



## Hospital Haven: Facelift Provides Safe Hurricane Refuge for Young Patients

### Full Mitigation Best Practice Story

#### *Miami-Dade County, Florida*



**Miami, FL** – The fanciful, brightly colored exterior of the Miami Children’s Hospital (MCH) belies the inherent strength of the facility, which can be used as a medical shelter during hurricanes. Beginning in 2001, the building underwent a state-of-the-art retrofit to enable it to withstand a Category 4 hurricane. It is now wrapped in a hurricane-resistant shell.

The hospital serves seven counties in southern Florida, including populous Miami-Dade County, and is the region’s only specialty hospital for children. The 268-bed medical facility has expertise in all aspects of pediatric medicine and is an important community resource.

An assessment of the facility’s exterior construction, built in the mid-1980s, found that it was unsafe at wind speeds associated with a Category 2 hurricane, which is a common occurrence in southern Florida.

Since many of the special pediatric services provided at MCH are not available in other area hospitals, a hurricane event would be detrimental to children in need of specialized medical care if evacuations had to take place or if the facility was closed during repair after a storm.

Hospital administrators had to solve a two-fold problem: how to fund the renovation project, and how to conduct the retrofit and renovations without disrupting medical services.

The hospital received funding through FEMA’s Hazard Mitigation Grant Program (HMGP) administered by the Florida Department of Community Affairs (DCA). DCA mitigation staff work with local officials throughout the state of Florida to identify and fund eligible projects to lessen damages from storms.

When flooding occurred in southern Florida in October 2000, a total of \$83 million in HMGP funds was made available for mitigation projects following the President’s federal disaster declaration. A \$5 million HMGP grant was awarded by the State of Florida to help pay for MCH’s \$11.3 million project.

The retrofit involved strengthening the building by encapsulating the three-story structure in pre-molded panels of concrete reinforced with glass fibers. The panel system, anchored into the building’s existing support structure, forms a protective cocoon around the hospital and, along with impact-resistant windows and a strengthened roof, enables the building to withstand winds of up to 200 miles per hour. The architect’s approach of working from the outside to the inside of the building made it possible for surgeries, diagnoses, and nursing care for the hospital’s young patients to continue uninterrupted throughout all phases of the renovation.

The project was completed in the spring of 2004, just prior to Florida’s hurricane season. Young patients and their families did not need to evacuate from the hospital when Hurricanes Frances and Jeanne struck. In addition, the hospital welcomed over 60 children who live at home but depend on ventilators or other powered medical equipment, since the facility is the designated shelter for these children residing from Miami to the Florida Keys.

Not only children in need of medical care found refuge at MCH. Kevin Hammeran, Senior Vice President and Chief Operating Officer for the hospital, explained that the safety of the medical staff is also a consideration when a hospital is designated as a hurricane shelter. “The strengthened building has enhanced the hospital administration’s ability to recruit staff to serve during hurricanes. Many employees feel safer at the hospital during a storm than in their own homes.” He continued, “We also have eliminated barriers by providing on-campus shelter for family members of storm-duty staff. Knowing their spouses and children are within the safe confines of the hospital gives peace of mind to those working through the storm.”

During Hurricane Frances, MCH was the temporary refuge for nearly 1,000 staff members and their families. In 2005, the hospital hosted medical evacuees and families during evacuations for Hurricanes Katrina and Wilma. MCH has proven to be a safe haven for sheltering sick children and those who care for them.

### Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region IV**

State: **Florida**

County: **Miami-Dade County**

### Key Activity/Project Information

Sector: **Private**

Hazard Type: **Hurricane/Tropical Storm**

Activity/Project Type: **Retrofitting, Structural**

Activity/Project Start Date: **01/2003**

Activity/Project End Date: **09/2005**

Funding Source: **Hazard Mitigation Grant Program (HMGP)**

Funding Recipient: **Critical Facility - Medical**

Funding Recipient Name: **Miami Children's Hospital**

Application/Project Number: **9999**

### Activity/Project Economic Analysis

Cost: **\$11,351,487.00 (Actual)**

Non FEMA Cost:

### Activity/Project Disaster Information

Mitigation Resulted From Federal  
Disaster? **Yes**

Federal Disaster #: **1345 , 10/04/2000**

Federal Disaster Year: **2000**

Value Tested By Disaster? **Yes**

Tested By Federal Disaster #: **No Federal Disaster specified**

Year First Tested: **2005**

Repetitive Loss Property? **Unknown**

## Reference URLs

Reference URL 1: <http://www.fema.gov/government/grant/hmgrp/index.shtm>

Reference URL 2: <http://www.dca.state.fl.us/>

## Main Points

- MCH underwent a state-of-the-art retrofit to enable it to withstand a Category 4 hurricane.
- A \$5 million HMGP grant helped pay for the \$11.3 million project.
- Surgeries, diagnoses, and nursing care for the hospital's young patients continued uninterrupted throughout all phases of the renovation.
- MCH sheltered patients, staff, and their families during Frances, Katrina, and Wilma.
- MCH has proven to be a safe haven for sheltering sick children and those who care for them.



The brightly-colored exterior of the Miami Children's Hospital.



The renovation project begins.