Since Katrina: Neonatal and Pediatric Issues From Both Sides of the Levee

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**Geographic circumstances:** I directed the NICU during Hurricane Katrina and the subsequent flood on the dry side of the levee. I continue to practice neonatology in the same hospital and continue to prepare for hurricanes.

**About the author:** I joined the staff of the Ochsner Clinic in 1987 as a neonatologist, and I am currently the section head of neonatal medicine and medical director of the Ochsner Foundation Hospital’s level III regional NICU. As a member of team A, it was my responsibility to run the NICU in the event of any disaster. I was in the Ochsner NICU in the days that led up to, during, and for the 9 days after Hurricane Katrina. With the departure of half of our neonatology staff over the ensuing 12 months, my partner and I were responsible for resurrecting our unit and providing care for up to 42 infants. Since that time, the staff now consists of 5 full-time neonatologists who provide care for neonates in 3 NICUs in the New Orleans area.

Failure of the levee system in southeast Louisiana and flooding associated with Hurricane Katrina forever changed the landscape in innumerable ways. The delivery of health care services including obstetric and newborn care did not remain unscathed.

Since Katrina in August, 2005, the levee system surrounding New Orleans has been enhanced with both improvements in drainage and pumping capacity. In places where pumping stations were actually forced to shut down because of the need to evacuate pump-station operations personnel, attached “safe houses” have been constructed. Major highway construction projects are underway, and some that are near completion will allow for improved evacuation of the population when necessary. Those people whose health requires them to be hospitalized during a local disaster will find themselves in a much improved environment than was the case 6 short years ago.

Many flooded hospitals, including Charity Hospital of New Orleans, never reopened, and those that have reopened continue to adjust their service levels to match the needs of the returning population. One “for-profit” hospital chain, Tenet Healthcare Corporation, has left the inpatient market entirely, and some hospitals have done creative partnering. Eleven months after the storm, in July 2006, the Ochsner Health System announced a definitive agreement to purchase 3 of the Tenet facilities. This sale was official as of September 30, and 2 of the 3 hospitals are remaining open as acute care facilities and the third as a surgical hospital. Although there had been level III NICUs in each of these hospitals before the storm (with a total of 55 NICU beds), only one (Meadowcrest Hospital) was reopened with similar capabilities. A second of the 3 hospitals (Kenner Regional Medical Center) developed the first of its kind (in Louisiana) level II NICU, which was neonatal nurse practitioner directed using neonatologist oversight. The third hospital purchased from Tenet (Memorial Medical Center) reopened...
with no labor and delivery or newborn services. As recently as April 2010, Tenet divested itself of a fourth facility to Ochsner. North Shore Regional Medical Center in Slidell, Louisiana (~30 miles east of New Orleans) has a level III NICU, and it was maintained as such. The ramifications of this natural and man-made catastrophe, therefore, were in the consolidation of many subspecialty medical services including neonatal intensive care.

The NICU at the Ochsner Foundation Hospital never closed before, during, or after Katrina. Although some infants were transferred to other institutions outside the area when it was learned that we might be without public utilities for up to 2 weeks (it turned out to be 4 days), 1 of our patients was able to be maintained on extracorporeal membrane oxygenation. Five days after the storm, we were once again admitting newborns to our NICU. As the population returned, so did deliveries and the need for neonatal services. Before the recent acquisitions, the number of NICU beds stood at 36. Currently, under the auspices of the Ochsner Health System, we have the ability to care for up to 69 ill newborns.

This system unification has allowed for the ongoing development of consistencies with regards to medical administration, nursing practices, and medical therapies. On a small scale, this “regionalization” has allowed us to match the infant to the level of intensive care required and decrease the likelihood of separating a mother from her newborn. In addition, it serves our population better because it provides immediate access to needed pediatric subspecialty support as a disease entity warrants. As an example, telemedicine for echocardiograms is now standard in some units and is being placed in NICUs that previously did not have the capability.

With the expansion and upgrade of information systems, patient records and radiographs can now be accessed off-site from some facilities at which it was not possible previously. After Katrina there was a significant efflux of medical personnel including pediatricians and subspecialists, so coordination of therapy and resource utilization was paramount for allowing for the triaging and delivering of timely medical care. Many general pediatricians and intensivists alike found themselves practicing more subspecialty work than customary. Most physicians who elected to leave for family or professional reasons made themselves available by phone to assist in patient care until permanent replacements became available. The spirit of cooperation among those of us who remained became a way of life, because we all were under a significant amount of stress and we wanted to protect our colleagues so that they, too, could weather the aftermath. Lessons that we learned during the days immediately after the storm have continued to serve us well.

In the days, weeks, and months after Katrina, both emotional and pastoral counseling was made available to all medical, nursing, and support staff. Sadly, many of us knew local health care professionals who took their own lives during these terribly traumatic and demanding times. Supporting each other became almost instinctive, and hugs were an acceptable form of greeting. The destruction of personal property, sorting out losses, dealing with insurance adjustors, getting children into schools in which they frequently knew none of their classmates, and beginning the rebuilding of one’s home made coming to work an actual return to a type of normalcy. A frequently heard phrase was that “I came to work to take a break.” Affirmative nodding then followed from everyone within earshot.

A refinement in our neonatal transport system required us to work more closely with the vendors of our ground, rotor, and fixed-wing vehicles. We have trained personnel at multiple levels so that our transport team composition more accurately reflects the anticipated needs of the patient as opposed to the “1-size-fits-all” methodology that tends to “overstaff” a transfer.

From a facilities standpoint, being part of the Ochsner Health System creates efficiencies and allows for continued enhancements based on all that is learned in preparing for, enduring, and surviving a disaster. If one of our hospitals is more likely to experience an impact from an impending disaster, the opportunity to move patients to other facilities within the system exists. Staff could also move with their patients. Electronic medical record keeping allows access to patient information from any of the Ochsner facilities and can be accessed through a secure portal if a patient is transferred outside the system. An “essential personnel” list was created to provide staffing for ongoing patient care. The A team stays at a hospital during the storm while the B team evacuates and awaits a call to return to relieve the A team. Planning for the inevitable is a perpetual endeavor, but the upgrading that continues encourages hospital staff to work in a less-threatening environment and allows inpatient care to continue practically uninterrupted. Improvements in organization of resources have included the formation of command centers at each hospital, equipping each facility with multiple communication methods (satellite and cell phones [with a tower on our roof so that we can supply the power], ham and 800-MHz radios), the provision of enhanced security, increased generator power (including increased fuel...
storage), and more wells and pumps to provide potable water and water for flushing toilets. Evacuation plans by ground and water for patients and personnel have also been created if the impending disaster does not allow us to shelter in place.

The need for nonmedical specialists, whose services were already in high demand, especially in the fields of social work and translational services, escalated significantly after Hurricane Katrina. Providing some of the most basic needs for a mother and her newborn in the poststorm environment became increasingly problematic. Many of the underinsured or uninsured population found themselves homeless after the storm and occasionally required financial assistance to reunite with loved ones. Although the housing situation has improved over the last few years, it has done so with a smaller population. Katrina related or not, a rise in the number of pregnant women with varying types of mental illness including depression and bipolar disease exposed the lack of sufficient mental health support personnel. The burden on the system was amplified with the large influx of non–English-speaking Hispanic migrant laborers who arrived to assist in the rebuilding process. Obtaining a family history and translating medical problems that their child was experiencing was and remains a challenge that requires a translator who has some degree of medical knowledge.

As a physician who practiced in this area of the United States before, during, and since this catastrophe, there is a tremendous amount of pride that comes from being part of a team assisting in the resurrection and redevelopment of providing health care to a community. However, the loss of pediatric subspecialists locally since the storm has magnified by several fold the shortage that exists in other parts of the United States. The seemingly endless need for both inpatient consultation and outpatient appointments for these highly sought-after physicians adds to the stress that these doctors endure on a daily (and nightly) basis. Although the spirit of cooperation has never been higher as we understand the limitations of our friends, we know that most pediatric subspecialists would not mind cooperating with a few more colleagues. Recruiting physicians to this area of the country remains challenging. Although perhaps not at the frontier level, a few more pediatric subspecialty pioneers who want to make a significant impact in the care and welfare of children residing in the Gulf Coast would be a welcome addition.
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