

Researchers examine disaster preparedness and recovery in a hurricane-induced hospital evacuation

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Two reports published in the *Journal of Nursing Scholarship* reveal important insights on emergency preparedness, recovery, and resilience from nurses working at NYU Langone Health's main hospital during Superstorm Sandy in 2012.

Communication - both improving channels and its importance in connecting nurses with others during a crisis - and social support emerged as key themes in the reports, authored by researchers at NYU Rory Meyers College of Nursing (NYU Meyers) and NYU College of Dentistry (NYU Dentistry). The researchers also call for more education and planning for future [disasters](#).

The scope and frequency of climate-related disasters have increased dramatically in recent years. Large-scale natural disasters can overwhelm a community's infrastructure, including access to essential health and medical services.

Weather-related disasters like hurricanes can often be predicted, enabling hospitals to prepare. In October 2012, with Hurricane Sandy approaching New York City, NYU Langone took several measures to protect its patients and facilities, including enhancing physical barriers for flood protection, discharging patients, ensuring adequate staffing, and moving patients into units less vulnerable to high winds and with more robust power sources.

However, severe and unprecedented weather led to the high water levels in NYU Langone's Tisch Hospital, a 725-bed facility located one block from the East River, which necessitated an evacuation mid-storm.

Thanks to the heroic efforts of the clinical staff and emergency responders, more than 300 patients were evacuated - many carried down stairwells - without injury.

There is a growing body of research in the medical field documenting the short-term and long-term effects of disasters on [health care workers](#). Nurses, given the nature of their work, are at particular risk for certain mental health issues, including compassion fatigue, burnout, and trauma.

The researchers sought to understand how nurses at NYU Langone were impacted before, during, and after Hurricane Sandy. Through interviews and surveys, the researchers explored nurses' experiences in disasters, what their challenges and resources were for carrying out responsibilities, and lessons learned.

The researchers conducted in-depth interviews with 16 nurses who participated in the evacuation. After the interviews, an anonymous online survey was sent to all registered nurses assigned to inpatient units who were employees at NYU Langone on the day of the storm, resulting in 528 responses, including 173 nurses who were part of the evacuation.

Challenges and Resources for Nurses in a Disaster

The researchers found that while some nurses had disaster training and experience, many working the night of the storm lacked prior hands-on experience or a deep knowledge of [emergency preparedness](#). Despite this, nurses drew on their own resourcefulness, support from colleagues, and hospital leadership to adapt to the challenges presented by the storm.

A few of the nurses with disaster training reported feeling prepared

during the hurricane and evacuation. To help [health care providers](#) better prepare and feel more confident in their ability to respond in the future, the researchers recommend FEMA's "all hazards" approach to disaster planning, which trains staff for a wide range of scenarios rather than select situations. For instance, training at hospitals might currently focus on an incident dealing with mass casualties, but should focus on hazards of all types.

The loss of power on many floors was another significant challenge nurses faced during the storm. In addition to lifesaving medical equipment, much of a hospital's everyday operations require power, from electronic medication carts to medical records to email and phone communication. The power failure jeopardized both patient care as well as nurses' ability to communicate with each other, with leadership, and with their loved ones.

In the absence of power, the nurses found creative solutions, including using batteries, unlocking medication carts in anticipation of the power outage, and handwriting medical summaries for patients being evacuated to other hospitals. In terms of their primary methods of communication, 72 percent of nurses surveyed reported talking face-to-face and 24 percent used personal cell phones.

"Nurses who were part of the evacuation encountered numerous unanticipated challenges in responding to the disaster but rose to the occasion by drawing from a variety of resources, from their personal resilience to interpersonal support from coworkers, as well as system and community resources," said Nancy VanDevanter, RN, DrPH, professor at NYU Meyers.

As part of "all hazards" training, the researchers recommend education that includes preparation for power loss, including "low-tech" alternatives - such as the sled-shaped devices NYU Langone used to

carry patients down stairwells - when electronic equipment is not available.

The Emotional Toll of Sandy and Building Resilience

When hospitals experience a natural disaster, health care providers become both first responders - and victims.

"All disasters are local," said Victoria H. Raveis, PhD, research professor and director of the Psychosocial Research Unit on Health, Aging and the Community at NYU Dentistry. "The nurses we studied lived and worked in communities directly impacted by the storm."

In their interviews, the researchers found that nurses subject to the stressful professional circumstances of the hurricane were also concerned about their families' welfare and worried about personal loss. For instance, prior to the storm, many nurses made arrangements for extended stays at the hospital, but were torn about leaving their families and later had trouble reaching their loved ones during the storm.

"When both personal life and professional life are impacted by an adverse event, as occurred in Superstorm Sandy, stress can exponentially increase. The responsibilities associated with the profession of nursing add additional demands that increase the risk for role conflict when a disaster occurs," said Raveis. "Despite this conflict between work and family responsibilities, the nursing staff at NYU Langone put their personal needs aside, clearly demonstrating their commitment and professionalism."

The storm's impact on nurses' personal lives was significant: the survey revealed that 25 percent of nurses experienced property damage or loss and 22 percent needed to relocate following the storm. A small proportion of respondents reported significant psychological problems

after the hurricane, including having disturbing thoughts (5 percent) and difficulty sleeping (4 percent).

The nurses cited social support - from coworkers, hospital leadership, and loved ones - as an important resource in helping them through the stressfulness of the disaster.

"Our research also shows that maintaining good communication with peers and hospital leaders after the hurricane helped the nursing staff feel more connected and less stressed," said Christine T. Kovner, RN, PhD, the Mathey Mezey Professor of Geriatric Nursing at NYU Meyers.

Provided by New York University

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