

An aerial photograph of Hurricane Gustav, showing a well-defined eye and a dense, swirling cloud structure over the ocean. The image is framed by a light green border at the top and bottom.

A surgeon in the eye of

*Hurricane
Gustav*

by Ralph J. Doerr, MD, FACS

Hurricane Gustav was a Category Four hurricane that struck the Gulf Coast at Cocodrie, LA, September 1, 2008. The wind speeds were clocked at 150 miles per hour and the pressure was recorded as 941 mbar.

The National Disaster Medical System (NDMS) was activated for deployment to Hurricane Gustav on August 27. The author, as a member of the International Medical Surgical Response Team (IMSuRT)-East, was included in the deployment.

NDMS

The NDMS is a major component of the federal health and medical response to national disasters, transportation disasters, terrorism, and technological disasters. Formed in 1981 by a presidential initiative, the NDMS is a public and private sector partnership whose mission is medical response, patient evacuation, and definitive medical care. The federal partners are Health and Human Services, Department of Defense, Veterans Affairs, and the Federal Emergency Management Agency. Within the NDMS there are specialty teams: pediatric, burn, disaster, mortuary teams, veterinary medical assistance teams, disaster medical assistance teams, and IMSuRTs. The IMSuRTs are composed of multidisciplinary physicians and surgeons. The IMSuRT deployments are generally for two or three weeks in 60-bed pressurized military-style tents with self-sustaining medical cache, pharmacy, blood, lab equipment, monitors, and an operating room (with two operating room tables). The teams are configured to provide initial stabilization, operative, intensive care, and evacuation with logistic and administrative support. Generally there are 50 self-sustainable volunteers deployed for 72 hours, capable of performing 20 major and 20 minor operative cases without re-supply. The teams are composed of surgeons and orthopaedists, gynecologists, anesthesiologists, critical care personnel, operative nurses and technicians, respiratory technicians, pharmacists, logistics, communication, and security and safety.

The range of deployments include hurricanes, national presidential conventions, inaugurations, mass casualty events (such as 9/11), mara-

thons, earthquakes, floods, and massive fires. For IMSuRTs, these can include international deployments.

Hurricane Gustav

The NDMS mission for Hurricane Gustav was to arrive in Baton Rouge, LA, at the Louisiana State University (LSU) campus facilities in preparation for the evacuation of New Orleans, which was the anticipated landfall of Gustav. Two 500-bed federal medical station (FMS) facilities were rapidly set up at the LSU Pete Maravich Athletic Center and the LSU Carl Maddox Field House.

Evacuees were transported by helicopter from New Orleans all day on August 30. All arrivals were triaged according to standard protocol.

There was significant structural damage as Hurricane Gustav passed directly over Baton Rouge. Portions of roofs were blown off, major leaks appeared in patient care areas, glass doors were broken, and power was lost for four days. The roof of one local hospital collapsed, and rapid evacuation to an FMS and intact health facilities ensued. An interesting component of the mission was the return of 5,000 evacuees back to New Orleans with NDMS assistance. This was accomplished by rail, the first mass evacuation by rail in modern times.

Over the course of the two-week deployment, more than 500 individuals were admitted to the two FMS facilities at LSU. These facilities provided shelter medicine needs to approximately 350 patients and an additional 175 personal caregivers. Some of these caregivers became patients during the ordeal. Thirty-eight hospice patients were cared for, four of whom died during the mission.

Unique needs of disaster victims

The types of diagnoses seen at the FMS facilities were typical of special needs individuals: a significant portion were oxygen-dependent and wound care was required for the bed-bound. Acute asthma and chronic obstructive pulmonary disease exacerbation, rule out myocardial infarction and congestive heart failure worsening, and poorly controlled diabetes were common. Surgical issues included a rattlesnake bite, lacerations, debridements, gangrenous toes,

glass in the arm of a Federal Express worker, contusions, and fractures. This experience is in line with other reported hurricane medical support.¹⁻³

From these past reports, deaths and injuries in hurricanes occur primarily during the post-disaster recovery period, with relatively few sustained in the impact period. Other hurricane rescue effort workers have observed chainsaw injuries, puncture wounds, stings, gasoline aspiration burns, and assaults as requiring surgical evaluation.⁴ As the time from the original event lengthens, the mission changes to supporting lost or diminished medical and surgical assets in the region.

Getting involved

How should surgeons become involved in disaster medicine? First, surgeons need to better educate themselves. There is an extensive array of online and American College of Surgeon-sponsored courses available on these topics. These courses are both comprehensive and relevant to surgeons. Become involved in your hospital's emergency management committee. Surgeons are often overlooked when these committees are formed, yet arguably, from a decision-making and injury perspective, surgeons are a perfect fit for such a role. Participate in your hospital disaster drills.

On a wider scale, surgeons can become involved with community disaster planning committees. Each state has a credentialing mechanism to join the Medical Reserve Corps. Under this auspice, it is possible to volunteer at the time of local, regional, or national crisis. The ACS has recently taken much more of an interest in the preparation, education, and providing of opportunities for disaster participations. And of course, surgeons can also take the initiative to join the NDMS.

On an academic level, surgeons may consider pursuing involvement with disaster committees within specialties, along with dedicated publications and national and international societies. Ultimately, remembering that all disasters start out at the local level, and by employing an all-hazards approach, informed general surgeons are a perfect match for any emergency management team. The need to make rapid decisions

with less-than-optimal information is our daily bailiwick. Surgeons need to understand that they will be called upon to manage many different aspects of disaster medicine, including the need for definitive operative and critical care. Finally, there is particular gratification in helping our fellow citizens in a time of great need. Q

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