

Disaster Plans: Resident Involvement and Well-Being During Hurricane Harvey

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Hurricane Harvey hit Texas on Friday, August 25, 2017, as a Category 4 hurricane, the first Category 3 or higher hurricane to make landfall in the United States since 2005.^{1,2} It unloaded approximately 27 trillion gallons of rain.^{1,3} In the first 15 hours of the storm there were 56 000 calls to 911, with more than 70 000 people rescued from their homes, and a death toll of more than 80.^{2,4,5}

Literature on natural disasters and mass casualty events notes that physician leadership is important for an effective hospital response. There is a knowledge gap, however, in emergency preparedness for residents despite attempts to introduce curricula or to engage residents in training.^{6–11} There is little time to incorporate additional training as the demands placed on residents are high. No formal emergency preparedness training for natural disasters existed at our institution for residents. Thus, as former chief residents at Texas Children's Hospital (TCH), we share our experience to help residency programs plan their approach to disaster events and anticipate responses from residents in a way that does not require extensive training. Although the initial logistic planning was strenuous, we found the most challenging aspect to be protecting our residents' well-being in ways that made them feel recognized and supported.

TCH is the largest children's hospital in the United States with more than 700 patient beds.¹² It is the main teaching hospital for the 188 residents and 4 chief residents who comprise the Baylor College of Medicine Pediatric Residency Program. The chief residents are integrated into daily operations at the hospital, and their participation in operational meetings leading up to the storm was integral to the residency program's preparedness.

The Storm

On Wednesday, August 23, 2017, we learned that Hurricane Harvey would hit Houston, Texas, and

linger for days. We asked residents to prepare their families and homes for the storm and to notify the hospital of any barriers to participating on the "Ride-Out" team (designated to stay in the hospital and "ride out" the storm caring for patients) versus the "Relief" team (designated to come in after the storm passed to allow the Ride-Out team to leave). Along with the TCH Lead Physician for Emergency Management, we reviewed departmental service needs and created resident Ride-Out and Relief teams, taking into account services with current heavy patient volume versus those that would get busier after the storm passed (ie, the emergency room). We assigned weekend-level staffing, which is at least 1 less resident per team than usual with no electives. In most cases, residents worked on their regularly assigned service. Residents were not asked to fill roles above their experience level. We scheduled residents to work 12-hour shifts (12 hours on, 12 hours off to rest in the hospital) to diminish the burden of consecutive work without leaving the hospital. Attending physicians ensured that patients were discharged early and preemptively coordinated urgent patient needs (ie, early dialysis for patients with renal failure). On Saturday, August 26, Ride-Out team 1 (approximately one-third of the residents) arrived at the hospital with enthusiasm to provide care for patients. However, instead of the anticipated heavy rainfall, Saturday remained dry. Morale waned and many wanted to return home to loved ones. However, we encouraged residents to heed the original safety plan.

The next day, we awoke to a devastated city as the storm hit overnight with intense flooding. Mixed emotions circulated. Many felt a newfound purpose, some felt trapped and claustrophobic, and most were worried about loved ones and their homes. The uncertainty of future events was particularly challenging. Unlike other mass casualty events in which only the hospital or medical system is overwhelmed, Hurricane Harvey devastated an entire region, which affected key supplies, transportation, and all the people within the region. Residents had to focus on

patient care despite uncertainty of the long-term impact on their families and homes.

It was clear that residents required event-specific emotional and social support. As chief residents, we walked the hospital halls to update residents. We had an open-door office policy for residents and hosted movie nights. By bringing residents together and offering engaging activities during their off-time, we provided comfort and comradery to encourage positive spirits and protect resident well-being. We also called the residents at home twice daily to ensure their safety and share up-to-date information.

Although we initially planned for Ride-Out team 1 to be in the hospital for 4 to 5 days, we soon realized that more than 3 consecutive days in the hospital jeopardized residents' well-being. Thus, based on resident input, we created Ride-Out team 2, comprised of Ride-Out team 1 residents who chose to continue, as well as a portion of the originally assigned Relief team. On Monday, August 28, during a brief break in the storm, we enacted a one-to-one replacement of Ride-Out team 1 for team 2 within a 3-hour period, bringing in fresh energy. We also initially had 3 of 4 chief residents in-house, but as the storm continued, 2 stayed in-house, and the other 2 went home.

Recovery

On Tuesday, August 29, the storm finally moved on and our Relief team was called in to relieve Ride-Out team 2. Eventually, the in-house chief residents went home, and the other 2 took over. Again, residents had mixed feelings. Those on Ride-Out teams 1 and 2 were excited to be released and go home, whereas others at home had "survivor's guilt." Many residents who were not scheduled to work found their own way to help by volunteering to clean up houses and deliver supplies.

Reflections

The unprecedented duration of the storm brought unique challenges. There are key action items we recommend to residency programs, particularly chief residents, when facing a natural disaster or mass casualty event.

- Chief residents should be involved in daily hospital operational frameworks, as it led to seamless leadership during this challenging time and helped organize teams leading up to the storm.
- Some of the chief residents should be in-house at all times, relaying up-to-date information regarding the weather, the city, and the hospital

services. This was invaluable to our residents and coordination of multiple teams.

- Nurture residents' innate desire to help others and be a part of a team that works for the greater good by recognizing them for their hard work and sacrifices. Stay in frequent contact with residents both in-house and at home to foster inclusivity.

We learned additional points that can improve other programs' experiences.

- Reduce the number of residents covering the overnight 12-hour shifts, because there are no admissions while a storm rages.
- Limit work days to 3 or less and anticipate that many residents may need time away from work after the storm to take care of loved ones, their homes, and themselves.
- Have at least 1 employee trained in counseling available onsite to support staff during this type of event, especially as residents encounter stressful situations as their homes and families are affected by the events.

Recognizing that everybody played a role—whether they were on the Ride-Out teams, Relief team, or at home—validated residents' varied sentiments and responses to the storm.

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