Deaths Associated with Hurricane Sandy: October-November 2012

CDR Rebecca S. Noe MN, MPH, FNP-BC
American Meteorological Society 94th Annual Meeting
February 6, 2014
**Red Cross Mortality Tracking**

- Red Cross volunteer tracking of disaster-related deaths
- **Purpose:** Provide services to family members
  - *Crisis counseling*
  - *Assistance with disaster-related expenses*
  - *Locate emergency housing*
  - *Identifying recovery resources*
  - *Address disaster-related health needs*
Red Cross Mortality Tracking Form

Disaster Health Services Mortality Report Form
Form 2077A Rev. 2/2013

Part I  GENERAL INFORMATION
1. DISASTER OP #: –
2. SOURCE OF INFORMATION (Report verified by):
   - ME/coroner
   - Fire Dept/Police
   - Physician
   - Other, specify:
3. REPORT DATE: MM DD YYYY

Part II  DECEASED INFORMATION
4. NAME:
   - LAST
   - FIRST

5. DATE OF BIRTH:    ☐ Unknown
   - O < 1 year

6. AGE (YEARS):    ☐ Unknown
   - ☐ 1 year

7. RESIDENTIAL ADDRESS OF DECEASED:
   - ST
   - ZIP
   - CITY
   - STREET ADDRESS

8. DATE OF DEATH: DATE OF BODY RECOVERY:
   - MM DD YYYY
   - MM DD YYYY

9. RACE (Check all that apply):
   - American Indian or Alaskan Native
   - Asian
   - Black/African American
   - Native Hawaiian or Pacific Islander
   - Other, specify:

10. ETHNICITY:
   - Hispanic
   - Non-Hispanic
   - Other, specify:

11. GENDER:
   - Male
   - Female

12. LOCATION OF INJURY OR ONSET OF ILLNESS:
   - Hospital
   - Decedent’s home
   - Single family residence
   - Mobile home
   - Other, specify:

13. LOCATION OF DEATH/BODY RECOVERY:
   - Hospital
   - Decedent’s home
   - Single family residence
   - Mobile home
   - Other, specify:

Part III  CAUSE AND CIRCUMSTANCES OF DEATH
14. MECHANISM OF INJURY:

15. IMMEDIATE CAUSE OF DEATH:

16. WAS THE DEATH:
   - ☐ DIRECTLY caused by disaster
     - (e.g., structural collapse, struck by flying debris, swept away by water, asphyxiation by fire)
   - ☐ INDIRECTLY caused by the disaster
     - (e.g., hazardous roadway, CO poisoning, stress/acute MI)
   - ☐ UNKNOWN

17. Did death occur as a result of work (paid or volunteer) involving response, recovery, or clean up?
   - ☐ YES
   - ☐ NO
   - ☐ Unknown

18. CIRCUMSTANCES LEADING TO DEATH: short narrative of “what happened” (e.g., warning(s) heard, actions taken, how died, where body found)
Sources of Fatality Information

- Medical examiners/coroners
- Funeral home directors
- FEMA
- News reports
- Additional information
  - Physicians
  - Hospitals
  - Fire departments/polices
  - Families of decedent

Objectives

- Describe deaths related to Hurricane Sandy
- Describe drowning deaths related to Hurricane Sandy
Types of Disaster-Related Mortality

- **Directly-related death**
  - *Caused by environmental force of disaster (e.g., wind, flood), or by the direct consequences of these forces (e.g., structural collapse)*

- **Indirectly-related death**
  - *Occurring in a situation in which disaster led to unsafe condition (e.g., hazardous road) or caused a loss or disruption of usual services that contributed to the death (e.g., loss of electrical services)*
Sandy-Related Deaths by Date of Death

**FIGURE 1.** Number of reported deaths related to Hurricane Sandy (directly, indirectly, and unknown/possibly), by date — Connecticut, Maryland, New Jersey, New York, Pennsylvania, and West Virginia, October 28–November 30, 2012*

* Excludes deaths with an unknown date of death (n = 12).
### Sandy-Related Deaths Demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, median (yrs)</td>
<td>65</td>
<td>-</td>
</tr>
<tr>
<td>Age, range (yrs)</td>
<td>1-94</td>
<td>-</td>
</tr>
<tr>
<td>Sex, Male</td>
<td>71</td>
<td>60.7</td>
</tr>
<tr>
<td>Race, White</td>
<td>63</td>
<td>53.8</td>
</tr>
</tbody>
</table>
## Sandy-Related Deaths by Location

<table>
<thead>
<tr>
<th>State (location of death)</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>53</td>
<td>45.3</td>
</tr>
<tr>
<td>New Jersey</td>
<td>34</td>
<td>29.1</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>12</td>
<td>10.3</td>
</tr>
<tr>
<td>West Virginia</td>
<td>6</td>
<td>5.1</td>
</tr>
<tr>
<td>Connecticut</td>
<td>4</td>
<td>3.4</td>
</tr>
<tr>
<td>Maryland</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Unknown</td>
<td>7</td>
<td>6.0</td>
</tr>
</tbody>
</table>
## Mechanism of Death

<table>
<thead>
<tr>
<th>Category</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Deaths (n=117)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directly related</td>
<td>67</td>
<td>57.3</td>
</tr>
<tr>
<td>Drowning</td>
<td>40</td>
<td>34.2</td>
</tr>
<tr>
<td>Indirectly related</td>
<td>38</td>
<td>32.5</td>
</tr>
<tr>
<td>Poisoning</td>
<td>10</td>
<td>8.5</td>
</tr>
<tr>
<td>Unknown/Possibly related</td>
<td>12</td>
<td>10.3</td>
</tr>
</tbody>
</table>
## Drowning Deaths

<table>
<thead>
<tr>
<th></th>
<th>Drowning (n=40)</th>
<th>All (n=117)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Age, median</td>
<td>62</td>
<td>-</td>
</tr>
<tr>
<td>Sex, male</td>
<td>26</td>
<td>65.0</td>
</tr>
<tr>
<td>Race, White</td>
<td>22</td>
<td>55.0</td>
</tr>
<tr>
<td>State, New York</td>
<td>32</td>
<td>80.0</td>
</tr>
</tbody>
</table>
Mapping of New York Drowning Deaths
Reported Circumstances of Drowning Deaths

- “went to basement to turn off gas and door closed to room unable to open, trapped and drowned in storm surge”
- “didn't want to leave home because he didn't believe the storm would be too bad”
- “deceased stayed in home with father to protect families belongings. Father and son found together in basement of the family's...both had drowned”
Limitations

- **Incomplete tally of Sandy-related deaths**
  - Only activated in areas with a Red Cross Disaster Relief Operation
  - Media sources identified 131 fatalities (vs 117)

- **Death certificates not complete at time of analysis**
  - New York City Bureau of Vital Statistics identified 4 additional drowning deaths
  - New Jersey Assistant State Medical Examiner In-Charge identified 40 additional Sandy-related deaths
Conclusions

- Red Cross successfully tracked Hurricane Sandy-related deaths in a timely fashion
  - Finding published in early 2014
    - [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6220a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6220a1.htm)
- Evaluation evacuation warnings and procedures
- Vulnerable populations
  - Interventions
Acknowledgements

Drs. Michelle Murti and Ellen Yard – primary authors at CDC Health Studies Branch
American Red Cross

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov    Web: http://www.cdc.gov

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.