



Guest Editorial

Hurricane Harvey: Trauma vs. Resiliency

Jean Ivey

Hurricane Harvey brought heavy and prolonged rain, and despite the systems in place, large areas of the counties in the Houston area flooded. After the hurricane passed, release of the water in the reservoirs, due to strain and potential for failing, flooded many homes. With these circumstances came the risk of physical and mental or emotional problems for children and adolescents.

The San Jacinto and Trinity Rivers flow south and east to drain into the Gulf of Mexico in a system of bayous and creeks. Although some street flooding frequently occurs after heavy rain, the area drains quickly if the rain is not too prolonged. Residents expect frequent heavy rains and some degree of street flooding. Flooding occurs most frequently in areas that are low-lying or adjacent to creeks, bayous, and bays. The area is built on marshes, cleared forested land, and swamps. It rains harder or longer, and some areas flood, typically those that lie within the flood plains. Flood district maps predict the likelihood of a property flooding. Theoretically, residents receive this information when they

purchase property, although breakdown in that process was reported in the past year. To prevent flooding of some areas adjacent to bayous or creeks, reservoirs retain some water during heavy rains, which theoretically can be released after the excess drains. The process of releasing the water has also been an issue during and after the hurricane. Many residents of the Gulf Coast from Houston to Florida are also affected by tropical storms and hurricanes. In fact, time is sometimes marked as “after Ike” or “since Katrina.”

Harvey brought days of rain, and forecasts of severe flooding (up to 55 inches) were almost continually in the media. Residents chose either to stay in their homes or to leave for higher ground or away from the Gulf. Some stayed in hopes of stopping the progress of flood waters into their homes or limiting the damage. Others with bad memories of being gridlocked on crowded and flooded freeways stayed because they didn't think they could get out of danger or hotels were booked by the time they decided to leave. It was almost impossible for a school-aged child or adolescent to miss hearing about the storm and expected flooding from someone. In 2015-2016, Houston had two incidents of flooding in the northwestern parts of the city and one in the southeastern part of the city. These caused considerable damage and temporary displacement for many families. Many had recently finished renovations and repairs to their homes and returned to their residences when Harvey was forecasted.

The literature related to childhood trauma after natural disasters includes discussions of assessment and intervention (Stark & Landis, 2016; Stark, Plosky, Horn, & Canavera, 2015) to assist children and adolescents affect-

ed by natural disasters and terrorism. More recently, homelessness and displacement due to the hurricane have been included in discussions of the potential for toxic stress (Hornor, 2015). Behaviors seen in children and adolescents reported by Quinn and colleagues (2016) as occurring after Super Storm Sandy in 2012 included irritability, grouchiness, sadness, depression, and difficulty completing schoolwork. Parents reported worrying, clinginess, and play related to the disaster in their children (Quinn et al., 2016). These symptoms of anxiety and difficulty concentrating, fear of the recurrence of the event, migraines or other pain, or physical symptoms are also reported by adults diagnosed with post-traumatic stress disorder (PTSD).

In anticipation of Hurricane Harvey, schools were closed, and some parents stayed home from work. Residents were advised to leave their flooding homes, or in the event escape was no longer possible due to flooded vehicles and impassable roads, to climb to the roof and wait for rescue. The level of fear and anxiety increased as the rain and wind increased. Once the family left their home, they were often taken to a large shelter where cots had been set up in rows, and some food and water were available. Generally, evacuated family members were placed together. In other families, children might be placed with relatives in unflooded areas of the city, and most had to attend a different school with children and teachers they did not know. School was delayed for three weeks because of these conditions, which added to the stress for children and families. Even in neighborhoods where mass evacuation was not necessary, light and sewer services were disrupted for several days. Water from

Jean Ivey, PhD, CRNP, PNP-BC, FAANP, is a Curriculum Consultant and Part-Time Adjunct Professor, University of Alabama at Birmingham, School of Nursing, Birmingham, AL, and a member of the Pediatric Nursing Editorial Board.

Editor's Note: As a holiday gift to our readers, we typically turn over the November/December editorial pen to a child or young person. With the many natural disasters our country has faced this year, we are taking a slightly different approach. Pediatric Nursing's Editorial Board member Jean Ivey conducted interviews with children affected by Hurricane Harvey, capturing their stories and painting a vivid picture of their experiences.

unflooded plains had to be diverted to affected areas, decreasing the amount available for all. Residents were asked to take fewer showers for shorter time periods to conserve water. There was a spill of toxic chemicals and oil in one section of the city, which increased concern about water safety. The extent of contaminated water rushing through the city is unknown, and symptoms reported included nausea and vomiting, rashes, and other skin disorders.

Children and adolescents with disabilities are at particular risk for higher exposure and mortality in comparison to others (Stough, Ducey, & Kang, 2017). Any need to evacuate is complicated by a lack of understanding, impaired mobility, disruption of routines, and scarcity or a lack of any special equipment or nutrition. Autism, mental illness, and sickle cell disease are just a few of the disabling conditions that will require careful coordination to avoid exacerbating their problems. Children with asthma, cystic fibrosis, and other respiratory illnesses face not only an increase in allergens, but the risk of contact with water containing infectious microbes, pollutants, and sewage when the water drainage and/or processing systems are overwhelmed. In Hurricane Harvey, 55 or more inches of rain overwhelmed the sewers, bayous, and reservoirs, and contaminated water flowed over large areas.

Shelters or removal to an unfamiliar home with friends or relatives can be an additional source of stress. Officials learned from Hurricane Katrina a great deal about planning to shelter large numbers of citizens on short notice. Harris County (where Houston is the county seat) rescue teams brought hundreds of people to a downtown conference shelter set up with rows of cots with sheets and a blanket. Water and restroom facilities were available. They were loud and crowded as people continued to arrive with minimal personal effects. These conditions can be terrifying to a child.

The concept of resilience (Happer, Brown, & Sharma-Patel, 2017; Luthar & Zelazo, 2006) may be both a prevention for and an approach to ameliorating the effects of such trauma. Resilient children and adolescents may have learned through experience to deal with adverse events constructively and with humor. Parents can build resiliency by preparing them through discussion and examples for seeking appropriate solutions to problems internally and externally. Such

children are usually able to use family and social support and humor to defuse stress.

In the Houston area, the commonness of storms and flooding caused many to ignore the warnings, assuming their homes were safe and their vehicles sufficient to get them to safety. One adolescent interviewed afterward said she heard the warnings but her family had lived on the bay for years and expected a little flooding. They also did not want to leave their possessions in case of looting. They lifted whatever they could higher when there was about six inches of water outside. They came back to the house several times to get animals and possessions they had left, wading up to the chest on the third day. Over a period of three days, the house gradually flooded until they could not see the house. The level of water inside the house reached 48 inches. The family went to a friend's house that was not flooded at first, and later, into a hotel. They ultimately saved some photos, but not many clothes, shoes, or furniture. Her mother had her purse stolen, with money and her green card inside.

This teen is an only child from a comfortable, middle-class family. They received aid from churches and friends, and expect that their low-lying property will be bought by the city. She demonstrated resilience by sharing her family's losses and getting support from schoolmates, teachers, and churches she attended; and recognizing that her friends' and family's safety was all that mattered. Other children and adolescents were not so fortunate. Hundreds had to be lifted by air from their roofs or rescued in private boats when the roads were too flooded for travel. Although these rescues may appeal to an adventurous 10-year-old, the reality of watching parents or grandparents become anxious and fearful, and the ongoing onslaught of news bulletins, would not be so much fun. Getting children out of harm's way was a priority, and some children were put into a crowded truck with the plan to come back later for the adults. Separation for days or weeks occurred when space in a relative's home, for example, was limited or parents in a work location could not get back to the area where their child stayed. Because schools were closed in anticipation of the storm, staying home from work was an option for some, but many had to work.

A first-grade student said, "The water came in the house, and it was

poopy water!" She and her family of two adults and three children had to leave their flooded home. Having to take down sheet rock in flooded homes and bleaching every other surface that had been in contact with the water was a chore. Possessions were water-soaked or ruined. They lived with relatives while working on the house. Mildew is almost unavoidable in the Houston area with its constant high humidity, and the walls must dry out completely over a period of weeks before repair can begin. Large fans and open windows and doors help the process.

Those who survived the storm cringe when a thunderstorm comes or rain continues for hours. Children may wet their beds, want to sleep with parents, and generally regress in coping strategies. Adolescents may act out, challenge parents, try to assume an adult role, or refuse to go to school. These behaviors can continue for months as parents struggle to provide safe, clean housing, food, and water.

Healthcare providers are in a prime position to help children and adolescents and their families deal with natural disasters and other traumatic events. Adolescents and older children can discuss flashback memories, how disruptive getting into a new school without their usual friends can be, or fears and concerns about their parents and siblings. Younger children may be more likely to express their fears through regression to an earlier developmental state. Writing, playing with human figures, and drawings may help them express their fears during play. Negative beliefs and distorted thinking, sleep disturbances, and prolonged crying or playing using morbid themes or less fantasy play may be seen. A single exposure to a traumatic event is less likely to cause permanent harm, but multiple events or concurrent losses, such as the death of a loved family member, build and make coping more difficult. Family counseling may be helpful for all. ■

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