

# Rising Above Iowa's 2008 Flood

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By CHAD WARE, RN, MSN

**T**he Iowa floods of 2008 have been called “Iowa’s Katrina” by some, because the scope was unimaginable. The Cedar River, swollen by heavy rains, raged southward, and on Sunday, June 8, the waters began to overwhelm communities along its banks. Each town recorded flood crests several feet above earlier record levels. Levees failed. Dams disappeared under water. Downtowns were submerged: Charles City, Waverly, Cedar Falls, Waterloo, Vinton, Palo.

Downstream, Cedar Rapids watched as the river rose and strengthened.

Flooding in our area is not unusual, and part of Cedar Rapids lies in what the Federal Emergency Management Agency (FEMA) designates as a 500-year flood hazard area, meaning there is a 1 in 500 (0.2 percent) chance of flooding in any given year.

Floods in 1961, 1993 and 1999 set records. But in 2008, the river’s power broke them all, covering 10 square miles of Cedar Rapids, impacting 940 businesses, displacing 9,000 employees in the area and flooding 5,400 homes, resulting in the evacuation of 19,000 residents. And, for the first time, Mercy Medical Center had to evacuate, too.

Mercy Medical Center in Cedar Rapids is a 445-bed hospital located above the flood plain, about 10 blocks from the river. The hospital’s lowest elevation is the south entrance, a bit more than 27 feet above the river’s normal level and 15 feet above flood stage, so we never dreamed the Cedar River waters could reach us. We stayed high and dry during the earlier inundations. But the June 2008 floodwater came fast and strong, and soon nearly surrounded the hospital, which held 183 patients at the time.

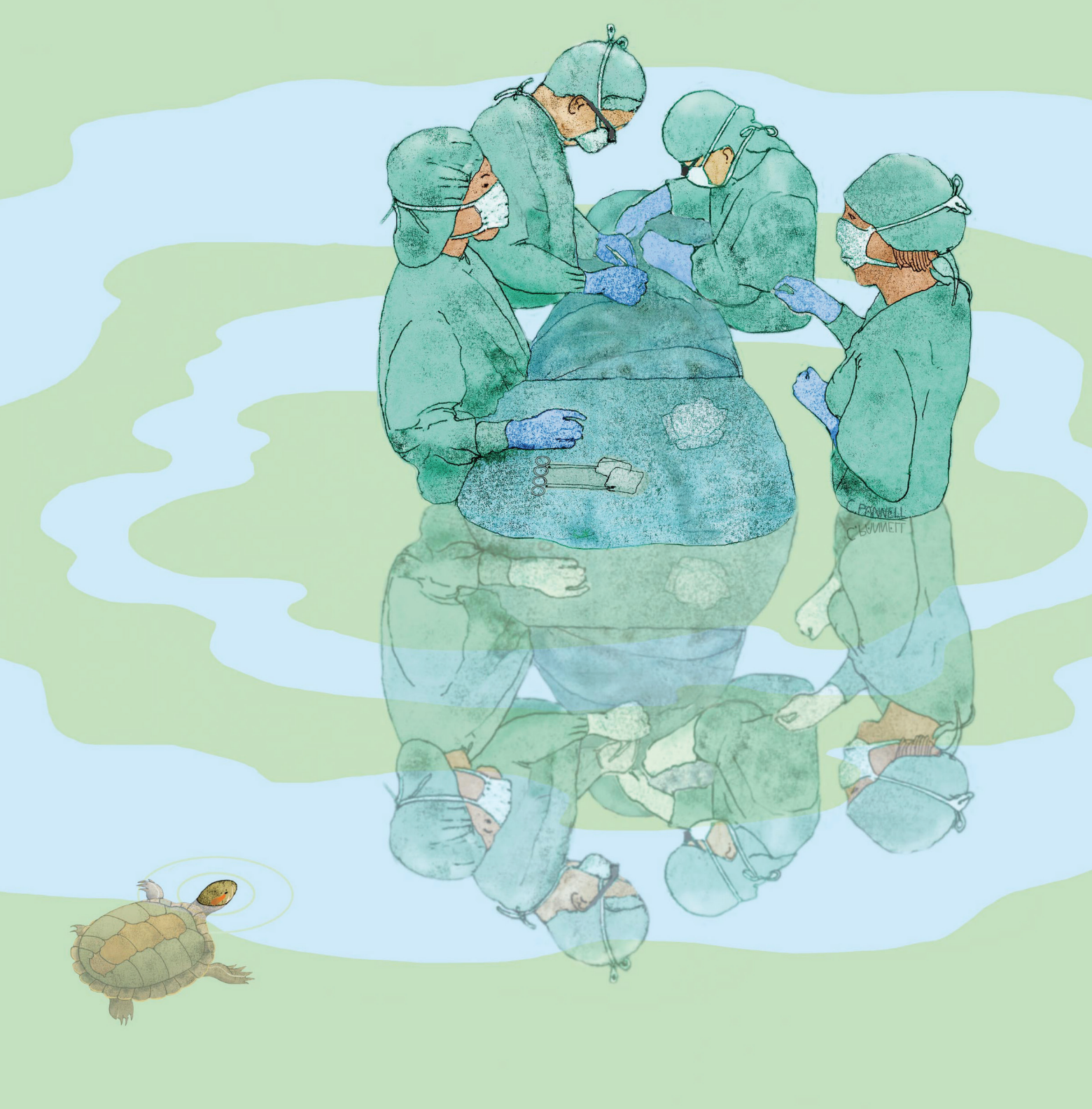
Mandatory evacuations in parts of the city

began on Tuesday, June 10. On Wednesday, Mercy activated its emergency operations plan. By 12:14 a.m. Thursday, the Cedar River was at 19 feet — 7 feet above flood stage — and rising. Three downtown river bridges had to be closed, an electrical substation flooded and power began failing for thousands throughout the city. Mercy’s emergency power switched on.

The water continued to rise, and, by evening, Mercy feared for its electrical system — housed in the basement, where water was seeping in. Mercy’s staff and state and local emergency centers began preparations to evacuate Mercy’s patients, an extensive logistical undertaking. By 7:30 Friday morning, all 183 patients had been safely transported to other facilities. A half-hour later, water began pouring into the electrical switching room in the hospital’s basement.

At 1:04 p.m., the Cedar River crested at 31.11 feet — nearly 20 feet above flood stage.

The 2008 flood and its aftermath were remarkable, life-changing experiences that challenged us as people and as an organization. The impact and scope were enormous. It was thanks to solid emergency preparedness planning, executive leadership and extraordinary commitment from our employees that Mercy was able to keep its



patients safe during this natural disaster. We pulled together, and we were embraced by our community in ways that we will never forget.

#### **FROM HELPERS TO VICTIMS**

For years, practicing our disaster plans meant focusing on the best responses in a variety of scenarios, but, in all of them, we viewed ourselves as

a source of help — not as disaster victims. Ironically, Mercy had been planning to participate in a communitywide disaster drill on June 12 involving a scenario tied to an annual week-long, statewide bicycle touring event that attracts thousands of riders and visitors from all over the world.

On June 12, the communitywide disaster was no drill. And though we had a well-rehearsed

disaster plan, the unfolding real-life scenario of the flood underscored the importance of flexibility and ability to adapt to changing circumstances during an emergency. In our case, our emergency response plan had to encompass protecting ourselves — employees, patients and the hospital's operations.

Mercy follows an “all-hazards” emergency management plan that activates our Hospital Incident Command System (HICS), a formal method hospitals use to set up procedures and a chain of command for dealing with emergencies and other events. The system is cross-functional with procedures that agencies such as emergency medical services (EMS), law enforcement, public health and fire departments use, so all emergency responders can communicate and respond effectively without duplication of resources.

Good emergency operations plans make it possible to react to a dynamic environment. Our incident command center opened on June 11 and continually evaluated the flood's threat to the hospital and our ability to provide safe care. From the CEO to the bedside care providers, patient safety was the main focus and drove many of the decisions. For example, at 7:42 a.m. on June 12, Mercy and most of downtown Cedar Rapids lost power after an electrical substation flooded. Our emergency generator power started instantly, but as a precaution, we canceled elective surgical procedures.

Our incident command center maintained communication with our local emergency management agency. We kept hospital staff updated on road closures and water levels, which seemed to change hourly. As water began to cover roads only four or five blocks away, we saw it was likely that the flood would reach our building. We asked our employees to spend the night at Mercy, and as water began seeping into areas in the basement and on the ground floor, we began planning to relocate affected departments.

Staff moved cars from our parking ramp as the floodwaters closed in. Our facilities employees plugged and sandbagged toilets backing up in the basement as we took on water. There were several feet of water inside the ambulance garage, and I was helping a patient over a 4-foot-high mound of sandbags when Mercy made the call to evacuate departments from the ground floor to the first floor, which included moving the ER so we could

continue responding to emergencies.

As the floodwaters rose outside, our nurses and clinical staff maintained a safe, calm environment inside for our patients. Many non-clinical Mercy employees pitched in to help build sandbag walls along the interior and exterior walls of hospital areas vulnerable to floodwater. In the basement, the sump pumps were working, and we made calls for more, but as the water rose outside, so did an unacceptable risk: Mercy's electrical system, housed in the basement, was vulnerable. If enough water seeped in, all power to the facility — including the emergency generator power — could be knocked out.

It was time to prepare to move our patients out. We contacted state emergency management officials to discuss transfer options based on our patients' requirements. Under Iowa's emergency plan, the state department of health is in charge of locating beds available in other medical facilities and coordinating arrangements. We called in additional physician staff members to assess patients for medical needs and to help prioritize transfers. Family members were notified.

We evacuated all 183 patients on June 13, finishing at about 7:30 a.m. A Mercy health care professional accompanied each patient and carried the patient's medical records. A local company, Area Ambulance Service, coordinated

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transportation, with ambulances coming from as far away as Peoria, Ill. — nearly 200 miles — to safely transport patients to other medical facilities throughout eastern and central Iowa. With so many patients, each of whom had specific medical requirements, we needed a transportation fleet. The state emergency management agency sent military Humvees to transport ambulatory patients, and the local emergency management agency helped coordinate buses designed for door-to-door transport of elderly and disabled. Nearby St. Luke's Hospital worked with our staff





## LESSONS LEARNED

**M**ercy is better prepared today for any sort of future disaster. After the 2008 flood, we gathered input from more than 25 debriefing sessions at the front line staff, supervisor and administrative level and categorized these important findings:

**Equipment Tracking** — We found we need a departmentally managed property inventory. When we evacuated multiple areas of the hospital, it was difficult for departments to relocate equipment specific to their operations with any assured accuracy. Currently, several departments have begun identifying and labeling equipment. We are still working to find the best way to implement this hospitalwide.

**Facilities** — It's vital to continually evaluate your emergency power at least once a year. With ongoing construction and relocation of services, the loads on the system increase. Also, some key areas may be missed in the planning process. Currently, we are considering increasing the number of sump pumps and adding more sewage backflow protection. We're also studying adding a review of emergency power to our preventive maintenance program.

**Labor pool** — Managing staff at a time when they were doing work outside their normal roles and departments was a challenge. Having a well-planned, smooth-functioning labor pool procedure is critical in a long-term event. We planned a management training event to develop this procedure.

**Planning** — We found that the planning function is an integral part of preparedness as well as response. Pre-planning and ongoing planning during an event are also equally important. We

have developed a full-time emergency management coordinator position. We have training planned on the Hospital Incident Command System and specific training with those in command staff roles.

**Fiscal discipline** — Fiscal responsibility is a mitigation activity for a disaster event. The phrase “save for a rainy day” is indeed sound advice. We were fully insured and had a financial cushion that allowed us to immediately start moving forward after the flood. Disaster planning aside, the flood also underscored how critical it is to invest in infrastructure. Some of our major investments in central plant and information technology proved to be keys to our success during and after the flood. We continue to follow this approach.

**Communication** — The calling tree method we used to get information out en masse in a short time was not sufficient. Some staff members were not reached, and messages were sometimes misinterpreted as they were passed along through many relays.

For ongoing employee communication, we set up multiple information points at entrances to the hospital for updates to staff. We added the updates to our email and Internet site as well.

Our marketing department heard many kudos for excellent information flow with media to inform the public. Also, redundancy and flexibility built into our IT infrastructure made a big difference in evacuation and recovery efforts. Dual data centers ensured we had backup. Since the flood, marketing has updated its emergency communications plan to include initiatives taken during the flood.

**Culture/Community** — We can't overemphasize the importance of ICARE/Mercy Touch, which reflect the

values of the organization and mission of the Sisters of Mercy, and how that contributes to a distinct culture at Mercy. We credit that with inspiring employees to take on new roles and work toward hard-to-reach goals set by administration. Employees were reassured their jobs were safe. We had ongoing appreciation events and communication during and after the flood. Employees were especially grateful for employee relief, first aid and mental health issues addressed by the organization. We continue to develop community partners and strive to be an employer of choice.

**CEO/Incident Commander** — The emergency management community and hospitals have generally advocated that the hospital CEO not be the incident commander; he or she should manage the organization, not the incident. By delegating this responsibility, our CEO was able to be a visible leader both in our organization and in the community. This is now an ongoing practice in our HICS structure.

**HICS/Leadership** — The Hospital Incident Command System works. It is an effective tool to transition from daily operations to managing an unusual event. This allowed us to stay focused on the organization as a whole, not just pieces of the event. Administrative teamwork proved exceptional during and after the flood. Staff has developed a trust and relationship among themselves and with other senior leadership. They were able to cooperatively manage the event while decentralizing leadership to make timely and effective decisions. It's critical that an organization produce leaders who step forward in an event. Leadership development programs help, and we continue that training.

— **Chad Ware**

## EVACUATION — KEY POINTS

We hope that by sharing Mercy's experiences with evacuating 183 patients, other organizations can better prepare, mitigate, respond and recover from future disasters.

### WHAT THINGS WOULD TRIGGER AN EVACUATION IN YOUR FACILITY?

**What we found:** Pre-plan and pre-empt. Discuss ahead of time what events could interrupt hospital operations enough to make it necessary to evacuate patients. Then identify what actions could prevent the circumstances from happening. Thinking through scenarios that would lead to evacuation — and preventive steps that might be taken along the way — means it will be easier to recognize and respond to a developing situation in the middle of a crisis. Making the decision to evacuate is much more difficult without such pre-planning.

**Action we are taking:** Working on developing a response-level system within the organization that will help us transition, step by step, from daily operations into the Hospital Incident Command System.

### PATIENT TYPING OR IDENTIFICATION

**What we found:** Have a standard system in place statewide that identifies patient types — for example, medical, surgical and orthopedics — to help in matching patients with beds in appropriate facilities if an evacuation is necessary. This is important because not all hospitals are able to care for the same types of patients — for example, not all orthopedic departments take care of total joint replacements, etc. The system should also take into account isolation patients and the fact that critical care beds are not the same for every hospital.

Notify the state as early as possible with specifics about the patients to be transferred so they can start locating beds. It speeds up the operation and removes a large load from the hospital.

**Action we are taking:** Ongoing meetings with the State Department of Public Health have identified Mercy Medical Center's detailed communication during the 2008 flood as one of the keys to the

successful patient evacuation. Representatives at the state level are working on the bed identification system.

### TRIAGE PATIENTS WITH PHYSICIAN INVOLVEMENT

**What we found:** Having physicians (rather than only nurses) involved in the triaging of patients allowed us to make better transport decisions, such as sending the most critical patients to the closest hospitals in order to minimize transport time. As we started transporting patients, we realized that one of the physicians helping triage the patients on the units had an EMS background. We made him the transportation officer, drawing on his experience in order to match transport teams to patients and their needs — the more critical patients had to be transferred by a team that could provide advanced life support, for example. We also found that having a physician as transportation officer allowed us to take one final look at the patients and their status just before they left our facility.

**Action we are taking:** We added this requirement to our emergency management policy and evacuation policy.

### MEDICAL RECORDS

**What we found:** Have a pre-planned way to ensure medical records are transferred with the patient. Look at the other facilities' capabilities, and make sure they are able to accept the data you send them. A paper copy may be the best way initially, but follow up with the capability to access the patient's electronic medical record remotely. In our case, PatientKeeper (a system physicians used to access patient records) was rapidly backed up off site, and that allowed access from other facilities.

**Action we are taking:** Maintain current policy, but we are looking at adding redundancy for our current electronic medical records and backups so we have access should infrastructure go down. The plan is to hold all of our data in two different locations, allowing us to switch seamlessly if one is lost in a disaster.

### PATIENT ACCOUNTABILITY

**What we found:** In the process of an evacuation, it is critical to keep track and maintain accountability for your patients — where they are and where they are going. Also, take a proactive approach to keeping families informed. As each evacuation log was completed, we confirmed that the patient reached his or her destination and notified families. Following this procedure also enabled us to limit phone calls coming into the facility and improved satisfaction of the patients and their families.

**Action we are taking:** Specifics in the way we maintained accountability were written immediately after the flood and added to our evacuation policy. Our current plan uses the hospital's social services workers to help in getting evacuation information to families, a process that requires some coordination as there often are multiple people with whom a patient would like us to communicate. We also are looking at options for setting up published phone numbers for patient information in the event of a disaster.

### COMMUNICATION

**What we found:** Maintain ongoing communication with your next levels of support — the county and state emergency management agencies. We had our liaison at the Linn County Emergency Operations Center and a direct phone line to the State Emergency Operations Center. One point of contact for each ensured that reliable and accurate information was passed among all agencies.

**Action we are taking:** We currently are partnering with our county and state partners to ensure this relationship is maintained.

### DRILL

Practice evacuation scenarios internally (hospitalwide) and externally, with outside agencies like police, fire, EMS, every year or two.

— *Chad Ware*



to maintain medical records and also accepted many of our evacuated patients.

#### COMMUNITY SUPPORT AND THE MERCY TOUCH

All of us carry memories and images of profoundly moving moments of strength and giving as our employees and our community supported Mercy during the flood. Area contractors and plumbers immediately offered their assistance

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through labor and additional equipment. One local construction employee — who was on vacation — came to help us seal up an exhaust vent that was taking on floodwater when sandbags gave way. His skill and ingenuity in fashioning a plywood plate and bolting it to that vent to hold back the water were a true blessing.

As the media put out a call for additional manpower to help Mercy, our employees, their families, physicians, trustees, National Guard members and the community at large rallied around the hospital, standing hip-deep in floodwater to build sandbag walls. As darkness fell, this army of volunteers formed human chains to combat the rising water.

Mercy employees were awe-inspiring. We believe their outstanding dedication stems from our organization's values, represented by our Mercy Touch model of medical excellence and compassionate care. For example: the Mercy employee who worked nonstop, never leaving the hospital to take a break or check on her own home situation, even though her house was flooded. Two employees from the catheterization lab, sandbagging in their scrubs. They stopped only to clean up and return to the lab to work; then they came back outside to continue sandbagging.

"You don't tell people to do that," says Sr. Susan O'Connor, RSM, the hospital's vice president of mission integration. "It's just who they are. They are a part of the organization."

Indeed, Bob Olberding, Mercy's director of plant operations and a 38-year Mercy employee, worked continually to protect "my hospital," as he

calls it. An ER nurse had to take away his boots and phone to make him stop and rest. (Olberding won an Iowa Hospital Association Heroes Award for his outstanding efforts during the flood.)

#### THE AFTERMATH

About 1,000 community volunteers worked to protect our facility, and sandbagging and sump pumps kept the water in the building from rising more than a few inches. We never lost emergency power. Still, more than 200,000 square feet of Mercy, or about 20 percent of the hospital, took on floodwater, causing major equipment damage in radiology and the catheterization lab, total loss of the pharmacy robot and of an MRI machine. Mercy sustained \$68 million in damage and lost revenue.

Tim Charles, Mercy Medical Center's president/CEO, played a crucial role in uniting and inspiring our employees to press forward to get the organization back up and running. On Friday, after the patients were gone and the river had crested, he held an all-employee meeting in the cafeteria and told everyone their jobs were safe. That reassurance was key, and relief was evident on many faces. He also set the goal of reopening Mercy in 14 days — a huge task, but the challenge united us.

Great ingenuity and creative problem-solving by Mercy staff during and after the flood helped speed up the recovery process. Damaged areas in the hospital were sealed off to prevent the spread of contamination. Those not assigned jobs in the hospital were directed to help in the community and also to support coworkers personally impacted by the flood.

Employee morale was a priority, and leadership held regularly scheduled meetings to keep staff apprised of the hospital's status. Employees were working in crowded or less-than-optimal situations while their work areas were brought back up to Mercy operational standards. We formed a team to develop morale-boosting events: cook-outs, prize drawings, special treats and special "Together — We're Rising Above It" T-shirts. Mental health respite services were also provided.

Among other highlights:

- National Guard remained on site at Mercy for several days to provide security and support. Mercy's food and nutrition department kept Guard members fed throughout their deployment at Mercy.

■ Hall Radiation Center — the only radiation center in Cedar Rapids — was the first service to re-open at Mercy, on June 16. Iowa Gov. Chet Culver held a news conference at Mercy to celebrate this milestone in our recovery process.

■ The Mercy Foundation established an employee flood relief fund that provided a \$750 gift card for each of 221 flood-affected employees to help with critical needs. Long-term needs continued to be addressed as employees rebuilt and recovered.

The flood was a trying time for our entire com-

munity, but Mercy used it as a rebuilding opportunity. We turned our flood experience into opportunity for redesign, improvement, centralization of services, increased efficiencies and adding new technologies to be “Better Than Ever,” a phrase that united us. We are stronger today for having been through the flood together.

**CHAD WARE** is nurse manager for the emergency and trauma center at Mercy Medical Center in Cedar Rapids, Iowa. He led Mercy’s evacuation of 183 patients during the June 2008 flood.

## EVENT TIMELINE

### JUNE 11

**10:30 a.m.** — Mercy Emergency Operations Center opens in response to flooding along the Cedar River.

### JUNE 12

**7:42 a.m.** — Electrical power lost; emergency power on.

**9:10 a.m.** — All procedures underway at time of power loss finished, and all elective procedures scheduled for the day canceled; arrangements for all inpatients ready for discharge underway.

**11:20 a.m.** — Sewer backup begins at Mercy Medical Center.

**12:15 p.m.** — Sandbagging begins at Mercy.

**12:39 p.m.** — First departments (linen and supplies) move from hospital basement as water seeps in and rises.

**5:08 p.m.** — Emergency Dept. moves to Eye Surgery Center when floodwaters reach the doors and cut off access for patients; sewer backup is flooding the department.

**5:16 p.m.** — Pharmacy begins relocation because of flooding.

**5:54 p.m.** — CT Imaging department on ground floor closes due to flooding.

**6:06 p.m.** — First call to state emergency operations center to discuss evacuation. In accordance with the statewide plan, the Iowa Department of Health begins locating and coordinating available beds, and Mercy begins its evacuation steps.

**7:12 p.m.** — Sandbagging restarted to build up part of Mercy’s sandbag levee by three more feet.

**7:15 p.m.** — Ambulance traffic diverted to nearby St. Luke’s Hospital.

**7:29 p.m.** — Preparation of patients for evacuation begins.

**7:38 p.m.** — Triage assessment to determine evacuation order and transfer mode for patients begins.

**8:35 p.m.** — Women arriving in labor directed to St. Luke’s.

**9 p.m.** — Official evacuation of patients order given by Tim Charles, Mercy president and CEO.

**9:45 p.m.** — Evacuation of critical care patients to St. Luke’s Hospital begins.

**10:41 p.m.** — Sandbagging completed.

### JUNE 13

**12:43 a.m.** — Team of 25 National Guard members arrives to help with general security at the hospital.

**7:30 a.m.** — Evacuation of all patients completed.

**8 a.m.** — Water pours into electrical switching room in basement; basement evacuated.

**1:04 p.m.** — Cedar River officially crests at 31.1 feet. Outside the Mercy building, the water is nearly 4 feet deep; the water level inside the hospital is less than 1 foot, thanks to the sandbagging and pumps.

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# HEALTH PROGRESS®

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