CDC’s Public Health Preparedness: Child and Adolescent Deaths Associated with Disasters

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Child Death Review – Disaster Module Training Webinar 10/31/2019

- Critical source of funding for state, local, and territorial public health departments (HDs)
- Build and strengthen the abilities of HDs to effectively respond to a range of public health threats, including infectious diseases, natural disasters, and biological, chemical, nuclear, and radiological events
- Encourage HDs to collaborate with medicolegal partners (e.g., medical examiners) on mortality tracking and identify common causes and circumstances of deaths during emergencies
- Ensure all PHEP-funded work activities at the HDs address individuals disproportionately affected by disaster (e.g., children)
Important uses of disaster-related mortality data

- Measure and record the burden and severity of disasters
- Identify ongoing hazards during response
- Identify risk factors to guide public health prevention efforts
- Identify those most at-risk
- Plan for future disasters
Children and adolescents are affected by disasters
Children are more vulnerable in emergencies

Because they breathe in more air for their size than adults, children absorb harmful materials from the air more readily.

Because they need vaccines, medicines, and specially designed equipment for emergency situations that are different from adults.

Because they may not be able to communicate their symptoms or feelings.

Because they spend more time outside, are lower to the ground, and they put their hands in their mouths more often than do adults.
Benefits of improving the reporting of pediatric deaths following a disaster

- Guiding ongoing response activities
- Defining risk factors associated with those deaths
- Informing preparedness strategies to prevent deaths
Fatality estimates following a natural disaster vary

<table>
<thead>
<tr>
<th>Disaster Event</th>
<th>State Response Agencies*</th>
<th>Red Cross</th>
<th>FEMA*</th>
<th>NOAA - NWS*</th>
<th>Vital Statistics*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurricane Ike, TX (2008)</td>
<td>74</td>
<td>38</td>
<td>104</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Hurricane Sandy, NJ (2012)</td>
<td>75</td>
<td>34</td>
<td>61</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>May Tornadoes, OK (2013)</td>
<td>48</td>
<td>42</td>
<td>19</td>
<td>30</td>
<td>36</td>
</tr>
</tbody>
</table>

*Response agencies=Medical examiners/Coroners and Emergency Operations Center(s); FEMA=Federal Emergency Management Agency; NOAA-NWS=National Weather Service; Vital Statistics=Post-disaster review of death certificates in state-based vital statistics systems.
Benefits of improving the reporting of pediatric deaths following a disaster

- Guiding ongoing response activities
- Defining risk factors associated with those deaths
- Informing preparedness strategies to prevent deaths
Improving the reporting of pediatric deaths from disasters

- Death scene investigation
- Medical examiner/coroner
- Death certificates
- Child death reviews
CDC Mortality Tools
CDC tools to improve data quality of disaster-related mortality data

- CDC Disaster-Related Mortality Tools (2017)
  - Death Scene Investigation Toolkit
  - Death Certificate Completion Reference Guide
Tool 1: Death scene investigation toolkit

- Weather-specific disasters (i.e., heat, hurricane, tornado)
- Data collections forms
- Identifies data sources for death investigators
- Online training with credits: https://www.train.org/cdctrain/course/1083843/

https://www.cdc.gov/nceh/hsb/disaster/docs/DisasterDeathSceneToolkit508.pdf
**Toolkit data collection forms**

Capture uniform data
- Circumstance(s)
- Cause of death
- Risk identification
- Relationship with the disaster
- Protective action(s) by the decedent
Tool 2: Death certificate completion reference guide

- Definition of disaster-related deaths
- Steps to determine if a death is related to a disaster
- Guidance on death certificate completion
- Flow chart
- Scenarios
Reference guide’s flow chart: determination of disaster-related deaths

Step 1 – Consider whether the death occurred during a disaster

- Use sources such as:
  - National Weather Service
  - Emergency Management
  - Federal Declarations
Reference guide’s flow chart: determination of disaster-related deaths (2)

- Step 2a – ask “Was the death caused by direct physical force of the hazard?”
- Step 2b – ask “Was the death caused by unsafe or unhealthy conditions created by the hazard?”
Reference guide: scenarios

- 12 scenarios
- Topic specific
- Guidance on completing the death certificate
- Key prevention measures to report

Scenario 1: Carbon monoxide during natural disaster

A 39-year-old female died during Hurricane Sandy in her home. The storm caused a regional blackout and she had used charcoal in her fireplace for heat. According to emergency medical services (EMS) officials, high carbon monoxide levels were detected in the home.

Comment: By stating in the “Describe how injury occurred” field that exposure to fumes from charcoal in the fireplace was due to the power outage during Hurricane Sandy, the certifier is providing information that this death was disaster-related. Such information would be challenging to find retrospectively.

When a carbon monoxide-related death is determined, the death certificate should identify:

- **SOURCE OF CARBON MONOXIDE**—Gas range, generator, charcoal grill, power washer, or other.
- **LOCATION OF THE SOURCE**—Basement, outside near window, house, garage, automobile, or other.
- **CIRCUMSTANCE(S)**—Indicate if the carbon monoxide death is disaster-related and the circumstances, such as power outage, using alternative heat source during snowstorm, no smoke detector in home, or other.
- **MANNER**—Consider that the carbon monoxide poisoning might be intentional.
Child Death Review
National Fatality Review-Case Reporting System (NCFRP)

- NCFRP manages the National Case Reporting System that promotes high quality Fetal Infant Mortality Review (FIMR) and CDR data collection
- Case Report Form (v5.0 May 2018), added question on whether the death occurred due to a natural disaster or mass fatality
- New trainings and tools will be discussed during 10/31 webinar
Case report form (v5.0 May 2018)

- ADD SCREEN SHOT of complete data collection elements
CDC and NCFRP’s ongoing collaboration

- Started Spring 2018 with four partners:
  - CDC’s Children’s Preparedness Unit (CPU)
  - CDC’s Division of State and Local Readiness (DSLR)
  - National Center for Fatality Review and Prevention (NCFRP)
  - American Academy of Pediatrics (AAP)
- Developed the NCFRP disaster module and possible expansion to include:
  - other public health emergencies (e.g., emerging infectious diseases)
  - determine additional disaster-specific variables to include in the case report form (similar to the process used for sudden unexpected infant deaths [SUID]).
CDC resources for the medical examiner community

- CDC’s disaster-related medicolegal tools and training
  - Death Scene Investigation Toolkit
    [www.cdc.gov/nceh/hsb/disaster/docs/DisasterDeathSceneToolkit508.pdf](http://www.cdc.gov/nceh/hsb/disaster/docs/DisasterDeathSceneToolkit508.pdf) and online training with credits
    [https://www.train.org/cdctrain/course/1083843/](https://www.train.org/cdctrain/course/1083843/)
  - Death Certification Completion Reference Guide
    [https://www.cdc.gov/nchs/data/nvss/vsrg/vsrg01.pdf](https://www.cdc.gov/nchs/data/nvss/vsrg/vsrg01.pdf)

- Websites
  - [https://www.cdc.gov/childrenindisasters/index.html](https://www.cdc.gov/childrenindisasters/index.html)
Thank you!

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.