

EMSC Grand Rounds: Children and Disasters

Satellite Conference and Live Webcast
Tuesday, July 29, 2014
10:00 – 11:30 a.m. Central Time

Produced by the Alabama Department of Public Health
Video Communications and Distance Learning Division

Faculty

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Disclosures

- No financial disclosures
- Will not discuss off - label medicines
- Dr. Baker is an intermittent federal employee
- The views and comments expressed are his own and do not represent those of the Department of Health and Human Services or the National Disaster Medical System

Objectives

- State elements of personal and family preparedness for disasters
- Review hospital preparedness and response for incidents involving children
- Provide an update for state, regional, and national preparedness efforts for children in disasters

What is a Disaster?

- A disaster is an event that exceeds the capabilities of the response
- A disaster is present when need exceeds resources
 - Disaster = Needs > Resources
 - Natural disasters may be increasing worldwide

Government Response to Disasters



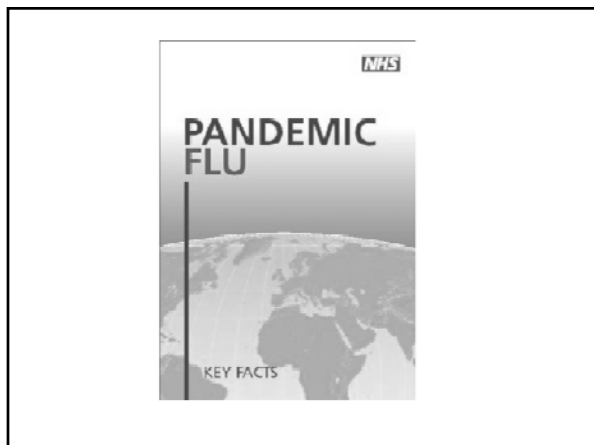
All disasters start and end locally.

Disaster Response

- **National Incident Management System (NIMS)**
 - Incident Command System (ICS)
- **National Response Framework**
 - Emergency Support Functions
 - **ESF - 8 Public Health and Medical Services (HHS)**

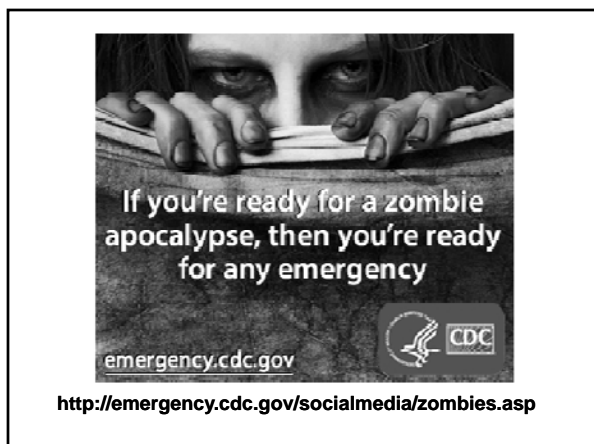
Disaster Response

- **State and County EMA's**
- **Hospitals and Volunteer Organizations (VOADs)**



All - Hazards Approach

- **All - hazards is a collection various man-made and natural events that have the capacity to cause multiple casualties**
- **All - hazards preparedness is the comprehensive preparedness required to manage the casualties resulting from the plethora of possible hazards**



Hazard Vulnerability Analysis

- **Systematic needs assessment for an Emergency Management program**
 - Risk = Probability x Severity
 - Severity = Impact – (Preparedness + Response)
 - Threat increases with percentage

<http://www.calhospitalprepare.org/hazard-vulnerability-analysis>

Hazard Vulnerability Analysis

- Approach to recognizing hazards that may affect demand for hospital services or its ability to provide those services

<http://www.calhospitalprepare.org/hazard-vulnerability-analysis>

Personal Preparedness

- Elements
 - Stockpiling – “Get a kit”, “Get 10”
 - Planning – “Make a plan”
 - Awareness – “Stay informed”
- Vulnerable populations
 - Elderly and children
 - Non - English speakers
- Healthcare workers and responders

Stockpiling Resources



Planning

AAP – ACEP Emergency Information Form FEMA Family Communication Plan

Emergency Information Form for Children with Special Needs		Ready Family Emergency Plan	
<p>Name: _____</p> <p>Address: _____</p> <p>City/State/Zip: _____</p> <p>Phone: _____</p> <p>Emergency Contact: _____</p> <p>Special Needs: _____</p>		<p>Family Emergency Plan</p> <p>What should you do if you are at home when a disaster strikes?</p> <p>What should you do if you are at school or work when a disaster strikes?</p> <p>What should you do if you are in a public place when a disaster strikes?</p> <p>What should you do if you are in a car when a disaster strikes?</p> <p>What should you do if you are in a public place when a disaster strikes?</p>	
<p>Emergency Information Form for Children with Special Needs</p> <p>Section 1: Personal Information</p> <p>Name: _____</p> <p>Address: _____</p> <p>City/State/Zip: _____</p> <p>Phone: _____</p> <p>Emergency Contact: _____</p> <p>Special Needs: _____</p>		<p>Section 2: Family Emergency Plan</p> <p>What should you do if you are at home when a disaster strikes?</p> <p>What should you do if you are at school or work when a disaster strikes?</p> <p>What should you do if you are in a public place when a disaster strikes?</p> <p>What should you do if you are in a car when a disaster strikes?</p> <p>What should you do if you are in a public place when a disaster strikes?</p>	

<http://www.acep.org/content.aspx?id=26276>
http://www.ready.gov/sites/default/files/documents/files/Family_Emergency_Plan.pdf

“While Children Have Increased Vulnerability to Disasters...Disaster Planning Has Largely Overlooked Their Needs”

Future of Emergency Care Report
 The Institute of Medicine
 (2006)

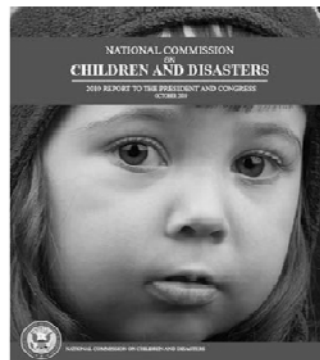
Fact sheet available:
<http://iom.edu>

Pediatric Vulnerabilities

- Developmental
 - Dependence on caregivers
 - Communication barriers
- Anatomic
 - Body size and surface area
 - Specialized equipment and drug
- Physiologic
 - Rapid metabolism

Systemic Vulnerability

- The “25% - 10%” rule
 - Roughly 25% of the population are children but less than 10% of hospital beds are pediatric capable
 - Especially true for critical care, burns
- In large disasters, capacity will be exceeded more rapidly for children than for adults



<http://www.childrenanddisasters.acf.hhs.gov/>

National Commission on Children in Disasters (NCCD)

- Bipartisan, independent body created under federal law (P.L. 110-161) to assess children’s needs as they relate to preparation for , response to and recovery from all hazards, including major disasters and emergencies

National Commission on Children in Disasters (NCCD)

- Commission created 2007
- Interim Report fall 2009
- Final report October 2010

Mass Casualty Incident (MCI)

- An MCI is an event that exceeds the health care capabilities of the response
- MCI = Healthcare Needs > Resources
- Presence of an MCI may affect 1 or more levels of health care delivery
 - EMS and communities – Regional 3^o Care Centers
 - Hospitals - National Government agencies, CDC, military

EMS Response to MCI Involving Pediatrics

- Tuscaloosa tornado April 27, 2011 >20 children transported by local EMS
- No adverse events in resuscitation and transport phases of care
- Adequate stockpiled supplies and equipment
- Opportunities for improvement

Kanter, RK. The 2011 Tuscaloosa Tornado: Integration of Pediatric disaster Services into Regional Systems of Care. J Pediatr 2012; 161:526-30

“Successful responses to the Tuscaloosa tornado serve as a challenge to all of us. How many regions could match Alabama’s performance?”

ORIGINAL www.jpeds.com • THE JOURNAL OF PEDIATRICS
ARTICLES

The 2011 Tuscaloosa Tornado: Integration of Pediatric Disaster Services into Regional Systems of Care

Robert K. Kanter, MD^{1,2}

Kanter, RK. The 2011 Tuscaloosa Tornado: Integration of Pediatric disaster Services into Regional Systems of Care. *J Pediatr* 2012; 161:526-30

EMS for Children Program

- 70% of pediatric emergency visits occur at community hospitals
- National Pediatric Readiness Project
 - www.pediatricreadiness.org
- National Clearinghouse for Pediatric Resources
 - PEDPrepared



How Are We Doing?

- National report card on protecting children during disasters
 - Save the children
 - Four core measures
 - Evacuation / relocation plans
 - Family - child reunification plans
 - Children with special needs plans
 - K - 12 multiple disaster plans



Post - Disaster Medical Issues Relating to Children

- Secondary medical conditions are common
- Injuries spike
- Domestic violence increases
- Child abuse escalates after major disasters
- School absentees increase

Mental Health Issues After Disasters

- PTSD, depression, anxiety, substance abuse all increase after disasters
- Major determinants affecting susceptibility
 - Degree of exposure
 - Parental response

Mental Health Issues After Disasters

- Pre - existing conditions
- Age, separation from parents
- Mitigating factors
 - Early support and intervention
 - Return to normalcy, especially school

Family Reunification

- 5,192 children separated from caregivers after Hurricane Katrina
 - 7 months to reunite all children with families
- National Emergency Family Registry and Locator Center (NEFRS)
 - Created in 2006

Family Reunification

- FEMA, National Center for Missing and Exploited Children
- Web - based bio - metric technology

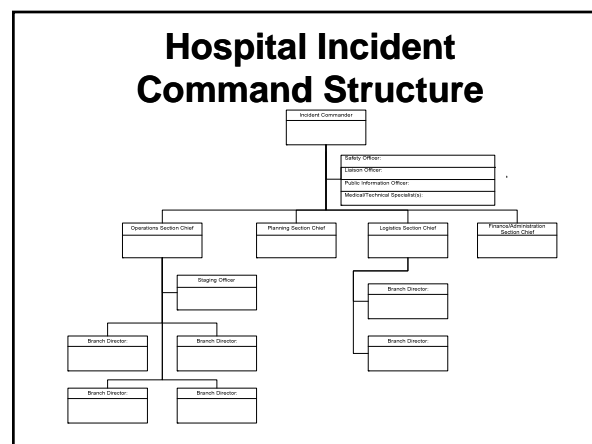
Surge Capacity

- “Do the most good for the most people with the resources available”
- Surge capacity is the ability of the health care system to manage patients who require specialized evaluation or intervention*
- Main elements
 - Staff, supplies, space, strategy

Surge Capacity

- May require paradigm change from individual to population-based care

* Hick JL, Hanfling D, Burstein J, et al. Health care facility and community surge strategies for patient care surge capacity. Ann Emerg. Med. 2004;44(3):256-61



Regionalization of Response

- **Problem: Limited surge capacity for critically ill children**
 - 5% of hospitals will need to care for 20% of population
- **Proposed solution: Create network of children's hospitals**

Regionalization of Response

- **Pediatric acute care facilities would work in conjunction with emergency response agencies to share resources and distribute patients**

Ginter, PM; Wingate, MS; et. al. **Creating a Regional Pediatric Medical Disaster Preparedness Network: Imperative and Issues.** *Mater Child Health J.* 2006, Aug. 8.

Southeastern Regional Pediatric Disaster Surge Network

- **Participants**
 - South Central Center for Public Health Preparedness (SCCPHP)
 - Over 40 private organizations, 5 state health departments

Southeastern Regional Pediatric Disaster Surge Network

- **Voluntary network to improve the pediatric preparedness strategies in the event of a large scale disaster**

Ginter, PM; Rucks, AC; et al. **Southeastern Regional Pediatric Disaster Surge Network: A Public Health Partnership.** (2010). *Public Health Reports.* 125, Suppl 5, 117-126.

Phases of Network Development

- **Phase 1 – Exchange Network**
 - Information sharing
- **Phase 2 – Action Network**
 - Mutual goal setting
 - Collective action
- **Phase 3 – Systematic Network**
 - Long - term formal linkages

Ginter, PM; Rucks, AC; et al. **Southeastern Regional Pediatric Disaster Surge Network: A Public Health Partnership.** (2010). *Public Health Reports.* 125, Suppl 5, 117-126.

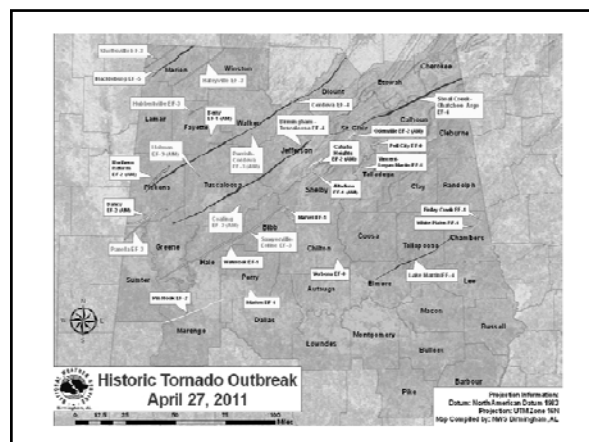
Network Activities

- **Phase 1 – Issue identification, Goals, recruit participants, establish workgroups**
- **Phase 2 – Draft planning documents, common terminology, resource typing, MOU, integration into existing response framework**
- **Phase 3 – Test and improve network**

Ginter, PM; Rucks, AC; et al. **Southeastern Regional Pediatric Disaster Surge Network: A Public Health Partnership.** (2010). *Public Health Reports.* 125, Suppl 5, 117-126.

Case Study

CHILDREN'S OF ALABAMA RESPONSE TO TORNADO APRIL 27TH, 2011



Children's of Alabama Tornado Response

- Hospital external disaster plan activated
- Hospital incident command system
 - Emergency operations center
 - ED and ICU reorganized
 - Alternate care site established
- Resources mobilized

Children's of Alabama Disaster Patients

- 60 disaster patients
 - 2 weeks to 18 years old
- 42 admitted, 1 DOA, 21 discharged from ED
 - 12 PICU, 1 NICU, 2 Burn Unit, 9 special care unit
- 1 died in hospital

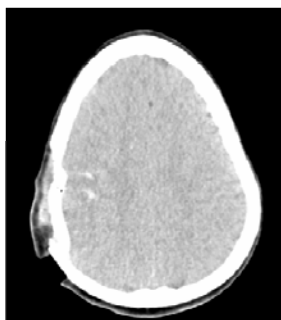
Children's of Alabama Disaster Patients

- 1 child in hospital over 4 months
- Multiple tornado - related non - disaster patients

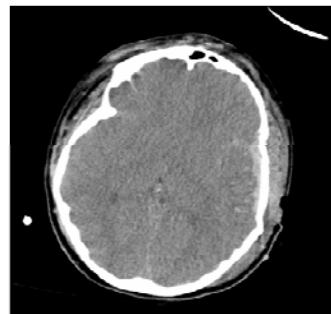
Overview of Injuries

- 60 pediatric trauma – disaster patients
 - 42 patients admitted
 - 12 PICU, 1 NICU, 1 burn, 9 special care
 - 1 DOA, 1 died in hospital
- Head injuries
- Orthopedic and soft tissue injuries

Head Injury Case #1



Head Injury Case #2



Orthopedic and Soft Tissue Injuries



Post - Disaster Injuries

- Carbon monoxide poisoning
- Burns from candle fires
- Falls
- Puncture wounds
- Chainsaw injuries
- Mental health

Lessons Learned

- “Code language” does not work well
- ICS not well integrated at time
- Limited existing capacity to care for seriously injured children
- Trauma routing system worked well, again
- Electronic medical records improve tracking, documentation, coordination

Injury Prevention

- Public health implications
 - Early warning devices
 - Radio, smart phones
 - Car seats for infants
 - Helmets for everyone
 - Post - disaster safety
 - Generators, stoves, candles

Injury Prevention

- **Wear hard sole shoes, carry I.D. and charged cell phone**

Resilience

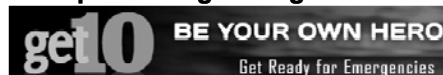
- **Resilience is the ability to take a punch and keep standing**
 - Marc Siegel, PhD
- **The formula for Resilience = M + P + R2**
- **Where**
 - M = Mitigation
 - P = Preparedness
 - R = Response and Recovery

Resilience

- **Resilience is the principle goal for managing the critical management functions in an emergency**

How To Help

- **Personal preparedness**
- **Get pre - credentialed to volunteer**
- **Join a state or federal response team**
- **FEMA independent study courses (ICS)**
 - <http://training.fema.gov/is/>



Contact Information

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