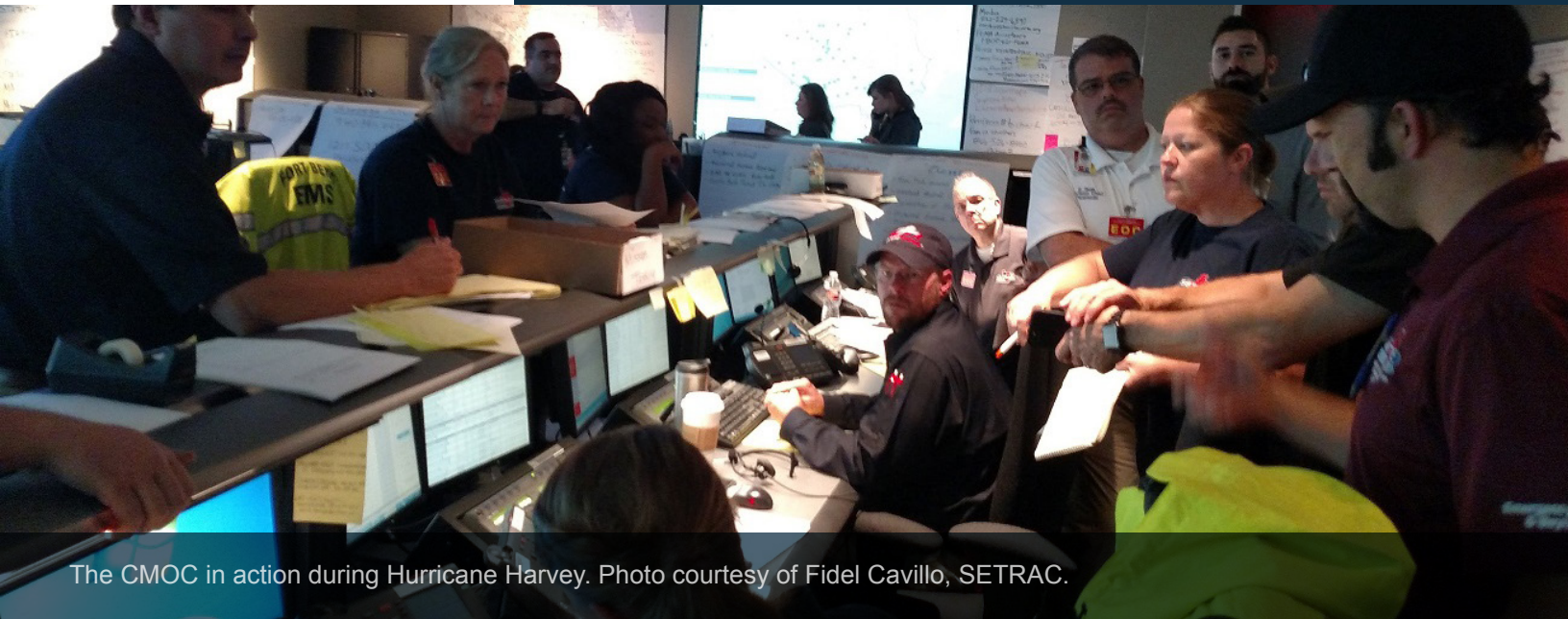




**TRACIE**  
HEALTHCARE EMERGENCY PREPAREDNESS  
INFORMATION GATEWAY

# EVACUATING A REGION:

## How a Healthcare Coalition Helped Evacuate 1504 Patients from 45 Facilities after Hurricane Harvey



The CMOC in action during Hurricane Harvey. Photo courtesy of Fidel Cavillo, SETRAC.

*Floodwaters from Hurricane Harvey inundated 23 out of 25 southeast Texas counties covered by the Southeast Texas Regional Advisory Council's (SETRAC) Regional Healthcare Preparedness Coalition (RHPC). Many hospitals and nursing homes were evacuated while others closed their submarine doors, sheltered in place, and received critical supplies via helicopter and high-water vehicles. ASPR TRACIE interviewed Lori Upton (RN, BSN, MS, CEM), Director of Regional Preparedness and Operations for SETRAC, to learn more about healthcare facility evacuation from a regional perspective.*

### ■ John Hick (JH)

**Lori, can you please describe your current role at SETRAC?**

### ■ Lori Upton (LU)

I currently serve as SETRAC's Director of Regional Preparedness and Operations. We are the contracted agency for the Texas Department of State Health Services for the Hospital Preparedness Program. We cover three trauma service areas of TX, which include 25 counties, approximately 180 hospitals, 900 nursing homes, one tribal nation, and about 277 jurisdictions. We serve 9.3 million people. My team includes an Assistant Director, three Area Coordinators (one per trauma service area), a Long-Term Care Coordinator who works with our nursing homes, and several educators.

### ■ JH

**What kind of role does SETRAC play during an event?**

### ■ LU

During an event the operational/response arm of our RHPC is the Catastrophic Medical Operations Center, or CMOC. This includes 13 members that are made up of SETRAC staff, Regional leaders, and hospital representatives. The CMOC can only be activated by a jurisdiction having authority, by a public health authority, or by the State of Texas. Hurricane Harvey was considered a Level 1 activation, so our staffing included: an operations chief, a logistics chief, a clinical director, our

transportation sector coordinators (air and ground), a regional public health liaison, and five hospital representatives.

When those representatives enter the CMOC, they lose their facility's identity and function as regional entities, looking out for all hospitals within a certain geographical area that they're familiar with because they've been planning with them.

*The CMOC is a Regional asset, written into our Regional catastrophic plans and our UASI plans. It's owned by SETRAC and is validated by the Office of Emergency Management through an agreement.*

The role of the CMOC is to carve out the medical component while working within the overarching scope of ESF-8. This ensures that medical needs are not in the same queue as debris management, for example, and are addressed separately and appropriately by medical personnel. This has worked very well in our area. The Region and state use the same software program for notification, information gathering, and bed reporting every day. In fact, today, we are using it to handle our IV solution shortages. It is also used by EMS agencies to identify capabilities and capacities within each hospital in the area. This makes for a very easy transition during disaster time. All hospitals can push critical information to the CMOC using our communications system and this can be pushed back out to the entire region and state if necessary.

During an emergency situation, if a hospital was experiencing an internal disaster or considering evacuation, they would change their facility status in our notification system. The system would then send a notice to SETRAC as well as the Office of Emergency Management in the county or city where that hospital resides so they know there is an issue. Our duty officer then contacts the hospital to see if there is any assistance we can provide to keep them running. If we can't fill the request regionally, we push the request up to our Disaster District Chair, who is our link to the state.

## ■ JH

**Walk us through Hurricane Harvey and the flooding event from your perspective.**

## ■ LU

In the beginning, we shared the information through daily conference calls with healthcare providers and nursing homes. During these calls, we'd provide status updates, recommend protective measures, and share the number to call in case they decided to evacuate a facility. We also let them know we would be checking in with affected facilities regularly regarding their decisions to shelter in place or evacuate. If they said they

were sheltering in place, we recommended they had seven days' worth of supplies and equipment. If they said they were evacuating, we asked them if they had enough resources and a place to go, and we asked them to let us know when the last person leaves so SETRAC could ensure they were safely out of harm's way. We also told facilities that if they had to change their plans, call us back, and we will help you identify alternate locations and assets to help move patients.

We track patients that we move two ways. During Hurricane Harvey, we relied solely on the virtual mission task board we had built for us in WebEOC, which can be used to gather information, make bed assignments, and provide data to the transportation sector (which then looks at closest staging locations and assigns ambulances to transport and keep the mission moving). It also allows us to identify points of contact once the patient arrives at their new location.

We also use "EMTrack," which allows us to begin tracking patients as soon as they enter the hospital. This provides a more accurate data picture—we found it makes more sense to start tracking when patients arrive at the hospital, rather than when they leave an incident site.

■ JH

**What happened with Ben Taub Hospital—was their evacuation canceled because of floodwaters?**

■ LU

Ben Taub was prepared to shelter in place, but they contacted us early on—there had been a sewer breach and water had gone into the lower level where they stored food and other supplies. This hospital cares for some of the most critical patients in our region; they are very fragile to move and it is hard to find a like acuity facility to receive them. First, we considered using a helicopter to drop food sources at the hospital next door, then transport them to Ben Taub so they could feed patients and staff. As we were working on these logistics, we were also working with the staff to determine which of the more critical patients to evacuate if necessary. We were only able to evacuate some of the five patients we wanted to move before the water came in and prevented ambulances from being able to access the area.

■ JH

**Can you tell us what happened with Beaumont Baptist Hospital?**

■ LU

They were also affected by quickly rising waters. Our Region was hit three separate times by Hurricane Harvey's rains. On the third round, the water caused many hospitals to basically become islands. In Beaumont the city's water pumps stopped functioning. Without the ability to pump fresh water, they decided to evacuate the hospital. We received their patient manifest and helped prioritize patients for evacuation. The Beaumont area is east of Houston and there is just one major highway that comes into that area (I-10, which was under water at that point). We had two choices: take patients north or continue east into Louisiana (LA). Many patients

were evacuated to LA; fewer went to facilities north of Beaumont. Once Beaumont Baptist decompressed, they brought in water trucks to take care of remaining patients and staff. These trucks were brought in on ferries and changed nearly daily, since they only had 5,000 gallon capacities (not enough to run a hospital for very long). For the most part, people and supplies were moved using helicopters, and some supplies were brought in via ground travel from LA.

■ JH

### **How did you figure out who had beds available for Beaumont patients?**

■ LU

Baptist Beaumont had identified several hospitals in LA that were capable and agreeable to accepting their patients. The ambulance service that normally serves the Beaumont area also has operations in LA so transportation fell together nicely. We can get bed reports from the State of Texas, but not usually LA. We have a good working relationship with LA Public Health so facilitation of patient movement was easier. Once residents were ready to be discharged home from their original hospital, shelter, or receiving hospital, we had to ensure the home they were going back to was habitable and had functioning utilities as well as a point of contact to receive that person. This was accomplished through coordination with our CMOC, Medical Incident Support Team (MIST) members, and local public health and emergency management.

**1504**

Patients were evacuated from

**45**

Facilities in the SETRAC Region

■ JH

### **What were some overall challenges or lessons you learned from this experience?**

■ LU

Our biggest problem was access. This was a flooding event with up to 60 inches of rain. We had established staging locations for ambulances coming in under state and federal contracts, but as the water continued to rise, the staging locations were threatened, so we continued to move west of the city. As we moved west, the water kept following us, so it took us several days to get to some patients because of the rising water. Roadways in 23 out of 25 of our Region's counties were completely impassable.

We did identify some shortfalls. We need some high-water vehicles and we need to improve coordination with air transport and rescue providers. We also need to improve coordination with our federal partners, particularly when they bring in the helicopters and high-water vehicles. While

everyone was doing what they needed to do, at times we lost sight of the whole picture because there were so many moving parts moving in their own spheres.

We are currently refining some of our WebEOC boards so that we have more robust information. This was completely different from Hurricane Ike (2008), where we had 56 hospitals and 200 nursing homes evacuated. After Harvey, while we only evacuated 20 hospitals and 25 nursing homes, the struggle was greater because of the quickly rising water and our inability to reach people. That said, we've put a lot of mitigation and planning efforts into the Texas Medical Center since Tropical Storm Allison hit in 2001.

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*At first, search and rescue teams were rescuing people from their homes and bringing them to hospitals, which weren't ready to shelter 600 people in addition to existing patients and staff. Hospitals should never be used as a sheltering location.*

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They've got submarine doors in place and monitor bayou cams— once the water hits a certain level, all hospitals close their submarine doors to block rising water. The green space that surrounds the Texas Medical Center has been dredged lower to help retain more water, and parking garages help serve as reservoirs that can hold water (versus it flowing into lower levels of healthcare facilities).

■ JH

**What was the interface like between ESF-8 and ESF-6?**

■ LU

We've been able to apply lessons learned along the way. Texas holds a contract with Baptist Children and Family Services (BCFS) for medical sheltering. BCFS brought staffing and equipment to open a medical shelter at Reliant Stadium. Harris County also opened a general shelter with a medical component. The City of Houston opened a large shelter at the convention center with a medical component. Our schools of nursing and medicine helped staff those facilities. So did the state contract.

These three served as big regional shelters which alleviated a lot of strain on some of our smaller communities. Once we got patients into these medical shelters, it was much easier to get them the services they needed while keeping them closer to home.

■ JH

**Who is responsible for providing medical shelter in Texas?**

■ LU

Public health handles providing medical shelter, and the shelters are staffed with contracted services—a private group that provides staffing

and oversight—which is managed by the State of Texas. Local public health departments are responsible for opening and supplying the shelters. We had Disaster Medical Assistance Teams (DMAT) on site and FEMA also stood up the Federal Medical Station (FMS). Our medical shelters resembled little hospitals—we referred to DMAT as the emergency department. If patients needed more critical care, they were taken to hospitals. If they were relatively stable, we sent them to the FMS (the “wards” in the shelters).

■ JH

**Where were supplies staged and distributed?**

■ LU

FMS brought supplies, but we also had a lot of donated medical supplies stored in warehouses. We sent those to our staging location at Reliant Stadium. On stadium grounds, we had a Harris County Public Health medical shelter, the county’s general shelter, and a large, state-run medical shelter. The central ambulance staging area was also located on the grounds (complete with logistics needs and fuel tankers), as was a helicopter loading zone for patient movement.

■ JH

**Are there any changes being made to evacuation plans as a result of lessons learned?**

■ LU

Overall, hospitals did an excellent job. They’ve been doing a lot of training and exercising over the past eight years, and they’ve also been working on hardening facilities. But I think they realized that they need to be a part of the coalition so they can better understand their role in overarching plans. One of our biggest current priorities is getting nursing homes involved in the coalition and working specifically on evacuation planning and asking for assistance.

After Hurricane Rita, some nursing home patients were temporarily unable to be located. We realized we needed to have a system in place to identify and maybe wandered off—so we track them better—particularly those who self-evacuated and began our Pink Vests program. During Harvey, the media shared photos of nursing home residents sitting in wheelchairs, waiting to be evacuated. I looked at those photos and realized they were doing what they were supposed to—they had their vests on, and their facilities were activating their evacuation plans, but the water rose before they could fully evacuate. Now we need to understand how to harden facilities to ensure patients and staff can evacuate in a safe manner. We have a preparedness boot camp every quarter for nursing homes and long-term care facilities where we teach them about: emergency communications, the CMOC, writing emergency and evacuation plans, the vests, and their role in regional response.

■ JH

**This level of coordination requires a sophisticated knowledge of the CMOC—who staffs it? Who backs you up?**

## CARING FOR RESPONDERS

The Medical Unit Rehab Crew (“MUR-C”) Team is a medical care team responsible solely for first responders. This relatively new concept started in 2016 during a major flooding event in East Texas. Our ambulance bus, or ambus (vehicles that can transport up to 20 supine patients with full medical support), was deployed with CMOC, and responders working the scene went to the ambus for care. The Medical Director for that agency suggested adding a team dedicated to caring for responders to our regional response program.

After Hurricane Harvey, we sent mobile medical units to several counties. Once responders began to demobilize, they reported to the stadium and were checked out there. If they didn’t feel well, we sent them to the MUR-C Team for further treatment. In one instance, we had nine staff members with norovirus symptoms. In addition to treating them, we were able to quickly send more handwashing stations and related supplies to the field.

## ■ LU

Our staff assumes several of the roles in the CMOC and we augment from our hospitals and EMS agencies for the transportation sector and corridor coordinators. The state's Disaster Medical System includes Medical Operations Centers and the Emergency Medical Taskforce (EMTF). One component of the EMTF is the MIST. Because Harvey affected so many of our hospitals, we pulled from MISTs to staff the CMOC. To belong to a MIST, you have to go through training, either as medical hospital personnel or an EMS personnel. They've been heavily trained and deployed before. Ambulance staging areas are staffed by our staff as well as members of EMTF trained as Ambulance Staging Managers.

## ■ JH

**Can you tell us about the coalition's role in recovery?**

## ■ LU

Most of our facilities are back up and running. We completed a lot of damage assessment query forms towards the end of the initial response phase. These forms are available on our emergency management [resource site](#). We ask all of our hospitals to complete those and send them back to us. The data we collect includes the type of physical damage the facility suffered, how much business interruption occurred, overtime staffing and supply expenses, and other financial losses as a result of this event. Those numbers are shared with the facility's county which then includes the data in their county-wide damage assessment claims, submitted for federal declaration and reimbursement support.

### *Editor's Notes:*

*The CMOC is one of the best national examples of a coalition-level multi-agency coordination center that addresses medical issues across multiple jurisdictions and has proven value in multiple large-scale events in the greater Houston area. The functions of information coordination, patient tracking, evacuation coordination and support and resource management are the very functions all coalitions should ensure they can provide during a disaster response. Depending on the size of the coalition and its resources, these may be based in a jurisdictional EOC, conducted virtually, or have their own dedicated space like CMOC, and personnel may be acting on behalf of the coalition, or as a lead for public health, EMS, or other agencies in their "usual" role while also representing coalition interests.*

*It's worth noting that the flooding from Harvey would have been catastrophic for the region's medical services if not for the lessons learned and investment (estimated at \$1 billion) by medical centers into facility hardening after Tropical Storm Allison in 2001 – a true mitigation success story. Many other best practices in alternate care site integration, long term care patient identification, responder care, and expense documentation are also noted in Lori's account.*

