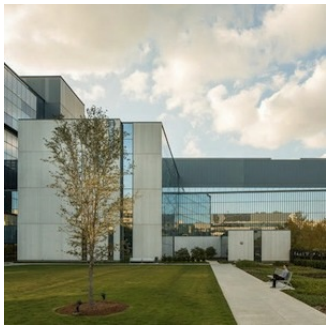
HealthManagement
Promoting Management and Leadership

Disaster-Proof Hospitals for Vulnerable Zones



The Southeast Louisiana Veterans Healthcare System recently opened its new hospital in New Orleans. Architects say the new 1.7-million-square-foot facility embodies "the lessons" of Hurricane Katrina, in reference to the destruction and problems caused by the storm that hit the area more than a decade ago.

Katrina exposed the structural deficiencies and vulnerabilities of medical centres. In the New Orleans area alone, seven of 16 hospitals with acute care units remained closed two years after the storm. Rebuilding the healthcare facilities posed a great challenge to architects and engineers: the hospitals must be rebuilt in such a way that they remain functional in the event of a similar, or even stronger, storm.

The new hospital is considered a "mission-critical facility" by the U.S.Veterans Administration. This means the hospital needs to survive and stay operational in nearly any type of disaster: natural, like a hurricane or earthquake, or man-made, like an explosion.

NBBJ, which designed the facility, says the building's perimeter can withstand category three storms and the walls are hardened to resist blasts, ballistic assaults, and ramming. In addition, the building's bones are designed to guard against progressive collapse — i.e., if one part of the building is destroyed, it won't cause a domino effect and lead to a full collapse.

See Also: **Sustainability in Hospital Design**

Building the hospital "upside down" is another key resiliency strategy employed by NBBJ, meaning power generators and other operational essentials are elevated or placed on upper floors, not in the basement and ground floor. (Hurricane Katrina-induced floodwaters destroyed the emergency generators in the basement of the old VA hospital in New Orleans. Life support systems, lights, and heating and cooling were knocked out.) The emergency room is on the second floor, which is accessible to vehicles via a ramp that also doubles as a boat launch if floor waters impede access. The design also allows for easy evacuation of people from the building, if necessary.

If a disaster strikes, the facility can remain fully operational for five days, according to NBBJ. A 6,000-square-foot on-site warehouse holds food and water for 1,000 people to get through the days. There is also a rainwater catchment system on the roof that feeds into underground tanks for a back-up water supply.

Indeed, the facility is "a poster child for resiliency," says Doug Parris, the project manager and a partner at NBBJ.

Stronger storms and rising tides have become more frequent as a result of climate change. Hence, NBBJ sees increasing application of resiliency techniques in the design of hospital buildings.

Hospitals are a literal lifeline and in the wake of a natural disaster, they become even more indispensable as places to treat its existing patients, admit people who were hurt as a result of the disaster, and provide emergency relief to their respective communities. They should not fail in times of crisis.

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