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IDENTIFYING AND OVERCOMING HEALTHCARE COMMUNICATIONS VULNERABILITIES: NASHVILLE, TN

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"Evacuate now," warned the computerized voice coming from the recreational vehicle (RV) parked in front of an AT&T building in downtown Nashville, early Christmas morning. As the warnings continued, police officers did their best to evacuate nearby buildings. The blast, which occurred at 6:30 a.m., injured several people and damaged nearly 50 buildings, including the AT&T transmission facility that served as a primary wireless and wireline service provider to the region. While the blast did not cause a mass casualty incident, it significantly impacted healthcare communications throughout the region.

Willie Suggs, Director of Emergency Operations for HCA Healthcare's Centennial Medical Center and Co-Chair of the Tennessee Highland Rim healthcare coalition (HCC) was notified by Nashville Fire Department of a mass casualty alert from an explosion early Christmas morning 2020.

Scott Cormier, the Vice President of Emergency Management, Environment of Care, & Safety for Medxcel (the largest provider of healthcare facilities services in the U.S.), was dealing with a potential flood at one of their hospitals in upstate New York when he was notified about the explosion.

This article details the impacts, lessons learned, strengths, and challenges faced by two professionals with different perspectives of the Nashville healthcare system specific to the Christmas Day explosion in 2020.

THE HIGHLAND RIM EXPERIENCE: WILLIE SUGGS

Most of the healthcare facilities in the Nashville market are located within a two-mile radius from the blast site. While initial notification of an event with potential casualties came directly to the emergency departments from the Nashville 911 center, many staff members witnessed the incident while driving to work. Facility staff activated their mass casualty plans and due to early warnings, had approximately 45 minutes to prepare for an influx of patients. While communications with on-scene command were effective, we did not know how many casualties to expect. We were very happy that the number of injured people was relatively low. After an hour, hospitals in the region resumed operations while remaining alert for potential victims buried in the blast debris. The crime scene was investigated by the Bureau of Alcohol, Tobacco, and Firearms, the Federal Bureau of Investigation, and local and state law enforcement agencies.

The Highland Rim region is comprised of 13 Tennessee counties served by 24 hospitals; more than half are in the greater Nashville area.

Things changed quickly; at 9:00 a.m., we started noticing scattered outages with cellular, landline and internet communications. Staff were not able to make outgoing calls from landline phones and entire communications systems (wireless, landline, and internet) were down for many facilities. Outages grew and became citywide, affecting other critical infrastructure partners and spreading to southern Kentucky and Alabama.

Because it was a holiday, staffing was somewhat limited, but we were able to hold the night shift over to help with the anticipated mass casualty response. Healthcare facilities in the region faced several challenges, including:

- The loss of voice over internet protocol (VOIP) in certain facilities.
  - » In some cases, internal communications still worked, but many were unable to make outgoing calls.
  - » Some lost VOIP due to having the same network source for phone and network service.
  - » Others had redundancies with network (such as satellite connectivity) and maintained VOIP and internal communications.
- Failure of many dedicated, redundant backup or “red” phones because they relied on the same landlines feeding the facility that were impacted by the bombing.
- Loss of internet connectivity for facilities that relied on single vendors.
- Failure of cellular systems, affecting communications among and between leadership and clinical teams.
- Loss of connectivity throughout the day with life safety, fire alarms, and oxygen monitoring systems.

FACILITY-LEVEL LESSONS LEARNED

- Use multiple cellular and internet vendors/providers; this will allow you to be able to switch over quickly.
- Consider providing dual sim card cell phones.
- Ensure provision of various cellular providers for leadership and clinical teams to reduce the risk of losing connectivity with all vital team members at one time.
- Maintain updated list of home addresses for leadership in downtime playbooks or other documentation. When communications failed, it was hard to locate some leaders, especially on Christmas morning.
- Make sure staff have knowledge of and are appropriately trained on the use of backup communications tools (it took time to bring some staff up to speed).
- Train and exercise on different levels of outages (i.e., partial or sporadic outages versus total inability to communicate internally or externally).

- An initial loss of the “Healthcare Resource Tracking System” (HRTS), a web-based coordination tool used to manage healthcare facility bed and other asset availability.
- Limited capacity of mass alerts. Mass alerts could be sent, but were not reaching all members, making it challenging to provide timely updates and situational reports.
    - » Response agencies and acute care hospitals have radio capabilities; long-term care, skilled nursing facilities, and dialysis centers in the region do not have the same capabilities.
- Failures within 911 call centers in several counties (incoming calls could not connect).

What Worked Well for the Region

- We had pre-established relationships with our response partners throughout the region. We participate in daily calls with our partners due to COVID-19; this proved helpful when we had to communicate with on-scene command after the explosion.
- Residents were watching television to learn more about the explosion, so we used that outlet to share alternate 911 center information.
- Existing partnerships were successfully leveraged; Regional Hospital Coordinators sent HCC members results from the impact assessments, highlighting services lost at each facility and related impacts on patient care.
- The Healthcare and Public Health Sector Coordinating Council (HPH SCC)-led public/private/federal/regional response coordination calls with telecommunications partners were a huge asset; with HPH SCC assistance, we were able to get the right people at the table quickly.
- AT&T deployed satellite Cell on Light Trucks (COLTs) to help reestablish their cellular communications. COLTs were in place for approximately two weeks, until full recovery was achieved. Verizon Wireless assisted with alternate communications to other impacted regions.

Gaps and Remaining Challenges

- There remains a need for more routine coordination with public/private sectors—on the federal level and regionally. We need to invite these stakeholders to participate in regional planning and exercises.
- Many communications plans are “all or nothing.” We either assume we have fully operational communications when we drill, or we plan for no communications and assume a smooth switchover to the use of satellite phones or radios. We do not do a good job demonstrating what we will do in the gray area—when communications are affected but not totally down—this should be added to our drills.
- Facilities have different devices for back up use, making interoperability between facilities a challenge.

MEDXCEL'S PERSPECTIVE: SCOTT CORMIER

Medxcel provides emergency management, environment of care, and safety services to 161 hospitals and 34,000 affiliated physicians across the country. We serve nine hospitals and 30 outpatient locations in the Nashville area. Our local, market, and national command centers were already activated for COVID-19 and we were also responding to significant flooding in Binghamton, NY. Once notified about the Nashville explosion, Medxcel activated a local team to increase security, assess damage, and prepare for victims. The impact assessment revealed a major communication gap. We increased security patrols to prepare for potential secondary disruptions and reminded associates to properly display badges, secure facility doors, and report suspicious people/packages.

Medxcel supports 161 hospitals, 2,600 sites of care, more than 22,000 beds, and 34,000 affiliate physicians across the country; nine hospitals and 30 outpatient locations are in the Nashville area.

Facility-level Assessment

- External call and fax functions were disrupted.
- We were unable to contact 911 centers through traditional communication paths.
- Home phones and internet services were also down; this was a critical issue because so many employees are currently working remotely.
- AT&T cell phones were down.
- Internal calls (using VOIP) and internet connections were functional (we use multiple vendors for communications to enhance our resilience).
- Most importantly, all associates were safe and accounted for, and there were no fatalities.

Early Steps

- Executive leadership and board members were kept informed on a regular, pre-determined basis. We have a standardized process where we send the executive leaders initial updates via text and email. This keeps them off the phones and allows our local teams to focus on incident management.
- That day, we had our on-scene team gather more information via an emergency management situation report. We sent a more comprehensive update to executives at 3:00 pm.
- We activated the communications annex of our emergency operations plan. We provided hot spots and Sprint phones to key hospital and outpatient leaders and remote workers.

CORPORATE COMMUNITY LESSONS LEARNED

Critical services were restored on December 28, 2020; work arounds helped our hospitals open to normal volume and offer traditional services. All services were recovered, and normal operations resumed on January 6, 2021. It will take a while for us to gather costs and data for insurance and/or reimbursement from the Federal Emergency Management Agency. We have learned several lessons from this incident and other recent outages and we are constantly reviewing and updating our plans to ensure they are incorporated. For example:

- When you cannot communicate with a team, you must be able to trust them to do the right thing. During a disaster, I think we ask for too much information, which leads to inaccurate data, and puts a burden on the local teams. As leaders, we must remove roadblocks and provide support, and part of that process is trusting your teams to follow the plan. Training and exercises, as well as spending time with your teams, builds this confidence and trust.
- Redundancy is the key. Think about new techniques

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to mitigate risk. There are services you can add to a building. For example, your internal phone system can be set up to transfer over to a satellite in the event of an outage. You can maintain your phone numbers so you do not have to redirect callers to a cell or handled satellite phone.

- Understand what the processes are for leveraging text messages or ham radios, or even runners. Now that we are all essentially operating virtual incident command systems due to the COVID-19 pandemic, figure out what works best for your facility and system.
- Add communication failures to your exercises and test your back up equipment regularly.
- Consider incorporating FirstNet and Government Emergency Telecommunications Service (GETS) / Wireless Priority Service (WPS) into your communications plan.[1]

[1] GETS works for landlines and prioritizes calls during network congestion. During this incident, there was no network congestion (it was down), so GETS was not useful. WPS prioritizes cellular communication at the tower during congestion. For those facilities using AT&T, those towers were down and WPS was not helpful. While these systems were not specifically useful during this event, they could be during other disasters.

- Calls were rerouted through a data center in TX.
- Our Nashville hospitals use "Voalte" phones which operate over the internet; they worked throughout the incident and allowed command centers to maintain communication with all providers until full communications were restored.
- We assigned people from, and coordinated with, local, state, and federal partners to cover all calls and confirm information.
- Bulk oxygen monitoring had to be switched to a manual process for all of our Nashville area hospitals.
- We lost connection with the fire panel monitoring company; we had to move to manual monitoring process at all Nashville hospitals.
- While the outages did not impact COVID-19 vaccine storage or plans, we continued to monitor both.

> *"Relationships built before disasters are crucial. We were able to open the "rolodex" and "muscle memory communication" allowed us to connect with key partners quickly and efficiently."*
> *--Scott Cormier*