



National Association of State EMS Officials

201 Park Washington Court • Falls Church, VA 22046-4527 • www.nasemso.org
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Best Practices/Lessons Learned: 2017 Hurricanes in Texas and Florida

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Introduction

The National Association of State EMS Officials works with State EMS Directors to document lessons learned and best practices from state-declared disasters. One of the tasks of the NASEMSO Health and Medical Preparedness Council is to provide assistance when requested by the State/Territory EMS Director in a state-declared disaster. NASEMSO staff and other members of the Council work with the affected state as needed during the disaster, and then conduct an after-action review to identify best practices and lessons learned. This document reflects findings from Hurricanes Harvey and Irma.

General Features

The 2017 Hurricane season was unprecedented in the number of major hurricanes, damage to property, flooding and cost. 2017 ranked among the highest in terms of the number of major hurricanes, with six hurricanes achieving Category 3 (130 mph winds) or higher. The National Weather Service defines a hurricane as “an intense tropical weather system with well-defined circulation and sustained winds of 74 mph (64 knots) or higher.” The 2017 hurricane season began June 1, 2017 and ended November 30, 2017. Although hurricanes Harvey and Irma affected many states, this report is limited to Texas and Florida.

Hurricane Harvey

Summary of Events

Hurricane Harvey made landfall in Rockport, Texas on the Texas coast on August 25, 2017 as a Category 4 hurricane with winds of 130 miles per hour; it lasted through August 30. The resulting floods inundated hundreds of thousands of homes prompting more than 1700 rescues.

Additional information on the Texas response to Harvey

- *August 18* — Seven days out, weather services were reporting no impact to Texas.
- *August 22* — After evaluating the latest data, 6 ambulances and 6 EMS Strike Teams were placed on stand-by.
- *August 23* — Weather service calling for a Category 1 Hurricane, still undetermined whether (or where) the storm will impact Texas.
- *August 24* — Two ambulances and 3 EMS Strike Teams moved to staging in San Antonio.



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- *August 24 (morning)* — Storm jumped to Category 4. Impact is expected on Friday night (August 25).
- Deployed 13 additional EMS Strike Team, 12 of the 13 ambulances.
- EMS started running missions as soon as resources entered staging area in San Antonio.
- *August 25 (Friday night)* — Harvey made landfall in Rockport/Port Aransas, Texas.
- *August 25 (12 noon)* — 300 patients evaluated. All resources pulled out due to high winds.
- Forecasts on the amount of rain started to increase.
- *August 25 (nighttime)* — Requested 100 ambulances and 15 air ambulances from the National Ambulance Contract (NAC).
- *August 26* — Additional 100 ambulances requested from the NAC for a total of 200 round ambulances and 25 air ambulances.
- *August 27-28* — Heavy rain falling in Houston area. Life safety mission ongoing throughout the area.
- Over 50 inches of rain in the Houston area.
- *August 29-31* — Rain continued. Second landfall on Texas and Louisiana line. The storm was a named storm for 5 days.
- *September 3* — Started demobilization of Federal resources to move to Florida.

EMS Facts of event

- 1700 iPhones used for tracking of ESF 8 resources (11 million messages provided to workforce)
- 3 major operation sites: Rockport/Port Aransas, Houston and Beaumont, Texas
- 250 Texas Emergency Medical Task Force (EMTF) resources used
- 1855 patients seen at Mobile Medical Unit (MMU)
- 20 EMS Strike Teams
- 13 ambulances
- 25 air ambulances through the NAC
- 200 Ambulances through the NAC
- 990 missions
- 3200 personnel



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Hurricane Irma

Summary of Events

Hurricane Irma hit the Florida Keys on September 10, 2017 as a Category 4 storm with winds of 130mph, and then hit the mainland on September 10 as a Category 3. Hurricane Irma was the strongest Atlantic-based hurricane ever recorded outside of the Gulf of Mexico and the Caribbean Sea.

Additional information on the Florida response to Irma

- *August 30* — Initial formation was one of a tropical storm.
- *August 31* — Initially a Category 2 (to be changed to a Category 5 on September 5th).
- *September 4* — Level 1 Activation 24 hours State EOC activation when Category 2.
- Reports indicate potential of a Category 5 hitting Miami with 175mph winds.
- Reports indicate potential of a Category 5 hitting the entire state of Florida.
- *September 6* — Emergency Medical Assistance Compact (EMAC) request for EMS resources.
- *September 7* — Request 100 FEMA ambulances (20 Ambulance Strike Teams (AST)), already staged in Tallahassee, through the National Ambulance Contract.
- *September 8* — (30 Ambulances/6 ASTs) arrive via Tennessee EMAC.
- *September 9* — (10 Ambulances/2 ASTs) arrive via Kentucky EMAC.
- Inability to stage resources due to the storm covering the entire state.
- *September 10* — Hurricane Irma made two landfalls (Keys and Marco Island).
- *September 11* — Another 100 FEMA ambulances and 144 Paratransit vehicles were requested and staged in Orlando.
- *September 13* — Relocated resources to Boca Raton.
- There were 533 ESF-8 Missions. 72 were for patient movement missions for Irma.
- Three consecutive Hurricane events — Irma, Maria, and Nate — required state EOC activation.



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Best Practices During Hurricanes Harvey and Irma

- iPhone for tracking resources
- Collaboration between local, state and federal personnel
- National Ambulance Contract
- Federal Partners
- Cell coverage remained in service in most areas, although there were still some areas that lost the coverage
- Preparation over many years for a major storm proved beneficial to overall responses
- Advance teams sent to hospital for evaluation before sending resources
- Repairs service available for response vehicles
- National Association of EMS Officials (NASEMSO) and National Registry for Emergency Medical Technicians (NREMT) sent out information to contacts, encouraging EMS personnel not to self-deploy
- Ongoing communication with NASEMSO for support and assistance
- The ESF-8 Patient Movement Branch was given the flexibility to make operational decisions without having to go through several layers of approval
- EMAC
- Right people in operation centers, such as the Agency for Health Care Administration (AHCA), the Florida Hospital Association (FHA), and Nursing Home administration
- FlaHealth STAT provided bed availability to help with patient movement
- Additional Paratransit vehicles process
- Strong support of local leadership without micro-managing local missions
- State buildings were opened to families and pets for shelter



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Lessons Learned During Hurricanes Harvey and Irma

- Maintaining the setup of pre-staged equipment reduces the need to reorient staff to the asset.
- Patient tracking remains an issue.
- Short time to get resources in place pre-storm
- Patients coming to mobile medical units before ready
- Employers must plan to back-fill positions when staff are involved in a deployment.
- Elected officials must know how long resources will stay in place.
- The narcotics refills process must be enhanced.
- The ability to increase the size of staging area must be considered.
- Personnel resources must know who to whom they are reporting after relocating.
- More depth is needed in communication plans, including an air ambulance plan.
- Plan for the storm's effect on first responders' homes and family
- Need to assure ongoing communication with emergency personnel to assure that they know the full, statewide effect of the storm.
- Portable toilets and trash cans needed for staff in the first response wave
- Security planning needs to be enhanced.
- When personnel are swapped out, they must be replaced with personnel of the same skill level.
- Air rescue dropping uninjured people at hospitals
- Education on the different between relocating and demobilization
- The National Ambulance Contract is not set up for Critical Care Transports.
- When staging vehicles, must consider the exhaust from vehicles parked next to each other
- O2 was needed for shelters.
- AMR's tracking of deployed resources must be improved.
- Education on FEMA reimbursement and how to estimate salaries
- No standard reimbursement model between states for EMS transports or services
- Better planning needed for EMS vehicles to access gasoline during fuel shortages
- Better planning needed for traffic congestion during patient movements (to ensure patient/ambulance access to hospitals)
- ESF-8 Patient Movement Branches should be involved in EMAC Planning.
- State EM Software overwhelmed



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- Ambulance Deployment Plan must reflect the reality of interfacility transports with private services
- More education on the use of military personnel and resources
- Communication and follow-through with logistics to move 200 ambulances
- Mission input confusion by locals

Additional Considerations

- Remember to continually monitor social media
- Storm impact on mental health of responding personnel and families
- Storm impact on responders' homes and personal resources
- Social media: Friend or foe?
- Identify ways to track resources
- Egress and ingress needed for ambulances, especially when evacuations cause changes to highways and/or when transporting strike teams from one part of a state to another.
- Responding to self-deployment by non-requested resources and personnel
- Best system for patient tracking

Contact NASEMSO

For more information about these findings or NASEMSO's Health & Medical Preparedness Council contact NASEMSO Program Manager Leslee Stein-Spencer, Spencer@nasemso.org.