

BUREAU OF PUBLIC HEALTH PREPAREDNESS

PROTECTING THE PALMETTO STATE





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TEAMWORK AND PUBLIC HEALTH PREPAREDNESS



Nick Davidson
Director of Public Health - Interim
Department of Health and
Environmental Control

When I think back over the last several years, I am reminded how critical our preparedness responsibilities are. The results of flooding, disease, wind, ice, etc. are absolutely devastating.

As I write this, we are in the midst of a hepatitis A outbreak. It is our responsibility to coordinate efforts around the entire state to minimize the effects of the disease and to proactively work to limit its spread. While we are certainly out in the field vaccinating those who are at risk, we also have to get education and information to private providers, coordinate with elected officials and emergency management, disseminate data about the status of the outbreak and work as a central point of coordination.

During times of need, Public Health Preparedness (PHP) is involved in all of that and serves as a critical hub of coordination. PHP team members take the lead in developing partnerships to ensure that we are not working in silos. It is critical that we have this coordination hub in order to enhance communication and collaboration, reduce the possibility of duplication of efforts, and streamline the utilization of resources.

PHP team members take the lead in developing partnerships to ensure that we are not working in silos.

Thinking back to our most recent responses, while working in our Agency Coordination Center, it is always clear to me that our entire team must come together to ensure a smooth response. To name just a few, we rely on our environmentalists, lab professionals, administrative staff, nurses, engineers, social workers—and so many others! These team members, be they in the field or in the office, work closely with various associations, our regulated community, and local and state governments to ensure that our efforts are coordinated.

A successful response truly requires both the knowledge of subject matter experts and a good infrastructure (planning, logistics, etc.) by which we can respond. Public Health Preparedness is the critical link that serves as the nexus between the two.

DHEC AT THE FRONT LINES OF HEPATITIS A

The CDC has been helping states deal with hepatitis A outbreaks since 2016, with over 25,000 reported cases, over 15,000 hospitalizations and over 200 deaths nationwide as of September 2019. Fortunately, South Carolina's outbreak is mild compared with the widespread outbreaks in other states, with 409 cases statewide compared to the hundreds and even thousands of cases reported elsewhere.

We want to keep it that way, which is why DHEC is taking proactive measures to prevent a worse outbreak. It won't be easy. The infection mostly affects high-risk groups such as drug users and the homeless, a population that can be difficult to reach for treatment and health monitoring.

Hepatitis A is a contagious liver infection.

Subject-matter experts in DHEC's Division of Acute Disease Epidemiology and epidemiology staff from DHEC's regional offices are spearheading the effort to protect public health and contain the disease within South Carolina.

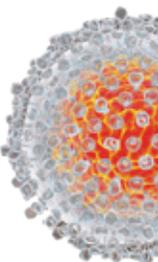
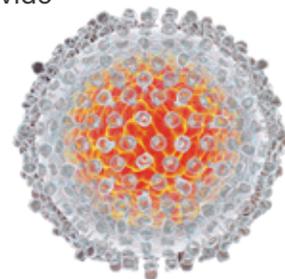
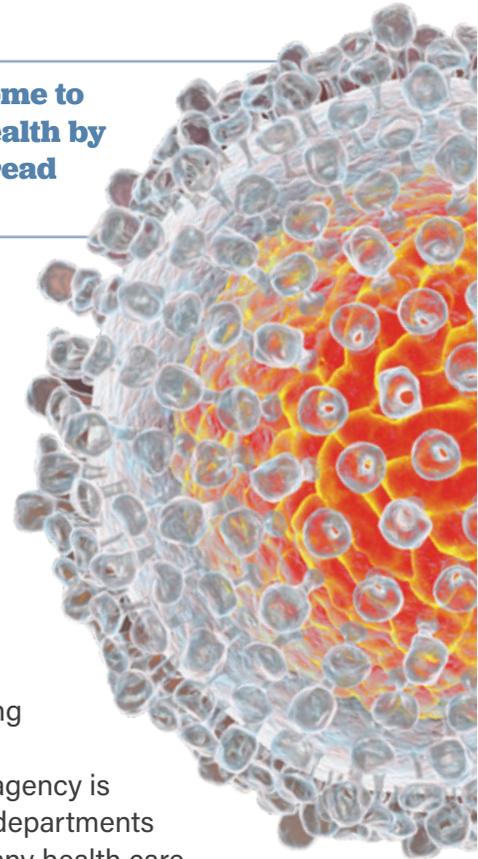
Epidemiology staff have been conducting disease surveillance and investigations, finding exposed people, and providing free testing, vaccinations and other disease control and prevention services. The public, health care providers, clinical laboratories and many others have played an important part in preventing the spread of the disease.

Subject-matter experts at DHEC come to work each day to protect public health by preventing and controlling the spread of disease.

Hepatitis A is a contagious liver infection transmitted through person-to-person contact with infected people, contact with personal items the person has contaminated or by eating or drinking food or water contaminated by an infected person. Most people feel sick for several weeks but usually recover completely. Symptoms include nausea, vomiting, diarrhea, stomach pain or yellowing of the eyes and skin.

DHEC has been vaccinating and educating people in high-risk groups to prevent a widespread outbreak of hepatitis A. The agency is offering no-cost vaccines at local health departments to those at increased risk of exposure. Many health care providers and pharmacies also provide vaccines at a cost.

Through effective partnerships, increased vaccination and greater awareness, South Carolina will be well-positioned to protect the public health against hepatitis A.

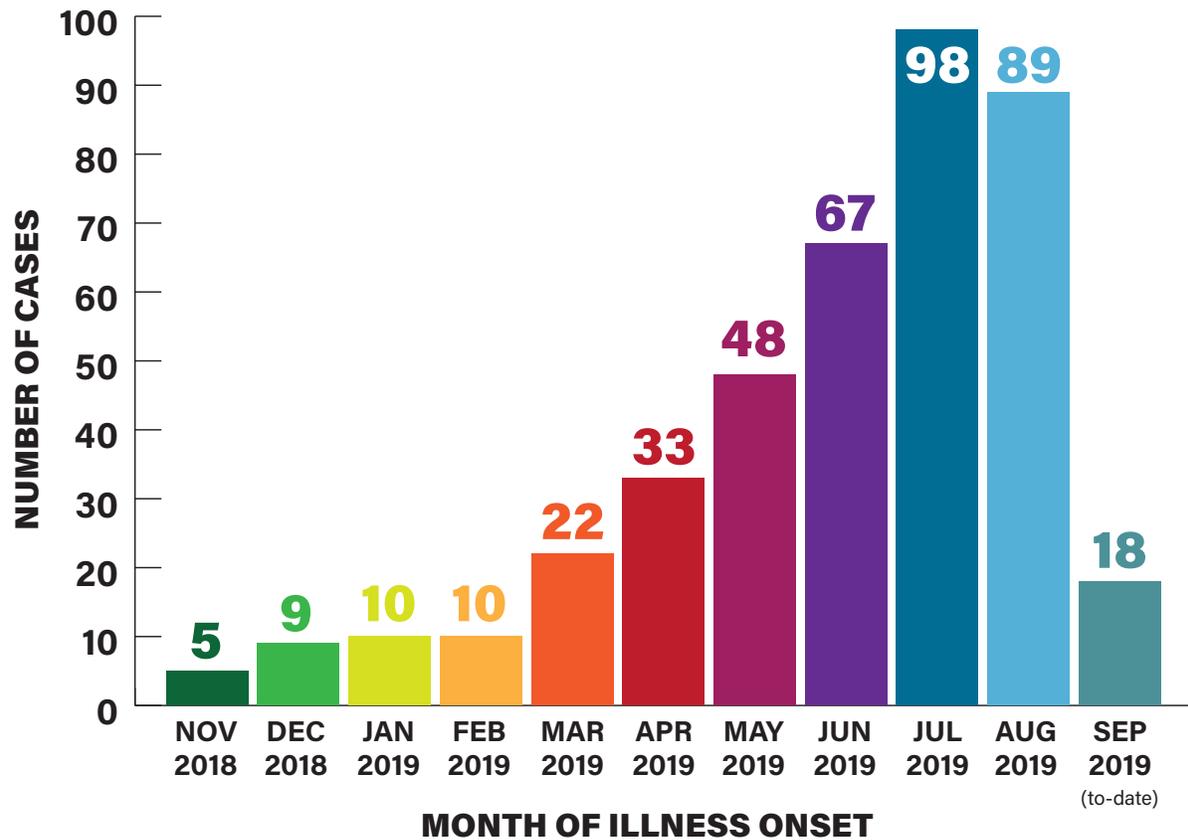




“[DHEC has] established a hepatitis A task force that is coordinating efforts to control the spread of the virus by increasing vaccination rates among high-risk groups, establishing partnerships critical to reaching those groups, and conducting outreach and education efforts.”

*Dr. Linda Bell, State Epidemiologist
Department of Health and Environmental Control*

CONFIRMED CASES* OF HAV INFECTION, BY MONTH OF ILLNESS ONSET NOVEMBER 1, 2018 - SEPTEMBER 13, 2019 (N=409)



*2019 data are provisional and subject to change

Learn more about the hepatitis A outbreak in South Carolina at www.scdhec.gov/HepA.

WHEN DISASTER STRIKES: SOUTH CAROLINA LENDS A HELPING HAND



Thirty seconds of shaking; that's all it took for a 7.1-magnitude earthquake to crack buildings, damage roads, and buckle bridges throughout the Cook Inlet region near Anchorage, Alaska on November 30, 2018. Within 24 hours, 48,000 homes and businesses were without electricity. The power outages happened while 45 aftershocks, all a 2.5 magnitude or higher, continued to shake the Inlet. Sam Walton, with Alaska's Homeland Security and Emergency Disaster Assistance Program, said "It [was] the largest recovery operation we'd seen in years."

GEARING UP FOR RESPONSE AND RECOVERY

Over the next four weeks, local, state, and federal emergency officials worked together to assess the damage, rebuild infrastructure, and get Alaska back up and running. During this time, local and state government officials realized the damage was so significant – shattered schools, destroyed homes, and hundreds of Alaskans with no place to go – that effective recovery efforts would require outside help.

With the help of Alaska governor Michael J. Dunleavy, a request was made to the president for federal assistance. On January 30, 2019, the request was approved, and Alaska received a Federal Declaration for FEMA Individual Assistance and Public Assistance grants, bringing millions of dollars in disaster relief funds to the state.

UNDERSTANDING THE PUBLIC ASSISTANCE RESPONSIBILITIES

FEMA	RECIPIENT (STATE)	SUBRECIPIENT (APPLICANT)
<ul style="list-style-type: none"> ▪ Coordinates with all Federal, State, Local agencies ▪ Establishes Joint Field Office ▪ Collects project and cost data ▪ Approves grants and obligates funds ▪ Provides Technical Assistance 	<ul style="list-style-type: none"> ▪ Educates subrecipients ▪ Works with FEMA to manage Public Assistance Program ▪ Collects project and cost data ▪ Disburses grants to applicants (Ex: Community, county, local public entity) ▪ Monitors and manages use of grants by subrecipients 	<ul style="list-style-type: none"> ▪ Requests assistance ▪ Identifies damaged facilities ▪ Provides information to support request ▪ Maintains accurate documentation ▪ Performs necessary work (repairs, debris removal, etc.)

SOUTH CAROLINA RESPONDS

Alaska's Emergency Management Director used the Emergency Management Assistance Compact (EMAC) to request Public Assistance Officers from other states to help manage the Public Assistance grants.

South Carolina answered the call and sent Amber Rodriguez from the DHEC Bureau of Public Health Preparedness. On February 1, 2019, Rodriguez deployed to Alaska and immediately went to work in the Alaska Emergency Operations Center, where she reached out to municipalities, schools, houses of worship, Native American tribes, and other eligible parties to let them know that Public Assistance grants were available.

Of the 76 eligible applicants across Alaska, 40 sustained enough damage to submit documentation for the Public Assistance grant. Thanks to Rodriguez's efforts to reach those who were eligible for Public Assistance funds, application submissions were more than double what FEMA had projected.

Rodriguez also provided training to local recovery staff on new grant implementation procedures, including the types of assistance FEMA offers and how to request them. She also developed a recovery grant reporting and tracking system to better arrange and communicate information, leaving Alaska with some South Carolina know-how.



AMBER'S ADVICE



The Alaska Department of Homeland Security and Emergency Management had their Emergency Operations Center (EOC) activated for over three months due to significant aftershocks. Many times, people don't realize how long after an earthquake aftershocks can occur. While I was there, we experienced the largest aftershock since the first week after the earthquake, a 4.0 magnitude!

People in earthquake zones should make an earthquake kit with food and water. You should also have an emergency plan for your home and work. It is important to be prepared for these no-notice events since they can strike at any time.

PROTECTING SOUTH CAROLINA: MEASLES UPDATE

SITUATION

From January 1 to June 6, 2019, the Centers for Disease Control and Prevention (CDC) had reported 1,022 cases of measles in 28 states. During this timeframe, South Carolina had not had a confirmed measles case.

HOW TO PROTECT YOURSELF

Measles is a highly contagious virus, but there is something you can do to help prevent getting the measles. The MMR (measles, mumps and rubella) vaccine provides the best protection from the virus. The CDC recommends doses of the vaccine for everyone, taking into account people's age to make sure they get the right dosage.

The CDC recommends two doses of the vaccine for children, with the first dose given at 12 months. All adults born in 1957 or after are recommended to have at least one dose of the vaccine. Certain adults may be at higher risk and the CDC recommends they have two doses of the vaccine. Anyone who travels internationally is also recommended to have two doses of the MMR vaccine.

IMPACT

DHEC wants to be prepared for possible cases in South Carolina. To do this, we need your help to make sure our state is protected. Talk to your health care provider, health department or local pharmacy about what vaccines you need. It's important that all individuals make sure they're up-to-date with the MMR vaccine.



HABITAT FOR HUMANITY: NEW PARTNERS IN RESILIENCY

Each year, South Carolina hospitals and other healthcare providers conduct exercises to simulate deployment of the National Disaster Medical System (NDMS) here in the state. A program of the U.S. Department of Health and Human Services, the purpose of the NDMS is to supplement local healthcare agencies when an emergency exceeds the resources available within a community's healthcare system.

In May 2019, DHEC's Upstate Public Health Preparedness (PHP) team and the Upstate Healthcare Coalition teamed up to carry out a full-scale exercise scenario in which the region received an influx of patients at the Greenville-Spartanburg Airport from another part of the country that had been impacted by a simulated disaster. Whenever the NDMS sends a Disaster Medical Assistance Team (DMAT) to a disaster area, the location of their base of operations depends on the nature of the disaster and available local resources. Medical tents, similar to those in war-themed movies and TV shows, can be set up on short notice for injured persons to be treated while hospitals and other facilities are unavailable or at full capacity.

On the day of the Upstate's NDMS exercise, the Upstate PHP participants faced a problem when it came time to set-up, take down, and repack their hospital tent. Previously, setting up the tent had been a challenge. The Upstate PHP team realized they needed to engage a team of volunteers who were skilled in building structures, were used to working in the sun and rain, and displayed inherent leadership abilities.

The result was a partnership with Habitat for Humanity of Greenville County that met the needs of both organizations.

As the exercise drew near, Upstate Public Health Reserve Corps volunteer coordinator, Joanne Hobbick, met with Habitat's volunteer coordinator, Robb Cobb, and their executive planner, Gail Peay. Hobbick presented the challenge, which led to a discussion of how a partnership would meet both organizations' needs and goals. Cobb and Peay saw this request as an opportunity for Habitat to be a partner during a disaster and recognized that this role aligned with Habitat's mission of "bring[ing] people together to build homes, communities and hope."

The two organizations developed a memorandum of agreement, and on May 5 and May 7, 2019, the Habitat team arrived for the exercise and met with the Upstate PHP team. Habitat volunteer Tyler Willingham filled the role of site manager, and the Habitat team proceeded to teach the Upstate PHP team some of their best practices.

Once the exercise was underway and the tent setup commenced, the teams quickly settled into a productive rhythm. Team members were soon talking and laughing, even through scorching temperatures and six intermittent rain showers. Before they knew it, Hobbick said, "it seemed like the tent had gone up in no time." Mission accomplished – and a new partnership created!



DHEC EMPLOYEES STAND STRONG IN RESPONSE TO HURRICANE FLORENCE

Before Hurricane Florence made landfall in the Carolinas, DHEC began to prepare for the storm's anticipated long-lasting rainfall and Category 4-force winds. The agency's Bureau of Public Health Preparedness (PHP) activated its Incident Command Structure, including the Agency Coordination Center and its four Regional Coordination Centers, to ensure effective and efficient operations of facilities, equipment, personnel, procedures and communications during the emergency. The coordination centers also streamlined and simplified the flow of information to and from partner agencies across the state.

As Hurricane Florence made its way toward South Carolina, it became clear that many healthcare facilities in coastal counties, as well as inland portions of the Pee Dee and Lowcountry regions, would have to evacuate. In turn, Medical Needs Shelters (MNS) would need to be opened for individuals who were dependent on electricity for their medical care.

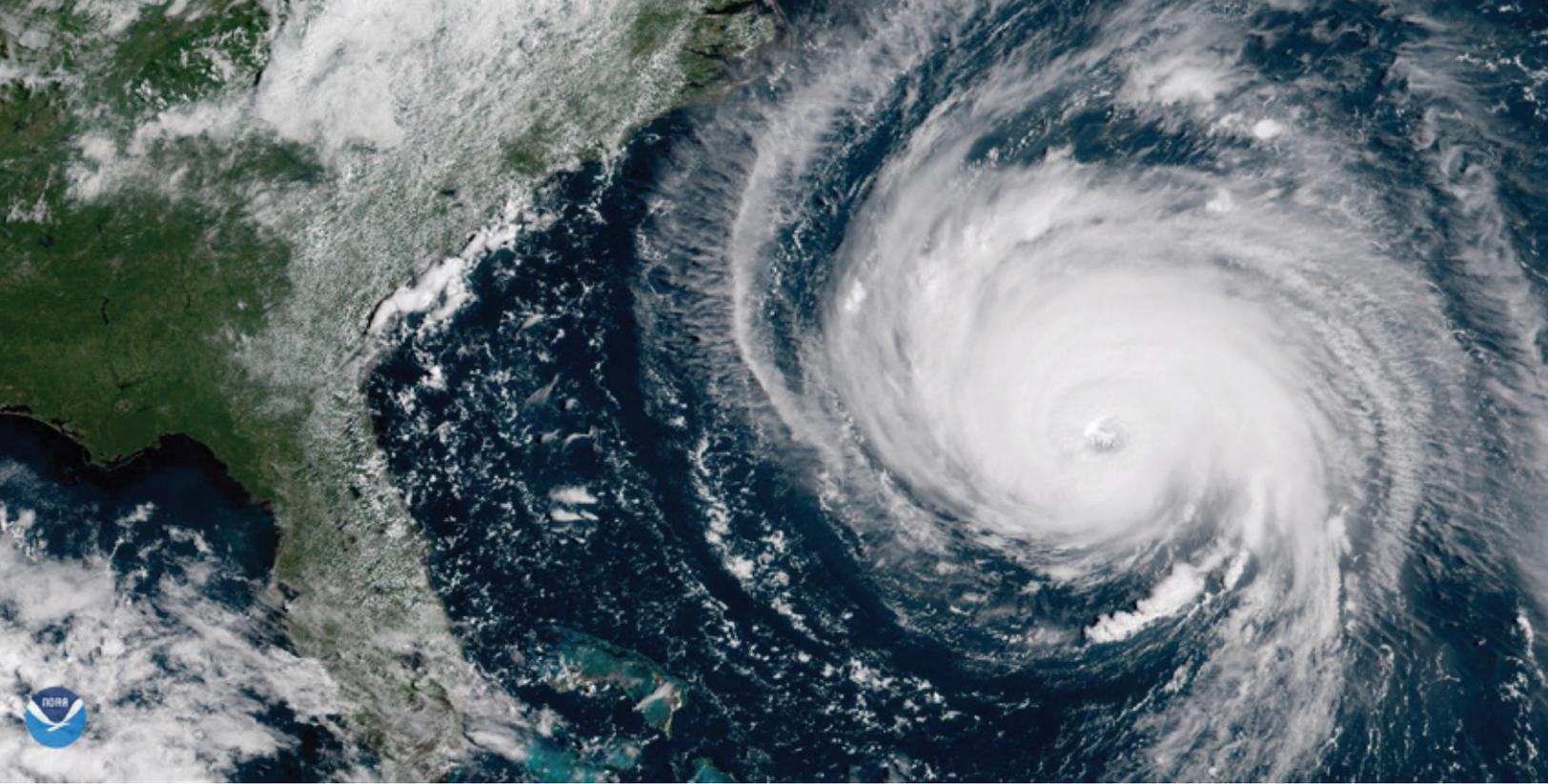


DHEC worked with its partners to ensure that a total of 131 healthcare facilities, including 17 hospitals, were able to safely evacuate. During this time, the agency also staffed 13 MNS statewide. Between these two operations, DHEC helped coordinate the transport of more than 6,000 patients and caregivers to MNS and receiving hospitals statewide. A total of 162 individuals were received in MNS throughout the event, which broke the previous state MNS record of 131 set during Hurricane Matthew.

Throughout the Hurricane Florence response, DHEC's call centers fielded over 8,400 calls from the public. These calls ranged from questions about MNS to the availability of health department services and more. The agency also dispatched more than 750 staff to communities across the state as part of its around-the-clock response operations.

Alongside the public health and healthcare response, DHEC's Division of Dam Safety and Stormwater Permitting activated its Dam Safety response plan and CodeRED communications system to contact more than 2,000 dam owners across the state.

The Columbia-based Dam Safety team, as well as regional Environmental staff, assessed 262 dams prior to Hurricane Florence. Some dam owners were urged to evaluate their water levels and coordinate lowering levels with other owners downstream to avoid flooding. After this initial assessment, the Dam Safety Program team continuously monitored all dams classified as high-hazard (likely to cause loss of life or extensive property damage in the event of failure) and stood ready to assist in the event of dam failures.



This GOES East satellite image, taken Tuesday, Sept. 11, 2018, at 10:30 a.m. EDT and provided by NOAA, shows Hurricane Florence in the Atlantic Ocean as threatening the southeastern U.S. Coast. Millions of Americans were preparing for what was anticipated to be one of the most catastrophic hurricanes to hit the Eastern Seaboard in decades. Mandatory evacuations began at noon Tuesday for parts of the Carolinas and Virginia (NOAA via Associated Press).

AFTER THE STORM: THE TEAM EFFORT CONTINUES

Although Hurricane Florence came and went over a single weekend in mid-September, secondary events – including major flooding in the Pee Dee region near Myrtle Beach – kept DHEC staff in high gear for the rest of the month and well into October. Once the storm passed, the Dam Safety Program team went back out into the field, along with members of the U.S. Army Corps of Engineers, to conduct post-storm dam safety assessments.

DHEC was also on the lookout for contaminated waterways due to flooding in the coastal areas. The Bureau of Water sampled water from the Waccamaw River and from the two coal ash ponds at the Santee Cooper Grainger Station. The Bureau also worked closely with the Georgetown County Water and Sewer District and the Grand Strand Water and Sewer Authority to monitor for contaminants, as well as Santee Cooper.

With the help of the South Carolina Law Enforcement Division, DHEC conducted aerial assessments of the Pee Dee River Basin and Waccamaw River in search of damage to public drinking water plants, wastewater plants, and industrial areas. DHEC also checked in regularly with facilities in the affected areas regarding the status of their systems and support to their customers.

Responding to Hurricane Florence was truly a team effort for DHEC and the many partner agencies who worked together to protect the health and safety of South Carolinians. Thanks to a strong, focused team and positive relationships with partner agencies throughout the state, DHEC was able to remain true to its commitment to keep the Palmetto State safe and to help strengthen our defenses against hurricanes and other natural disasters.

SOUTH CAROLINA WIC: HELPING SOUTH CAROLINA RESIDENTS AFTER HURRICANE FLORENCE

South Carolina's position along the east coast places the state at high risk for hurricanes and related dangers such as flooding. In recent years, flooding from hurricanes has heavily impacted the state and disrupted, or threatened to disrupt, the wide range of services provided by DHEC—particularly WIC—as participants were forced to relocate or had difficulty accessing established service sites.

In Fall 2018, Hurricane Florence left several counties in the Pee Dee region flooded either during the storm or shortly afterward, as the flood waters from the Lumber River receded into smaller rivers inland from Myrtle Beach. This created travel barriers for WIC participants and forced many area health departments to shut down until the emergency passed. Fortunately, SC WIC has mobile units, called Services on Wheels (SOWs), to provide services when visiting the local health department isn't an option. The SOWs are part of SC WIC's service delivery model, and they became indispensable following Hurricane Florence.



DHEC's WIC mobile units ensure continued support to women, infants, and children so there is no interruption of benefits after an event.

Since the Pee Dee was one of the hardest-hit regions along the coast, SC WIC staff knew they had to go out in the community to serve WIC participants. The SOWs were deployed throughout the Pee Dee and met participants in different locations. As a result, flood-impacted communities continued to be served with minimal disruptions.

State WIC Director Berry Kelly praised the mobile units, saying that they allow the WIC office "to deliver the same services to our

participants by meeting them where they are."

In addition to reaching out to WIC participants, the SOWs were staffed to provide immunizations to Pee Dee area residents and as special weekend clinics to help residents recover from the storm. During these weekend clinics, WIC staff gave out more than 20 WIC vouchers and over 20 tetanus vaccinations to those who might not have been reached without services being brought to them. The SOWs were able to serve this population thanks in part to media coverage by the ABC News stations in Columbia and Myrtle Beach.

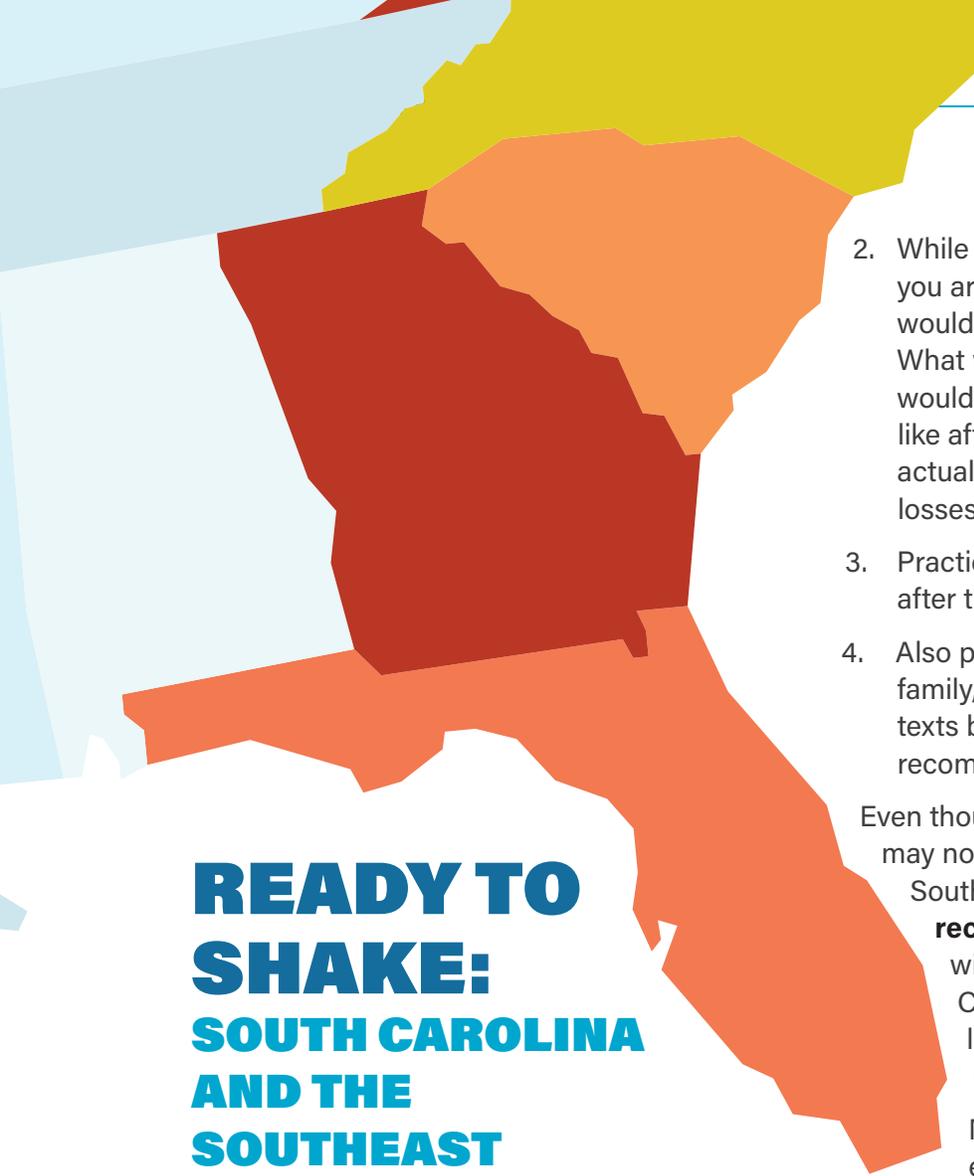
For some participants, getting to the nearest health department for their WIC appointment is challenging under normal circumstances. In hurricanes and other natural disasters, the value of mobile WIC services becomes even more apparent as evacuees struggle to meet basic needs while displaced from their homes. By meeting evacuees where they are, DHEC's mobile SOW units help WIC participants to survive the storm, take care of their families, and return to normal, everyday life following disasters.



ABOUT THE SC WIC SERVICES ON WHEELS INITIATIVE

The Services on Wheels (SOW) initiative is one of several quality improvements by WIC Director Berry Kelly and his team for modernizing service delivery for WIC participants.

With the goal of increasing access to core services, the SOW removes transportation barriers for WIC participants by using transport vans outfitted to deliver benefits and services to WIC participants in their own communities.



READY TO SHAKE: SOUTH CAROLINA AND THE SOUTHEAST

On Thursday, October 18, 2018, more than 2.3 million people across the South participated in the yearly **Great SouthEast ShakeOut** earthquake drill. DHEC and the South Carolina Emergency Management Division (SCEMD) supported the event by encouraging 421,261 people in South Carolina to join in. The drill lasted one minute and encouraged every participant to "Drop, Cover, and Hold On" wherever they were. To participate in the yearly drill, participants simply need to do the following:

1. **Drop, Cover, and Hold On: Drop** to the ground, take **cover** under a table or desk, and **hold on** to it as if a major earthquake were happening, staying down for the full minute (or until the shaking stops in a real earthquake!).

2. While still under the table, or wherever you are, look around and imagine what would happen in a major earthquake. What would fall on you or others? What would be damaged? What would life be like after? What will you do before the actual earthquake happens to reduce losses and quickly recover?
3. Practice what your community will do after the shaking stops.
4. Also practice how to communicate with family, friends, and co-workers. Sending texts before making phone calls is highly recommended.

Even though earthquake preparedness may not seem like a high priority for South Carolina, the state has **10 to 30 recorded earthquakes** every year, with two to five felt by citizens. South Carolina's earthquakes tend to be less than a 3 on the magnitude scale and cause little or no damage.

Most of South Carolina's earthquakes (about 70 percent) occur in the Coastal Plain, where the underlying rocks are very faulted (have many cracks and breaks). If pressure is exerted, these faults/breaks will allow the rocks to move. Most faults are clustered around three areas in the state: Ravenel-Adams Run-Hollywood, Middleton Place-Summerville, and Bowman. Small earthquakes may also occur near dams and the Appalachian Mountains.

There is a consensus among seismologists that where earthquakes have occurred before, they can again. Several areas of South Carolina regularly experience earthquakes and have experienced strong earthquakes in the past. Unfortunately, there is **no reliable method for predicting the time, place or size of an earthquake.**

Because earthquakes are unpredictable, and South Carolina has so many, DHEC and SCEMD felt it was important to encourage citizens to participate in the Shakeout. A "Drop, Cover, and Hold On" drill is vital because you may only have seconds to protect yourself in an earthquake before strong shaking knocks you down or something falls on you.

Another way to practice is for you and your employer to review your Emergency Action Plans and Continuity of Operations Plan (COOP). There may be additional emergencies following an earthquake such as fire, gas line break, loss of power, medical emergencies, etc. You and your employer need to know how and what to do after the earthquake is over.

HOW DHEC RESPONDS TO EARTHQUAKES

Because of the low magnitude of most earthquakes that occur in South Carolina, DHEC has never needed to respond to earthquakes affecting a large area. Nevertheless, DHEC prepares for earthquakes and any outcomes which may affect public health and the healthcare system in the following ways:

- **Inspections of damaged healthcare facilities:** Since all hospitals and nearly all healthcare facilities in South Carolina are regulated by DHEC, the agency is prepared to support damaged facilities immediately after an earthquake. DHEC will send out architects who specialize in hospitals to inspect any damage and indicate what types of repairs will be needed in order for the facility to re-open and operate safely.
- **Federal Medical Stations:** Also known as mobile hospitals, South Carolina has never had a severe-enough emergency to need federal medical stations from the federal government. DHEC has emergency plans in place to request deployment of the stations if a large-scale event limits a hospital's ability to function properly in the impacted area.
- **Medical evacuations:** DHEC works closely with hospitals, nursing homes, EMS agencies and other healthcare facilities around the state to coordinate evacuations. The agency ensures the safe arrival of patients to designated locations so they can continue to receive the medical care they need.

Because of all the work that EMD and DHEC do on a regular basis to prepare for earthquakes and other natural disasters, South Carolinians can rest assured that their basic human needs will be considered and addressed should a high-magnitude earthquake ever impact our state.

The Great
SouthEast
**Shake
Out**[™]

WHAT IS THE GREAT SOUTHEAST SHAKEOUT?

The Great SouthEast ShakeOut is a yearly event that happens in October. It is a great way for you, your family, or organization to be prepared to survive and recover quickly from big earthquakes - wherever you live, work, or travel.

The ShakeOut is organized to encourage you, your community, your school, or your organization to review and update emergency preparedness plans, supplies, and how to secure your space in order to prevent damage and injuries.

The ShakeOut is part of a worldwide effort to encourage people to practice how to protect themselves during big earthquakes.

THE GREAT CHARLESTON EARTHQUAKE

On August 31, 1886, Charleston experienced the most damaging earthquake in the eastern United States. The initial shock lasted nearly one minute. It was later determined to be a 7.3 magnitude earthquake.

The earthquake was felt over 2.5 million square miles, from Cuba to New York, and Bermuda to the Mississippi River. Structural damage extended several hundred miles to cities in Alabama, Ohio, and Kentucky. At the time of the earthquake, many Charleston residents thought the calamity was worldwide. Imagine their surprise when they discovered that their area suffered the majority of severe damage.

Geologically, **Charleston lies in one of the most seismically active areas east of the Mississippi River.** This seismic area is in the Coastal Plain and clusters around the cities of Summerville and Bowman. The area is known as the Middleton Place – Summerville Seismic Zone (MPSSZ).

The MPSSZ experiences between 10 to 15 3.0 magnitude or less earthquakes every year. Large events, like the 1886 earthquake, have been recorded in the oral history of the area (approximately 1300s to 1600s). In addition, evidence has been found for several pre-historic earthquakes in the last 6,000 years. If the past is the key to learning about future activity, then the MPSSZ can expect another earthquake like the one in 1886 sometime in the future.

Right: A man stands in front of the destroyed portico of the William Ravenel House at 13 East Battery Street.



Left: Two boys stand inside first floor of earthquake-damaged residence at 118 Tradd Street.



HELPING THOSE ON THE FRONT LINES OF A DISASTER: ASPR RESOURCES FOR HEALTHCARE PROFESSIONALS

Emergency Medical Service (EMS) personnel and hospital emergency departments respond to urgent medical needs every day. They also serve on the front lines of medical response to disasters, public health emergencies, terrorist attacks and mass casualty incidents. The U.S. Department of Health and Human Services (HHS) is the federal government's lead agency for coordinating the public health and medical response to disasters and other emergencies.

In 2006, HHS established the office of the Assistant Secretary for Preparedness and Response (ASPR), dedicated to supporting the nation's healthcare infrastructure, including hospitals, EMS personnel and agencies such as DHEC, throughout a disaster response. ASPR supports readiness by ensuring that these entities have the tools and resources they need to effectively respond during disasters and to successfully recover from disasters affecting their patients, facilities and communities.

HPP is the only source of federal funding for health care system readiness.

HPP prepares the health care system to save lives through the development of regional health care coalitions. HCCs are groups of health care and response organizations that collaborate to prepare for and respond to medical surge events. HCCs incentivize diverse and often competitive health care organizations to work together.



ASPR provides support through several programs, most notably the national Hospital Preparedness (HPP) program. This program has led to the formation of regionally-based healthcare coalitions (HCCs) throughout the United States whose member organizations support each other and share resources during disasters and public health emergencies.

Collaborative resources would assist the needs of large areas that would otherwise overwhelm individual healthcare facilities and potentially jeopardize patient wellbeing.

South Carolina's four HCCs – Upstate, Midlands, Pee Dee and Lowcountry – work regularly with DHEC and a wide variety of healthcare agencies, including hospitals, nursing homes and EMS providers, to integrate them fully into the health and medical response activities the HCC carries out for their communities during disasters.

Other ASPR resources available to healthcare agencies include the Technical Resources, Assistance Center, and Information Exchange (TRACIE) and the Emergency Triage, Treat, and Transport (ET3) Model Program. ASPR is also committed to the goals of EMS Agenda 2050, a people-centered vision for the future of EMS care in the United States. EMS Agenda 2050 aims to help EMS providers deliver the best possible patient outcomes.



With the help of these and other resources, South Carolina's hospitals and other HCC member agencies have made major headway in preparing for large-scale disasters. Without them, the outcome of hurricane and winter storm events since 2014 would have likely been more disastrous than they were. Through regular collaboration, training, exercise and first-hand experience, South Carolina's healthcare facilities are more prepared than they have ever been to protect patients no matter how trying the circumstances.

DHEC AND HEALTHCARE COALITIONS: WORKING WITH SCHOOLS TO 'STOP THE BLEED'

On September 27, 2016, in Townville, South Carolina (population 4,177), a 14-year-old former student of Townville Elementary School opened fire on the school playground in the early afternoon, injuring three and killing six-year-old Jacob Hall.

Hall died three days later, but what many do not know, is that the fatal injury was caused by a gunshot wound to the leg – not the head or torso. Had anyone at the scene been aware of the life-saving measures available, the outcome might have been different.

Soon after tragedy shook this rural community 40 miles south of Greenville, the Upstate Healthcare Coalition—a public-private partnership funded by the Hospital Preparedness Program (HPP) of the U.S. Department of Health and Human Services—came together to figure out a way to reduce the number of preventable deaths in their area. For Upstate-area hospitals and other Coalition member agencies, the tragedy signaled a clear need for the Stop the Bleed program in schools.



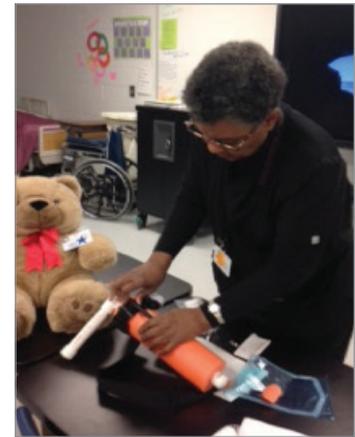
WHAT IS STOP THE BLEED?

Launched in October 2015 by the White House, Stop the Bleed is a nationwide awareness campaign and grassroots effort to train concerned citizens on life-saving bleeding control techniques. The goal is to train individuals to be ready to help another person with a bleeding emergency until professional help arrives. Thanks to the efforts of organizations who have teamed up to bring the program to life, such as the Department of Homeland Security, Johnson & Johnson, and the American College of Surgeons, Stop the Bleed is now one of the nation's largest public health campaigns.

What began as an Upstate Healthcare Coalition initiative soon grew into a statewide project, with the South Carolina HPP grant providing \$1,058,776.00 in funding

for the purchase of 18,000 Stop the Bleed kits to be distributed to schools and community groups around the state. Spartanburg Regional Healthcare, the Medical University of South Carolina, Palmetto Health (now Prisma Health) and Grand Strand Health all stepped in to help the SC Healthcare Coalition Advisory Council and DHEC carry out this project.

With the help of the South Carolina Department of Education, Coalition members across the state have been distributing Stop the Bleed kits to public school districts throughout each of their Coalitions since 2018. The kits, which contain tourniquets and other medical supplies needed to prevent fatal blood loss, are designed for rapid deployment with everything needed to control bleeding until help arrives or the injured person can be taken to the hospital.



Each school district's head nurse was invited to attend a "train-the-trainer" kickoff session in July 2018, prior to the start of the 2018-2019 academic year. School districts whose nurses have completed their training have since received Stop the Bleed kits from DHEC's Bureau of EMS and Trauma Services, and head school nurses are now training the nursing staff in their districts so that they can all be prepared to deal with a bleeding emergency in their schools.

The tragic circumstances of Jacob Hall's death in 2016 resulted in the development of important partnerships that will help to prevent another unnecessary death due to a bleeding emergency. Thanks to the efforts of the Upstate Healthcare Coalition in bringing the Stop the Bleed program to South Carolina, families of school-aged children around the state can be reassured that school staff are receiving the training and tools needed to save lives.

"Bleeding is the number one cause of death in trauma patients, and the number one cause of preventable death," says Rich Wisniewski, Director of DHEC's Trauma Division. "We want to make sure people are prepared in the case of an emergency. The goal is to achieve zero preventable deaths, and we can do that [through] bleeding control."



EMPOWERING HEALTHCARE AGENCIES AND THEIR PARTNERS TO HELP AT-RISK POPULATIONS

Advances in healthcare technology now allow millions of people with a wide variety of medical conditions to enjoy independent living. Many of these people rely on electricity to operate their medical equipment and for essential healthcare services such as dialysis.

When disaster strikes, these individuals can find themselves in a life-threatening situation within a matter of hours. Many seek help by calling 911 or by going to their local hospital, which may overwhelm staff and resources. Often, these people are simply looking for a secure power source for their medical devices. Others can't evacuate safely without assistance, so they end up sheltering in place.

In the past, DHEC and partners around the country struggled to find accurate information about the at-risk populations in their areas. Not knowing the home addresses of people with

medical conditions or limited mobility made it difficult for emergency managers to meet the needs of vulnerable populations, and the information gap put lives at risk.

Everything changed in 2013, when the HHS Assistant Secretary for Preparedness and Response (ASPR) and the Centers for Medicare and Medicaid Services (CMS) developed the emPOWER Program. Using limited Medicare and Medicaid data, the program provides public health agencies with information about at-risk populations. This allows the agencies and their partners to better assist these populations.

WHAT IS EMPOWER?

The emPOWER Program is a robust system that allows public health emergency responders and their partners to support emergency preparedness, response, recovery, and

The emPOWER Program has helped protect the health of more than 4.1 million Medicare beneficiaries who live independently and are electricity-dependent for their medical equipment and healthcare services.

mitigation activities for at-risk populations. One tool, the emPOWER Map, displays the total number of people who are electricity-dependent and where they live at the state, territory, county, and ZIP code levels.

Public health emergency responders across the United States now use the emPOWER Program to develop emergency plans with at-risk populations across a range of scenarios. The program has strengthened their planning ability to assist at-risk populations in their areas.

SOUTH CAROLINA IS AN EMPOWER POWER USER!

emPOWER's Emergency Planning De-identified Dataset and the Emergency Response Outreach Individual Dataset tools are DHEC's go-to resource when it comes to preparedness planning for vulnerable populations.

The Emergency Planning De-identified Dataset tool provides information on the number of people who are electricity-dependent and where they live in the state. PHP uses this to help with Medical Needs Shelter planning. It shows, for example, how many electricity-dependent individuals are in a hurricane evacuation zone and will likely need assistance to evacuate. DHEC shares this data with the

state's four regional healthcare coalitions (whose membership includes hospitals, clinics, ambulance services and other healthcare providers) so they can better serve their clients.

DHEC's Public Health Preparedness (PHP) team started using the Emergency Response Outreach Individual Dataset in 2016 during the statewide response to Hurricane Matthew. The dataset revealed areas with a high concentration of electricity-dependent citizens, and DHEC shared that information with search and rescue teams to support their efforts. In 2017, DHEC conducted an outreach campaign for individuals living within hurricane evacuation zones to better understand the evacuation behavior of people with medical conditions and limited mobility.

Thanks to DHEC's extensive use of emPOWER, PHP operations director Jamie Blair now represents South Carolina on the National emPOWER Workgroup. The group seeks to share best practices and develop additional ways the data can be used to support preparedness, response, and recovery operations. Through Blair's participation in the workgroup, South Carolina is leading the way among emergency management agencies wanting to save lives and ensure the best possible health outcomes for vulnerable populations during disasters.

EMPOWER IN ACTION

Communities have used the emPOWER Program tools prior to, during, and after the following incidents, emergencies and disasters:



Chemical Spill



Earthquake



Flood



**Hurricane/
Tropical Storm**



**Infrastructure
Failure**



**Severe Power
Outage**



Tornado



Water Emergency



Wildfire



Winter Storm

THE POWER OF COLLABORATION: PUBLIC HEALTH LABORATORY AND PUBLIC HEALTH PREPAREDNESS PUT COOP TO THE TEST

As the name suggests, DHEC’s Public Health Laboratory (PHL) conducts laboratory testing in support of public health. This includes specialized lab testing to screen, detect, diagnose, prevent and investigate diseases, foodborne illnesses and hereditary disorders. These activities can’t be put on hold—not even during an emergency, natural disaster or other disruption.

Since late 2015, DHEC’s Bureau of Public Health Preparedness (PHP) had been leading the agency-wide effort to develop, review and update its Continuity of Operations Plan (COOP), including the plans specific to each Bureau and program. Because PHL’s functions

are essential to protecting public health and are required to continue under any circumstance, PHP approached them in early 2018 to participate in a pilot review process. The premise of the review was to identify gaps and fully integrate their plan into the general agency COOP.

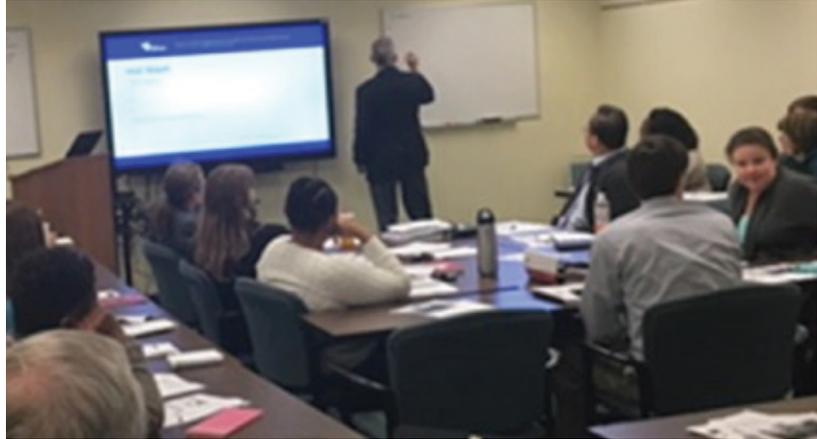
The PHL COOP review took place during the summer of 2018. In consultation with PHP Training and Exercise staff, PHL later developed a tabletop exercise to test the plan. In the exercise scenario, the laboratory building had a fire which initially disabled only one room but then spread to the whole floor, disabling many services.



For PHL, the tabletop exercise proved an invaluable opportunity to assess the situation and identify the actions needed to safely manage the fire, maintain files and records, and continue operations despite the disruption.

Later in the year, PHL teamed up with PHP to conduct two more exercises – a tabletop exercise with a new emergency scenario, followed by a full-scale exercise— which built on lessons learned during the original tabletop. To mimic real life as much as possible, PHL staff worked with local first responders.

Not long after completing exercises and reviewing lessons learned, PHL had the opportunity to put what they learned into practice. One night during March 2019, a vehicle collided with a utility pole near the laboratory building. This accident interrupted power and Internet service to the



PHL staff participating in the tabletop exercise.

building. The building's emergency power backup kicked in well before staff arrived the next morning; however, Internet service was not restored until later in the day.

Although this may not sound like an emergency, many of the PHL's key instruments and reporting systems require Internet access to function effectively. Even a delay of 24 hours could negatively impact the quality of patient care. Backup plans to ensure the continuity of essential laboratory operations need to be

fully considered before an incident occurs, in order to be operable before limited emergency power is depleted.

In this real-world event, PHL staff successfully used their COOP training to activate their Incident Command System, assess the scope and impact of the accident outside their building, activate their emergency plan, notify internal and external partners, and carry out essential laboratory activities in spite of the disruption until power and Internet were fully restored.

This situation could have proven disastrous for the agency and for the many people served by the PHL. Fortunately, PHL's hard work on their COOP paid off—they developed a workable plan and followed it successfully during an unpredictable situation. PHL's dedicated work with PHP resulted in increased staff readiness in handling emergencies.



PHL staff participating in the full-scale exercise.

HAM OPERATORS READY TO PROVIDE EMERGENCY COMMUNICATIONS IN THE EVENT OF CRISES

By Tut Underwood/South Carolina Public Radio

When a disaster strikes, communication channels may become spotty or even interrupted completely. Cell phone towers may be down, land lines disrupted, and if the Internet is offline, there is no way to send or receive emails. Keeping lines of communication open for hospitals and other health care facilities during these

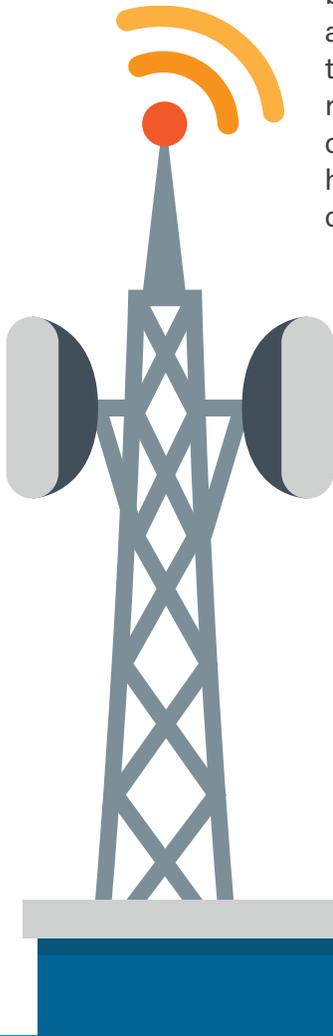
types of crises are vital. Amateur radio operators, referred to as "hams," train once a week to ensure communication will continue during an emergency. They are members of a network called the South Carolina Healthcare Emergency Amateur Radio Team (SC HEART).

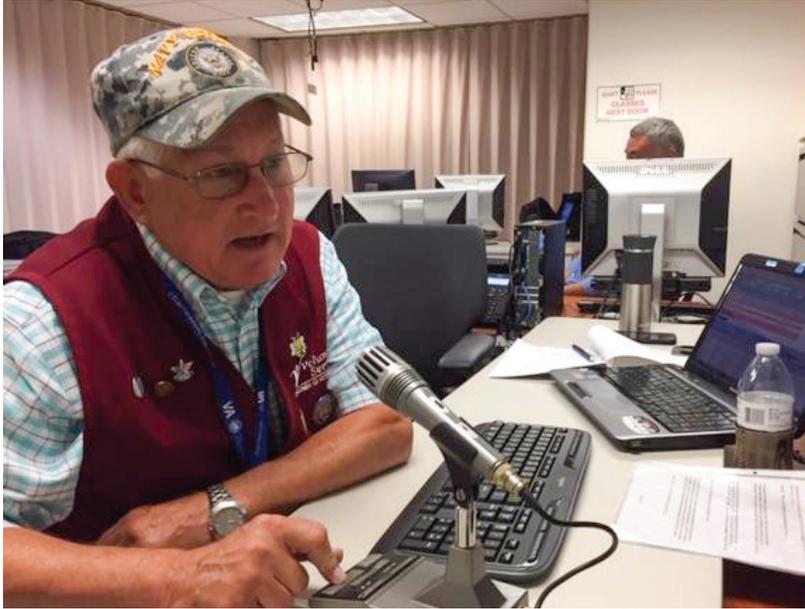
Comprised of volunteers from across the state, SC HEART conducts exercises, which it calls Training Nets, from various locations in South Carolina. One recent exercise was run by ham operator Warren Richey at the Charleston V.A. hospital, with operators listening and checking in from places ranging from Aiken and Darlington County to Pickens and Beaufort - as well as from out of state locations such as Asheville, N.C.

"Our goal is to have amateur radio operators in those hospitals to be able to pass traffic back and forth about the amount of patients they receive and if there are any diversions (en route by ambulance from one hospital to another). During a natural disaster, if we lose cell phone towers and Internet access, we depend on those amateur radio operators to keep the communication lines open," said Scott Phillips, emergency preparedness coordinator for the South Carolina Department of Health and Environmental Control (DHEC).

Alicia Fletcher, emergency manager for the Charleston V.A. hospital, added "this is something that we know is reliable and very clear. We can communicate very effectively without having to worry about dropping calls in specific areas, wavering signal strength, or the system being overwhelmed."

Because the hospital has generators that can provide power for days in case of natural disaster, Fletcher is more appreciative of SC HEART for the help it can offer in man-made crises:





Ham radio operator Warren Rickey calls amateur operators statewide in SC HEART's weekly training exercise. The group was founded to provide emergency communications when a disaster destroys phone and Internet capabilities.

"Generators would really become critical in times of a complete network outage that took our phones out. For example, cyber-attacks and things like that."

Phillips pointed out the value of ham radio in recalling a recent hurricane disaster in the Caribbean. "During 2017, when Puerto Rico was decimated as a result of a hurricane, the only way they were actually able to get any communication off the island was through their amateur radio operators."

He said SC HEART volunteers also lent a vital helping hand when emergency responder communications were overworked following the historic flood of 2015. "We had play-by-play from amateur radios because they were out there. And they were giving us real life updates on road closures and dams breaching. No one asked them to do it. They were just out there helping their community."

Anticipating a future which may include an increasing number of hurricanes or other disasters, Phillips, who recruits operators for SC HEART, hopes to bring more people into amateur radio so that the flow of potentially life-saving communications will continue in decades to come.

This story was provided by South Carolina Public Radio. It appeared on the South Carolina Public Radio website on June 18th and was heard nationally on NPR the same day.

AN INVALUABLE SERVICE

In the last five years, South Carolina has been impacted by floods, hurricanes, and other natural disasters. These events have necessitated the use of redundant communications. One of the most effective and resilient communications methods is provided by Amateur Radio Operators (Ham Radio).

Ham radio operators are FCC licensed and provide an extremely valuable service in local and state response to disasters. The South Carolina Healthcare Emergency Amateur Radio Team (SC HEART) provides an invaluable service when the state is preparing for, responding to, and recovering from a disaster.



PREPAREDNESS IN THE AGE OF BIG DATA



*Michael A. Elieff
Director of Public Health
Preparedness
Department of Health and
Environmental Control*

Another year has come and gone that was filled with challenges; Hurricanes Florence and Michael, flooding in the Pee Dee, Tuberculosis (TB), Measles and Hepatitis A. As much as we might wish, we cannot change when a disaster is going to happen. What can change is how we prepare for and respond to them. We have a responsibility to make the best decisions possible under difficult circumstances. One way we can change is to figure out how to utilize the enormous amount of data available to us daily. We strive to be a data-driven organization to effectively enable our decision-making.

In the sixth edition of DOMO's report, and according to their research: **"Over 2.5 quintillion bytes of data are created every single day, and it's only going to grow from there. By 2020, it is estimated that 1.7 megabytes of data will be created every second for every person on earth."**

Additionally, 90 percent of all the data ever generated was produced in the last 2 years. How do we harness that data? What's useful, what's not? How do we make sense of it? What tools do we have to make that process easier?

We have been working with SCEMD and other partners as they continue to refine the Palmetto system, which is how the State Emergency Response Team shares information during disasters. We are also working with our GIS teams to rapidly identify and graphically display problems and possible solutions. We are focused on developing processes and systems to quickly gather essential elements of information from the healthcare coalitions so that appropriate and timely decisions can be made in support of the citizens of South Carolina.

The world is an increasingly complex and changing environment and we must have the flexibility to change with it. We will be focusing our efforts over the coming year on finding solutions to those problems.



A handwritten signature in black ink, appearing to read "Michael A. Elieff".



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