

# Deaths Associated with Hurricane Sandy: October-November 2012

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# 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



American Red Cross

## Disaster Health Services Mortality Report Form

Complete one form per decedent. Email form to [Mary.CaseyLockyer@redcross.org](mailto:Mary.CaseyLockyer@redcross.org) or fax to 202-303-0225

Form 2077A v3  
Rev. 2/2013

### Part I GENERAL INFORMATION

1. **DISASTER OP #:** -  
 2. **SOURCE OF INFORMATION** (Report verified by):  
 ME/coroner  Fire Dept/Police  Not verified  
 Physician  Family/individual  Other, specify: \_\_\_\_\_  
 3. **REPORT DATE:** MM  DD  YYYY

### Part II DECEASED INFORMATION

4. **NAME:** LAST  FIRST   
 5. **DATE OF BIRTH:**  Unknown  MM  DD  YYYY  
 6. **AGE (YEARS):**  Unknown  < 1 year  
 7. **RESIDENTIAL ADDRESS OF DECEASED:** STATE  ZIP CODE  COUNTY   
 STREET ADDRESS  CITY   
 8. **DATE OF DEATH:** MM  DD  YYYY  Missing, presumed dead  Recovery Date same as Date of Death  
 DATE OF BODY RECOVERY: MM  DD  YYYY  
 9. **RACE** (Check all that apply):  American Indian or Alaskan Native  Asian  Black/African American  Native Hawaiian or Pacific Islander  Other  
 10. **ETHNICITY:**  Hispanic  Non-Hispanic  
 11. **GENDER:**  Male  Unknown  Female  
 12. **LOCATION OF INJURY OR ONSET OF ILLNESS:**  Mobile home  Single family residence  Unknown  Motor vehicle  Outside  Other, specify: \_\_\_\_\_  
 If same address as #7; check here   
 STATE  ADDRESS and ZIP CODE   
 13. **LOCATION OF DEATH/BODY RECOVERY:**  Hospital  Decedent's home  Unknown  Motor vehicle  Outside  Other, specify: \_\_\_\_\_  
 If same address as #7; check here   
 STATE  ADDRESS and ZIP CODE

### Part III CAUSE AND CIRCUMSTANCES OF DEATH (Use the codes below to mark the category that best applies. For example, if driver died of a heart attack preceded by a MVA, code Mechanism as 07-01 and COD as 51-01)

14. **MECHANISM OF INJURY\*** USE 4-DIGIT MECH OF INJURY CODE   
 15. **IMMEDIATE CAUSE OF DEATH\*** USE 4-DIGIT CAUSE OF DEATH OR MECH OF INJURY CODE   
**\*MECHANISM OF INJURY CODES INCLUDE 00-00 to 18-00. CAUSE OF DEATH INCLUDE ANY BELOW**

MECHANISM OF INJURY AND/OR CAUSE OF DEATH CODES	CAUSE OF DEATH CODES
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00-00 **NO INJURY**  
 01-00 **Burns**  
 01-01 fire / flames  
 01-02 chemical /caustics  
 02-00 **Crushed in or between objects**  
 03-00 **Cut/struck by or against,**  
 03-01 debris  
 03-02 machinery/tools/equipment/chainsaw  
 03-03 other, specify  
 04-00 **Drowning / submersion**  
 05-00 **Electric current** (e.g., cables / lines)  
 06-00 **Fall, specify:**  
 06-01 from one level to another (e.g., down stairs; from ladder, building, or tree)  
 06-02 on same level  
 07-00 **Motor vehicle /transport, specify:**  
 07-01 driver  
 07-02 passenger / occupant  
 07-03 pedestrian / bicyclist  
 07-04 bicyclist  
 08-00 **Poisoning, specify:**  
 08-01 toxic effect of carbon monoxide  
 08-02 inhalation of gases, fumes, vapors  
 08-03 ingestion of poison  
 09-00 **Assault / violence specify:**  
 09-01 firearm / gunshot  
 09-02 other assault  
 09-03 suicide / self-inflicted injury  
 11-00 **Unknown mechanism of injury**  
 18-00 **Other Mech. specify:** \_\_\_\_\_

50-00 **Asphyxiation / suffocation**  
 51-00 **Cardiovascular illness/disease:**  
 51-01 ASCVD (e.g. MI)  
 51-02 congestive heart failure  
 52-00 **Dehydration**  
 53-00 **GastroIntestinal, specify:**  
 53-01 bleeding  
 53-02 hepatic failure  
 54-00 **Neurological, specify:**  
 54-01 meningitis / encephalitis  
 54-02 seizure / convulsions  
 54-03 stroke (hemorrhagic/thrombotic)  
 55-00 **Renal failure**  
 56-00 **Respiratory illness/disease, specify:**  
 56-01 asthma  
 56-02 COPD  
 56-03 pneumonia  
 56-04 pulmonary embolism  
 57-00 **Sepsis**  
 58-00 **Temperature Extremes**  
 58-01 hypothermia  
 58-02 hyperthermia/heat-related illness  
 59-00 **Trauma**  
 59-01 head injury  
 59-02 multiple injuries  
 60-00 **Unknown cause of death**  
 88-00 **Other Cause of Death, specify:** \_\_\_\_\_

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 roads, 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

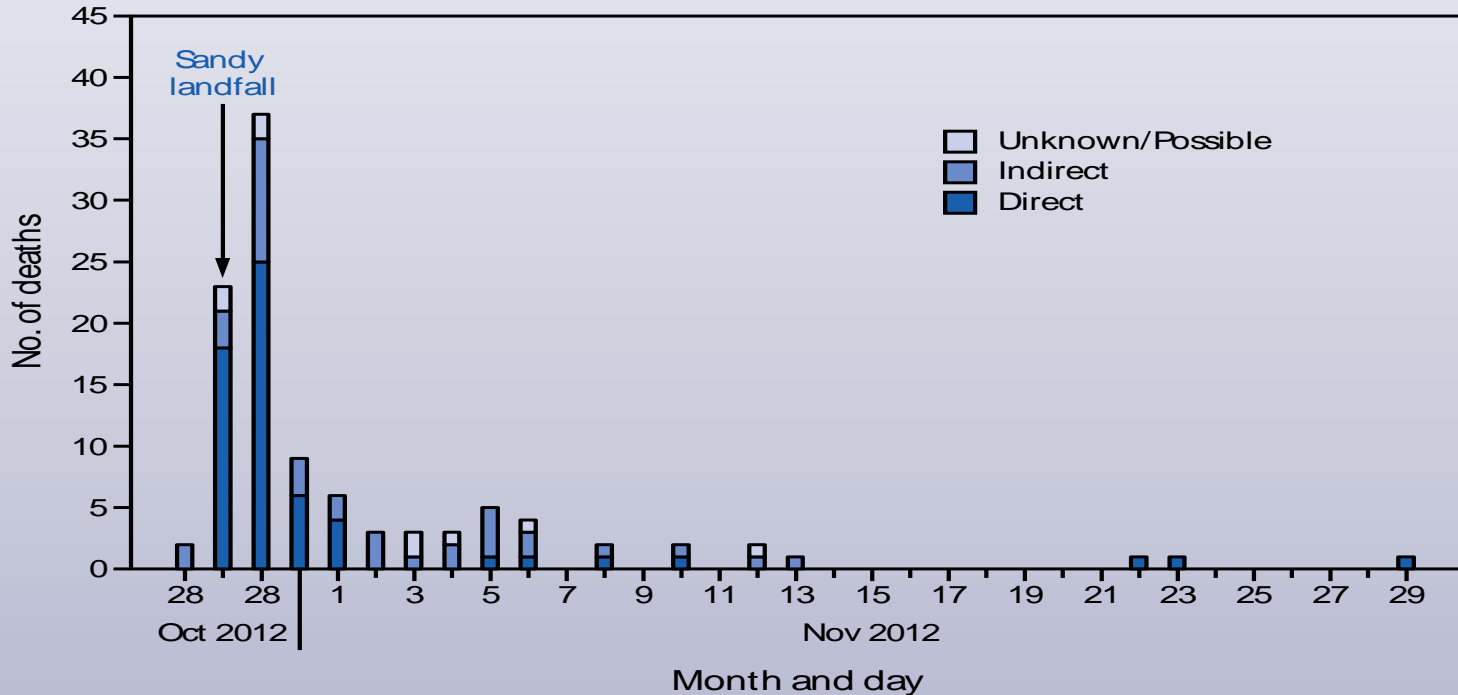
- *Caused by environmental force of disaster (e.g., wind, flood), or by the direct consequences of these forces (e.g., structural collapse)*

## ❑ 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

### All Deaths (n=117)

<b>Characteristic</b>	<b>No.</b>	<b>%</b>
<b>Age, median (yrs)</b>	<b>65</b>	<b>-</b>
<b>Age, range (yrs)</b>	<b>1-94</b>	<b>-</b>
<b>Sex, Male</b>	<b>71</b>	<b>60.7</b>
<b>Race, White</b>	<b>63</b>	<b>53.8</b>



## Sandy-Related Deaths by Location

State (location of death)	All Deaths (n=117)	
	No.	%
New York	53	45.3
New Jersey	34	29.1
Pennsylvania	12	10.3
West Virginia	6	5.1
Connecticut	4	3.4
Maryland	1	0.9
Unknown	7	6.0

## Mechanism of Death

	All Deaths (n=117)	
	No.	%
<b>Directly related</b>	<b>67</b>	<b>57.3</b>
<b>Drowning</b>	<b>40</b>	<b>34.2</b>
<b>Indirectly related</b>	<b>38</b>	<b>32.5</b>
<b>Poisoning</b>	<b>10</b>	<b>8.5</b>
<b>Unknown/Possibly related</b>	<b>12</b>	<b>10.3</b>

## Drowning Deaths

	Drowning (n=40)		All (n=117)	
	No.	%	No.	%
<b>Age, median</b>	<b>62</b>	<b>-</b>	<b>65</b>	<b>-</b>
<b>Sex, male</b>	<b>26</b>	<b>65.0</b>	<b>71</b>	<b>60.7</b>
<b>Race, White</b>	<b>22</b>	<b>55.0</b>	<b>63</b>	<b>53.8</b>
<b>State, New York</b>	<b>32</b>	<b>80.0</b>	<b>53</b>	<b>45.3</b>

# 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>
- ❑ **Evaluation evacuation warnings and procedures**
- ❑ **Vulnerable populations**
  - *Interventions*

# Acknowledgements

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American Red Cross**

**For more information please contact Centers for Disease Control and Prevention**

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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.*