



Research Brief

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ASSOCIATION BETWEEN EXPOSURE TO HURRICANE IRMA AND MORTALITY AND HOSPITALIZATION IN FLORIDA NURSING HOME RESIDENTS

Keywords: mortality, hospitalization, nursing homes, long-term care, disaster preparedness

Purpose of the Study: To better understand hospitalizations and mortality of long-stay (≥ 90 days) and short-stay (< 90 days) nursing home residents after Hurricane Irma in 2017.

Key Findings:

- ✓ More nursing home residents died and were hospitalized in the 90-day period following Hurricane Irma in 2017 than in the 2015 control group that did not experience a hurricane.
- ✓ Long-stay residents were especially at risk of hospitalization and mortality after Hurricane Irma, while short-stay residents were at risk of hospitalization, but not mortality.

Major Policy/Practice Implication: Nursing home residents are vulnerable to hospitalization and death following disasters, particularly long-stay residents who are more likely to have serious cognitive and functional impairments. Risks to this population may be underreported by governing agencies.

IMPORTANT BACKGROUND INFORMATION

Nursing home (NH) residents exposed to hurricanes are at greater risk of mortality and morbidity than unexposed residents, but less is known about the impact of hurricanes on specific populations of NH residents, such as long- and short-stay residents. Length of stay may be an important differentiating characteristic because short-stay residents are typically funded by Medicare to recover from an injury or hospitalization, while long-stay residents are likely to be funded by Medicaid and may have greater cognitive and/or functional impairments. Even more, hospitalizations and deaths among NH residents in the months following a hurricane may be underreported by governing agencies.

STUDY METHODS

The study population included all Florida NH residents 65 years and older in 2017 when Hurricane Irma hit the entire state. Researchers categorized residents as short-stay (< 90 days) and long-stay (≥ 90 days), and designated a similar 2015 control group who were not exposed to a disaster. Data were collected from Medicare and resident assessment records, and clustered by facility and residents who were in both 2015 and 2017 cohorts to reduce bias. They calculated hospitalization cumulative incidence and mortality rate at 30 days and 90 days after exposure, as well as risk difference between 2015 and 2017 to determine excess risk among the exposed group. They reported results per 1000 residents.

KEY FINDINGS

- ✓ **Long-stay residents were especially at risk of first hospitalization and death after Hurricane Irma:** Long-stay residents exposed to Hurricane Irma were 18% (OR, 1.18; 95%CI, 1.08-1.29) more likely to die than their 2015 counterparts 30 days after the hurricane, and were 11% (OR, 1.11; 95%CI, 1.04-1.17) more likely to be hospitalized.
- ✓ **Short-stay residents were at a greater risk of first hospitalization after Hurricane Irma, but not mortality:** Short stay residents exposed to Irma were 8% (OR, 1.08; 95%CI, 1.03-1.13) more likely to be hospitalized than their 2015 counterparts 30 days after the hurricane.

PRACTICE AND POLICY IMPLICATIONS

For policy makers: This and prior research indicate that NH resident hospitalization and death after disasters are higher than official reports suggest. Policy makers should consider revising post-disaster assessments to acknowledge indirect impacts, such as worsening chronic conditions, transfer trauma, and environmental triggers.

For providers: Excess hospitalization and death may be mitigated by having adequate direct-care staff during disasters and an awareness of vulnerable groups.

For researchers: Studies should further identify specific factors that may contribute to hospitalization and death after disasters, such as resident health conditions, evacuation processes, and environmental conditions.

Table 4. First Hospitalization Incidence Rate and Mortality Rate at 30- and 90-Day Intervals and Odds Ratios Among Long-Stay and Short-Stay Residents

Variable	Rate (95% CI) ^a		Odds ratio (95% CI) ^b
	2015	2017	
First hospitalization			
Within 30 d			
Short stay ^c	158.6 (153.4-163.9)	170.9 (164.7-177.3)	1.08 (1.03-1.13)
Long stay ^d	48.25 (46.27-50.31)	53.33 (51.25-55.49)	1.11 (1.04-1.17)
Within 90 d			
Short stay ^c	307.6 (301.1-314.3)	319.5 (312.9-326.3)	1.04 (1.01-1.07)
Long stay ^d	121.3 (118.2-124.4)	129.4 (126.2-132.6)	1.07 (1.03-1.10)
Mortality			
Within 30 d			
Short stay ^c	60.95 (57.61-64.50)	64.31 (60.86-67.95)	1.06 (0.98-1.14)
Long stay ^d	26.28 (24.82-27.84)	31.00 (29.40-32.67)	1.18 (1.09-1.28)
Within 90 d			
Short stay ^c	147.8 (142.8-153.0)	154.4 (149.3-159.7)	1.05 (1.00-1.10)
Long stay ^d	78.88 (76.38-81.46)	86.22 (83.61-88.91)	1.09 (1.05-1.14)

ORIGINAL ARTICLE

Dosa, D.M., Skarha, J., Peterson, L., Jester, D.J., Sakib, N., Ogarek, J., Thomas, K.S., Andel, R., & Hyer, K. (2020). Association Between Exposure to Hurricane Irma and Mortality and Hospitalization in Florida Nursing Home Residents. *JAMA Network Open*, 3(10). doi:10.1001/jamanetworkopen.2020.19460

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