

White Paper: Disaster Response for Pediatric Hospitals and Specialty Patients

Developed by:
Pediatric Disaster Coalition

Connie Schneider Eastlee, RN, MS, CMTE

Lori Upton, RN, BSN, MS

Kevin Schitoskey, RN, BSN, CFRN

Byron Piatt,

Garry Sitler, RRT, CMTE

Jack Sosebee,

Dawne Sokora, RN

Chris Yuhás,

Carol Hasty, MS, RN

Christine Reeves,

Angela Crawford, CCRN, CMTE

Jean Bennett, MSM, MSN, RN

Susan Engleman,

Kim Montgomery,

Melissa Low,

Scotti Floyd Edgar, RN BSN LP

April Anderson,

Pam Sprague,

Chad Sommer,

Mike Shutrump,

David Wood,

Doug Brown,

Amy Mersiovsky, BSN, RNBC

Janice Hughes

November 26, 2007

Introduction

The unique needs associated with the evacuation of Neonatal Intensive Care Units (NICU) and Pediatric Intensive Care Units (PICU) patient populations has not historically been recognized or well understood by hospital or governmental officials. When planning for hospital evacuations, Hurricanes Katrina and Rita brought to light the logistical challenges associated with the mass evacuation of several pediatric facilities and demonstrated multi-state asset mobilization of seven specialty transport services (Appendix A). Much can also be garnered from the historical responses and evacuations in other states. (ADD REFERENCES - JEAN and BYRON)

Pediatric and neonatal patient transportation is a labor, training and equipment intensive process. There is a need for development of planning guidance for healthcare facilities as well as local, state, regional and federal jurisdictions centered around the awareness of pediatric needs.

The Challenge

The challenges faced by the pediatric specialty facilities and their transport services advocates within the HHS Federal Planning Region VI (Texas, Arkansas, Louisiana, Oklahoma and New Mexico), led to the formation of the Pediatric Disaster Coalition. These entities, brought together by shared goals, decided to collaboratively address the lessons learned from prior disasters requiring evacuation of pediatric facilities.

This planning group consists of subject matter experts from free-standing children's hospitals, facilities with dedicated pediatric/neonatal units, pediatric specialty transport organizations, local and state public health and federal partners. The Coalition's intention is to provide recommendations and technical guidance to be shared with other healthcare facilities, local, state and federal agencies and other key stakeholders such as the Child Health Care Association (CHCA), the National Association of Children's Hospital and Related Institutions (NACHRI), Association of Air Medical Services (AAMS), American Academy of Pediatrics (AAP) Section on Transport Medicine and others.

Goals

The Pediatric Disaster Coalition has identified the following initial goals for HHS Region VI:

- assure that the state contracts and MAA (Mutual Aid Agreement) incorporate the use of civilian air and ground medical resources to ensure prompt and coordinated evacuation of these specialty patients
- provide technical assistance with Subject Matter Experts (SME) and guidelines for coordination of the response effort
- work toward inclusion of pediatric SMEs in state ESF 8 (Emergency Support Function) CON OPS (Concept of Operations)
- identify appropriate receiving facilities to assume care of the evacuated patients and associated resource utilization
- disseminate information to those stakeholders responsible for pediatric and neonatal evacuation planning
- integrate recommendations into hospitals, local, and state emergency operations plans
- identify and seek in advance funding mechanisms
- develop and execute tiered MOU's for transfers of specialty patients

- elevate pediatric issues and recommend policy revisions to include the pediatric and neonatal populations

Current Situation

Ultimately, every healthcare facility has the legal and moral obligation to provide appropriate emergency planning to ensure continued care of their patients. Historically, evacuation planning in the healthcare setting focused on movement horizontally and vertically in the event of fire or other isolated incident. Regulatory agencies now require hospitals to develop a “written all hazards emergency management plan” and perform Hazard Vulnerability Assessments (HVA’s) which provides processes for evacuating the entire facility when the environment cannot support adequate care, treatment, and services. The plan must address transporting patients, staff, and equipment to other facilities or alternative care sites.

The Pediatric Disaster Coalition has concluded, based on research, actual incidents, and exercises, that the requirements for transportation resources exceed the local availability to evacuate pediatric facilities to similar facilities. A relatively large proportion of the adult population uses hospital facilities compared with the relatively small percentage of the total pediatric population (<5%) that uses inpatient care. As a result, pediatric inpatient capacity is more limited relative to the baseline population of children. Thus, to significantly increase pediatric capacity during a disaster, a more regionalized approach must be considered for children. (Baldwin)

While all emergency planning begins at the local level, the healthcare community historically has relied on external entities to address resource gaps. Resource requests from a healthcare facility would be communicated to the local emergency operations center (EOC). If the local government cannot meet the need, the request would be elevated to a regional or state coordinating center. If the state is unable to meet the needs, the governor can institute their Emergency Management Assistance Compact (EMAC) agreements with neighboring states if applicable, and/or begin the process of declaring a state disaster and requesting assistance from the federal government.

The National Disaster Medical System (NDMS) is the primary federal program that supports the care and transfer during evacuation of patients. Despite federal and state pre-planning to stage transport assets near a disaster location, NICU and PICU patients cannot be effectively transported through the NDMS in a mass-evacuation scenario due to lack of specialty teams and equipment. And currently, civilian air medical services are not included in most state or federal disaster response plans.

Recommendations

This paper will outline actions which should be incorporated into pediatric facilities evacuation plans. The paper also offers HHS and other governmental agencies best practices and a model to successfully respond to any Federal, Regional, State and local evacuation of PICU and NICU patients.

As a result of the research and collaborative efforts, the Coalition offers these recommendations and best practices:

1. Provide education and information to all key stakeholders with responsibility for evacuation of specialty patients by distributing this White Paper.

2. Utilize the coalition's database of all pediatric capable hospitals, (including PICU and NICU dedicated units) and specialty transport teams in HHS Region VI. This database will indicate what local and regional resources are available to utilize in an incident. The database includes but is not limited to the following elements:
 - a. Surge capacity
 - b. Transport vehicles (helicopters, fixed wings, ambulances)
 - c. Specialty teams and composition of crew members
 - d. Transport equipment (isolettes, ventilators, nitric, ECMO)
 - e. Contact information
3. Execute Memorandums of Understanding (MOUs) between facilities, their transport teams and governmental agencies. A sample MOU will be included which details:
 - a. Deployment of transport assets
 - b. Processes such as mobilization of assets, liability, reimbursement, billing, etc
 - c. Agreement to accept patients at similar or higher level of care
 - d. Sharing credentialed staff
 - e. Repatriation of patients
 - f. Reimbursement for transports
4. Request each state to develop specialty mutual aid and contract agreements that include pediatric and neonatal patients with specific transport equipment and requirements.
5. Partner with national pediatric associations such as CHCA, NACHRI and AAP to educate governmental agencies, hospital administrators and emergency managers as to the unique requirements of transporting specialty pediatric and neonatal patients.
6. Disseminate a comprehensive tabletop exercise for hospitals and states to use as a model or template for local adaptation.
7. Coordinate with local, state and federal agencies regarding critical issues such as:
 - a. Integration of civilian specialty transport teams into local, state or federally directed missions
 - b. Command, control, and coordination of transportation assets
 - c. Communication interoperability
 - d. Aviation issues (fuel, duty time, airspace restrictions)

Summary

Pediatric and neonatal patient evacuation is a challenge of the greatest possible magnitude. Your expertise and actions are therefore sought, so that limited pediatric and neonatal resources are effectively incorporated into executable plans.

At the local level:

- individual facilities with pediatric and neonatal patient populations work with your emergency preparedness partners
- incorporate recommendations
- ensure a pediatric SME is included in the planning to advocate on behalf of the pediatric and neonatal population for which you are responsible.

At the state level:

- work with the pediatric leaders and facilities in your jurisdictions to ensure a pediatric SME is included in the planning and response phases
- identify and support a coordinating entity to assist in the pediatric/neonatal response efforts
- establish and maintain pediatric and neonatal database to include capability, capacity, resources and asset availability
- execute contracts and/or mutual aid agreements with pediatric/neonatal facilities for specialty strike team development and specialty transportation assets
- support healthcare facilities in their decision to shelter in place or evacuate
- author legislature and policy changes to include the unique needs of the population
- establish and support alternative facilities (care and shelter) capable of providing for the unique needs of the non-hospitalized technologically dependant pediatric population

At the federal level:

- identify and adapt transportation assets to be capable of transporting this unique population
- improve and streamline accessibility to federal transport assets
- earmark funding to improve pediatric preparedness and response efforts
- ensure pediatric and neonatal needs are addressed in federal planning and response
- include a pediatric/neonatal component to federally sponsored exercises and drills
- author legislature and policy changes to include the unique needs of the population

The Pediatric Disaster Coalition advises all free-standing children's hospitals and facilities with dedicated pediatric/neonatal units to prepare for emergency responses using this information and address and support the above recommendations.

APPENDIX A:

The Pediatric Disaster Coalition has met to address lessons learned from evacuating Children's Hospital New Orleans Louisiana (CHNOLA) with hurricane Katrina. Driscoll Children's in Corpus Christi and Texas Children's in Houston both had evacuations with hurricane Rita. Seven pediatric transport teams participated in the two hurricane evacuations with various Rotor Wing (RW) and Fixed Wing (FW) responses. Five transport teams responded to hurricane Katrina and six transport teams responded to hurricane Rita.

- Arkansas Children's Hospital, Little Rock, AR – 1 RW, 2 FW and one C130 Air Guard
- Cook Children's Hospital, Fort Worth, TX – 1 RW and 1 FW
- Texas Children's Hospital, Houston, TX – 2 FW
- Miami Children's Hospital, Miami, FL – 1 RW and 1 FW
- Mercy Children's Hospital, Kansas City, MO – 1 FW and two C130's Air Guard
- Children's Medical Center, Dallas, TX – 1 RW and 2 FW
- Driscoll Children's Hospital, Corpus Christi, TX – 2 FW

A SWOT Analysis and Gap Analysis has uncovered considerable challenges, including but not limited to the following:

- a. Surge capacity limitations (e.g. definitions, physical versus licensed beds, alternative care sites)
- b. NICU / PICU patients must go to same or higher level of care (not alternative sites)
- c. High volume of patients requiring specialized care during transport (Nitric, high frequency ventilators, ECMO)
- d. Pediatric population not planned for in State / Federal responses
- e. Lack of drilling total evacuations at hospitals
- f. Determination of alternate Landing Zones (LZs) at hospitals
- g. Lack of Landing Zone control and communication with ground personnel or hospitals
- h. Logistics of landing at airport versus referring / receiving hospitals
- i. Triage of patients at sending facility
- j. Limited capabilities of non crosstrained pediatric/neonatal teams to evacuate multiple patients
- k. Lack of communication between Children's Hospitals to accept patients and know bed capacity for ICU and specialty patients
- l. EMAC (state driven) agreements for mutual aid. Governor to Governor request. Specialty pediatric transport teams are not considered when asking for EMAC assistance between states
- m. Lack of drilling EMAC agreements between states
- n. Identification of patients / families during evacuation
- o. Transporting parents with critical patients
- p. EMTALA / HIPAA / Consent issues
- q. FAA duty time limitations for pilots evacuating hospitals
- r. Lack of refueling capabilities and priority at local airports
- s. FAA restricted airspace issues surrounding disaster areas
- t. Lack of specialty teams to repatriate evacuated patients
- u. Communication shortfalls
 - i. Different radio frequencies for different states and municipalities (interoperability)
 - ii. Cell coverage frequently lacking in disaster situations
 - iii. Lack of ATC and airspace radio communication
 - iv. Lack of ability to recharge cell phones, sat phones, and handheld radios
 - v. Lack of knowledge of EOCs frequencies

References

Baldwin, Steve, MDa, Robinson, Andria, MBAb, Barlow, Pam, BSb, Fargason, Crayton, MD,MM,FAAPa. Moving Hospitalized Children All Over the Southeast: Interstate Transfer of Pediatric Patients During Hurricane Katrina. *Pediatrics*, Vol. 117 No. 5 May 2006, pp. S416-S420 (doi:10.1542/peds.2006-0099O).

About.com (n.d.). *Civil Reserve Air Fleet*. Accessed July 20, 2007 from <http://usmilitary.about.com/library/milinfo/affacts/blcivilreserveairfleet.htm>.

Association of Air Medical Services (AAMS). Including Air Medical Services in Federal Disaster and Terrorism Response Plans Position Paper.

Cearnal, L. Only six percent of hospitals prepared for pediatric emergencies? The controversy and facts about the fearsome statistic. *Annals of Emergency Medicine*, 2006, Oct; 48 (4): 403-5.

Committee on Pediatrics Emergency Medicine. *Pediatrics* Vol 99, No 1, Jan 1997, pp 130-133. The pediatrician's role in disaster preparedness.

Davis DP, Poste JC, Hicks T, Polk D, Rymer TE, Jacoby I: Hospital bed surge capacity in the event of a mass-casualty incident. *Prehospital Disaster Medicine* 2005; 20: 169-176.

Department of Homeland Security, Lowell, JA: Medical Readiness responsibilities and Capabilities: A Strategy for Realignment and Strengthening the Federal Medical Response. January 3, 2005.

Dolan, Margaret and Drug, Stephen: Pediatric Disaster Preparedness in the Wake of Katrina: Lessons to be Learned. *Pediatric Emergency Medicine* 2006; 7:59-66.

Epley, E. Regional medical disaster planning: an integrated approach to ESF-8 planning. *Journal of Trauma*, 2007, Jun: 62(6 Suppl): S96.

Farmer JD and Carlton PK: Providing critical care during a disaster: the interface between disaster response agencies and hospitals. *Critical Care Medicine* 2006; 34(3 supplement): S 56-S 59.

Fendya, DG. When disaster strikes – care considerations for pediatric patients. *Journal of Trauma Nursing*, 2006; Oct-Dec; 13 (4): 161-5.

Gajdeczka, Aleksandra. A Makeshift Shelter from the Storm. June 2007.

GAO. Hurricane Katrina: GAO's Preliminary Observations Regarding Preparedness: Response, and Recovery. GAO-06-442T. Washington, D.C.: March 8, 2006.

Government Accountability Office (GAO). Testimony before the Special Committee on Aging, US Senate: Disaster Preparedness, Preliminary Observations on the Evacuation of Vulnerable Populations due to Hurricanes and Other Disasters. GAO-06-790T. Washington D.C.: May 18, 2006.

Joint Commission on Accreditation of Healthcare Organization (JCAHO). 2006 Hospital Accreditation Standards for Emergency Management Planning and Emergency Management Drills, Standard EC.4.10.

Kanter RK and Moran JR: Pediatric Hospital and Intensive Care Unit Capacity in Regional Disasters: Expanding Capacity by Altering Standards of Care. *Pediatrics* 2007; 119; 94-100.

Markenson D, Reynolds S; American Academy of Pediatrics, Committee on Pediatric Emergency Medicine and Task Force on Terrorism. The pediatrician and disaster preparedness. *Pediatrics* 2006; 117(2). Available at: www.pediatrics.org/cgi/content/full/117/2/e340.

National Disaster Medical System (2006). *Federal Coordinating Center Guide*, Retrieved July 20, 2007, from <http://fhp.osd.mil/ndms/docs/fccGuide.pdf>.

National Disaster Medical System. *National Disaster Medical System*. Retrieved July 20, 2007, from <http://www.ndms.dhhs.gov/index.html>.

National Emergency Management Association (NEMA): Model Intrastate Mutual Aid Legislation. March 2004.

Pociask, Martin: Helicopter Association International Members Respond to the Fury of Katrina. *Rotor*. Winter 2005-2006, 16-29.

Quinn B, Baker R, Pratt J: Hurricane Andrew and a pediatric emergency department. *Annals of Emergency Medicine*, 1994; 23:737-741.

Seidel JM, Knapp JF, eds. American Academy of Pediatrics, Committee on Pediatric Emergency Medicine. Disasters, mass casualty events, and disaster preparedness. *Childhood Emergencies in the Office, Hospital, and Community: Organizing Systems of Care*. Elk Grove Village, IL: American Academy of Pediatrics; 2000:217-246.