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Hospital Evacuation Guidelines for

Pediatric & Neonatal Patients

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ILLINOIS EMSC
Emergency Medical Services for Children SM
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Acknowledgements

This document was developed by the Illinois Emergency Medical Services for Children (EMSC) program under the direction of the Pediatric Preparedness Workgroup. The first edition of this document (titled *Neonatal Intensive Care Unit [NICU] Evacuation Guidelines,* 2009) targeted NICUs, and was developed by the ad hoc NICU Evacuation Planning committee comprised of perinatal administrators, neonatal nurses, transportation coordinators, emergency planners, Regional Hospital Coordinating Center (RHCC) coordinators, as well as representatives from the Illinois Department of Human Services and Illinois Department of Public Health. This second edition has expanded the target audience to include all hospital inpatient units that care for children including but not limited to: neonatal intensive care units (NICU), nurseries, pediatric intensive care units (PICU), pediatric units, adult medical/surgical units that admit pediatric patients, labor and delivery/obstetrical units, and child and adolescent psychiatric units. Expanding the hospital units addressed by this document prompted the retitling of this edition to reflect its broader scope.

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How to Use These Guidelines

The purpose of these guidelines is to assist hospitals with addressing the needs of hospitalized newborns, infants, children, adolescents, and laboring mothers during unit specific evacuation. ***These guidelines should not be used as a hospital's evacuation plan.*** Rather, the contents of this guide aim to assist in the planning phase as related to general planning concepts, tools and resources, equipment/supplies, and training/education. These guidelines are not all inclusive as there may be additional considerations that individual institutions need to incorporate based on specific needs within their facility.

NOTE: This document defines the age of a child as 15 years of age and younger in accordance with the Illinois Emergency Medical Services (EMS) and Trauma Center Administrative Code. Exceptions to this age range may include children with special healthcare needs (CSHCN)/children with functional and access needs (CFAN). Individual hospitals may define pediatric specific age criteria for admission to their inpatient units that may vary with the Illinois EMS and Trauma Center Administrative Code.

Introduction

Disasters can strike at any time and lead to extended interruptions in operations/services, unstable infrastructures, and/or catastrophic devastation. In a traditional sense, healthcare facilities are viewed as sources of medical care and refuge to disaster victims. Unfortunately, these facilities may also be adversely affected by the disaster. When the hospital infrastructure is compromised and patient care can no longer be provided safely, evacuation and transfer of patients to other facilities may be necessary. Historically, hospital evacuations were considered a rare and unusual occurrence. A review of the literature shows that from 1971-1999 there were 275 reported evacuations of health care facilities with an annual average of 21 in the 1990s.[1] This number has dramatically increased in recent years. For example, in 2017, Hurricane Irma forced the evacuation of 35 hospitals within 3 states (Florida, Georgia, and South Carolina), along with a number of nursing homes and health facilities (i.e. clinics, dialysis centers).[2] The northern California wildfires in 2017 evacuated roughly 200 patients from 2 hospitals in 24 hours.[3] During Hurricane Harvey in 2017, the Houston Chronicle reported that 23 hospitals were evacuated, with another 25 facilities on the "brink of internal disaster status."[4] The 2018 wildfires in Paradise, California forced one hospital to evacuate 80 patients and 200 employees in 50 minutes.[5] These findings emphasize the need for hospitals to develop and implement evacuation plans.

Large scale disasters such as Hurricane Katrina (2005), the Joplin tornados in Missouri (2011), Superstorm Sandy in New York (2012), the Northern California wildfires (2017), and the multitude of hurricanes that affected the U.S. and Caribbean during the 2017 hurricane season, have demonstrated that hospitals need to be prepared to evacuate their facility. Smaller scale incidents such as utility failures and internal fires may also lead to a hospital evacuation. Regardless of the type and scale of the incident, hospitals need to be prepared for both partial and complete evacuation of their facility should it be necessary.

The evacuation of any patient population is a challenging activity; however the mobilization and evacuation of children, particularly the tiniest and most fragile patients such as those in the NICU, is a high risk activity. Evacuation requires a carefully planned approach. Hospitalized newborns, infants, and children have unique needs and additional planning considerations that must be addressed in order to ensure their safety and security during a hospital evacuation. Many of these infants and children have complex medical conditions, depend on medical technology/devices for survival, and are unable to assist with evacuation. In addition, not every hospital has the capabilities to admit and care for newborns, infants, and children, which may present additional challenges in planning for placement after a hospital evacuates. It is essential that hospitals have unit specific evacuation plans established for each inpatient unit where children are admitted including:

- Nurseries
- Neonatal intensive care units (NICU)
- Pediatric units
- Pediatric intensive care units (PICU)
- Adult medical/surgical units that admit pediatric patients
- Child and adolescent psychiatric units
- Labor & delivery (L&D)/obstetrical units
- Procedural and pre/post-procedural units
- Outpatient units

General Evacuation Planning Concepts

The foundation of hospital or facility evacuation planning begins with the emergency management committee. This committee should be well rounded, with representatives from all areas of the institution,[6] particularly pediatric/neonatal specialty units such as: inpatient pediatric unit, L&D/obstetrics, child and adolescent psychiatric units, and outpatient units. Plans should be developed and tested utilizing all disciplines to ensure familiarity with their role and responsibilities. In addition, a multi-disciplinary team can ensure that plans encompass all aspects of a hospital evacuation. Within this document, a variety of evacuation planning concepts will be discussed. In addition, key considerations for the pediatric population will be presented.

Facility Evacuation Plans

A key responsibility of the emergency management committee is the development and maintenance of a facility evacuation plan. These plans provide an overview, procedures, and considerations should an institution need to evacuate. How a hospital or facility defines each type of evacuation should be clearly communicated in their plan or policy. In addition, the decision to implement an alternative type of evacuation should include the same considerations as a full hospital evacuation. When creating a hospital or facility evacuation plan, it is important to conduct a comprehensive analysis of the institution, including areas and units where children are managed. For instance:

- How many patient care areas does the hospital have and what is their capacity?
- What types of units does the institution have?
- Does the institution have critical care units such as an ICU, PICU, or NICU?
- Is there an adult and/or child/adolescent psychiatric unit?
- How many floors is the institution to assess for vertical evacuation?

Throughout the plan/policy, it is essential to utilize standard terminology to ensure consistency. This same terminology should also be utilized during all trainings and exercises. Key components that should be integrated into the evacuation plan or policy should include but are not limited to the following:

- Authority & Decision Making
- Alternate Care Facilities
- Communications
- Emergency contacts
- Equipment
- Hazard Vulnerability Analysis (HVA)
- Job Action Sheets (see example in Appendix D)
- Patient movement
- Pre-evacuation procedures
- Relocation points (vertical, horizontal, external, secondary/back-up)
- Recovery
- Roles & responsibilities
- Unit bed capacity

Hazard and Vulnerability Analysis (HVA)

The emergency management committee needs to complete a Hazard Vulnerability Analysis (HVA), which can assist in identifying potential threats to your institution. An HVA emphasizes which types of natural or man-made disasters are likely to occur in a community (e.g., tornado, flood, chemical release, or terrorist event). It further highlights the impact those disasters may have on the community and any capabilities that are in place that may lessen the effects of the disaster.

Authority & Decision Making

Deciding whether to evacuate a hospital or take refuge in the current location (shelter-in-place) is a complex, time-sensitive decision that creates uncertainty and the potential for significant adverse repercussions.[7,8] Decision making processes need to take into consideration advanced warning events (i.e. storm, blizzard, flood) and no advanced warning events (i.e. explosion, fire, tornado). For the purposes of this document, the term "urgent/planned" evacuations will reference advanced warning events while the term "immediate" evacuation will reference no advanced warning events. Before Hurricane Katrina in 2005, very few health care institutions had evacuation plans. However, over the years, hospital evacuation has become an increasingly common activity in response to both natural and man-made disasters.

Recent literature provides limited guidance on the evacuation decision making process. A comprehensive literature review was conducted utilizing the CINAHL and PubMED databases with key words "evacuation," "decision making," and "pediatric." Although evacuations have been present in the literature for several decades, for the purposes of this document, the time frame from 2010 to 2018 was utilized in an attempt to capture more current evacuation practices. This resulted in less than 25 studies that discuss or evaluate the decision making process for partial or full evacuation of an institution. The decision itself requires consideration of many variables, including critical infrastructure vulnerabilities, electrical power capabilities, safe transport of patients without the use of elevators, transport routes that may become impassable due to weather, and other factors that may or may not be able to be determined in advance.[9] In addition, the time available versus the time necessary for evacuation must be taken into account.

In hospitals that have experienced evacuation of their facilities, the authority to make the evacuation decision resides with a hospital administrator such as the facility director,[8] director of emergency management,[10] or chief executive officer (CEO).[10] Factors influencing decisions included previous experience with hospital evacuations,[5] presence of a mandated order from the local, state, or federal government or organizations,[8] ability to maintain continuity of operations (COOP),[10] and risk to patients.[10] The Hospital Evacuation Decision Guide developed by the Agency for Healthcare Research and Quality (AHRQ),[7] incorporates these decision-making considerations, as well as many others. Included in the guide are decision trees for an urgent/planned evacuation (*Advanced Warning Evacuation Decisions*, Figure 1) and an immediate evacuation (*No Advanced Warning Evacuation Decisions*, Figure 2). In addition, Appendix E provides a table that outlines *Factors to Consider in Deciding Whether to Begin a Pre-Event Evacuation*.

Patient and staff safety should be of the utmost importance when making evacuation decisions. When developing an institution evacuation plan or policy, it is critical to designate a specific role that activates the evacuation plan to avoid confusion or miscommunication. An alternate role should always be identified in the event the primary contact is not available. However, any individual should make the evacuation decision when the immediate safety of staff or patients are jeopardized.

Alternatives to Full Facility Evacuation

Full hospital or facility evacuations may become necessary in certain situations such as power loss or infrastructure damage that places staff and patients at risk. This encompasses removing all patients and personnel from the building(s) and relocating to a safe area. In lieu of a full facility evacuation, consider the following alternatives with consideration to hospital protocol or policy and type of event:

- Shelter-in-place: remain indoors and take refuge in the current location[11]
    - May be advantageous for vulnerable populations in areas such as intensive care units (ICUs) and non-ambulatory patients who are more resource intensive[12]
- Partial Evacuation: strategy to evacuate general areas nearest the incident of concern while remaining in the same building
    - Horizontal: move patients on the same floor away from the area of concern or danger
    - Vertical: move patients to a higher or lower floor away from the area of concern or danger
    - Some hospitals may not need to implement all the above types of evacuation. For example, a single story hospital will not need a vertical evacuation plan.

Communication

Hospital Incident Command System (HICS)[13]

The hospital incident command system (HICS) is an incident management system that can be used by hospitals or organizations to manage emergency incidents. As an organizational tool, it was also developed for institutions to ensure well defined hierarchal roles with limited redundancy. It is extremely useful in providing an organizational structure for incident management, but also guides the process for planning, building, and adapting that structure. This system possesses the same principles as the Incident Command System, but has been adapted for the healthcare environment, and can be used by all hospitals regardless of size, location, patient acuity, patient volume, or hazard type. NOTE: HICS is not meant to replace an organization's design nor is it meant to serve as the hospital's emergency operations plan. The HICS command structure can be found in Appendix F.

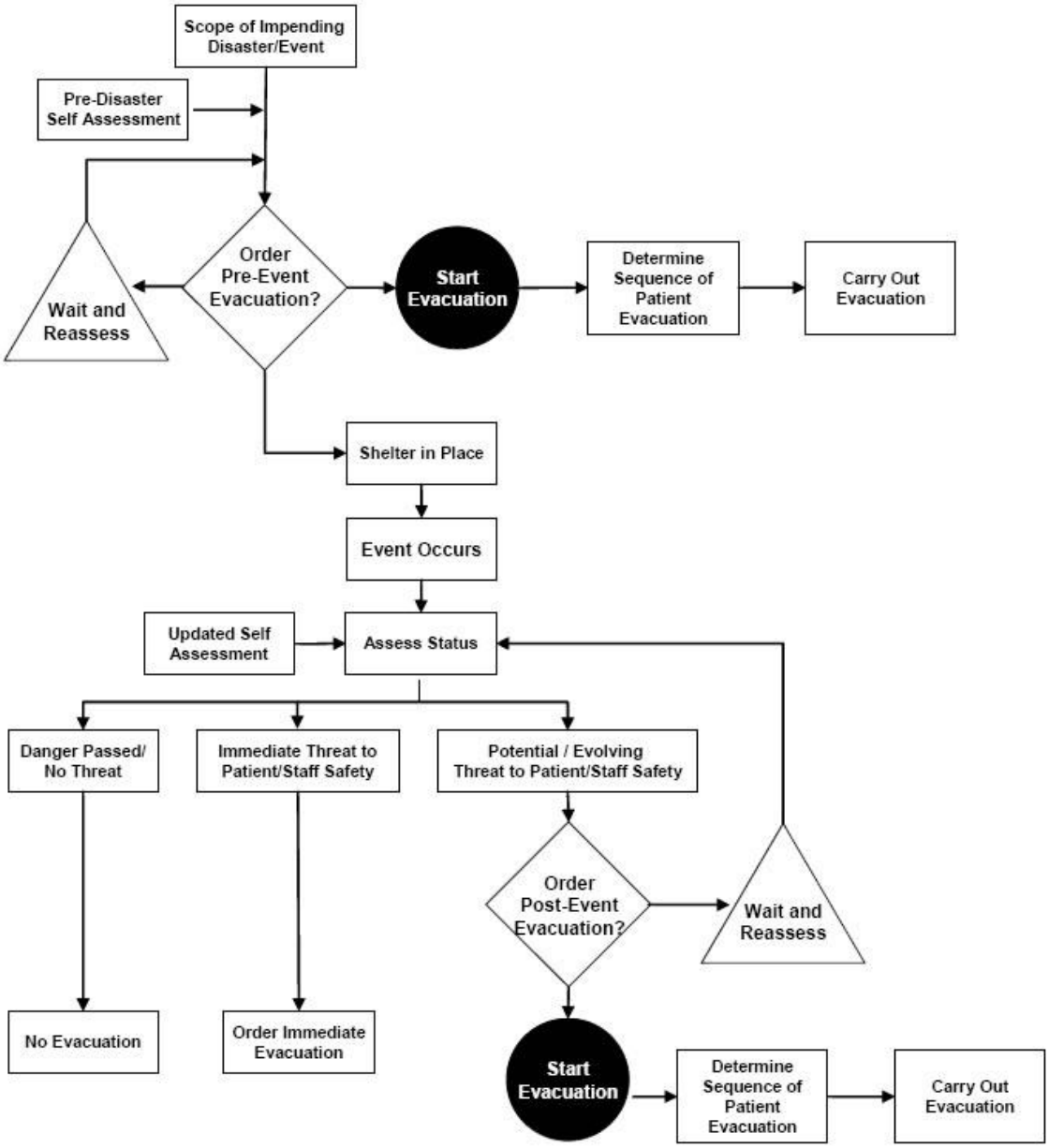
Notification of Evacuation

Typically, the notification of evacuation is completed by hospital administration. In Illinois, the following should be notified about a potential or actual evacuation:

- Internal Hospital Leadership & Staff
- Local Fire Department
- Local Law Enforcement
- EMS Resource Hospital
- Regional Hospital Coordinating Center (RHCC)
- Local and State Health Department

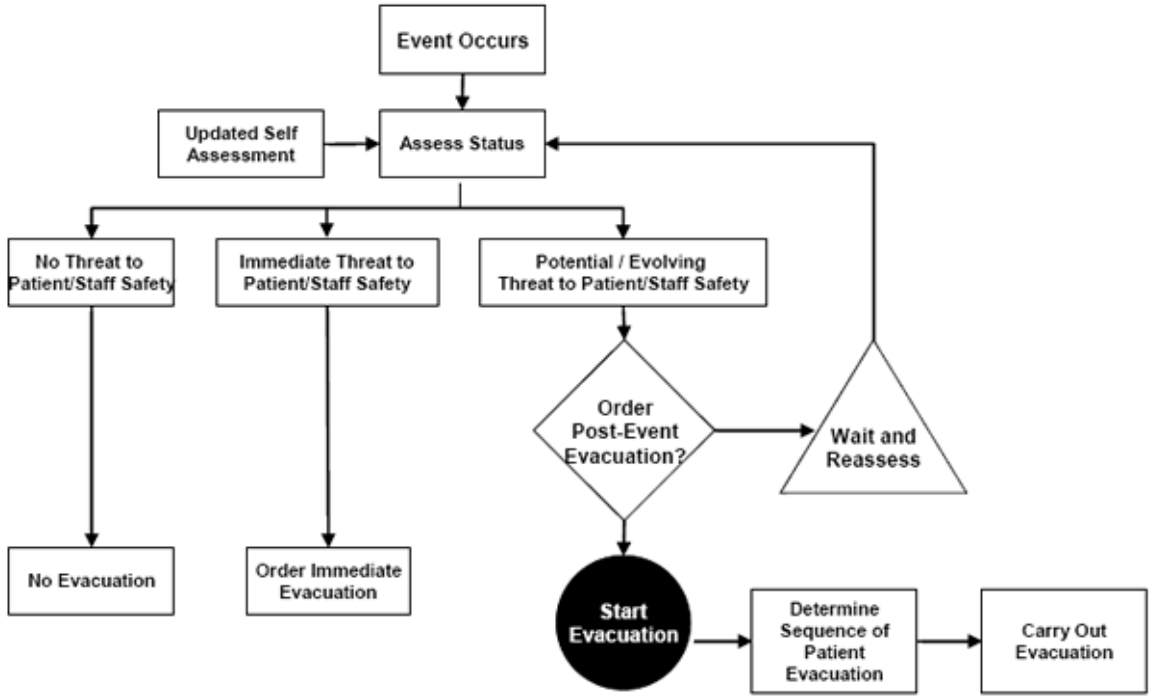
Other entities may need to be notified based on each individual hospital plan or policy and the nature of the event. However, in instances where a patient or staff member is in any immediate danger, they should first be immediately evacuated to safety. Then, appropriate leadership should be notified of the threat.

Figure 1: Advanced Warning Event Evacuation Decisions



Source: Hospital Evacuation Decision Guide (Figure 1). Content last reviewed July 2018. Agency for Healthcare Research and Quality, Rockville, MD. https://www.ahrq.gov/research/shuttered/hospevacfig1.html

Figure 2: No Advanced Warning Event Evacuation Decisions



Source: Hospital Evacuation Decision Guide (Figure 2). Content last reviewed July 2018. Agency for Healthcare Research and Quality, Rockville, MD. https://www.ahrq.gov/research/shuttered/hospevacfig2.html

Communication During Evacuation

Communication will be a key concept during the evacuation process. To ensure that messaging is conveyed effectively, communication should be clear and concise by using short messages and plain language. In addition, information is most effective when repeated multiple times. For patient reports, the SBAR format (situation, background, assessment, recommendation) can be utilized to ensure a standardized report.

Multiple methods of communication should be readily available and prioritized.[14] For example, if 2-way radios are to be used for communication and become dysfunctional during the event, then satellite phones, followed by land line phones, will be used. Radios should be clearly labeled with the pre-designated communication channel. Personal communication devices can also be used as a method of communication through texting or other communication applications.

Accessing additional staff will support the surge needs as well as provide relief for current staff. Facilities may use several mechanisms to contact staff, including emergency call trees, mass notification systems, or a list of emergency contacts. In addition, unit specific emergency contact lists should be regularly updated as well as include an estimated time of arrival of all staff to the facility.

In addition to communication between hospital staff, it is important to maintain communication with patients and families, especially if those families are not at the hospital.[15] A public information officer (PIO) is outlined in the HICS structure and should be established as quickly as possible. The PIO can then appoint an individual to communicate directly with patients and families, as needed. Hospital phone lines can be directed to voice messages that address how to access information regarding patients, including a central phone number. This option should have pre-established scripts

that can be customized based on the event. In addition, providing information on a hospital's web page or social media avenues are other methods to maintain communication with families. Ensure all communication is available in multiple languages.[16]

Personnel

Staff Roles and Responsibilities

The roles and responsibilities for each person on an inpatient unit should be outlined in the job action sheets. Please note that the responsibilities listed are not all inclusive and should be modified and tailored to meet your institution's needs. The following roles can serve as a template for planning:

- Unit Charge Nurse—works in conjunction with the lead physician in determining the number and acuity of patients, determining triage priorities, communicating with incident command about the event and needs, activating emergency call trees as warranted, and facilitating the evacuation process
- Lead Physician—works in conjunction with the charge nurse as the team leader to determine triage priorities and facilitate medical care during the evacuation process
- Licensed Practitioners (APNs, fellows, residents, physician assistants, medical assistants)—accompanies/monitors patients during the evacuation process, facilitates medical care as needed, and additional tasks as delegated by team leader
- Registered Nurses (RN)—prepares patients for transport including identification, supplies, and equipment; accompanies and monitors patients; facilitates nursing care as needed
- Nursing Assistant—Functions under the direction of the unit charge nurse
- Respiratory Therapists (RT)—ensures oxygen and other ventilation needs are identified and obtained; accompanies/monitors patients with respiratory equipment*
- Clerical Staff—prepares medical/transfer documents including demographic/"face sheet," additional tasks as delegated by team leader
- Other clinical staff (Pharmacy, Social Work, Transport Teams, Radiology, Occupational Therapy, Physical Therapy, etc.)—functions as per hospital policy/plan*
- Ancillary staff (public safety, transport, environmental services [EVS], central supply/materials management, etc.)—functions as per hospital policy/plan*
- Licensed staff (i.e. RN) that are not currently in a clinical role—function under team leader as per hospital emergency credentialing policy

*Note: At the time of a disaster, some individuals may be functioning in a unit other than their home department (i.e. respiratory therapy providing nebulizer treatment on a patient care unit). Plans needs to consider whether they remain on that unit or return to their home department for further instruction/assignment.

Consider utilizing non-clinical hospital staff to assist during a hospital evacuation. Departments such as central supply, dietary, environmental services (EVS), and volunteers should have plans in place that outline their responsibilities. This can include providing assistance to patient care units under the direction of the unit team leader (i.e. escorting ambulatory patients through the evacuation route). Remember, a hospital evacuation is a team effort.

Day-to-day operations should also include evacuation preparation. Although evacuation is a rare event, it is important that each unit staff member be aware of their role and responsibilities should the need to evacuate occur. If unit specific disaster bags are created (see equipment section), ensure that these supplies are checked on a regular basis (at minimum monthly) to ensure integrity. In addition, emergency call trees should be reviewed, verified, and updated at minimum every 3 months.

Training

Training, drills, and exercises are vital to ensure staff are knowledgeable on their role and various assigned tasks associated with each type of evacuation. General concepts that should be incorporated into training for hospital staff include:

- Identification—it is important for all staff to wear hospital identification during an emergency. In addition, methods for identification of specific roles during an evacuation include hats, vests, and sashes. This also allows staff to become familiar with the different roles, and who will be in those roles, as well as identify which individuals are permitted in certain areas.
- Incident Command/HICS—understanding the roles and chain of command will help maintain organization and clear communications.
- Designated locations—a discussion of two possible phases of evacuations: an initial evacuation to a safe place such as a staging area, then a secondary transfer to care at an appropriate facility. Information should be provided about the evacuation staging area locations, back up/secondary locations, hospital entrances and exits, unit specific evacuation routes as well as alternate routes, and parking lots/safe areas.
- Communications—modes of communication including landlines, two-way radios, walkie-talkies, personal communication devices, in house wireless devices, and satellite phones. Staff should also be knowledgeable on communication techniques such as using clear, concise language and avoiding code or industry specific nomenclature. In addition, familiarity with hospital dead zones can avoid confusion and panic.
- Procedures—review of evacuation plan/process, utilizing equipment,[17] unit or patient evacuation bags and their content and storage locations, method to designate when a patient room is empty/cleared, and patient tracking
- Staff—recommend planning for the availability of at least 96 hours (four days) of personal supplies at the institution (i.e. toiletries, medications, and clothing); have a process in place for duration of duty and relief staff

Patient Movement

Triage

The order of evacuation should be based on the type of disaster and whether an evacuation must occur immediately as opposed to an urgent/planned evacuation. Immediate evacuations are associated with fires, structural damage, and threats to safety. A patient or staff member in immediate danger should always be moved first.

Triage is a sorting method used to identify the highest acuity patients who need medical attention first. During an evacuation, the "reverse" is true in that the lowest acuity patient receives attention first. Reverse triage is a method utilized by many institutions and is defined in the literature as "identifying hospitalized patients who do not require major medical assistance…who only have a small

risk for serious complication resulting from early discharge."[18] Studies have emphasized evacuating the least acute patients first, followed by more complex and resource intense patients.[17,19,20] Less acute patients can be evacuated faster and with fewer resources. This is the method most utilized during an immediate evacuation.

Triage by Resource Allocation for IN-patient (TRAIN) is a tool for pediatric hospital disaster pre-planning. This assists facilities with categorizing patients according to their resource transportation needs during an evacuation. This tool incorporates needed equipment, mobility, and required staff/transportation.[21] The TRAIN matrix is illustrated in Figure 3. By completing this assessment on a daily basis, a unit can be one step ahead in the event of a disaster.[22]

Figure 3: Triage by Resource Allocation for INpatients [TRAIN] Tool

Transport	*Blue/Car*	*Green/BLS*	*Yellow/ALS*	*Orange/CCT*	*Red/Specialized*
Life Support	Stable	Stable +	Minimal	Moderate	Maximal
Mobility	Car/Carseat	Wheelchair or Stretcher	Wheelchair or Stretcher	Transport rig	Incubator or Immobile
Nutrition	All PO	Intermittent Enteral	Continuous Enteral or Partial Parenteral	TPN Dependent	
Pharmacy	PO Meds	IV Intermit meds	IV Fluids	IV Drip x1	IV Drip ≥2

Source: Lin, A., Taylor, K., & Cohen, R.S. (2018). Triage by resource allocation for inpatients: a novel disaster triage tool for hospitalized pediatric patients. *Disaster Medicine and Public Health Preparedness,* 1-5. doi: 10.1017/dmp.2017.139

Patient triage differs for urgent/planned evacuations. Urgent/planned evacuations are associated with blizzards, hurricanes, or hospital relocations. Tools have been developed to prioritize patients for a planned evacuation based on resources needed as well as personnel required for the move (See example in Figure 4).[23] Executing an urgent/planned evacuation has the benefit of having additional time to obtain necessary supplies, equipment, and personnel.

Key Considerations

- *Ambulatory patients/least acute patients should be evacuated first. This includes well infants and ambulatory post-partum women.*
- *Intensive care units, including NICUs and PICUs, tend to be evacuated last due to the amount of resources needed to transport patients.*[12,17,20]
- *Keep patients and families together. This includes the mother-baby duo in OB units.*
- *Consider that pediatric patients may be mixed in with adult patients when being prioritized for evacuation.*
- *For urgent/planned evacuations, consider coordinating movement of patients from unit with arrival of transporting vehicle.*
- *The following priority order is suggested for pediatric psychiatric units:*
  1. *patients in immediate danger*
  2. *low risk*
  3. *high risk: suicidal, aggressive behavior, elopement, and self-injury; with an appropriate staff to patient ratio.*

Figure 4: Patient Departure Checklist

Patient Departure Checklist.

PATIENT DEPARTURE CHECKLIST		
N/A	Completed	**24 HOURS PRIOR TO EVACUATION:**
❒	❒	**Verify Room Assignment at new hospital**
❒	❒	**Patient's ID/Allergy band on**
❒	❒	**Pack up personal Belonging bag (limit 1)—label with patient label**
❒	❒	**Parent/Guardian going with patient: YES___ NO___**
❒	❒	**Name:_____ Cell Phone_____**
N/A	Completed	**NIGHT BEFORE EVACUATION:**
❒	❒	Obtain MD orders to support patient transport the following day-ex: EVD management, Chest Tube management, Saline Lock for IV, NG feeds that could be put on hold
❒	❒	Evaluate fluids necessary for transport for patients
❒	❒	Pumps fully charged—verify battery life when unplugged of at least 50%
❒	❒	**Appropriate sized bag/mask/emergency equipment with patient (ex trach, suction catheters, central line and chest tube clamps, bedside emergency kits)**
❒	❒	**Print Patient Profile from header on Index page in EHR**
❒	❒	**Patient's loose medical records at bedside**
❒	❒	**2 document labels**
❒	❒	Boarding Pass labeled on all sheets and checked against pt ID band
N/A	Completed	**MORNING OF EVACUATION:**
❒	❒	Attending note "OK to transport" in EHR
❒	❒	Chest tubes Y'd together to one suction source or to water seal, if ordered.
❒	❒	**Patient's medications packed and with patient (including refrigerated meds).**
❒	❒	Assess lines for patency, security and saline lock if ordered.
❒	❒	NG feedings held if possible.
❒	❒	**Print vitals 24 hour report from the Index page with expanded respiratory orders for ventilator/NIPPV settings and review pertinent information with hand-off**
❒	❒	**Boarding Pass with documentation label on all sheets**
N/A	Completed	**WITHIN ONE HOUR PATIENT EVACUATION:**
❒	❒	**Remaining breast milk or specialty formulas labeled and packed in patient labeled cooler with freezer gel pack. Note date/time placed in cooler bag.**
❒	❒	Elimination needs met/diaper changed, drainage bags emptied, measured and documented.
❒	❒	**Pre-move sedation and/or pain medications given, if appropriate. PRN narcotics (e.g. morphine, versed) should <u>not</u> be removed from pyxis and taken with during transport (transport teams will have their own supply of PRN medications).**
❒	❒	**Verify patient with correct ID band matches documentation on "Transport Hand-off" as well as "Boarding Pass"**
N/A	Completed	**WHEN PATIENT EVACUATES OFF UNIT:**
❒	❒	Full H2T hand-off report called to receiving nurse at destination hospital and documented in EHR hand-off when patient leaves unit
❒	❒	Arrhythmia monitoring patients on PICU/NICU RN-at central station click "save data" on telemetry monitor when patient departs the floor.

Used to prepare the patient for evacuation day. Preparation included 24 hours in advance, the night before, the morning of, and within 1 hour of the evacuation. Abbreviations: EHR, electronic health record; EVD, external ventricular drain; H2T, head to toe; IV, intravenous; NG, nasogastric; NIPPV, noninvasive positive pressure ventilation; NICU, neonatal intensive care unit; PICU, pediatric intensive care unit; PRN, as needed medication.

Source: Rozenfeld, R.A., Reynolds, S.L., Ewing, S., Crulcich, M.M., & Stephenson, M. (2017). Development of an evacuation tool to facilitate disaster preparedness: use in a planned evacuation to support a hospital move. *Disaster Medicine and Public Health Preparedness, 11*(4), 479-486. doi: 10.1017/dmp.2016.154

Once the decision to evacuate is made, units will need to know if the move is a partial or full hospital evacuation. This will allow the units to mobilize their move procedures and transition to pre-determined relocation areas. There are two types of relocations: internal (different units in the hospital, staging areas, alternate treatment sites) and external (hospitals, alternate care sites). It is essential to have these locations pre-determined in the hospital plan or policy. Due to situation dependent factors surrounding evacuation, it is also important to identify secondary or back-up locations should the primary relocation point not be accessible/secure.

Staging areas are typically locations where patients are cared for while waiting for clearance to return to the building or transfer to another care facility. If a return to the unit cannot be established within a reasonable time frame, begin the steps to transfer the patients to the pre-determined external locations. Determining external locations should occur when the decision to evacuate is initially made. Prioritizing patients for transfer to other facilities is different than the prioritization for evacuation. During this stage of an evacuation, many organizations prioritize the most critical and resource intensive patients first, followed by the least acute patients.

Key Considerations

- *Evaluate hospital policies regarding staff who choose to or find it necessary to shelter in place as opposed to evacuating.*
- *The decision to move any unstable patient is a critical and challenging decision. Consider consulting with ethical experts to pre-establish processes for this population.*
- *In an immediate evacuation, any patient that is considered unstable should be evaluated for feasibility of discontinuing treatment for transport and evacuation.*
- *If it is deemed that the patient is too medically fragile to move, professional judgment will have to be made to shelter in place with necessary staff, or to relinquish care of the patient and utilize staff elsewhere. Decisions will be situation based and require hospital leadership authorization. Psychological support should be available for all individuals in this situation.*
- *In the event that the decision is made to move an unstable patient, prepare necessary equipment and supplies should that patient decompensate.*

Identification, Tracking, & Reunification

Pre-planning will be integral to efficiently identifying and tracking patients, regardless if it is an urgent/planned or immediate evacuation. Tracking through an electronic health record (EHR) is ideal, but not always available. If an EHR remains available, institutions can attempt to keep patients within the system to allow for continuity of care. However, a paper medical record will still be necessary, especially for patients transferred outside of the corporate health system or if there are information technology (IT) system failures. Suggestions include printing the EHR, copying files onto an encrypted USB flash drive,[17] or utilizing another hospital within the health system that is unaffected to transmit records. Ideally, the following information should accompany each patient:

- Patient identification form or face sheet
- Discharge summary
- Active medication list
- Problem/diagnosis list
- Allergies
- Recent progress notes
- Procedure notes
- Consultations

In addition, a patient tracking form should be used during each point of the evacuation process (i.e. evacuating clinical location, arriving location, time to staging area, and time departing to receiving facility).[17] Appendix G provides the HICS 260 patient tracking form. Minimum data on a tracking sheet should include the patient's first and last name, date of birth, medical record number/triage number/tracking number, time leaving facility, transport company and vehicle number, receiving facility, and emergency contact information.[17]

In addition to maintaining communication amongst staff regarding the patient, communication mechanisms to families should be developed and assigned to a dedicated staff member. Information conveyed should include patient status and relocation information. If family is present, separation from family can still occur during evacuation. All reasonable efforts should be made to keep the patient and family together.

Key Considerations

- *Ensure that each patient has a method of identification applied on their person such as an ID bracelet. Infants should be identified with at least two methods.*
- *DO NOT write on the skin of infants less than 1 year of age. Utilize a surgical marking pen or waterproof marker to write on a transparent dressing that is then applied to the skin of the infant. This avoids the possibility of leaving a permanent tattoo.*
- *If parent or family are present, ensure that parent identification matches patient identification.*
- *Identification methods should include name, date of birth, medical record number, parent/family information, and labor status, if applicable and readily available.*
- *Avoid labeling hats or blankets, as these items can be easily transferred from one patient to another.*
- *If an ambulatory caregiver is present, consider allowing the caregiver to carry their child out of the facility as able.*
- *Ensure that electronic tagging devices are removed prior to transfer and documented appropriately.*
- *For pediatric psychiatric patients, consider allowing telephone time for them to communicate with their families as time allows.[24]*

Equipment, Supplies, & Resources

The equipment and supplies needed for an evacuation will vary based on the type of unit and amount of time available. Technology assisted patients should have equipment specific to their needs that accompanies them. Units that care for critical patients, such as ICUs, will have additional needed supplies. Supplies can include but are not limited to:

- Medications: Special attention should be given to medications that require refrigeration (and shelf life outside of refrigeration), or medications that have a short shelf life once opened. In addition, staff should ensure that drips are correctly labeled at all times, including time of expiration.
- Syringe/IV pumps
- Oxygen devices (bag-masks, non-rebreathers, nasal cannulas, nebulizers)
- Portable oxygen tanks
- Tracheostomy tubes/ties
- Dressings
- Crutches/wheelchairs
- Plastic bags
- Diapers/wipes
- Formula with bottles or syringes
- Flashlights
- Blankets/sheets
- For shelter in place: water and non-perishable foods

Other equipment considerations:

- Label all electronic dependent equipment with battery life.
- Ensure equipment is charging on emergency outlets whenever possible, especially if an evacuation is anticipated.
- Have charging cords available for personal communication devices.
- Consider a supply of back up batteries for equipment as well as a method to ensure charging capabilities.
- Equipment maintenance testing should be based on hospital or manufacturer recommendations.

Equipment specific considerations:

- Consider providing manual ventilations using a bag-mask or flow inflating bag for those patients that can't be maintained on a ventilator or respiratory support device.
- Discontinue respiratory therapies and place on oxygen for transport.
- Ensure IV lines are saline locked as able and discontinue IV medications as appropriate. If fluids are necessary and IV/syringe pumps are not available, consider drawing fluids up in a syringe and manually administering during transport.
- Arterial monitoring devices should be disconnected from monitor. Consider manually administering fluid by syringe to maintain patency. Lay bottle/bag and transducer next to patient.

- If utilizing an isolette, consider placing two infants in one device to maximize use. Remember to keep infant covered including the head. Infant warming mattresses can also be used.
- For neonates, consider utilizing skin to skin contact or warming pads for thermoregulation.[15,22]
- Chest tubes can be placed to a water seal or connected to a chest drain valve.
- Clamp oral and nasal gastric tubes as able. If gastric decompression is needed, it can be maintained by aspiration with a syringe.
- Consider utilizing plastic bags to pack patient breast milk as able.
- For patients in labor, prepare/obtain an emergency OB delivery supply kit.
- Consider having items to assist patients with cognitive or sensory needs that affect their behavior. Items can be small and pre-packed in a disaster bag and placed by unit exits. Examples of distraction techniques include but are not limited to: stuffed animals, stress balls, music, paper, and crayons.
- For patients on dialysis or renal replacement therapy, reference existing hospital policies/guidelines regarding disruption of care.

Disaster/evacuation supply kits are extremely beneficial, and should contain basic airway supplies, a portable oxygen source, portable suction equipment, and dressings. These supplies could be maintained in boxes, bags, or backpacks depending on what would be most appropriate for the specific inpatient unit. This can assure that basic life support (BLS) supplies can be easily transported. All equipment needed for an evacuation should be clearly labeled and strategically placed where it can be retrieved at a moment's notice. In addition, establish a process to check the contents of each bag, and secure with breakaway locks or closures. Equipment tracking should occur with each patient and can be documented on the paper chart that accompanies the patient.

Staging areas should have similar equipment available or have a process in place to obtain necessary equipment and supplies. Similar to patients being transferred in stages, the same should be applied to crash carts. A crash cart should be available at the staging area with the arrival of the first patient. However, a crash cart should also be available at a patient's initial location until the last patient has left the area. In addition to medical supplies, staging areas should be stocked with oral hydration fluids and formula, as well as alcohol-based hand cleansing solution, non-latex gloves, and hygiene supplies.[16] These items are essential for patient gross contamination or those with infectious diseases such as Clostridium Difficile (C-Diff). If these supplies aren't pre-stocked in these areas, a process should be in place to ensure the availability and timely transport of these items to the staging areas.

It is also essential to ensure that the unit has emergency supplies for staff. A staff disaster box, bag, or backpack can be created. Supplies can include:

- Non-flammable light sources
- Reflective vests
- Calculators
- Scissors (i.e. trauma shears, bandage scissors, paper scissors, safety scissors)
- Portable fire extinguishers
- Printed copies of emergency plan
- Keys for medication and supply storage machines
- Bottled water

Consider purchasing commercial evacuation equipment that is appropriate for your facility, such as evacuation sleds, baskets, folding stretchers, and chairs. Readily available items such as mattresses can be utilized on stairways to transport non-ambulatory patients if elevators are out of service. Evacuation equipment should be stored at or near unit exits.

Security & Safety[6]

Public safety officers, local police, or comparable personnel, play an integral role not only for the safety and security of patients, but for the staff as well. Security should ensure that the facility is secured early in the evacuation process. This prevents outside interference with the evacuation process. Officers can ensure that only authorized personnel are in the facility and transporting patients. In addition, officers should be stationed along the evacuation route to maintain a one way patient flow. There should be one route designated for leaving the facility, and a different route for entering the facility. For example, maintaining a "stay to the right" concept can help facilitate flow.[26]

Key Considerations

- *Evacuations, like any disaster or emergent event, poses a risk for child abductions. It is recommended to have at least one staff member dedicated to each patient.*
- *Be sure to thoroughly check rooms for patients or visitors. In times of panic, children may hide in bathrooms or under beds.*
- *Remove any restraints that are being used and consider additional personnel to accompany these patients to maintain safety.*
- *Due to the large population movement, ensure that staff are present at checkpoints to ensure patients remain stable.*
- *Reference existing hospital policy for care and security of the following populations: patients from juvenile detention centers, correctional facilities, prisons, and treatment/detention facilities; as well as those individuals brought into the hospital under law enforcement custody.*
- *Patients can be aggressive or have suicidal or homicidal ideations. It is important to secure a separate staging area for this population that has sufficient supervision. Areas with minimal auditory and visual stimulations are suggested.*

Transportation

Transportation will be needed during an evacuation, both internally and externally. Be aware of hospital-based transportation resource inventory. Consider establishing pre-arranged contracts with private ambulance agencies, critical care aeromedical transportation providers, bus companies, and other transportation agencies that, although not conventional, may render services when medical transport vehicles are not available. Keep in mind that during a disaster event, other patient care facilities may be competing for these same resources. In addition, consider maintaining lists of helicopter and fixed wing transport agencies that have abilities to transport critical patients. The pre-planning process should also include development of an intra-state and inter-state hospital network. Knowledge of the capabilities and contact information of hospitals within the state as well as border-states is beneficial. This can facilitate the placement of patients for continued care.

As previously mentioned, the priority of which patients are transported to other facilities from staging areas may differ from evacuation of the affected unit. Most institutions will transport the most critical patients first, followed by the least acute patients. In addition, some patients can be safely discharged home from staging areas with appropriate follow-up.

Within your institution, utilize both clinical and non-clinical staff to assist with the evacuation of patients. This is especially helpful for resource intensive patients. By having non-clinical staff assist with less acute patients/ambulatory patients under the guidance of clinical staff, it allows clinicians to focus on evacuating critical patients who require multiple resources and monitoring. In addition, utilizing a "relay" system can help maintain staff stamina during the process. For example, individuals rotate turns to transport patients down the stairs. Lastly, it is important for the team leader or designated personnel to identify relief staff, especially if the evacuation process is lengthy.

Mitigation should include identification of hospitals and organizations that patients can be transferred to in the case of an evacuation. Illinois Emergency Medical Services for Children has created a pediatric resource directory which provides a list of hospitals and their pediatric capabilities for emergencies. This resource can be accessed through the Illinois EMSC home page (www.luriechildrens.org/emsc). Designated staff should contact receiving facilities as soon as the decision to evacuate is made.

Key Considerations

- *Most ambulatory pediatric patients can utilize non-medical transportation such as buses, cars, or shuttles. Also, studies have illustrated that most laboring mothers should be ambulatory.* [27]
- *Allow parents or family to carry their infant out of the facility, as appropriate. Allow for skin-to-skin contact whenever possible during transport.*
- *Consider accessing and utilizing car seats as immobilization devices for infants, so cars and other non-medical vehicles can be used for transport.*

Receiving patients from another facility that is evacuating (surge)[28]

Facilities that are receiving patients from evacuating hospitals need to create space to accommodate these patients. Upon receiving notification of a surge of incoming patients, the same "reverse triage" concept can be utilized. Studies have illustrated that reverse triage can increase surge capacity up to 50%. Suggestions to optimize bed availability in receiving hospitals include:

- Cancelling elective admissions and surgeries
- Discharging stable patients or those with a low risk for adverse effects
- Opening unstaffed and unlicensed beds
- Exploring unconventional spaces (i.e. meeting rooms, waiting areas, etc.)
- Implementing crisis standards of care

In addition, Illinois has established a decompression process to assist with the movement of pediatric patients to an appropriate facility. This system consists of 4 categories, which outlines the self-identified pediatric capabilities each hospital has during a disaster event. Consider referencing these capabilities in order to increase bed availability at tertiary care centers. The Illinois Pediatric Regional Resource Directory can be accessed on the Illinois EMSC webpage (www.luriechildrens.org/emsc).

Table 1: Illinois Hospital Decompression Categories

Illinois Hospital Decompression Categories	
Category 1	Specialty centers (PICU/NICU); provides complex care to ages 0-15 y/o
Category 2	Hospitals with some pediatric services; will accept ages 0-12 y/o
Category 3	Hospitals with no pediatric/nursery services; will accept ages > 12 y/o
Category 4	Hospitals with some nursery but no pediatric services; will accept ages 0-1 y/o

Source: IDPH ESF-8 Plan: Pediatric & Neonatal Surge Annex, July 2020.

In some cases, receiving facilities may not have pediatric/neonatal capabilities. These hospitals should consider utilizing the Illinois EMSC Pediatric & Neonatal Care Guidelines (which can be accessed from the Illinois EMSC webpage) or other similar care management document. The Pediatric & Neonatal Care Guidelines provide support and guidance to those practitioners caring for children during the initial 96 hours following a disaster. Topics include, but are not limited to, initial assessment of the pregnant patient, inpatient treatment and monitoring, pandemic care guidelines, and shock care guidelines. These guidelines are not meant to be all inclusive, should not replace an existing policy and procedure at a health care facility, nor substitute for clinical judgment.

Recovery

Decision Making & Receiving patients back from facility they were evacuated to

Once local authorities have deemed the hospital safe to return from a structural or threat-based perspective, the decision to return to a facility will be based on a number of factors. This includes assuring that necessary supplies, equipment, medications, and staffing are in place to support patients. The authority for opening the facility should be made by a pre-designated individual, such as the facility director, director of emergency management, or chief executive officer. If the integrity or safety of the building is in question, coordination with local law enforcement and fire department(s) is needed.

As the hospital works to return to normal operations, it is important to provide ongoing support to staff, addressing their short- and long-term mental health needs and providing appropriate resources.

Conclusion

Disasters can strike at any time and the evacuation of any patient population is challenging. The evacuation of children, infants, and neonates is a high risk event. This document provides general evacuation guidance with special considerations for the pediatric population in the hospital setting. Many of the concepts in this document are also applicable or can easily be adapted by other agencies and entities involved in disaster response. Hospitals should work collaboratively with community, regional, and state agencies and resources to ensure a successful hospital evacuation.

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Appendix A
Acronyms

AHRQ	Agency for Healthcare Research and Quality
APN	Advanced Practice Nurse
ASPR	Assistant Secretary for Preparedness and Response
BLS	Basic Life Support
C-DIFF	Clostridioides difficile
CEO	Chief Executive Officer
CFAN	Children with Functional and Access Needs
COOP	Continuity of Operations Plan
CSHCN	Children with Special Health Care Needs
EHR	Electronic Health Record
EMS	Emergency Medical Services
EMSC	Emergency Medical Services for Children
EVS	Environmental Services
HICS	Hospital Incident Command System
HVA	Hazard Vulnerability Assessment
ICU	Intensive Care Unit
IDPH	Illinois Department of Public Health
IMERT	Illinois Medical Emergency Response Team
IT	Information Technology
IV	Intravenous
L&D	Labor and Delivery
NICU	Neonatal Intensive Care Unit
OB	Obstetrics
PICU	Pediatric Intensive Care Unit
PIO	Public Information Officer
RHCC	Regional Healthcare Coordinating Center
RN	Registered Nurse
RT	Respiratory Therapist
TRAIN	Triage by Resource Allocation for In-Patient

Appendix B
References

1. Sternberg, E., Lee. G.C., & Huard, D. (2004). Counting crisis: US hospital evacuations, 1971-1999. *Prehospital and Disaster Medicine, 19*(2), 150-157.
2. Blau, M. (2017). Irma forces at least 35 hospitals to evacuate patients. Here's the rundown. *StatNews*. Retrieved June 21, 2018 from https://www.statnews.com/2017/09/09/irma-hospital-evacuations-rundown/
3. Nedelman, M. (2017). Hospitals evacuated and many injured as wildfires ravage Northern California. *CNN News.* Retrieved June 21, 2018 from https://www.cnn.com/2017/10/09/health/california-wildfires-hospitals-evacuation/index.html.
4. Almendrala, A. (2017). Why many Houston health centers didn't evacuate before Harvey hit. *HuffPost*. Retrieved June 21, 2018 from https://www.huffingtonpost.com/entry/houston-hospital-evacuations-hurricane-harvey_us_59a5e6cbe4b063ae34d9c146.
5. Gabbert, B. (2019). Feather river hospital evacuation 280 patients and staff as camp fire approached. *Wildfire Today.* Retrieved February 2, 2020 from https://wildfiretoday.com/2019/02/26/feather-river-hospital-evacuated-280-patients-and-staff-as-camp-fire-approached/
6. Baioni, K., Gneuhs, M., Dickman, L., Weber, K., Hueneman, M., & Timm, N. (2013). Preparing for optimal outcomes: A live evacuation exercise. *AORN Journal, 98*(1), 71-76. doi: 10.1016.j.aorn.20.13.04.016
7. Hospital Evacuation Decision Guide. Content last reviewed August 2017. Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq/gov/research/shuttered/hospevac4.htm
8. Ricci, K. A., Griffin, A. R., Heslin, K. C., Kanke, D., & Dobalian, A. (2015). Evacuate or shelter-in-place? The role of corporate memory and political environment in hospital-evacuation decision making. *Prehospital and Disaster Medicine, 3*(3), 233-238. doi: 10.1017/S1049023X15000229
9. Hassol, A., Biddinger, P., & Zane, R. (2013). Hospital evacuation decisions in emergency situations. *Journal of the American Medical Association,* 309(15), 1585-1586.
10. McGinty, M. D., Burke, T. A., Resnick, B., Barnett, D. J., Smith, K. C., & Rutkow, L. (2017). Decision processes and determinants of hospital evacuation and shelter-in-place during Hurricane Sandy. *Journal of Public Health Management and Practice, 23*(1), 29-36. doi: 10.1097/PHH0000000000000404
11. American Red Cross: Fact Sheet on Shelter-In-Place. (2003). Retrieved July 2, 2018 from https://www.redcross.org/images/MEDIA_CustomProductCatalog/m4340182_shelterinplace.pdf
12. Petinaux, B. P. & Yadav, K. (2013). Patient-driven resource planning of a health care facility evacuation. *Prehospital and Disaster Medicine, 28*(2), 120-126. doi: 10.1017/S1049023X12001793
13. California Emergency Medical Services Authority. (2014). Hospital Incident Command System Guidebook: 5th edition.
14. Tekin, E., Bayramoglu, A., Uzkeser, M., & Cakir, Z. (2017). Evacuation of hospitals during disaster, establishment of a field hospital, and communication. *The Eurasian Journal of Medicine, 49*, 137-147. doi: 10.5152/eurasianjmed.2017.16102

15. Farra, S., Miller, E.T., Gneuhs, M., Timm, N., Li, G., Simon, A., et al. (2016). Evacuation performance tool. *American Journal of Disaster Medicine, 11*(2), 131-136. doi: 10.5055/ajdm.2016.0232
16. Mace, S. E., Sharieff, G., Bern, A., Benjamin, L., Burbulys, D., Johnson, R., et al. (2010). Pediatric issues in disaster management, part 2: evacuation centers and family separation/reunification. *American Journal of Disaster Medicine, 5*(3), 149-161. doi: 10.5055/ajdm.2010.0017
17. King, M.A., Niven, A.S., Beninati, W., Fang, R., Einay, S., Rubinson, L., et al. (2014). Evacuation of the ICU. *Chest, 146*(4), e44S-e60S.
18. Pollaris, G. & Sabbe, M. (2016). Reverse triage: more than just another method. *European Journal of Emergency Medicine, 23*(4), 240-247. doi: 10.1097/MEJ.0000000000000339
19. Children's National Medical Center: Neonatal Intensive Care Unit Evacuation Plan.
20. Femino, M., Young, S., & Smith, V. C. (2013). Hospital-based emergency preparedness: Evacuation of the neonatal intensive care unit—the smallest and most vulnerable population. *Pediatric Emergency Care, 29*(1), 107-113.
21. Lucile Packard Children's Hospitals. Preplanning disaster triage for pediatric hospitals: TRAIN toolkit. Retrieved August 20, 2018 from http://www.acphd.org/media/270195/hospital%20disaster%20triage%20pediatric%20planning%20train%20toolkit%20x.pdf
22. Daniels, K., Oakeson, A.M., & Hilton, G. (2014). Steps toward a national disaster plan for obstetrics. *Obstetrics & Gynecology, 124*(1), 154-158. doi: 10.1097.AOG.0000000000000326
23. Rozenfeld, R.A., Reynolds, S.L., Ewing, S., Crulcich, M.M., & Stephenson, M. (2017). Development of an evacuation tool to facilitate disaster preparedness: use in a planned evacuation to support a hospital move. *Disaster Medicine and Public Health Preparedness, 11*(4), 479-486. doi: 10.1017/dmp.2016.154
24. Thomas, J. & Lackey, N. (2008). How to evacuate a psychiatric hospital: a hurricane Katrina success story. *Journal of Psychosocial Nursing, 46*(1), 35-40.
25. Espiritu, M., Patil, U., Cruz, H., Gupta, A., Matterson, H., Kim, Y., et al. (2014). Evacuation of a neonatal intensive care unit in a disaster: lessons from hurricane Sandy. *Pediatrics, 134*, e1662-e1669. doi: 10.1542/peds.2014-0936
26. Fuzak, J.K., Elkon, B.D., Hampers, L.C., Polage, K.J., Milton, J.D., Powers, L.K., et al. (2010). Mass transfer of pediatric tertiary care hospital inpatients to a new location in under 12 hours: lessons learned and implications for disaster preparedness. *Journal of Pediatrics, 157*(1), 138-143. doi:10.1016/j.jpeds.2010.01.047
27. Rimstad, R. & Holtan, A. (2015). A cross-sectional survey of patient needs in hospital evacuation. *Journal of Emergency Management, 13*(4), 295-301. doi: 10.5055/jem.2015.0243
28. Kelen, G. D., Troncoso, R., Trebach, J., Levin, S., Cold, G., Delaney, C. M., Jenkins, J. L., Fackler, J., & Sauer, L. (2017). Effect of reverse triage on creation of surge capacity in a pediatric hospital. *JAMA Pediatrics, 171*(4), e164829. doi: 10.1001./jamapediatrics.2016.4829

Appendix C
Bibliography

1. Almendrala, A. (2017). Why many Houston health centers didn't evacuate before Harvey hit. *HuffPost*. Retrieved June 21, 2018 from https://www.huffingtonpost.com/entry/houston-hospital-evacuations-hurricane-harvey_us_59a5e6cbe4b063ae34d9c146

2. American Red Cross: Fact Sheet on Shelter-In-Place. (2003). Retrieved July 2, 2018 from https://www.redcross.org/images/MEDIA_CustomProductCatalog/m4340182_shelterinplace.pdf

3. Baioni, K., Gneuhs, M., Dickman, L., Weber, K., Hueneman, M., & Timm, N. (2013). Preparing for optimal outcomes: A live evacuation exercise. *AORN Journal, 98*(1), 71-76. doi: 10.1016.j.aorn.20.13.04.016
   - Six key areas of evacuation planning: communication, resources and assets, security and safety, staff responsibilities, utilities management, and clinical and patient support activities
   - Goals of drill were to test staff members' knowledge of roles and responsibilities as well as to test the six key areas of the evacuation plan
   - Important to include all appropriate stakeholders in planning
   - Important to develop communication tools for non-English speaking patients and families
   - Need to have enhanced presence of hospital security to prevent families from interfering with evacuation process, manage crowd control, and flow of evacuation

4. Barfield, W.D. & Krug, S.E. (2017). Disaster preparedness in neonatal intensive care units. *Pediatrics, 139*(5), e1-e11. doi: 10.1542/peds.2017-0507
   - NICUs must have specific, advance plans for their care, stabilization, triage, transfer, and evacuation
   - Available resources such as medications, ventilators, and staff may become limited, consider substitution, adaptation, or reallocation
   - In 2014, less than half of hospitals with an emergency department had a disaster plan for children
   - Patient-provider ratios may need to be altered
   - If isolation is necessary, the postpartum mother and newborn should be placed together if medically appropriate
   - Decisions made during a disaster because of limited resources may result in the death or disability of a critically ill neonate
   - Maintaining flexibility is important

5. Blau, M. (2017). Irma forces at least 35 hospitals to evacuate patients. Here's the rundown. *StatNews*. Retrieved June 21, 2018 from https://www.statnews.com/2017/09/09/irma-hospital-evacuations-rundown/

6. California Emergency Medical Services Authority. (2014). Hospital Incident Command System Guidebook: 5th edition.

7. Childers, A. (2010). *Prioritizing patients for emergency evacuation from a healthcare facility* (Unpublished doctoral dissertation). Clemson University, South Carolina.
   - Center for Bioterrorism Preparedness and Planning suggests that evacuation should take place in two phases: first, patients are moved to a staging area where ambulatory patients are moved first, and more critical patients moved last. Once in staging area, the most critical patients should be transferred first, followed by the less resource intense patients.
   - New York Centers for Terrorism Preparedness and Planning and the Association of Peri-Operative Registered Nurses suggest that patients should be prioritized from least to most critical.
   - Hurricane Katrina: initially the most critical patients were evacuated first, but when help was not immediately available, the least critical patients were chose for evacuation because they had the greatest chance of surviving.

8. Children's National Medical Center: Neonatal Intensive Care Unit Evacuation Plan.

9. Comeau, O. Y., Heeffernan, J. M., & Sheaffer, J. L. (2014). Rising to the challenge: Transforming an adult ICU into an adult and pediatric ICU. *Critical Care Nursing, 37*(3), 336-343. doi: 10.1097/CNQ.0000000000000034
   - Discusses how an adult ICU burn unit was able to care for pediatric burn patients when the children's hospital was unable to reopen after an infrastructure damage from a hurricane.
   - Hired pediatric burn ICU nurses from closed facility into adult facility, and paired pediatric nurses with adult nurses to begin training process, as well as creating a competency list of necessary skills and assessments. In addition, care was taken to ensure that a mix of both disciplines were present on each shift.
   - Added a social worker and child life specialist as part of care team in burn unit.
   - Expanded needed supplies and equipment, medications, nutrition, policies, and documentation tools.
   - Attributes necessary include flexibility, adaptability, creativity, and resilience.

10. Daniels, K., Oakeson, A.M., & Hilton, G. (2014). Steps toward a national disaster plan for obstetrics. *Obstetrics & Gynecology, 124*(1), 154-158. doi: 10.1097.AOG.0000000000000326
   - An obstetric specific triage method is paramount to accurately assess and rapidly triage patients during a disaster
   - Assessment is completed on a daily basis, thus having the unit one step ahead in the event of an emergency
   - OB TRAIN Antepartum and Labor & Delivery components: labor status, mobility, epidural status, and maternal or fetal risk
   - OB TRAIN Postpartum components: delivery, mobility, postoperative, maternal risk
   - Provides sample "Grab and Go Labor and Delivery" Bag, see Appendix I
   - Growing evidence that the use of simulation training facilitates education, improves team training and communication, and reduces errors in high-acuity environments

11. Espiritu, M., Patil, U., Cruz, H., Gupta, A., Matterson, H., Kim, Y., et al. (2014). Evacuation of a neonatal intensive care unit in a disaster: lessons from hurricane Sandy. *Pediatrics, 134*, e1662-e1669. doi: 10.1542/peds.2014-0936
    - Major challenges were finding alternate hospital beds and coordinating transportation to receiving hospitals.
    - Transport team personnel and equipment availability proved to be a major rate-limiting factor; arrangements were made by hospital incident command center.
    - Infants were accompanied by a neonatal fellow, nurse, and respiratory therapist if needed.
    - Infants without ventilator needs were held by their mothers; warming pads and skin-to-skin contact were used for thermoregulation.
    - Also coordinated with obstetrics to ensure delivery room coverage for neonatal resuscitation
    - Pre-arrangements were made with other NICUs to accept patients in the event of a mass transfer, regional coordination vital
    - Hand off was given to receiving physician by cellular phone, resident team prepared handwritten transfer summaries
    - Ambulance support was arranged by the Federal Emergency Management Agency (FEMA)
    - Communication with parents must be an essential component of disaster planning

12. Farra, S., Miller, E.T., Gneuhs, M., Timm, N., Li, G., Simon, A., et al. (2016). Evacuation performance tool. *American Journal of Disaster Medicine, 11*(2), 131-136. doi: 10.5055/ajdm.2016.0232
    - Response actions must address six key priorities outlined by the Joint Commission: communications, resources and assets, security and safety, staff and business support, utilities, and patient care management.
    - Principles of the incident command structure should be a part of every disaster response
    - Evacuation evaluation tool being used to measure participant performance pre-training and post-training during a series of live disaster exercises
    - Evaluates performance on three patients: stable neonate, neonate on a ventilator, and neonate on an oscillator
    - Final version of tool has a high content validity, good internal validiy, and very good inter-rater reliability
    - Sample evaluation tool illustrated in Appendix J

13. Femino, M., Young, S., & Smith, V. C. (2013). Hospital-based emergency preparedness: Evacuation of the neonatal intensive care unit—the smallest and most vulnerable population. *Pediatric Emergency Care, 29*(1), 107-113.
    - Effective and constant communication was critical
    - Essential health care personnel included staff to physically transport patients, central communication/coordinating site, on-site triage in holding area
    - Flexibility and creativity are essential in disaster management
    - Communication with patient family members a priority; NICU social workers designated to contact families

- A point person should be designated at the site of impacted area to assign arriving manpower to areas of need before the command center becomes activated

14. Fuzak, J.K., Elkon, B.D., Hampers, L.C., Polage, K.J., Milton, J.D., Powers, L.K., et al. (2010). Mass transfer of pediatric tertiary care hospital inpatients to a new location in under 12 hours: lessons learned and implications for disaster preparedness. *Journal of Pediatrics, 157*(1), 138-143. doi:10.1016/j.jpeds.2010.01.047
    - Incorporated the "3Ss" of surge capacity into their disaster plan: staff (utilization of both local and regional pediatric-trained staff), stuff (pediatric-specific equipment and medications), and structure (the HICS, command centers, and communications framework).
    - Transported a total of 111 patients in 11.6 hours with no adverse outcomes
    - Mass inpatient pediatric transfers can be managed rapidly and safely with parallel transfers and preexisting agreements with regional pediatric teams
    - The Noria principle of MCI transport and rescue supports unidirectional patient movement

15. Gabbert, B. (2019). Feather river hospital evacuation 280 patients and staff as camp fire approached. *Wildfire Today.* Retrieved February 2, 2020 from https://wildfiretoday.com/2019/02/26/feather-river-hospital-evacuated-280-patients-and-staff-as-camp-fire-approached/

16. Hassol, A., Biddinger, P., & Zane, R. (2013). Hospital evacuation decisions in emergency situations. *Journal of the American Medical Association,* 309(15), 1585-1586.
    - The decision to evacuate requires the consideration of a number of variables: critical infrastructure vulnerabilities, power for life support equipment, how to safely move patients to street level without elevators, transportation options/routes

17. Hospital Evacuation Decision Guide. Content last reviewed August 2017. Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq/gov/research/shuttered/hospevac4.htm

18. Iwata, O., Kawase, A., Iwai, M., & Wada, K. (2017). Evacuation of a tertiary neonatal centre: lessons from the 2016 Kumamoto earthquakes. *Neonatology, 112*(1), 92-96. doi: 10.1159/000466681
    - Evacuation of 38 newborn infants from a level III NICU, 37 were successfully evacuated within 8 hours (one very low birth weight infant developed moderate hypothermia after transport)
    - Risk for transportation was quantified for each infant which had 3 categories: immaturity, respiratory support, and vascular routes for transportation.
    - Prioritized patients for evacuation from low care to high care.
    - 20 nurses and 3 neonatologists were available for primary evacuation, elevators were unavailable and internal stairs in the building were damaged from earthquakes and aftershocks; infants were transported using an external emergency staircase; outside temp was 57°F, staged in a rehabilitation room on ground floor to await transfer
    - Many infants required self-inflating bags, oxygen, and infusion pumps; infants shared oxygen tanks

- Chief neonatologist initiated communication with other facilities for placing evacuated newborns utilizing an online directory developed in 2011 after the Great East Japan earthquake, utilized internet phone, text messages, and social networking services; parents were informed of infant status and location by mobile/landline phones
- Transportation: grouped less sick infants with more critical infants to transport more than one infant per ambulance; receiving facilities sent their own ambulances/teams to retrieve infants
- Had failure of cooperation with DMAT for transportation resources

19. Kelen, G. D., Troncoso, R., Trebach, J., Levin, S., Cold, G., Delaney, C. M., Jenkins, J. L., Fackler, J., & Sauer, L. (2017). Effect of reverse triage on creation of surge capacity in a pediatric hospital. *JAMA Pediatrics, 171*(4), e164829. doi: 10.1001./jamapediatrics.2016.4829
    - Surge capacity is defined as the maximum potential augmentation of resources beyond routine to provide treatment to the sudden unexpected influx of a large number of patients.
    - Strategies to increase surge capacity include canceling elective admissions, opening unstaffed or unlicensed beds, exploiting unconventional space, and altering standards of care.
    - Reverse triage is a utilitarian ethic concept where inpatients at low risk for adverse events would be discharged or transferred back to the community, giving inpatients and individuals affected by the disaster equal consideration for inpatient resources.
    - Effect of reverse triage in a children's hospital appears to be more modest.

20. King, M.A., Niven, A.S., Beninati, W., Fang, R., Einay, S., Rubinson, L., et al. (2014). Evacuation of the ICU. *Chest, 146*(4), e44S-e60S.
    - Suggest creating pre-disaster formal agreements between hospitals and transport agencies or between Health Coalitions or Regional Health Authorities and transport agencies for air or ground transport of critically ill patients during a disaster.
    - Designate a critical care team leader to coordinate and support ICU evacuation preparations, including categorizing each patient by resources and skill set of transport staff required; patients should be categorized routinely
    - Ventilators should have the ability to run on low flow oxygen without a high pressure gas source
    - In a time limited evacuation, recommend evacuating the least acute patient first in order to evacuate the most patients in the fastest time
    - When there is adequate time for an evacuation, simultaneously evacuate critical and acute patients
    - Staging areas should be staffed by individuals capable of re-triaging patients for transport, and should be located near the point of embarkation

21. Lin, A., Taylor, K., & Cohen, R.S. (2018). Triage by resource allocation for inpatients: a novel disaster triage tool for hospitalized pediatric patients. *Disaster Medicine and Public Health Preparedness,* 1-5. doi: 10.1017/dmp.2017.139
    - The three triage needs in a disaster are evacuation, surge capacity, and communication.

- Implementation of tool facilitates rapid identification of resources needed for pediatric transport, augmentation of surge capacity by identifying patients for rapid discharge or transfer to lower levels of care, and communication with receiving hospitals and supporting agencies such as EMS.
- TRAIN model decreases time needed to determine needed resources.

22. Lucile Packard Children's Hospitals. Preplanning disaster triage for pediatric hospitals: TRAIN toolkit. Retrieved August 20, 2018 from http://www.acphd.org/media/270195/hospital%20disaster%20triage%20pediatric%20planning%20train%20toolkit%20x.pdf
    - Tool for pediatric hospital disaster "pre-planning"
    - Categorizes patients according to their resource transportation needs during an evacuation or mass casualty event requiring increased surge capacity

23. Mace, S. E., Sharieff, G., Bern, A., Benjamin, L., Burbulys, D., Johnson, R., et al. (2010). Pediatric issues in disaster management, part 2: evacuation centers and family separation/reunification. *American Journal of Disaster Medicine, 5*(3), 149-161. doi: 10.5055/ajdm.2010.0017
    - Provides an overview of the needs of pediatric evacuees as well as key points for family reunification
    - In addition to basic needs (shelter, food, water, basic healthcare), children also require special foods, clothing, cribs, distraction, play, and some sense of normalcy
    - Provides sample pediatric specific supplies and services for evacuation centers (Appendix K)
    - Have safety features that cover the following three concepts: general physical and environmental safety, infection control, and control of violence
    - Evacuations should attempt to keep families together and separate children from parents only as a last resort
    - Utilize local, regional, and national resources for reunification

24. McGinty, M. D., Burke, T. A., Resnick, B., Barnett, D. J., Smith, K. C., & Rutkow, L. (2017). Decision processes and determinants of hospital evacuation and shelter-in-place during Hurricane Sandy. *Journal of Public Health Management and Practice, 23*(1), 29-36. doi: 10.1097/PHH0000000000000404
    - Most influential factors were risk to patients, ability to maintain continuity of operations (COOP), and prior experience
    - For hospitals that evacuated, disruption of utility services—whether preplanned, anticipated, or sustained—was the most common determinant
    - Hospital and government emergency plans should include processes and criteria for determining whether hospitals should evacuate or shelter-in-place
    - Relying on instinct is problematic; using checklists or decision making tools can ensure that important factors are not inadvertently overlooked

25. Nedelman, M. (2017). Hospitals evacuated and many injured as wildfires ravage Northern California. *CNN News.* Retrieved June 21, 2018 from https://www.cnn.com/2017/10/09/health/california-wildfires-hospitals-evacuation/index.html

26. Petinaux, B. P. & Yadav, K. (2013). Patient-driven resource planning of a health care facility evacuation. *Prehospital and Disaster Medicine, 28*(2), 120-126. doi: 10.1017/S1049023X12001793
    - Evacuation factors included continuous medical needs, mobility, and comprehension
    - Comprehension includes patients with needed medical or psychiatric restraint as well as communication (understanding the English language, those that are blind/deaf)
    - Drip infusion calculations should be available for continuous medication infusions
    - Consider ethical and moral questions that may arise for patients undergoing an operative procedure that cannot be interrupted safely
    - Consider utilizing one portable cardiac monitor to assess multiple patients on a rotating basis
    - Multiple infants in bassinettes can be transported on one stretcher
    - Account for evacuation plans for other clinical support areas such as pharmacy, blood bank, materials management, and sterile processing; should include how area addresses needs for supplies and equipment both during an evacuation and at the staging area

27. Pollaris, G. & Sabbe, M. (2016). Reverse triage: more than just another method. *European Journal of Emergency Medicine, 23*(4), 240-247. doi: 10.1097/MEJ.0000000000000339
    - It is assumed that hospitals should be able to sustain medical services for up to 96 hours without external aid
    - 10-20% of hospital total bed capacity can be made available within a few hours using reverse triage; reverse triage is a sure way to rapidly create inpatient surge capacity by identifying inpatients who do not require major medical assistance for at least 96 hours and who have a small risk for serious complications resulting from early discharge
    - Reverse triage can produce “bounce back” patients and adverse events

28. Ricci, K. A., Griffin, A. R., Heslin, K. C., Kanke, D., & Dobalian, A. (2015). Evacuate or shelter-in-place? The role of corporate memory and political environment in hospital-evacuation decision making. *Prehospital and Disaster Medicine, 3*(3), 233-238. doi: 10.1017/S1049023X15000229
    - Most influential factor in the decision to evacuate was New York City’s hospital evacuation mandate
    - Results suggest that hospital-evacuation decisions are confounded by political considerations and are influenced by past disaster experience
    - Evacuation decision resided with facility director since they “know their facility better than anybody else and what [the facility can] withstand, [or] not withstand in case of a natural disaster
    - Greater shared situational awareness among at-risk hospitals, along with a more coordinated approach to evacuation decision making, could reduce pressure on hospitals to make the high staked decision in isolation

29. Rimstad, R. & Holtan, A. (2015). A cross-sectional survey of patient needs in hospital evacuation. *Journal of Emergency Management, 13*(4), 295-301. doi: 10.5055/jem.2015.0243

- Cross sectional survey of inpatient needs in the event a total hospital evacuation within a few hours was needed
- Map inpatient population within three areas: physical mobility, special needs requiring caretaker resources under transport, and the lowest acceptable level of care facility to which evacuation may take place
- Labor and delivery is a department with low continuous medical care needs during an emergency evacuation, with the exception of the patients in stage II labor
- Each patient should be assigned to a category: walk, wheelchair, or stretcher; previous publications estimated that about 2/3 of the patients would be able to walk out of a hospital in case of a fire
- Five special needs categories: procedure, ventilator, intensive care, observation, and labor

30. Rozenfeld, R.A., Reynolds, S.L., Ewing, S., Crulcich, M.M., & Stephenson, M. (2017). Development of an evacuation tool to facilitate disaster preparedness: use in a planned evacuation to support a hospital move. *Disaster Medicine and Public Health Preparedness, 11*(4), 479-486. doi: 10.1017/dmp.2016.154
    - Event considered a planned evacuation
    - Inpatient psychiatry patients were transported via hospital shuttle with inpatient psychiatry staff
    - Patient electronic tracking took place at 4 checkpoints utilizing 4 color coded “boarding passes” : departing inpatient unit/emergency department at originating hospital, departing ambulance bay at originating hospital, arriving at new hospital ambulance bay, arriving at the new hospital inpatient unit
    - Evacuation routes, elevator traffic and staging locations, access control, communication devices, and availability of computer access and connectivity were tested during drills
    - All patients were to be seen by an attending physician prior to leaving originating hospital and upon arrival at new hospital
    - Exercises and drills found that evacuating acute care floors and critical care floors simultaneously was more efficient

31. Sternberg, E., Lee. G.C., & Huard, D. (2004). Counting crisis: US hospital evacuations, 1971-1999. *Prehospital and Disaster Medicine, 19*(2), 150-157.
    - Hospitals are exposed to varied hazards capable of causing crisis in a facility or hospital
    - Primary source of crisis in hospitals continues to be events that occur within the hospital such as internal fire, internal HazMat, human threat, and utility failure
    - 275 reported evacuation incidents from 1971 to 1999, with an annual average of 21 in the 1990s

32. Tekin, E., Bayramoglu, A., Uzkeser, M., & Cakir, Z. (2017). Evacuation of hospitals during disaster, establishment of a field hospital, and communication. *The Eurasian Journal of Medicine, 49*, 137-147. doi: 10.5152/eurasianjmed.2017.16102
    - Decision for partial or full evacuation of hospital is within the discretion of the president of the hospital disaster plan, and is coordinated by the disaster command center board—these individuals should also be in contact and coordinate with local and regional officials

- Priority for evacuation: small children and infants/patients not connected to machines and are ambulatory, patients who can move with assistance i.e. wheelchair or walker, patients who require a stretcher for transport, patients in ICU, and patients with least probability of survival
- Also prioritized patients for evacuation based on needed personnel for transport
- Communication is critical for coordination between organizations and staff; methods for communication include telephone, telegram, media communication such as radio and television, landline phone, cellular and satellite phones, mobile communication devices, amateur radios, couriers, etc.; essential to have methods pre-determined along with back-up methods
- Maintain security against possible sabotage in staging areas depending on incident prompting the evacuation

33. Thomas, J. & Lackey, N. (2008). How to evacuate a psychiatric hospital: a hurricane Katrina success story. *Journal of Psychosocial Nursing, 46*(1), 35-40.
    - Majority of evacuating patients were acutely will with diagnoses such as psychosis, suicidality, homicidality, and personality disorders
    - Patients given additional phone time with family members
    - Utilized 2 out of state buses to transfer patients
    - Children and adolescents strategically placed in buses away from adults (i.e. children in front, followed by several rows of staff, followed by adult patients) as well as separating post trauma patients and chemically dependent patients
    - Oriented bus drivers with general information about patients
    - Travel included scheduled breaks which were communicated to patients, resulting in reducing anxiety
    - Regularly updated employee and physician call trees were a major asset in effectively implementing the pre-evacuation process

34. Wyte-Lake, T., Griffin, A.R., & Dobalian, A. (2018). Supporting staff through a complete hospital evacuation and extended displacement period. *American College of Healthcare Executives, 63*(3), 195-209. doi: 10.1097/JHM-D-16-00009
    - Retaining a healthy, employed workforce following a disaster is one of the crucial steps to ensure that the facility is effectively staffed when it returns to normal operations; maintaining staff morale is vital
    - Phone lists were not updated, so it was difficult to communicate the evacuation and closure of the hospital to the entire staff due to Superstorm Sandy; for five days after the storm, leadership set up a call centers for staff to check in and held daily conference calls with managers as a way to account for staff

Appendix D

SAMPLE JOB ACTION SHEET

UNIT TEAM LEADER

Mission: Advise the Incident Commander or Operations Section Chief/Medical Care Branch Director, as assigned, on issues related to unit emergency response.

Date: _____ Start: _____ End: _____ Positioned Assigned to: _____ Initials: _____

POSITION REPORTS TO: _____ Signature: _____

Hospital Command Center (HCC) Location: _____ Telephone: _____

Fax: _____ Other Contact Info: _____ Radio Title: _____

IMMEDIATE (OPERATIONAL PERIOD 0-2 HOURS)	TIME	INITIALS
Receive appointment and briefing from the Medical Branch Director or Operations Section Chief, as assigned.		
Read this entire Job Action Sheet and review incident management team chart.		
Notify your usual supervisor of your HICS assignment.		
Meet with the Medical Branch Director or Operations Chief to discuss unit needs.		
Communicate with the Medical Branch Director or Operations Section Chief to obtain/communicate: • Type and location of incident • Number of expected and acuity of patients for evacuation • Estimated time of departure from facility • Unusual or hazardous environmental exposure • Patient isolation needs		
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, evacuation, and for the pediatric patient.		
Ensure pediatric patient identification and tracking practices are being followed.		
Communicate and coordinate with the Logistics Section chief to determine: • Medical care equipment and supply needs • Medications with pediatric dosing • Transportation availability and needs (carts, cribs, wheelchairs, etc.)		

INTERMEDIATE (OPERATIONAL PERIOD 2-12 HOURS)	TIME	INITIALS
Continue to communicate and coordinate with Logistics Section Chief on the availability of pediatric equipment and supplies.		
Coordinate with the 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	INITIALS
Assess for inappropriate responses or behaviors in patient families and/or staff during the emergency event.		
Ensure the provision of resources for mental health and appropriate event education for patients, families, and staff.		
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	INITIALS
Ensure return/retrieval of equipment and supplies and return all assigned incident command equipment.		
Upon deactivation of your position, ensure all documentation is 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.		

DOCUMENTS/TOOLS
• HICS Form 213 – Incident Message Form • HICS Form 260 – Patient Evacuation Tracking Form • Hospital Emergency Operations Plan • Hospital Organization Chart • Hospital Telephone Directory • Radio/Satellite Phone • Local Public Health Reporting Forms

Appendix E

Hospital Evacuation Decision Guide:
Factors to Consider in Deciding Whether to Begin a Pre-Event Evacuation

Factor	Issues to Consider	Implications
Event Characteristics		
• Arrival	• When is the event expected to "hit" the hospital? The metropolitan area? • How variable is the time the event is expected to "hit"?	• The amount of time until the event "hits," combined with the anticipated time to evacuate patients, determines how long an evacuation decision can be deferred.
• Magnitude	• What is the expected strength of the event? • How likely is the event to gain or lose strength before it reaches the hospital? The metropolitan area?	• The magnitude of the event forewarns the potential damage to a facility and utilities, which could cut off the supply of key resources, or otherwise limit the ability to shelter-in-place and care for patients.
• Area impacted	• How large is the geographic area to be affected by the event? • How many vulnerable health care facilities are in this geographic area?	• Competition for resources needed to evacuation patients (especially vehicles) increases when more facilities evacuate simultaneously.
• Duration	• How long is the event expected to last? • How variable is the expected duration of the event?	• The duration of the event will affect how long hospitals have to shelter-in-place or operate on back-up, alternative, or less predictable sources of key resources.
Anticipated Effect of the Event on Key Resources Needed to Care for Patients		
• Water source	• Is the main city water supply in jeopardy? Already non-functional? • Is there a backup water supply (well, nearby building with intact water mains)?	• Water loss of unknown duration (more than 1-2 days) is almost always cause for evacuation.
• Heat source	• Is the heat source in jeopardy (steam, water for boilers, etc.)? Already non-functional? • Is there a backup (intact nearby building that still has power/heat)? • Is not, will the building be too cold for patient safety before adequate heat returns?	• Loss of heat, especially during a northern winter, is almost a cause for evacuation—often within 12 hours.
• Electricity	• Is power in jeopardy? Just for the hospital or a wider area? • Are backup generators functional? How long can they run without refueling? Is refueling possible (e.g., intake not under water)?	• Loss of electricity endangers ventilated patients, among others, and may affect the sequence in which patients are evacuated.

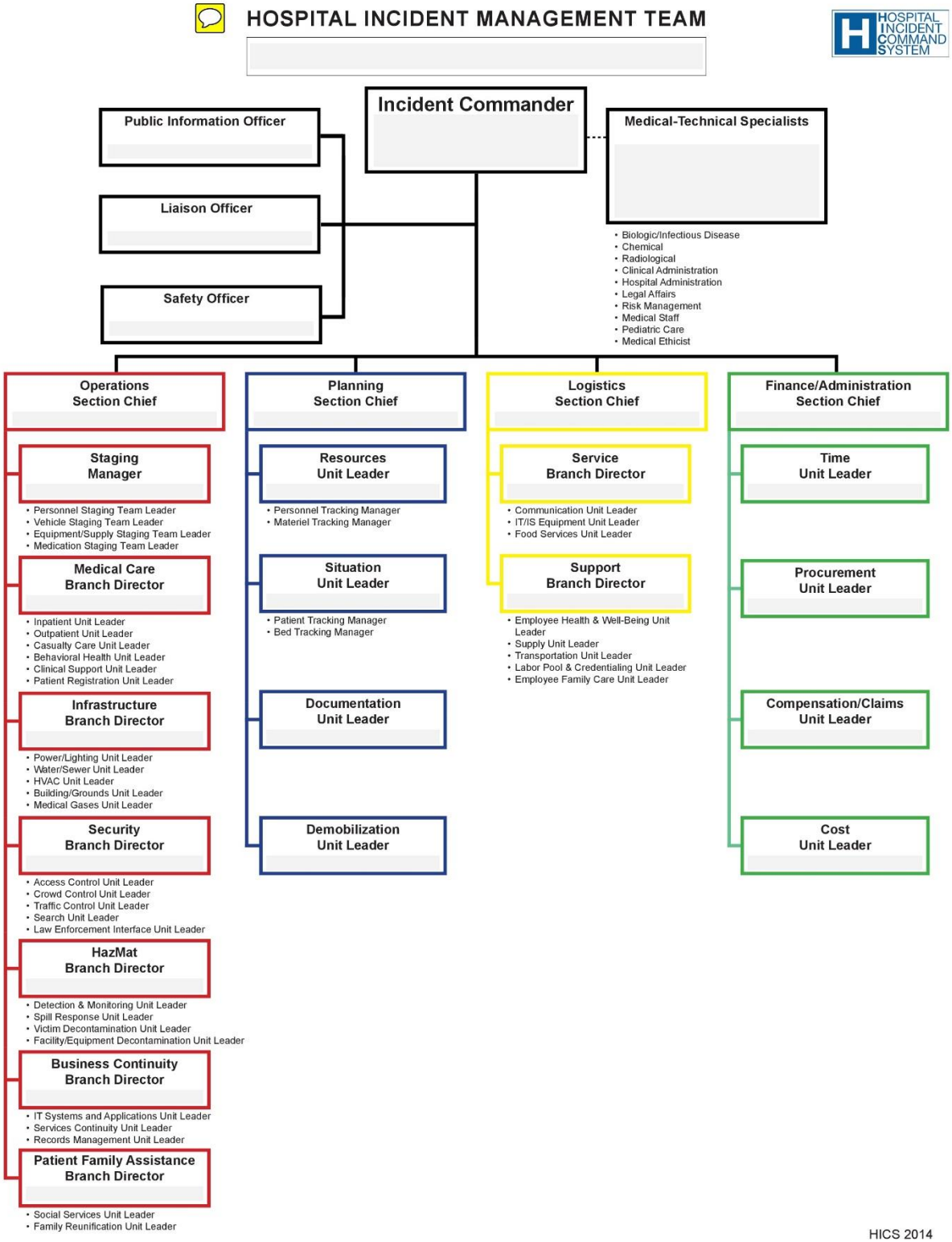
Factor	Issues to Consider	Implications
	• Can some sections/wings be shut down to reduce fuel consumption and stretch fuel supplies?	
• Building structural integrity	• Is the building obviously/visibly unsafe? All of it or only portions (e.g. can people be consolidated in safer sections)? • Was there a water tower on the roof, and is it intact? • Is a building engineer needed to determine structural integrity/safety?	• Earthquakes or explosions may cause rooftop water towers to fall, flooding the building. • Safety/integrity may not be obvious to untrained occupants.
Anticipated Effect of the Event on the Surrounding Environment and Community That Could Affect an Evacuation Decision		
• Road conditions	• Are any major routes form the hospital to potential receiving care sites closed? • Is traffic at gridlock on major routes from the hospital to potential receiving care sites? • Are access routes to the hospital cut off?	• There may be a limited window of opportunity to carry out a ground-based evacuation. • Increased use of helicopters to evacuate patients may be required. • Staff may not be able to get to the hospital to relieve existing staff or assist in the evacuation.
• Community/building security	• Have any nearby areas experienced increased in disorder or looting? • Are local law enforcement agencies understaffed due to self-evacuations or significant additional responsibilities? • Are additional private security officers available to secure the hospital?	• If patient and staff safety cannot be assured, evacuation will be necessary.
• Evacuation status of other nearby health care facilities	• Are other hospital or other health care facilities already evacuating or planning to evacuate, or have they decided to shelter-in-place?	• If other hospitals or health care facilities are evacuating: ○ The competition for ambulances, wheelchair vans, and buses may be substantially increased. ○ The hospital may be asked to accept additional patients. ○ Patients may have to be relocated to facilities further away than anticipated.
• State/county/local evacuation order	• Have evacuation orders been issued in areas that are closer to the event? • Have any public or private statements been issued regarding the possibility of an evacuation order? • Have any other incidents occurred that increase the likelihood that an evacuation order will be issued?	• There may be no other choice but to evacuate.

Factor	Issues to Consider	Implications
• Availability of local emergency response agencies	• Are local emergency response agencies understaffed (or otherwise unavailable) due to self-evacuations or additional responsibilities?	• Unavailability of local fire agencies increases the risk of sheltering-in-place.

Source:
Hospital Evacuation Decision Guide (Table 6). Content last reviewed July 2018. Agency for Healthcare Research and Quality, Rockville, MD. https://www.ahrq.gov/research/shuttered/hospevactab6.html

Appendix F

HICS Command Structure



Appendix G
HICS 260 Patient Evacuation Tracking Form

HICS 260 - PATIENT EVACUATION TRACKING FORM

1. Date	**2. From** (Unit)		
3. Patient Name		**4. DOB**	**5. Medical Record Number**
6. Diagnosis		**7. Admitting Physician**	
8. Family Notified ☐ YES ☐ NO NAME: _____ CONTACT INFORMATION: _____			
9. Mode of Transport	**10. Accompanying Equipment** (check those that apply)		
☐ Hospital Bed ☐ Gurney ☐ Wheelchair ☐ Ambulatory ☐ Other:	☐ IV Pump(s) ☐ Oxygen ☐ Ventilator ☐ Chest Tube(s) ☐ Other:	☐ Isolette/Warmer ☐ Traction ☐ Monitor ☐ A-Line/Swan ☐ Other:	☐ Foley Catheter ☐ Halo-Device ☐ Cranial Bolt/Screw ☐ Intraosseous Device ☐ Other:
11. Special Needs			
12. Isolation ☐ YES ☐ NO TYPE: _____ REASON: _____			

13. Evacuating Clinical Location			**14. Arriving Location**	
ROOM # TIME			ROOM # TIME	
ID BAND CONFIRMED BY:		☐ YES ☐ NO	ID BAND CONFIRMED BY:	☐ YES ☐ NO
MEDICAL RECORD SENT		☐ YES ☐ NO	MEDICAL RECORD RECEIVED	☐ YES ☐ NO
BELONGINGS	☐ WITH PATIENT	☐ LEFT IN ROOM ☐ NONE	BELONGINGS RECEIVED	☐ YES ☐ NO
VALUABLES	☐ WITH PATIENT	☐ LEFT IN SAFE ☐ NONE	VALUABLES RECEIVED	☐ YES ☐ NO
MEDICATIONS	☐ WITH PATIENT	☐ LEFT ON UNIT ☐ PHARMACY	MEDICATIONS RECEIVED	☐ YES ☐ NO
PEDS / INFANTS			**PEDS / INFANTS**	
BAG/MASK WITH TUBING SENT		☐ YES ☐ NO	BAG/MASK /W TUBING RCVD	☐ YES ☐ NO
BULB SYRINGE SENT		☐ YES ☐ NO	BULB SYRINGE RECEIVED	☐ YES ☐ NO

15. Transferring to another Facility / Location			
TIME TO STAGING AREA		TIME DEPARTING TO RECEIVING FACILITY	
Destination			
TRANSPORTATION ☐ AMBULANCE. #	AGENCY	☐ HELICOPTER	☐ OTHER
ID BAND CONFIRMED ☐ YES ☐ NO	BY		
DEPARTURE TIME:			
16. Prepared by PRINT NAME: _____		SIGNATURE: _____	
DATE/TIME: _____		FACILITY: _____	

HOSPITAL INCIDENT COMMAND SYSTEM

Purpose: Detail and account for patients transferred to another facility
Origination: Inpatient/Outpatient Unit Leader or Casualty Care Unit Leader
Copies to: Patient Tracking Manager, Medical Care Branch Director, evacuating clinical location, and Documentation Unit Leader

HICS 260 I Page 1 of 1

Appendix H
Illinois Hospital Pediatric Capabilities
July 2020

EMS Region	Hospital Name	City	Dedicated Pediatric Unit	PICU	NICU
1	MercyHealth Javon Bea Hospital—Riverside Campus	Rockford	X		X
	Swedish American Hospital	Rockford	X		X
2	Carle BroMenn Medical Center	Peoria	X		
	Galesburg Cottage Hospital	Galesburg	X		
	OSF St. Francis Medical Center	Peoria	X	X	X
	Unity Point Health—Methodist	Peoria	X		
	Unity Point Health—Pekin	Pekin	X		
3	HSHS St. John's Hospital	Springfield	X	X	X
4					
5	Memorial Hospital of Carbondale	Carbondale	X		
6	Carle Foundation Hospital	Urbana	X	X	X
	Decatur Memorial Hospital	Decatur	X		
7	Advocate Christ Medical Center—Advocate Children's Hospital	Oak Lawn	X	X	X
	AMITA Health St. Joseph Medical Center	Joliet	X		X
	Silver Cross Hospital	New Lenox	X		
8	Advocate Good Samaritan Hospital	Downer's Grove			X
	AMITA Health Adventist Medical Center—Hinsdale	Hinsdale	X	X	X
	Edward Hospital	Naperville	X	X	X
	Loyola University Medical Center	Maywood	X	X	X
	Northwestern Medicine Central DuPage Hospital	Winfield	X	X	X
9	Advocate Lutheran General Hospital—Advocate Children's Hospital	Park Ridge	X	X	X
	Advocate Sherman Hospital	Elgin	X		
	AMITA Health St. Alexius Medical Center	Hoffman Estates	X	X	X
	Northwest Community Hospital	Arlington Heights	X		X
	Rush Copley Medical Center	Aurora			X

EMS Region	Hospital Name	City	Dedicated Pediatric Unit	PICU	NICU
10	Advocate Condell Medical Center	Libertyville	X		
	Northshore University Health System—Evanston Hospital	Evanston	X		X
	Vista Medical Center East	Waukegan	X		
11	Advocate Illinois Masonic Medical Center	Chicago			X
	Ann & Robert H. Lurie Children's Hospital of Chicago	Chicago	X	X	X
	John H. Stroger Jr. Hospital of Cook County	Chicago	X	X	X
	Mt. Sinai Hospital Medical Center	Chicago			X
	Northwestern Memorial Hospital	Chicago			X
	AMITA Health Saint Joseph Hospital	Chicago			X
	Rush University Medical Center	Chicago	X	X	X
	University of Chicago—Comer Children's Hospital	Chicago	X	X	X
	University of Illinois Hospital and Health Science System	Chicago	X	X	X
Missouri*	SSM Health Cardinal Glennon Children's Hospital	St. Louis, MO	X	X	X
	St. Louis Children's Hospital	St. Louis, MO	X	X	X
Indiana*	Ascension St. Vincent Evansville	Evansville, IN	X	X	
	Deaconess Hospital	Evansville, IN	X		
	Union Hospital	Terre Haute, IN	X		

***Only hospitals that participate in the Illinois Pediatric Facility Recognition Program, Illinois Perinatal Regionalization System, and/or the Illinois Trauma System, are included in this list.**

NOTE: This list only includes hospitals with licensed pediatric beds on a dedicated pediatric unit. There may be hospitals in the region that have licensed pediatric beds on adult medical/surgical units.

Appendix I

SAMPLE Grab and Go Labor and Delivery Supply List

- Gloves
  - Nonsterile—1 box
  - Sterile size 7 (x10)
- Examination gel (x10)
- Fetal Doppler
- Antibacterial hand gel
- Suture
  - Monocryl 2.0 X 2
  - Monocryl 3.0 X 2
- Instruments
  - Mayo scissors
  - Clamp
  - Needle driver
  - Umbilical clamp (x3)
- General Supplies
  - Under-buttocks drape
  - Needle box
  - Peripads x 2
  - Red bag x 2
- Medications
  - Oxytocin 20 units intramuscular
  - Methergine 0.2mg intramuscular
  - Lisoprostol 1,000 micrograms
  - Lidocaine 1% 30mL
  - Needles
  - Syringes
- Neonatal
  - Ambubag (neonatal)
  - Bulb syringe
  - Hat
  - Blanket
  - Stethoscope

Source:

Daniels, K., Oakeson, A.M., & Hilton, G. (2014). Steps toward a national disaster plan for obstetrics. *Obstetrics & Gynecology, 124*(1), 154-158. doi: 10.1097.AOG.0000000000000326

Appendix J

SAMPLE Evacuation Evaluation Tool

NICU PATIENT TWO (2) Group _____ Evaluator Initials _____					
Measurable Action		**Yes**	**No**	**Time to Complete**	**Comments**
Resources and Assets					
Staff acquire and distributed per policy these items					
	Binders/Patient Record				
	Downtime Forms (BCA)				
Assigned staff acquire durable medical equipment, feeding supplies per patient need					
	ID band				
	Syringes for replogle decompression				
	Monitor				
	O2 Tank				
	Diapers				
	Wipes				
	Hat/Head warmer				
	IV pumps/fluids/pole(s)				
	Self-inflating ambu bag				
	Blankets				
Bedside clinician gathers medications per patient need					
	IV antibiotics				
	TPN and Lipids				
	Versed drip				
	PRN Morphine				
	IV Tylenol scheduled				
Discussion among clinicians regarding: Which medications to transport with the patient; Use of limited resources for limited patients					
Utilization of baskets per manufacturers recommendation and training; Bedside clinician acquires evacuation basket and dons correctly					
	Obtain basket				
	Shoulder strap applied correctly				
	Shoulder strap adjusted				
	Chest strap fastened				
	Back buckles fastened to basket				
	Basket is leveled				
	Transwarmer mattress acquired and placed in basket				
	Bottom of basket is padded				
Evacuation basket is used correctly for transport					
	Infant is bundled				
	Infant placed in basket and strapped in				
	Chart is placed in bottom part of carrier				
	Equipment is placed in corners of basket away from neonate				
	Equipment does not touch neonate				
Patient ET tube is stabilized during transport by staff transporting neonate					
Parent is assigned a specific task (carry supplies)					
Safety/Security					
Neonate and staff are evacuated to correct staging area					
Patient Clinical Care					
Quality of care is maintained; measured by simulator respirations and temperature					
Communications					
RN makes contact with charge RN once patient is evacuated to staging area					

Source:

Farra, S., Miller, E.T., Gneuhs, M., Timm, N., Li, G., Simon, A., et al. (2016). Evacuation performance tool. *American Journal of Disaster Medicine, 11*(2), 131-136. doi: 10.5055/ajdm.2016.0232

Appendix K

SAMPLE Pediatric Specific Supplies and Services for Evacuation Centers

Supplies

- Basic pediatric first aid equipment and guidelines
- Infant formula
- Special formulas
- Oral hydration fluids
- Child-appropriate snacks and foods
- Diapers and other supplies for infant hygiene including disposal systems
- Alcohol-based hand sanitizing solution
- Charts with pictures of infectious diseases with rashes (chicken pox, measles)
- Games and other distraction devices for children

Services

- Multi-lingual translation services
- Basic health screening to ensure appropriate levels of available care
- Access to telephone/on-site consultation for medical questions
- Availability of medical information resources (computers, posters, referral lines, etc.) to aid in the appropriate use of medical resources
- Pediatric basic medical care
- Pediatric mental healthcare
- Communication with Emergency Medical Services
- Arrangements for children with special healthcare needs—individual shelter area
- Isolation areas for those families and individuals with potential infectious disease(s)
- Standardized healthcare data collection
- Security of unattended or unsupervised minors
- Supervision of children
    - Providing safe play area
    - Preventing exposure of children to drugs, alcohol, smoking, weapons
    - Preventing access to medications, power outlets, other environmental threats
    - Preventing injury to frail children and adults

Miscellaneous

- Cooling/heating system with carbon monoxide monitoring capability (especially if utilizing a tent)
- Secure transportation for individuals who require access to medical care, as needed

Adapted from:

Mace, S. E., Sharieff, G., Bern, A., Benjamin, L., Burbulys, D., Johnson, R., et al. (2010). Pediatric issues in disaster management, part 2: evacuation centers and family separation/reunification. *American Journal of Disaster Medicine, 5*(3), 149-161. doi: 10.5055/ajdm.2010.0017