional Healthcare Coalition should maintain knowledge of the total capacity for pediatric casualties and have a plan in place to be able to support an increase in pediatric surge capacity during an incident. Strategies to increase surge capacity within the hospital should be consistent with and integrated within Regional Healthcare Coalition operational guidelines. All appropriate available space should be utilized. Some areas to consider include the following: ⁵

- Discharging inpatients and emergency department patients as soon as feasible and safe.
- Converting outpatient procedure beds into inpatient beds.
- Establishing a discharge holding area.
- Using hallways or creating alternate treatment areas (e.g., ambulatory clinics, on-site fitness center etc.)
- Strategies to create pediatric emergency treatment capacity outside the hospital.
- Initiate mutual agreements with other health care facilities, such as pediatric long-term care and rehabilitation facilities.
- Utilize mobile clinics, hospital-based ambulances, faith-based facilities, fitness centers and/or schools as alternate treatment areas.
- Establish relationships with pediatric tertiary care centers.

 ⁴ Altevogt, B.M., Stroud, C., Hanson, S.L., Hanfling, D., Gostin, L.O. (2009). Guidance for establishing crisis standards of care for use in disaster situations: A letter report. <u>http://nap.edu/catalog/12749.html</u>. Retrieved November 26, 2015
 ⁵ *Illinois Emergency Medical Services for Children*. Pediatric Disaster Preparedness Guidelines <u>http://www.luhs.org/depts/emsc/HospPedPreparednessToolkitOct2015Final.pdf</u> Table 1 below demonstrates how each stage of surge capacity could potentially be managed as the number of pediatric patients increase.

	Conventional Capacity	Contingency Capacity	Crisis Capacity
Medical	Tier 1	Tier 2	Tier 4
Surge		Tier 3	Tier 5
Capacity			Tier 6
Capability			
Tiers			
Supplies	 Stockpiled supplies used Medical Supply Chain able to resupply on request 	 Hospital MOUs Regional Equipment, Supply, and Pharmaceutical Caches MEDDRUN/CHEMPACK 	 State Caches Strategic National Stockpile (SNS) Great Lakes Healthcare Partnership (GLHP) Emergency Medical Assistance Compact (EMAC) Allocation of Scarce Medical Descurace
Space	 Cancel elective procedures Use in-place bed additions Begin surge discharge 	 Clear patients from pre- induction and procedure areas Fill all available beds Bed availability reporting (EMResource) 	 Place patients in hallways or lobby areas Activate Alternate Care Sites (ACS), Casualty Transport System (CTS) MI-TESA Medical Unit
Staffing	Use all staff trained to care for pediatrics to provide care	 Request pediatric trained staff from regional hospitals MI Volunteer Registry Medical Reserve Corps (MRC) Mobile Medical Field Teams Ambulance Strike Teams MI-MORT 	 GLHPP EMAC National Disaster Medical System (NDMS) Michigan Volunteer Registry Utilize staff not trained for pediatric care

Table 1 Potential Medical Surge Response Strategies

Staffing Plans^{6,7}

A team of selected members with skills or training in treating children should be the primary caregivers to children during a disaster. Identifying pediatric care providers is more important at hospitals with few pediatric services. Ideally, medical staff should be selected from pediatric emergency medicine, emergency medicine, pediatrics or family medicine divisions. Other staff members with some experience treating children may serve as additional or ancillary personnel. It is important to look for staff with airway management, resuscitation and critical care skills.

⁶ <u>http://pediatrics.aappublications.org/content/99/1/130</u> Accessed March 3, 2016

⁷ http://www.emscimprovement.center/ Accessed August 25, 2016

Staff may include physicians, nurses, and advanced care providers such as physician assistants and nurse practitioners who are trained in the fields of anesthesia, critical care, otolaryngology, pediatric surgery, trauma surgery, general surgery, orthopedics, urology, neurosurgery and thoracic surgery. Staff members should have appropriate life support training certifications and hospital credentials.

- Identify these pediatric disaster team members before a disaster and incorporate into facility exercises.
- Provide their names and contact information to the Disaster Committee and Command Center.
- Maintain this information on a pediatric disaster call down roster.
- Update team member roster including contact information at least annually.



Key Personnel

The following key personnel will coordinate pediatric disaster care and planning, serving as regular members of the Disaster Preparedness Committee. Assign qualified clinical personnel to these three key positions:

Physician Coordinator for Pediatric Emergency Care in a Disaster

Nominated by the ED Medical Director and approved by the facility disaster preparedness committee, this individual should be responsible for:

- Ensuring staff physicians have necessary skills and knowledge for emergency care and resuscitation of infants and children.
- Helping develop and periodically review ED medications, equipment, supplies, policies and procedures as a member of the general disaster committee.
- Helping develop and update the hospital emergency response plan, focusing on children's needs.
- Serving as liaison to a definitive care hospital (regional pediatric referral center with pediatric-capable trauma center) should the need arise to facilitate pediatric transfers.
- Organizing emergency and disaster pediatric education for ED health care providers.
- Identifying staff qualified to provide immediate or extended care of pediatric patients during a disaster
- Developing liaison relationships with pre-hospital providers and systems for purposes of community preparedness and transport readiness.
- Providing emergency care and resuscitation to children during a disaster.

Pediatric Champion

The pediatric champion responsibilities should include:

- Serve as a liaison to standing hospital pediatric care committees (if hospital cares for children at all during normal operations) or having the ability to stand up such a committee during an incident.
- Serve as a liaison to inpatient nursing and a definitive care hospital (regional pediatric referral center with pediatric-capable trauma center), integrating services and facilitating patient transfers.
- Organize ED nursing continuing education in emergency/disaster pediatric care and providing pediatric orientation for new staff members.
- Help develop, and periodically review and revise policies and procedures for pediatric emergency care.
- Monitor pediatric medical equipment and medication availability.
- Provide emergency evaluation and care to children during a disaster.

Nursing Coordinator for Pediatric Emergency Care in a Disaster

This individual's responsibilities should include:

- Serving as liaison to in-hospital standing pediatric care committees (if hospital cares for children at all during normal operations) or having the ability to stand up such a committee during incident.
- Serving as liaison to inpatient nursing and a definitive care hospital (regional pediatric referral center with pediatric-capable trauma center), integrating services and facilitating patient transfers.
- Organizing ED nursing continuing education in emergency/disaster pediatric care and providing pediatric orientation for new staff members.
- Helping develop, and periodically review policies and procedures for pediatric emergency care.
- Monitoring pediatric medical equipment and medication availability.
- Providing emergency evaluation and care to children during a disaster.

Response

A hospital's pediatric disaster team should be as broad as possible, accounting for the many levels of staffing needed to care for children during a disaster. The team should include clinical staff as well as ancillary ED and inpatient personnel who will unite to provide emergency care for children. Additional staff may be needed to respond to children's non-clinical needs.

Sample Job Action Sheets (Appendix III) will help assign tasks to specific team members and help to support leadership positions. While the Physician and Nursing Coordinators will oversee clinical care in the ED, a general Pediatric Logistics Unit Leader and a Pediatric Services Unit Leader should monitor non-clinical areas. These unit leader positions will facilitate communication between non-clinical areas while overseeing disaster response in Procurement, Materials/Supplies, Transportation and Nutrition. These unit leader positions may be a part of the logistics section of the hospital incident command center.

Procurement Unit Leader

- Receives briefing from Logistics Section Chief and Pediatric Logistics Unit Leader
- Contacts personnel on Procurement Disaster call list, if warranted.
- Works with vendors for pediatric supplies.
- Develops a plan for back-up resources (hospital vendors, community resources, pharmacies, grocery stores).

Materials/Supplies Leader

- Receives briefing from Logistics Section Chief and Pediatric Logistics Unit Leader.
- Contacts personnel on Materials/Supplies Disaster Call list, if warranted.
- Collects and coordinates distribution of essential children's medical equipment and supplies.
- Helps Pediatric Service Unit Leader prepare pre-designated Pediatric Disaster Care Areas and Pediatric Safe Area.

Transportation Unit Leader

- Receives briefing from Logistics Section Chief and Pediatric Logistics Unit Leader.
- Contacts personnel on Transportation Disaster Call list, if warranted.
- Counts available stretchers, carts, cribs and wheelchairs available for transporting children.
- Ensures safety for transporting children and proper modification of adult transport equipment.
- Reports transportation resources to Logistics Section Chief.
- Coordinates delivery of transportation resources to designated pediatric area or ED, depending upon scenario.
- Designates transporters from Incident Command System staff or labor pool as needed.
- Ensures that all transporters aware of child safety issues, including never leaving children unattended.

Nutrition Unit Leader

- Receives briefing from Logistics Chief and Pediatric Logistics Unit Leader.
- Contacts personnel on Nutritional Call list, if warranted.
- Estimates number of children's meals needed for 48 hours.
- Estimates Pediatric Safe Area's food, snacks and water needs.

Behavioral Health

In addition to caring for children's physical needs during a disaster, it is essential that hospitals provide age appropriate emotional support to foster psychological resilience post disaster. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), "adult support and reassurance is the key to helping children through a traumatic time." Disasters can result in long lasting psychological effects such as post-traumatic stress disorder in addition to the acute psychological issues such as fear, anxiety, grief, anger and confusion. Hospitals should include mental health providers, social workers and the hospital chaplain in all disaster response plans.



Volunteer Utilization

Experience has shown that during an emergency or crisis, many people want to volunteer their assistance. The Michigan Volunteer Registry (MVR) is a centralized database that provides access to contact information of interested and credentialed personnel. The credentialing process includes Michigan criminal background checks. This advanced registration process allows the Michigan Volunteer Registry to provide qualified and credentialed personnel to organizations in need. Volunteers with all skill levels and experiences are able to register online at: http://www.mivolunteerregistry.org. Information about the Michigan Volunteer Registry can be found at: http://www.michigan.gov/DEPR

To request volunteers, the hospital should contact their regional HCC Coordinator using the pre-established process.



Pediatric Triage

This section includes general principles of triage as well as more specific guidelines for disaster triage, especially applied to the pediatric population. Tools in this section can guide hospitals both with and without pediatric specific units. The goal is to ensure accurate sorting of patients and optimal use of limited resources.

Background

Few hospitals have disaster plans that specifically address pediatric needs. A CDC analysis of the 2008 National Hospital Ambulatory Medical Care Survey found only about 68% of 294 hospitals had planned response strategies for six incidents, including epidemic-pandemic disease outbreaks and bioterrorism attacks. Researchers said the most important deficiency was in pediatric planning. Only 56.2% of hospitals reported having pediatric patient transfer agreements with other hospitals in case of patient overload and fewer than 50% had a system to track accompanied or unaccompanied children.⁸

⁸ Gausche-Hill M, Schmitz, C, Lewis RJ. (2003). Pediatric Preparedness of UW Emergency Departments: A 2003 Survey. Pediatrics.207:120(6):1229-1237. <u>http://pediatrics.aappublications.org/cgi/reprint/120/6/1229</u>. Accessed August 25, 2016.

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Of the 119 million ED visits each year, 24 million are for children and 90% of these visits occur in non-children's hospitals.⁹ Only about 6 percent of EDs in the United States have all of the supplies deemed essential for managing pediatric emergencies and only half of hospitals have at least 85 percent of the supplies.¹⁰ It is important to note that children are more vulnerable than adults in many ways:^{11 12}

- A child's condition can shift from stable to life-threatening quite rapidly because he/she has less blood and fluid reserves, which means that relatively small amounts of blood/fluid loss can lead to irreversible shock or death. Children are also more sensitive to changes in body temperature, and have a higher metabolic rate.
- Infants, toddlers and young children do not have the motor skills to escape from the site of a chemical, biological or other terrorist incident. Children also lack cognitive decision-making skills to effectively flee from danger or to follow directions from others.
- Children are particularly vulnerable to aerosolized biological or chemical agents because they have a higher respiratory rate than adults and would inhale larger doses of the substance in the same period of time. Some agents (e.g., sarin and chlorine) are heavier than air; they accumulate close to the ground—in the breathing zone of children.
- Children are more vulnerable to the effects of agents that produce vomiting and/or diarrhea. Due to having less fluid reserve than adults, they can become dehydrated faster.
- Children are more vulnerable to agents that act on the skin because their skin is thinner and they have a larger surface-to-mass ratio than adults.

Acutely, the majority of pediatric care is not in specialized children's hospitals, but rather in community based hospitals and Emergency Departments, which is not likely to change during a disaster. Ideally, it is best to transport pediatric victims to regional pediatric hospitals, but logistically that may be impossible. In a large scale disaster or mass casualty incident, children's hospitals may become overwhelmed quickly and exceed their surge capacity to care for the incoming patients. A lack of qualified pediatric transport teams, or available EMS crews may contribute to further delays or even an inability to transfer children to available pediatric centers due to the size or nature of the incident.

Parents or caregivers may also be injured and need treatment. Every effort must be made to keep children and their caregivers together; therefore, hospitals need to be prepared to provide care to these patients as a "unit". Hospitals not normally accustomed to delivering pediatric care may be forced to do so, and pediatric hospitals may need to care for adult victims, both for an unknown duration of time.



 ⁹ Gausche-Hill M, Schmitz, C, Lewis RJ. (2003). Pediatric Preparedness of UW Emergency Departments: A 2003 Survey.
 Pediatrics.207:120(6):1229-1237., <u>http://pediatrics.aappublications.org/cgi/reprint/120/6/1229</u>. Accessed August 25, 2016.
 ¹⁰ Hogan, E.D., Lairet, J., Burnstein, J.L. (2002). Triage in Disaster Medicine. Lippincott, Williams and Wilkins: Philadelphia.
 ¹¹ Emergency Care for Children: Growing Pains. <u>http://books.nap.edu/catalog/11655.html.</u> Accessed August 25, 2016.
 ¹² Illinois Emergency Medical Services for Children. (2005). Pediatric Disaster Preparedness Guidelines.



Planning Tips:

- All hospital emergency plans should have a pediatric specific component
- Include community representation when developing plans.
- Written transfer agreements should be in place with other hospitals that have pediatric capabilities.
- Plan to care for the family as a unit, adults and children.
- Continuing education in pediatric care is highly recommended for hospital and pre-hospital emergency medical personnel.

Triage Principles

A mass casualty incident (MCI) can be characterized by an imbalance between needs and resources; there is not a pre-determined number of patients that equates to a mass casualty incident. In a mass casualty incident/disaster response, triage should be the first step in patient care. It is the keystone of successful and fair disaster medical management, because the decisions made during this phase will impact on the community at large. As the incident changes, the triage process should evolve. Disaster triage requires a paradigm shift from the daily routine to transport and treatment priorities, as well as accomplishing the greatest amount of good for the greatest number of patients.

Daily triage identifies the sickest patient to receive evaluation and treatment as early as possible. This allows for the highest intensity of care provided to most seriously ill patients regardless of the probability for survival.

Disaster triage is employed when local resources are unable to provide timely care to all victims needing it due to limited availability of resources.

The use of disaster triage involves a change of thinking from everyday care to:

- High intensity care should go to the sickest patient doing the greatest good for greatest number.
- Identify victims with best chance of survival for immediate intervention focusing care on those with serious and critical injuries but who are salvageable.
- Identify victims at extremes of care by sorting those who are lightly injured and those who are so severely injured that they will not survive.
- Immediate treatment to only those victims that procedure or intervention may make difference in survival.
- Altered standards of care based on resource availability.

Disaster triage must be dynamic and fluid in its execution. **Primary triage** is done at the scene by first responders; the triage category is assigned in less than 30 seconds and is based on physiologic parameters and survivability. **Secondary triage** occurs typically at the facility where the patient is transported. The initial triage assignments may

change and evolve as the patient's condition changes so reassessment is crucial. It is essential that medical personnel prioritize transport and treatment based on level of injury and available resources.¹³

An important skill in disaster triage is the ability to distinguish those requiring immediate lifesaving care and those who can receive delayed care and making these decisions based on survivability. During times of disaster and mass medical surge, medical personnel must remember that resources will become scarce quickly so they must be conserved and utilized efficiently.¹⁴ The objective of pediatric triage is to optimize the number of pediatric victims triaged in an MCI, to improve resource allocation, and reduce emotional burden on triage personnel.

As of yet there is no one standardized approach to triage that is accepted nationally. The type of system used can be dependent upon local, regional or state protocols. This can cause inconsistency or a lack of interoperability between jurisdictions. The State of Michigan uses triage tags with the five color coded categories: red, yellow, green, gray, and black.

• Red signifies that the patient has immediate or life threatening injuries, but could be salvageable with immediate action such as, relief of an airway obstruction or by controlling significant external bleeding.



- Green signifies minor injuries and many times these patients are called "walking wounded." Green patients can wait longer periods for care and may have injuries such as minor burns, laceration and sprains.
- Grey signifies injuries so grave they are expected to die.
- Black indicates already dead. Any attempt to resuscitate these patients will use too many resources and are likely to have a negative outcome.

The physiologic criteria of the Field Triage Decision Scheme are well supported in determining who requires a trauma center. Parameters include:

- Glasgow Coma Scale (GCS) < 14.
- Systolic Blood Pressure (SBP) < 90.
- Respiratory Rate (RR) < 10 or > 29.
- Palpable radial pulses can be an acceptable form of assessment of perfusion.
- The motor component of the GCS and the patient's ability to follow commands may be enough to identify patients in need of immediate care/ transport.

Triage Models Reviewed

Many triage models exist across the nation. The Federal Interagency Committee on EMS (FICEMS) Preparedness Committee reviewed several models and developed the Model Uniform Core Criteria (MUCC) for Mass Casualty Incident Triage (2011). The MUCC for Mass Casualty Triage is an evidence and consensus based national guideline that recommends 24 core criteria to be included in all mass casualty triage systems.¹⁵ Of all the triage models



 ¹³ Hogan, E. D., Lairet, J., Burnstein, J. L. (2002). <u>Triage in Disaster Medicine</u>. Lippincott, Williams and Wilkins: Philadelphia.
 ¹⁴ Burkle, F. M., Antosia, R. E., Cahill, J. D. (2006). <u>Handbook of Bioterrorism and Disaster Medicine</u>. Springer Science: NY
 ¹⁵ Federal Interagency Committee on EMS. (2011). <u>National Implementation of the Model Uniform Core Criteria for Mass</u> <u>Casualty Incident Triage: A Report to the FICEMS.</u>

evaluated by the FICEMS, there was not sufficient evidence to recommend any one model to become the national model. Therefore, several of the most commonly utilized triage models are shared in this toolkit.



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START Triage¹⁶

Simple triage and rapid treatment (START) is a method used by first responders to effectively and efficiently evaluate all of the victims during a mass casualty incident (MCI). The first arriving medical personnel will use a triage tag to categorize the victims by the severity of their injury. The victims will be easily identifiable in terms of what appropriate care is needed by the triage tags they were administered. The whole evaluation process is generally conducted in 60 seconds or less. Once the evaluation is complete, the victims are labeled with one of the four triage categories:

- Minor –delayed care/can delay up to three hours.
- **Delayed** urgent care / can delay up to one hour.
- Immediate immediate care / life-threatening.
- Deceased victim is dead or mortally wounded / no care required.

The START MCI triage method uses a quick assessment of:

- Ambulation/ ability to walk.
- Airway.
- Circulation.
- Neurologic function.



- Mass Casualty triage differs from daily field and ED triage.
- Physiology is the driving factor for MCI triage including children.
- Resources, patient acuity and numbers are limiting factors.
- "MCI triage will never be logistically, intellectually, or emotionally easy... but we must be prepared to do it using the best of our knowledge and abilities." Lou Romig.

MASS Triage

The MASS Triage (Move, Assess, Sort, Send) was developed by the National Disaster Life Support (NDLS) Foundation and involves an initial global sorting of patients before individual evaluation. All ambulatory patients are asked to walk to a specific location for care.

¹⁶ <u>http://www.remm.nlm.gov/startadult.htm</u>. Accessed August 25, 2016

Any non-ambulatory patients who are cognizant enough to understand and follow commands are asked to wave their hands so they can be categorized. A responder then goes to each patient who is not moving or waving and assesses them for their injuries. Individual patients are categorized into 1 of 4 classes:

- Immediate (Red).
- Delayed (Yellow).
- Minimal (Green).
- Expectant or Dead (Black).

Once the triage process is complete, patients are prioritized for transport.

JumpSTART Triage¹⁷

The JumpSTART Pediatric triage framework is an adaptation of the START triage method that takes into account the physiologic differences between adults and children. It was designed specifically for mass casualty incidents not daily triage. According to its developer, Dr. Lou Romig, JumpSTART is intended for, "children with acute injuries and may not be appropriate for the primary triage of children with medical illnesses in a disaster setting."¹⁸ The issues with using adult START for children that JumpSTART addresses include:

- Physiological differences in respiration.
- Different levels of mentation or social integration that affect the mentation check.
- Common non-ambulatory evaluations that should not affect Green status.
- Creating a special class of triage evaluation to help the triage officer control his or her own psychological reactions.

Currently JumpSTART is the most widely used pediatric mass casualty triage tool in the US at present. This pediatric triage model:

- Focuses on pediatric parameters.
- Is well known and widely adopted.
- Is designed for any pediatric victim who appears < 8 yrs. of age.
- Allows for age dependent physiologic parameters of child such as respiratory rate, circulation, and mental status.

JumpSTART objectives:

- Optimize the primary triage of injured children in the MCI setting.
- Enhance the effectiveness of resource allocation for all MCI victims.
- Reduce the emotional burden on triage personnel who may have to make rapid life-or-death decisions about injured children in chaotic circumstances.

Figure 1 below outlines the JumpSTART triage process for categorizing victims of a MCI.

¹⁷ <u>http://www.jumpstarttriage.com/JumpSTART_and_MCI_triage.php.</u> Accessed August 25, 2016.

¹⁸ Romig, L. (2012). The JumpSTART Pediatric MCI Triage Tool and other pediatric disaster and emergency medicine resources. The JumpSTART Pediatric MCI Triage Tool: Principles of Multi-casualty Triage. http://www.jumpstarttriage.com/JumpSTART_and_MCI_Triage.php. Accessed August 25, 2016



Table 2: AVPU Scale

- Mental Status AVPU Scale
- A Alert
- V Responds to Verbal StimuliP Responds to Painful Stimuli
- U Unresponsive

Figure 2 JumpSTART Triage Categories



Pediatric Assessment Triangle (PAT)^{19,20}

The Pediatric Assessment Triangle (PAT), developed by the American Academy of Pediatrics (AAP) is intended to be a rapid (30-60 second) severity of illness assessment. The method relies on visual clues of appearance, work of breathing and circulation to determine the urgency of needed interventions. Basically, the determination of sick or not sick is made. PAT is not designed for disaster triage.

Figure 3 Pediatric Assessment Triangle



The SALT Triage Method^{21,22}

The SALT triage method uses the principals of Sort, Assess, Life-saving interventions, and Treatment and transport. This methodology was created by CDC's Federal Interagency Committee on Emergency Medical Services Preparedness Committee in response to requests to simplify and standardize disaster triage for all aged victims. It

¹⁹ <u>http://www.health.ny.gov/professionals/ems/pdf/pediatricreferencecard-04.pdf</u>. Accessed August 25, 2016

²⁰ Lyle, K. (2009). et.al. *Pediatric Mass Casualty: Triage and Planning for the Pre-hospital Provider*. Clinical Pediatric Emergency Medicine. Sept 2009 10:3 p.173-185.

²¹ <u>http://www.ncbi.nlm.nih.gov/pubmed/?term=19947863</u>. August 25, 2016

²² Lerner, B. E., et al. (2008). *Mass Casualty Triage: An Evaluation of the Data and Development of a Proposed National Guideline*. Disaster Med. Public Health Preparedness. 2(sup 1): (S24-34)

incorporates the Model Uniform Core Criteria for mass casualty triage. The SALT method adds an existing triage category to the traditional 4 categories as indicated in Figure 4 below. SALT places an emphasis on continual reassessment. SALT Lifesaving interventions include:

- Open airway/jaw thrust.
- 2 rescue breaths for child (consistent with American Heart Association guidelines).
- Control major hemorrhage.
- Use of auto-injector antidotes.

The lifesaving interventions should be completed quickly prior to assignment to a triage category, but only if the supplies are readily available and the provider is trained in their use. These specific actions were chosen because they have a profound effect on patient survival.

The SALT method offers 5 levels of severity as indicated in Figure 4 below.



Figure 5 depicts the triage decision making process utilized with the SALT method.

²³ Burkle, F. M., Antosia, R.E., Cahill, J.D. (2006). <u>Handbook of Bioterrorism and Disaster Medicine</u>. Springer Science: NY.

²⁴ Eastridge, B. J., et al. (2010). *Field Triage Score in Battlefield Casualties: Validation of a Novel Triage Technique in a Combat Environment.* The American Journal of Surgery. 200, 724-727



²⁵ Federal Interagency Committee on EMS. (2011). National Implementation of the Model Uniform Core Criteria for Mass Casualty Incident Triage: A Report to the FICEMS.

Hospital Based Triage

Assessment of Breathing:

The triage officer will form a first impression about a patient's respiratory status as indicated in table 2.

- If critical or unstable, the patient will be considered RED and sent to the decontamination ahead of the line or to the resuscitation area as appropriate.
- If potentially unstable after decontamination, the patient will be considered YELLOW and sent to the Triage or to the appropriate treatment area after decontamination.
- If breathing is stable, then continue assessment for circulation and appearance.

Table 2: Airway Assessment

Assessment	Critical/Unstable	Potentially Unstable	Stable
Airway	Partial to complete obstruction including by secretions or blood	Patent with secretions.	Patent
Work of breathing	Absent or increased work with periods of weakness	Normal	Normal
Central skin color	Pallid, mottled, or cyanotic	Pink	Pink
Inspection	Absent to decreased chest movements	Normal	Normal

Modified from Sandal ND et al.

Assessment of Circulation

The triage officer will form a first impression about a patient's circulatory status as indicated in table 3 below.

- If critical or unstable, the patient will be considered RED and sent to decontamination ahead of the line or to the Resuscitation area as appropriate.
- If potentially unstable, the patient will be considered YELLOW and sent to an area or other designated area after decontamination.
- If circulation is stable, then continue assessment for appearance.

Table 3: Circulatory Assessment

Assessment	Critical/ Unstable	Potentially unstable	Stable
Skin	Pallid, mottled, or cyanotic.	Normal	Normal

Modified from Sandal ND et al.

Assessment of Appearance – "TICLS"

The triage officer will form a first impression about a patient's appearance, based on evaluating muscle tone and mental status as indicated in table 4 below. To make the determination whether the patient is critical or unstable. The patient will be sent to decontamination ahead of the line or to the Resuscitation/RED area as appropriate. Based on any abnormal findings, if potentially unstable, the patient will be sent to Triage/YELLOW area or other designated area after decontamination.

Table 4: Characteristics of Appearance "TICLS"²⁶

_			
Tone	Is there vigorous movement with good muscle tone, or is the child limp?		
	 Is the child alert and attentive to surroundings, or apathetic? 		
last a na attivity r			
Interactivity	Will the child reach for a toy?		
	 Does the child respond to people objects and sounds? 		
	bles the child respond to people, objects, and sounds:		
Consolability	Does comforting the child alleviate agitation and crying?		
consolability			
Look/Gaze	• Do the child's eves follow your movement, or is there a vacant gaze?		
ECON, GUEC	bo the child's cycs follow your movement, or is there a vacant gaze.		
	Are vocalizations strong and spontaneous, or are they weak, muffled, or		
Speech/Crv			
opecent erj	hoarse?		

Key Visual Assessment Points of the Pediatric Assessment Triangle:

- Any Critical/Unstable elements of the Pediatric Assessment Triangle, the patient is immediately sent to Resuscitation/RED.
- Any Potentially Unstable elements of the Pediatric Assessment Triangle, the patient is immediately sent to Triage/YELLOW.
- When Stable elements for ALL THREE elements of the Pediatric Assessment Triage occur, the patient is sent to Stable Area/GREEN.
- Patient will be sent to Triage/YELLOW, by default, when the criteria for Critical/Unstable and Stable are not clearly met.





Planning Tip: Special Circumstances

The following circumstances require a more thorough history and physical. Patients in these circumstances should not be considered stable by visual inspection alone and should be triaged to the **yellow** category:

- Patients who appear to be 8 years of age or less without an accompanying caretaker.
- Children with special needs.
- All patients 5 years of age or less.

Assessment of Mental Health

Assessment of mental status in children is age-dependent, but can quickly be assessed by gauging the level of responsiveness as indicated in table 5 below. An answer that demonstrates an abnormal response by the patient requires that the patient be sent to Resuscitation/Red.

²⁶ Adapted from, Dieckman, R., Brownstein, D., Gausche-Hill, M. eds. (2000). *Pediatric Education for Prehospital Professionals*. Sudbury, MA: Jones and Bartlett Publishers, American Academy of Pediatrics. (Used with permission)

Category	Stimulus	Response Type	Reaction
<u>A</u> lert	Normal environment	Appropriate	Normal interactions for age
Varbal	Simple command	Appropriate	Responds to name
	or sound stimulus	Inappropriate	Nonspecific or confused
		Appropriate	Withdraws from pain
<u>P</u> ain	Pain	Inappropriate	Sound or motion without purpose or localization of pain
		Pathological	Posturing
<u>U</u> nresponsive		Pathological	No response to any stimulus

The Glasgow Coma Scale (GCS) is more specific and predictive of patient outcomes than the AVPU scale²⁷, but it is more complex as it assigns a score. There are 2 GCS scoring tables based on age of the individual being assessed as indicated in the following tables.

Table 6: Standard Glasgow Coma Scale

Eye Opening	
Spontaneous	4
To verbal stimuli	3
To pain	2
None	1
Best Verbal Response	
Oriented	5
Confused	4
Inappropriate words	3
Incomprehensible sounds	2
None	1
Best Motor Response	
Follows commands	6
Localizes pain	5
Withdraws to pain	4
Flexion to pain	3
Extension to pain	2
None	1
Total	

²⁷ Tepas, J. J., Fallat, M. E., Moriarty, T. M. (2004). *Trauma, in APLS: The Pediatric Emergency Medicine Resource*. Gausche-Hill, M., Fuchs, S., and Yamamato, L. (eds.) Sudbury, MA: Jones and Bartlet Publishers.

Table 7: Pediatric Glasgow Coma Scale for Infants and Young Children

Eye Opening			
Infants	Children		
Opens eyes spontaneously	Opens eyes spontaneously	4	
Opens eyes to speech	Opens eyes to speech	3	
Opens eyes to pain	Opens eyes to pain	2	
No response	No response	1	
Ver	bal Response		
Infants	Children		
Coos and babbles	Oriented	5	
Irritable cry	Confused	4	
Cries to pain	Inappropriate words	3	
Moans to pain	Incomprehensible words	2	
No response	No response	1	
Motor Response			
Infants	Children		
Spontaneous movements	Obeys commands	6	
Withdraws to touch	Localizes	5	
Withdraws to pain	Withdraws to pain	4	
Flexion to pain	Flexion to pain	3	
Extension to pain	Extension to pain	2	
No response	No response	1	
	Total		

Triage Algorithm

Patients 8 years or less of age without accompanying caretaker or those with special needs and all patients 5 years or less of age in the presence of a caretaker should all go through this Triage assessment and should not be considered stable by visual inspection alone. These groups of patient require more detailed history and physical.

Figure 6: Pediatric Assessment Primary Triage Algorithm²⁸



²⁸ Pediatric Disaster Toolkit: Hospital Guidelines for Pediatrics during Disasters (2nd Edition 2006)



Resuscitation Area

General:

- The received patients are classified as Critical/Unstable from triage.
- Resuscitation personnel should be trained in evaluation and management of critical pediatric patients.
- There will be a designated Unit leader in this area.
- A more detailed history and physical needs to be obtained. An example is the SAMPLE history and physical.

Once stabilized, the patients are sent to ED Treatment and Holding Area for continued care and management. This decision to send the patient is based on reassessment. In general, these patients do not require additional critical care and/or resuscitation.

Reassessment criteria include the following:

- Breathing.
- Circulation.
- Appearance (TICLS).
- Mental Status (AVPU scale).
- Average Pediatric Heart Rate by Age.
- Average Pediatric Respiratory Rate by Age.

In some cases, patients will be sent to areas for Definitive Management such as the Operating Room or intensive care areas.

Patients who die will be sent to the area designated as the Morgue.

YELLOW

ED Treatment and Holding or Urgent Area

General:

- The received patients are classified as Potentially Unstable from Triage.
- Resuscitation personnel should be trained in evaluation and management of pediatric patients.
- There will be a designated Unit Leader in this area.
- A more detailed history and physical needs to be obtained, an example is the SAMPLE history (see appendix B and appendix C).

The physical exam will include criteria from the Pediatric Assessment Triangle and a "hands on" physical exam with the focus on detecting signs specific to the suspected injury or illness. This step is an interactive process, reassessment identifies potentially critical/unstable at this later moment in time.

Reassessment criteria include:

- Breathing.
- Circulation.
- Appearance (TICLS).
- Mental Status (AVPU scale).
- Average Pediatric Heart Rate by Age.
- Average Pediatric Respiratory Rate by Age.

Based on the Pediatric Assessment Triangle and CUPS classification, the patients will be sent to Resuscitation Area, ED Treatment and Holding Area/ Urgent Treatment, and Fast Track or Minor Treatment Area. Patients are transferred to definitive management or home, when appropriate. In cases where the patient's clinical status declines or improves dramatically, they will be sent either to Resuscitation or Fast Track, respectively.

GREEN

Fast Track or Minor Area

General:

The received patients are classified as stable from triage

- Fast Track personnel should be trained in evaluation and management of pediatric patients.
- There will be a designated Unit Leader in this area.
- A more detailed history and physical needs to be obtained, an example is the SAMPLE history (see appendix A and appendix B).

The physical exam will include criteria from the Pediatric Assessment Triangle and a "hands on" physical exam with the focus on detecting signs specific to the suspected injury or illness. This step is an interactive process, reassessment identifies potentially critical/unstable at this later moment in time.

Reassessment criteria include:

- Breathing.
- Circulation.
- Appearance (TICLS).
- Mental Status (AVPU scale).
- Average Pediatric Heart Rate by Age.
- Average Pediatric Respiratory Rate by Age.

Based on the Pediatric Assessment Triangle, the patients will be sent to ED treatment and holding area, definitive management, and home.

Here, patient flow and area volume is dictated by patient volume and staffing, and capacity. Patients waiting for assessment or treatment will be monitored in regular intervals using criteria from the Pediatric Assessment Triangle.²⁹

²⁹ <u>Pediatric Disaster Toolkit: Hospital Guidelines for Pediatrics during Disasters</u> (2nd Edition 2006)

SAMPLE History

After initial triage, the healthcare provider should try to obtain a focused history from first responders, caregivers, and patient. This focused history will be obtained by performing a secondary survey and asking SAMPLE history questions.

SAMPLE History Includes:

- **S**igns/symptoms—assessment findings and history.
- Allergies—particularly drug allergies.
- Medications the child is currently taking.
- Past medical problems (chronic medical conditions, which may predispose to greater morbidity/mortality).
- Last food or liquid the child has taken.
- Event leading to the illness or injury (this will be of special relevance in a disaster; questions will depend on type of incident).

Reassessment Criteria

Once the child has been triaged, had their initial assessment and has received initial treatment, it is important that the healthcare provider continues to regularly reassess their status. The following criteria are utilized for the reassessment of children in each of the areas listed above.

Assessment	Critical /Unstable	Potentially Unstable	Stable
Airway	Complete or partially obstructed or	Patient with minimal	Patent
	significant blood or secretions	secretions	
Work of breathing	Absent or increase work with	Normal	Normal
	periods of weakness		
Breath sounds	Absent or decreased breath sounds;	Normal or slight	Normal
	Grunting, wheezing, stridor	wheezing	
Respiratory rate Apnea, bradypnea, tachypnea:		Occasionally	Normal
	irregular breathing rate	increased	
Central skin color	Pallid, mottled, cyanotic	Pink	Pink
Inspection	Absent, decreased chest movement	Normal	Normal
Pulse ox	Less than 85%	85% or higher	95% or higher

Table 8: Critical, Unstable, Potentially Unstable, Stable (CUPS) Assessment for Breathing

Sandal ND et al. CUPS assessment

Table 9: CUPS Assessment for Circulation

Assessment	Critical /Unstable	Potentially unstable	Stable
Heart rate	Tachycardia or bradycardia	Normal	Normal
Pulse strength	Weak central pulse, absent or weak peripheral pulse	Normal	Normal
Capillary refill	>3 to 5 seconds	<2-3 seconds	<2-3 seconds
BP	Hypotensive	Normal	Normal
Skin	Pallid, mottled, or cyanotic; cool	Normal	Normal

Pediatric Decontamination

Purpose

These recommendations are intended to facilitate timely decontamination of children presenting to any hospital during a disaster or terrorist attack resulting in a need for decontamination. Children require special considerations that may not be addressed in a general Hospital Decontamination Plan.

General Guidelines

Infants and children have unique needs that require special consideration during the process of hospital based decontamination, such as:

- Avoiding separation of families during decontamination, especially under conditions that involve large numbers of patients in a chaotic situation; however, medical issues take priority.
- Older children may resist or be difficult to handle due to fear, peer pressure and modesty issues (even in front of their parents or caregivers).
- Since parents or caregivers may not be able to decontaminate both themselves and their children at the same time, decontamination ("hot zone") personnel may be needed to assist them.
- Incorporating high ¬volume, low ¬pressure water delivery systems (e.g., handheld hose sprayers) that are "child¬ friendly" into the hospital decontamination showers.
- Risk of hypothermia increases proportionally in smaller, younger children when the water temperature in the decontamination shower is below 98°F.
- Attention to airway management, a priority in decontamination showers.

The smaller the child, the bigger the problem regarding any of the above considerations (hypothermia, airway management, the ability to effectively decontaminate the child) and the separation of families.

Decontamination Recommendations Based on Estimated Age Group

The following recommendations are based on the child's estimated age based on appearance, since asking may be impractical due to the limitations of personal protective equipment (PPE) worn by decontamination team members and/or due to a large influx of patients.

- Undress child (by caregiver and hot zone personnel). If child is able to undresses without assistance, respect modesty and privacy if at all possible.
- Place child on stretcher or a restraining device.
- Escort child through the decontamination shower (by hot zone staff and caregiver).
- Directly supervise caregiver and child decontamination.
- Monitor airway.
- Child decontaminates him/herself, but goes through decontamination shower in succession with caregiver, or parent or classmates.
- Treat or prevention hypothermia (towels, gowns, warming blankets).
- Immediately give a unique identification number on a wristband (or equivalent).
- Triage to an appropriate area for further medical evaluation.

Infants and Toddlers (Children Typically Younger than Two Years of Age)

Infants and toddlers are the most challenging group to treat; special needs considerations are of the utmost importance in this group. Follow the guidelines below during treatment to assure the patient is properly and thoroughly decontaminated. It is not recommended that the child be separated from family members or adult caregivers. Caregivers should not carry the child because of the possibility of injury from a fall, or from dropping a slippery and squirming child. Special attention must be given to the child's airway while in the shower.

Non-ambulatory children should be placed on a stretcher by hot zone personnel and undressed (using trauma shears if necessary). All clothes and items that cannot be decontaminated should be placed in appropriate containers or bags as provided by the hospital and labeled. All non-ambulatory children should then be escorted through the decontamination shower by either the child's caregiver or decontamination personnel to ensure the patient is properly and thoroughly decontaminated. Special attention must be paid to the child's airway while in the shower.

Once through the shower, the child's caregiver or post decontamination ("cold zone") personnel will be given a towel and sheets to dry off the child, and a hospital gown. Remember to prevent or treat hypothermia by providing additional towels, gowns or warming blankets as necessary. The child should immediately be given a unique identification number on a wristband and then triaged to an appropriate area for medical evaluation. Children and their parents or caregivers should not be separated unless critical medical issues take priority.

Planning Tip: Estimate Child's Age

For decontamination purposes, children are divided into 3 groups by ages:

- Infants and toddlers typically 0-2 years of age.
- Preschool children typically older than 2 up to 6-8 years of age.
- School aged children approximately 8-18 years of age.

Preschool Aged Children (Typically Two to Eight Years of Age)

Children ages two to eight years are able to walk and speak, yet (with considerable variations in physical characteristics), are clearly children. Each child should be directly accompanied through the shower by either the child's caregiver or hot zone personnel to ensure the entire patient is properly and thoroughly decontaminated. The child should not be separated from family members or the adult caregiver.

Ambulatory children should be assisted in undressing with help from either the child's caregiver or "hot zone" personnel. All clothes and items that cannot be decontaminated should be placed in appropriate containers or bags as provided by the hospital and labeled.
Non-ambulatory children should be placed on a stretcher by hot zone personnel and undressed (using trauma shears if necessary). All clothes and items that cannot be decontaminated should be placed in appropriate containers or bags as provided by the hospital and labeled.

Each non-ambulatory child on a stretcher should be escorted through the decontamination shower and assisted with decontamination to ensure the patient is thoroughly and properly decontaminated.

Once through the shower, each child should be given a towel and sheets to dry themselves, and a hospital gown Remember to prevent or treat hypothermia by providing additional towels, gowns or warming blankets as necessary. The child should immediately be given a unique identification number on a wristband and then triaged to an appropriate area for medical evaluation.

Children and their parents or caregivers should not be separated unless critical medical issues take priority.



³⁰ Heon D, Foltin G. *Principles of Pediatric Decontamination*. Pediatric Disaster Readiness Vol. 10, Issue 3 (p 186-194). <u>http://www.clinpedemergencymed.com/article/S1522-8401%2809%2900054-8/fulltext</u> Accessed 2-18-2016

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Post-Stabilization Needs: Transporting Children during a Disaster

Purpose

This section contains recommendations for transporting children after a disaster. General guidelines outlining the transport of children within a hospital and between two facilities are discussed. During a disaster all hospitals should be prepared to provide extended care for pediatric patients, even if they do not have pediatric staff and services.

Hospitals lacking pediatric and pediatric subspecialty care may need to transfer children to facilities with pediatric capabilities. All hospitals are encouraged to make pre-arranged agreements with EMS agencies and receiving hospitals in their area. Transfer may be difficult (or impossible) after a disaster due to local conditions, safety concerns, lack of personnel or vehicles, or lack of capacity at the referral center.

The logistics of transporting hospitalized children during a disaster are likely to require the mobilization of local, regional or even state assets. All hospitals should determine the location of the nearest sites that could provide appropriate care for:

- Neonatal Intensive Care Unit (NICU) patients.
- Pediatric Intensive Care Unit (PICU) patients.
- Special needs children.
- Pediatric psychiatric care.
- Children requiring special medical equipment.
- Children with complex chronic medical needs such as dialysis.

A vital component of care will include the transport of children between clinical areas, to another area (inpatient unit) or for diagnostic testing (imaging). Ideally, all patient care transports are performed by specially trained individuals. The hospital should develop contingency plans for disaster situations in which specialized personnel may not available for pediatric transports.³¹

Personnel who transport stable patients within the hospital should understand:

- The special needs of children during a disaster.
- They are never to leave children alone.
- How and who to call for assistance if required.

Personnel who transport unstable patients should be professional personnel such as paramedics, nurses, air ambulance flight crews, pediatric transport teams etc.

Know who to call for help – call Pediatric Hospitals for information to assist in caring for the child. Consider calling for an air ambulance or pediatric transport team if child is extremely unstable or it is a long transport.

³¹<u>http://www.health.ny.gov/facilities/hospital/emergency_preparedness/guideline_for_hospitals/docs/emergency_preparedness</u> <u>s_manual.pdf</u>. Accessed August 25, 2016

Transportation Equipment³²



Planning Tip: Transport Equipment

The following equipment should be available prior to transporting a child.

• Pediatric specific airway management equipment.

Transportation Precautions

It is imperative when transporting a pediatric patient that safety personnel or chaperones are provided during transport. Parents or adult caregivers must stay with their children when it is possible. If no family supervision is possible, appropriate hospital personnel must accompany and supervise children at all times. Children must be provided with some type of identification and their caregivers must be given something signifying their relationship to the child in order to avoid the child being lost or stolen.

Children less than 6 years old on stretchers require continuous one-on-one direct supervision if no crib is available. Children older than 6 must be evaluated for their ability to comply with safety rules while on the stretcher. Continuous one-on-one monitoring is recommended if compliance is questionable. If separated from caregivers, they need continuous one-on-one direct supervision. Stable ambulatory patients require one-on-one direct supervision if transported out of the Emergency Department. If transported to a pediatric safe area, staff that is experienced at observing groups of children should accompany the patients.

Transporting Children to Other Facilities

Disaster conditions might prevent safe or efficient travel on roadways, or may cause overflow at pediatric referral centers. Therefore, all hospitals must prepare to provide short- and long-term care to children during disasters. Even when inter-facility transport is possible, resources will likely be stretched thin. Therefore, hospitals should develop alternative mechanisms for safely transferring children based upon the following guidelines. If ambulances are not available, other transport options including cars, vans and buses may be used for children who can sit up. School buses may be used for children who are at least 5 years old who can sit up. Drivers must be able to communicate with hospital emergency command centers by mobile phone or radio at all times.

If stable children will be transported by car, be sure to arrange for child car safety seats and follow the appropriate guidance as indicated in table 10 below. All children less than 12 years of age should ride in the back seat³³

³²<u>http://www.health.ny.gov/facilities/hospital/emergency_preparedness/guideline_for_hospitals/docs/emergency_preparedness_s_manual.pdf.</u>

³³ <u>http://www.nwhrn.org/media/King-Co-Pediatric-Toolkit-2010.pdf</u>. Accessed August 25, 2016.

Table 10: Car Safety Seat Guidance

	Infants	Toddlers	Young Children
Seat Positioning	Rear-facing seat	Forward-facing seat	Forward facing seat
Seat Type	Infant-only or rear-	Convertible/forward-	Belt-positioning booster seat
	facing seats	facing seats	
Age/Weight	Up to 2 years of age ³⁴	Between 1 - 4 years of	4-8 years of age, unless more
		age and > than 20 lbs.	than 4'9" and > than 40 lbs.

Appropriate medical personnel must accompany children during transport. Acceptable options include:

- Emergency medical technicians.
- Nurses.
- Physician assistants/nurse practitioners.
- Physicians.
- Mental health personnel.

Unstable or Potentially Unstable or III Children

Consider obtaining a Memoranda of Understanding (MOU) with ambulance providers at distant locations since they are less likely to be involved with local disaster response and may have available staff, transportation and resources. All children should be transported by a team with the appropriate level of training and supplies. Acceptable transport options include:

- Basic EMS transport for stable patients.
- Advanced EMS transport with no additional hospital staff for non-critical patients.
- Pediatric transport vehicles and teams for unstable patients.

³⁴ American Academy of Pediatrics. (2012). Healthy Children.org. AAP Updates Recommendations on car Seats. <u>http://www.healthychildren.org/English/news/pages/AAP-Updates-Recommendations-on-Car-Seats.aspx</u>. Accessed August 25, 2016

Chemical Exposures and Pediatric Antidotes

Purpose

A chemical exposure presents an additional set of problems and concerns in the pediatric population versus the adult population. It is important to consider anatomic and physiologic differences as well as developmental considerations if the pediatric patient is exposed to a chemical substance.

A number of anatomic and physiologic factors make the pediatric patient more vulnerable to chemical exposures. The pediatric patient has higher minute ventilation, which leads to increased respiratory exposure. Shorter stature places children nearer to the greatest gas vapor density at ground level. Increased skin permeability leads to increased dermal exposure. Relatively larger body surface area increases the risk of dehydration and shock, increases dermal exposure and increases the risk of hypothermia during decontamination. Less intravascular volume reserve increases the risk for dehydration and shock in the pediatric patient.

Developmental immaturity, limited coping skills makes the pediatric population more challenging. Children, especially those that are preverbal, non-ambulatory, or have special needs considerations, are less able to evade danger, escape, or seek attention. Children have a normal dependence on adult caregivers and will need more assistance than an adult patient in a similar situation. A chemical exposure would be extremely frightening to children and children are at increased risk for posttraumatic response to stress.

Understanding the basic differences both anatomically and developmentally will aid the caregiver in providing optimal care for the pediatric patient in a chemical exposure. Following are guidelines to address specific chemical exposures in the pediatric patient.

Triage/Decontamination

Airway and cardiopulmonary support should be provided as needed. For specific exposures, emergent intramuscular antidote therapy should be initiated. Contaminated clothing should be removed as soon as possible. It is important to remember that the relatively large body surface area of children plays a key role in the degree of contamination and also affects the ability of children to maintain thermal homeostasis after decontamination.

Nerve Agents (Tabun, Sarin, Soman, VX)

Nerve agents are readily absorbed via the respiratory tract; liquid nerve agents are readily absorbed via the skin and eyes. Children may manifest primarily central and/or neuromuscular effects. Infants may be drowsy or unconscious with muscular floppiness. CNS manifestations include headache, confusion, slurred speech, seizures, and coma. Respiratory depression and respiratory arrest may occur.

Autonomic nervous system effects can be extensive and include tachycardia or bradycardia; hypertension or hypotension; metabolic problems (hyperglycemia, hypokalemia, metabolic acidosis); miosis, eye pain, blurred vision, lacrimation; watery rhinorrhea; increased bronchial secretions and bronchospasm; AV block; flushing and sweating; salivation; nausea, vomiting, diarrhea, and abdominal cramps; urinary frequency, urgency, and incontinence.

Neuromuscular effects include muscle fasciculation and twitching followed by weakness progressing to flaccid paralysis and respiratory failure.

A simple mnemonic to remember these symptoms is DUMBELS:

- **D** = diarrhea
- **U** = urination
- **M** = miosis
- B = bronchoconstriction B = bronchorrhea
- **E** = emesis
- L = lacrimation
- **S** = salivation

Diagnosis

Diagnosis is made by clinical recognition of signs and symptoms and a positive response to the antidote.

Treatment

Treatment includes airway and ventilatory support, antidotes (atropine and pralidoxime (2-PAM)); control of seizures with benzodiazepines, and decontamination.

Antidotes

Atropine dosing: 0.05 mg/kg IV, IM (minimum dose 0.1 mg, maximum dose 5 mg); repeat every 2-5 min as needed for marked secretions and bronchospasms. End point for treatment is diminished secretions and comfortable breathing.

Pralidoxime (2-PAM) dosing: 25 mg/kg IV, IM (maximum dose 1 g IV; 2 g IM); may repeat within 30-60 min as needed then again every hour for 1 or 2 doses as needed for persistent weakness or high atropine requirement.

Mark 1 nerve agent antidote kits: contain Atropen[®] 2 mg auto injector and pralidoxime 600 mg auto injector.

Duodote auto injector contains 2.1 mg atropine and 600 mg pralidoxime in one injector.

Similar kits with pediatric doses are currently not available in the United States.







Pediatric auto-injectors of atropine in 0.25 rng, 0.5 mg, and 1.0 mg sizes are available. In dire circumstances, the adult 2-PAM auto-injector (600 mg) might be used in children older than 2-3 years or weighing more than 13 kg.

Anticonvulsants

Benzodiazepines as needed for seizures or severe exposures.

- Diazepam 0.3 mg/kg (max 10 mg) IV
- Lorazepam 0.1 mg/kg (max 4 mg) IV, IM
- Midazolam 0.2 mg/kg (max 10 mg) IM

Cyanide

Cyanide is readily absorbed by the lungs as well as the skin and eyes. In general, clinical manifestations include tachypnea, coma, seizures, and apnea. Exposure to low concentrations of vapor may result in tachypnea, hyperpnea, tachycardia, flushing, dizziness, headache, diaphoresis, nausea, and vomiting. Exposure to high concentrations of vapor may result in tachypnea, hyperpnea, seizures, coma, apnea, and cardiac arrest within several minutes.

Diagnosis

Diagnosis is primarily made clinically based on CNS symptoms and rapid respiratory compromise.

Decontamination

Decontamination includes exposure to fresh air and washing the skin with warm soap and water.

Treatment

Rapid treatment is critical. Assess the need for airway and cardiopulmonary support and provide 100% O².

- Sodium bicarbonate as needed for metabolic acidosis
- Benzodiazepines for seizure control
- Diazepam 0.3 mg/kg (max 10 mg) IV
- Lorazepam 0.1 mg/kg (max 4 mg) IV. IM
- Midazolam 0.2 mg/kg (max 10 mg) IM

Antidote

Inhaled amyl nitrite or IV Sodium nitrite (3%) (avoid with mild symptoms, uncertain diagnosis, or smoke inhalation); inhale amyl nitrite for 30 sec of every minute; IV sodium nitrite (3%) 0.33 ml/kg given over 5-10 minutes (max 10 ml) assuming hemoglobin concentration of 12 g/dl (Dose adjusted for patient with significant anemia but this is difficult to know in an emergency situation).

Sodium thiosulfate (may be used alone if uncertain diagnosis or with smoke inhalation) 1.65 mL (of the standard 25% solution)/kg, IV (with a maximal, or adult, dose of 50 mL). Each agent may be given a second time at up to half the original dose as needed, or in the case of thiosulfate, even a full dose would be unlikely to pose inherent toxicity. Both these medications are packaged together in commercially available "cyanide antidote kits," along with amyl nitrite pearls.

Chlorine and Phosgene

Clinical manifestations include mucosal irritation with coughing, sneezing, hoarseness, inspiratory stridor, choking sensation (chlorine), wheezing, dyspnea, pulmonary edema (delayed onset). Bronchospasm and pulmonary edema are especially associated with phosgene. Irritation of the eyes, nose and throat may also occur, especially with chlorine exposure. Children are at increased risk for rapid dehydration or frank shock with pulmonary edema after exposure to these chemicals.

Decontamination

Fresh air and copious water irrigation are important for decontamination.

Treatment

Treatment includes symptomatic care.

Vesicants (Mustard, Lewisite)

Clinical manifestations include skin erythema, vesicles, ocular inflammation, and respiratory tract inflammation. Effects may be delayed for hours although onset of skin manifestations may be shorter in children compared to adults.

- Skin findings occur within 2-48 hours after exposure and include erythema, pruritus, yellowish blisters and bullae.
- Ocular symptoms occur 4-6 hours after exposure and include pain and irritation, photophobia, worsening conjunctivitis, severe lid edema, corneal ulceration, and globe perforation with severe exposure.
- Respiratory symptoms are delayed for several hours. These symptoms include rhinorrhea, hoarseness, dry and painful cough with expectoration, toneless voice due to vocal cord damage, tracheobronchitis with pseudomembrane formation and airway obstruction, laryngospasm, and respiratory failure. Early onset dyspnea and hypoxia is consistent with poor prognosis.
- Facial and eye involvement are more common in children and pulmonary involvement may be more extensive due to lower breathing zone for children where vapors settle and increased respiratory rate of children.

Decontamination

Rapid decontamination is the most effective treatment. Wash skin with soap and warm water (to avoid hypothermia). Ocular irrigation has major impact only if done within minutes of exposure.

Treatment

Treatment is symptomatic care.

- BAL (British antilewisite or dimercaprol) 3 mg/kg IM every 4-6 hours for systemic effects in severe cases may be helpful.
- Skin lesions are treated similarly to those of burn victims.
- Eye treatment includes irrigation, cycloplegics for comfort and prevention of formation of synechiae; topical antibiotics and lubricating ointments to eyelids to prevention adhesions and subsequent scarring.
- Pain management consideration is important (especially in very young nonverbal child). Children may need more aggressive fluid replacement.

Riot Control Agents

Symptoms occur quickly after exposure and typically resolve in 1-2 hours once the victim has been removed from the agent. Rapid resolution of symptoms is a distinguishing factor from other chemical agents. Symptoms include eye burning, eye pain, tearing, blepharospasm, periorbital edema, photophobia; nasal burning and pain, copious rhinorrhea, persistent sneezing, oral irritation, salivation; chest tightness and burning, dyspnea, bronchospasm, bronchorrhea, coughing; pulmonary failure (rare); skin pruritus, erythema and dermatitis, vesicles and bullae.

Decontamination

Victims should be moved to a well-ventilated, uncontaminated space. Outer clothing should be removed. Copious eye irrigation is important; skin should be washed with warm soap and water.

Treatment

Treatment is symptomatic.

• Oxygen should be provided for dyspnea.

- Treatment of bronchospasm includes 0.5% inhaled albuterol; 2.5 mg if patient is less than 15 kg and 5.0 mg if patient is greater than 15 kg. Ipratropium bromide 500 mcg inhaled may also be added for significant bronchospasm.
- Atropine or glycopyrrolate can be helpful for treating bronchorrhea. Dosing for atropine IV or IM is 0.02 mg/k/dose (minimum dose 0.1 mg, maximum dose 5 mg). Dosing for glycopyrrolate IV or IM is 0.004 mg/kg/dose (max 0.1 mg).
- Oral antihistamines such as diphenhydramine 5mg/kg/day divided into 4 does or an equivalent medication are effective in treating pruritus.
- Topical steroids are used for treating erythema or dermatitis.
- Vesicles or bullae are treated with burn dressings and topical antibiotics.

Methamphetamine Decontamination

Remove clothing, shower with soap and warm water.

Vapor-exposed Victims

Remove clothing and wash hair.

Liquid Dermal Exposure

- Remove clothing and dispose of in double bags
- Irrigate eyes with copious amounts of saline or water if ocular exposure
- Wash skin and hair thoroughly with soap and tepid water.

Additional Chemical Exposure Resources

Web-based references:

- <u>http://www.atsdr.cdc.gov/MMG/index.asp</u>
- <u>http://www.atsdr.cdc.gov</u>



Planning Tip: Michigan Poison Control Center

- Provides immediate advice on possible poisoning, toxic substance or any other environmental hazard emergency.
- 24/7 contact number: 1-800-222-1222
 <u>http://www.childrensdmc.org/?id=747&sid=1</u>

Pediatric Infection Prevention

Purpose

The purpose of this section is to provide basic infection control measures and concepts as they would relate to, and are applied during a large scale communicable disease incident.

Background

In an emergency caused by communicable disease, the management of children and their caregivers will be complicated by variables such as exposure and infectious status. In addition to the basic challenges of providing emergency shelter for a sudden influx of dependent children, hospitals will need to:

- Prevent exposure and contamination
- Manage contact of cases
- Separate, isolate and care for persons who are ill and/or possibly infectious

The SARS 2003 epidemic and H1N1 2009 pandemic continue to provide lessons for managing a surge of patients with a communicable disease. Successful national surveillance methods and infection prevention measures were instituted during the SARS epidemic. Fortunately, the United States did not experience a significant disease outbreak. Nonetheless, clinical suspicion for SARS-like illness and rapid institution of infection prevention measures were important during this outbreak. Signs and symptoms of SARS are very similar to other respiratory illnesses thus making disease identification more difficult.

During the H1N1 pandemic, emergency departments were overwhelmed with patients ranging from critically ill to the worried well. Even though the overall morbidity and mortality from H1N1 was low, patients younger than 25 years of age experienced the greatest disease burden. Reduction of emergency department overcrowding, improved patient flow and quality of care are ongoing research topics.

Even though the characteristics of the next epidemic or pandemic cannot be predicted, careful surveillance, rapid institution of infection prevention measures and continued analysis of the response to the H1N1 pandemic will help hospitals become better prepared for the next communicable disease outbreak.

Basic Infection Prevention Strategies

This section discusses the basic infection prevention measures that must be used when caring for young children (i.e., infants, toddlers and those requiring diapering, feeding, toileting and assistance with hand hygiene). Specific information about standard precautions in child care settings may be found at: http://aspe.hhs.gov/hsp/ccquality-ind02/#Handwashing

Infection Prevention Definitions

A Communicable Disease Event is an infectious disease incident that is severe, moves quickly from person-to-person, to which there is little or no immunity and for which countermeasures may be non-existent or not widely or immediately available. Agents that could cause a communicable disease emergency may occur naturally or maybe deliberately induced. Such agents are characterized by:

- Person-to-person transmission.
- High attack rates.
- High morbidity.
- High mortality.

Standard Precautions are the basis for infection prevention in all health care and group child care settings. Standard Precautions:

- Must be used whether or not other "transmission-based" precautions are in place.
- Are based on the principle that any moist body substance (blood, secretions, excretions, non-intact skin) may contain infectious organisms regardless of the patient's diagnosis or assumed state of health.
- Must be used in health and child care settings whenever contact with moist body substances is anticipated.
- Must be implemented in managing children in group settings. (For more information, refer to the Centers for Disease Control and Prevention, Standard Precautions, at: <u>http://www.cdc.gov/hicpac/2007IP/2007ip_part3.html</u>

Transmission-based precautions are designed to supplement standard precautions in treating patients with documented or suspected to be infected with highly transmissible pathogens. Both Standard Precautions and Transmission-based Precautions should be applied when managing adults and children who are ill with a communicable disease. Specific information on transmission-based precautions may be found in: http://www.cdc.gov/hicpac/2007IP/2007ip_part2.html#e *Note:* Certain organisms cause disease that is transmissible prior to the onset of symptoms (e.g., influenza virus).

Person-to-Person Transmission occurs only in one or more of the following three ways:

Droplet transmission – the organism is sneezed or coughed into the environment within large, wet, respiratory droplets; organisms land on the mucosal surfaces of the nose, mouth or eyes, are absorbed and enter the body.

Contact transmission – the organism enters the body through the mucosa of the mouth, eyes, or nose either directly (skin-to-skin contact with an infectious individual or with infectious secretions) or indirectly when a contaminated intermediate object (unwashed hands or equipment) transfers organisms to mucosal surfaces and is absorbed.

Airborne transmission – the organism enters the body when tiny droplet nuclei are coughed or sneezed into the environment and are inhaled into the lungs.

Assumptions about Large Scale Communicable Disease Emergencies

In the incident of a large scale communicable disease outbreak:

- Children and caregivers will arrive at hospitals in large numbers.
- Some will be symptomatic (cases) and some will have no symptoms but will have been exposed to their symptomatic charges or caregivers (contacts).
- Cases and contacts will be separated because:
 - Ill caregivers accompanying asymptomatic children will require admission.
 - Asymptomatic caregivers may need to accompany an ill child into the clinical setting, leaving other children who are in their care in hospital custody
 - Emergency conditions will delay the arrival of parents or alternate caregivers
 - Hospitals will be required to provide temporary ad hoc shelter for exposed/asymptomatic child contacts to cases.
 - Hospital staffing will be reduced following the emergency, which will required parent/caregiver assistance on the clinical pediatric units.

Exposure and Infection Prevention Measures in Communicable Disease Emergencies

Point-of-Entry Infection Prevention Measures

Once a hospital is alerted to the potential for severe communicable disease conditions, exposure prevention measures should be instituted at or before the point of entry to the facility. Rapid identification of symptomatic individuals will permit actions to protect the facility, its patients, visitors and the physical environment from exposure and contamination.

Obtain case definition from the local health authority in order to instruct screening, triage and reception staff in procedures related to:

- Symptom recognition.
- Mode of transmission.
- Specific infection and exposure prevention measures.

Screen to identify symptomatic individuals at or before the point of entry in order to implement exposure prevention measures.

Instruct patients and/or caregivers about respiratory etiquette, hand hygiene and other relevant infection and exposure prevention measures and observe and supervise them to ensure compliance.

Mask symptomatic adults and, as feasible, mask symptomatic children who are old enough to tolerate a surgical mask (generally, three years of age and older) to prevention the release of organisms into the environment. In addition: instruct accompanying adult caregivers to use Standard Precautions to manage the secretions of ill children who cannot be masked.

Signage Ensure that respiratory etiquette signs are prominently placed in the entry and waiting areas.

Provide adequate supplies of tissues and provide an easy, sanitary, way of disposing of used tissues.



Separate persons with symptoms from persons who are asymptomatic; except exposed adult caregivers, who may need to remain with ill children to provide care and comfort. These adults will require instruction and supervision.

Separate contacts to ill individuals from persons who have not been exposed. Manage separation as follows:

- Place symptomatic individuals in single rooms either alone (if adults) or with prepared and instructed parent/caregivers if children, and if necessary and feasible.
- If possible separate symptomatic, masked individuals by at least three feet. If masking is not possible: instruct and supervise parents/caregivers in Standard Precautions and emphasize the importance of respiratory etiquette and hand hygiene.

- **Cohort** masked symptomatic individuals in an area that is separate from asymptomatic individuals, preferably in a room that is large enough to permit social distancing and that has a door that can be closed.
- Symptomatic children who cannot be masked may be included in this cohort if Standard Precautions are employed, as advised by the hospital's infectious disease department and/or the local health authority.
- Ideally: Cohort non-masked symptomatic individuals only when the diagnosis is confirmed and only if diagnoses are the same.

Emergency cohorting decisions: In the absence of confirmatory diagnostic information, make decisions according to symptoms and epidemiology, as advised by the local health authority and/or the hospital's infectious disease department.

Conduct contact identification procedures among persons accompanying an ill child or adult to the facility: As requested by the local health authority, obtain identification and locate information for contacts. Ensure that children's identification bands include information about contact status.

Instruct, **observe and supervise** to ensure that appropriate infection and exposure control measures are being followed by contacts, cases, personnel and adult caregivers providing care to ill children.

Cohorting Procedures for Asymptomatic Exposed Children

Cohort asymptomatic children and asymptomatic caregivers who have sustained the same exposure (the same apparent disease within roughly the same time period) as advised by the local health authority or the hospital infectious disease department.

Certain diseases are infectious prior to symptom onset—seek guidance from the local health authority and/or the hospital infectious disease department about specific cohorting restrictions.

Ensure that spaces used are child safe, and that facilities and supplies are adequate to permit sanitary toileting, hand hygiene, diaper changes, disposal of soiled diapers and other items, and frequent cleaning and disinfection.

Consult with the local health authority or with hospital infectious disease department for specific recommendations about cohorting pediatric contacts to cases.

Maintain appropriate group size and staff-to-child ratio by keeping groups as small as possible (smaller group size is associated with a lower risk of infection in child care settings). Table 11 shows both group size and staff to-child ratios for child care centers, and should guide hospital cohorting practices for grouping asymptomatic children.

Table 11: Recommended Staff to Child Ratios-Child Day Care

Age	Staff to Child Ratio*	Maximum Group Number**
Less than 6 weeks	1:3	6
6 weeks-18 months	1:4	8
18 months-36 months	1:5	12
3 Years	1:7	18
4 Years	1:8	21
5 Years	1:9	24
6 Years-9 years	1:10	20
10 Years-12 years	1:15	30

*Staff- to-child ratio refers to the maximum number of children per staff person

**Group size refers to the number of children cared for together as a unit. Group size is used to determine the minimum staff-to-child ratio based upon the age of the children in the group

Screen children and accompanying adults (again) for symptoms at the point of entry into the shelter/cohort area; exclude, mask and redirect symptomatic individuals.

Ensure that all children have been issued hospital identification bands that include parent/caregiver information and contact status.

Create a Log or Tracking Mechanism that lists all persons, including personnel that enter the cohort setting and include the following information:

- Date.
- Name and brief identifying information (child, caregiver, staff).
- Time in/time out.
- Information about any subsequent exposure within cohort including date, time, duration of exposure and name of symptomatic individual.

Establish a basic record for each cohorted individual that includes:

- Assigned record number.
- Identifying and locating information.
- Responsible adult(s) name and details.
- Initial exposure information (date of exposure, name of person to whom exposed).
- Symptom monitoring information.
- Subsequent exposure information.

Monitor cohorted children, adult caregivers and hospital personnel for symptom onset at intervals and using methods advised by the local health authority or by the hospital infectious disease department and document the results.

Promote social distancing as much as possible; maintain a space of three feet between cohorted asymptomatic children (consult pediatric activities therapist to identify games and other activities that might be used to maintain distancing).

Use Standard Precautions and the Day Care Protocol for routine care of the cohorted asymptomatic/exposed children, ensuring that staff understand and can implement Standard Precautions.

Ensure scrupulous and frequent hand washing with soap and water among staff, adult caregivers, and children. Be sure to:

- Provide instructions about hand hygiene.
- Ensure that caregivers wash the hands of young children before and after meals, after toileting, and frequently in between.
- Supervise children who are able to wash their own hands—encourage them to wash their hands for at least 15 seconds (the duration of the Happy Birthday song).
- Consider that anxious children may regress to earlier behaviors provide comfort and non-judgmental assistance with toileting and hygiene.
- Ensure that caregivers wash their hands before feeding children (and prior to preparing formula) and after diapering, toileting, cleaning, or any contact with moist body substances or with items soiled with moist body substances even if gloves are used.



Establish diapering protocols and ensure that caregivers follow them. Hospitals without pediatric services should adapt adult diapering protocols for infants and children.

- Set up sanitary changing stations for infants and young children.
- Ensure that waste and soiled linen collection units are child safe, plentiful and designed to be hands-free.

Toys should not be shared among children unless washed and disinfected first. In addition:

- Toys should be made of hard plastic.
- Disinfectants must be safe for mouthed toys.

Provide an adequate supply of clean linen: gowns, disposable diapers and, if possible, clothing for infants and young children.

Establish policies for routine and targeted cleaning of environmental surfaces according to the nature and degree of contamination or soiling. Be sure to:

- Use an EPA-registered disinfectant that has microbicidal properties effective against organisms most likely to be present in the environment (consult with local health authority or hospital infectious disease department) or use a chlorine bleach solution (1/4 cup of bleach per gallon of cool water).
- Establish schedules for cleaning and disinfecting changing stations, sleeping mats, toys (disinfectants used on toys that may be mouthed by children must be non-toxic).
- All sanitizers, disinfectants and other potentially toxic materials must be kept out of the reach of children.

Infection Prevention Scenarios

A Child or Adult Becomes Symptomatic in the Cohorted Setting:

Rapidly identify symptomatic individuals using routine, scrupulous, symptom monitoring, close and ongoing observation.

- Immediately separate, mask, counsel and comfort children and adults at the first sign that they have become symptomatic; remove them from the cohorted setting.
- Arrange transport for symptomatic children or adults to a clinical care unit where they can be isolated.
- During transport place a surgical mask on children older than three years of age and supervise them closely to ensure that the mask remains in place; for younger children or infants use respiratory hygiene and cough etiquette as alternatives to masks.
- Transporters escorting masked, symptomatic, individuals do not require respiratory protection themselves, but may need to wear disposable gowns and gloves in case physical contact with the symptomatic individual is required. (See CDC Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings available at: http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Isolation2007.pdf
- Clean and disinfect transport equipment such as wheelchairs or stretchers with Environmental Protection Agency (EPA)-registered disinfectants after use.
- Identify contacts to a person who becomes symptomatic as advised by the local health department or the facility's infectious disease department, including children, caregivers and staff in the space shared with the symptomatic individual. Be sure to:
- Document the exposure in individual records and in a log
- Include the name of the individual exposed
- Document the names of those exposed (in the log only).
 - Note the duration of exposure and other information requested by the local health authority or by the hospital's infectious disease department.
 - Counsel, comfort and reassure cohorted adults and children following separation from the symptomatic individual.
 - Clean and disinfect surface areas in the cohort area using a child-safe EPA registered disinfectant.

Infectious or Potentially Infectious Parent/Caregiver Must Have Contact with an Asymptomatic/Exposed Child

- Arrange that the visit takes place in a single room and avoid exposing other children.
- Ensure that parents/caregivers are masked and that they understand that both physical contact and the amount of time spent with the child must be limited.
- Prepare the child, according to age and comprehension level, for the masked appearance of parents/caregivers and for restrictions on contact with, or proximity to, the caregiver.
- Supervise the visit to ensure that standard and transmission-based precautions are used and followed.
- Firmly limit the amount of time parents/caregivers spend with child.

Asymptomatic Caregivers/Parents Must Provide Nursing Care for an III Child

- Ensure that parents/caregivers are instructed in procedures for complying with Standard Precautions and relevant Transmission-based Precautions including hand hygiene and the correct use and disposal of personal protective equipment (PPE).
- Observe/supervise parents/caregivers by providing guidance, answering questions and ensuring compliance.

Parents/Alternate Caregivers Arrive at Hospital to Assume Care of Their Asymptomatic/Exposed Children

- Consult with the local health authority or the hospital's infectious disease department for recommendations for managing the exposed children in the home setting.
- Inform and counsel parents/caregivers about the nature of the exposure.
- Tell parents to inform the child's pediatrician of the exposure.
- Provide information necessary for parents to comply with instructions for contact management in accordance with the local health authority and/or the hospital's department of infectious disease.
- Give parents a contact number they may call for information related to the incident and the child's exposure (such as an appropriate contact at the local health department).
- Use standard and transmission-based precautions according to recommendations of the local health authority, the hospital's infectious disease department and facility guidelines for pediatric infectious disease.

Hospitals with no pediatric units that are caring for pediatric patients as an emergency measure should

apply established infection control guidelines and should adopt the relevant day care protocols including:

- Maintain a log or tracking mechanism of personnel assigned to patients who are ill with the disease causing the emergency, including:
 - Names, dates, shifts worked, patient names
 - Consider including non-personnel adult caregivers/parents in the log if they are significant care providers to their children on the pediatric unit
 - Monitor personnel for symptom onset (work with employee health services)
 - Instruct nursing, medical and other personnel in infection and exposure control measures, emphasizing any enhanced or additional measures (needed due to the nature or severity of the disease). Be sure to:
 - Observe, monitor and supervise personnel in order to ensure competence and compliance
 - Ensure that there is a mechanism for updating personnel about changed directives and new information about the outbreak.
 - Increase the frequency of surface cleaning throughout the unit.

The use of parents and other adult caregivers to provide routine care to pediatric patients during the emergency will require the oversight of facility staff, which will provide instruction and supervision to ensure compliance with infection control guidelines.

- Limiting the number of visitors and the duration of the visits.
- Instruction and supplies (including PPE) necessary for the safety of visitors, personnel and the environment.

Procedures for Requesting Laboratory/Epidemiology Consult from the State of Michigan

When a physician or a laboratory suspects the presence of a designated condition but does not have sufficient information to be certain that the condition or agent is present, the physician or laboratory must report the designated condition or agent as suspected. Upon confirmation of the disease or presence of the agent, the physician shall report the confirmation to the appropriate local health department as a case. http://michigan.gov/documents/Reportable_Disease_Chart_2005_122678_7.pdf

The Michigan Department of Health and Human Services, Bureau of Laboratories (BOL) is equipped to respond to acts of biological or chemical terrorism, emerging infectious diseases or other public health threats and emergencies. The role of the BOL is to provide rapid identification of etiologic agents, allowing the medical community to provide appropriate prophylaxis and or treatment to minimize morbidity and mortality.

The Laboratory Response Network (LRN) is an integrated national network of laboratories that are capable of responding to biological or chemical public health emergencies. Established by the Centers for Disease Control and Prevention (CDC) and the Association of Public Health Laboratories (APHL) in 1999, the LRN is now a partnership between government and private organizations that have a stake in all public health threat incidents. The LRN is comprised of laboratories that follow consensus protocols developed by the CDC and the Food and Drug Administration (FDA).



The LRN in Michigan includes Reference Level Laboratories located in several regions of the state, including the MDHHS Bureau of Laboratories in Lansing. If requesting a consult from the MDHHS Epidemiology or Laboratory divisions they can be contacted 24/7/365 at their EMERGENCY PHONE NUMBER: 517-335-9030. Additional information and contact numbers can be found at:

- MDHHS Laboratories: http://www.michigan.gov/MDHHS/0,1607,7-132-2945_5103---,00.html
- MDHHS Epidemiology: http://www.michigan.gov/MDHHS/0,4612,7-132-2945_5104---,00.html

Unaccompanied Minors and Family Reunification

Purpose

As a consequence of disasters, family reunification becomes one of the most challenging processes to plan for, implement, and accomplish. One critical piece in this process is to rapidly identify and protect displaced children in order to reduce the potential for maltreatment, neglect, exploitation, and emotional injury. A critical aspect of pediatric disaster response is to effectively address the needs of children who have been displaced from their parent or guardian.³⁵

Assuring success with family reunification efforts in times of disaster involves the collaboration of local, regional and state partners, having clear lines of communication, and strict adherence to reunification protocols. Linking pediatric victims with family members is ideal; however, without available family members, efforts should be made to create a system that links children to other shelter volunteers or medical care providers.

As an aid to reunification efforts, reliance on personnel within and outside a healthcare institution contributes to the success of monitoring, tracking, and identifying children. These ancillary support providers such as the shelter volunteers and nonclinical staff work with local public health and emergency management to create safe areas for children and families who have been displaced from their homes. Volunteers, social workers, and public health personnel can accompany children who have been separated from their families throughout the triage and treatment process so that patients are comforted and supported as they move through the process.

Exemplar: Operation Child-ID

To maximize reunification efforts, one model used at Camp Gruber, a reunification center created in the aftermath of Hurricane Katrina, involved the use of "Operation Child-ID." This program was created to identify separated children, to help prevent intentional injuries, and to help thwart abductions. With the use of volunteers, nurses, and staff, "strike teams" were created who used a standardized survey form, along with specified identification procedures (bracelets on children and their accompanying adults), along with National Center for Missing and Exploited Children (NCMEC) personnel, and demonstrated significant success at reuniting affected children and their families.³⁶

A standardized survey form was used to collect specific information about the location of the child in the camp, the identity of the accompanying adults and whether an accompanying adult was the legal guardian of the child. The form asked specific questions regarding the relationship between the adult and the child, and whether the adult currently with the child was the supervising adult before the disaster incident. Information about the accompanying adult was recorded and the adult was given a matching bracelet that matched the child's. These hospital bracelets enabled camp staff to identify the children already registered and served as a method for matching children with their supervising adults; this was an effort to thwart any attempt that might be made by other adults to abduct a child from Camp Gruber. A copy of the intake survey used by medical personnel at Camp Gruber, shown in figure 8 below, as well as the procedures they followed as they moved through the identification process is provided. This process should be used as a starting point for local, regional and state partners to assure the safety of the children in

³⁵ Brandenburg, M.A., Watkins, S.M., Brandenburg, K.L, et al. (2007). *<u>Operation Child-ID: Reunifying Children with Their Legal</u> <u><i>Guardians after Hurricane Katrina*</u>. Disasters. 31:277-87.

³⁶ Brandenburg, M.A., Watkins, S.M., Brandenburg, K.L, et al. (2007). <u>Operation Child-ID: Reunifying Children with Their Legal</u> <u>Guardians after Hurricane Katrina.</u> Disasters. 31:277-87.

all mass care shelters, as well as creation of a protocol for getting all unaccompanied minors into the national database for missing and exploited children.

Figure 8: Sample Child Registration Form

Operation Child ID Survey National Center for Missing and Exploited Children (NCMEC) Katrina Missing Persons Hot Line' phone number: 1-888-544-5475				
Name: Barrack #				
Age: Months/Years				
Gender: Male Female				
Who is currently the supervising adult in this camp?				
Is this person a Parent? Yes No A Grandparent? Yes No				
Is this parent the usual guardian? Yes No				
Was the child living with this person before Hurricane Katrina? Yes No				
If the adult(s) is not a Parent or Grandparent, what is the relationship to this child? Aunt/Uncle Sibling Friend Other (next-of-kin)				
Does the child appear to be ill or have an injury? Yes No				
If yes, please describe:				
Does this child have a history of medical problems? Yes No				
If yes, please list:				
Does this child or family members have special needs? Yes No				
If yes, please list:				

Operation Child-ID Steps:

- Recognize that some children in the shelter were not with their usual guardians and that these children were at 'high-risk' of being listed as missing by family members.
- Create a group of volunteers (primarily MDs and RNs, in this case) to conduct pediatric social assessments.
- Find and register all the children in the shelter.

- Use a survey form to question each child about their sleeping location in the shelter, age and relationship to the adult who was currently supervising the child.
- Attach a hospital-style identification bracelet to the child and a matching one to the supervising adult(s) and monitor frequently to ensure that the wristband matched that of the adult(s) seen with the child while in, or when leaving, the evacuee shelter.
- Review the data sheets promptly to identify those children not travelling with their legal guardians, consider these children to be at 'high-risk' and submit the names of these children to the NCMEC.
- Generate a complete list of all children in the shelter, including those not on the 'high-risk' list, and submit these names to the NCMEC.
- When a response is received from NCMEC that a child in the shelter has been listed as missing, immediately locate the child in order to pursue reunification, and establish and monitor the safety and well-being of the 'missing' child.

"Local public health and emergency management need to work together to create and utilize an intake form to collect the specific information needed to safeguard all children who are staying at disaster shelters. Furthermore, once this information is collected the children found to be unaccompanied and looking for family members need to be entered into the national database for missing children and local law enforcement, hospitals and other shelters need to be alerted to their presence in order to make every effort to reunify the child with family members. If the disaster crosses state lines or is on a national level, state agencies will work with other agencies to be sure the information regarding unaccompanied minors goes out to law enforcement, hospitals and other shelters in the affected states. This working relationship will need to be utilized in the event injured and ill pediatric patients are transferred across state lines to meet medical needs or due to medical surge overload.

Identification and tracking of patients is paramount to the success of getting patients from one location to another and in supporting timely family reunification. Examining all potential sources of information for the identification and tracking of children will ultimately create a greater ability to monitor patients through the system at all levels and allow for greater, more efficient, and timely family reunification. The methods used for tracking patients are varied and include:

- Photographing
- Placing identification markings on the skin (tracking number)
- Wristbands
- Bar coding
- Forensic odontology
- Geographical information systems
- Global positioning systems (GPS)
- Radio Frequency Identification (RFID), including implantable chips
- Wireless communication devices
- Personal Digital Assistants (PDA)
- Wireless internet
- Biometrics, (passwords, fingerprint scans, signature analysis, voice recognition, digital certificates, iris/retina scan, face recognition, hand geometry)
- Intelligent triage tags". 37

³⁷ Nager, A. (2009). *Family Reunification Concepts and Challenges*. Clinical Pediatric Emergency Medicine. 10:3 (195-207).

There are no set guidelines or uniformity among patient tracking methods, especially for child victims. National services available for assisting in locating and/or tracking children may include law enforcement, public health, social services, as well as



More recently, a comprehensive document published by FEMA in conjunction with the American Red Cross, National Center for Missing and Exploited Children and the U.S. Department of Health and Human Services, was made available, called "Post-Disaster Reunification of Children: A Nationwide Approach." This document contains a "holistic and fundamental baseline for reunifying children separated as a result of a disaster and aims to assist local, state, tribal, territorial, and insular area governments and those responsible for the temporary care of children." It also contains many useful answers to questions about management of temporary guardianship or unaccompanied minors, a compendium of organizations that could provide resources and governmental agency's contact information. It is available on the FEMA site at http://www.fema.gov/media-library/assets/documents/85559.

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Psychological Support

Purpose

Children involved in a disaster suffer immediately, during, and possibly even long after the incident. Depending on the age of the child, their developmental level and cognitive abilities, and whether the child is separated from his/her parent or guardian, a vast array of reactions may be seen. Many disaster victims require treatment strictly for psychological stress.³⁸ Working together with their local, regional and state partners, public health and healthcare personnel can create the tools needed in the hospital and shelter settings to screen for children that are suffering psychological and emotional issues and work together to provide appropriate intervention, stabilization, and treatment.

Reactions to disasters and the associated anxiety that accompanies it manifests differently according to the ages and development level of the child. Mental health staff should be actively involved in recruiting and training personnel and possibly volunteers, become a pediatric champion in the mental health system, or assist with communication efforts between patients, families, and caregivers.

Fostering Resilience

Some of the ways to help children deal with disasters include:³⁹

Listen to them:

- Ask the children what they know, what they heard or what their friends are saying.
- Ask children how they are feeling; they may feel angry, scared, sad or anxious.
- Let children know that you understand their feelings.
- It is important not to laugh at children's fears, even if they seem silly to you.
- Let them ask questions.
- When they ask questions, answer briefly and honestly.
- Remember: it's okay to answer, "I don't know".

Try to make them feel safe

Let children know that many people are working hard to:

- Take care of the hurt people.
- Help keep them safe.
- If they are worried that their home is not safe, explain the nature of the incident as simply as possible.
- Try to keep their regular routines as much as possible.

 ³⁸ Nager, A. (2009). *Family Reunification Concepts and Challenges*. Clinical Pediatric Emergency Medicine. 10:3 (195-207).
 ³⁹ http://www1.nyc.gov/assets/doh/downloads/pdf/bhpp/hepp-peds-childrenindisasters-010709.pdf. Accessed June 23, 2016

Appendices

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Appendix 1 Regional Structure

Michigan Emergency Preparedness Regions

The Michigan Healthcare Coalition preparedness regions are consistent with the Michigan State Police Emergency Management Division regions. Each region has Regional Coordinator, (b) a Medical Director and a 24/7/365 Medical Coordination Center that can be activated during a disaster or emergency incident to assist hospitals and healthcare entities with resource coordination. Map 1 below illustrates the location of each region.

Map 1: Michigan Emergency Preparedness Regions



Contact Information for the Regional Medical Coordination Centers

Dogion	Dhono	Email Contact
Region	Phone	
1	517-546-9111	d1rmrc@sbglobal.net
2N	248-267-0535	RMCC@region2north.com
2S	863-203-7733	email@2south.org
3	800-571-8859	btddnregion3@gmail.com
5	269-337-2500	communication@aircare.org
6	855-734-6622	Region6mcc@mcmca.org
7	989-732-5141	rc@miregion7.com
8	866-276-4443	R8MCC@r8hcc.org

Appendix II Scarce Resources

Purpose

This attachment is meant to be a resource for hospitals and healthcare facilities. These Guidelines are not a formalized series of instructions, but rather a set of criteria that can be employed by decision-makers in various circumstances during a public health emergency using their best professional discretion. Thus, the criteria offered within these Guidelines are meant to be scalable, adaptable, and functional. Some facilities may not have the capacity to implement all of the suggestions offered in this document. Others will choose to adopt different strategies that are nonetheless consistent with the ethical framework presented in the Guidelines. However, it is presumed that many hospitals and healthcare facilities will adapt the approaches and strategies contained in this document, tailored to fit the circumstances of their specific facility.

The allocation of resources and services during emergency-induced situations of scarcity must be based on a sound ethical framework. This is an excerpt from an attachment offered in the Guidelines for Ethical Allocation of Scarce Medical Resource and Services during Public Health Emergencies in Michigan, which provides specific guidance to hospitals and other healthcare facilities to assist these entities in planning for resource and service scarcity that may arise during public health emergencies. It also offers potential strategies for implementation of the Guidelines in hospital and healthcare facility settings. Healthcare facilities, whether individual hospitals, multi-site health systems, or other inpatient care delivery facilities, should review the ethical framework presented in the main Guidelines document to ensure that their decision-making strategies for allocating scarce resources and services during public health emergencies and considerations outlined in the Guidelines.

Structuring guidance for hospitals and health systems presents obvious challenges. Each organization has its assets and areas of expertise, which can be vastly different from other organizations. Each organization must proactively examine its plans for continuing to deliver care to the public during a Mass Medical Event (MME), including how it would allocate scarce medical resources and services. The guidance discussed in this attachment is based primarily on a proposal developed by the University of Michigan Health System using the existing medical and ethics literature and ethical guidance documents available from some others states and from the federal agencies charged with health preparedness.⁴⁰



⁴⁰ Association for Healthcare Research and Quality. (2009). <u>Mass Medical Care with Scarce Resources: The Essentials AHRQ pub</u>. 09-0016, September 2009, Phillips, Kneel and Johnson, editor's archive. <u>http://archive.ahrq.gov/prep/mmcessentials/.</u> Accessed August 25, 2016

Hospital/Health System Ethical Duty to Plan

Just as the state has a duty to prepare, so do hospitals and health systems. Most hospitals have an incident management team and must drill to fulfill regulatory agency mandates. Specific planning to care for patients in an atmosphere of scarce resources, for at least some period of time while awaiting assistance, must be undertaken. Hospital leadership must have a thorough understanding of the local, regional and state emergency plans, have active relationships with those organizations and exercise their plans. Planning for hospital surge, communications, public messaging, command and control, prevention of further casualties, business continuity, vulnerable population management and security must take place in advance and be communicated to the members of the hospital organization.

In the normal course of care delivery, many hospitals do not care for pediatric patients and would transfer them out of their facility to a pediatric center. During public health emergencies which affect a large region, pediatric facilities may not be able to accommodate an excessive surge of patients from other regional facilities. "Sheltering in place" or caring for these pediatric patients not normally kept at facility, may be the most ethical solution, despite the high level of stress this would place on any system. Planning for potential situations where providers would have to practice outside their normal scope includes an assessment of hospital and staff capabilities, and the mechanism for augmenting their capabilities through "just in time" training assets.

Scarce Resource Allocation Committees

Recognizing that each hospital organization is unique and planning for the allocation of resources should be proactive, this section proposes the composition and function of a Scarce Resource Allocation Committee (SRAC), Triage Officers Corps for hospital floors or units, and the Clinical Review Committee (CRC) which serves as a decision making body around issues of withdrawal of care when there is no likelihood of recovery and others might benefit from the scarce resource. Triage officers would act as liaisons between the primary physicians providing care for these committees. Caregivers, physicians, and administrators will need clear guidance regarding how to distribute resources, and family members will need to know that a just and thoughtful process is in place.

Indicators and Triggers

"Indicators are measurements or predictors of change in demand for health care service delivery or availability of resources. Triggers are decision points that are based on changes in the availability of resources that require adaptations to health care services delivery along the care continuum."⁴¹

Triggers

When a public health emergency is imminent, or has been declared by a relevant public health agency, the Medical Care Director, or his/her designee as predetermined in the Incident Management System, will direct the relevant emergency planning committees to:

- Identify resources which are likely to become scarce.
- Develop a method (or implement a previously developed method) for tracking such resources.
- Establish trigger points which indicate when conservation of a particular resource(s) is necessary.

⁴¹ Institute of Medicine. (2013). *Crisis Standards of Care: A toolkit for indicators and triggers*. Washington, DC: The National Academies Press
Scarce Resource Allocation Committee (SRAC)

Once the trigger point is reached for a particular resource, the Incident Management Team must determine whether to activate the Scarce Resource Allocation Committee (SRAC) or a subset of the membership (dependent on the scarce resource) as shown in table 12. The groups identified have been recommended because they represent the leadership in clinical care, the leadership in areas most likely to be faced with scarce resources, and experts in the ethics of health care delivery. This is one proposed structure for a SRAC, but recognizing that some organizations would not have access to an ethicist, intensive care or ambulatory care leaders (because they do not normally deliver intensive care or ambulatory clinic services), such organizations should consider appropriate equivalent committee members. Ad hoc advisors may include representatives from the Office of the General Counsel, Pharmacy, Material Services, Epidemiology, Infection Control, Human Resources, etc. Ad hoc advisors will not be permitted to vote in matters to be decided by the SRAC.

It is understood that some small hospitals may not have the staffing capacity to fill all the recommended positions in the SRAC. Therefore, it would be reasonable that the hospital leadership looks to different entities from the healthcare services in the community to fill those vacancies. The hospital may look to private healthcare providers such as local physicians to help guide decisions in their area of expertise. Community religious leaders may fill some of the roles that might normally be filled by hospital employed ethicists and pastoral care staff. Furthermore, it may be advantageous in rural areas for hospitals that would likely be challenged in staffing such an allocation committee to form a regional committee to include representation from all involved. This will help to ensure consistent decision making in all areas of the region as well as decrease the burden of dual functioning roles on the staff from the affected hospitals.

A SRAC committee, comprised of representation from regional Medical Control Authorities, Healthcare Coalitions and healthcare personnel from areas such as long term care and pediatrics, could be created as part of the regional emergency operational plans, and would only become active during times of scare medical resources.

Statement of Purpose	SRAC should have the full authority to make necessary allocation decisions to assign or conserve resources for patient care
Objectives	In the incident of a shortage of services, supplies, or staffing, the SRAC should determine when and how these resources should be allocated or conserved. In addition, the SRAC will have responsibility for determining when Triage Protocols will be activated and deactivated.
Scope	hospital or health system organization.
Membership	 In the incident of a disaster declaration and/or the establishment of the Incident Management System (IMS), the SRAC structure should be consistent with this system. At this point, the Incident Commander (or designee) will chair the SRAC. The SRAC composition should include appropriate patient group representation (e.g., adult, pediatric, geriatric, obstetric) from each of the following groups: Medical Care Director, e.g. Chief of Staff or designee. Nursing Care Director, e.g. Director of Nursing or designee. Ambulatory Care Medical Director or designee. ICU Medical Director(s) or designees. Respiratory Therapy Medical Director and Technical Director or designees. Emergency Medicine Medical Director or designee. Admissions/Bed Capacity Manager or designee. Ethicist. Each position on the SRAC should be filled by 3 people who will rotate shifts on this committee. Those members who are off shift should be available to rotate on an appeals committee if needed.
Timeline	May be activated upon determination of one or more scarce resources.
Voting	It consensus among the members of the SRAC cannot be reached regarding the assignment or conservation of a scarce resource, the Incident Commander will call for a vote. Voting consists of one vote for the Incident Commander and one vote for each of the eight groups for a total of nine votes. A simple majority vote will be required, the Incident Commander given the authority to decide in the case of tie votes.

Clinical Review Committee

While decisions to discontinue life sustaining interventions will be made in conjunction with the Triage Officers, in consultation with the primary clinician caring for the patient, any patient, family member or clinician (including the

Triage Officer) can request consultation with the Clinical Review Committee (CRC). The makeup of the CRC might include:

- Medical Care Director, e.g. Chief of Staff or designee
- Triage Officer for that unit (non-voting)
- Adult Triage Officer from another unit
- Pediatric Triage Officer from another unit
- Respiratory Therapy Medical Director or designee
- Emergency Medicine Medical Director or designee
- Nursing Director or designee (non-voting)
- Social Work Director or designee (non-voting)
- Ethicist, ad hoc advisor (non-voting)
- Office of the General Counsel, ad hoc advisor (non-voting)

The Functions of the CRC include:

- The CRC will serve as a consultative body that will advise clinicians regarding clinical decision-making in complex patient care situations and identify principles that will serve as guidelines for triage officers.
- The CRC will be involved in all decisions to discontinue a life-saving therapy. The CRC will have real-time information on all currently available life-saving scarce resources in the hospital system.
- The CRC will maintain a list of all patients who, based on objective clinical parameters, have the lowest chance of survival. The CRC will discontinue a life-saving resource for a particular patient only when:
 - The life-saving resource has been depleted throughout the organization and cannot be obtained from any outside source.
 - Another person with a greater chance of survival, based on objective clinical parameters that have been selected for triage guidelines, requires the same life-saving resource.
- Once a decision to discontinue a life-sustaining scarce resource has been made for a particular patient the CRC will instruct the Triage Officer and the primary clinicians to implement the process for discontinuing that resource.

Triage Officers

The Triage Officer will have the responsibility to assure that the clinicians caring for the patient perform an assessment, for triage purposes, at 48 and 120 hours (or a time deemed appropriate by leadership, given the type of pathology being seen with the particular mass illness) and attests that the assessments are accurate. Day-to-day clinical care decisions for individual patients will continue to be made by the primary clinician caring for the patient.

If Triage Protocols need to be implemented to manage a scarce resource (i.e. ICU care or ventilators), the Triage Officer will notify the clinicians within their assigned units to communicate regarding Triage Protocols and collect data about patient assessments as often as needed, but at least daily. The Triage Officers should communicate frequently with the Clinical Review Committee to assess the needs of all patients within the institution. Using the Triage Protocols, the Clinical Review Committee and the Triage Officers will determine which patients no longer meet criteria for the use of a scarce resource. When a patient no longer meets criteria for a particular resource, the Triage Officer will advise the primary clinician to discontinue its use. Decisions to discontinue any intervention based on resource conservation will only occur after the SRAC has determined that conservation of that particular resource is necessary.

Staffing Resources

Personnel may be the most important scarce resource in a Mass Medical Event, especially if the emergency lasts for weeks or months. Equipment, medications, and vaccines cannot treat or prevent illness without trained personnel to prescribe, administer and oversee their use. Most hospital organizations have mechanisms in place for planning human resource needs and strategies. The following ethical guidelines may be useful for allocating scarce human resources during an emergency:

- As is the case for material resources, institutions should increase the "supply" of scarce human resources by prospectively training individuals whose current roles will be less urgently required during an MME to work in areas of likely shortfall, and consider training community members as well.
- Professional ethics for clinicians generally discourage or prohibit practice outside the scope of one's expertise. During conditions of extreme scarcity of trained personnel, however, standards of competence may justifiably be lower than during normal conditions.
- Individuals who assume the risks and burdens of working during a pandemic (e.g., extended hours and quarantine) should:
 - Receive appropriate protection (e.g., vaccine, protective gear) to minimize their risk of infection.
 - Receive priority for antivirals, antibiotics and other mid-level scarce resources, with the exception of life-sustaining interventions such as ventilators.



Key issues planners should anticipate, to the degree possible, include the types of health care needs and potential resource shortfalls that may occur as well as policy and operational adjustments that will be needed in response.

- Develop a plan to expand staff capacity. Determine how the hospital will meet staffing needs.
- Develop contingency plans for staff absences, particularly ED staff.
- Create procedures and policies for use of supplemental providers.
- Consider volunteers, ESAR VHP, CERT, MRC, clinic staff, out-of-State licensed staff, National Guard, retirees, non-health-care staff, among others.
- Ensure policies are in place to test and manage deployment of non-hospital personnel at both at the community and hospital levels.

Initiate discussions of allocation of hospital resources. Hospital administrators meet with hospital ethics committee early in the planning process to:

- Establish hospital process for scarce resource allocation.
- Develop communication process so the community understands the rationale behind resource allocation policies.
- Stockpile supplies and equipment including PPE equipment (e.g., gloves, masks).
- Estimate increased need for medical equipment/supplies and develop strategy to acquire additional equipment/supplies if needed. Consult with local and State health departments about access to the Strategic National Stockpile.

Define essential and non-essential visitors and develop policies for restricting visitors during a pandemic or other special emergency that may require limiting exposure to visitors (and mechanisms for enforcing the policies):

- Plan to limit hospital entry to a few key entrances.
- Plan for increased security needs.
- Develop a health care risk communications messages, including criteria for seeking health care, and postponement of elective procedures or surgeries.

Ventilator/ICU Resources

During a severe MME such as a pandemic respiratory illness, it is possible that the number of existing ventilators/ICU beds could be inadequate to meet the needs of patients. There have been several proposed mechanisms for initial triage of patients to critical care units, ventilator use or transport to definitive care. Hicks (2006), proposed a triage system for ventilator assignment during an infectious disease disaster for adults⁴². This system uses only clinical and not laboratory assessments and includes a reassessment of resource use for each patient with a requirement for improvement to continue use of the ventilator. Another proposal put forth by Christian (2006) used the Sequential Organ Failure Assessment (SOFA) score for adult patients in a similar respiratory pandemic scenario to create triage criteria for critical care admission. The SOFA scores require both laboratory and radiology resources.⁴³

After the SARS epidemic in Toronto, Christian (2006) proposed a triage system for ventilator access based on preexisting health status and SOFA scores. The New York Department of Health was the first U.S. governmental body to issue a proposed triage system for ventilator access during a pandemic influenza incident.⁴⁴ None of the triage criteria designed for infectious disease disasters have included pediatric specific recommendations and this will be addressed in a subsequent section.

Clinical Evaluation

Evaluation criteria to predict potential morbidity and mortality of severe cases of a pandemic respiratory illness should be discussed, vetted, and adopted prior to their needed utilization and should use simple and straightforward metrics that most clinicians recognize and can assess. As the physiology of adult and pediatric patients is often quite different, we have determined that separate triage tools are required to evaluate adults and pediatric patients. To comply with the need for equitable access to care, we have used the same expected mortality criteria for both groups. For the purposes of this publication only pediatrics will be included. Adult criteria are included in the State

⁴² Hicks, J.L. and O'Laughlin, D.T. (2006). *Concept of Operations for Triage of Mechanical Ventilation in an Epidemic*. Academy Emergency Medicine, 13(2): p: 223-229.

⁴³ Chiristian, M.D. et al. (2006). *Development of a Triage Protocol for Critical Care during an Influenza Pandemic*. CMAJ, 175(11):p.1377-81

⁴⁴ Powell T., Christ, K.C, and Birkhead, G.S. (2008) *Allocation of Ventilators in a Public Health Disaster*. Disaster Medicine Public Health Preparedness. 2(1): p. 20-26.

of *Michigan Ethical Guidelines for Allocation of Scarce Medical Resources and Services during Public Health Emergencies in Michigan.* When a pediatric patient presents to the ED, or a decision is required for admission to ICU, or the patient is determined to need ventilator support, the appropriate triage tool will be used to determine whether the patient is allocated a ventilator. We have also included a requirement to systematically review the clinical progress of each pediatric patient who is currently receiving mechanical ventilation or ICU care with a requirement of improvement at agreed upon intervals thereafter.

In an incident that results in a severe shortage of ventilators or ICU beds, not all patients will be eligible for mechanical ventilation or ICU care. The following inclusion and exclusion criteria are recommended (Table 13). These criteria have been informed by both the Toronto triage tool and the New York tool. Initiation of ventilatory support should be determined by the following inclusion and exclusion criteria: allocation of scarce resources will not only need to have a clear determination of criteria for initiation, but also clear criteria to determine if the pediatric patients currently using resources are obtaining the needed benefit to insure the lowest morbidity and mortality for the population at risk. When patients are not progressing to the desired outcomes, these resources may need to be reallocated to insure the stated goal. Patients will be evaluated for worsening potential for mortality at 48 hours and 120 hours by the following adult and pediatric criteria described in Table 13. These decisions will be both difficult and necessary, and to insure their fairness there will be a monitoring and appeals process to best insure a cautious and moderated approach to these decisions.

Table 13: Inclusion and Exclusion Criteria for Mechanical Ventilation

	Inclusion Criteria
The	patient must have one of the following:
Α.	 Requirement for invasive ventilatory support: Refractory hypoxemia (SpO2 < 90% on non-rebreather mask or FIO2 > 0.85). Respiratory acidosis (pH < 7.20). Clinical evidence of impending respiratory failure. Inability to protect or maintain airway.
В.	PEDS: Hypotension (systolic BP < 70 + 2x age (years)) or clinical shock state (as evidenced by altered level of consciousness, decreased urine output, or other evidence of end-organ failure) refractory to volume resuscitation requiring vasopressor or inotrope support that cannot be managed in ward setting.
	Exclusion Criteria
The	patient is excluded from admission or transfer to critical care if any of the following is present:
Α.	Severe trauma.
В.	Severe burns of patient with any 2 of the following: • Age > 60 yr. • > 40% of total body surface area affected. • Inhalation injury.
C.	Cardiac arrest • Unwitnessed cardiac arrest. • Witnessed cardiac arrest, not responsive to electrical therapy (defibrillation or pacing). • Recurrent cardiac arrest.
D.	Metastatic malignant disease with poor prognosis.
E.	Advanced and irreversible immunocompromised.
F.	Severe and irreversible neurologic incident or condition with highly expected mortality.
G.	 End-stage organ failure meeting the following criteria: Heart. NYHA class III or IV heart failure. Lungs. Severe chronic lung disease with FEV1 < 25% predicted, baseline PaO2 < 55 mm Hg, or secondary pulmonary hypertension. Previously diagnosed primary pulmonary hypertension with NYHA class III or IV heart failure, or mean pulmonary arterial pressure > 50 mm Hg. Liver. Child-Pugh score ³ 7 or Meld scored of > 20.

Triage of Eligible Patients

Once a patient is deemed eligible for triage by meeting the above inclusion criteria, the appropriate pediatric triage tool will be used to determine initial and continuing use of mechanical ventilation and/or ICU care. When utilizing critical care resources for children, the Pediatric Logistic Organ Dysfunction (PELOD)scoring method, discussed below in table 14, is felt to be more easily applied when data may be scarce, but decisions regarding allocation must be based on both clinical and laboratory data.

Table 14: The PELOD Scoring System

Organ		SCORE			Max Score	
System	Variable	0	1	10	20	
Neurologic						20
	Glasgow coma score	12-15	7-11	4-6	3	
		AND		OR		
	Papillary reaction	Both reactive		Both fixed		
Cardiovascular						20
	Heart rate					
	< 12 yrs.	≤ 195 bpm		> 195 bpm		
	> 12 yrs.	≤ 150 bpm		>150 bpm		
		AND		OR		
	Systolic blood pressure					
	< 1 month	> 65 mmHg		35-65mmHg	< 35 mmHg	
	≥ 1month & < 1yr	> 75 mmHg		35-75mmHg	< 35 mmHg	
	≥ 1 yr. & < 12 yr.	>85 mmHg		45-85 mmHg	< 45 mmHg	
	≥ 12 yr.	> 95 mmHg		55-95 mmHg	< 55 mmHg	
Renal						10
	Creatinine					
	< 7 days	< 1.59 mg/dl		≥1.59 mg/dl		
	≥ 7 days & < 1 yr.	<0.62 mg/dl		≥ 0.62 mg/dl		
	≥ 1 yr. & < 12 yrs.	< 1.13 mg/dl		≥ 1.13 mg/dl		
	≥12 yrs.	< 1.59 mg/dl		≥ 1.59 mg/dl		
Pulmonary						10
	PaO2/FiO2 ratio	> 70mmHg		≤ 70mmHg		
		AND		OR		
	PaCO2	≤ 90 mmHg		>90 mmHg		
		AND				
	Mechanical vent	No	Yes			
Hematologic	·					
	WBC	≥ 4.5K	1.5-4.4 K	<1.5		
		AND	OR			
	Platelets	≥ 35 K	< 35			
Hepatic						1
	AST	< 950 IU/L	≥ 950 IU/L			
		AND				
	Prothrombin time	> 60%	≤ 60%			

In the validations study a PELOD score of >33 had a mortality rate of 100%. Table 3 gives a predicted PELOD score associated with different mortality probability. To use the PELOD scoring system on a daily basis, the score is calculated as at presentation. If new data is not available (i.e. new laboratory values), the values can either be assumed to be unchanged or normal depending on the physician's clinical judgment.

Using similar mortality levels for pediatric and adult patients leads to using a PELOD score of 33 as a reasonable proxy for a SOFA score of 11. The calculated probability of mortality with a score of 33 is 53%; however the validation study showed 100% mortality at this score. This seems a reasonable compromise since to use a score of 29 (approximately 85% mortality) may prioritize some children who would receive futile allocation of scarce resources.

PELOD Score	Predicted Mortality Probability	Predicted Mortality Rate
< 10	0.009	<1%
15	0.04	4%
20	0.1625	16%
22	0.26	26%
24	0.3917	40%
25	0.46	
26	0.53	53%
27	0.61	
28	0.68	68%
>30	0.98	98%

Table 15: Predicted mortality levels for a given PELOD score

Table 16: Critical Care Triage Tool – PEDIATRIC PATIENTS (<18 yrs.)

	Initial Assessment		48 Hour Assessment		120 Hour Assessment	
Color Code	Criteria	Priority/ Action	Criteria	Priority/ Action	Criteria	Priority/ Action
Blue	Exclusion Criteria* or PELOD ≥ 33*	Medical Mgmt. +/- Palliate & d/c	Exclusion Criteria or PELOD > 33 or PELOD 21-33 & no A	Palliate & d/c from CC	Exclusion Criteria ** or PELOD > 33 ** or PELOD 21-33 no A	Palliate & d/c from CC
Red	PELOD < 21 or Single Organ Failure	Highest	PELOD <33 and decreasing	Highest	PELOD < 33 and decreasing progressively	Highest
Yellow	PELOD 21- 33	Intermediate	PELOD < 21 no Δ	Intermediate	PELOD < 21 minimal decrease (< 3 point decrease in past 72 hrs.)	Intermediate
Green	No significant organ failure	Defer or d/c, reassess as needed	No longer ventilator dependent	d/c from CC	No longer ventilator dependent	d/c from CC

*If exclusion criteria or PELOD > 33 occurs at any time from the initial assessment to 48 hours change triage code to Blue and palliate.

** If exclusion criteria or PELOD > 33 occurs at any time from 48 - 120 hours change triage code to Blue and palliate. $\Delta = change$ CC = critical care d/c = discharge

Blue: High probability of mortality; should be discharged from critical care and should receive medical management and palliative care as appropriate.

Red: Highest priority for critical care.

Yellow: Intermediate priority for critical care.

Green: Low probability of mortality; defer admission/ discharge from critical care.

The initiation of other, more sophisticated methods of ventilatory support, such as ECMO, may be evaluated and allocated using the same criteria as conventional ventilatory support. There is concern that these already scarce resources will become more frequently requested interventions, but their use strains the efficient and maximal use of all available resources and thus will be limited by established medical criteria.

Oxygen Therapy

Given that in the worst case scenario, 15-20% of influenza patients may acquire pneumonia ⁴⁵ during a pandemic, it is likely that oxygen therapy will be in great demand. In addition, the current needs for oxygen supplementation for COPD, heart failure, cystic fibrosis, and other respiratory diseases will remain the same. As such rationing decisions may need to be implemented. If rationing of oxygen therapy is required; oxygen will be administered based on the following guidelines:

- Ventilated patients.
- Pediatric patients > 1 year with oxygen saturation <88% on room or respiratory rate of >40.
- Pediatric patients with oxygen saturation <88% on room air or respiratory rate >60.
- Hypoxic patients with pneumonia.

It is unlikely that oxygen supplies will be depleted because of the storage capacity of hospitals, technology to concentrate oxygen and the ease of delivery without constant attendance of trained personnel. If oxygen supplies or personnel required to administer oxygen therapy become scarce, those patients categorized as Blue (expectant) who are not be eligible for ventilators will also not be eligible for oxygen therapy. Every effort will be made using other therapeutic means to keep these dying patients' comfortable (see Palliative Care Section). Outpatients who currently receive home oxygen therapy will be resupplied based on oxygen availability and the guidelines listed above.

Palliative Care Resources

Regardless of modeling or assumptions, a major pandemic incident will require significant resources to care for dying patients and their families. The impact of pandemic death will stress all parts of our system and require clear, executable strategies for supporting very large numbers of patients and their families through the end of life. The ethical imperative to provide pandemic palliative care is well-supported under the framework used to create these guidelines for ventilator allocation; specifically, our obligations to individual patients, institutional competence and utility. In addition to the ethical imperative, and in contrast to prior pandemics, palliative care is now recognized as a core institutional competency by multiple organizations including the Joint Commission (JC) and the National Quality Forum (NQF). Formal palliative care clinical guidelines have been developed and widely endorsed. The guidelines are available at:

<u>http://www.nationalconsensusproject.org</u> and stress the importance of care in four key areas: physical symptom management (pain, dyspnea, nausea, etc.); psychological symptom management (anxiety, depression, agitation, delirium); support for family and close persons; and spiritual care for patients and loved ones.

⁴⁵ Gupta, R.K., George, R., Nguyen-Van-Tam, J.S. (2008). *Bacterial Pneumonia and Pandemic Influenza Planning*. Emerging Infectious Disease. Aug: 14(8), 1187-92.



As with all clinical resources mobilized for a mass illness, palliative care providers are limited and will need to be allocated based upon need and availability. Unlike some resources that can be concentrated geographically (i.e. ventilators, critical care providers), palliative care support will be needed across all care settings, including inpatient and intensive care, the alternative care center (ACC), and outpatient and community contact points. It should be assumed that patients with life-threatening illness could (and will) receive care in all parts of the system, which creates a formidable task to source palliative care throughout.

The broad need for palliative care during a pandemic does not dictate that resources will be distributed evenly among settings, but that reasonable efforts will be made to provide the support likely to be most useful in each. Those who require mechanical ventilation but do not receive it due to exclusion criteria or removal from the resource are most likely to require prompt, competent palliative care. The distribution of palliative care resources is thus closely connected to ventilator allocation, and should be integrated into the universal triage process for pandemic response.

Palliative Care Resource Allocation

Pandemic palliative care resources can broadly be divided into personnel and non-personnel categories. Non-personnel resources include oxygen, space and medications for control of anticipated symptoms among those severely ill with influenza. As many of these resources are finite, if not scarce, it is possible that allocation for palliative care will compete with allocation for potentially curative care. Oxygen is a good candidate for such a conflict, if supplies become critically low. Prioritizing oxygen to probable survivors can be justified, if sufficient medications are available to manage the dying patients' distress acceptably. As with all potential scarce resources, distribution will be guided by SRAC. Personnel specifically trained in Palliative Care are still quite few, though many more have skills and experience in caring for patients through end-of-life. The factors affecting availability of personnel to support palliative care are similar to those affecting all (illness, willingness to work, etc.). Allocating available personnel will need to be coordinated along with other SRAC functions, and will be guided by need and patterns of volume. It is possible for much end-of-life care to be delivered by unit-based providers. It may be reasonable to identify one or two staff from each unit to serve as pandemic palliative care 'leads' to facilitate training and serve as resources in preparation and execution of a mass care plan. It will be necessary to develop written palliative care protocols to help unit providers care for patients and families through end of life.

"Advanced planning about indicators and triggers involves considering what information about demand and resources is available across the health care spectrum (from pre-hospital to end-of-life-care), how the information is shared and integrated, how this information drives actions, and what actions might be taken to provide the best health care possible given the situation."⁴⁶

⁴⁶ Institute of Medicine. (2013). *Crisis Standards of Care: A Toolkit for Indicators and Triggers*. Washington, DC: The National Academies Press.

Appendix III Burn Surge Plan

Introduction

Nationally there are not enough designated "burn care" beds or burn centers at present to manage the day to day needs of pediatric burn patients. Current practice recommends transfer of seriously burned patients to burn centers for specialized care; however, these resources will be quickly overwhelmed by an incident that results in large numbers of pediatric victims. So in the event a disaster occurs in which there is a surge of pediatric burn patients, it is not possible for these limited centers to provide specialized burn care for all of the affected patients. The capacity for local and regional burn center beds would be quickly exceeded. If this incident should ever occur, existing health care centers must accommodate and care for these patients until specialized burn care resources/beds become available. It is likely those healthcare facilities will be caring for the burn patients for 3-5 days at minimum until safe discharge or transfer to tertiary care facility can occur. The definitions these kinds of burn incidents are as follows:

Burn Mass Casualty Incident (MCI): Small number of victims easily cared for by existing burn units.

Burn Disaster: incident resulting in a number of victims that overwhelm existing burn care resources. In a mass casualty burn incident each one of Michigan's eight regions should plan on receiving 50 burn casualties per million. This capacity planning should incorporate the development of non-traditional "burn bed" resources to include: initial and ongoing training in burn triage, categorization of injuries, patient care, and supply caches capable of supporting patient care for at least 72 hours.

Many burn patients will be critically ill and require time/resource/labor intensive care:

- Initial resuscitation in EDs.
- Fluid managements.
- Airway control/ mechanical ventilation.
- Surgical debridement/ escharotomy/ grafting.
- Pain control.
- Infection control.

The State of Michigan has created a plan that incorporates the utilization of "adjusted environments of care," by planning for the provision of stabilizing care for burn patients in facilities that are not normally associated with providing definitive care to burn patients. The ability to standardize the care that will be provided in hospitals that do not provide definitive burn care has been agreed upon in an effort to safeguard critical resources, and ultimately improve outcomes for patients.

This plan incorporates the use of "burn stages" to provide context for the scope of an incident, and should not be viewed as prescriptive. Given even the limited availability of definitive burn care at the national level, it is understood that even a "relatively minor" incident may indicate a need for accessing resources from one or more of the planning partners to ensure the best possible outcomes for patients.

Burn Stage I

Any incident in which **local** trauma/burn resources are overwhelmed with patients (example: 10-24 patients).

Burn Stage II

Any incident in which **regional** trauma/burn resources are overwhelmed with patients (example: 25-100 patients).

Burn Stage III

Any incident in which **state** trauma/burn resources are overwhelmed with patients (example: Exceeds 100 patients).

This plan develops non-traditional burn care resources to provide surge capacity during a multi-casualty incident, and to protect those facilities with definitive care capacity from being overwhelmed through the use of "off-site" triage and stabilization. By developing this type of surge capacity we can maximize the use of our critical definitive care resources.

State Burn Coordinating Center

The state has established one healthcare facility to act as the State Burn Coordinating Center (SBCC). The SBCC must be a healthcare facility with recognized expertise in the care of burn patients, as well as the ability to provide staff assistance to the local and regional partners from beyond their geographic region, the state, or other states involved with the Great Lakes Healthcare Preparedness Partnership coordinated plan for mass casualty burn incidents.

Burn Centers

Michigan currently has six healthcare facilities recognized as "burn centers". They have been identified as accepting burn referrals, and are able to provide definitive care for burn patients. These centers will work in conjunction with the SBCC to manage the flow of burn surge patients to ensure the optimal use of the state's definitive burn care capacity.

Burn Surge Facilities

The state has established 13 Regional Burn Surge Facilities (BSFs) within each of the eight Emergency Preparedness Regions. Given the expectation that established state Burn Centers may initially be overwhelmed and transportation limited, Regional BSFs will be responsible for the initial evaluation and stabilization of burn patients and preparation for transfer, if necessary, during the initial 72 hours. Regional BSFs will have 24-hour coverage with Advanced Burn Life Support (ABLS)-trained nurses and physicians. Patients treated and discharged by regional BSFs should be referred to a Burn Center for complications and any needed long-term follow-up.

The Purpose of the Burn Surge Plan is to:

- Assign responsibility.
- Define treatment sites.
- Outline response measures.

The Goal of the plan is to:

- Provide highest level of care for a large number of burn patients.
- Expand ability to provide burn care.
- Prioritize use of limited resources.
- Plan for provision of "stabilizing care" for burn patients in facilities not routinely required or expected to do so.

Standardization of care in hospitals not normally associated with provision of definitive burn management is intended to:

- Safeguard limited resources.
- Improve patient outcomes.
- Maximize staff training to care for burn injuries (especially important when staff resources exceeds capacity):
 - Use of long acting silver impregnated dressing to treat burn patients, which will simplify
 patient care

When activated, BSFs will report patient information to the SBCC. The Burn director at the SBCC will triage and determine definitive care facility. Burn surge teams are available to be deployed to a BSF to provide support for triage, treatment and transfers. Burn surge teams available for deployment outside hospital system consist of:

- Flight Nurse/Paramedic.
- Senior burn nurse.
- Physician, Fellow or Senior Resident in Emergency Medicine, Pediatric Critical Care or Pediatric Surgery.

Basic Treatment Considerations during a Burn Mass Casualty Incident

Provide Initial First Aid:

- Stop the burning process.
- Use universal precautions.
- Remove clothing or jewelry.
- Cool any burns that are warm to touch with tepid water and then pat dry.
- Rinse liberally with water if chemicals suspected according to protocols, then dry.
- Cover with clean DRY sheet or bedding to prevention hypothermia.

Perform Primary Survey

Airway Maintenance with Cervical Spine Protection:

- Chin lift/jaw thrust with cervical spine precautions as needed.
- Assess for signs of airway injury such as hypoxia, facial burns, carbonaceous sputum, stridor, and nasal hair singes.
- Assess for history of a closed space fire.
- Insert an oral pharyngeal airway or endotracheal tube (ETT) in the unconscious patient (Intubate early).

Breathing and Ventilation:

- Assess for appropriate rate and depth of respirations with adequate air exchange 100% (15L) FIO2 non-rebreather face mask or by ETT until ABG result. An ABG with Carboxyhemoglobin (COHgb) level is required for suspected inhalation injury. COHgb levels are decreased by 50% every 40 minutes while on 100 % FIO2. COHgb level goal is <10 %.
- Mechanical ventilation as needed.
- If extensive facial burns or >40% TBSA, intubation for airway protection prior to expected facial swelling is indicated.
- Monitor pulse oximetry while checking COHgb level (as needed).
- Head of bed (HOB) elevated.

Circulation with Hemorrhage Control:

- Vital Signs.
- Heart rate.
- Blood pressure.
- Capillary refill.
- Temperature.
- Skin color of unburned skin.

Cardiac monitoring as needed

• May be needed if there is an electrical injury, concurrent trauma or cardiac issues.

Fluid Resuscitation

- Oral resuscitation can be used in the following circumstances:
 - Patient is not intubated.
 - Injury is not an electrical injury.
 - No other injuries.
- Heplock/Saline lock IV (as needed) if taking adequate PO fluids

IV fluid resuscitation is indicated in the following circumstances:

- If patient is intubated:
 - Start maintenance fluids
 - One large bore peripheral IV in non-burned, upper extremities
 - Place a soft feeding tube
- Pediatric patients with burns > 10% TBSA require resuscitative fluids and maintenance fluids
- Pediatric patients less than 30 kg require D5 LR at maintenance rate if not taking adequate PO or are intubated. Pediatric calculation for maintenance fluid formula:
 - For the first 10 kg of body weight: 4 mL per kg per hour
 - For the second 10 kg of body weight: 2 mL per kg per hour
 - For the remaining kg of body weight up to 30kg: 1ml per kg per hour

Diagnostic studies on admission and then as dictated by medical condition

- Arterial blood gas.
- Carboxyhemoglobin (COHgb) level, always add this to a blood gas.
- Electrolyte panel.

- CBC.
- EKG for electrical injury or cardiac history.
- CXR if intubated, inhalation injury suspected or underlying pulmonary condition.
- Tetanus prophylaxis unless given in the last 5 years.

Disability:

- Neurologic checks every 4-8 hours and prn.
- Goal is an alert and oriented patient.
- If altered neurological status consider the following:
 - Associated injury.
 - CO poisoning.
 - Substance abuse.
 - Hypoxia.
 - Pre-existing medical condition.
- Determine level of consciousness. Consider using the "AVPU" method:
 - Alert
 - V- Responds to verbal stimuli.
 - P- Responds to painful stimuli.
 - U- Unresponsive.

Exposure

- Remove all clothing and jewelry.
- Initially place a clean, dry sheet over the wounds until a thorough cleaning is done.
- Keep patient normal thermic, especially during wound care. This may be accomplished by:
 - Keeping patient covered.
 - Covering the patients head.
 - Warming the room.
 - Warming IV fluids.

Perform Secondary Survey

History:

- Obtain circumstances of injury
- Obtain medical history:
 - A Allergies.
 - M Medications.
 - P Previous illness, past medical history.
 - L Last meal or fluid intake.
 - E Incidents/environment related to the injury.

Complete Physical Examination:

- Head to toe exam:
 - If eye involvement or facial burns, consult an Ophthalmologist.
- Determine extent/size of the burn by calculating the TBSA burn:

- Rule of Nines.
- Lund-Browder chart.
- Rule of the Palm.
- Determine the depth of the burn (Superficial thickness burns are not included in the TBSA):
 - Superficial PARTIAL thickness (2nd degree).
 - o Involves the epidermis and a thin layer of dermis.
 - o Red, moist, with blisters and blanches.
 - Deep PARTIAL thickness (2nd degree).
 - Involves the entire epidermis and variable portion of the dermis.
 - o Red, blistered and edematous.
 - Full thickness (3rd degree).
 - o Involves the destruction of the entire epidermis and dermis.
 - o White, brown, dry, leathery with possible coagulated vessels.
- Assess Need for Escharotomies: Monitor the following signs and symptoms in full thickness, circumferential burn injuries which may indicate a circulation deficit requiring decompression by incision of burn wound:
 - Cyanosis of distal unburned skin on a limb.
 - Unrelenting deep tissue pain.
 - Progressive paresthesia.
 - Progressive decrease or absence of pulses.
 - Inability to ventilate in patients with deep circumferential burns of the chest.
- Comfort:
 - Frequent pain/sedation assessment.
 - Every hour.
 - Before and after pain/sedation medications given.
 - Use age appropriate pain scales for pediatric patients.
 - Give whatever pain medication is required:
 - Narcotic/Analgesic PO/IV.
 - o Oxycodone PO.
 - o Ativan/Versed PO/IV.

Wound Care:

- Assess and monitor the wound for:
 - Change in wound appearance.
 - Change in size of wound.
 - Signs or symptoms of infection.
 - Wound care should include:
 - Washing the wounds with soap and warm tap water using a wash cloth
 - Remove water by patting dry.
- Wound care should be performed every day, if using the following to the face:
 - Silver sulfadiazine cream.
 - Triple antibiotic ointment.
- Burned scalps and faces should be shaved daily.
- All blisters should be debrided, except for the following:
 - Intact blisters on hands and feet.

- Ears are poorly vascularized and at risk for chondritis. Topical sulfamylon cream should be used; if unavailable, use silvadene. Avoid external pressure including pillows and constrictive dressings.
- For extensive and severe burns to the face:
 - Apply a thin layer of silver sulfadiazine cream, approximately a nickels thickness or enough to cover the wound, so that it doesn't dry out prior to the next dressing change. The purpose of a dressing is to keep the cream from rubbing off before the next dressing change.
 - Avoid creams near the eyes.
- For moderate facial burns:
- Bacitracin or another antibiotic ointment without dressing can be used.
- If fingers and toes are burned:
 - Dress and wrap separately to promote range of motion and prevention adhering together
- Genitalia and perianal burns require:
 - A greasy gauze and/or lubricant between the labia and in the foreskin to prevention adhesions.
 - A foley is never indicated to maintain patency.
 - May be used to monitor urine output, if needed.
- Elevate burned extremities above the level of the heart.
- If applying an Acticoat dressing:
 - Apply a single layer of the dressing moistened with water over burn wounds so that all areas are covered.
 - Water should be used to keep the Acticoat and overlying gauze moist to maintain the dressing's antimicrobial activity.
 - Should be held in place with water-moistened gauze dressing, this should be periodically moistened throughout the use of the dressing. Acticoat needs to be damp in order to have full use of its antimicrobial therapy.
 - Dressing does not need to be changed for 7 days.
 - The overlying gauze can be changed as necessary, but kept damp.

Ongoing Resuscitation (as needed)

- Monitor urine output
 - Adjust fluids to keep urine output between the following:
 - Patients > 30kg = 30-50 ml/hr.
 - Pediatrics = 2 ml/kg/hr.
- Additional fluid needs can occur with:
 - Very deep burns.
 - Inhalation injury.
 - Associated injuries.
 - Electrical injury.
 - Delayed resuscitation.
 - Prior dehydration.
 - Alcohol or drug dependence.
 - Small children.
- Children, the elderly and patients with pre-existing cardiac disease are particularly sensitive to fluid management.
- If Myoglobin in the urine (burgundy color): (treatment algorithm still under discussion)

- Maintain urine output of 100 ml/hour for adults and 4ml/kg/hr. for pediatrics by increasing fluid rate.
- Place a foley.
- Increase fluid rate (LR).
- Diuretics are never indicated with myoglobinuria.
- Mannitol may be used only as a last resort to maintain urine output.
- Intravenous sodium bicarbonate may be administered to maintain an alkaline urine with a pH > 6.

For circumferential burns to extremities:

- Perform pulse checks (CMS) every 1 hour to determine need for emergent escharotomy.
- Monitor by palpation or Doppler exam for:
- Decreased sensation.
 - Severe deep tissue pain.
 - Diminished distal pulses.
 - Slowed capillary refill.
 - After 24-48 hours, decrease frequency of pulse checks to every 2 hours if stable.
 - Elevate extremities above the level of the heart.

Nutrition:

- Obtain dry weight on admission.
- Keep NPO until assessment has been completed.
- Dietary consultation, as needed.
- Regular high calorie, high protein diet if able to take PO.
- If intubated, begin tube feeding at full strength increasing to goal rate:
 - Soft feeding tubes are preferred over hard naso-gastric tubes.
 - If possible post-pyloric placement is more beneficial for patients who need frequent dressing changes.
 - Ensure stool softeners are ordered to prevention constipation due to pain medications.

Mobility:

- Physical Therapy/Occupational Therapy consultation, as needed.
- In a disaster, therapists may just splint patients in functional positions as needed.
- HOB elevated at all times.

Ear burns

- No external pressure should be applied.
- No pillows or blankets under the head.

Neck burns

- Maintain the head in a neutral position.
- No pillows or blankets under the head flexing the neck forward.

Axilla burns:

- Keep arms extended to decrease contractures.
- Elevate burned extremities above the level of the heart to decrease swelling.

If legs are burned, apply ace wraps when OOB (Out of Bed)

• Encourage active range of motion hourly, when awake.

Encourage Activities of daily living

• Patient should have enough pain control to perform these activities.

Infection Control:

- Utilize universal precautions.
- For patients with > 10% TBSA wounds, when they are exposed:
 - Gown, mask, surgical hat and gloves will need to be worn to protect patient
 - No systemic antibiotics are required for the burn injuries

Psychosocial:

- Explain any procedures:
 - Involve patient and family.
 - Consider Social Worker consultation.
 - Offer Spiritual Care.

Included in this annex is reference material useful in caring for the pediatric burn patient. Healthcare providers in the State of Michigan also have access to the University of Michigan website designed specifically for use during a burn surge incident at: <u>http://www.michiganburn.org.</u>

BURN TREATMENT: FLUID RESUSCITATION

Fluid Resuscitation Formula: 3 - 4 mL / kg / %TBSA burn For Infants (0 - 2 years; less than 30 kg): Use maintenance fluid containing 5% dextrose is D5 Lactated Ringer's Maintenance fluid requirements

- 1st 10kg of body wt.: 4 mL/kg/hr.
- 2nd 10kg of body wt.: 2 mL/kg/hr.
- Remaining kg of body wt.: 1 mL/kg/hr.

Patient Weight	TBSA burn	Calculation	Estimated 24h Resuscitation Total (NOT including maintenance fluids)	Fluid type (dependent on patient weight)
8 kg	20%	3 x 8 x 20	480 ml	D5 LR
8 kg	40%	3 x 8 x 40	960 ml	D5 LR
8 kg	60%	3 x 8 x 60	1,440 ml	D5 LR
8 kg	80%	3 x 8 x 80	1,920 ml	D5 LR
10 kg	20%	3 x 10 x 20	600 ml	LR
10 kg	40%	3 x 10 x 40	1,200 ml	LR
10 kg	60%	3 x 10 x 60	1,800 ml	LR
10 kg	80%	3 x 10 x 80	2,400 ml	LR
20 kg	20%	3 x 20 x 20	1,200 ml	LR
20 kg	40%	3 x 20 x 40	2,400 ml	LR
20 kg	60%	3 x 20 x 60	3,600 ml	LR
20 kg	80%	3 x 20 x 80	4,800 ml	LR
30 kg	20%	3 x 30 x 20	1,800 ml	LR
30 kg	40%	3 x 30 x 40	3,600 ml	LR
30 kg	60%	3 x 30 x 60	5,400 ml	LR
30 kg	80%	3 x 30 x 80	7,200 ml	LR
40 kg	20%	3 x 40 x 20	2,400 ml	LR
40 kg	40%	3 x 40 x 40	4,800 ml	LR
40 kg	60%	3 x 40 x 60	7,200 ml	LR
40 kg	80%	3 x 40 x 80	9,600 ml	LR
50 kg	20%	3 x 50 x 20	3,000 ml	LR
50 kg	40%	3 x 50 x 40	6,000 ml	LR
50 kg	60%	3 x 50 x 60	9,000 ml	LR
50 kg	80%	3 x 50 x 80	12,000 ml	LR

Table 17: Exemplar Burn Resuscitation Fluid Calculations

Table 18: Daily Maintenance Fluid and Electrolyte Requirements

	Calculation
Fluids	4mL/kg/hr. for first 10kg of weight
Per Hour	2mL/kg/hr. for next 10 kg of weight
	1mL/kg/hr. for remaining kg of body weight
Maintenance Electrolyte Calculations for IV Fluid	Sodium: 3-4 mEq/kg/day or 30-50
	mEq/m2/day
	Potassium: 2-3 mEq/kg/day or 20-40
	mEq/m2/day

Table 19: Clinical Features of Dehydration

Feature	Mild (<5%)	Moderate (5% to 10%)	Severe (<10%)
Heart rate Normal		Slightly increased	Rapid, weak
Systolic BP Normal		Normal to orthostatic, >10 mmHg change	Hypotension
Urine output Decreased		Moderately decreased	Marked decrease, anuria
Mucous membranes Slightly dry		Very dry	Parched
Anterior fontanel Normal		Normal to sunken	Sunken
Tears Present		Decreased, eyes sunken	Absent, eyes sunken
Skin Normal turgor		Decreased turgor	Tenting
Skin perfusion	Normal capillary refill (<2 seconds)	Capillary refill slowed (2-4 seconds); skin cool to touch	Capillary refill markedly delayed (>4 seconds); skin cool, mottled, gray

Pediatric Burn Assessment: Palm Method/Rule of Nines

The **Palm method** is extremely easy and is very helpful when the burns are scattered over the body. With this method and using the PATIENT'S hand as a guide, the palmar surface is equal to 1% of the patient's body. Extremely helpful in determining burns in infants, toddlers and small children.



The "Rule of Nines" is a convenient, quick method to determine burn size. **Only second and third degree burn injury are used to calculate the extent of burn that is applied to burn formula** calculations. (See Figure 9 below)



Figure 9: Pediatric Rule of Nine's

Pediatric considerations include:

- Increased fluid requirements relative to adults.
- Increased surface area.
- Hypoglycemia may occur in infants (<30 kg) due to limited glycogen reserves.

Equipment Estimations

- Method to estimate Endotracheal Tube (ETT) size:
 - Internal tube diameter (mm) = [16 + age(y)] / 4
 - ETT Depth in cm at lip = 3 x ETT size

Table 20. Equipment Sizes. Newporn - o reals Old	Table 20: Equir	oment Sizes	: Newborn -	6 Years	Old
--	-----------------	-------------	-------------	---------	-----

Equipment	Newborn	3-6 mos.	1 year	2-3 yrs.	4-6 yrs.
Weight	3 kg	5 kg	10 kg	15 kg	20 kg
ETT	3-3.5	3.5-4.0	4-4.5	4.5-5/0	5.0-5.5
L Blade	Miller 0-1	Miller 0-1	Miller 0-1	Miller 1-2	Miller 2
Suction	6-8 Fr	8-10 Fr	10 Fr	10 Fr	10 Fr
NG Tube	5-8 Fr	5-8 Fr	8-10 Fr	10-12 Fr	12-14 Fr
Foley	6-8 Fr	6-8 Fr	8-10 Fr	10-12 Fr	10-12 Fr
Chest Tube	10-12 Fr	12-16 Fr	16-20 Fr	20-24 Fr	24-32 Fr
LMA (cuff)	1 (4 mL)	1.5 (7 mL)	2 (10 mL)	2 (10 mL)	2-2.5 (14 mL)

Table 21: Equipment Sizes: 7 Years and Older

Equipment	7-9 yrs.	10-12 yrs.	13-15 yrs.	>15 yrs.
Weight	25 kg	30 kg	40 kg	> 50 kg
ETT	5.5-6.0 cuff	6.0-6t.5 cuff	7.0-7.5 cuff	7.5-8.0 cuff
L Blade	Mil/Mac 2	Mil/Mac 2-3	Mil/Mac 3	Mil/Mac 3
Suction	10 Fr	10 Fr	12 Fr	12-14 Fr
NG Tube	12-14 Fr	14-26 Fr	14-16 Fr	16-18 Fr
Foley	12 Fr	12 Fr	12-14 Fr	12-14 Fr
Chest Tube	28-32 Fr	28-32 Fr	32-40 Fr	32-40 Fr
LMA (cuff)	2.5 (17 mL)	3 (20 mL)	3 (20 mL)	4-6 (30-50 mL)

NUTRITION

Nutrition in a pediatric patient should be considered early in the treatment phase. Place enteral feeding tube as early as possible in all patients with burns > 20% TBSA. If none are available or if the patient is awake and alert and able to drink and eat encourage patient to do so.

- If patient has an NG/OG, check residuals Q 4 hr. If residuals are more than 3 times the hourly rate stop the tube feedings and notify MD.
- Consult dietician for appropriate formula.

Figure: Pediatric Nutrition



Table 22: Appropriate Infant Nutritional Components

Age	
Birth - 1 month	2-3 ounces (6-90 mL) per feeding breast or bottle every 2-3 hours
2-4 months	3-4 ounces (90-120 mL) per feeding every 3-4 hours
4-6 months	4-5 ounces (120-150 mL) per feeding, four or more time daily
	Begins baby food, usually rice cereal
6-8 months	6-8 ounces (180-240 mL) per feeding, four times daily
	Eats baby food such as rice cereal, fruits and vegetables
8-10 months	6 ounces (180 mL) per feeding, four times a day
	Soft finger foods
10-12 months	6-8 ounces (180-240 mL) per feeding, four times a day
	Soft table foods, uses spoon and cup with lid
Formulas	Milk Based: Enfamil, Enfacare & Similac
	Soy Based: Prosobee & Isomil

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Appendix IV Job Action Sheets⁴⁷

Pediatric Services Unit Leader

You report to:	(Operations Chief)
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Command Center: _____

Mission: To ensure that the pediatric treatment and holding areas are properly assigned, equipped, and

staffed during an emergency.

Immediate (Operational Period 0-2 Hours):

____Receive appointment from Unit Leader.

- _____Read this entire job action sheet.
- _____Obtain briefing from Unit Leader.
- _____Gather external information from Treatment Area Supervisor/ED Charge Nurse regarding:
- _____Number of expected pediatric patients and their conditions.
- ____Current total number of ED patients.
- _____Expected time of patient arrival.
- _____Determine number of available pediatric/crib beds [inpatient] and report to Operations Chief for planning Purposes.
- _____Determine qualified, on-site pediatric staff members.
- _____Determine additional staff needed based on expected patient volume.
- _____Alert Discharge Unit Leader to institute early discharge/transfer of patients.
- _____Initiate Pediatric Response Team as per plan.
- _____Predetermined Physicians for Pediatric Response (Pediatric/Family/Practice/Staff/Community).
- _____Predetermined Nurses (with pediatric experience and/or PALS/ENPC certification).
- _____Predetermined ancillary technicians with pediatric experience.
- ____Others as predetermined.
- _____Determine need for opening of a Pediatric Safe Area (dependent on expected number of
- unaccompanied children during the disaster).
- _____Assign Pediatric Safe Area Coordinator.
- _____Communicate with Operations Chief to assure coordination of non-pediatric ancillary/support personnel are assigned to each area.
- _____Assure preparation of a pre-designated Pediatric Disaster Care Areas.

____Clear area.

- _____Designate each specific area per plan and based on expected casualties.
- _____Assure support personnel are assigned to each area.

⁴⁷ Northwest Healthcare Response Network. (2010). <u>Hospital guidelines for Management of Pediatric Patients in</u> <u>Disasters</u>

_____Assure delivery of medical and non-medical pediatric equipment.

- _____Assure set-up of pediatric equipment by clinical staff.
- _____Receive pediatric patients.
- _____Communicate findings to Treatment Area Supervisor for dissemination as per disaster plan.

_____Following triage of all children, move uninjured/unaffected children to pre-designated Pediatric Safe Area.

Intermediate (Operational Period 2-12 Hours):

_____Assess on-going staffing needs based on patient status report form:

_____Pediatric healthcare personnel (emergency department, inpatient, and OR).

_____Non-pediatric ancillary/support personnel.

_____Pediatric Safe Area Coordinator.

_____Assess additional medical and non-medical equipment/supply needs.

_____Communicate with Pediatric Logistics Unit Leader via Operations Chief to Logistics Chief.

_____Assure delivery of needed supplies to pediatric designated areas.

_____Assess Pediatric Response Team basic needs:

____Food.

____Rest.

_____Psychological support.

_____Obtain status of pediatric casualties (discharges, admissions, transfers, and Pediatric Safe Area) and report to the Operations Chief.

_____Hold information sessions with Public Information Officer as needed.

_____Obtain Child Survey Forms (See Section 5. Security) from all pediatric patient areas.

_____Report any unidentified or unaccompanied pediatric patients to Operations Chief.

Extended (Operational Period Beyond 12 Hours):

_____Debrief Pediatric Response Team and Pediatric Safe Area Coordinator regarding:

_____Summary of Incident.

_____Review of areas of success.

_____Identify opportunities of success.

Pediatric Logistics Unit Leader

You report to:	(Logistics Chief)
Command Center:	
MISSION: To ensure that the pediatric needs are addressed by Procurement,	Transportation, Materials
Supply, and Nutritional Supply during an emergency.	
IMMEDIATE:	
Receive appointment from Logistics Chief.	
Read this entire job action sheet.	
Obtain briefing from Logistics Chief.	
Number of expected pediatric patients and their conditions.	
Timeline for supply needs.	
Depending on the extent of elcs activation, meet with Logistics Chief an	d
Distribute tasks to the following Unit Leaders:	
Procurement Unit Leader:	
Receive briefing from Logistics Chief and Pediatric Logistics Unit Leader	
Initiate Procurement Disaster Call list if warranted.	
Work with vendors for pediatric supplies including hospital vendors and	l community resources
(Local pharmacies and grocery stores) for back-up resources.	
Transportation Unit Leader:	
Receive briefing from Logistics Chief and Pediatric Logistics Unit Leader	
Initiate Transportation Disaster Call list if warranted.	
Count open stretchers, carts, cribs, and wheelchairs for pediatric transp	oortation.
If adult transport equipment options are used, ensure all are appropriate	tely modified and safe for
pediatric transport.	
Report transportation options to Logistics Chief.	
Coordinate delivery of transportation options to designated pediatric and	rea or ED depending on
scenario.	
Designate transporters as needed from CS staff or Labor pool.	
Ensure that all transporters are aware of pediatric safety issues and are	not to leave pediatric
patients unattended (see Section 9 - Transportation for more information	on).

Materials/Supplies Unit Leader:

_____Receive briefing from Logistics Chief and Pediatric Logistics Unit Leader.

_____Initiate Materials/Supplies Disaster Call list if warranted.

_____Collect and coordinate essential pediatric medical equipment and supplies.

Assist in preparation of pre-designated Pediatric Disaster Care Areas with Pediatric Services Unit Leader (See Section 4 - Equipment Recommendations for more information).

_____Assist in preparation of pre-designated Pediatric Safe Area with Pediatric Services Unit Leader (See Section 5 - Security for more information).

Nutritional Supply Unit Leader: (See Section 12 - Pediatric Dietary Needs for additional information)

_____Receive briefing from Logistics Chief and Pediatric Logistics Unit Leader.

_____Initiate Nutritional Call list if warranted.

_____Estimate number of pediatric meals needed for 48 hours (See Section 12 - Pediatric Dietary Needs for more information).

_____Estimate pediatric food/snacks/hydration needs for Pediatric Safe Area.

INTERMEDIATE:

_____Obtain regular updates from Logistics Chief.

_____Assess additional equipment/supply needs for pediatrics.

_____Address pediatric concerns, questions and issues as needed.

EXTENDED:

_____Document actions and decisions, submit reports to Logistics Chief.

_____Participate in debriefing.

_____Review areas of success.

_____Identify opportunities for improvement.

_____Thank and congratulate team.

Medical/Technical Specialist - Pediatric Care

Mission: Advise the Incident Commander or Operations Section Chief, as assigned, on issues related to
pediatric emergency response.

Date:	_ Start:	End:	Position Assigned to: _		
Initial:					
Position Reports to:		Signature:			
Hospital Comman	d Center (HC	C) Location:		_Telephone:	

Fax: _____ Other Contact Info: _____ Radio Title: _____

Immediate (Operational Period 0-2 Hours)	Time	Initial
Receive appointment and briefing from the Incident Commander or Operations Section Chief, as assigned.		
Read this entire Job Action Sheet and review incident management team chart (HICS Form 207). Put on position identification.		
Notify your usual supervisor of your elcs assignment.		
Document all key activities, actions, and decisions in an Operational Log (HICS Form 214) on a continual basis.		
Meet with the Command staff, Operations and Logistics Section Chiefs and the Medical Care Branch Director to plan for and project pediatric patient care needs.		
Communicate with the Operations Section Chief to obtain: Type and location of incident. Number and condition of expected pediatric patients. Estimated arrival time to facility. Unusual or hazardous environmental exposure.		
Request staffing assistance from the Labor Pool and Credentialing Unit Leader, as needed, to assist with rapid research as needed to determine hazard and safety information critical to treatment and decontamination concerns for the pediatric victims.		
Provide pediatric care guidance to Operation Section Chief and Medical Care Branch Director based on incident scenario and response needs.		
Ensure pediatric patient identification and tracking practices are being followed.		
Communicate and coordinate with Logistics Section Chief to determine pediatric: Medical care equipment and supply needs. Medications with pediatric dosing. Transportation availability and needs (carts, cribs, wheel chairs, etc.)		
Communicate with Planning Section Chief to determine pediatric: Bed availability. Ventilators. Trained medical staff (MD, RN, PA, NP, etc.) Additional short and long range pediatric response needs.		
Ensure that appropriate pediatric standards of care are being followed in all clinical areas.		
Immediate (Operational Period 0-2 Hours)	Time	Initial
Collaborate with the PIO to develop media and public information messages specific to pediatric care recommendations and treatment.		

Participate in briefings and meetings and contribute to the Incident Action Plan, as requested.		
Document all communications on an Incident Message Form (ICS Form 213). Provide a copy of the Incident Message Form to the Documentation Unit.		
Intermediate (Operational Period 2-12 Hours)	Time	Initial
Continue to communicate and coordinate with Logistics Section Chief the availability of pediatric equipment and supplies.		
Coordinate with Logistics and Planning Section Chiefs to expand/create a Pediatric Patient Care area, if needed.		
Continue to monitor pediatric care activities to ensure needs are being met.		
Meet regularly with the Operations Section Chief and Medical Care Branch Director for updates on the situation regarding hospital operations and pediatric needs.		
Extended (Operational Period Beyond 12 Hours)	Time	Initial
Ensure the provision of resources for pediatric mental health and appropriate incident education for children and families.		
Continue to ensure pediatric related response issues are identified and effectively managed.		
Continue to meet regularly with the Operations Section Chief or Incident Commander, as appropriate, for situation status updates and to communicate critical pediatric care issues.		
Ensure your physical readiness through proper nutrition, water intake, rest and stress management techniques.		
Observe all staff and volunteers for signs of stress and inappropriate behavior. Report concerns to the Mental Health Unit Leader. Provide for staff rest periods and relief.		
Upon shift change, brief your replacement on the status of all ongoing operations, issues and other relevant incident information.		
Demobilization/System Recovery	Time	Initial
Ensure return/retrieval of equipment and supplies and return all assigned incident command equipment.		
Upon deactivation of your position, ensure all documentation and Operational Logs (HICS Form 214) are submitted to the Operations Section Chief or Incident Commander, as appropriate.		
Upon deactivation of your position, brief the Operations Section Chief or Incident Commander, as appropriate, on current problems, outstanding issues and follow-up requirements.		
Submit comments to the Operations Section Chief or Incident Commander, as appropriate, for discussion and possible inclusion in the after-action report; topics include: Review of pertinent position descriptions and operational checklists. Recommendations for procedure changes. Section accomplishments and issues.		
Participate in stress management and after-action debriefings. Participate in other briefings and meetings as required.		

INCIDENT COMMANDER

Mission: Organize and direct the Hospital Command Center (HCC). Give overall strategic direction for hospital incident management and support activities, including emergency response and recovery. Authorize total facility evacuation if warranted.

Date:	Start:	End:	Position Assigned to:	
Signature:			Initial:	
Hospital Command Center (HCC) Location:			Telephone:	
Fax:	Other Co	ontact Info:		Radio Title:

Time	Initial	Immediate (Operational Period 0-2 Hours)
		Assume role of Incident Commander and activate the Hospital Incident Command System (HICS).
		Read this entire Job Action Sheet and put on position identification.
		Notify your usual supervisor and the hospital CEO, or designee, of the incident, activation of HICS and your ICS assignment.
		 Initiate the Incident Briefing Form (ICS Form 201) and include the following information: Nature of the problem (incident type, victim count, injury/illness type, etc.) Safety of staff, patients and visitors. Risks to personnel and need for protective equipment. Risks to the facility. Need for decontamination. Estimated duration of incident. Need for modifying daily operations. HICS team required to manage the incident. Need to open up the HCC. Overall community response actions being taken. Status of local, county, and state Emergency Operations Centers (EOC).
		Contact hospital operator and initiate hospital's emergency operations plan.
		Appoint Public Information Officer, Security Officer, and Liaison Officer. Determine need for and appropriately appoint Command Staff and Section Chiefs; distribute corresponding Job Action Sheets and position identification. Assign or complete the Branch Assignment List (ICS Form 204), as appropriate.
		Announce a status/action plan meeting of all Section Chiefs and Medical Staff Director to be held in 5-10 minutes. Brief all appointed staff of the nature of the problem, immediate critical issues and initial plan of action. Designate time for next briefing.
Time	Initial	Immediate (Operational Period 0-2 Hours)
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		Assign one or more clerical personnel from current staffing or make a request for staff to the Labor Pool and Credentialing Unit Leader, if activated, to function as the Hospital Command Center (HCC) recorder(s).
		Distribute the Section Personnel Time Sheet (ICS Form 252) to Command Staff and Medical/Technical Specialist assigned to Command, and ensure time is recorded appropriately. Submit the Section Personnel Time Sheet to the Finance/Administration Section's Time Unit Leader at the completion of a shift or at the end of each operational period.
		Initiate the Incident Action Plan Safety Analysis (ICS Form 261) to document hazards and define mitigation.
		 Receive status reports from and develop an Incident Action Plan with Section Chiefs and Command Staff to determine appropriate response and recovery levels. During initial briefing/status reports, discover the following: If applicable, receive initial facility damage survey report from Logistics Section Chief and evaluate the need for evacuation. If applicable, obtain patient census and status from Planning Section Chief, and request a hospital-wide projection report for 4, 8, 12, 24 & 48 hours from time of incident onset. Adjust projections as necessary. Identify the operational period and HCC shift change. If additional beds are needed, authorize a patient prioritization assessment for the purposes of designating appropriate early discharge. Ensure that appropriate contact with outside agencies has been established and facility status and resource information provided through the Liaison Officer. Seek information from Section Chiefs regarding current "on-hand" resources of medical equipment, supplies, medications, food, and water as indicated by the incident. Review security and facility surge capacity and capability plans as appropriate.
		Document all key activities, actions, and decisions in an Operational Log (ICS Form 214) on a continual basis.
		Document all communications (internal and external) on an Incident Message Form (ICS Form 213). Provide a copy of the Incident Message Form to the Documentation Unit.

Time	Initial	Intermediate (Operational Period 2-12 Hours)			
		Authorize resources as needed or requested by Section Chiefs.			
	 Designate regular briefings with Command Staff/Section Chiefs to identify Update of current situation/response and status of other area h emergency management/local emergency operation centers, at health officials and other community response agencies. Deploying a Liaison Officer to local EOC. Deploying a PIO to the local Joint Information Center. Critical facility and patient care issues. Hospital operational support issues. Risk communication and situation updates to staff. Implementation of hospital surge capacity and capability plans. Ensure patient tracking system established and linked with app outside agencies and/or local EOC. Family Support Center operations. Public information, risk communication and education needs. Appropriate use and activation of safety practices and procedur Enhanced staff protection measures as appropriate. Media relations and briefings. Staff and family support. Development, review, and/or revision of the Incident Action Plan, or elements with the procedure and the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or elements with the protection of the Incident Action Plan, or				
		Consult with section chiefs on need for staff, physician and volunteer responders and food and shelter. Oversee and approve revision of the Incident Action Plan developed by the Planning Section Chief. Ensure that the approved plan is communicated to all Command Staff and Section Chiefs.			
		Communicate facility and incident status and the Incident Action Plan to CEO or designee, or to other executives and/or Board of Director members on a need-to-know basis.			
Time	Initial	Extended (Operational Period Beyond 12 Hours)			
		Ensure staff, patient, and media briefings are being conducted regularly. Approve media releases submitted by PIO.			
		Ensure your physical readiness, and that of the Command Staff and Section Chiefs, through proper nutrition, water intake, rest periods and relief, and stress management techniques. Provide for staff rest periods and relief.			
		Observe all staff and volunteers for signs of stress and inappropriate behavior. Report concerns to the Employee Health & Well-Being Unit Leader.			

Review and revise the Incident Action Plan Safety Analysis (ICS Form 261) and implement correction or mitigation strategies.
Evaluate/re-evaluate need for deploying a Liaison Officer to the local EOC.
Evaluate/re-evaluate need for deploying a PIO to the local Joint Information Center.
Ensure incident action planning for each operational period and a reporting of the Incident Action Plan at each shift change and briefing.
Evaluate overall hospital operational status, and ensure critical issues are addressed.
Review /revise the Incident Action Plan with the Planning Section Chief for each operational period.
Ensure continued communications with local, regional, and state response coordination centers and other HCCs through the Liaison Officer and others.
Upon shift change, brief your replacement on the status of all ongoing operations, critical issues, relevant incident information and Incident Action Plan for the next operational period.

Demobilization/System Recovery

- Assess the plan developed by the Demobilization Unit Leader for the gradual demobilization
 of emergency operations according to the progression of the incident and facility/hospital
 status. Demobilize positions and return personnel to their normal jobs as appropriate until
 the incident is resolved and there is a return to normal operations.
- Briefing staff, administration, and Board of Directors.
- Approve announcement of "ALL CLEAR" when incident is no longer a critical safety threat or can be managed using normal hospital operations.
- Ensure outside agencies are aware of status change.
- Declare hospital/facility safety.
- Ensure demobilization of the HCC and restocking of supplies, as appropriate including:
 - Return of borrowed equipment to appropriate location.
 - Replacement of broken or lost items.
 - Cleaning of HCC and facility.
 - Restock of HCC supplies and equipment;
 - Environmental clean-up as warranted.
- Ensure that after-action activities are coordinated and completed including:
 - Collection of all HCC documentation by the Planning Section Chief.
 - Coordination and submission of response and recovery costs, and reimbursement documentation by the Chiefs.
 - Conduct staff debriefings to identify accomplishments, response and improvement issues.
 - Identify needed revisions to the Emergency Management Plan, Emergency Operations Plan, Job Action Sheets, operational procedures, records, and/or other related items.
 - Writing the facility/hospital After Action Report and Improvement Plan.

- Participation in external meetings and other post-incident discussion and after-action activities.
- Post-incident media briefings and facility/hospital status updates.
- Post-incident public education and information.
- Stress management activities and services for staff.

PEDIATRIC SAFE AREA (PSA) COORDINATOR

You report to:	(PEDIATRIC SERVICES UNIT LEADER)
Command Center location	Phone number

Mission: To ensure that the pediatric safe area is properly staffed and stocked for implementation during an emergency, and to insure the safety of children requiring the PSA until an appropriate disposition can be made.

Immediate:

- _____ Receive appointment from Pediatric Services Unit Leader.
- _____ Read this entire job action sheet.
- _____ Obtain briefing from Pediatric Services Unit Leader.
- _____ Ascertain that the pre-designated pediatric safe area is available.
- _____ If not immediately available, take appropriate measures to make the area available as soon as possible.
- _____ Gather information about how many pediatric persons may present to the area.
- _____ Make sure that enough staff is available for PSA.
- _____ Make sure that enough security staff is available for PSA.
- _____ Make sure that there is adequate communication in PSA.
- _____ Make sure that there is a sign in/out log for PSA.
- _____ Make sure that all items in PSA checklist have been met; if there are any deficiencies, address them as soon as possible and report them the PSUL.

Intermediate:

- _____ Ascertain the need for ongoing staff for PSA.
- _____ Maintain registry of children in PSA as they arrive or are released to appropriate adult.
- _____ Determine estimated length of time for the expected operational period of PSA.
- _____ Maintain communication with Pediatric Services Unit Leader for planning needs.
- _____ Determine if there are any medical or non-medical needs specifically needed by pediatric persons in PSA.
- _____ Prepare an informational session for the pediatrics persons in the PSA.
- _____ Prepare to make arrangements for sleeping capacities if needed.
- _____ Ascertain if there will be any additional needs required for this incident (volunteers, staff, security, and equipment).
- _____ Make sure that pediatric persons have the appropriate resources (food, water, medications, ageappropriate reading materials) and entertainment for their stay.
- _____ Report frequently to Pediatric Services Unit Leader concerning status of PSA.

Extended:

- _____ Make sure that PSA staff have enough breaks, water, and food during their working periods.
- _____ Coordinate with Psychological Support for ongoing evaluations of mental health of volunteers and pediatric persons in case of need for psychosocial resources.
- _____ Document all action/decisions with a copy sent to the Pediatric Services Unit Leader.

Pediatric Safe Area Checklist

Yes	No	Item
		Needle boxes are at least 48 inches off the floor?
		Do the windows open?
		Are the windows locked?
		Do you have window guards?
		Plug-in covers or safety wiring for electrical outlets?
		Strangulation hazards removed (cords, wires, tubing, curtain/blinds drawstrings)?
		Can you contain children in this area (consider stairwells, elevators, doors)?
		Do you have distractions for the children (age and gender appropriate videos, games, toys)?
		Poison-proof the area (cleaning supplies, Hemoccult developer, choking hazards, cords should be removed or locked)
		Are your med carts and supply carts locked?
		Do you need to create separate areas for various age groups?
		Have you conducted drills of the plans for this area with all relevant departments?
		Do you have a plan for security for the unit?
		Do you have a plan to identify the children?
		Do you have a plan for assessing mental health needs of these children?
		Are there any fans or heaters in use? Are they safe?
		Do you have an onsite or nearby daycare? Could they help you?
		Do you have enough staff to supervise the number of children (Younger children will require more staff)?
		Do you have a sign-in, sign-out sheet for all children and adults who enter the area?
		Will children need to be escorted away from safe area to bathrooms?
		Are age-appropriate meals and snacks available for children?
		Are various-sized diapers available?
		Does the PSA have hand hygiene supplies?
		Are there cribs, cots or beds available for children who need to sleep?
		Does the PSA have a policy/protocol for handling minor illness in children (Tylenol dosing, administering routine meds, etc.)?
		Do you have an evacuation plan?

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Appendix V⁴⁸

⁴⁸ <u>https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Children-and-Disasters/Documents/Checklist_ED_Aug2010.pdf#search=ED%20Checklist</u>

Guidelines in the Em This checklist is based on Emergency Physicians, an "Guidelines for Care of Child http://aappolicy.aappublications determine if your emergency depart	s for Care of Children ergency Department the American Academy of Pediatrics, the American College of d the Emergency Nurses Association 2009 joint policy statement then in the Emergency Department," which can be found online at s.org/cgi/reprint/pediatrics; 124/4/1233.pdf. Use the checklist to the timent (ED) is prepared to care for children.
Appointed Pediatric Physician and Nurse Coordinator	Guidelines for QI/PI in the ED, Continued
Dedictric obvicion coordinator is a precipitet in padictice oppor	Clinical and Professional Competency
 Prediatic privacial coordinator is a specialist in pediatics, entergency medicine, or family medicine, appointed by the ED medical director, who through training, clinical experience, or focused continuing medical education demonstrates competence in the care of children in emergency settings including resuscitation. See policy statement for details. Pediatric Nurse coordinator is a registered nurse (RN), appointed by the ED nursing director, who possesses special interest, knowledge, and skill in the emergency medical care of children. See policy statement for details. Physicians, Nurses and Other Healthcare Providers Who Staff the ED Physicians who staff the ED have the necessary skill, knowledge, and training in the emergency evaluation and treatment of children of all ages who may be brought to the ED, consistent with the services provided by the hospital. Nurses and other ED health care providers have the necessary skill, knowledge, and training in providing emergency care to children of all ages who may be brought to the ED, consistent 	Below are the potential areas for the development of pediatric competency and professional evaluations. Triage Illness and injury assessment and management Pain assessment and treatment, including sedation and analgesia Airway management Vascular access Critical care monitoring Neonatal and pediatric resuscitation Trauma care Burn care Mass-casualty events Patient- and family-centered care Medication delivery and equipment safety Training and communication Mechanisms are in place to monitor professional performance, credentials, continuing education, and clinical commendencies
 with the services offered by the hospital. Baseline and periodic competency evaluations completed for all ED alinical staff, including a busicious are associated and 	Guidelines for Improving Pediatric Patient Safety
include evaluation of skills related to neonates, infants, chil- dren, adolescents, and children with special health care needs. Competencies are determined by each institution's medical staff privileges policy.	The delivery of pediatric care should reflect an awareness of unique pediatric patient safety concerns and are included in the following policies or practices.
Guidelines for QI/PI in the ED	 Children are weighed in kilograms. Weights are recorded in a prominent place on the medical record.
 The pediatric patient care-review process is integrated into the ED QI/PI plan. Components of the process interface with out-of-hospital, ED, trauma, inpatient pediatric, pediatric critical care, and hospital-wide QI or PI activities. 	 For children who are not weighed, a standard method for estimating weight in kilograms is used (e.g., a length-based system). Infants and children have a full set vital signs recorded (temperature, heart rate, respiratory rate) in the medical record. Blood pressure and pulse oximetry monitoring are available for children of all ages on the basis of illness and injury severity.

- A process for identifying age-specific abnormal vital signs and notifying the physician of these is present.
- Processes in place for safe medication storage, prescribing, and delivery that includes precalculated dosing guidelines for children of all ages.
- Infection-control practices, including hand hygiene and use of personal protective equipment, are implemented and monitored.
- Pediatric emergency services are culturally and linguistically appropriate
- ED environment is safe for children and supports patientand family-centered care.
- Patient-identification policies meet Joint Commission standards.
- Policies for the timely reporting and evaluation of patient safety events, medical errors, and unanticipated outcomes are implemented and monitored.

Guidelines for ED Policies, Procedures, and Protocol

Policies, procedures, and protocols for the emergency care of children should be developed and implemented in the areas listed below. These policies may be integrated into overall ED policies as long as pediatric specific issues are addressed.

- Illness and injury triage
- O Pediatric patient assessment and reassessment
- Documentation of pediatric vital signs and actions to be taken for abnormal vital signs
- Immunization assessment and management of the underimmunized patient
- Sedation and analgesia for procedures, including medical imaging
- Consent including when parent or legal guardian is not immediately available
- Social and mental health issues
- Physical or chemical restraint of patients
- Child maltreatment and domestic violence reporting criteria, requirements, and processes.
- Death of the child in the ED
- Do not resuscitate (DNR) orders
- Families are involved in patient decision-making and medication safety processes
- Family presence during all aspects of emergency care
- Patient, family, and caregiver education
- Discharge planning and instruction
- Bereavement counseling
- Communication with the patient's medical home or primary care provider
- Medical imaging policies that address pediatric age- or weight-based appropriate dosing for studies that impart radiation consistent with ALARA (as low as reasonably achievable) principles.
- All-hazard disaster-preparedness plan that addresses the following pediatric issues:

- Availability of medications, vaccines, equipment, and trained providers for children
- Pediatric surge capacity for injured and non-injured children
- Decontamination, isolation, and quarantine of families and children
- Minimization of parent-child separation (includes pediatric patient tracking, and timely reunification of separated children with their family)
- Access to specific medical and mental health therapies, and social services for children
- Disaster drills which includes a pediatric mass casualty incident at least every 2 years
- Care of children with special health care needs
- Evacuation of pediatric units and pediatric subspecialty units.
- Interfacility transfer policy defining the roles and responsibilities of the referring facility and referral center.
- Transport plan for delivering children safely and in a timely manner to the appropriate facility that is capable of providing definitive care.
- Process for selecting the appropriate care facility for pediatric specialty services not available at the hospital (may include critical care, reimplantation or digits or limbs, trauma and burn care, psychiatric emergencies, obstetric and perinatal emergencies, child maltreatment, rehability for recovery from critical conditions).
- Process for selecting an appropriately staffed transport service to match the patient's needs
- Process for patient transfer (including obtaining informed consent)
- Plan for transfer of patient information (medical record, copy of signed transport consent), personal belongings, directions and referral institution information to family'
- Process for return transfer of the pediatric patient to the referring facility as appropriate.

Guidelines for ED Support Services

- Radiology capability must meet the needs of the children in the community served
- A process for referring children to appropriate facilities for radiological procedures that exceed the capability of the hospital is established.
- A process for timely review, interpretation, and reporting of medical imaging by a qualified radiologist is established.
- Laboratory capability must meet the needs of the children in the community served, including techniques for small sample sizes
- A process for referring children or their specimens to appropriate facilities for laboratory studies that exceed the capability of the hospital is established

Produced by the AAP, the EMSC National Resource Center, and Children's National Medical Center

buidelines for Equipment, for the Care of Dodiatric D	Supplies, and Medications atients in the En	Equipment/Supplies: Monitoring	g Equipment
 Pediatric equipment, supplie priate for children of all ages clearly labeled, and logically the medication, equipment, a ED staff is educated on the I Daily method in place to veri tion of equipment and suppli Medication chart, length-bas other evolutions in mediation chart, length-bas 	s, and medications are appro- and sizes, easily accessible, organized. See list below for and supplies. ocation of all items. fy the proper location and func- es. ed tape, medical software, or	Blood pressure cuffs Neonatal Infant Child Adult-arm Adult-thigh Doppler ultrasonography devices	 Electrocardiography mortor/defibrillator with pediatric and adult capabilitie including pads/paddles Hypothermia thermomete Pulse oximeter with pediatric and adult probes Continuous end-tidal COmonitoring device
resuscitation equipment and	proper dosing of medications.	Equipment/Supplies: Vascular A	Access Supplies
Medications		Arm boards	 IV administration sets with calibrated chambers
Atropine Adenosine Amiodarone	 Topical, oral, and paren- teral analgesics Antimicrobial agents (par- 	 child adult 	and extension tubing and or infusion devices with
 Antiemetic agents Calcium chloride 	enteral and oral) Anticonvulsant medications	Catheter-over-the-needle device	ability to regulate rate and volume of infusate
 Dextrose (D10W, D50W) Epinephrine (1:1000; 1:10 000 solutions) 	 Antidotes (common antidotes should be acces- sible to the ED) 	15 gauge 16 gauge	Umbilical vein catheters 3.5F 5.0E
 Lidocaine Magnesium sulfate Naloxone hydrochloride 	Antipyretic drugs Bronchodilators Corticosteroids	18 gauge	Central venous catheters
 Procainamide Sodium bicarbonate (4.2%, 8.4%) 	 Inotropic agents Neuromuscular blockers Sedatives 	 20 gauge 21 gauge 22 gauge 	 4.0F 5.0F 6.0F
Activated charcoal	Vaccines Vasopressor agents	23 gauge 24 gauge	7.0F Intravenous solutions
Equipment/Supplies: General E	Equipment	Intraosseous needles or device	 Normal saline Dextrose 5% in normal
 Patient warming device Intravenous blood/fluid 	 Tool or chart that incorporates weight (in 	Adult	Saline O Dextrose 10% in water
Waint device	kilograms) and length to determine equip-	Equipment/Supplies: Fracture-M	lanagement Devices
grams (not pounds)	 Age appropriate pain scale-assessment tools 	Extremity splints Femur splints, pediatric size Femur splints, adult sizes	'S
		 Spine-stabilization devices app ages 	propriate for children of all
2.27		American Aca of Pediatrics	

Equipment/Supplies: Respirat	tory	Equipment/Supplies: Respiratory, Continued		
Endotracheal tubes		() infant	Nanagastria tukasu	
O uncuffed 2.5 mm	Oronbanmaeal ainuaus	O child	ivasogastric tubes:	
O uncuffed 3.0 mm	oropharyngear all ways	O critic	O Infant, 8F	
Cuffed or upgiffed 2 F mm		O aduit	Child, 10F	
Called of unculled 3.5 mm	O size 1	Classical	O adult, 14-18F	
Culled of unculled 4.0 mm	O size z	Clear oxygen masks		
Culled or unculled 4.5 mm	Size 3	Standard infant	Laryngeal mask airway	
Cutted or uncutted 5.0 mm	O size 4	Standard child	O size: 1	
Cutted or uncutted 5.5 mm	O size 5	Standard adult	O size: 1.5	
Cuffed 6.0 mm	territoria de la construcción de la constru	 partial nonrebreather 	O size: 2	
Cutted 6.5 mm	Stylets for endotracheal tubes	infant	O size: 2.5	
Cuffed 7.0 mm	pediatric	 nonrebreather child 	O size: 3	
Cuffed 7.5 mm	adult	nonrebreather adult	O size: 4	
Cuffed 8.0 mm			O size: 5	
	Suction catheters	Nasal cannulas		
Feeding tubes	O infant	infant		
○ 5F	O child	O child		
0 8F	adult	O adult		
Laryngoscope blades	Tracheostomy tubes	Equipment/Supplies: Specializ	ed Pediatric Travs or Kits	
Straight: 0	O 2.5 mm			
Straight: 1	○ 3.0 mm	 Lumbar-puncture tray (includ 	ing infant 22 gauge pediatric	
Straight: 2	3.5 mm	-22 gauge, and adult 18-21 d	auge), lumbar puncture needles	
Straight: 3	O 4.0 mm		jengen inder parterare neodice	
O curved: 2	○ 4.5 mm	O Supplies/kit for patients with	difficult airway (supraclottic	
Curved: 3	○ 5.0 mm	airways of all sizes Jarvnoea	I mask airway needle cricothuro	
	○ 5.5 mm	tomy supplies, surgical cricot	hypotomy kit)	
Laryngoscope handle		inity supprise, surgical criter	informing kity	
	Yankauer suction tip	O Tube thoracostomy trav		
Magill forceps	And the rest of the termination of the	- Tube more costonly day		
O pediatric	Bag-mask device, self inflating	Chest tubes to include:		
O adult	O infant: 450 ml	infant: 10.12E		
1000	O adult: 1000 ml	O child: 16 24 E		
Nasopharyngeal airways		O adult: 29 40 E		
O infant	Masks to fit han-mask deuloo	3 adult: 20-40 F		
Ochild	adaptor	O No. A State State State	and a strange income processing	
O adult	Oneonatal	an infant (umbilical clamp, sc	g equipment for resuscitation of issors, bulb syringe, and towel)	
		 Urinary catheterization kits ar (6F–22F) 	nd urinary (indwelling) catheters	







Acronyms & Mnemonics

AAP – American Academy of Pediatrics

ACS – Alternate Care Site

AMPLE – Allergies, Medications, Previous illness, Past Medical History, Last Meal or Fluid Intake,

Incidents/Environment Related to the Injury

AVPU – Alert, Verbal, Pain, Unresponsive

BETP – Bureau of EMS, TRAUMA & PREPAREDNESS

BSF – Burn Surge Facility

CBC – Complete Blood Count

CDC – Centers for Disease Control and Prevention

CHEMPACK Resources – a CDC-supplied, state manage supplemental source of pre-positioned nerve agent/organophosphate antidotes and associated pharmaceuticals

CMS - Circulation, Movement, Sensation

CRC – Clinical Review Committee

CTS – Casualty Transport System

CXR – Chest X-Ray

DEPR – Division

DUMBELS – Diarrhea, Urination, Miosis, Bronchoconstriction, Bronchorrhea, Emesis, Lacrimation, Salivation

ED – Emergency Department

EMAC – Emergency Management Assistance Compact

EMResource – EMResource is an interoperable emergency communications solution that streamlines communications required to prepare for, respond to, and recover from individual and large-scale incidents across the entire emergency services spectrum. EMResource facilitates monitoring of healthcare assets, emergency department capacity, behavioral health and dialysis bed status.

EMSC – Emergency Medical Services for Children

EMS – Emergency Medical Services

EOC – Emergency Operations Center

ETT – Endo Tracheal Tube

FEMA – Federal Emergency Management Agency

FICEMS – Federal Interagency Committee on EMS

GCS – Glasgow Coma Scale

GLHP – Great Lakes Healthcare Partnership

HCC – Hospital Command Center

HCO – Healthcare Organization

HHS - Health and Human Services

IC – Incident Command or Incident Commander

ICS – Healthcare Organization

ICU – Incident Command System

LSI – Life Saving Interventions

MASS MEDICAL EVENT - defined as a situation that stresses the first responders (such as firefighters and emergency medical technicians/paramedics) as well the healthcare system in general.

MASS Triage – Move, Assess, Sort, Send

MCI – Mass Casualty Incident

MDHHS – Michigan Department Health & Human Services

MEDDRUN – Michigan Emergency Drug Delivery and Resource Utilization Network

MI-MORT – Michigan Mortuary Response Team

MI-TESA – Michigan Transportable Emergency Surge Assistance Medical Unit

MMFT – Mobile Medical Field Teams

MOU – Memorandum of Understanding

MSCC – Medical Surge Capacity and Capability

MUCC – Model Uniform Core Criteria

NCMEC – National Center for Missing and Exploited Children

NG-Naso-gastric

NPO – Nothing by mouth

PAT – Pediatric Assessment Triangle

PELOD – Pediatric Logistic Organ Dysfunction

PO - Oral

PSA – Pediatric Safe Area

RMCC – Regional Medical Coordination Center

SALT Triage - Sort, Assess, Life-saving Interventions, Treatment & Transport

SAMHSA – Substance Abuse and Mental Health Services Administration

SAMPLE History – Signs/Symptoms, Allergies, Medications, Past Medical Problems, Last food or liquid

taken, Event leading to the illness or injury

SBCC – State Burn Coordinating Center

SBP – Systolic Blood Pressure

SNS – Strategic National Stockpile

SOFA score – Sequential Organ Failure Assessment

SRAC – Scarce Resource Allocation Committee

START Triage – Simple Triage and Rapid Treatment

TBSA – Total Body Surface Area

TICLS – Tone, Interactivity, Consolability, Look/gaze, Speech/cry

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PRQC DISASTER BUNDLE - DISASTER DOMAIN 2, 3, 4 Local Coalition Building, Pediatric Surge Capacity and Essential Pediatric Resources

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Hospital emergency response checklist

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An *all-hazar<u>ds</u>* tool for hospital administrators and emergency managers

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Hospital emergency response checklist

An *all-hazards* tool for hospital administrators and emergency managers

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Abstract

Hospitals play a critical role in providing communities with essential medical care during all types of disaster. Depending on their scope and nature, disasters can lead to a rapidly increasing service demand that can overwhelm the functional capacity and safety of hospitals and the health-care system at large. The World Health Organization Regional Office for Europe has developed the *Hospital emergency response checklist* to assist hospital administrators and emergency managers in responding effectively to the most likely disaster scenarios. This tool comprises current hospital-based emergency management principles and best practices and integrates priority action required for rapid, effective response to a critical event based on an all-hazards approach. The tool is structured according to nine key components, each with a list of priority action to support hospital managers and emergency planners in achieving: (1) continuity of essential services; (2) well-coordinated implementation of hospital operations at every level; (3) clear and accurate internal and external communication; (4) swift adaptation to increased demands; (5) the effective use of scarce resources; and (6) a safe environment for health-care workers. References to selected supplemental tools, guidelines and other applicable resources are provided. The principles and recommendations included in this tool may be used by hospitals at any level of emergency preparedness. The checklist is intended to complement existing multisectoral hospital emergency management plans and, when possible, augment standard operating procedures during non-crisis situations.

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Keywords

EMERGENCY MEDICAL SERVICES EMERGENCY SERVICE, HOSPITAL DELIVERY OF HEALTH CARE HOSPITAL PLANNING

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Glossary

Capacity

The combination of all the strengths, attributes and resources available within an organization that can be used to achieve agreed goals (1).

Command and control

The decision-making system responsible for activating, coordinating, implementing, adapting and terminating a preestablished response plan (2).

Contingency planning

A process that analyses potential events or emerging situations that might threaten society or the environment and establishes arrangements that would enable a timely, effective and appropriate response to such events should they occur. The events may be specific, categorical, or all-hazard. Contingency planning results in organized and coordinated courses of action with clearly identified institutional roles and resources, information processes and operational arrangements for specific individuals, groups or departments in times of need (1).

Critical event

Any event in connection with which a hospital finds itself unable to deliver care in the customary fashion or to an accepted standard, event resulting in a mismatch of supply (capacity, resources, infrastructure) and demand (patients), and requiring the hospital to activate contingency measures to meet demand.

Disaster

Any event or series of events causing a serious disruption of a community's infrastructure – often associated with widespread human, material, economic, or environmental loss and impact, the extent of which exceeds the ability of the affected community to mitigate using existing resources (1).

Emergency

A sudden and usually unforeseen event that calls for immediate measures to mitigate impact

(3). Emergency response plan

A set of written procedures that guide emergency actions, facilitate recovery efforts and reduce the impact of an emergency event.

Incident action plan

A document that guides operational activities of the Incident Command System during the response phase to a particular incident. The document contains the overall incident objectives and strategy, general tactical actions, and supporting information to enable successful completion of objectives (4).

Incident command group

A multidisciplinary body of the incident command system, which provides the overall technical leadership and oversight for all aspects of crisis management, coordinates the overall response, approves all action, response and mitigation plans, and serves as an authority on all activities and decisions.

Incident command system

The designated system of command and control, which includes a combination of facilities, equipment, personnel, procedures, and means of communication, operating within a common organizational structure designed to aid in the management of resources for emergency incidents (4).

Memorandum of understanding

A formal document embodying the firm commitment of two or more parties to an undertaking; it sets out the general principles of the commitment but falls short of constituting a detailed contract or agreement (5).

Mutual-aid agreement

An agreement between agencies, organizations and jurisdictions, which provides a mechanism whereby emergency assistance in the form of personnel, equipment, materials and other associated services can be obtained quickly. The primary objective of the agreement is to facilitate the rapid, short-term deployment of emergency support prior to, during and after an incident (6).

Policy

A formally advocated statement or understanding adopted to direct a course of action, including planning, command and control, preparedness, mitigation, response and recovery (7).

Preparedness

The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent, or current hazardous events or conditions (1).

Recovery

Restoring or improving the functions of a facility affected by a critical event or disaster through decisions and action taken after the event (8).

Resources

The personnel, finances, facilities and major equipment and supply items available or potentially available for assignment to incident operations.

Response

The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety, and meet the basic subsistence needs of the people affected (1).

Risk assessment

A methodology for determining the nature and extent of risk, which involves analysing potential hazards and evaluating their impact in the context of existing conditions of vulnerability that, together, could harm exposed people, property, services, livelihoods, and the environment on which they depend (1).

Standard operating procedure

A complete reference document or operations manual that describes the purpose of a preferred method of performing a single function or a number of interrelated functions in a uniform manner and provides information about the duration of the operation, the authorities of those involved and other relevant details. *(6)*.

Surge capacity

The ability of a health service to expand beyond normal capacity to meet an increased demand for clinical care (9).

Triage

The process of categorizing and prioritizing patients with the aim of providing the best care to as many patients as possible with the available resources (2).

Introduction

During times of disaster, hospitals play an integral role within the health-care system by providing essential medical care to their communities. Any incident that causes loss of infrastructure or patient surge, such as a natural disaster, terrorist act, or chemical, biological, radiological, nuclear, or explosive hazard, often requires a multijurisdictional and multifunctional response and recovery effort, which must include the provision of health care. Without appropriate emergency planning, local health systems can easily become overwhelmed in attempting to provide care during a critical event. Limited resources, a surge in demand for medical services, and the disruption of communication and supply lines create a significant barrier to the provision of health care. To enhance the readiness of health facilities to cope with the challenges of a disaster, hospitals need to be prepared to initiate fundamental priority action. This document provides an *all-hazards* list of key actions to be considered by hospitals in responding to any disaster event.

Hospitals are complex and potentially vulnerable institutions, dependent on external support and supply lines. In addition, with the current emphasis on cost-containment and efficiency, hospitals frequently operate at near capacity. During a disaster, an interruption of standard communications, external support services, or supply delivery can disrupt essential hospital operations and even a modest unanticipated rise in admission volume can overwhelm a hospital beyond its functional reserve. Employee attrition and shortage of critical equipment and supplies can reduce access to needed care and occupational safety. Even for a well-prepared hospital, coping with the consequences of a disaster is a complex challenge. Amid these challenges and demands, the systematic implementation of priority actions can help facilitate a timely and effective hospital-based response.

In defining the all-hazards priority action required for a rapid, effective response to a critical event, this checklist aims to support hospital managers and emergency planners in achieving the following: (1) the continuity of essential services; (2) the well-coordinated implementation of hospital operations at every level; (3) clear and accurate internal and external communication; (4) swift adaptation to increased demands; (5) the effective use of scarce resources; and (6) a safe environment for health-care workers. The tool builds on previous work by the World Health Organization to assist hospitals with pandemic management [Hospital preparedness checklist for pandemic influenza: focus on pandemic (H1N1) 2009].

The tool is structured according to nine key components, each with a list of priority actions. Hospitals experiencing an excessive demand for health services due to a critical event are strongly encouraged to be prepared to implement each action effectively and as soon as it is required. The "recommended reading" listed for each component includes selected tools, guidelines and other resources, which are considered relevant for that component.

Hospital emergency management is a continuous process requiring the seamless integration of planning and response efforts with local and national programmes. The principles and recommendations outlined in this tool are generic, applicable to a range of contingencies and based on an all-hazards approach. The checklist is intended to complement existing multisectoral hospital emergency-management plans and, when possible, augment standard operating procedures during non-crisis situations.

Hospital emergency response checklist

An *al-hazards* tool for hospital administrators and emergency managers

The following tool is designed to assist hospital administrators and emergency managers to respond effectively to disasters of all types.

Health facilities experiencing an excessive demand for health services due to a disaster-related event should verify the status of implementation of each of the actions listed.

Health facilities at risk of an increase in demand for health services should be prepared to implement each action promptly.

Key component 1

Command and control

A well-functioning command-and-control system is essential for effective hospital emergency-management operations (Fig. 1) (Recommended reading 1).

Fig. 1. Organizational structure of the incident command system



Box 1. Ad hoc hospital incident command group based systems and procedures required for successful emergency response. following services: hospital administration infection control communications respiratory therapy security engineering and maintenance nursing administration laboratory human resources nutrition • pharmacy In addition, medical staff working, for example, in emergency medicine, intensive care, internal medicine or paediatrics, should be represented. Due for **Recommended** action review progress Completed Designate a hospital command centre, i.e. a specific location prepared to convene and coordinate hospital-wide emergency response activities and equipped with effective means of communication. For each of the nine key components listed in this document, designate an individual (focal point) to ensure the appropriate management and coordination of related response activities. Designate prospective replacements for directors and focal points to guarantee continuity of the command-and-control structure and function. Consult core internal and external documents (e.g. publications of the

Activate the hospital incident command group (ICG) or establish an ad hoc ICG, i.e. a supervisory body responsible for directing hospital-based emergency management operations (Box 1).

If NO mechanism is in place for coordinated hospital incident management (e.g. a hospital ICG), the hospital director should promptly convene a meeting with all heads of services in order to create an ad hoc ICG. An ICG is essential for effective development and management of hospital-

When organizing a hospital incident command group, consider including representatives from the

I aundry, cleaning, and waste management

national health authority and WHO) related to hospital emergency manage- ment to ensure application of the basic principles and accepted strategies related to planning and implementing a hospital incident action plan (Rec- ommended reading 1).	U
Implement or develop job action sheets that briefly list the essential qualifi- cations, duties and resources required of ICG members, hospital managers and staff for emergency-response activities (Recommended reading 1).	0

Ensure that all ICG members have been adequately trained on the structure and functions of the incident command system (ICS) and that other hospital staff and community networks are aware of their roles within the ICS (Recommended reading 1).

Recommended action

Pending review progress Completed



Key component 2 Communication

Clear, accurate and timely communication is necessary to ensure informed decision-making, effective collaboration and cooperation, and public awareness and trust (Recommended reading 2). Consider taking the following action.

Recommended action	Due for review pi	In rogress Co	mpleted
Appoint a public information spokesperson to coordinate hospital communication with the public, the media and health authorities.	\bigcirc	\bigcirc	\bigcirc
Designate a space for press conferences (outside the immediate proximity of the emergency department, triage/waiting areas and the command centre).	\bigcirc	\bigcirc	0
Draft brief key massages for target audiences (e.g. patients, staff, public) in preparation for the most likely disaster scenarios.	\bigcirc	\bigcirc	\bigcirc
Ensure that all communications to the public, media, staff (in general) and health authorities are approved by the incident commander or ICG.	\bigcirc	\bigcirc	\bigcirc
Establish streamlined mechanisms of information exchange between hospital administration, department/unit heads and facility staff (Recommended reading 2).	\bigcirc	\bigcirc	0
Brief hospital staff on their roles and responsibilities within the incident action plan.	0	0	\bigcirc
Establish mechanisms for the appropriate and timely collection, processing and reporting of information to supervisory stakeholders (e.g. the govern- ment, health authorities), and through them to neighbouring hospitals, private practitioners and prehospital networks (Recommended reading 2).	\bigcirc	\bigcirc	\bigcirc
Ensure that all decisions related to patient prioritization (e.g. adapted admis- sion and discharge criteria, triage methods, infection prevention and control measures) are communicated to all relevant staff and stakeholders.	\bigcirc	\bigcirc	0
Ensure the availability of reliable and sustainable primary and back-up communication systems (e.g. satellite phones, mobile devices, landlines, Internet connections, pagers, two-way radios, unlisted numbers), as well as access to an updated contact list.	\bigcirc	\bigcirc	0

Key component 3 Safety and security

Well-developed safety and security procedures are essential for the maintenance of hospital functions and for incident response operations during a disaster (Recommended reading 3). Consider taking the following action.

Recommended action	Due for review pr	In ogress Cor	npleted
Appoint a hospital security team responsible for all hospital safety and security activities.	\bigcirc	\bigcirc	\bigcirc
Prioritize security needs in collaboration with the hospital ICG. Identify areas where increased vulnerability is anticipated (e.g. entry/exits, food/water access points, pharmaceutical stockpiles).	\bigcirc	\bigcirc	0
Ensure the early control of facility access point(s), triage site(s) and other areas of patient flow, traffic and parking. Limit visitor access as appropriate.	0	0	\bigcirc
Establish a reliable mode of identifying authorized hospital personnel, patients and visitors.	\bigcirc	\bigcirc	\bigcirc
Provide a mechanism for escorting emergency medical personnel and their families to patient care areas.	\bigcirc	\bigcirc	\bigcirc
Ensure that security measures required for safe and efficient hospital evacuation are clearly defined.	0	0	0
Ensure that the rules for engagement in crowd control are clearly defined.	\bigcirc	\bigcirc	\bigcirc
Solicit frequent input from the hospital security team with a view to identify- ing potential safety and security challenges and constraints, including gaps in the management of hazardous materials and the prevention and control of infection.	0	0	0
Identify information insecurity risks. Implement procedures to ensure the secure collection, storage and reporting of confidential information.	0	0	0
Define the threshold and procedures for integrating local law enforcement and military in-hospital security operations.	\bigcirc	0	\bigcirc
Establish an area for radioactive, biological and chemical decontamination and isolation (Recommended reading 3).	0	0	0

Key component 4

Triage

Maintaining patient triage operations, on the basis of a well-functioning mass-casualty triage protocol, is essential for the appropriate organization of patient care (Recommended reading 4). Consider taking the following action.

Recommended action	Due for In review progress Completed		
Designate an experienced triage officer to oversee all triage operations (e.g. a trauma or emergency physician or a well-trained emergency nurse in a supervisory position).	\bigcirc	\bigcirc	\bigcirc
Ensure that areas for receiving patients, as well as waiting areas, are effec- tively covered, secure from potential environmental hazards and provided with adequate work space, lighting and access to auxiliary power.	\bigcirc	\bigcirc	\bigcirc
Ensure that the triage area is in close proximity to essential personnel, medical supplies and key care services (e.g. the emergency department, operative suites, the intensive care unit).	\bigcirc	\bigcirc	\bigcirc
Ensure that entrance and exit routes to/from the triage area are clearly identified.	\bigcirc	\bigcirc	\bigcirc
Identify a contingency site for receipt and triage of mass-casualties.	\bigcirc	\bigcirc	\bigcirc
Identify an alternative waiting area for wounded patients able to walk.	\bigcirc	\bigcirc	\bigcirc
Establish a mass-casualty triage protocol based on severity of illness/in- jury, survivability and hospital capacity that follows internationally accepted principles and guidelines (Recommended reading 4).	\bigcirc	\bigcirc	\bigcirc
Establish a clear method of patient triage identification; ensure adequate supply of triage tags (Recommended reading 4).	\bigcirc	\bigcirc	\bigcirc
Identify a mechanism whereby the hospital emergency response plan can be activated from the emergency department or triage site.	0	0	\bigcirc
Ensure that adapted protocols on hospital admission, discharge, referral and operative suite access are operational when the disaster plan is activated to facilitate efficient patient processing.	\bigcirc	\bigcirc	0

Key component 5 Surge capacity

Surge capacity – defined as the ability of a health service to expand beyond normal capacity to meet increased demand for clinical care – is an important factor of hospital disaster response and should be addressed early in the planning process (Recommended reading 5). Consider taking the following action.

Recommended action	Due for In review progress Completed		
Calculate maximal capacity required for patient admission and care based not only on total number of beds required but also on availability of human and es- sential resources and the adaptability of facility space for critical care.	\bigcirc	\bigcirc	\bigcirc
Estimate the increase in demand for hospital services, using available planning assumptions and tools (Recommended reading 5).	0	0	\bigcirc
Identify methods of expanding hospital inpatient capacity (taking physical space, staff, supplies and processes into consideration).	$\overline{\mathbf{O}}$	\bigcirc	0
Designate care areas for patient overflow (e.g. auditorium, lobby).	\bigcirc	\bigcirc	\bigcirc
Increase hospital capacity by outsourcing the care of non-critical patients to appropriate alternative treatment sites (e.g. outpatient departments adapted for inpatient use, home care for low-severity illness, and chronic-care facilities for long-term patients) (Recommended reading 5).	\bigcirc	\bigcirc	\bigcirc
Verify the availability of vehicles and resources required for patient transportation.	\bigcirc	\bigcirc	\bigcirc
Establish a contingency plan for interfacility patient transfer should traditional methods of transportation become unavailable.	\bigcirc	\bigcirc	\bigcirc
Identify potential gaps in the provision of medical care, with emphasis on critical and emergent surgical care. Address these gaps in coordination with the authorities and neighbouring and network hospitals.	\bigcirc	\bigcirc	\bigcirc
In coordination with the local authorities, identify additional sites that may be converted to patient care units (e.g. convalescent homes, hotels, schools, community centres, gyms) (Recommended reading 5).	\bigcirc	\bigcirc	\bigcirc
Prioritize/cancel nonessential services (e.g. elective surgery) when necessary.	\bigcirc	\bigcirc	\bigcirc
Adapt hospital admission and discharge criteria and prioritize clinical interventions according to available treatment capacity and demand.	\bigcirc	\bigcirc	\bigcirc
Designate an area for use as a temporary morgue. Ensure the adequate supply of body bags.	\bigcirc	\bigcirc	\bigcirc
Formulate a contingency plan for post mortem care with the appropriate partners (e.g. morticians, medical examiners and pathologists).	0	\bigcirc	\bigcirc

Key component 6 Continuity of essential services

A disaster does not remove the day-to-day requirement for essential medical and surgical services (e.g. emergency care, urgent operations, maternal and child care) that exists under normal circumstances. Rather, the availability of essential services needs to continue in parallel with the activation of a hospital emergency response plan (Recommended reading 6). Consider the taking following action.

Due for In review progress Completed		
	\bigcirc	\bigcirc
\bigcirc	\bigcirc	\bigcirc
\bigcirc	\bigcirc	0
0	0	0
0	0	0
\bigcirc	0	0
\bigcirc	0	0
0	0	0
	Due for review pr	Due for In review progress Co () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () ()

Key component 7 Human resources

Effective human resource management is essential to ensure adequate staff capacity and the continuity of operations during any incident that increases the demand for human resources (Recommended Reading 7). Consider taking the following action.

Recommended action	Due for review pro	In ogress Con	npleted
Update the hospital staff contact list.	\bigcirc	\bigcirc	\bigcirc
Estimate and continuously monitor staff absenteeism.	0	\bigcirc	0
Establish a clear staff sick-leave policy, including contingencies for ill or injured family members or dependents of staff.	0	0	0
Identify the minimum needs in terms of health-care workers and other hospital staff to ensure the operational sufficiency of a given hospital	\bigcirc	\bigcirc	\bigcirc
department (Recommended reading 7).	\bigcirc	\bigcirc	\bigcirc
Establish a contingency plan for the provision of food, water and living space for hospital personnel.	0	0	0
Prioritize staffing requirements and distribute personnel accordingly.	0	0	0
Recruit and train additional staff (e.g. retired staff, reserve military personnel, university affiliates/students and volunteers) according to the anticipated need.	0	0	0
Address liability, insurance and temporary licensing issues relating to additional staff and volunteers who may be required to work in areas outside the scope of their training or for which they have no licence.	0	0	0
Establish a system of rapidly providing health-care workers (e.g. voluntary medical personnel) with necessary credentials in an emergency situation, in accordance with hospital and health authority policy.	0	0	0
Cross-train health-care providers in high-demand services (e.g. emergency, surgical, and intensive care units).	\bigcirc	\bigcirc	0
Provide training and exercises in areas of potential increased clinical demand, including emergency and intensive care, to ensure adequate staff capacity and competency.	0	0	0

Continued on next page

Key component 7 - continued

Human resources

Effective human resource management is essential to ensure adequate staff capacity and the continuity of operations during any incident that increases the demand for human resources (Recommended Reading 7). Consider taking the following action.

Recommended action	Due for In review progress Completed		
Identify domestic support measures (e.g. travel, child care, care for ill or disabled family members) to enable staff flexibility for shift reassignment and longer working hours.	\bigcirc	\bigcirc	\bigcirc
Ensure adequate shift rotation and self-care for clinical staff to support morale and reduce medical error.	\bigcirc	\bigcirc	\bigcirc
Ensure the availability of multidisciplinary psychosocial support teams that include social workers, counsellors, interpreters and clergy for the families of staff and patients (Recommended reading 7).	0	0	0
Ensure that staff dealing with epidemic-prone respiratory illness are provided with the appropriate vaccinations, in accordance with national policy and guidelines of the health authority.	0	0	0

Key component 8 Logistics and supply management

Continuity of the hospital supply and delivery chain is often an underestimated challenge during a disaster, requiring attentive contingency planning and response (Recommended reading 8). Consider taking the following action.

Recommended action	Due for In review progress Completed		
Develop and maintain an updated inventory of all equipment, supplies and pharmaceuticals; establish a shortage-alert mechanism.	\bigcirc	\bigcirc	0
Estimate the consumption of essential supplies and pharmaceuticals, (e.g. amount used per week) using the most likely disaster scenarios (Recommended reading 8).	\bigcirc	\bigcirc	\bigcirc
Consult with authorities to ensure the continuous provision of essential medications and supplies (e.g. those available from institutional and central stockpiles and through emergency agreements with local suppliers and national and international aid agencies).	0	0	0
Assess the quality of contingency items prior to purchase; request quality certification if available.	\bigcirc	\bigcirc	\bigcirc
Establish contingency agreements (e.g. memoranda of understanding, mutual aid agreements) with vendors to ensure the procurement and prompt delivery of equipment, supplies and other resources in times of shortage (Recommended reading 8).	0	\bigcirc	0
Identify physical space within the hospital for the storage and stockpiling of additional supplies, taking ease of access, security, temperature, ventilation, light exposure, and humidity level into consideration. Ensure an uninterrupted cold chain for essential items requiring refrigeration.	0	0	0
Stockpile essential supplies and pharmaceuticals in accordance with na- tional guidelines. Ensure the timely use of stockpiled items to avoid loss due to expiration.	0	0	0
Define the hospital pharmacy's role in providing pharmaceuticals to patients being treated at home or at alternative treatment sites.	\bigcirc	0	0
Ensure that a mechanism exists for the prompt maintenance and repair of equipment required for essential services. Postpone all non-essential services when necessary.	0	\bigcirc	0
Coordinate a contingency transportation strategy with prehospital networks and transportation services to ensure continuous patient transferral.	0	0	\bigcirc

Post-disaster recovery planning should be performed at the onset of response activities. Prompt implementation of recovery efforts can help mitigate a disaster's long-term impact on hospital operations (Recommended reading 9). Consider taking the following action.

Recommended action	Due for In review progress Completed		
Appoint a disaster recovery officer responsible for overseeing hospital recovery operations.	\bigcirc	\bigcirc	\bigcirc
Determine essential criteria and processes for incident demobilization and system recovery (Recommended reading 9).	\bigcirc	\bigcirc	\bigcirc
In case of damage to a hospital building, ensure that a comprehensive structural integrity and safety assessment is performed (Recommended reading 9).	\bigcirc	\bigcirc	\bigcirc
If evacuation is required, determine the time and resources needed to complete repairs and replacements before the facility can be reopened (Recommended reading 9).	0	0	0
Organize a team of hospital staff to carry out a post-action hospital invento- ry assessment; team members should include staff familiar with the location and inventory of equipment and supplies. Consider including equipment vendors to assess the status of sophisticated equipment that may need to be repaired or replaced (Recommended reading 9).	0	0	0
Provide a post-action report to hospital administration, emergency managers and appropriate stakeholders that includes an incident summary, a response assessment, and an expenses report.	\bigcirc	\bigcirc	0
Organize professionally conducted debriefing for staff within 24–72 hours after the occurrence of the emergency incident to assist with coping and recovery, provide access to mental health resources and improve work performance.	0	0	0
Establish a post-disaster employee recovery assistance programme according to staff needs, including, for example, counselling and family support services.	0	0	0
Show appropriate recognition of the services provided by staff, volunteers, external personnel and donors during disaster response and recovery.	0	0	\bigcirc

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Hospital emergency response checklist

An all-hazards tool for hospital administrators and emergency managers

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PRQC DISASTER BUNDLE - DISASTER DOMAIN 2, 3, 4 Local Coalition Building, Pediatric Surge Capacity and Essential Pediatric Resources

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SURGE TEC

BLS Patients Patient Ratio <u>4-2 ratio</u> 1RN's : 1 Tech 4 Pt's 1 RN's : 1 Techs 8 Pt's 2 RN's : 2 Techs 12 Pt's 3 RN's : 3 Techs 16 Pt's 4 RN's : 4 Techs 20 Pt's 5 RN's : 5 Techs 24 Bt's 6 RN's : 6 Techs	 2 P 4 P 6 P 8 P 10 P	ALS Patient Patient Rat 2 ratio 1RN's : 1 t's 2 RN's : 2 t's 3 RN's : 3 t's 4 RN's : 4 t's 5 RN's : 5 t's 6 RN's : 5	ts io <u>1 Tech</u> Techs Techs Techs Techs Techs Techs Techs	Trau Pa <u>1-3 ratio</u> 2 Pt's 4 3 Pt's 4 3 Pt's 6 4 Pt's 8 5 Pt's 10 7 Pt's 12 8 Pt's 14	uma Patients atient Ratio <u>2RN's : 1 Tec</u> RN's : 2 Techs RN's : 3 Techs RN's : 4 Techs PRN's : 5 Techs RN's : 6 Techs	 <u>ch</u>	DECON F Non-Ambu Patient F <u>1-3 ratio</u> 1 Pt's 3 T 2 Pt's 3 T 3 Pt's 3 T	Room ulatory Ratio <u>3 Tech</u> echs echs echs	DECON She Pat <u>4-3 ratio</u> 4 Pt's 1 F 8 Pt's 2 F 12 Pt's 3 F 16 Pt's 3 F	elter Amb ient Ratio <u>1RN's : 2</u> RN's : 2 To RN's : 4 To RN's : 6 To RN's : 6 To	Ulatory <u>Tech</u> echs echs echs echs echs		<u>4-7</u> 4 Pt's 8 Pt's 12 Pt's 16 Pt's	DECON Non-Am Patier ratio 2F s 2 RN' s 4 RN' s 6 RN' s 6 RN'	Shelte bulato nt Ratio N's : 5 5 : 5 T 5 : 10 T 5 : 15 T 5 : 15 T	r ry <u>5 Tech</u> echs echs echs echs echs
1		2		0113 14	3		4		Orig 3.28.14	5 _{Rev}	5.23.14			e	5	
ESI LEVEL 2 ESI LEVEL 3	(\ Patients	Vaiting Roon RN 0 0	n) Tech O O								D 11 F	ECON TE	AM Techs			
PATIENT	Incoming Patients	Staff RN	Staff Tech	Admin RN	Admin Tech				-	ED Si	<mark>irge Leve</mark> II	el 💠		Code Tri II	age Lev	el IV
POV / AMBULATORY	- utients	0	0						RN	2	3	4	4	5	6	7
BLS		0	0						Tech	2	3	4	4	5	6	7
ALS		0	0													

I Advisory

- II The event is impacting normal services and operations
- III No longer providing reasonable and customary care and services
- IV No longer functioning as a normal hospital or healthcare system

Resources Needed

Requested Resources

Current Resources Available

0

0

0

0

0

0

0

0

0

0

0

2

3

Δ

5

6

TRAUMA ACTIVATION

DECON RM (Non-Ambulatory)

DECON Shelter (Ambulatory)

DECON Shelter (Non-Ambulatory)



PRQC DISASTER BUNDLE - DISASTER DOMAIN 2, 3, 4 Local Coalition Building, Pediatric Surge Capacity and Essential Pediatric Resources

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Michigan Immediate Bed Availability Decompression Strategy Guidelines and Toolkit









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Preface: Plan to Manage Medical Surge through Immediate Bed Availability

The development of an Immediate Bed Availability (IBA) process reinforces the critical role played by hospitals within a Healthcare Coalition. The ability to plan for and implement organizational strategies to make hospital beds available within a short period of time will prove crucial in assuring optimal outcomes during incident response. Based on national guidelines, the goal is for hospitals to put actions into place that will provide availability of approximately 20% of their normal staffed bed capacity for incoming casualties. The goal timeframe is to make these beds available within four hours of incident notification. Steps to obtain IBA may include rapid discharge for stable patients, moving stable critical care patients to step down units within the facility, canceling elective surgeries, procedures and potentially using Post Anesthesia Care Units (PACUs), medical holding areas and outpatient surgical preparation areas for incoming patients. This document provides guidelines as well as tools to assist hospitals to expand current levels of bed availability during a medical surge. It is understood that what can be accomplished may depend on the level to which a specific facility is involved in the occurring response. Healthcare Coalition members, working together, can strengthen efforts to assure adequate capacity to receive patients and maximize the care of patients impacted during a medical surge incident.

Members of a Healthcare Coalition (hospitals, long term care facilities, community health clinics and EMS) must have specific plans in place to ensure collective support within the coalition.

This toolkit is not intended to be a stand-alone document – it is intended as a supplement to support an organization's internal plans and preparatory activity. The toolkit can be modified to compliment an individual Healthcare Organizations (HCOs) Emergency Operations Plan (EOP) or internal disaster policies and procedures.

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Introduction

IBA guidelines provide a framework to open beds in a medical surge incident by using strategies such as rapid discharge of stable patients and transferring patients who are stable but cannot be discharged. This toolkit contains general conceptual information about the models related to IBA, associated recommended checklists and templates that may be used by hospitals to achieve the nationally recommended goal of opening 20% of the facility's *staffed* beds within four hours of incident notification to receive a surge of patients. It also provides information to assist with the development of documents and forms that can be adapted by each individual facility to aid in the process of rapid discharge. *To accomplish future healthcare capabilities, each facility should have a plan in place to decompress their existing patient census to prepare to receive numerous patients. This toolkit will assist with resources and recommendations.* ¹

Scope

This document will assist healthcare organizations in the development or revision of IBA strategies which should include the integration of IBA into organizational policies, protocols, and or the emergency response/disaster plan.

¹ .U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2013). Hospital Preparedness Program (HPP) Healthcare Preparedness Capability Review National Call: Capability 10: Medical Surge and Immediate Bed Availability (IBA).

Management of Medical Surge through Immediate Bed Availability

What is IBA?

IBA defines a concept where members of a healthcare coalition work together to ensure that an appropriate level of care is provided to hospital in-patients, while providing services to a large influx of disaster-related patients. This reduces the public health implications of mass casualties/medical surge. The foundation of IBA is opening 20% of a hospital facility's staffed beds available within four hours of incident notification through decompression strategies and by strategically re-distributing low acuity patients among other healthcare coalition partners (i.e. long term care, community health centers, and home health) is key to the management of a medical surge response.

What is the relationship between IBA and the Healthcare Preparedness Capabilities?

Though IBA is incorporated most closely in the **Medical Surge Capability**, found in the Office of the Assistant Secretary for Preparedness and Response: 2017-2022 National Guidance for Healthcare System and Preparedness and Response², IBA cannot be successfully realized without development of all four Healthcare Preparedness Program (HPP) capabilities.

The four HPP capabilities are:

- 1. Foundation for Health Care and Medical Readiness
- 2. Health Care and Medical Response Coordination
- 3. Continuity of Health Care Service Delivery
- 4. Medical Surge

What does IBA look like in practice? (Diagram 1)

To ensure IBA in times of crisis, healthcare coalition partners must continuously monitor the acuity of patients and maintain their ability for patient movement. Once a declared disaster happens, acute care facilities will need to prepare for an influx of new patients impacted by the incident. Through agreements specific to IBA with healthcare coalition partners, movement of lower acuity patients will begin to occur from hospitals to other appropriate facilities and care sites; making room for higher acuity patients. These same agreements ensure that receiving facilities are prepared to provide the appropriate level of care. This is what would be known as Executive IBA, where an executive makes the decision to cancel elective surgeries, starts moving patients to lower levels of acuity and begins to transfer patients to other appropriate facilities and care sites.

²Office of the Assistant Secretary of Preparedness and Response. (2016). 2017-2022 National Guidance for Healthcare System and Preparedness and Response, Retrieved <u>https://www.phe.gov/Preparedness/planning/hpp/reports/Documents/2017-2022-healthcare-pr-capablities.pdf</u> Accessed: January 18, 2018

Diagram 1





Diagram 1 demonstrates the shift in focus of beds during a medical surge.

- 1. The first column represents a typical delineation of bed type and occupancy within most hospitals.
- 2. The second column represents the shift when an executive IBA is declared and the Emergency Response Rapid Discharge Plan is implemented. The use of healthcare coalitions (HCC) partners, long term care, community health centers, discharges home and the cancellation of elective surgeries and procedures are instituted.
- 3. The third column demonstrates the change in bed types or census. Notice the significant increase in acute care beds.

Diagram adapted from: South Carolina Hospital Association: Medical Surge through Immediate Bed Availability factsheet. <u>https://www.scha.org/files/iba_fact_sheet_v6.pdf</u>.

How do Healthcare Coalitions participate in meeting the goals of Immediate Bed Availability?

- 1) Communicate established disaster discharge protocols at patient admission.
- 2) Continuously monitor patient acuity across coalition facilities.
- 3) Rapidly discharge patients with the lowest acuity, consistent with established disaster discharge protocols.
- 4) Conduct expedited patient transport and transfer of care between facilities, outpatient sites or home.
- 5) Coordinate acceptance of inter-facility patients to healthcare coalition partners.
- 6) Coordinated exercises between partners to test the process.

All of these tasks can be done seamlessly through the constant assessment of people, processes and infrastructure, such as the following:

People:

- Staffing considerations
- Staffing agreements
- Training and education
- Medical provider awareness and education
- Family support and awareness

Processes:

- Discharge planning and protocols
- Bed turnaround/housekeeping
- Billing and reimbursement services planning
- Patient transportation agreements
- Ongoing patient acuity monitoring

Infrastructure:

- Logistics (patient management and discharge processes)
- Pharmacy planning and protocols
- Patient tracking means and protocols
- Legal considerations
- *Health record management*

How is the activation of IBA determined?

The activation of IBA processes occurs as the result of triggers identified in hospital/healthcare coalition medical surge plans and follows a flow such as that in Diagram 2:

Diagram 2

Medical Surge through Immediate Bed Availability

Immediate Bed Availability (IBA)

Goal: To quickly provide higher-level care to more serious patients during a medical surge declared disaster with healthcare implications.

• The reason for IBA: No new space, personnel or equipment available to provide care.

Definition: Provide no less than 20% of staffed beds within four hours to respond to declared disaster:

• Bed is available and cleaned for use as defined in healthcare system.

IBA is:

- Evidence-informed studying "Reverse Triage" methods.
- Operationally tenable using healthcare systems that track bed availability now and have staff available to care for patients.
- Economically sustainable as it allows for surge capacity without extra staff, space, supplies, etc.
- Ethically grounded and consistent with Standards of Care definitions.

Pillars of IBA



Immediate Bed Availability Measurement



Strategies to free beds or have staff available to meet IBA in four hours:

- Discharge holding lounge
- Convert private rooms to double rooms for non-acute patients
- Reopen closed areas
- Utilize hallways
- Convert patient step-down areas to critical care areas
- Temporary external structures for patient holdings (1135 waiver)
- Use other areas like lobbies, waiting rooms, hallways as needed
- Rapid bed/room cleaning when patient leaves room
- Rapid systems/processes to know when beds are available
- Discharge to other facilities including long term care when appropriate
- Cancel elective surgeries
- Protocols for revision of staff work hours
- Callback of off-duty personnel
- Untraditional patient care providers including family members, volunteers, non-clinical personnel
- Surge plans for home care agencies and clinics
- Use of healthcare coalition partners (MCC, Public Health, Emergency Management, Long Term Care, etc.)
- Use of healthcare coalition systems (EMResource, MICIMS, MI-HAN Alerts, MI-Volunteer Registry, etc.)

Diagram 3



Hospital Capacity Surge Toolkit. <u>https://www.sccgov.org/sites/sccphd/en-us/HealthProviders/BePrepared/pages/Hospital-Surge-Capacity-Toolkit.aspx</u>. Accessed July 25, 2017.

Decompression of the Emergency Department during a Mass Casualty Incident

- 1. Determine the number of patients in the Emergency Department (ED) currently being seen compared to total number of beds.
- 2. In a mass casualty incident where patients are coming in by privately owned vehicles (POV), begin triage in the ambulance bay. Think pre-hospital medicine in the parking lot.
- 3. Concurrently clear as many beds as possible, as quickly as possible.
- 4. Call –in extra staff per hospital/department policy.
- 5. Determine the number of patients that can be rapidly dispositioned.
- 6. Determine the number of patients waiting for admission institute a Rapid Admission Policy (patients are sent to the floor or holding area for their admission work-up).
- 7. Open a designated holding area for patients waiting on test results prior to disposition outside of the ED.
- 8. Clean rooms, stage necessary equipment and prepare for incoming casualties.
- 9. Develop treatment areas according to triaged injuries. For example:
 Green minor, "walking wounded"
 Yellow moderate, can wait a period of time before definitive treatment
 Red severe, requires immediate care and treatment
 Gray expectant, require more resources than available
- 10. Assign staff to each of the triage/treatment areas.
- 11. Screen patients on arrival, outside of the ED, for the need of decontamination, consider activating hospital decontamination team.
- 12. Have a senior physician meeting the ambulances to triage patients to the appropriate areas.
- 13. Make sure all patients are registered into the system for an ED record and chart. Institute EMTrack for patient tracking.
- 14. Move casualty patients through the ED system as quickly as possible:
 - a. Examination
 - b. Labs

- c. Radiology
 - i. CT Scan
 - ii. Plain films
 - iii. Specialized films
- d. Special procedures
- e. Operating Room (OR)
- 15. Move to inpatient bed once ED or trauma disposition is made or discharge patient.

Diagram 4





Medical Surge: Emergency Department Immediate Bed Availability Calculations

The Community Emergency Department Overcrowding Scale (CEDOCS)

The CEDOCS score helps determine the severity of overcrowding in community emergency departments (ED) with the use of several variables. The score ranges from 0 to 200.

The scale was developed by Dr. Steven Weiss, to help assess and objectively communicate overcrowding of the ED. The scale provides a more consistent approach to defining ED crowding and helps to clarify the distinctions between causes, characteristics, and outcomes.

CEDOCS assists in ED patient disposition, discharge, and rapid admission policies. This equation could be used on a daily basis to determine overcrowding, for a multi-casualty incident or medical surge incident to create beds.

The CEDOCS calculator is found at this link: https://www.mdcalc.com/cedocs-score-emergency-department-overcrowding

Information needed for the ED Overcrowding Assessment

Available beds at the time of the incident

# Beds in ED	# Hallway Beds	Total # Beds	# Occupied	# Available

ED Occupancy Rate **Occupancy Rate = Total patients/B**_T

 \mathbf{B}_{T} = The total number of beds, or treatment bays, available in the ED.

Determine how many patients require admission. Initiate a Rapid Admission Policy to transfer patients out of the ED and to the appropriate care unit. Discharge as many patients as possible.

Pending Admissions	Pending Discharges	Hospital Beds	Ventilators in the ED	Last Bed Time, ED waiting to bed

The equation relates to the table below:

Not busy	Busy	Extremely busy but not overcrowded	Overcrowded	Severely overcrowded	Dangerously overcrowded
0-20	21-60	61-100	101-140	141-180	> 180

Definitions:

Total Patients: total number of patients in the ED, including those in the waiting room, fast- track or observation units.

ED Beds: Total number of ED beds, including those in hallways, fast track areas, chairs and elsewhere.

Admits: Total number of boarders/admitted patients in the ED at the time the score is calculated.

Hospital Beds: Total number of hospital beds, typically the number of licensed beds that could be used in a disaster.

Ventilators: The number of patients in the ED on ventilators.

Longest Admit: The longest patient holding time (in hours) at which the score is calculated.

Last Bed Time: The time (in hours) from arrival to ED to bed for the last patient assigned to a bed.

The manual equation for calculating CEDOCS is as follows:

CEDOCS = -20 + 85.8 x (total patients/ED beds) + 600 x (admits/hospital beds) + 13.4 x (ventilators) + 0.93 x (longest admit, in hours) + 5.64 x (last bed time) Total

Example =	-20 + 85.8 x (30 pts./52 beds) + 600 x 5 (admits/180 hospital beds) +13.4 x (1 vent) + 0.93 x (2 hrs.) + 5.64 x (1 hr.)	$\begin{array}{l} -20 + 49.5 = 29.50 \\ 600 * 0.28 = 16.67 \\ 13.4 + 1.86 = 15.26 \\ 5.64 * 1 = 5.64 \end{array}$	+ 29.50 + 16.67 + 15.26 <u>+ 5.64</u> Total 67.07

Permission to use CEDOCs calculator obtained from Dr. Steven Weiss.

³. Boyle, A., Beniuk, K., Higginson, I., Attkinson, P. (2012). Emergency Department Crowding: Time for Interventions and Policy Evaluations. Emergency Medicine International, Volume 2012, Article ID 838610. Hindawi Publishing Company.

Diagram 5



Immediate Bed Availability Activation Monitoring Decision Tree

Rapid Discharge Plan (Model)

POLICY: In the event of a mass casualty incident requiring the availability of 20% more beds within a short period of time, the Rapid Discharge Plan may be activated by the facilities Incident Commander. The goal is to have stable patients discharged from the unit as soon as possible.

PROCEDURE:

A) Initiation of the Rapid Discharge Plan

- 1) Using normal Incident Command Structure the Incident Commander, in collaboration with the Operations Section Chief and the Medical Care Branch Director, has sole authority for implementing the Rapid Discharge Plan.
- 2) The Inpatient Unit Leader, upon assignment by the Medical Care Branch Director will:
 - a) Oversee implementation of the Rapid Discharge Plan.
 - b) Assist in establishing Discharged Patient Holding Area(s) located in to secure patients until transportation is available.
 - c) Coordinate with the Transportation Unit Leader and Security Branch Director to arrange for transport.
- 3) The Medical Care Branch Director will notify the Medical and Surgical services Department Heads/Division Chairs to initiate the Rapid Discharge Plan. The highest ranking physician, or designee, who is present and available in each division will report to their assigned unit to initiate the plan.
- 4) The Hospital Operator will announce activation of the Rapid Discharge Plan via the hospital wide immediate notification system.

B) Obtaining Materials

The Rapid Discharge Team Member/designee will obtain the Rapid Discharge packets located on each unit. The packets contain the following emergency materials:

- Emergency Response Rapid Discharge Order Forms
- Emergency Response Rapid Discharge Prescription Order Form
- Facility Transfer Short Form Medical Record

C) Identifying Patients for Discharge

- The Rapid Discharge Teams, comprised of a Physician, Nurse, Case Manager or Social Worker, as available, will make rounds on each unit to determine which patients can be discharged immediately. The reverse triage method will be used to determine who can be safely discharged.
- 2) The following guidelines may be used to identify patients for Rapid Discharge:

Medical Specialty	Guidelines
Medicine	Stable for care at home
Obstetrics (OB)	Multipara > 8 hour post delivery
	Primipara > 24 hours post delivery
	No complications
	Selected C-sections
	No infant to take home
	Infant stable for discharge
Surgery	Patient stable
	No need for IV therapy
	Eating and ambulating
	Pain controlled with oral agents
Pediatrics/Neonates	Stable
	Noncritical
	Parent on unit with patient

D) Discharge Process

Once a patient has been identified for immediate discharge:

1) The reverse triage system is used to identify patients who can be discharged.

Note: Reverse triage is a system of categorization of patients in a mass casualty incident based on decisions as to which patients can most safely be discharged rather than on priority for treatment.

- 2) The physician will fill out the Emergency Response Rapid Discharge Orders and, if needed, the Emergency Response Discharge Prescription Order for each patient.
- 3) The Rapid Discharge Team member will:
 - a) Inform the patient of the need to discharge.
 - b) Provide copies of the physician and prescription order forms.
 - c) Provide an explanation of the physician orders and instructions on where to pick up medications.

- d) Discuss with the patient options on how to get home, including facilitating phone calls to family/friends. If necessary, the Rapid Discharge Team member will alert the Inpatient Unit Leader concerning patient transportation needs.
- e) Nursing staff completes the remainder of the discharge process, including disconnecting IV lines, providing wound care dressing materials, and any general care instructions as needed.
- f) Transfer patient to the Discharged Patients Holding Area in the to wait for their ride. (Make arrangements for wheelchair transportation through the Inpatient Unit Leader, if needed.)
- g) Sign in the patient at the Discharged Patient Holding Area.
- h) Complete and send a copy of the Discharge/Transfer Form to Admitting.
- 4) The Inpatient Unit Leader/designee will sign patient out of the Discharged Patient Holding Area, and provide taxi or bus voucher as needed.
- 5) EMS will control all inter-facility medical/emergency transport resources for discharge patients.
- 6) Utilization of healthcare organization shuttles, if available, for transport of ambulatory patients.

Appendices

- A. Emergency Response Rapid Discharge Orders (Appendix C)
- B. Emergency Response Rapid Discharge Prescription Orders (Appendix D)

*Note: Reverse triage is a system of categorization of patients in a mass casualty incident based on decisions as to which patients can most safely be discharged rather than on priority for treatment.*²

² Reverse triage. (n.d.) *Collins Dictionary of Medicine*. (2004, 2005). Retrieved March 14 2017 from <u>http://medical-dictionary.thefreedictionary.com/revers</u>e

Yes	No		Date	Time
		1. Incident Command initiated (Incident		
		Commander has sole authority for the		
		implementation of Rapid Discharge Plan,		
		in collaboration with the Operations		
		Section and Medical Branch Director)		
		2. Contact Regional Medical Coordination		
		Center		
		3. Medical Branch Director assigns Inpatient		
		Unit Leader who:		
		Oversees implementation of Rapid		
		Discharge Plan		
		• Assists in establishing a Discharge		
		Holding Area		
		Coordinate with Transport Unit Leader		
		and Security Branch Director to		
		arrange transport		
		5. The Medical Care Branch Director will		
		notify the Physician Department		
		Heads/Division Chairs to initiate the Rapid		
		Discharge Plan		
		6. The Hospital Operator will announce		
		activation of the Rapid Discharge Plan via		
		overhead paging system		
		7. The Rapid Discharge Team Members will		
		obtain the Rapid Discharge packets		
		8. Identifying Patients for Discharge		
		• The Rapid Discharge Teams, composed		
		of a Physician and Nurse (and Case		
		Manager or Social Worker, as		
		available) will make rounds on each		
		unit to determine who can be		
		discharged immediately. The reverse		
		triage method will be used to determine		
		who can be safely discharged		
		9. Discharge Process:		
		Physician fills out Rapid Discharge		
		Form and Rapid Discharge Prescription		
		Form if needed		
		10. The Inpatient Unit Leader or designee will		
		sign patients out of the Discharged Patient		
		Holding Area, and provide taxi or bus		
		vouchers as needed		

Emergency Response Rapid Discharge Checklist

11. EMS will control all inter-facility medical/emergency transport resources of patients discharged from the hospital	
12. Utilize healthcare organization shuttles, if available, for transportation of ambulatory patients	

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APPENDICES

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Appendix A

Rapid Discharge Unit Assessment

Hospital Name:

Date: _____ Time: _____

Unit Name:

(Note: on following forms, please be consistent and fill in the unit name as listed here)

Title (e.g. Nurse Manager):

Unit Type (Check the most specific type)

Medical	Neurology only	Critical Care:
Surgical	Chemical Detox	Medical CC
Pediatric	Physical Rehab	Surgical CC
Cardiology only	Hospice or Palliative Care	Trauma CC
Oncology only		Burn CC
Psychiatric		Neuro CC
Step-down (any type)		Pediatric CC
Other Specify:		Neonatal CC
Other:		
Other:		
Other:		

CENSUS

Total number of patients currently on the unit: _____

Number of identified confirmed discharges (except critical care*): _____ *If critical care, number of potential downgrades: _____

Number of patients awaiting departure: _____

Number of patients discharged still on the unit:

Number of identified potential discharge (except critical care): _____

Return Completed Form to Bed Management Committee Leader

Appendix B

Inpatient Potential Discharge Assessment Profile Form – Page 1 of 2

Patient Name:	
Unit Name:	
r attent mior mation	
Bed number:	-
MRN:	_ (for possible future reference)
Sex: Female Male	
Age:	

Primary Admission (Check the one that most specifically describes reason for patient stay.)

Surgical	OB/GYN
Cardiology	Transplant
Respiratory	Oncology
Neurology	Hospice or Palliative Care
Pediatric	Infectious Disease (including TB)
Trauma	Psychiatric
Orthopedics	Chemical Dependency
Spine	
Other Specify:	

Residence before admission?	Home
	LTC Assisted-Living Skilled Nursing
	Shelter Other, Specify
This patient can be transferred to: Step-Down Unit Medical/ Surgery	
	Other, Specify
This patient can be discharged	Yes No
Inpatient Potential Discharge Assessment Profile Form – Page 2 of 2

Patient Name: _____

	Yes	No	Unknown
Is lab work or lab work results required before discharge?			
Is an imaging study or radiology results required before			
discharge?			
(e.g., CT, echocardiogram, X-rays, etc.)			
Are meds from pharmacy needed before discharge?			
Are discharge orders currently written OR is a completed intend			
to discharge form in the patient's chart?			
If NO, is the patient's attending physician available to write the			
discharge order at this moment?			
Are prescriptions for after care available now?			
Is a specialist consult required prior to discharging the patient?			
Does patient education require greater resources in time beyond			
the typical discharge instructions? (e.g., diabetic care)			
Does this patient have a functional disability (e.g., wheelchair			
bound, vision or hearing impairment) that requires special			
arrangements on discharge?	 		
Is patient clothing available now?			
Is there a language barrier that would require an interpreter?			
The transportation required for this patient to leave the hospital is:			
• Pt can leave on their own			
• Pt needs assistance of family/friend			
• Pt requires an Ambu-Cab or wheelchair van			
• Pt requires ambulance			
If family/friend picking-up, has that person already been notified?			
If ambulance, have arrangements already been made?			
Is this patient being transferred to a care facility upon discharge?			
If YES, type of facility?			
Nursing Home/LTC facility			
Physical Rehab facility			
Halfway House			
Substance Abuse Rehab			
• Shelter Bed			
Hospice Bed			
Other, specify			
Is Home Health Care/Visiting Nurse Service needed for this			
patient?			
Would a Social Worker need to be consulted before discharge?			

Appendix C

Emergency Response Rapid Discharge Orders

Patien	t Name:		Date:	Unit:
Hospit	al MRN #:			
	Dr requires hospital c	has determine are.	ed that	's condition no longer
	Advise patient to c business day for fo	contact their primary phy bllow-up.	sician, Dr	, on the next
	Advise patient tha	t if they experience any r for follow-	nedical problems, to up instructions.	call
Discha	arge Diagnosis:			
 Discha	arge to:			
Discha	arge Medication(s):			
	Medications:			
	 Inform patient Here] pharmac Give a copy of Diet:	that they are to take any y or to a commercial pha Emergency Rapid Discl Call y ment: You should sched	prescriptions provid armacy and take as d harge Prescription Or our physician if you	ed to either an [Insert Hospital irected. der form. (Appendix F) have any questions.
	ronow-up appoint	ment. Tou should selled	uie all appointment v	/1011.
	If you are a new m home visit.	other, call the		for a follow-up
Provid	ler Signature:		Printed:	
Date:		Time	:	
		Copy to: Patient	To: Medical F	Records

Appendix D

Emergency Response Rapid Discharge Pharmacy Order Form

Patient Name:

Date of Birth: _____

Emergency Rapid Discharge Prescription Orders

W	eight	Height	Temperature	Blood Pressure	Pulse	Respiration	
Alle	rgies: 🗆	No Kno	wn Allergies [Penicillin] Sulfa	Oth	er:
			Drug, Strength, I	Form, Sig		Qty.	Date:
1.							
2.							
3.							
4.							
5.							
6.							
7.							Other Language
8.							(Insert Below)
9.							
Prov	vider Sig	gnature:		Ι	License #:		Dr. #:
Prin	ted Nan	ne:		Ι	DEA #:		

Instructions to Patient:

IMPORTANT

You are being discharged with written prescription(s) for medications that you must continue to take for your ongoing care. These prescription(s) may be filled at any of the [Insert Hospital Here] pharmacies listed below. If you are unable to reach these pharmacies, you may take your prescription(s) to any community pharmacy, pay to have them filled, and submit your receipt to [Insert Hospital Here] for repayment.

Name	Location	Days of Operation	Hours of Operation

Copy to: Patient

To: Pharmacy

To: Medical Records

Appendix E

		Facilit	y Transfer Summary Form			
Facility:			Date:			
Address:						
Contact Person:			Contact I	Number:		
Reason for Transfer/Evacuation:	🗆 Full		Mass Casualty Incident	Mandato	ry	□ Voluntary
Patient Name (Last, First)	Transport*	Time	e Receiving Facility Name and Phone Sent with T		Tracking Number	
				Meds	Chart	_

***Transport:** A = ambulance; C = car; E= EMS; F = family; O = other - specify; V = van

Facility Transfer Short Form Medical Record

o- nic	Patient Name: Parent/Guardian:		DOB: MRN:			
Dem grapl	Primary Physician: Allergies:			NKA		
	Chief Complaint: Significant Medical History:					
	Pregnancy Status:					
	Name	Route	Dose	Time/Frequency		
ory						
listo						
H	Time Recorded					
	Temperature					
	Pulse					
	Respiration					
	Blood Pressure					
	Notes:					
	Special Dietary Needs:					
	Total Intake: Total C	Output:				
al	HEENT:					
ysic xan	Cardiovascular:	Pulmonary	/:			
Ph	Neurological:	Abdomen	:			
	Extremities:					
it llts	X-ray Results:					
Tes kesu	Other:					
ł						
u	Discharge: Home ACS	Shelter L7	TC Decease	ed Date:		
itio	Diet: Regular Soft I i	Oth	ier:	Time:		
sod	Activities: No Restrictions Res	trictions as follows:	· · · · · · · · · · · · · · · · · · ·			
Dis	Physician Signature:	Nurse	Signature:			
	Other Signature:	Other Sig	gnature:			
Adapted from V	Wong, DL., Et al. Wong's Essentials of Ped	iatric Nursing, Ed. 6	. St. Louis. (2001)	p. 1301.		

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Appendix G

Small and Rural Hospitals

IBA remains the same regardless of the size of the healthcare facility. It is more challenging in rural areas and small hospitals and is not implemented as frequently as in larger hospitals. In an article (included in the references) by the National Association of County and City Health Officials (NACCHO) that addresses practices for IBA in rural communities. They offer four strategies for implementation:

1. Establish and leverage partnerships.

Well-coordinated medical surge response is effective due to the formal and informal partnerships developed long before an incident takes place. Working with the Regional Healthcare Coalition can help to foster these relationships. The affiliations include other larger hospital facilities, clinics, long-term centers, dialysis centers, pharmacies Federally Qualified Health Centers (FQHC), and Emergency Managers. Other relationships to nurture include churches, schools, community centers and local businesses. While non-traditional, these collaborators are entrusted community members and could potentially lighten the load on the hospital by providing food, shelter, other resources including emotional support, and community assistance in family reunification.

2. Focus on sustainable practices.

Cutbacks in healthcare preparedness funding, a deficiency in extra space and equipment, and healthcare worker shortages are listed as obstacles to IBA implementation. Working collaboratively with the HCCs allows for single healthcare facilities with partial or inadequate capacity access to collective resources of a system of providers. Utilization of ambulance strike teams, mobile medical field teams, and Medical Reserve Corps (MRC) volunteers are great assets during an incident. Telehealth programs are also available to assist in assessment and treatment of patients without the need to build larger facilities. There are established programs in some states that provide emergency medical, psychiatric, wellness care and other services.

3. Share information and integrate data.

Real-time situational awareness is critical during IBA to deliver the highest level of care. The monitoring of healthcare organization capacity, patient acuity, and services available are all core components of situational awareness. Detailed information regarding bed availability and the medical needs of patients in a precise and timely format must be accessible to healthcare organizations, EMS and emergency management personnel. Platforms such as EMResource for bed availability, EMTrack for tracking of a patient, and the Michigan Health Alert Network (MIHAN) for messaging, alerts, and information requests are all available.

4. Engage in efforts to define crisis standards of care.

There needs to conversations regarding altered or crisis standards of care at the local, regional, state and national level. Healthcare coalitions and partners can have these discussions at the local level to develop guidance documents for inclusion into the healthcare organizations EOP. Coalitions can ensure the developed guidance, including definitions, indicators, triggers, and protocols are relevant for both urban and rural settings. Specific guidelines have been developed

in some states for hospitals, EMS and intensive care units for the allocation of scarce resources during a disaster. The guidelines are accepted scoring rubrics and processes for those states. The developed strategies also delineate roles for the different stakeholders in the process.

National Association of County and City Health Officials. (2014). Responding to medical surge in rural communities: Practices for immediate bed availability. Retrieved <u>http://nacchopreparedness.org/wp-</u> <u>content/uploads/2014/11/Responding-to-Medical-Surge-in-Rural-Communities.pdf</u>. Accessed February 20, 2018.

Diagram 6

Small and Rural Hospital Flowsheet



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RESOURCES

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Resource 1:

Hospital Immediate Bed Availability (IBA) Planning Checklist

Using the Checklist: The individual or team responsible for disaster planning should review the checklist.

Name and title of initial Incident Commander: _____

Operational Period:	Date:	<i>Time:</i>
- I · · · · · · · · · · · · · · · · · ·		

Command and Management Structure

Status	Location	Plan Elements
C- Completed IP-In Progress, NS- Not Started, and NA- Not Applicable	Which Plan is referenced? Safety Mgmt. Plan, Infectious Disease Plan, EOP, etc.	Identifies indicators and triggers, determine who has decision-making authority, what is the process for activating the Emergency Operations Plan (EOP) and the IBA plan:
		• Establish communications with Regional Medical Coordination Center (MCC) following ESF-8* reporting systems to report: patient census and bed capacity using EMResource, standardized reporting terminology; hospital status, critical issues, and resource requests
		• Activation (define responsibility and activation process)
		Begin thinking about and developing indicators and triggers to end IBA and begin to return to normal activities
		• Develop indicators and triggers for stopping IBA and returning to normal operations
		Surge Space: Specific protocols for creating capacity to care for a significant surge of disaster incident patients
		• Reverse triage to discharge patients from the hospital, including transport methods

• Implement protocols for rapid and periodic review of patients for admission, discharge or transfer
• Implement plan for immediate cancellation/delay of scheduled/non- emergent admissions, procedures, and diagnostic testing
Diagnostic/Ancillary services (Laboratory, Imaging, and Special Procedures)
• Capacity and use, considering cohorting of patients (inpatient, minor care, holding)
• Communication and coordination with Healthcare Coalition regarding activated and available community resources to triage, discharge or transfer (plan should include checklist with location, level of care and contact information)
• Management and operation of the area (describe responsibilities and procedures)
• Identify how clinical areas may be utilized
Defer scheduled clinic visits
• Equipment and supplies (including re-supply)
• Staffing (identify requirements and staffing plan)
• At-Risk populations requiring medical treatment, sheltering and/or safe harboring (including admission and/or transfer information)
Additional Initial Care Areas
Inpatient capacity: specific plans for increasing bed capacity to care for a surge of inpatients while maintaining continuity of operations and care for current patients.

	• Critical care: expansion of bed capacity in existing units, use of other areas/units. This may include admitting trauma, burn patients or specialty patients who are stable and unable to transfer to appropriate level of care.
	• Utilization of Intermediate Care: step-down, telemetry units
	• Medical/surgery care: possible use of alternative care areas within the facility
	• Specialty units: pediatric, neonatal, and maternity: this may include plans for increasing bed capacity or delivery of care. This may be due to the inability to transfer to appropriate level of care.
	• Ambulatory Care Capacity: specific plans for expanding capacity for surge of emergency/ambulatory patients, including use of ambulatory care centers, and opening alternative treatment areas (clinics, other hospital areas and facilities)

* Emergency Support Function (ESF) #8 – Public Health and Medical Services provides the mechanism for coordinated Federal assistance to supplement state, tribal, and local resources in response to a public health and medical disaster, potential or actual incidents requiring a coordinated Federal response, and/or during a developing potential health and medical emergency. ESF-8 also includes mental health services and mass fatality management.

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Staffed Versus Licensed Beds

Staffed Beds: Beds that are licensed and physically available for which staff is on hand to attend to and treat the patient who occupies the bed. Staffed beds include those that are occupied and those that are vacant.

Licensed Beds: The maximum number of beds for which a hospital holds a license for a specific type of bed. Many hospitals do not operate all of the beds for which they are licensed.

Note: The Michigan Licensing and Regulatory Agency does not have definition of staffed beds under statute. They did approve the definition above. The licensed beds definition in state statute is noted above.



Hospital Emergency Operation Plans to Refer to in an Immediate Bed Availability Response

- 1. Incident Command
- 2. Medical Surge
- 3. Communications
- 4. Reverse Triage
- 5. Bed Management
- 6. Staffing
- 7. Resources
- 8. Volunteers
- 9. STAT cleaning of rooms

Michigan's Regional Medical Coordination Center's Contact Information

Region 1 MCC: 517-546-9111 D1rmrc@sbcglobal.net

Region 2 North MCC: 248-267-0535 RMCC@region2north.com

Region 2 South MCC: 863-203-7733 email@2south.org

Region 3 MCC: 800-571-8859 BTDNregion3@gmail.com

Resource 5

Region 5 MCC: 269-337-2500 Aircare.org

Region 6 MCC: 855-734-6622 MIRegion6.org

Region 7 MCC: 989-731-4975 MIregion7.com

Region 8 MCC: 866-276-4443 R8MCC@r8hcc.org

Map of the Healthcare Coalition Regions



Acronym List

Acronym	Term
ACS	Alternative Care Site
ASPR	Assistant Secretary for Preparedness and Response
CEDOCS	Community emergency department overcrowding scale
CHECC	Community Health Emergency Coordination Center
СТ	Computed Tomography
ED	Emergency Department
EMResource	Supports status reporting and bed availability
EMTrack	A web-based patient tracking process
EMS	Emergency Medical Service
EOP	Emergency Operations Plan
ESF #8	Emergency Support Function #8 – Public Health and Medical Services
FQHC	Federally Qualified Health Centers
HEENT	Head, eyes, ears, nose, throat
HCC	Healthcare Coalition
HHS	Health and Human Services
HPP	Hospital Preparedness Program
IBA	Immediate Bed Availability
IC	Incident Command
IV	Intravenous
LTC	Long Term Care
MCC	Medical Coordination Center
MDHHS	Michigan Department of Health and Human Services
MICIMS	Michigan Critical Incident Management System
MIHAN	Michigan Health Alert Network
MRC	Medical Reserve Corps
MRN	Medical Record Number
NACCHO	National Association of County and City Health Officials
NKA	No Known Allergies
OB	Obstetrics
OR	Operating Room
PACU	Post Anesthesia Care Unit
POV	Privately Owned Vehicle
SEOC	State Emergency Operations Center
ТВ	Tuberculosis

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Supply Chain Disaster Preparedness Manual



U.S. Department of Health and Human Services Centers for Disease Control and Prevention

Oak Ridge Associated Universities (ORAU) is a university consortium leveraging the scientific strength of major research institutions to advance science and education by partnering with national laboratories, government agencies, and private industry. ORAU manages the Oak Ridge Institute for Science and Education for the U.S. Department of Energy (DOE).

The Oak Ridge Institute for Science and Education (ORISE) is a DOE institute focusing on scientific initiatives to research health risks from occupational hazards, assess environmental cleanup, respond to radiation medical emergencies, support national security and emergency preparedness, and educate the next generation of scientists.

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¹ At the time this document was created HPRT was known as the Healthcare Preparedness Activity (HPA) and was located in the Division of the Strategic National Stockpile. HPRT is currently located in the Capacity Building Branch, Division of State and Local Readiness, Division of State and Local Readiness, Office of Public Health Preparedness and Response.

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Sherline Lee Kelly Dickinson Dahna Batts Will Artley Betsy Smither [This page is intentionally blank]

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Chapter 1 – Introduction

DISASTER

- A sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources²
- When the destructive effects of natural or man-made forces overwhelm the ability of a given area or community to meet the demand for healthcare³



Hospital damaged by the Moore, Oklahoma tornado in 2013

OVERVIEW

Disaster. That is the operative word for this manual. Disaster preparedness. That is its focus.

Preparing for disasters is a much more difficult task than preparing for the day-to-day emergencies that a healthcare facility or system faces. Disaster preparation goes beyond the healthcare facility walls. It involves coordination with community partners and federal and state responders. Disaster preparation calls for everyone to work together for a common goal: to meet the needs of the community in a time of extreme devastation. This manual provides a framework for preparing for such a coordinated and collaborative response to a disaster.

² International Federation of Red Cross and Red Crescent Societies, <u>http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/</u>

³ American College of Emergency Physicians, <u>http://www.acep.org/</u>

WHY THIS MANUAL IS NEEDED

In late 2013, the Association for Healthcare Resources and Materials Management (AHRMM) surveyed its membership to assess their level of readiness for a disaster. While the survey responses did indicate a high level of disaster planning, survey respondents identified topics they would like to see addressed further in a manual or other format, such as coordinating with local or state governments during a disaster and determining the roles the federal government will play in a disaster, among other things. These topics were not covered thoroughly in AHRMM's *Disaster Preparedness Manual for Healthcare Materials Management Professionals* (2007). As a result, these topics helped to inform the content of this manual.

BACKGROUND

The AHRMM membership survey resulted from a meeting with the Centers for Disease Control and Prevention (CDC) Healthcare Preparedness and Response Team (HPRT)⁴ and the Oak Ridge Associated Universities (ORAU) Oak Ridge Institute for Science and Education (ORISE) in February 2012. At the meeting, federal partners and private sector experts discussed current gaps in knowledge about the U.S. healthcare system's supply chain and obstacles that inhibit effective response to an influenza pandemic or other large-scale infectious disease event.

In early 2013, CDC staff engaged the AHRMM Board of Directors to update them on the progress of post meeting activities. The board agreed to the concept of a joint effort to produce a newer, up-to-date disaster preparedness manual and later agreed to make the manual freely available on their website and CDC's website.

TARGET AUDIENCE

Healthcare supply chain managers are the primary target audience for this manual. Healthcare (facility) emergency managers are the secondary audience. Other users of the manual could include healthcare supply distributors, healthcare administrators, clinicians, and government and nonprofit professionals involved in disaster planning and response.

⁴ At the time this meeting was convened, HPRT was known as the Healthcare Preparedness Activity (HPA) and was located in the Division of the Strategic National Stockpile. HPRT is currently located in the Capacity Building Branch, Division of State and Local Readiness, Division of State and Local Readiness, Office of Public Health Preparedness and Response. HPA resides within the Office of Public Health Preparedness and Response, Division of State and Local Readiness at CDC.

PURPOSE

The purpose of this manual is to help healthcare supply chain managers prepare for disasters by showing how disaster preparation is a whole-community, coordinated effort. The purpose of this manual also is to help supply chain managers become more familiar with the hazard scenarios likely to impact their facility or system as well as their community, develop supply chain-related plans to help respond to these scenarios, and if possible, begin developing an all-hazards cache of medical supplies to ensure a hospital or healthcare system is prepared for these hazard scenarios.

GUIDING PRINCIPLE

Perhaps the most important point to make before beginning a planning effort is that planning should be a community-wide effort. Planning cannot be undertaken by a single individual. Instead, development of a disaster plan should include expertise and input from many partners within a healthcare facility or system and the community, either on a planning team, a coalition, or both. Bringing these people together is crucial to the success of a planning effort, as will be shown in later chapters of this manual.

ASSUMPTIONS

- An internal planning team has been or will be established in the healthcare facility or system to help the supply chain manager work through this manual. (See Chapter 2 for more information about this team.)
- The various planning elements in this manual can be completed individually, but should be coordinated with the planning team or other community partners (i.e., the supply chain manager should not feel compelled to work alone on this manual and should use the planning team or other subject matter experts [SMEs] for feedback).

BARRIERS/ISSUES TO CONSIDER

- Supply chain department managers will need to work with many other hospital and nonhospital partners to determine what supplies will be needed in an emergency.
- Supply chain managers need input from many sources to determine the critical supplies that are needed during a disaster. Sometimes they do not get all of the input they need or they do not receive it in a useful way.

- Implementing the recommendations made in this manual will be dependent on vendor compliance, market availability of critical supplies, and availability of financial resources.
- Regulatory or legal directives may be barriers to implementing some of the recommendations made in this manual.
- Preparing for some disasters is difficult because of a lack of knowledge in the community about how to specifically respond to the disaster (e.g., a radiological incident).

QUESTIONS TO CONSIDER

Answering these questions may be helpful in preparing you for the next chapter.

Questions	Response Complete?
Do you know what types of disasters or emergencies your healthcare facility or system has experienced in the past?	Yes 🗆 No 🗆
- If not, do you know who has this information?	
In terms of the supply chain, do you know what lessons were learned? What worked well? What did not?	Yes 🗆 No 🗆
Are you currently involved in your facility's or system's emergency preparedness/planning activities?	Yes 🗆 No 🗆
- If not, can you become involved in these activities?	Yes 🗆 No 🗆
Do you work with others in your facility or system on these emergency preparedness/planning activities?	Yes 🗆 No 🗆
 If not, do you know who you could work with in your facility or system on these emergency preparedness/planning activities? 	Yes 🗆 No 🗆
Are you currently involved in your community's emergency preparedness/planning activities (e.g., drills, exercises, meetings)?	Yes 🗆 No 🗆
- If not, can you become involved in these activities?	Yes 🗆 No 🗆
Do you work with others in your community to help plan these emergency preparedness/planning activities?	Yes 🗆 No 🗆
 If not, do you know who you could work with in your community on these emergency preparedness/planning activities? 	Yes 🗆 No 🗖
FINAL THOUGHT

CDC would appreciate your feedback on this document. You may provide this feedback by sending it to <u>healthcareprepared@cdc.gov</u>.

Chapter 2 – Getting Started: Identifying Your Planning Partners

OVERVIEW

Before you begin reading through this manual and working through the tasks outlined within it, you need to understand that you should not feel pressured to undertake these tasks on your own. As pointed out in the guiding principle in the previous chapter, planning or preparing for a disaster is an effort that involves many partners either within your healthcare facility or system or within your community. In order for you to be better prepared for a disaster as a supply chain manager, you need to leverage the knowledge and expertise of these partners. Moreover, you need to allow them to leverage your knowledge and expertise. This collaborative relationship will result in enhanced disaster preparedness for your healthcare facility or system as well as for your community.

KEY POINT OF THIS CHAPTER

Planning and preparedness activities are a group effort. No one should feel compelled to undertake them alone.

WHAT THIS CHAPTER COVERS

This chapter provides an overview of two internal partner groups you can leverage to enhance your healthcare facility's or system's and your community's preparedness for a disaster. These two groups are

- Internal planning team
- Environment of Care Committee

INTERNAL PLANNING TEAM

Overview

The focus of this team is not just on planning as being a group of consultants to which you can turn for answers to questions you may have or for explanations of internal protocols or processes related to emergency preparedness and response.

Team Makeup

Your internal planning team should be a <u>small group</u> composed of your facility's emergency manager and people from within your supply chain department⁵. Below is a suggested list of people to include on your planning team:

- Emergency/disaster manager or planner
- A clinical products specialist from within your supply chain department
- A small number of inventory staff and receiving/distribution staff from within your supply chain department or throughout the facility or system
- A small number of purchasing or supply ordering staff from major support services divisions, such as facility maintenance/operations, food services, and sanitation because the supply chain department most likely will be called upon to support them during a disaster.

As stated above, you want to limit your planning team to a small group of people while still encompassing the major supply chain activities. Use the worksheet below to identify these team members.

Name	Title	Contact Information

My Internal Planning Team

⁵ Some healthcare facilities or systems use the term "materials department" instead of "supply chain department." The authors of this manual consider the two terms to be interchangeable.

You also may want to consider keeping the following people informed of the work you do as outlined in this manual because these people are involved in preparedness activities and can be an information resource for you:

- Safety manager
- Security manager
- Risk manager
- Relevant clinical representatives who can help you determine their supply needs during a disaster

Use the worksheet below to identify these people.

Name	Title	Contact Information

My Resource Contacts

ENVIRONMENT OF CARE COMMITTEE

Overview

The Joint Commission's Environment of Care standards require organizations to develop management plans in six functional areas⁶, noting that "management plans should not detail how things are done, but should provide assurance that processes are in place to respond to risk." The six functional areas are safety, security, hazardous materials and waste, fire safety, medical equipment, and utilities.

⁶ From Clarifications and Expectations, Environment of Care Management Plans, Making Sure Your Plans Get the Job Done by The Joint Commission, which is available at http://www.jointcommission.org/assets/1/6/EOCManagementPlans.pdf.

To meet this Joint Commission requirement, your healthcare facility or system has developed management plans in these six functional areas and has assigned ownership of each plan to one or more representatives from your healthcare facility or system. These representatives make up what is known as your facility's or system's Environment of Care Committee.

With regard to your task of working through this manual, your Environment of Care Committee also can be consultants to whom you can turn for answers to questions or for explanations of internal protocols or processes related to emergency preparedness and response. Additionally, this committee could tell you what they need from you in terms of supplies for each of these six functional areas for a given disaster scenario.

Committee Makeup

It is likely that your healthcare facility's or system's Environment of Care Committee already has been assembled; therefore, its makeup has been predetermined. However, you need to ask them to identify pertinent people within the committee or a subcommittee, such as the preparedness subcommittee, who can help you as you work through this manual. To do this, approach the Environment of Care Committee and tell them that you are trying to prepare your facility's or system's supply chain for disasters. They will then connect you with the appropriate people.

Use the worksheet below to identify relevant members of your healthcare facility's or system's Environment of Care Committee who can help you as you work through this manual.

Name	Title	Contact Information

Environment of Care Committee

QUESTIONS TO CONSIDER

Before you move on to the next chapter, please consider these important questions.

Questions	Response Complete?
Have you determined a regular, recurring time for the planning team to meet?	Yes □ No □
Did you seek input from your planning team members about other people who should be involved in helping you to complete the tasks outlined in this manual?	Yes 🗆 No 🗖
Have you determined who will take meeting notes and who will track progress on task completion?	Yes 🗆 No 🗖
Have you discussed roles and responsibilities with Environment of Care Committee members?	Yes □ No □
Have you informed your healthcare facility or system leadership of the work you are undertaking for this project?	Yes 🗆 No 🗖

CONCLUSION

Identifying your planning partners is the first step in gaining the foundational knowledge you need to work through the tasks outlined in this manual. The next step is to, with the help of your planning partners, understand your healthcare facility's or system's framework for disaster preparedness and response. This topic is addressed in the next chapter. [This page is intentionally blank]

Chapter 3 – Understanding Your Facility's or System's Framework for Preparedness and Response

Most hospitals throughout the United States have a disaster plan as a requirement of state licensure and to comply with an accrediting organization. The key question still remains . . . do plans meet the needs of the facility and the community? Often they still do not.⁷

OVERVIEW

As the title suggests, this chapter focuses on your healthcare facility's or system's disaster preparedness and response frameworks. Specifically, you want to look at your facility's or system's level of preparedness for a disaster and, more importantly, your role as a supply chain manager in these plans. The particular plans you will need to review are described below.

- Hazard vulnerability analysis (HVA) The HVA provides a systematic approach to
 recognizing hazards that may affect demand for a hospital's services or its ability to
 provide those services. The risks associated with each hazard are analyzed to prioritize
 planning, mitigation, response, and recovery activities. The HVA serves as a needs
 assessment for the emergency management program. This process should involve
 community partners and be communicated to community emergency response agencies.⁸
- Continuity of operations plan (COOP) The COOP describes how your healthcare facility's or system's essential functions and operations will be maintained during a disaster. As explained later in this chapter, the COOP has 10 components, which may or may not include the supply chain department.
- Emergency operations plan (EOP) Your healthcare facility's or system's HVA and other preparedness plans are combined to create an all-hazards EOP.
- Environment of care management plans The Joint Commission's Environment of Care standards require organizations to develop management plans in six functional areas: safety, security, hazardous materials and waste, fire safety, medical equipment, and utilities.

⁷ From Hospital Disaster Preparedness, Meeting a Requirement or Preparing for the Worst? An Update (Eleven Years After), American Society for Healthcare Engineering, which is available at http://www.ashe.org/management_monographs/mg2009richter.shtml.

⁸ From *Emergency Preparedness, Preparing Hospitals for Disasters – Hazards Vulnerability Analysis,* California Hospital Association, which is available at <u>http://www.calhospitalprepare.org/hazard-vulnerability-analysis.</u>

KEY POINTS OF THIS CHAPTER

- You need to approach your review of your facility's or system's plans with a high degree of curiosity. Do not assume that your needs as a supply chain manager will be addressed within the scope of your facility's or system's existing plans. You need to look at these plans to find out for yourself.
- Many plans (e.g., HVA, COOP) roll up into your facility's or system's EOP. You need to consider all of these plans—not just the EOP—when you try to determine your level of preparedness for a disaster.
- Your review of your facility's or system's plans will help you to determine where you fit (or need to fit) into the preparedness spectrum within your facility or system.
- Your review of your facility's or system's plans will help you to identify areas in your supply distribution management plan or other supply-related plans that need to be updated.
- The internal teams you identified while working through Chapter 2 of this manual should be used to help you review existing plans and identify gaps in planning or areas for improvement.

WHAT THIS CHAPTER COVERS

This chapter provides a method for gauging your facility's or system's level of disaster preparedness as it relates to supply chain issues by reviewing the following assessments and plans: HVA, COOP, EOP, and environment of care management plans.

PLAN OWNERSHIP

Each of the plans listed above has an "owner"—a person within your healthcare facility or system who is responsible for maintaining and updating the plan. These "owners" are the people with whom you are going to talk to in order to gain a better understanding of the content of the plans and how you, as a supply chain manager, fit into the plan. If you are not sure where to find these plans or who maintains them, ask your emergency manager or relevant member of your Environment of Care Committee. You will need this "owner" information before getting started on this chapter of the manual. Use the worksheet on the next page to capture this information.

Plan Ownership Worksheet

Plan Name	Owner	Telephone	E-Mail	Plan Last Updated
HVA				
СООР				
EOP				
Safety Management Plan				
Security Management Plan				
Hazardous Materials And Waste Management Plan				
Fire Safety Management Plan				
Medical Equipment Management Plan				
Utilities Management Plan				
Other plan:				
Other plan:				

HOW TO APPROACH THE TASK OF REVIEWING PLANS

The key point of Chapter 2 was that planning and preparedness activities are a group effort; therefore, you should keep this point in mind as you work through this chapter. You will rely heavily on your internal planning team and your relevant Environment of Care Committee members to help guide you through the process of reviewing existing plans. The approach you should take when reviewing these plans is

• Contact the owner of the plan to start a collaborative process⁹ for reviewing the plan and to secure a copy of the plan to review before proceeding with the next step.

⁹ Assure the owner of the plan that you are not auditing the plan. Your focus is on whether supply chain operations are adequately addressed in the plan. You will collaborate with the owner of the plan to strengthen areas of the plan where supply chain operations are not adequately addressed.

- Meet with or contact your internal planning team or relevant Environment of Care Committee members to inform them of the plan(s) you will be reviewing and to get their insights and opinions on the plan(s).
- Use the discussion questions provided in this chapter as a guide to enhance the collaborative process.
- Using discussion results and your observations from reviewing the plan, identify gaps in planning or issues that need to be addressed.
- Meet with your internal planning team and the owner of the plan to review these gaps or issues, prioritize those that should be addressed, and determine a path forward for addressing them.

PLAN REVIEW

Hazard Vulnerability Analysis

The HVA identifies the hazard scenarios likely to impact your healthcare facility or system as well as your community. The purpose of your review of the HVA is to familiarize yourself with these hazard scenarios so that you can determine your role as a supply chain manager in the response to them.

Before the Discussion

Prior to meeting with the owner of your healthcare facility's or system's HVA, you should meet with your internal planning team and relevant members of your Environment of Care Committee (either in person or by telephone) to review the discussion topics and questions (on the next page) to see if any other topics or questions need to be added. You also want to determine if other facility or system representatives should attend the meeting with the owner of the HVA. For example, with regard to patient needs for each hazard scenario, the owner of the HVA will not be able to answer the questions associated with this topic area. Therefore, a person with a clinical background should attend the meeting so that all parties understand patient needs for a given scenario. The same could apply to other topic areas. The point is to get all relevant parties together to discuss the HVA and to understand each other's needs as it relates to the HVA.

The Discussion

Use the discussion topics and potential questions on the next page as a guide to help you collaborate with the owner of your healthcare facility's or system's HVA to determine if supply chain operations are adequately addressed in it. Please note that these discussion topics and

questions are not all encompassing of the subject matter. Answers to questions you may ask about a certain topic may prod you to ask more questions in order to fully understand the complexities of the HVA. Please also note that you are not required to cover all of these topics or ask these questions (i.e., if you think a question does not need to be asked, then do not ask it). They are provided as a guide.

As you work through each question set, make note of any issues or areas of concern that you may have either using your own notebook or the optional Issue Documentation Form provided at the end of this chapter. If you choose to do so, you will address these issues or areas of concern with the plan owner during the wrap up of your discussion.

Торіс	Potential Questions
General information	• What was the process of conducting the HVA? What was the process for updating it? When was it last updated? Who was involved? Is it under revision?
	 What hazards were identified? Which ones are considered to be most likely to impact us?
	• Do we need to consider any other hazards? If so, what are they?
Patient needs for each hazard scenario	 For (hazard scenario), what kind of patients are we going to see? For example, are we going to see people with comorbidities? Are we going to see an influx of vulnerable populations? Are we going to see trauma victims? Are we going to see people with out-of-the-ordinary symptoms? Are we going to get greater numbers of patients than we normally do? What kind of support are these patients going to need? What supplies do I need to stockpile for these patients? Make note of supplies that you do not normally stock or that require extra storage space or a controlled environment.
Staff needs for each hazard scenario	What about our staff? What support do they need for this hazard scenario?
	What supplies do I need to stockpile for our staff?
	 Make note of supplies that you do not normally stock or require extra storage space or a controlled environment (e.g., personal supplies, housing, childcare, pet care, laundry, food, and water).
Extra staff needs for each hazard scenario	• Does the response to this hazard scenario require the employment of extra staff? If yes, who are the extra staff?

HVA Discussion Topics and Potential Questions

Торіс	Potential Questions	
	 If yes, are personal supplies, housing, childcare, pet care, laundry, food, and water needed for these additional staff? Who is going to provide these supplies? 	
	• Are additional supplies required to ensure the safety of the facility/system staff (e.g., personal protective equipment [PPE])? If so, what are these supplies?	
Surge planning	 Does the HVA account for patient surge? If so, what departments will be impacted? What supplies will they need? 	
	• Will any departments have to relocate because of patient surge? If so, where will they relocate? What supplies will have to be relocated? How will they be relocated?	
Storage needs	• Are any storage spaces for our supplies vulnerable (i.e., might be ruined) in this hazard scenario? Will we lose these supplies?	
	• Do we need extra storage space for some of these supplies? If so, has that been addressed in the HVA? If not, how should we address this need?	
	• Do we need a controlled environment beyond our capabilities for these supplies? If so, has that been addressed in the HVA? If not, how should we address this need?	
	• Do we need supplies that we normally do not stock? If so, has that been addressed in the HVA? If not, how should we address this need?	
Supply Vendors	 How will this hazard scenario impact our vendors' ability to provide the supplies needed for our patients and staff? 	
	 Will we need to sign agreements or contracts with other vendors in order to maintain supplies during this hazard scenario? 	
	Can our vendors provide the supplies that we do not currently stockpile?	
	\circ Can they provide them in a timely manner during this hazard scenario?	
	• Will our vendors be willing to sign an agreement stating that our healthcare facility or system will have priority for the supplies needed for our patients and staff during this hazard scenario?	
Issues/areas of concern	• Here are the issues or areas of concern I have identified from our discussion. (This information comes from your notes or the Issue Identification Form that you filled out.)	
	\circ How can we work together to address these issues or areas of concern?	
	 What steps do we need to take? 	
	 Who do we need to involve? 	

Торіс	Potential Questions
Wrap-up questions	• What do you need from me as the supply chain manager for our facility or system in terms of preparing for these hazard scenarios?
	• How can we work together to enhance our facility's or system's preparedness for all of the hazards identified in the HVA?
	• What do we need to do to improve our facility's or system's HVA so that supply chain operations are adequately addressed?

After the Discussion

The answers to the issues/areas of concern questions and the wrap-up questions will guide your next steps with regard to your facility's or system's HVA. As mentioned earlier in this chapter, your work with the owner of the HVA should be an ongoing, collaborative process; therefore, you and the owner should work together to make the necessary improvements to the HVA. You also can appoint a member of your planning team to work with the owner of the HVA. Just make sure that you clearly identify the work to be done and a timeline for completing it. An optional Issue Resolution Form is provided at the end of this chapter to help you document and track this task.

Continuity of Operations Plan¹⁰

Sometimes referred to as a Business Continuity Plan, a COOP ensures that a healthcare facility's or system's critical business functions and essential services continue during an emergency or a disaster. The elements of a COOP vary from organization to organization, but 10 common components can be found in most COOPs:

- Essential Functions The most critical functions that must be continued under all circumstances
- 2. Lines of Succession An order of succession of leadership positions in your facility or system

¹⁰ The content in this section was adapted from X Hospital Continuity of Operations Plan Guidance Document by the Kansas Department of Health and Environment (<u>http://www.kdheks.gov/cphp/download/Hospital_COOP_Guidance_Document.doc</u>) and Louisiana DHH OPH Continuity of Operations Plan by the State of Louisiana Department of Health and Hospitals Office of Public Health (<u>http://dhh.louisiana.gov/assets/oph/Center-</u> CP/emergprep/COOP_OPH_Central_Office_Annex9_February2011.pdf).

- 3. Delegation of Authority Positions that have the legal authority to carry out particular duties for your facility or system
- 4. Alternate Facilities or Sites Facilities or sites other than your primary facility in which your system can carry out its essential functions
- 5. Vital Records, Systems, and Equipment Records, databases, systems, and equipment needed to support your facility's or system's essential functions
- 6. Interoperable Communications Communications to be used during an emergency as well as applicable contact lists, call down rosters, and logs of trainings and drills
- Human Capital Management How employees will be trained on your facility's or systems COOP and how you will communicate with them during a COOP event as well as other programs available for home and family preparedness, if applicable
- 8. Testing and Exercising How staff will be tested on the COOP and how the COOP will be evaluated
- 9. Devolution How your agency will deal with a catastrophic event that wipes out your primary facility and most, if not all, of your employees. This can be done through using other facilities and their staff members to carry out the essential functions of your agency, training them, exercising with them, and allowing access to the vital systems, records, databases and equipment they would need to fulfill those functions
- Restoration and Recovery Actions and resources needed to restore essential functions; vital records, systems, and equipment; and communication systems to pre-emergency operating conditions

Before the Discussion

Prior to meeting with the owner of your healthcare facility's or system's COOP, you should meet with your internal planning team (either in person or by telephone) to review the discussion topics and questions (on the next page) to see if any other topics or questions need to be added.

The Discussion

Use the discussion topics and potential questions on the next page to help you to collaborate with the owner of your healthcare facility's or system's COOP to determine if the supply chain operations are adequately addressed in it. As you work through each question set, make note

of any issues or areas of concern that you may have either using your own notebook or the optional Issue Documentation Form provided at the end of this chapter.

NOTE: As you review the COOP, think about how you will have to support the organizational (facility or system) COOP as well as the supply chain department COOP. The COOP is not just for the hospital or the supply chain department, rather the COOP will involve both. As a result, some of these questions pertain to supply chain department personnel, but the owner of the COOP needs to be a part of the discussion so that all parties understand their roles and responsibilities in the COOP.

COOP Discussion Topics and Potential Questions

Торіс	Potential Questions
General information	• What was the process for updating our facility's or system's COOP? When was it last updated? Who was involved?
Essential functions	 Is supply chain department management listed as an essential function? If not, why not?
Lines of succession	• Are lines of succession in the supply chain department management clearly defined in the COOP?
	 Have these lines of succession been communicated to supply chain department personnel?
	 Have these lines of succession been communicated to vendors and other stakeholders?
Delegation of authority	• Have the positions that have the legal authority to carry out particular duties related to supply chain department management been identified in the COOP?
	 Have these authoritative positions been communicated to supply chain department personnel?
	 Have these authoritative positions been communicated to vendors and other stakeholders?
Alternate facilities or sites	 Are alternate facilities or sites readily accessible for the transfer and storage of supplies?
	 Do these alternate facilities or sites provide acceptable space for storage of supplies?
	 Do these alternate facilities or sites provide adequate security for storage of supplies?
	• Do these alternate facilities or sites provide adequate temperature controls for stored supplies?
Vital records, systems, and equipment	 Have the records vital to the supply chain department been identified in the COOP?
	• Have the systems vital to the supply chain department been identified in the COOP?
	 Has the equipment vital to the supply chain department been identified in the COOP?

Торіс	Potential Questions
	 Have provisions been made or is infrastructure in place to support back-up systems?
Interoperable communications	 Does the COOP identify how supply chain department personnel will communicate with other facility or system staff during a disaster?
	 Does the COOP identify how supply chain department personnel will communicate with vendors and other stakeholders during a disaster?
Human capital management	• Does the COOP provide for cross-trained staff to assist in the supply chain department?
	 Does the COOP provide for external entities to assist in the supply chain department?
Testing, training, and exercising	• Does the COOP provide for testing and training of supply chain department staff on pertinent components of the COOP?
	 Does the COOP provide for exercising and evaluating areas of the COOP related to the supply chain department?
Devolution	• What will be the process to demobilize and or return supplies and equipment to pre-event status?
	How will we collect and evaluate supplies for return?
	• Who will be responsible for the reverse distribution of equipment and supplies?
	• When we close down and redeploy from alternate sites, what role will the supply chain department play?
Restoration and recovery	• Does the COOP describe how essential functions related to the supply chain department will be restored to pre-emergency operating conditions?
	 Does the COOP describe how vital records related to the supply chain department will be restored to pre-emergency operating conditions?
	 Does the COOP describe how vital systems related to the supply chain department will be restored to pre-emergency operating conditions?
	• Does the COOP describe how vital equipment related to the supply chain department will be restored to pre-emergency operating conditions?
	• Does the COOP describe how communication systems related to the supply chain department will be restored to pre-emergency operating conditions?

Торіс	Potential Questions
Supply Vendors	 Does the COOP provide for alternate methods for obtaining supplies should one or more of our current vendors be unable to fulfill our supply needs?
Issues/areas of concern	• Here are the issues or areas of concern I have identified from our discussion. (This information comes from your notes or the Issue Identification Form that you filled out.)
	\circ How can we work together to address these issues or areas of concern?
	 What steps do we need to take?
	 Who do we need to involve?
Wrap-up questions	• What do you need from me as the supply chain manager for our facility or system to help ensure that our critical business functions and essential services continue during an emergency or even a disaster?
	 How can we work together to make sure our facility or system maintains its essential functions during a disaster?
	 What do we need to do to improve our facility's or system's COOP so that supply chain operations are adequately addressed?

After the Discussion

As was the case with the HVA, the answers to the issues/areas of concern questions and the wrap-up questions will guide your next steps with regard to your facility's or system's COOP. As mentioned earlier in this chapter, your work with the owner of the COOP should be a collaborative process; therefore, you and the owner should work together to make the necessary improvements to the COOP. You also can appoint a member of your planning team to work with the owner of the COOP. Just make sure that you clearly identify the work to be done and a timeline for completing it. An optional Issue Resolution Form is provided at the end of this chapter to help you document and track this task.

Emergency Operations Plan¹¹

Hospitals are required to have an EOP that describes how a facility will respond to and recover from all hazards. It is inclusive of the six critical elements within *The Joint Commission's Emergency Management Standards*:

- 1. Communication
- 2. Resources and assets
- 3. Safety and security
- 4. Staff responsibilities
- 5. Utilities management
- 6. Patient clinical and support activities

The EOP's "all-hazards" approach enhances the facility's or system's ability to respond to a range of emergencies varying in scale, duration, and cause.

Before the Discussion

Prior to meeting with the owner of your healthcare facility's or system's EOP, you should meet with your internal planning team (either in person or by telephone) to review the discussion topics and questions (on the next page) to see if any other topics or questions need to be added.

The Discussion

Use the discussion topics and potential questions below to help you to collaborate with the owner of your healthcare facility's or system's EOP to determine if supply chain operations are adequately addressed in it. As you work through each question set, make note of any issues or areas of concern that you may have either using your own notebook or the optional Issue Documentation Form provided at the end of this chapter.

¹¹ Adapted from *Emergency Preparedness, Preparing Hospitals for Disasters – Emergency Operations Plan (EOP),* California Hospital Association, which is available at <u>http://www.calhospitalprepare.org/emergency-operations-plan.</u>

Торіс	Potential Questions
Communication	• Does the EOP indicate when and how supply chain department personnel should communicate with the Hospital Incident Command System (HICS)?
	 Does the EOP provide a process for communicating with vendors and other external stakeholders?
Resources and assets	• Does the EOP provide for an adequate supply of resources needed to respond to all scenarios identified in the HVA?
	 Does the EOP identify a process for acquiring additional supplies in a timely manner?
Safety and	• Does the EOP provide for the safety of supply chain department personnel?
security	• Does the EOP provide for security of stored supplies?
Staff responsibilities	• Does the EOP identify roles and responsibilities of supply chain department personnel during a disaster?
	 Does the EOP identify roles and responsibilities of HICS staff with regard to supply chain department management?
Utilities management	• Does the EOP provide for self-sufficiency of the hospital for 96 hours?
	 Does the EOP provide for back-up utilities for supply chain department operations?
Patient and critical support activities	 Does the EOP outline what functions, activities, departments, or clinical processes will be increased or shut down in the event of emergency?
	 Can any of the supplies from closed departments be used by the supply chain department?
Supply Vendors	• Does the EOP have contingencies for obtaining supplies should one or more of our current vendors be unable to fulfill our supply needs?
Issues/areas of concern	 Here are the issues or areas of concern I have identified from our discussion. (This information comes from your notes or the Issue Identification Form that you filled out.)
	\circ How can we work together to address these issues or areas of concern?
	\circ What steps do we need to take?
	 Who do we need to involve?

EOP Discussion Topics and Potential Questions

Торіс	Potential Questions
Wrap-up questions	• What do you need from me as the supply chain manager for our facility or system to help ensure that we meet the clinical, administrative, facility, staff, and other needs for the organization?
	 How can we work together to make sure our facility or system has plans, contracts, memoranda of understanding, and other agreements in place to ensure it meets the needs for the hazard scenarios discussed in the EOP? What do we need to do to improve our facility's or system's EOP so that supply chain operations are adequately addressed?

After the Discussion

As was the case with the HVA and the COOP, the answers to the issues/areas of concern questions and the wrap-up questions will guide your next steps with regard to your facility's or system's EOP. As mentioned earlier in this chapter, your work with the owner of the EOP should be a collaborative process; therefore, you and the owner should work together to make the necessary improvements to the EOP. You also can appoint a member of your planning team to work with the owner of the EOP. Just make sure that you clearly identify the work to be done and a timeline for completing it. An optional Issue Resolution Form is provided at the end of this chapter to help you document and track this task.

Environment of Care Management Plans

As mentioned in Chapter 2 of this manual, The Joint Commission's Environment of Care standards require organizations to develop management plans in six functional areas¹²:

- 1. Safety
- 2. Security
- 3. Hazardous materials and waste
- 4. Fire safety
- 5. Medical equipment

¹² From Clarifications and Expectations, Environment of Care Management Plans, Making Sure Your Plans Get the Job Done by The Joint Commission, which is available at <u>http://www.jointcommission.org/assets/1/6/EOCManagementPlans.pdf</u>.

6. Utilities

To meet this Joint Commission requirement, your healthcare facility or system has developed management plans in these six functional areas and has assigned ownership of each plan to one or more representatives of your healthcare facility or system. These representatives make up what is known as your facility's or system's Environment of Care Committee.

Before the Discussion

Prior to meeting with the owner(s) of your healthcare facility's or system's environment of care management plans, you should meet with your internal planning team (either in person or by telephone) to review the discussion topics and questions (on the next page) to see if any other topics or questions need to be added.

The Discussion¹³

Use the discussion topics and potential questions below to help you to collaborate with the owner(s) of your healthcare facility's or system's environment of care management plans to determine if supply chain operations are adequately addressed in them. As you work through each question set, make note of any issues or areas of concern that you may have either using your own notebook or the optional Issue Documentation Form provided at the end of this chapter.

Торіс	Potential Questions
Safety	• What supplies or resources do you need in order to maintain safety during each hazard scenario identified in the HVA?
	• Does the plan identify from where these supplies or resources will come?
	• Does the plan identify how you will acquire these supplies or resources?
Security	 What supplies or resources do you need to maintain security during each hazard scenario identified in the HVA?
	• Does the plan identify from where these supplies or resources will come?
	• Does the plan identify how you will acquire these supplies or resources?

Environment of Care Management Plans Interview Guide

¹³ Note: Since the Environment of Care Committee is most familiar with your healthcare facility's or system's environment of care management plans for the six functional areas, you should try to meet with the entire committee to conduct your interview or, at least, with those members who are most familiar with these management plans. Otherwise, you will need to conduct up to six separate interviews.

Supply Chain Disaster Preparedness Manual

Торіс	Potential Questions				
Hazardous materials and	• What supplies or resources do you need to manage hazardous materials and waste during each hazard scenario identified in the HVA?				
waste	• Does the plan identify from where these supplies or resources will come?				
	• Does the plan identify how you will acquire these supplies or resources?				
Fire safety	• What supplies or resources do you need to maintain fire safety during each hazard scenario identified in the HVA?				
	• Does the plan identify from where these supplies or resources will come?				
	• Does the plan identify how you will acquire these supplies or resources?				
Medical equipment	• What supplies or resources do you need to maintain medical equipment during each hazard scenario identified in the HVA?				
	• Does the plan identify from where these supplies or resources will come?				
	• Does the plan identify how you will acquire these supplies or resources?				
Utilities	 What supplies or resources do you need to maintain utilities during each hazard scenario identified in the HVA? 				
	• Does the plan identify from where these supplies or resources will come?				
	• Does the plan identify how you will acquire these supplies or resources?				
Supply Vendors	• Do our vendors currently stockpile the supplies or resources identified in the topics above?				
	 If they do not stockpile some or all of these supplies, can they stockpile them? 				
	 If they do not stockpile them, are other vendors available that do stockpile these supplies or resources? 				
Issues/areas of concern	 Here are the issues or areas of concern I have identified from our discussion. (This information comes from your notes or the Issue Identification Form that you filled out.) 				
	\circ How can we work together to address these issues or areas of concern?				
	 What steps do we need to take? 				
	 Who do we need to involve? 				
Wrap-up questions	• What do you need from me as the supply chain manager for our facility or system to help ensure that we have the equipment and supplies needed to respond to each of the scenarios in the plan?				

Торіс	Potential Questions			
	• How can we work together to make sure our facility or system is prepared for each of these scenarios?			
	 What do we need to do to improve our facility's or system's Environment of Care Management Plans so that supply chain operations are adequately addressed? 			

After the Discussion

As was the case with the HVA, COOP, and EOP, the answers to the issues/areas of concern questions and the wrap-up questions will guide your next steps with regard to your facility's or system's environment of care management plans. As mentioned earlier in this chapter, your work with the owner(s) of the environment of care management plans should be a collaborative process; therefore, you and the owner should work together to make the necessary improvements to the environment of care management plans. You also can appoint a member of your planning team to work with the owner of the environment of care management plans. Just make sure that you clearly identify the work to be done and a timeline for completing it. An optional Issue Resolution Form is provided at the end of this chapter to help you document and track this task.

SUMMARIZATION

Issues with Planning

After you have reviewed and discussed your healthcare facility's or system's HVA, COOP, EOP, and environment of care management plans, you may have found that one plan might contain information that conflicts with other plans. For example, one plan may list an alternate facility or site that is not listed in other plans. You should document these conflicts using the optional Issue Documentation Form at the end of this chapter or another form of your choosing.

In addition to conflicts in planning, you may have discovered that a planning gap is consistently seen across most, if not all, of the plans you have reviewed. These consistent gaps should take priority in terms of resolution over other planning gaps. You also should document these consistent gaps using the optional Issue Documentation Form at the end of this chapter or another form of your choosing.

After you have documented these conflicts in planning and consistent planning gaps, you should meet with your planning team to strategize how best to address them. One of your strategies may involve the owner(s) of the plans that have conflicts or gaps. As with the plans

you reviewed, you should make sure that you clearly identify the work to be done and a timeline for completing it. An optional Issue Resolution Form is provided at the end of this chapter to help you document and track this task.

Issues with Vendors

Your plan review may have highlighted areas where vendors might be unable to provide needed supplies in a timely manner or might not be able to provide them at all. This revelation may lead you to discussing your concerns with your current vendors or initiating agreements or contracts with other vendors to replace any shortfalls that may have been identified. You can use the optional Issue Resolution Form at the end of this chapter to help you document and track this task.

Last Steps

Although you or a member of your planning team will identify who should address conflicts or gaps in planning and when they should address them, do not assume that the work will be accomplished or completed on time. You need to consider what next steps you will take if one or more of your concerns are not addressed.

PUTTING IT ALL TOGETHER

Below are some tips to help you and your planning team members process the information you gathered from your plan reviews:

- Summarize the information from each plan review with your team.
- Determine what events will <u>directly</u> impact the supply chain department (e.g., building destruction, relocation).
- Determine what events will require the supply chain department to directly support impacted departments (e.g., clinical, facility).
- Determine what events will <u>indirectly</u> impact the supply chain department (e.g., computer failure affecting electronic data interchange).
- Determine what needs to be done in the supply chain department to prepare for these events.

LOOKING AHEAD

The purpose of this chapter was for you to look at specific emergency preparedness plans in your facility or system to gauge your facility's or system's level of preparedness for a disaster. Now that you have looked at these plans, you should have an idea of the level of preparedness with regard to your supply chain department. You also should know what will be the areas of biggest concern when responding to each of the disaster scenarios identified in your HVA. However, one topic that was not touched upon in this chapter is where, when, and why you will need assistance from external entities (i.e., those who are not connected to or contracted with your healthcare facility or system) when responding to a disaster. This topic will be addressed in the following chapters.

Thinking about your gaps in planning and your biggest areas of concern, try to identify external assistance that could help to resolve these gaps or concerns. Enter this information in the appropriate column on the Issue Resolution Form at the end of this chapter.

QUESTIONS TO CONSIDER

Before you move on to the next chapter, please consider the questions listed in the table below.

Questions	Response Complete?
Have you identified the types of supplies <u>and services</u> your facility's or system's clinical, ancillary, and support departments will need to respond to the events outlined in the HVA?	Yes 🗆 No 🗖
Have you identified the types of supplies <u>and services</u> your facility's or system's clinical, ancillary, and support departments will need to maintain their critical functionality as outlined in their various plans and the COOP?	Yes 🗆 No 🗖
Have you flagged any scenarios/situations that are not addressed in the supply chain department COOP, such as power outages?	Yes 🗆 No 🗖
Do you understand the role of the supply chain department in the facility's EOP?	Yes 🗆 No 🗆
Have you identified the strengths/shortcomings that you see in this role?	Yes 🗆 No 🗆
Have you identified the supplies and services that are lacking in each of the plans or in the supply chain department functions/responsibilities outlined in the plans?	Yes 🗆 No 🗖
Have you identified the most dangerous event for your facility and the supply chain department?	Yes 🗆 No 🗖
Have you identified the most likely event to occur for your facility and the supply chain department?	Yes 🗆 No 🗆
Do you know how your department will respond to each?	Yes 🗆 No 🗖

CONCLUSION

Healthcare facilities or systems can plan as best as possible for the worst of conditions but, as you probably have deduced from your plan review, outside assistance will be needed to help with the response to disasters. This point is made above in this question posed to you: where, when, and why will you need assistance from external entities? Now that you have answered this question, you are prepared to move on to the next chapter, which addresses external partners that can be of assistance to you in a disaster situation.

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Issue Documentation Form

Plan Name/Plan Component Name: _____

Issue(s)/Area(s) of Concern

[This page is intentionally blank]

Issue Resolution Form

Plan Name/Plan Component Name: ______

/Concern	Priority	Person(s) to Address It	External Assistance Needed	Timeframe for Resolution

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Chapter 4 – Reaching Out to External Partners

OVERVIEW

One of the conclusions made in the previous chapter was that your healthcare facility's or system's response to a disaster will require the assistance of external partners. Some of this assistance may come from within your community, some may come from your state, and some may come from the federal government. This chapter focuses on these three types of partners and finishes with a discussion of the process for reaching out to them.

KEY POINT OF THIS CHAPTER

Your understanding of the local, state, and federal resources available to assist with a disaster and the protocols for requesting them will enhance your healthcare facility's or system's preparedness and responsiveness to a major disaster.

WHAT THIS CHAPTER COVERS

This chapter covers the following topics:

- Community healthcare coalition
- Local, state, and federal disaster resources
- The process for reaching out to external partners

COMMUNITY HEALTHCARE COALITION

Healthcare coalitions are defined as a "single functional entity" of healthcare facilities and other healthcare assets organized to implement the mitigation, preparedness, response, and recovery actions of medical and healthcare providers in a jurisdiction's healthcare system¹⁴. Healthcare coalitions consist of community partners who have a vested interest in improving the ability of the healthcare system to respond to and recover from emergencies and disasters. Your community probably has a healthcare coalition.

Whereas your internal planning team and your Environment of Care Committee are intended to help you prepare from a facility- or system-based perspective, the purpose of involving your community's healthcare coalition in your preparedness efforts is focused on the whole-

¹⁴ Adapted from Hospitals to Healthcare Coalitions: Transforming Health Preparedness and Response in Our Communities, U.S. Department of Health and Human Services, which is available at http://www.phe.gov/Preparedness/planning/hpp/Documents/hpp-healthcare-coalitions.pdf.

community perspective. They will help you to understand where you fit into their preparedness and response framework. Likewise, you will come to understand where they fit into your healthcare facility's or system's preparedness and response framework, which could include sharing resources and supplies they have on hand during a disaster.

Coalition Makeup

Just as was the case with your Environment of Care Committee, your community coalition already has been assembled; therefore, its makeup has been predetermined.

Your Community's Healthcare Coalition

Use the worksheet below to identify the key players in your community's healthcare coalition, such as the chairperson, resource or supply managers, Strategic National Stockpile (SNS) coordinators, public health representatives, and emergency management representatives.

Name	Agency or Organization	Role	Contact Information

Community Healthcare Coalition

LOCAL, STATE, AND FEDERAL DISASTER RESOURCES

The tables on the following pages list the local¹⁵, state, and federal resources that could be deployed to assist your healthcare facility or system during a disaster. Please note that some of

¹⁵ For the purposes of this chapter, the term *local resources* encompasses community, city, county, or regional resources.

these resources may be organized or administered at the national level, but involve personnel or other resources deployed at the local level.

While you, as a supply chain manager, may not think you will ever need one or more of these resources or partners, you still should consider these key questions for your planning and preparedness efforts as you look through the list of resources:

- Who are your external points of contact for this partner?
- Who in your healthcare facility or system is delegated responsibility for coordinating with this partner?
- What is the importance of this partner to your planning? What do you need to know?
- Under what circumstances will this partner become available to your healthcare facility or system? What type of resources will become available? When will they become available?
- How will you integrate (i.e., train) personnel associated with this partner into your response to a disaster? What responsibilities might you assign to personnel associated with this partner (if relevant)?
- What relevant work has your community's healthcare coalition done with regard to coordinating the request for this partner and its resources? How can/does your facility or system fit into this planning?
- What is the process for requesting this partner? Who within your healthcare facility or system makes the request? Who do they contact to make the request?

Use the External Partner/Resource Planning Worksheet at the end of this chapter to capture relevant information resulting from these questions.
Local Disaster Resources

Resource	Description	What is Provided
LPHD	Your local public health department (LPHD) may be able to provide medical countermeasures (MCMs) or other medical supplies during a disaster.	MCMs, medical supplies
EOC	Emergency Support Function ¹⁶ (ESF) 8 – Public Health and Medical Services will reside in your community's emergency operations center (EOC) with a representative of your LPHD acting as the lead with regard to the distribution of MCMs.	Coordination of requests and distribution of supplies and human resources – EOC personnel will coordinate requests for supplies with your facility's or system's HICS personnel.
CERT	The Community Emergency Response Team (CERT) Program educates people about disaster preparedness for hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations.	Human resources – CERT members may be the first response personnel at your healthcare facility; therefore, you may need to turn to them to help you manage your supplies at hand.
MRC	The Medical Reserve Corps (MRC) is a national network of volunteers, organized locally to improve community health and safety. MRC units engage these volunteers to prepare for and respond to natural disasters (e.g., wildfires, hurricanes, tornadoes, blizzards, floods) as well as other emergencies affecting public health (e.g., disease outbreaks).	Human resources – Your local MRC may be able to provide you with volunteers to assist you with your supply chain management. As a result, you need to know who to contact and how to contact them to request MRC assistance.
NVOAD	Many member organizations of the National Voluntary Organizations Active in Disasters (NVOAD), such as the American Red Cross and the United Way of America, have local chapters in your community that assist in the response to a disaster.	Human resources, equipment and supplies – NVOAD members can provide your healthcare facility or system with basic necessities after a disaster and can help with family assistance, family reunification, and reconfiguration of facility space to meet the needs of disaster victims. You need to know which organizations in your communities are members of NVOAD, how they can help you, and how to request their assistance during a disaster.

¹⁶ An Emergency Support Function is the grouping of governmental and certain private sector capabilities into an organizational structure to provide support, resources, program implementation, and services that are most likely needed to save lives, protect property and the environment, restore essential services and critical infrastructure, and help victims and communities return to normal following domestic incidents.

State Disaster Resources

Resource	Description	What is Provided
SPHD	Like your LPHD, your state public health department (SPHD) may be able to provide MCMs or other medical supplies during a disaster.	MCMs, medical supplies
EMAC	The Emergency Management Assistance Compact (EMAC) offers assistance during governor-declared states of emergency through a responsive, straightforward system that allows states to send personnel, equipment, and commodities to help disaster relief efforts in other states. Through EMAC, states also can transfer services, such as shipping newborn blood from a disaster-impacted lab to a lab in another state.	Human resources, equipment, commodities – During a disaster, you may need to request supplies from a neighboring state. The EMAC process is designed to facilitate such requests. Therefore, you should become familiar with the EMAC personnel structure and the process for making requests.
ESAR-VHP	The Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) is a federal program administered at the state level that verifies health professionals' identification and credentials so that they can respond more quickly when disaster strikes. By registering through ESAR-VHP, volunteers' identities, licenses, credentials, accreditations, and hospital privileges are all verified in advance, saving valuable time in emergency situations.	Human resources – You may need to supplement your supply chain department staff during a disaster. ESAR-VHP can help to provide pre-credentialed volunteers to help you. As a result, you need to know who to contact and how to contact them to request volunteer assistance.

Federal Disaster Resources

Resource	Description	What is Provided
SNS	CDC's Strategic National Stockpile (SNS) has large quantities of medicine and medical supplies to protect the American public if a public health emergency (e.g., terrorist attack, flu outbreak, or earthquake) occurs that is severe enough to cause local supplies to run out. Once federal and local authorities agree that the SNS is needed, medicines will be delivered to any state in the country in time (within 12 hours) for them to be effective. Each state has plans to receive and distribute SNS medicine and medical supplies to local communities as quickly as possible. These medicines and supplies are free, and CDC has stockpiled enough of them to protect people in several large cities at the same time.	MCMs, equipment associated with MCMs – You may need to request SNS assets through the proper channels during an emergency. You need to understand the overall importance of SNS to your planning efforts and how to request SNS assets. You also need to understand what supplies come with SNS and the timeframe you can expect to receive them so that you can factor this information into determining your shortfalls during a disaster (i.e., what your facility will have to supply).
CHEMPACK	Under its mandate, SNS has a maximum 12-hour response time, but this response time is inadequate for a nerve agent event because treatment must be accomplished quickly in order to save as many lives as possible. As a result, CDC established a voluntary participation project (CHEMPACK) for the "forward" placement of sustainable repositories of nerve agent antidotes in numerous locations throughout the United States, so that they can be immediately accessible for the treatment of affected persons.	Nerve agent antidotes – Your healthcare facility or system may experience an unexplained surge of patients seeking treatment for symptoms indicating nerve agent exposure. As a result, you will need to know if your hospital already has CHEMPACK assets or, if not, how to quickly request CHEMPACK assets. You will need to know how to make this request through the proper channels.
FMS	The Federal Medical Station (FMS) was designed by the U.S. Department of Health and Human Services (HHS) for deployment anywhere in the United States when communities experience a widespread terrorism incident or a large-scale natural disaster that incapacitates or overwhelms the affected area's medical care delivery system. A team of approximately 100 personnel is needed to staff an FMS, with personnel provided primarily by the U.S. Public Health Service. Each FMS contains a 3-day supply of medical and pharmaceutical resources to sustain from 50 to 250 stable, primary care-based patients who require bedding services.	Medical and pharmaceutical resources – An FMS may be set up in your community and you may be asked to support it. You need to recognize that the operation of an FMS has limitations, including complete dependence on the host agency (federal, state, or local) for service support, including staffing, since it does not deploy with power, water and food sources, or waste removal capabilities.

Resource	Description	What is Provided
NDMS	The National Disaster Medical System (NDMS) is a federally coordinated medical response system that augments state and local emergency resources during disasters or major emergencies. NDMS also provides supplemental medical support to the U.S. Department of Veteran's Affairs (VA). NDMS resources come from federal, state, and local governments, the private sector, and civilian volunteers. NDMS Response Teams include the Disaster Medical Assistance Team (DMAT), the Disaster Mortuary Operational Response Team (DMORT), and the National Veterinary Response Team (NVRT).	Human resources – NDMS personnel may be stationed in your healthcare facility or system during a disaster. You need to understand what resources the federal government will provide them and what resources you will be expected to provide them.
DMAT	A DMAT is a group of professional and paraprofessional medical personnel (supported by a cadre of logistical and administrative staff) designed to provide medical care during a disaster or other event. DMATs are designed to be a rapid- response element to supplement local medical care until other federal or contract resources can be mobilized, or the situation is resolved. DMATs deploy to disaster sites with sufficient supplies and equipment to sustain themselves for a period of 72 hours while providing medical care at a fixed or temporary medical care site. The personnel are activated for a period of 2 weeks. In mass casualty incidents, their responsibilities may include triaging patients, providing high-quality medical care despite the adverse and austere environment often found at a disaster site, patient reception at staging facilities, and preparing patients for evacuation.	See above
DMORT	A DMORT is composed of private citizens, each with a particular field of expertise, who are activated in the event of a disaster. During an emergency response, DMORTs work under the guidance of local authorities by providing technical assistance and personnel to identify and process deceased victims. Teams are composed of funeral directors, medical examiners, coroners, pathologists, forensic anthropologists, medical records technicians and transcribers, finger print specialists, forensic odontologists, dental assistants, x-ray technicians, mental health specialists, computer professionals, administrative support staff, and security and investigative personnel.	See above

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Resource	Description	What is Provided
NVRT	The NVRT is a cadre of individuals within NDMS who have professional expertise in areas of veterinary medicine, public health, and research. NVRT is the primary federal resource for the treatment of injured or ill animals affected by disasters. NVRT members are private citizens who have been hired as intermittent federal employees and activated in the event of a disaster. As intermittent federal	See above
	licensure is recognized by the state(s) requesting assistance.	
Healthcare Ready	Healthcare Ready (formerly Rx Response) helps to strengthen healthcare supply chains through collaboration with public health and private sectors by addressing pressing issues before, during, and after disasters.	Membership is required to access Healthcare Ready resources. For more information, see http://www.healthcareready.org/join-us.

THE PROCESS FOR REACHING OUT TO EXTERNAL PARTNERS

If a devastating tornado or flood severely damages your facility and your surrounding community, the immediate response to the incident will come from your local emergency responders. Depending on the scope of the devastation, response assets from the region, the state, or even the federal government will be called in to offer assistance. Examples of past disasters where this tiered response was observed are Hurricanes Katrina (2005) and Sandy (2012) and the Joplin, Missouri (2011) and Moore, Oklahoma (2013) tornadoes.

While the response to an incident may begin locally, a structured framework for a tiered response involving local, state, and federal assets has been developed by the federal government.

Federal Emergency Response Overview

Federal Emergency Management Agency and Declared Disasters

The U.S. Department of Homeland Security (DHS) is the federal agency responsible for domestic incident management, usually through the Federal Emergency Management Agency (FEMA). When an incident cannot be managed with the combined response capabilities of state and local governments, the governor(s) of the impacted state(s) may request federal assistance under the Stafford Act. The request is made by the state governor(s) through a FEMA regional office to the head of FEMA to the Secretary of DHS to the President of the United States, who ultimately makes the decision to declare an emergency.

The Public Health Emergency Response Framework

Several federal departments and agencies have authorities to respond to and declare specific types of disasters or emergencies apart from the Stafford Act. Of particular note is the fact that the Secretary of HHS has the authority to declare a public health emergency through the Public Health Service Act. Like the Stafford Act, this declaration allows for the activation of federal assets, such as SNS.

State Emergency Response Overview

As noted in the National Response Framework¹⁷, "Most incidents begin and end locally and are managed at the local level. These incidents typically require a unified response from local agencies, the private sector, and nongovernmental organizations. Some may require additional support from neighboring jurisdictions or state governments." When these incidents are of

¹⁷ Available at <u>FEMA National Response Framework</u>.

disastrous proportions, the governor of the state can declare a state of emergency to enhance the response to the disaster.

QUESTIONS TO CONSIDER

Before you move on to the next chapter, please consider the questions listed in the table below.

Questions	Response Complete?
Do you know how you will order, track, inventory, and distribute the medical supplies received from the different resources mentioned in this chapter?	Yes 🗆 No 🗆
 Have you considered that medical supplies may be from different manufacturers, have differing units of measure, and be different sizes from what you currently have? 	Yes 🗆 No 🗖
 Have you considered that your Inventory Management System (IMS)/perpetual inventory systems may not interface with the different agencies from which you need supplies? 	Yes 🗆 No 🗖
- Have you considered that your warehouse clinical staff will be unaccustomed to the supplies received?	Yes 🗆 No 🗆
 Have you considered that some of the peripheral supplies (e.g., pulse-ox) may not be compatible with your equipment? 	Yes 🗆 No 🗖
 Have you considered that you will have to maintain storage and possibly separate the supplies you receive from those you normally carry? 	Yes 🗆 No 🗖
 Have you considered that you may have to track and report usage on the different supplies to various response infrastructures? 	Yes 🗆 No 🗆
Do you know how you will receive orders from, fulfill requests for, and support the different (non-MCM) response organizations that work with your hospital?	Yes 🗆 No 🗆
 Do you know how you will ensure the response infrastructure/incident command levels is/are all kept informed about demand and supplies fulfilled? 	Yes 🗆 No 🗖
 Do you know how you will deliver to agencies that do not have the logistical ability to pick up supplies from you? 	Yes 🗆 No 🗖
 How will you provide staff to ensure you are able to support the different resources mentioned in this chapter, your organization, and other needs, including when your staff are affected by the incident (i.e., reduced staffing)? 	Yes 🗆 No 🗖

CONCLUSION

At this point, you and your planning team should have identified the following:

- Internal and external partners with whom you need to collaborate to enhance existing plans
- The disaster scenarios most likely to impact your healthcare facility or system
- External partners who can be sources for disaster materiel

All of this information has provided you with the foundation to begin planning for a disaster, which is covered in the remaining chapters of this manual.

External Partner/Resource Planning Worksheet

Partner/Resource Name: ______

Contact Information

Name	Phone	E-mail

Planning Considerations		
	_	
	—	
	—	
	—	
	—	

Chapter 5 – Engaging Healthcare Facility/System Leadership

OVERVIEW

As a supply chain manager, planning for a disaster requires the support of your healthcare facility's or system's leadership. This chapter describes a process for engaging your leadership to help them to understand the scope of your planning efforts and to get their support for the tasks you need to undertake to ensure your healthcare facility or system is prepared for a disaster.

KEY POINT OF THIS CHAPTER

The more your healthcare facility's or system's leadership understands in advance of a disaster event the facility's or system's capacity to respond to the event, the more support he or she will provide to plan for the response. To help your facility's or system's leadership gain this understanding, you will need to synthesize the information you collected in the previous chapters to inform your leadership of (1) the main hazards likely to impact your facility or system with regard to the supply chain and (2) the current state of facility or system planning with regard to the supply chain.

WHAT THIS CHAPTER COVERS

This chapter covers the following topics:

- Meeting with key stakeholders to summarize the findings of the previous chapters in this manual
- Briefing the Environment of Care Committee on the outcomes of the meeting with these key stakeholders
- Meeting with leadership to inform them of the main hazards likely to impact the facility or system with regard to the supply chain and the current state of facility or system planning with regard to the supply chain

MEET WITH KEY STAKEHOLDERS

In Chapter 3, you met with the owner of your healthcare facility's or system's HVA to, among other things, gain an understanding of the hazard scenarios most likely to impact your facility or system. Now, you need to meet with your facility's or system's key stakeholders to discuss these hazard scenarios and determine how they will impact the acquisition and stockpile of supplies needed for the response to the hazard. Key stakeholders to engage are

- Internal planning team members
- Safety manager
- Security manager
- Risk manager
- Relevant clinical representatives who can help you determine their supply needs during a disaster
- Others who you think should be involved in the process

Use the worksheet on the next page to guide you through the discussion of <u>each hazard</u> <u>scenario</u> you identified as likely to impact your facility or system and to document your discussion with your key stakeholders because next you will meet with your facility's or system's Environment of Care Committee to brief them on what you have learned.

NOTE: The goal of your discussion with your key stakeholders is to capture the information needed to brief your healthcare facility's or system's leadership. Once your leadership has agreed with your assessments and approved your path forward, you can delve deeper into your supply needs, which is covered in the next chapter.

Key Stakeholder Discussion Guide	
Hazard scenario	
Do we agree that this is a hazard scenario for which we should prepare? If not, why?	Yes 🗆 No 🗆
Do we understand what we need in terms of supplies for this hazard? If not, why?	Yes 🗆 No 🗖
Have we stockpiled the supplies needed for the response to this hazard? If yes, where is this stockpile? If not, why?	Yes 🗆 No 🗖
How long can our stockpile of supplies meet the needs of those impacted by this hazard	?
If we do not currently stockpile the supplies needed for the response to this hazard, what supplies do we need?	at additional

Key Stakeholder Discussion Guide	
Do our satellite facilities (e.g., outpatient facilities, urgent care facilities) have supplies we can use for the response to this hazard? What are these supplies?	Yes 🗆 No 🗖
Do our satellite facilities expect us to provide supplies to them for the response to this hazard? What supplies are they expecting?	Yes 🗆 No 🗖
Will our vendors be able to provide us with the supplies we need during this hazard? If not, how will we get the supplies we need?	Yes 🗆 No 🗖
What external partners do we need to engage in the response to this hazard?	

Key Stakeholder Discussion Guide

After discussing and answering the above questions, you should use this next set of questions to guide further discussion.

If we cannot stockpile all of the supplies needed for the response to this scenario, what supplies must be on hand at the outset of the response (i.e., what supplies have top priority)?

What issues did we identify in our discussions?

What actions do we need to take to address these issues?

How much time is needed to address these issues?

Notes

POST MEETING ACTIVITIES

After your meeting with your key stakeholders, you and your planning team need to regroup to address the questions posed below for each hazard scenario and identify any issues that need to be resolved by your facility's or system's Environment of Care Committee.

Post Meeting Discussion Guide
Hazard scenario
If we were able to stockpile all of the supplies needed for the response to this scenario, how much time will be required to stockpile these supplies?
For the supplies that we cannot stockpile, what memoranda of agreement (MOAs) or understanding (MOUs) do we need to initiate and with whom?
What are our processes for accessing supplies through our community EOC?
Do we have adequate and appropriate space to stockpile these supplies? Yes □ No □
If yes, where is this space? If no, where can we find space?
Can we estimate whether the cost of these supplies is within our budget? Yes \Box No \Box
Do any of these supplies have a high cost? If so, what are these supplies?

BRIEF THE ENVIRONMENT OF CARE COMMITTEE

The purpose of your meeting with your Environment of Care Committee is to confirm the results of your meeting with your key stakeholders. Another purpose of the meeting is to identify any political issues that may arise as a result of the meeting with your healthcare system's or facility's leadership. Suggested topics to cover in the meeting are provided in a checklist format below.

Торіс	Covered?
The three hazard scenarios most likely to impact the facility or system	
The main concerns about the supplies on hand needed for the response to each hazard scenario (e.g., only enough supplies available for a few days of the response, overall cost)	
Concerns about expectations of satellite facilities	
The plan for addressing identified concerns	
Concerns about expectations of supply vendors	
The plan for addressing identified concerns	
External partners that need to be engaged in responding to the hazard scenario	
The plan for engaging external partners	
Your plan for meeting with your facility's or system's leadership	

With regard to the last topic above, your facility's or system's Environment of Care Committee may tell you not to proceed with the meeting because they may want you to do more research on the issues you identified¹⁸ or address particular issues before meeting with leadership.

MEET WITH LEADERSHIP

The meeting with your healthcare facility's or system's leadership should be short. As stated earlier, the purpose of this meeting is to help leadership understand in advance of a disaster event the facility's or system's capacity to respond to the event and to gain leadership's buy-in to the planning efforts necessary for an effective response to the event. The worksheet on the next page provides a list of topics that should be covered in the meeting.

¹⁸ See Issue Resolution Form on page 35.

Торіс	Covered?
Provide a summary of the work performed to date in this manual	
Present the top three hazard scenarios identified as likely to impact the facility or system while also explaining the level of preparedness for each hazard with regard to the supply chain (i.e., prepared or not prepared)	
Describe your plan for addressing concerns about the supplies on hand needed for the response to each hazard or about expectations of satellite facilities	
Describe your plan for addressing concerns about the ability of supply vendors to provide needed supplies in a timely manner	
Identify the external partners that need to be engaged in responding to each hazard scenario	
Describe your plan for engaging external partners	
Present what you propose to do and how long it will take	
Ask if leadership has any questions or feedback	
Provide a summary of the meeting (i.e., here is what you need from me and here is what I need from you)	

POST MEETING ACTIVITIES

The ultimate goal of your work in this chapter is to have your healthcare facility's or system's leadership agree with your assessments and approve your path forward in developing an all-hazards cache, which is covered in the next chapter. However, if your leadership does not agree with your assessments or suggests a different path forward, you will need to resolve these differences before you proceed to the next chapter.

QUESTIONS TO CONSIDER

Before you move on to the next chapter, please consider the questions listed in the table below.

Questions	Response Complete?
Did you encounter differences between what the key stakeholders, Environment of Care Committee, and hospital/system leadership identified as the top three hazards for which to prepare? If so, how can you address these differences to help your planning and preparedness activities?	Yes 🗆 No 🗆

Questions	Response Complete?
Did you encounter differences between what the key stakeholders, Environment of Care Committee, and hospital/system leadership identified as the biggest supply chain concerns (e.g., money, storage, need, availability, supply vendors)? If so, how can you address these differences to help your planning and preparedness activities?	Yes 🗆 No 🗆
Following these meetings, what additional information or other meetings did the key stakeholders, Environment of Care Committee, and hospital/system leadership request? What actions will you take to fulfill these requests?	Yes 🗆 No 🗖
What is your plan to address each of these action items? Who will help you and what support will you need?	Yes 🗆 No 🗖
Would external expertise or support (e.g., government partners, consultants) help you with these planning and preparedness activities? If so, who would you ask to help you?	Yes 🗆 No 🗖

CONCLUSION

Now that your healthcare facility's or system's leadership has provided you the support you need to move forward in planning for a disaster, you can begin the actual task of doing more detailed planning. That work begins in the next chapter.

Chapter 6 – Developing an All-Hazards Cache

OVERVIEW

In the last chapter, you met with your healthcare facility's or system's key stakeholders, Environment of Care Committee, and, most importantly, leadership to get their support for the steps you need to take to prepare for a disaster. Now comes the point where you actually take steps toward developing an all-hazards cache.

KEY POINT OF THIS CHAPTER

The best approach to building an all-hazards cache is to identify necessary resources and supplies to support the provision of care during your priority disaster scenarios. In this chapter, you will make use of discussion-based meetings with the people who will provide support during a disaster scenario. These meetings will help you determine their needs and the needs of those in the community they would be treating.

WHAT THIS CHAPTER COVERS

This chapter covers the following topics:

- Developing short scenarios for each of the hazards identified as most likely to impact the facility or system to help generate discussion
- Gathering information about resource and supply needs during each of your top three hazard situations
- Comparing the resource and supply needs for each hazard scenario to identify commonalities
- Procuring the needed resources and supplies based on the list of common items and those needed for specific hazards

DEVELOP SHORT SCENARIOS

In order to conduct a discussion-based meeting, you need a scenario to guide discussion. The scenario only needs to be long enough to identify the hazard, how it has impacted the community infrastructure (if applicable), and how it has impacted the citizens of the community in terms of their health and medical needs.

Sample scenarios for the hazards listed below are provided in Appendix A on page 89.

Hazard – With No Notice	Hazard – With Notice
Chemical spill	Blizzard/snow storm
Earthquake	Flood
Large-scale fire	Hurricane
Mass-casualty incident	Influenza pandemic
Tornado/derecho	
Novel, highly pathogenic disease	

List of Hazard Scenarios with No Notice and with Notice

You and your planning team can use these scenarios as templates to build a scenario more applicable to your healthcare facility or system and your community. If one or more of your priority hazards is not covered in the appendix, you and your planning team will need to develop those scenarios. If you think others within the facility or system need to be involved in the development process, then include them as well.

GATHER INFORMATION ABOUT SUPPLY NEEDS

Meet with Primary Staff

Once you have developed your scenarios, you and your planning team are ready to meet with primary staff who will be impacted by the hazard to discuss their needs and the needs of those they will treat. Please note that you may have to engage different staff depending on the hazard scenario. Examples of primary staff to include in your meeting are shown below.

Position	Position
Emergency/disaster managers/planner	Emergency department (ED) personnel
HICS personnel	Infection control/prevention personnel
Safety officer	Worker safety/occupational health personnel
Clinical personnel [*]	Supply chain personnel

Examples of Primary Staff Positions

Clinical personnel include staff from the critical care unit (CCU), intensive care unit (ICU), laboratory, operating room (OR), pharmacy, and others as needed.

Ideally, you would want to meet with these people in one large session, but that probably will not be possible. Therefore, you may need to conduct multiple sessions or identify a champion for each group to meet with separately.

The purpose of these sessions will be to

- Clarify where a supply chain manager may need to support the facility's overall response to the hazard scenario. Specifically, you will want to identify new capabilities or resources that you may not usually provide. To help with this identification, you may want to present the information you gathered in previous chapters in which you determined potential impacts a specific hazard scenario would have on your facility or system or you identified concerns or issues you have in terms of planning and preparing for the hazard. Doing so will provide an opportunity to validate this information with primary staff
- Discuss with your clinical SMEs the types of care not normally provided in your facility on a routine basis that would need to be provided during a hazard scenario, changes to existing care (e.g., cancel elective surgeries, increase certain types of care) that would need to be made, and the anticipated increase in the number of medical procedures for people who would need care during a hazard scenario
- Estimate the demand for medical supplies and the timeframe for when they will be needed
- Project possible training needs related to the use of new equipment or supplies
- Validate any prior information gathered from other stakeholders

The following aids are provided to help you facilitate and capture information from these sessions: sample scenarios (Appendix A), a discussion guide with prompting questions (on page 67), and worksheet templates for capturing information discussed in the sessions (included in the discussion guide).¹⁹

¹⁹You also may wish to share resource lists, such as the Association for Healthcare Resource & Materials Management (AHRMM) formulary (available at <u>http://www.ahrmm.org/ahrmm/news and issues/issues and initiatives/files/disaster formularies.pdf</u>), to help guide discussion and to ensure that critical supplies (e.g., medical gases) are covered during the discussion.

Discussion Guide

Hazard Scenario: _____

Instructions

The purpose of this discussion guide is to help a supply chain manager clarify where resources and supplies may be needed to support a hospital's or system's overall response to a given hazard scenario. In particular, the supply chain manager should focus on supplies or logistical issues that are unique to this scenario and may not be addressed in current response plans.

If you are using this guide as part of a series of discussions (i.e., more than one meeting), you may wish to prefill information from earlier sessions on the provided worksheets. This will help other groups more easily provide additional comment and feedback.

Previously Collected Information

Present the information you gathered in previous chapters in which you determined potential impacts, if any, the hazard scenario would have on your facility or system or in which you identified concerns or issues you have in terms of planning and preparing for the hazard. Ask the following questions:

- Do you agree with this list of concerns or issues?
- If not, what is incorrect?
- If not, what is missing?

Notes:_____

Hazard Impact

As a group, read the sample hazard scenario. Select a person to ask the following questions to determine the general impact this scenario will have on the hospital or system:

- Will we need to evacuate or shelter in place?
- Will we lose communication systems, electricity, gas, water, or other utilities?
- Will we need to alter our normal process for receiving medical supplies or medical gases?
- Will we need to provide transportation, family support, or other services for staff?
- Do we have other needs or issues we must cover?

For each of the above questions that are answered "yes," ask the following questions:

- What will be the role of the supply chain manager in helping to address this situation?
- What resources or supplies do you expect the supply chain department to provide to help address the situation?

Use Worksheet 6.1 below to capture this information.

Situation	Supply Department Role	Expected Resources/Supplies

Worksheet 6.1 – Supply Chain Department Roles and Expectations

Clinical/Patient Care

Next, discuss the types of medical care that would need to be provided for patients under this hazard scenario. The focus should be on care that goes beyond what is provided on a day-to-day basis, whether it is the type of care to be provided or an increased volume of a type of care. Ask the following questions to prompt discussion:

- What types of patients (i.e., injuries or illnesses) would you expect to encounter with this hazard?
- How would you treat these injuries or illnesses? What kind of care will they need (e.g., specialized care, burn care)?
- What supplies would need to be on hand to treat impacted people immediately? How much would be needed?
- What out-of-the-ordinary supplies do we need to provide by units (e.g., ED, CCU, ICU) and shifts?

Next, you need to estimate the demand, training needs, and timeframe in which supplies will be needed.

- How many people would you expect to treat within 48 hours? 1 week?
- What supplies would need to be obtained within 24 to 48 hours of the hazard? How much would be needed?
- What supplies not covered above would be needed to sustain a long-term response? How much would be needed? When would it be needed?
- How long will the impact of this hazard last (i.e., how long will we be treating patients)?
- What kind of supplies can we stockpile in anticipation of the event, if possible?
- What additional supplies or additional quantities of the supplies covered above would be needed for training of staff or equipping families or visitors of patients (e.g., PPE)?

Use Worksheet 6.2 on page 71 to help you capture key points from this discussion. (Italicized entries on the worksheet are examples to show you how the worksheet might be completed.)

Department	Supplies Needed	Quantity Needed	More Than What Is On Hand?	When Will It Be Needed?	What Can Be Stockpiled Prior To Hazard?	What Additional Supplies Are Needed?
ED	PPE for infectious diseases (e.g., respiratory, contact, blood-borne)	Lots. One for every staff member doing work	Yes. We have plenty of PPE, but only two powered air purifying respirators (PAPRS)	 ☑ Immediately □ 24 to 48 hours □ 48 to 96 hours □ 1 week 	One for every staff member for each shift for 3 days, plus any quantities needed for fit testing or training	Supplies for decontamination (e.g., bleach wipes)
сси				 Immediately 24 to 48 hours 48 to 96 hours 1 week 		
ICU				 Immediately 24 to 48 hours 48 to 96 hours 1 week 		
Laboratory				 Immediately 24 to 48 hours 48 to 96 hours 1 week 		
OR				 Immediately 24 to 48 hours 48 to 96 hours 1 week 		
Pharmacy				 Immediately 24 to 48 hours 48 to 96 hours 1 week 		

Worksheet 6.2 – Clinical Supply N	Needs for <hazard scenario=""></hazard>
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Miscellaneous

One final topic to discuss is the potential for your hospital to become a community gathering place during this hazard scenario as was the case with some hospitals during Hurricane Sandy in 2012. In order to determine how the supply chain department fits into this situation, ask the following questions:

- What is the role of the supply chain department in helping to provide the following resources? What assistance or supplies is the department expected to provide in conjunction with these resources?
 - o Shelter
 - o Food
 - o Family support
 - o Pet care
 - Sanitation and comfort care (i.e., additional "creature comforts" that we might not normally have on hand)

Use Worksheet 6.3 below to capture this information.

Worksheet 6.3 – Miscellaneous Supply Needs for <Hazard Scenario>

Logistical Item	Role of Supply Department	Expectations of Supply Department
Shelter		
Food		
Family support		
Pet care		
Sanitation and comfort care		
Other:		
Other:		
Other:		

- End of Discussion Guide -

Meet with Ancillary Staff

After you have met with your primary staff and collected information on their supply needs during each hazard scenario, you will need to meet with your ancillary staff—the people who provide the support services that allow the healthcare facility or system to function properly—to determine their needs during each hazard scenario. Examples of ancillary staff positions are shown below.

Position	Position
Facility management	Food services
Safety	Laundry services
Security	Janitorial services

Examples of Ancillary Staff Positions

Each of these positions will have special supply needs based on the hazard scenario encountered. Meeting with them as a group or separately will help you to identify these supply needs. You will need to brief them on the information you collected from your discussions with primary staff so that they can understand how the staff they will be supporting will be functioning in the given hazard scenario. After you have briefed them, ask the following questions:

- Have we missed anything in our discussions with primary staff?
- What is the role of the supply chain department in helping you to provide your support services? What assistance or supplies are department personnel expected to provide in conjunction with
 - o Facility management?
 - o Safety?
 - o Security?
 - o Food services?
 - o Laundry services?
 - o Janitorial services?
 - Other support services?
Use Worksheet 6.4 below to capture this information.

Logistical Item	Role of Supply Department	Expectations of Supply Department
Facility Management		
Safety		
Security		
Food services		
Laundry services		
Janitorial services		
Other:		
Other:		
Other:		

Worksheet 6.4 – Support Services Supply Needs for <Hazard Scenario>

COMPARE SUPPLY NEEDS

After you and your planning team have met with primary and ancillary staff, next you need to compare the lists of needed supplies you have compiled for each hazard scenario (using Worksheets 6.2, 6.3, and 6.4). The purpose of this comparison is to identify commonalities among the needed supplies. These common supplies will serve as the core supplies for your hospital's or system's all-hazard cache. Use Worksheet 6.5 on page 79 to list the supplies that are common to all of the hazard scenarios you discussed.

ACCOUNT FOR SPECIAL SUPPLY REQUIREMENTS

Some of the supplies you listed in Worksheet 6.5 may have special storage requirements (e.g., refrigeration) or may have special rotation requirements. You will need to research any special requirements for these supplies and then enter these requirements in the appropriate column on the worksheet.

DETERMINE IF YOU CAN STOCKPILE THESE SUPPLIES

In the appropriate column of Worksheet 6.5 check the box that corresponds to

- Cache? Is this supply item something that we can actually stockpile?
- Agreement(s) needed? Is this supply item something that we will need to have agreements in place to obtain during a disaster?

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Supply Item	Ancillary Supplies Associated with the Supply Item	Special Requirements	Cache?	Agreement(s) Needed?

Worksheet 6.5 – Common Supplies for All-Hazards Cache

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LIST ADDITIONAL NEEDED SUPPLIES

Upon completion of Worksheet 6.5, you and your planning team should review the three worksheets you completed for each scenario (Worksheets 6.2, 6.3, and 6.4) and scratch off the items you added to the common supplies list. What is left is the additional supplies you need to add to your all-hazards cache. Use Worksheet 6.6 on page 83 to list these additional supplies needed to support the hazard scenarios.

ACCOUNT FOR SPECIAL SUPPLY REQUIREMENTS

As with your list of common supplies, some of the supplies you listed in Worksheet 6.6 may have special storage requirements (e.g., refrigeration) or may have special rotation requirements. You will need to research any special requirements for these supplies and then enter these requirements in the appropriate column on the worksheet.

DETERMINE IF YOU CAN STOCKPILE THESE SUPPLIES

In the appropriate column check the box that corresponds to

- Cache? Is this supply item something that we can actually stockpile?
- Agreement(s) needed? Is this supply item something that we will need to have agreements in place to obtain during a disaster?

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Supply Item	Ancillary Supplies Associated with the Supply Item	Special Requirements	Cache?	Agreement(s) Needed?

Worksheet 6.6 – Additional Supplies for All-Hazards Cache

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DEVELOP YOUR ALL-HAZARDS CACHE

After you have completed Worksheets 6.5 and 6.6, you and your planning team should look at your list of supplies to determine the timeframe for which each supply item is needed. Supplies that will be needed immediately most likely will make up your all-hazards cache. Next you should estimate the amount of each supply item needed. When estimating the amount of supplies needed and when they are needed, take into account these factors for each hazard scenario you discussed:

- Types of patients (i.e., injuries or symptoms) you would expect to encounter
- Number of patients who will need the supplies
- Number of staff who will need supplies
- Duration of each hazard scenario

You and your planning team should document the supplies needed, when they will be needed, and approximately how much will be needed. You will need this information when the time comes for you to procure these supplies or to explain why you are procuring them.

As you are developing your all-hazards cache, you should include your supply vendor representatives in your discussions about needed supplies. Your vendors will be able to tell you what they can provide, how much they can provide, and when they can provide it. Having this information will allow you to initiate agreements or contracts with other vendors to make up for shortfalls or to have a back-up supply channel in place.

QUESTIONS TO CONSIDER

Before you move on to the next chapter, please consider the questions listed in the table below.

Questions	Response Complete?
For purchased cached items, how and when will you acquire them (e.g., in bulk, in phases, end-of-year funding, one-time funding)? How will you fund/maintain this cache of supplies in the long term?	Yes 🗆 No 🗖
For cached items you will get through agreements, how will you establish and maintain these agreements? How can you ensure a vendor will provide agreed upon services in the event of an emergency?	Yes 🗆 No 🗆

Questions	Response Complete?
How will you maintain an inventory and rotation schedule for your all-hazards cache to ensure it remains viable whenever it is needed?	Yes 🗆 No 🗖
How will you integrate your all-hazards cache or external support services (e.g., government resources) into your normal chain department operations during an emergency?	Yes 🗆 No 🗖
How will you plan, train, and exercise your supply chain department personnel for the general response operations that are common to the hazard scenarios identified as likely to impact your facility or system?	Yes 🗆 No 🗖
How will you plan, train, and exercise for singular events that will have a unique impact on your supply chain department and your hospital or system?	Yes 🗆 No 🗖
What will be the availability of the supply chain system to support supply requests during the response to the hazard scenario?	Yes 🗆 No 🗖
How often will you review your all-hazards cache to ensure it and the supported operations, agreements, and materials stay viable?	Yes 🗆 No 🗖
Could external expertise or support (e.g., government partners, consultants) help you with these planning and preparedness activities? If so, who would you ask to help you?	Yes 🗆 No 🗖
Has a protocol been developed for the management and movement of patients if key supplies in your all-hazards cache run out and cannot be replenished in a timely manner?	Yes 🗆 No 🗖

CONCLUSION

The purpose of this chapter was to provide you with a framework for identifying common resources and supplies among your priority hazard scenarios, which form the basis for your all-hazards cache. Once you and your team have documented the supplies needed for your cache, what do you do next? Turn to the next chapter to find out.

Chapter 7 – Conclusion

WHAT TO DO NEXT

The contents of your all-hazards cache may change based on the outcomes of exercises or drills, events that have occurred in other parts of the country, or to actual hazard scenarios to which your facility or system has to respond. When this happens, you and your planning team will need to conduct an after-action survey with the primary and ancillary staff who helped you to develop the cache in Chapter 6. This will help you to alter or refine your cache, if necessary.

Questions to consider asking primary and ancillary staff are provided in Worksheet 7.1 below.

Questions	
Did we have any shortages of supplies?	Yes 🗆 No 🗆
What were these supplies?	
What supplies were needed for the response to this hazard scenario that we did not o previous work?	consider in our
What supplies did we overstock (i.e., have much more than expected)?	
What equipment, logistical support, and other management functions were the suppl asked to provide?	y chain manager
What non-MCM supply chain functions were the supply chain manager asked to perform to obtaining and distributing medical supplies?	orm in addition
How efficient was supply chain department communication, inventory/task tracking, performances during the event?	and other

Worksheet 7.1 – After-Action Survey Questions

Based on the answers to these questions, you should reassess the contents and quantities of your all-hazards cache and make any corrections that you and your team deem necessary. If your facility or system experiences another hazard scenario, then you will need to go through this process again.

Appendix A – Sample Scenarios

OVERVIEW

This appendix contains short narratives of the 10 scenarios listed below. The purpose of these scenarios is to help guide discussion on identifying supplies needed for the response to the three hazard scenarios you and your planning team identified as most likely to impact your healthcare facility or system. You and your planning team can use these scenarios as templates to build a scenario more applicable to your healthcare facility or system and your community. If one or more of your priority hazards is not covered in this appendix, you and your planning team will need to develop those scenarios. If you think others within the facility or system need to be involved in the development process, then include them as well.

Hazard – No Notice	Hazard – With Notice
Chemical spill	Blizzard/snow storm
Earthquake	Flood
Large-scale fire	Hurricane
Mass-casualty incident	Influenza pandemic
Tornado/derecho	
Novel, highly pathogenic disease	

List of Scenarios with No Notice and with Notice

NOTE: References and resources are listed for each scenario in this appendix. However, these lists are not all inclusive and should not be construed to mean that CDC endorses one reference or resource over another. These lists represent just a sampling of useful information available on the Internet that you can use to develop realistic scenarios to benefit your planning and preparedness efforts.

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NO-NOTICE SCENARIO 1 – CHEMICAL SPILL

Situation

A train transporting liquefied chlorine gas derails near your community during business hours. Approximately 60 tons of liquefied chlorine spill out of a ruptured freight car. The liquefied gas vaporizes rapidly, with volumetric expansion of 450:1. A 15-mile-per-hour wind blows the gas into the community and, in particular, toward your facility.

Impact to Infrastructure

- Damage to rail system
- Possible need to evacuate 40% of your community
- Possible need to evacuate your facility

Impact to Population

- 40% evacuated
- 1% injured
- 1% dead

Types of Injuries/Illnesses

- Respiratory distress from chlorine gas exposure
- Crush injuries, lacerations, punctures, concussions, contusions from the train derailment

- Your facility could become a public shelter from escaping chlorine gas
- Your facility's employees might be overly concerned about family members and others

- Burgess JL. <u>Hospital evacuations due to hazardous materials incidents.</u> Am J Emerg Med. 17 (1999)
- Greenberg MI, Jurgens SM, Gracely EJ. <u>Emergency department preparedness for the</u> <u>evaluation and treatment of victims of biological or chemical terrorist attack</u>. J Emerg Med. 2002 Apr; 22(3): 273-278. doi:10.1016/S0736-4679(02)00427-4
- Kirk M, Iddins, C. <u>Resources for Toxicologic and Radiologic Information and Assistance</u>. Emerg Med Clin N Am. 2015 Feb; 33(1): 69-88. doi:10.1016/j.emc.2014.09.007
- Murray V, Goodfellow F. <u>Mass casualty chemical incidents—towards guidance for public</u> <u>health management</u>. Public Health. 2002 Jan; 116(1): 2-14
- Runkle JR, Zhang H, Karmaus W, Brock-Martin A, Svendsen ER. Long-term impact of environmental public health disaster on health system performance: experiences from the Graniteville, South Carolina chlorine spill. South Med J. 2013 Jan; 106(1): 74-81. doi: 10.1097/SMJ.0b013e31827c54fc

NO-NOTICE SCENARIO 2 – EARTHQUAKE

Situation

Your community is struck by a magnitude 7.5 earthquake at dawn. The epicenter of the quake is located 20 miles from your community. A magnitude 3.5 aftershock occurs less than 1 hour later.

Impact to Infrastructure

- 50% of buildings in community are damaged or destroyed
- 75% of roads are damaged and impassable
- Communication systems are completely down
- Water and sewer systems are severely damaged

Impact to Population

- 50% displaced
- 35% injured
- 15% dead

Types of Injuries/Illnesses

- Primary Crush injuries, lacerations, punctures, concussions, contusions
- Secondary Exposure, infections

- You may need to evacuate your facility
- Your facility may be asked to take the load of patients from a damaged facility in your community
- Your facility could become a community gathering place

- Arbon P. <u>Applying lessons learned to the Haiti Earthquake response</u>. Aust Emer Nursing J. 2010 May; 13(1-2): 4-6
- Ardagh MW, Richardson SK, Robinson V, Than M, Gee P, Henderson S, et al. <u>The initial health-system response to the earthquake in Christchurch, New Zealand, in February, 2011</u>. The Lancet Inf Dis. 2012 June; 379(9831): 2109-2115
- Bissell RA, Pinet L, Nelson M, Levy M. <u>Evidence of the effectiveness of health sector</u> <u>preparedness in disaster response: The example of four earthquakes</u>. J Health Prom Main. 2004 Jul-Sep; 27(3): 1933-203
- Fariborz Nateghi-Alahi, Yasamin O. Izadkhah, (2004) <u>Earthquake disaster management</u> <u>planning in health care facilities</u>. Dis Prev Mngmt. 13(2): 130-135

NO-NOTICE SCENARIO 3 – LARGE-SCALE FIRE

Situation

A severe drought combined with strong winds in your region has contributed to a wildfire spreading rapidly through fields and forests. The fire is overtaking residential areas in your community, causing the evacuation of those residences. Smoke is blowing into the center of your community, and it gets thicker as time progresses.

Impact to Infrastructure

- Loss of property in the community
- Some roadways blocked or partially blocked, limiting access to critical areas

Impact to Population

- Displacement
- Mental anguish

Types of Injuries/Illnesses

- Primary Inhalation injuries, burns, heat exhaustion
- Secondary Fatigue

- You may need to evacuate your facility
- Your facility may be asked to take the load of patients from a damaged facility in your community
- Community members could lack access to needed medical care
- First responders may require care because of their increased presence

- Barnett J, Dennis-Rouse M, Martinez V. <u>Wildfire disaster leads to facilities evacuation</u>. Orthop Nurs. 2009 Jan-Feb; 28(1): 17-20. doi: 10.1097/01.NOR.0000345849.32424.0a
- Davidson JE, Sekayan A, Agan D, Good L, Shaw D, Smilde R. <u>Disaster Dilemma: Factors</u> <u>Affecting Decision to Come to Work During a Natural Disaster</u>. Adv Emerg Nursing J. 2009 Jul-Sep; 31(3): 248-257
- Hoyt SK, Gerhart AE. <u>The San Diego County wildfires: perspectives of healthcare</u>. Dis Mngmt Resp. 2004 Apr-Jun; 2(2): 46-52.
- Keefe A, Atabaki N, Jenkins P, Rideout K. <u>Evidence Review: Filtration in institutional</u> <u>settings during wildfire smoke events</u>. Disaster Manag Response. 2004; 2: 46-52.
- Kulig JC, Edge D, Smolenski S. <u>Wildfire disasters: Implications for rural nurses</u>. Aust Emerg Nurs J. 2014 Aug; 17(3): 126-134.

NO-NOTICE SCENARIO 4 – MASS-CASUALTY INCIDENT

Situation

An annual festival is held in your community. It draws thousands of people. Many are from outside of your community. Within the span of 60 seconds, three terrorist bombs explode in different sections of the festival. One of those sections is mostly made up of children.

Impact to Infrastructure

- Blocked roads leading into the scene because of chaos
- Blocked roads leading into your facility because of chaos
- Concerns that more bombs may be in the community

Impact to Festival Goers

- 25% injured
- 10% dead
- Mental anguish

Types of Injuries/Illnesses

- Primary Loss of limb, loss of blood, severe trauma, lacerations, punctures, concussions, contusions
- Secondary Mental trauma

- Emergency responders may be delayed getting to the scene and getting to your facility
- Patients may be driven to your facility in private vehicles
- Pediatric providers/specialists and pediatric beds in the immediate area may be limited; regional resources may need to be considered to treat children.
- Parents may show up and demand to see their children

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NO-NOTICE SCENARIO 5 – UNKNOWN, NOVEL, HIGHLY PATHOGENIC DISEASE

Situation

A 33-year-old man presents to your facility's emergency department (ED) with a high fever, respiratory distress, and a rash on his arms and legs of unknown origins. Questioning by ED workers reveals that he has just returned from a 2 month stint as a healthcare worker in the jungles of South America where local news media have reported the occurrence of a mysterious, highly infectious disease. He returned to your community 1 week ago. His symptoms first appeared 1 day later. He went to a local walk-in clinic for treatment. Personnel there prescribed an antiviral medication, which has not had an effect on the man's symptoms. In fact, his symptoms have gotten worse.

Impact to Infrastructure

- Primary Initially, none
- Secondary Possible limited access to your facility

Impact to Population

- Possible exposure of healthcare workers and the general population to an unknown disease
- Potential for widespread infections and deaths in your facility and in the community
- Potential for quarantine measures to be enacted

Types of Illness

Unknown until more investigative work can be completed

- You may have to track workers and patients exposed to this patient
- You may have workers who will not want to come to work because they fear being exposed
- Your facility may become known as "that infected hospital"

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NO-NOTICE SCENARIO 5 – TORNADO

Situation

An EF5 tornado strikes a heavily populated²⁰ section of your community during business hours. Homes are destroyed. Included in the destruction is an elementary/middle/high school or a college/university²¹.

Impact to Infrastructure

- Roads in and out of the damaged areas are impassable
- Power is out in 50% of the community
- Water and sewer systems have been shut down
- Communication systems are damaged

Impact to Population

- 40% injured in the heavily populated section
- 10% dead in the heavily populated section
- 50% injured in the elementary/middle/high school or college/university
- 15% dead in the elementary/middle/high school or college/university

Types of Injuries/Illnesses

- Primary Crush injuries, lacerations, punctures, concussions, contusions
- Secondary Mental trauma, gastro-intestinal illnesses

- The tornado could hit your facility
- Your facility may be asked to take the load of patients from a damaged facility in your community

²⁰ Choose the most populated section of your community for this scenario. This will help you determine the number of injuries and fatalities.

²¹ Choose the type(s) of school(s) in your community with the most students.

• One or more shifts at your facility could be impacted by the tornado

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WITH-NOTICE SCENARIO 1 – BLIZZARD/SNOW STORM

Situation

Meteorologists give you a 3-day notice that a 100-year snow storm will occur in your community. The storm lives up to expectations, dumping over 30" of snow over the region. Gusting winds create blizzard conditions and create high banks of snow. Temperatures are forecasted to remain below freezing for at least 3 weeks. The snow will not be going away soon.

Impact to Infrastructure

- Major roadways in your community are blocked or impassable
- More than 50% of the community has lost power

Impact to Population

- Lack of access to medical care
- Loss of heat in homes

Types of Injuries/Illnesses

- Primary Normal day-to-day injuries and illnesses; slips, trips, and falls; heart attacks
- Secondary Frostbite, hypothermia, exacerbated injuries/illnesses because of lack of access to medical care

- One or more shifts at your facility could be impacted by the blizzard
- Vendors may not be able to make deliveries
- Patients may be driven to your facility in private vehicles or other means of transportation

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- Piercefield E, Wendling T, Archer P, Mallonee S. <u>Winter storm-related injuries in</u> <u>Oklahoma, January 2007</u>. J Safety Res. 2011 Feb; 42(1): 27-32
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WITH-NOTICE SCENARIO 2 – FLOOD

Situation

The annual ice/snow melt²² is predicted to be heavier than normal, which will cause the river flowing through your community to exceed flood stage and spill into the community. As predicted, the river rises to over _____ feet (fill in the blank) above flood stage. The water pushes far into the community.

Impact to Infrastructure

- Businesses and homes flooded
- Roads blocked or washed out by flood waters
- Utilities knocked out or taken offline

Impact to Population

- Possible lack of access to medical care
- Mental anguish

Types of Injuries/Illnesses

- Primary Drownings, increased gastro-intestinal illnesses
- Secondary Snake bites; mental trauma

- Your facility could be flooded
- Your facility could become a community gathering place

²² This scenario could be modified to incorporate an impending tropical storm moving into your community.

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- McGlown KJ, Fottler MD. <u>The impact of flooding on the delivery of hospital services in</u> <u>the southeastern United States</u>. Health Care Manage Rev. 1996 Summer; 21(3): 55-71
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WITH-NOTICE SCENARIO 3 - HURRICANE

Situation

The National Oceanic and Atmospheric Administration (NOAA) has been watching a storm forming in the ocean. NOAA initially predicts the storm to reach hurricane status and make landfall within 50 miles of your community. Three days later, it becomes a Category 3 hurricane with 120-mile-per-hour winds and, as it approaches the coast, it appears to be headed directly towards your community. One day later it makes a direct strike on your community during the middle of the night.

Impact to Infrastructure

- Businesses and homes damaged or destroyed
- Roads blocked or destroyed
- Utilities damaged or destroyed

Impact to Population

- 15% injured
- 5% dead
- Possible lack of access to medical care
- Mental anguish

Types of Injuries/Illnesses

- Primary Blunt-force trauma, crush injuries, lacerations, punctures, concussions, contusions
- Secondary Mental trauma, gastro-intestinal illnesses

- Your facility could be severely damaged by the hurricane
- One or more shifts at your facility could be impacted by the hurricane
- Your facility may be asked to take the load of patients from a damaged facility in your community
- Your facility could become a community gathering place

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WITH-NOTICE SCENARIO 4 – INFLUENZA PANDEMIC

Situation

A novel strain of influenza first appears in Southeast Asia and, within 2 weeks, spreads around the world, upon which time the World Health Organization declares it an influenza pandemic. The disease has now reached your community. It is mostly impacting those under the age of 25 and over the age of 60. No vaccine is available for the virus. The current version of the annual influenza vaccine offers no protection.

Impact to Infrastructure

None

Impact to Population

- 60% of those under the age of 25 and over the age of 60 infected
- 10% of those under the age of 25 and over the age of 60 who are infected die
- 25% of the rest of the community infected
- 5% of the rest of the community who are infected die

Types of Illness

- Primary Influenza-like illness
- Secondary The "worried well"

- An influenza pandemic will result in long-term stress on your employees and the members of your community
- Vendors may run short of needed supplies
- If the pandemic becomes severe enough, your community may need to activate its crisis standards of care plan

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Appendix B – Abbreviations and Acronyms

PREPAREDNESS ACRONYMS

CCU	Critical Care Unit
CERT	Community Emergency Response Team
СООР	Continuity of Operations Plan
DMAT	Disaster Medical Assistance Team
DMORT	Disaster Mortuary Operational Response Team
ED	Emergency Department
EMAC	Emergency Management Assistance Compact
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
ESAR-VHP Emergency System for Advance	e Registration of Volunteer Health Professionals
ESF	Emergency Support Function
FMS	Federal Medical Station
HICS	Hospital Incident Command System
HVA	Hazard Vulnerability Analysis
IC	Incident Commander
ICU	Intensive Care Unit
IMS	Inventory Management System
LPHD	Local Public Health Department
MCM	Medical Countermeasure
MRC	Medical Reserve Corps
NDMS	National Disaster Medical System
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NVOAD	National Voluntary Organizations Active in Disasters
NVRT	National Veterinary Response Team
OR	Operating Room
PAPR	Powered Air Purifying Respirators
PPE	Personal Protective Equipment
SME	Subject Matter Expert
SNS	Strategic National Stockpile
SPHD	State Public Health Department

ORGANIZATIONAL ACRONYMS

AHRMM	Association for Healthcare Resources and Materials Management
CDC	Centers for Disease Control and Prevention
DHS	U.S. Department of Homeland Security
FEMA	Federal Emergency Management Agency
HHS	U.S. Department of Health and Human Services
HPRT	Healthcare Preparedness and Response Team
NOAA	National Oceanic and Atmospheric Administration
ORAU	Oak Ridge Associated Universities
ORISE	Oak Ridge Institute for Science and Education
VA	U.S. Department of Veteran's Affairs