

# Pediatric Disaster Preparedness and Response

Jonathan Klein, MD, MPH, FAAP  
Associate Executive Director  
American Academy of Pediatrics



American Academy  
of Pediatrics



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# Disclosure Slide

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A disaster = convergence, at a time and place, of risk and vulnerability...

- **Hazard:** a *potential* threat to public health and safety
- **Emergency:** an *actual* threat to public health and safety
- **Risk:** the *consequences* of *exposure* to a hazard
- **Vulnerability:** *determinants* of risk
- **Capacity:** *way* the community copes and responds

# Emergencies

- I can't find my phone
- My son didn't come home from school
- A man is having a heart attack
- A plane crashed
- Gas is leaking from a factory
- An earthquake

# Hazards and Emergencies

- 36 “serious” earthquakes (>4.0 magnitude) occur every day around the world
- Only one of them needs an emergency response
- An earthquake which is labelled a disaster occurs once every 3 months

# Vulnerabilities and risks

- Vulnerability
  - Access to water and sanitation, under 5 mortality rate, nutrition status, age/sex
- Risks
  - Death, injury, disease, displacement

# Definition of Disaster

- ...a situation or event that most often occurs suddenly and unexpectedly, causing trauma to people and/or severe damage to the environment, and exceeds or overwhelms the response capacity of the community...
- A disaster can be...
  - Financial crisis
  - Natural or catastrophic event
  - Pandemic
  - Act of terrorism or war

# Phases of a Disaster

- Planning
- Rescue
- Response/recovery
- Mitigation/prevention of consequences
  
- Cannot “prevent” disaster, only mitigate the impact

# Severity

- Magnitude of the event
- Vulnerability of the population
- Number of affected people
- Rates of associated diseases
- Crude mortality rate (CMR)

# Types of hazards

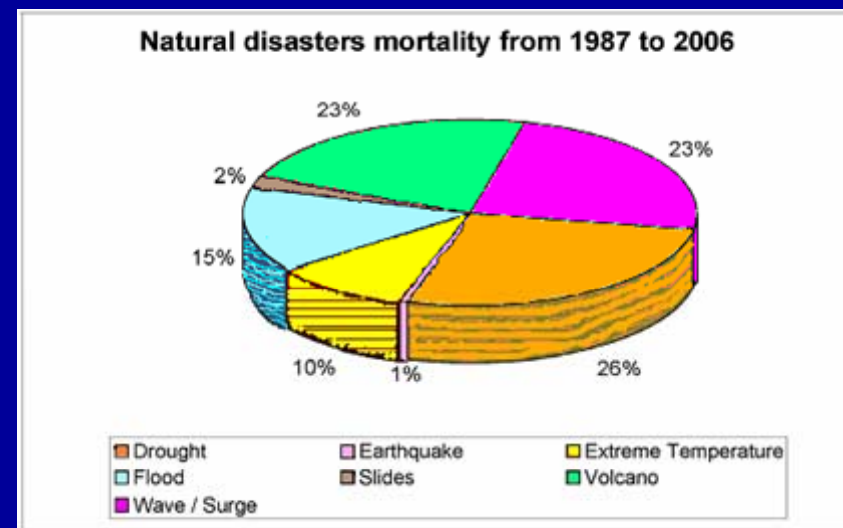
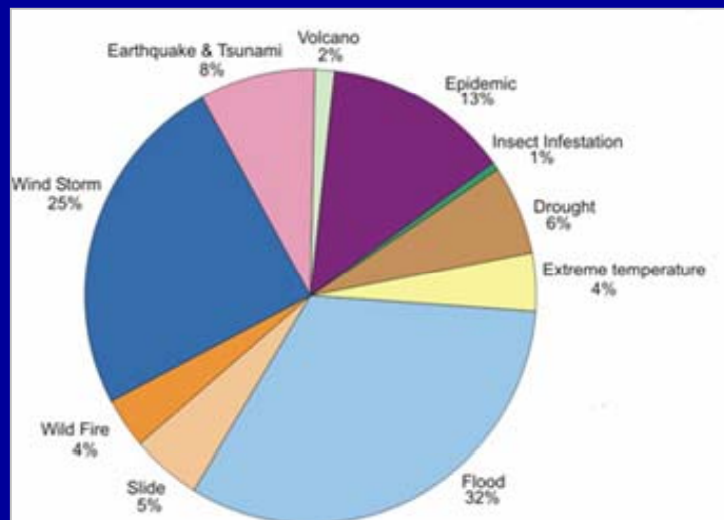
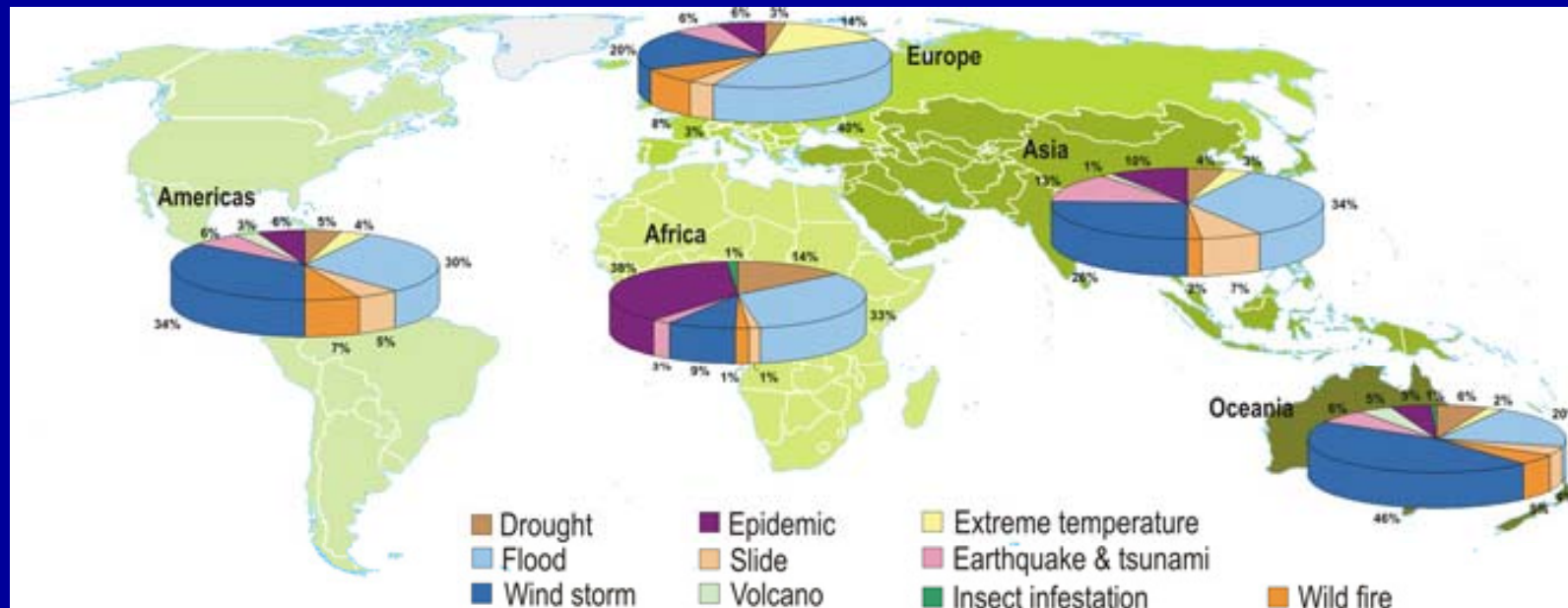
**Slow Onset:** Flood  
Drought  
Famine  
Chemical Spill  
Epidemic

**Sudden Onset:** Earthquake  
Cyclone  
Flash Flood  
Accidents  
Conflict

# Public health impact

- Increased numbers of deaths and injuries
- Population displacement
- New cases of disease and disability
- Exacerbation and increased numbers of cases of psychological and social behaviour disorders
- Possible food shortages and nutritional deficiencies
- Disease from environmental health hazards
- Damage to health facilities and other infrastructure
- Diversion of development resources to emergency relief

# Recent trends in disaster



Sources: the OFDA/CRE International Disaster Database

# Causes of deaths

- Trauma
- Diarrheal diseases and dehydration
- Communicable diseases:  
    Measles, Malaria, ARI
- Malnutrition

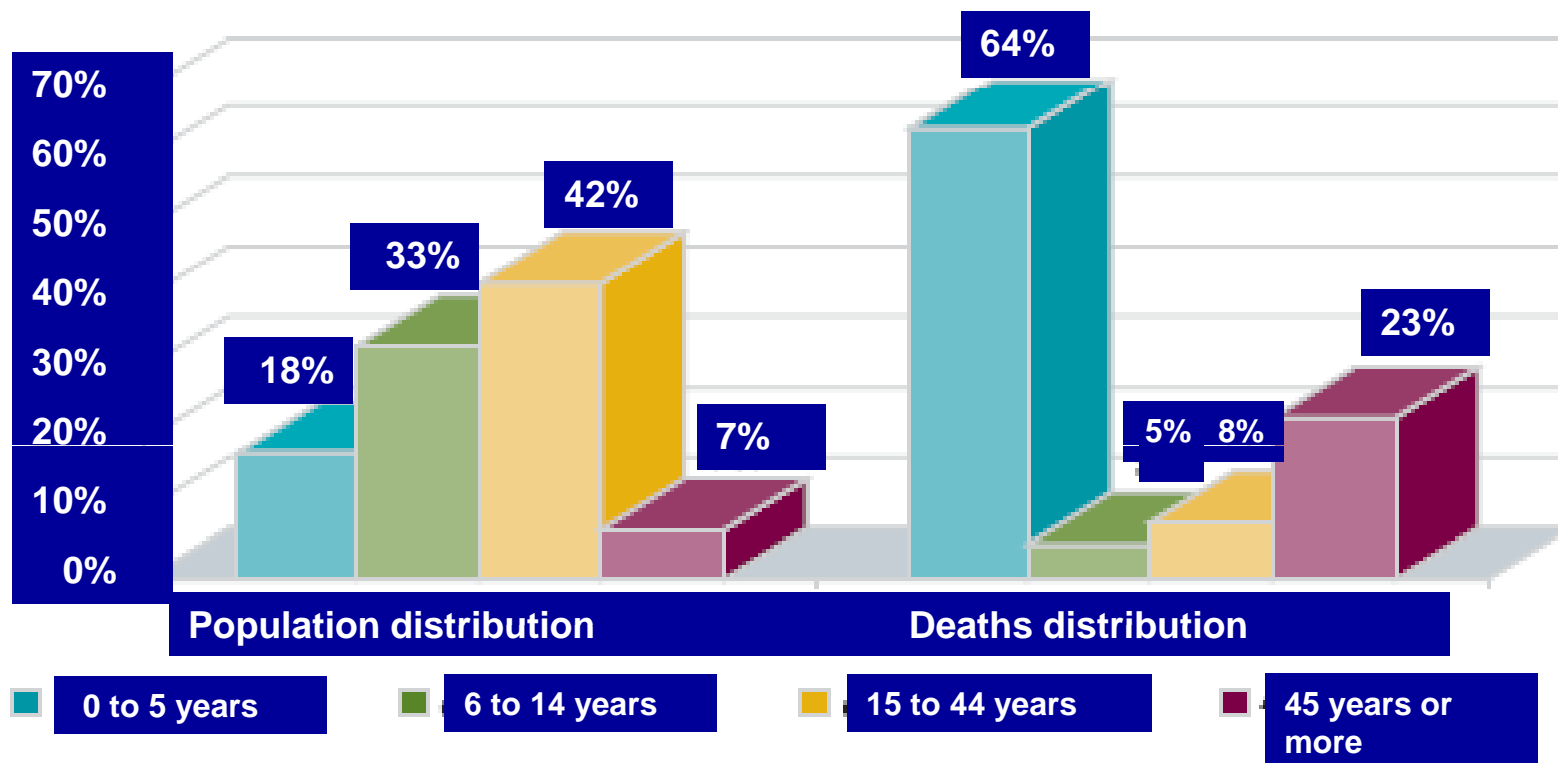
# Population most vulnerable

- Children
- Women
  - Pregnant
  - Lactating
  - Without spouse
- Elderly
- Disabled



# Age specific mortality

Kurdish refugees, Northern Iraq, 1991



# Pediatric Vulnerability

**Respiratory**

**Higher minute volume  
Smaller distance to the floor**

**Gastrointestinal**

**Higher risk of diarrhea and dehydration**

**Skin**

**Higher body surface area increases skin exposure risk; more susceptible skin**

**Endocrine**

**Increased risk of thyroid cancer from radiation exposure**

**Thermoregulation**

**Increased risk of hypothermia**

**Developmental**

**Less ability to escape environmental dangers or anticipate them**

**Psychological**

**More susceptible to separation anxiety and prolonged stress**

# Added risk

## Physical victimization

- Rape
- Torture
- Robbery

## Exploitation

- Child labor
- Child trafficking / sexual trafficking
- Child soldiering

# Planning

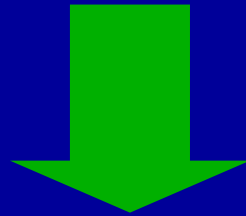
- **Planning for children's needs are challenging when they are in groups (school, child care).**
- **Needs are not the same as other vulnerable or at-risk groups (elderly, pregnant women, adults with chronic conditions, etc.)**
- **When children are involved, the situation is beyond the capacity of most systems**

# Children Have Unique Needs

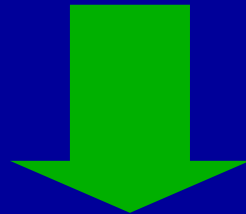
- **Require assistance from adults (protection from hazards, feeding, supervision)**
- **Their ongoing development pose unique challenges to providing mental health care**
- **More vulnerable to rapid spread of infectious diseases and to toxic substance exposures**
- **Need to have pediatric care providers, and also pediatric medicines, equipment, and protocols available**

# What do we do?

**Address vulnerabilities**



**Minimize risks**



**Manage disaster**



# Phases of disaster management

- **Prevention/ Mitigation**
- **Preparedness**
- **Emergency response**
- **Recovery**



**“The patient  
with a thousand  
arms and legs**

**The patient is  
the community**



# Preparedness

- **Risk assessment and vulnerability analysis**
- **Information management**
- **Policy and planning**
- **Resource mobilization**
- **Coordination and partnership**
- **Community involvement**
- **Training and simulation**

# Response

- **Notification**
- **Information management and communication**
- **Coordination**
- **Search and rescue**
- **Damage and need assessment**
- **Evacuation and sheltering**
- **Resource mobilization**

# Pre-disaster health conditions

*Know the community before disaster strikes*

- Immunization rates
- Where are the most vulnerable children?
- Are there vector-borne illnesses?
- What are the most prevalent diseases?
- What is the baseline malnutrition rate?

# Recovery

- **Re-establish self-sufficiency**
- **Community planning**
- **Infrastructure rebuilding**
- **Health recovery**
- **Lessons learned**

# Condition of health care system

- **People:** who is available to help
- **Places:** what condition are the facilities
- **Things:** emergency medications, oral rehydration packets, medical supplies
- **Capabilities:** cold chain; vaccines; is surgery or inpatient care possible

***Pre-disaster community planning is crucial!***

# Priority emergency needs

- **Safe water**
- **Shelter**
- **Basic sanitation and hygiene**
- **Food**
- **Local environmental conditions**
- **Health needs**

*WHEN POSSIBLE: best met by using local resources*

# Learning from experience

- **Analysis and evaluation of emergency management**
- **Improvement plan for preventive and precautionary measures**
- **Continuous process: Incorporate learning into planning to achieve a better response**

# Data are important

- **Deaths**
- **Significant morbidity or frequent illness in community**
- **Early warnings; e.g., one case of cholera**
- **Other: Malnutrition, malaria, serious trauma**

*Surveillance begins with individual patients*

# Pediatrician role: Pre-disaster

- **Join disaster planning committees**
- **Provide input on children's specific needs**
- **Make sure that drills include children**
- **Understand your community's vulnerabilities and capacities to respond to emergencies**
- **Make sure child health system is integrated into specific disaster response plans**

# Pediatrician roles

- **Preparedness and risk reduction**
- **Disaster response participant**
- **Specialist in child care**
- **Awareness of plans in own city or district**
- **Advocacy**

# Pediatric Disaster Preparedness

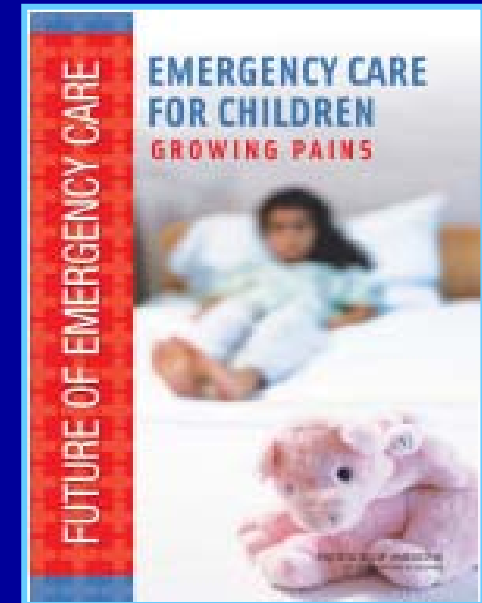
Preparation begins with basic preparation for pediatric emergencies.

- Needed at all levels of care
- Anticipate children with special healthcare needs
- Consider needs of health care providers



# Pediatric Readiness

- Children make up 1/4 of all Emergency Department visits in the US:
  - Most general EDs and EMS agencies do not require specialized pediatric training for clinical staff
  - Only 6% of EDs had the full scope of pediatric equipment, medications, supplies



## Guidelines for Care of Children in the ED

Gausche-Hill M, Krug S, and the American Academy of Pediatrics, American College of Emergency Physicians, Emergency Nurses Association

Pediatrics - October 2009; 124(4):1233-43.

- Recommendations regarding personnel, training, equipment, supplies, medications, support services, quality and process improvement, policies, protocols, and other resources necessary for optimal pediatric emergency care
- The presence of MD and RN pediatric coordinators may be the most important factor associated with readiness
- Recommendations for patient safety & disaster readiness

# AAP Children and Disasters Web Site

<http://www.aap.org/disasters/index.cfm>

American Academy of Pediatrics  
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Home | Parenting Corner | Health Topics | Bookstore & Publications | Professional Education & Resources | Advocacy | Members | About

## Children & Disasters



**Disaster preparedness to meet children's needs**

- Audiences ▶
- Topics ▶
- Educational Tools ▶
- Advocacy/Policy ▶
- Resources ▶
- AAP Initiatives ▶
- About Us ▶

**Featured Topics: Community Preparedness**

- ▶ [AAP Information on the Oil Spill Affecting the Gulf Coast](#)
- ▶ [Disaster Preparedness for Pediatric Practices: Online Tool](#)
- ▶ [Financial Crisis: Talking to Kids About the Economy](#)
- ▶ [Hurricanes and Tropical Storms](#)
- ▶ [H1N1 Pandemic Influenza](#)

**What's New**

- New Policy Statement**  
Emergency Preparedness for Children With Special Needs
- Preparedness Checklist**  
Hospital Emergency Depts
- Haiti Earthquake**  
Pediatric Response/Recovery
- Education/Training**  
PowerPoint Presentations  
Events Calendar

Hospitals can ensure day-to-day emergency preparedness and promote disaster readiness for children by taking steps to have the appropriate resources (eg, equipment, medications, policies and personnel) and professional education necessary to provide effective pediatric emergency care. Evidence shows that these efforts will improve pediatric

**Key Resources**

- Active Disasters Page**
- Guidelines: Care of Children in the Emergency Department**
- Helping Children Cope**
- Pediatric Disaster Readiness Special Journal Issue**
- Youngest Children Preparedness Handout**

This Web site is supported in part by the AAP Tomorrow's Children Endowment

DisasterReady@aap.org © 2010

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# Disaster Preparedness Pediatric Practices: Online Tool

<http://practice.aap.org/disaster-prep-tool.aspx>

The screenshot shows the American Academy of Pediatrics (AAP) website. At the top, there is a navigation bar with links: Home | Parenting Corner | Health Topics | Bookstore & Publications | Professional Education & Resources | Advocacy | Member Center | About AAP. Below this is a banner for 'practice management online' with the tagline 'Helping You Help Children'. A search bar is present with a 'GO' button and the text 'Advanced search Disable autosuggest'. A secondary navigation bar includes icons for Home, Practice Basics, Payment and Finance, Office Operations, Quality and Safety, Patient Management, Practice Toolbox, Site Demo, and E-mail Alerts. A 'Sign In' link is also visible.

The main content area features a section titled 'Disaster Preparedness for Pediatric Practices: An Online Tool' with a flame icon. The text reads: 'Disasters are unpredictable and can cause loss of life, destruction of property, and disruption of business operations. Pediatricians face special concerns including the inadequacy of disaster planning in addressing the needs of children (especially those with special needs), and the ongoing need to develop or improve their pediatric offices and personal disaster plans. A working plan can help practices reduce risks, maintain practice operations, and ensure a [medical home](#) for children in their care.'

Below the text is a blue button that says 'Develop your Disaster Plan Now'. Underneath, there are 'Instructions' and a paragraph: 'Create a disaster preparedness plan for your medical home practice by answering questions in this interactive tool.'

The section 'Choose a topic below:' lists several topics:

- Practice Information
- Review Key Resources
- Plan for Continuing Operations
- Review Insurance Coverage
- Store Essential Supplies and Minimize Risk to Equipment
- Protect Patient Records and Office Files
- Handle Vaccine Issues
- Attend to Facility Issues
- Consider How to Handle Infection Control
- Prepare Office Staff/Employees
- Develop Service and/or Evacuation Plans
- Prepare an Office "Emergency Go Kit"
- Prepare a Plan for Communicating with Clients
- Develop a Preparedness Plan for Your Home and Family

On the right side, there are two sections: 'Key Resources:' and 'Supplemental Resources:'. 'Key Resources:' includes a link to 'A Disaster Preparedness Plan for Pediatricians' by Scott Needle, MD, FAAP, and 'The Role of Pediatric Health Care Providers' by Daniel Fagbuyi, MD, FAAP and Jeffrey Upperman, MD, FAAP. 'Supplemental Resources:' includes a list of links such as 'AAP Children and Disasters Web Site', 'AAP Health Topics Page on Disasters', 'Continuity of Operations Plan', 'Emergency Information Forms and Emergency Preparedness for Children With Special Health Care Needs', 'Insurance Coverage for Vaccine Loss', 'Pandemic Influenza Plan: Template for Primary Care Provider Offices', 'Safe Storage of Vaccines', 'Summary of AAP Policy: "Preparation for Emergencies in the Offices of Pediatricians and Pediatric Primary Care Providers"', and 'NEW! Template Office Plan (word document)'.

At the bottom of the page, there is a copyright notice: '©2010 COPYRIGHT AMERICAN ACADEMY OF PEDIATRICS. ALL RIGHTS RESERVED' and a footer with contact information: 'American Academy of Pediatrics, 141 Northwest Point Blvd., Elk Grove Village, IL 60007, 847-434-4000'. There are also links for 'Site map | Contact us | Privacy statement | About us | Home' and a statement: 'Use of this Web site signifies acceptance of our [Terms of Use](#)'.

# Peds Pediatrics in Disasters

A COURSE OF THE PROGRAM HELPING THE CHILDREN



EDITOR  
**Stephen  
Berman**  
MD, FAAP



#### Disasters and their Effects on the Population: Key Concepts

*Julia A. Lynch | Stephen Berman*



#### Preventive Medicine in Humanitarian Emergencies

*Douglas Lougee | Ángela Gentile*



#### Planning and Triage in the Disaster Scenario

*Ciro Ugarte | Jacobo A. Tieffenberg | Lou Ramig*



#### Pediatric Trauma

*Joseph Wathen | Kristen Crossman | Mario Acosta Bastidas*



#### Management of Prevalent Infections in Children Following a Disaster

*Stephen Berman | Julia A. Lynch | Ángela Gentile*



#### Diarrhea and Dehydration

*Clifton Yu | Douglas A. Lougee | Jorge R. Murno*



#### Delivery and Immediate Neonatal Care

*William J. Keenan | Enrique Udaeta | Mariana López*



#### Nutrition and Malnutrition

*Teresa M. Kemmer | Clifton Yu | Andrew J. Bauer | Julia A. Lynch*



#### The Emotional Impact of Disaster on Children and Families

*Brian Stafford | Carmen López Stewart | Lea Keselman | David Schonfeld*



#### Toxic Exposure

*Kathy L. Leham-Huskamp | William J. Keenan | Anthony J. Scalzo*

*Johnson & Johnson*  
**PEDIATRIC  
INSTITUTE**  
U.S.

American Academy  
of Pediatrics



# PEDS program

- **Establish national and regional PEDS training centers to carry out “train the trainer” activities**
- **Educate Pediatricians and other health professionals about the needs of children in disaster preparedness and emergency response**
- **Facilitate collaboration**

# Course structure

- Training manual
- Lectures
- Problem based small group learning
  - Scenarios appropriate for training site
- Technical skills training
  - toxic exposures, trauma and newborn care
- Final simulation and integration exercises

# Thematic areas

1. Disasters and their effects
2. Preventive medicine in humanitarian emergencies
3. Planning and triage
4. Pediatric trauma
5. Management of infections in children following a disaster
6. Diarrhea and dehydration
7. Delivery and neonatal care
8. Nutrition and malnutrition
9. Emotional impact on children and families
10. Toxic exposures

## Developing national training centers

- Faculty with expertise and experience in the 10 thematic areas
- Facilities and equipment for lectures, breakout sessions, and final simulation exercise
- Qualified course director and administrative capacity to organize the course
- Collaboration with WHO/PAHO, governmental health ministry, professional society, hospital, and medical school

# Training progress

- China (2 courses), Vietnam (2), Qatar (1), Mexico (2), Panama (3), Peru (1) and Ecuador (1)
  - Planning phase: Philippines, Nicaragua, Haiti
- Course materials are available in English, Spanish, Chinese, and Vietnamese
  - In process: French and Creole

# Disaster Preparedness Goals



- Pediatricians and pediatric practices prepared to assist children, families, and communities
- Children's needs are integrated and exercised in plans for all hazards/ emergencies with public health impact
- Pediatricians have ongoing mechanism to implement disaster preparedness initiatives, and respond to requests for pediatric expertise on disaster readiness



Thank you !

¡ Gracias !

[www.aap.org](http://www.aap.org)

<http://www.aap.org/disasters/index.cfm>



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