



INSTITUTE FOR HOMELAND SECURITY



**Sam Houston
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**EMERGENCY AND MEDICAL SERVICES AND WINTER STORM URI:
RECOMMENDATIONS TO HELP THESE ESSENTIAL FIRST RESPONDERS**

**Institute for Homeland Security
Sam Houston State University**

David A. McEntire, PhD, SFHEA

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Abstract

From February 13th to February 17th, 2021, Texas experienced a significant winter storm which was accompanied with a substantial amount of snow and ice as well as freezing temperatures. Winter Storm, Uri as it was known, placed an incredible burden on Emergency Medical Services due to traffic accidents, carbon monoxide poisoning and other medical emergencies due to the loss of power and water. Emergency Medical Technicians (EMTs) and Paramedics demonstrated heroic efforts to care for those in need. However, the nature of the storm, systemic problems and unexpected challenges resulted in a sub-optimal response in some cases. The follow report examines the problems that were experienced and provides recommendations for improvements in the future.

Introduction and Overview

Emergency Medical Services (EMS) – comprised of Emergency Medical Technicians (EMTs) and Paramedics – provide emergency medical care to those involved in accidents or affected by serious illnesses or other life-threatening situations. The goal is to stabilize the patient and get them to the hospital for additional medical treatment.

In the state of Texas, EMS is very complex with substantial variation across jurisdictions. Some communities provide EMS publicly through the government (e.g., Dallas Fire Department). Other cities and counties may have their own EMS departments (e.g., Pflugerville and Williamson). In different contexts, EMS is run through private companies, hospitals, or even nonprofit organizations (e.g., Bastrop, Montgomery, and Marble Falls respectively). Facilities, equipment, staffing and procedures may vary dramatically in these unique contexts.

While there are significant differences in the organizational arrangements and daily operations of EMS in Texas, each of these providers experienced major challenges associated with the February 2021 winter storm that blanketed the entire state. Besides having to address another major incident after the demanding Covid-19 pandemic, the storm created increased loads on EMS providers and stress-tested such agencies as they provided life-saving care (Dickson et. al. 2021).

For instance, there were many traffic accidents throughout the state due to snow and icy condition of the roads. These fender benders and major pileups in virtually all locations created countless victims that required emergency medical care. In addition, there were many people who experienced hypothermia and some individuals even required amputations due to frost bite due to the extremely cold temperatures. Other people could not drive to medical appointments and had medical challenges relating to the lack of oxygen, medicines, or dialysis. As an example, one victim conveyed to 911 operators that “My power is out. I can’t get my oxygen concentrator to work, and I don’t know how to use my back-up tank” (Zavadsky in Scaia 2021).

Another tragic experience concerned the many individuals and families that became sick or even died due to carbon monoxide poisoning as they tried to stay warm by lighting charcoal grills in their homes or sitting in a running car in their garage. According to Dr. Neil Hampson, an expert on Carbon Monoxide poisoning, Texas witnessed the worst carbon monoxide poisoning in recent history. He stated, “in their desperation, thousands of Texans unwittingly unleashed deadly gases into homes and apartments that, in many cases, were not equipped with potentially lifesaving carbon monoxide alarms” (Trevizo, Larson and Churchill 2021). At least 121 deaths resulted and more than 1,400 people required emergency medical care (Trevizo, Larson and Churchill 2021).

The increase in workload from each of these issues was clearly visible from February 13 to February 17, 2021. For instance:

- In Houston, ambulance calls were up 300% (Childers 2021).
- In Austin, there were 187 environmental exposures, 115 vehicle accidents, 86 carbon monoxide exposures, and 519 falls. Call volume increased from an average of about 450 calls per day to more than 1400 at the peak of the winter storm on February 15th (Xie, n.d.).
- In Fort Worth, MedStar experienced twice the call volume, with 3,484 calls between February 14 and February 20 (an average of 21 calls per hour) (Scaia 2021).

Regarding the call volume, Matt Zavadsky - an employee of MedStar Mobile Healthcare - stated “it was certainly a record-setting week for MedStar’s crews and all of our personnel” (Scaia 2021).

In spite of this heavy workload, EMS providers should be commended for their efforts and success in treating those in need. EMTs and paramedics worked around the clock with long-hours to care for the injured and ill. In many cases, these employees and their respective organizations demonstrated creative problem solving:

- Taking victims to a relative’s house (typically a violation of policy) to limit demand on hospitals and ensure the infirm were cared for.
- Stoking fireplaces in nursing homes to help residents stay warm.
- Opening up and staffing warming centers to care for vulnerable populations (e.g., the homeless).
- Meeting immediate needs of dialysis patients with electrolyte treatments until dialysis centers could reopen.
- Driving other EMTs and paramedics to work to ensure they would arrive safely.
- Covering the expenses associated with car accidents that employees experienced as they risk their lives to go to work.

No one could question the dedication and innovative approaches of these professionals under very trying circumstances.

Problem Statement and Gap Assessment

In spite of heroic efforts, there were many systemic and contingency related problems that made EMS challenging and limited the capacity to respond. Some of them related to staffing shortages and pay. Others were more relevant to the nature of this disaster and the challenges of reacting under severe winter weather conditions.

One systemic issue facing EMS is staffing. According to some of those working in EMS, there is a lack of EMTs and Paramedics. Assertions have been made that “we have never been fully staffed” and that this may be a result of insufficient hourly wages. One of the individuals interviewed for this study suggested that “you can make more being a Buckey’s clerk” (a gas station attendant). Others agreed and expressed concern that the \$15.00 to \$22.00 range for hourly wages is not attracting sufficient or qualified candidates. Firefighter and police officers typically make 15-30% more. Consequently, there are never enough personnel to meet the demands of EMS.

In addition to this challenge, approximately 15% of the workforce was incapacitated due to their contraction of the Covid-19 virus. What is more, the winter storm caused a whole host of other problems. For example, the President of the Austin EMS Association mentioned six problems facing EMS providers (Xie, n.d.):

1. Loss of power to critical infrastructure.
2. Loss of water to critical infrastructure.
3. Inability to access patients in ambulances.
4. Increase in fleet accidents.
5. Lack of medical resources for vulnerable patients (O2, dialysis, methadone, and power).
6. Hospital diversions and closures.

Others agree that staffing and power integrity issues were problems, and suggest that fuel shortages, communications and information sharing also hindered the response (Dickson et. al., 2021). Some problems were more prevalent than others.

For instance, the loss of power and water had a direct impact on EMS providers. In some cases, EMTs and paramedics became victims of the disaster at home since they lacked essential utility services. The needs at their place of residence made it difficult for some employees to engage in their life saving work because they had to care for their family members. In other cases, even their EMS facility had lost power and water, which complicated operations (e.g., opening garage bays, recharging batteries, cooking food, or using the rest room).

Making matters worse, the roads created situations where driving to work or driving for work became impossible or dangerous. Some employees could not get to work so supervisors or

other EMS personnel would pick up their peers. Alternatively, some EMS units rented rooms at hotels so their employees would be closer to the station (thereby avoiding a commute to work). In different cases, EMTs and paramedics slept in the EMS facilities themselves (even when power and water was not available). Matt Zavadsky, an employee with MedStar, stated that “we actually turned some of our classrooms into housing facilities, not only for our personnel but for their families. It is hard to ask first responders to come to work every day when their families are struggling with not having electricity, not having water” (Scaia 2021).

When responding to calls, EMS personnel experienced difficulty driving ambulances. Ambulances got stuck and had challenges with traction. One EMT commented “we were so close to sliding off of roadways and even over guardrails on overpasses (which would have ended in our death). We often had very little control over our ambulance” (Xie, n.d.). Many ambulances were involved in accidents, and some had to be taken out of service.

Other problems that EMS providers experienced were multi-faceted. EMTs and paramedics had to work long hours spending time and energy in arduous work with limited food and water or restroom facilities. The combination of high demands and limited personnel resulted in a situation where EMTs had to work overtime. These individuals did not have nutrition and hydration at their facility and could not always find it while working in the field because fast food restaurants and convenience stores were often closed due to the loss of power, the loss of water, or the lack of employees who were able to drive to work. In many cases, those working in EMS could not find operating restrooms. One female employee stated she had to relieve herself in a vomit bag in the back of ambulance.

Communications and direction from leaders were often lacking. EMS personnel did not receive instructions on how to handle this major disaster and did not always know when they were going to get off a shift or who was coming to replace them. They felt they were “rudderless” and did not always know what was going on or what should be done from a strategic perspective. One EMT suggested that the “blind leaders resulted in blind medics” who struggled to meet the needs of victims. Others, also in negative tone, suggested that “the department stood by silently while we struggled” (Xie, n.d.).

Regarding these very trying circumstances, one EMT revealed:

I worked 29+ hours on a shift. We were sent literally all over the city, from far north to far south, back-to-back. [We had] no food, water. [We were] told we couldn't use hospital bathrooms, yet our station's bathrooms were unusable due to [the lack of] water. We literally had no relief. We were exhausted, run ragged, with no nutrition or basic needs to be met (Xie, n.d.).

Topic Discussion

To be clear, not every EMS provider went through the same challenges. Some EMTs and paramedics were able to commute to work and others were able to safely drive the icy roads when responding to emergency calls. Other departments were not impacted by the loss of electricity and water. Different units had sufficient supplies to stock ambulances or had additives to prevent diesel fuel from gelling up due to the extreme winter weather.

Nevertheless, Winter Storm Uri provided some important lessons for Emergency Medical Services. The President of the Austin EMS Association provided several suggestions on how to address the problem experienced in February 2021 (Xie, n.d.):

1. Improve preparedness for cold weather events.
2. Improve preparedness relating to lack of power/food/water.
3. Increase engagement of executive staff during high-profile, multi-day events.
4. Enhance communication.
5. Alter staffing.
6. Use all EMS vehicles.
7. Modify charting.
8. Modify response.
9. Treat prolonged incidents like a deployment.
10. Acquire 4X4 ambulances.

Other jurisdictions and departments conducted after action reports and are currently making a variety of changes so the aforementioned problems can be avoided. For example, new tires and chains have been purchased for ambulances. MREs have been acquired and distributed. Blankets, hand warmers and water are being stored. In Austin, EMS providers have been issued “yak tracks, a slip-on rubber and metal gripping device that you can slide onto the bottom of your shoes. It [makes] trekking through the ice and snow a little bit easier” (Newland 2022).

The storm also indicated that “there needs to be more frequent communication from [the department] executive . . . about changes and expectations. This event should have had several (communications) per day, not one per day” (Xie, n.d.).

The Way Forward

As noted above, Winter Storm Uri posed excessive demands on Emergency Medical Services. Traffic accidents resulted in injuries and patients needed treatment for hypothermia and carbon monoxide poisoning. Calls increased dramatically and EMTs and paramedics worked diligently to meet victim needs. Unfortunately, these individuals struggled to do their job due to impassible roads, the loss of utilities at home or work, insufficient food/water/restroom facilities, and limited communication from supervisors.

Nevertheless, we can learn from this experience, avoid prior mistakes, and be in a better position to respond more effectively next time. Darren Noak, the Deputy Public Information Officer with the Austin-Travis County Emergency Medical Services (ATCEMS), stated it best: “It’s

always a matter of preparation. It's a matter of looking back retrospectively and seeing what worked and what didn't, and making improvements and being ready for it again" (Newland 2022).

To the extent that this can be done, the problems Emergency Medical Services encountered during Winter Storm Uri can be overcome in the future. We should remember that old adage provided by Robert Dickson (2021): "Prior proper preparation prevents poor performance."

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