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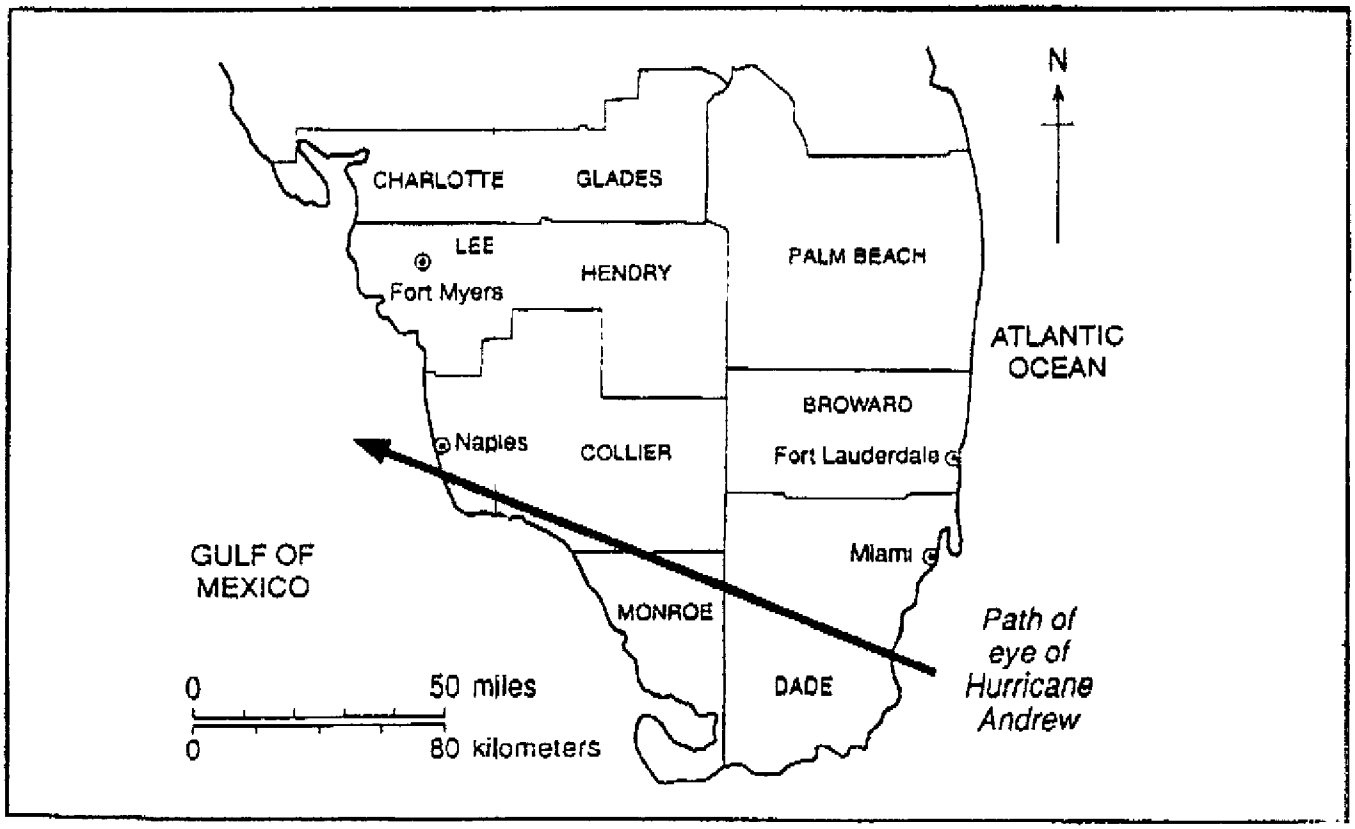
Epidemiologic Notes and Reports

Preliminary Report: Medical Examiner Reports of Deaths Associated with Hurricane Andrew — Florida, August 1992

On August 24, 1992, at 1:40 a.m. eastern daylight time (EDT), rain bands associated with Hurricane Andrew reached the eastern coast of Florida. At 4:45 a.m. EDT, Hurricane Andrew made landfall 35 miles southeast of Miami at Homestead, with sustained winds of 145 miles per hour (mph) and gusts of 164 mph. These winds extended 45 miles outward of the storm center. The storm moved across the state at 18 mph toward the Gulf of Mexico (Figure 1). The tidal surge on the eastern coast was

FIGURE 1. Path of Hurricane Andrew — Florida, August 24, 1992



Hurricane Andrew — Continued

estimated at 7–19 feet. During the storm, approximately 2.5 million Florida residents were left without electrical power, and approximately 56,000 family dwelling units were destroyed or severely damaged. This report presents preliminary data from Florida medical examiner (ME) offices about deaths attributed to Hurricane Andrew.

From August 26 through September 1, public health officials contacted staff in seven district ME offices in southern Florida to request information about hurricane-associated mortality. These seven districts comprise nine counties and have a total population of 4,765,675. The only district ME office to report deaths associated with the storm was District 11 (Dade County [1990 population: 1.9 million]).

As of September 1, the Dade County Medical Examiner Office reported receiving the bodies of 32 persons whose deaths were associated with Hurricane Andrew. Of these deaths, 14 were accidental* deaths directly† associated with the storm (Table 1). Nine were caused by injuries resulting from blunt or penetrating trauma, four from asphyxia following the collapse of buildings, and one from drowning.

The remaining 18 deaths were indirectly§ associated with the hurricane. Of these deaths, 11 were from natural causes, five were from accidental causes, and two are pending further investigation. Of the 11 deaths from natural causes, eight were caused by stress-induced cardiovascular events, two were associated with organic brain syndrome, and one was caused by intracerebral hemorrhage in a pregnant woman. Of the five deaths from "accidental" causes, three were caused by blunt trauma associated with clean-up or falls from damaged buildings, and two were children who died in house fires.

In addition to the 32 known deaths, one person, who was on his boat during the preimpact phase of the storm, is officially missing and presumed dead after being washed overboard.

Reported by: Medical examiner's offices in districts 11 (Dade County), 15 (Palm Beach County), 16 (Monroe County), 17 (Broward County), 20 (Collier County), 21 (Glades, Hendry, and Lee counties), 22 (Charlotte County); Florida Dept of Health and Rehabilitative Svcs. Surveillance and Programs Br and Disaster Assessment and Epidemiology Section, Health Studies Br, Div of Environmental Hazards and Health Effects, and Emergency Response Coordination Group, Office of the Director, National Center for Environmental Health; Div of Field Epidemiology, Epidemiology Program Office, CDC.

Editorial Note: In Florida, most deaths directly attributed to Hurricane Andrew resulted from blunt trauma or asphyxia. In the past, hurricane-associated mortality has included high numbers of drownings (*1*). However, because of the minimal storm surge in the heavily populated areas, a building code that requires structures to withstand winds of 130 mph, and advanced warning systems and well-coordinated evacuation plans, drowning, as well as deaths from other causes, attributed to the

*"Accidental" is a medicolegal term that refers to the circumstance under which a death occurs. When a death occurs under "accidental" circumstances, the preferred term within the public health community is "unintentional injury."

†The ME office defined a directly associated death as a death caused by the environmental force of the hurricane. Therefore, all these deaths occurred during the preimpact or impact phases of the storm.

§An indirect death was defined as a death caused by hurricane-related events, such as evacuation, clean-up, inability to obtain medication, loss of electricity, or stress-induced cardiovascular events.

hurricane remained relatively low. Nonetheless, some persons refused to evacuate their homes, and the deaths directly associated with Hurricane Andrew in Florida occurred among such persons. Public health and emergency management agencies need to continue to emphasize the importance of timely evacuation during natural disasters.

Most of the deaths associated with Hurricane Hugo, which struck Puerto Rico and South Carolina in September 1989, occurred in the postimpact phase and included deaths from electrocutions due to contact with energized power lines and the use of portable electric generators; house fires caused by candles used for lighting; and traumatic injuries sustained during clean-up (*2,3*). Two deaths associated with fires have already occurred in the postimpact phase of Hurricane Andrew. The public and relief workers should be aware of these and other potential dangers during the postimpact, clean-up phase of the hurricane and take appropriate precautions.

TABLE 1. Deaths* directly attributed to Hurricane Andrew — August 1992

Decedent age (yrs)	Race	Sex	Cause of death	Circumstance of death
47	Black	Male	Asphyxia due to chest compression	Tree fell on camper
12	White	Female	Blunt head trauma	Struck by beam from roof while in her home
25	White	Male	Massive head trauma	Roof of home caved in
74	White	Male	Multiple injuries	Truck trailer without wheels (being used as a shelter) rolled over and collapsed (11 others survived)
49	White	Male	Craniocerebral trauma	
32	White	Male	Drowning	Aboard anchored boat at time of storm; later found floating in canal
62	White	Male	Mechanical asphyxia	Trailer collapsed and rolled over
67	White	Male	Positional asphyxia	Trapped under debris from ceiling that collapsed
80	White	Female	Mechanical asphyxia	Refused evacuation; buried under debris when trailer collapsed
46	White	Male	Multiple blunt trauma	Found in residence destroyed by storm
49	White	Male	Multiple blunt trauma	Left home when it began to collapse; killed by flying debris outside home
67	White	Female	Multiple penetrating injuries	Townhouse collapsed
54	White	Male	Multiple blunt trauma	Roof collapsed
37	White	Male	Blunt craniocerebral trauma	Struck by flying object aboard boat, and fell overboard during storm; later washed ashore on island (another person survived, and a third was washed overboard and is officially missing)

*n = 14.

Hurricane Andrew — Continued

Because there is no universally accepted definition of a hurricane-associated death, the cases listed in this report were determined to be hurricane-associated by each district ME office. As a result, each ME office may apply different criteria to determine whether a death resulted from the hurricane. In addition, other organizations that collect information on disaster-associated deaths might apply different criteria. These potential differences reinforce the need to develop a standard definition for disaster-associated deaths.

Since 1989, MEs and coroners have reported important information about deaths associated with several natural disasters, including Hurricane Hugo (1989) (*2,3*), the Loma Prieta earthquake (1989) (*4*), the Plainfield tornado in Illinois (1990) (*5*), and flash floods in Texas (1991). In addition to mortality surveillance, the State of Florida, with the assistance of CDC, is conducting a rapid damage assessment survey to determine the extent of injuries and loss of utilities and health services that resulted from Hurricane Andrew.

References

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Syphilis — Ford County, Kansas, 1992

In January 1992, the Ford County (Kansas) Health Department received a report of a pregnant woman with a positive serologic test for syphilis. Syphilis had not been reported in the county (1990 population: 27,463) since September 1989. As a result of the investigation summarized in this report, six additional persons with syphilis were identified by contact tracing.

Patients ranged in age from 15 to 21 years (median: 16 years); five were female, including two who were pregnant. All were residents of Ford County. All patients had positive serologic tests (i.e., Venereal Disease Research Laboratory/rapid plasma reagin and fluorescent treponemal antibody tests) for syphilis. Two patients were symptomatic; both had a rash consistent with secondary syphilis. Early latent syphilis was diagnosed in the other patients. Three patients were tested for human immunodeficiency virus; all were negative.

Two of the patients were in drug-abuse rehabilitation; these two were the only patients who reported use of crack cocaine. The primary patient was a male who traveled frequently to Wyandotte County, Kansas (in the Kansas City metropolitan area), which reported a 290% increase in early syphilis from 1990 (48 cases) through 1991 (187 cases). Although much of the increase in Wyandotte County has been associated with the use of crack cocaine, none of the patients in this investigation reported exchanging drugs or money for sex.

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