

The Kids are Coming!

Are you ready for a pediatric
disaster?

Ohio Pediatric Trauma Symposium
Rainbow Babies and Children's Hospital
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Objectives

- Review National recommendations for incorporating children into disaster preparedness
- Review unique physical and mental considerations for children in disasters
- Examine specific scenarios involving children in disasters
- Review resources for further education

Types of Disasters

- natural events; such as tornados, wind storms, hurricanes;
- infectious pandemics
- man-made such as release of chemicals or biologic agents or terrorist events

Vulnerable Groups in Disasters

- Individuals of a population that are unable to provide for their own day to day needs; more prone to illness
- Groups may include: children, pregnant women, elderly adults, disabled individuals, individuals with different language or cultural practices from the majority population and potentially others

IOM Report 2006: Goals for Improved Emergency Care for Children

Coordination of Services :

Integration of pediatrics at all levels of emergency care

Regionalization:

Categorization of services such as Emergency Departments with pediatric specific capabilities

Disaster preparedness that incorporates special populations

Accountability:

Evidence based national pediatric emergency care clinical practice guidelines and standards of care

Certification/credentialing of pediatric competencies for emergency health care providers

National Commission on Children and Disasters

- Purpose of commission was to assess needs of children for preparedness, response and recovery from disasters and emergencies
- Report gaps and recommendations to President and Congress

National Commission on Children and Disasters

- Ensure the inclusion of pediatrics for all Mass Casualty Management
- Expand capability and integration for Pediatrics
- Ensure adequate training for healthcare providers in pediatric emergency and disaster clinical training
- Create Regional Pediatric networks

www.childrenanddisasters.acf.hhs.gov

EMS-C in Ohio

Performance Measures

- Prehospital Equipment for BLS/ALS
- On-line and off-line Pediatric Protocols
- Emergency Department Preparedness
- Inter-facility Transfer agreements

EMSC is a national program designed to reduce child and youth disability and death due to severe illness and injury. Ohio EMSC, housed within the Division of Emergency Medical Services (EMS) at the Ohio Department of Public Safety, was created to incorporate pediatric issues into all aspects of the EMS system.

Integrating Children into Disaster Planning

- Understanding the unique needs for children (medical and trauma)
- Having the appropriate equipment and knowing how to use it

What makes children more vulnerable- Physically ?

- Shorter height (thus closer to the ground)
- Larger surface to mass ratio (chemical and radiation effects)
- Thinner skin (may have lower body fat)
- Smaller blood volume

More Unique Physical

- Kidneys ability to concentrate
- Maturity of Immune system—suspectable to infectious agents (usually younger)
- Higher minute ventilation (breath faster)
—suspectable to chemical, radiation and biologic agents

Children's size and body mass

Surface to mass
ratio child and
adult

Skin exposure for children

Respiratory status of children

Infant	30-60
Toddler	24-40
Child 3-6	22-34
Child 7-12	18-30
Adolescent	12-16

Minute ventilation is tidal volume x breathes per minute

Blood volume in children

What makes children prone to dehydration?

- faster respiratory rate
- smaller blood volume
- losses from vomiting, crying or sweating

Assessing dehydration in children

- children tend to remain compensated longer than adults
- at 5-10% volume loss - tachycardic, cap refill delayed, but normal blood pressured
- can lose up to 15-20% of blood volume before they lose blood pressure- then it may be too late
- change in mental status important component of hydration, but may be challenging in

Children and Disasters

- *Respiratory injury due to more frequent breaths per minute
- *Chemical injury due to thinner skin
- *Fluid shifts due to losses become more pronounced quicker (vomiting and diarrhea or blood loss) and development of shock
- *Psychological/Developmental concerns—
inability to escape
- *Need for pediatric sized equipment
- *Need for social services

Treatment differences for children

- Equipment sizes
- Drug dosages (weight based)
- Drug side effects
- Contamination special considerations

What makes children more vulnerable-psychologically?

- Dependent upon an older individual (adult advocate)
- Developmental limitations; judgement, independent thought, common sense, maturity
- Inability to anticipate, recognize or respond to danger

Coping with Disasters involving children

- Adults need to be aware of their own response to disaster and feeling when children are involved
- Explanation of disaster situation to children should involve simple language (developmental age and behavior considerations)
- Reestablish routines for children will be important to long term outcome

Unique mental health

- Chronologic age and developmental age of child may be different (regression in response to stress)
 - Under stressful situation children may not be able to follow instructions or give information – full name or date of birth due to regression
- Emotional state of caregivers may have profound effect upon children
- True long term effects are difficult to

What happens if that exposure at a day camp?

- think about the number of kids?
- think about the ages?
- think about the staff?
- staging area?
- evacuation?
- identification children and adults?
- reunification of families?

Unaccompanied Minor

How to identify children
who are not accompanied?
Tracking of children?

Pre-screening of volunteers
to assist children?

Unique challenges of decontamination of

- *Stranger anxiety: appearance of PPE*
- *Communication: talking thru PAPR*
- *Flow: time to disrobe, time to shower*
- *Unaccompanied minor: who to assist*

Removal of clothing

- Respect the modesty of the child (consider cultural customs)
- Use same sex chaperones when possible
- Keep the child warm (preventing heat loss and continued hypothermia)

Decontamination of toddler/ small child

use of scoop may be helpful,
but again consider the added
weight and need for individuals
to carry the item

Process of decontamination

- Lower water pressure for children
- Moderate the temperature to 98 F
- Use of water only (and mild soap)
- Dry immediately and consider use of space blanket
- Outdoor decontamination areas– be sure moderate the ambient temperature

After decontamination?

- Triage patients (children may need to be watched longer)
- Need for distraction/play (to begin to reduce effects of disaster)
- Keeping families (units) intact - different medical needs of individuals
- Feeding options/ hygiene (diapers)
- Reunification

Ongoing Challenges for Children in Disasters

- Limited personnel with pediatric expertise
- Limited equipment (and appropriate drug) availability
- Limited Hospital bed capacity

Community Hospital Preparation

- Equipment
- Personnel training
- Additional staff (MRC or ESAR-VHP)
- Emergency credentialing
- Just-in-time training
- MOM
- Regional Partnerships

Resources for Integrating Children into Disaster Planning

- * JumpSTART for EMS workers to rapidly triage children (1995)
- * Pediatric Terrorism and Disaster Preparedness Resource (AAP 2006)
- * **States to integrate pediatrics into all disaster planning (HRSA and EMS-C initiatives)**
- * Creation of more Pediatric specific DMAT teams (currently 43-2 pediatric specific)
- * Disaster plans to include daycare and schools
- * Children in Disasters: Hospital Guidelines for Pediatric Preparedness
Centers for Bioterrorism Preparedness Program Pediatric Task Force

<http://www.nyc.gov/html/doh/downloads/pdf/bhpp/hepp-peds-childrenindisasters-010709.pdf>

Additional Resources

- Medical Emergency Preparedness Pediatrics (MEP-P) Just-in-Time Training Manual All Alaska Pediatric Partnership (AAP) <http://www.hss.state.ak.us/prepared/assets/conference/MEPP-Manual.pdf>
- New York Hospital Pediatric Critical Care Surge Tool <http://www.nyc.gov/html/doh/downloads/pdf/bhpbp/hepp-pedsconf02-rec-for-incr-picusurge>
- Air and Ground Transport of Neonatal and Pediatric Patients, 3rd edition, AAP

Questions?