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HOSPITAL EVACUATION DURING A WILDFIRE AND PANDEMIC: Avista Adventist Shares their Experience



Avista Adventist is a Level III trauma center with two trauma suites, nine surgical suites, and 114 beds. The facility has a considerable obstetrics department and the area's largest NICU.

On December 30th, 2021, healthcare workers at Centura Health's Avista Adventist Hospital (Louisville, CO) were managing a pandemic and planning for a winter storm. The hospital, which includes a large neonatal intensive care unit (NICU), was full, with less than 5% capacity. Unbeknownst to the staff working during that holiday weekend, the Marshall Fire was approaching the building, and would cause some of them to lose their homes while forcing the hospital to evacuate in under two hours. While the after-action report is still being prepared, ASPR TRACIE met with five subject matter experts (listed alphabetically) to learn more about their experiences, challenges, and lessons learned:

- Mark Daugherty, EMS Chief, North Metro Fire Rescue District
- Michelle Deland, MA, CO-CEM, MEP, Executive Director, North Central Region Healthcare Coalition
- Caroline Fraser, Nurse Manager, Avista Adventist Hospital
- Natalie Ingmire, Director of Quality and Facilities, Avista Adventist Hospital
- Chris Mailliard, Emergency Manager for Avista Adventist Hospital and St. Anthony North Hospital

■ John Hick, ASPR TRACIE (JH)

Michelle and Chris, can you please set the stage for us? What did the hospital look like on December 30, prior to the fire?

■ Michelle Deland (MD HCC)

Like many hospitals, we activated our regional hospital coordination plan and healthcare coalition (HCC) response plans in March 2020, in response to COVID-19, and we were in a good rhythm, sharing information and resources across the area. We had strong ties with many local partners and shared weekly or daily status updates with them. On the day of the fire, hospitals across Colorado were full and both crisis standards of care and a combined hospital transfer plan had been activated. The whole system was very stressed.

■ Chris Mailliard (CM)

The hospital was also short staffed because we were between winter holidays. To provide some background, we regularly engage in regional planning, training, and exercises. In 2018, we conducted our first HCC surge test, with Avista as an evacuating hospital. We also recently held a mass casualty incident (MCI) exercise. Both experiences contributed to the success of the response to this incident, but there were some challenges.

■ JH

Natalie, when did you assume the role of incident commander?

■ Natalie Ingmire (NI)

I smelled smoke in the basement, then I went outside and saw the smoke from the fire. I ran down to the facilities area, and they were shutting down the air handlers. I quickly went to the roof to get a better perspective, and that is when I decided to activate incident command. First, we issued an overhead page to determine who was in the building and could serve as the incident commander. The director of surgery and I were the two on-site options at the time, and he had to leave to check on his house, so I became the incident commander. Chris arrived shortly afterwards. We had three priorities: send staff who lived in affected areas out to check on their homes and loved ones, ensure patient safety, and determine if we needed to evacuate the building.

■ JH

How was information about the size and scope of the fire shared with you?

■ CM

This was one of our biggest challenges. At 11:54, Natalie sent me a picture of the smoke, and I turned on the scanner app to figure out what was going on and listened to the radio the whole way to the hospital. I could even see the fire while on the freeway. Just an hour later, after I arrived at the hospital and began pre-evacuation procedures, I heard on the scanner that officials were evacuating east of McCaslin Road, where the hospital is located.

I immediately called the Boulder County Sheriff's Office dispatch—no answer. Then I tried the county's office of emergency management—no answer. I tried using our 800-MHz radio—no answer. Next, I left a message with the Boulder County Department of Public Health, and called Michelle

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Deland, because I knew she would answer. Someone from the public health department called me back four minutes later and that is when we made our initial resource request. Looking back, I should have called 911 because they probably would have rolled the call over to the City and County of Broomfield, which is where the bulk of our assistance eventually came from.

■ MD HCC

Based on the HCC surge exercise, we knew that getting emergency medical services (EMS) resources would be a limiting factor; it was clear that the resources in Boulder County were already in use. Thankfully, Avista is close to Broomfield County, and they were able to assist since they were not yet affected by the wildfire.

■ Mark Daugherty (MD Fire)

There was some doubt at first about Avista needing to evacuate, simply because it was very hard to imagine a wildfire affecting this area in general, let alone a large hospital. The Avista building is fire resistant and surrounded by green space. As soon as I arrived, however, it was clear the amount of smoke was an immediate threat to the well-being of the patients within the hospital. It was also evident that sheltering in place was not realistic and that evacuation was the right call. Thankfully, Chris set up the MCI training in the recent past and the scenario was similar to what we were facing: how to rapidly evacuate a large number of patients from a hospital. It was obvious Boulder County was overwhelmed with the response and unable to provide support, so I decided to rely primarily upon Broomfield County's dispatch center to request regional resources. As the fire continued to advance on the hospital, my main concern was the roof catching fire or a window being broken – either of these issues would likely result in a full structure fire.

■ JH

What resources did you request?

■ MD Fire

As many medic units as possible to come to hospital. At the time, we already had fire resources fighting the fire and we were initially assigned three fire medic units. Then I heard there were four ambulances coming from one of our private companies. I didn't know the timeframe or where they were coming from, which made it hard to plan the evacuation. Two of our own units arrived quickly and three NICU patients were evacuated with nurses in one ambulance followed by several more in the second. Both of those ambulances also carry simple transport ventilators, so we were able to handle the intubated patient transports ourselves rather than wait for critical care transport units.

■ CM

We knew that Mark was ordering everything he could. We did request three critical care ambulances, but they never showed up. Again, we knew this was going to be likely based on our exercise but having the transport ventilators was extremely critical to the response. We had a vented patient

on pressors, but we had to discontinue the pressor for transport because we couldn't send a nurse along. At St. Anthony North (one of the receiving hospitals), they did not have good insight into what that specific patient needed, and the situation became emergent.

This was another lesson learned; we need to determine how to make do with what we get and ensure that what we get matches patients' needs. I knew I was overloading St. Anthony's, but I needed to keep the transport destination close because I did not know if or when I would get more ambulances.

■ MD Fire

Honestly, we turned and burned; it was easier to have our units transport patients and come back to the hospital than to request new ambulances. Round trips were pretty quick; I saw one of our units three times.

■ JH

Did the emergency department become a staging area for the evacuation?

■ Caroline Fraser (CF)

Ironically, December 30 was one of the first days in a while that we had only three patients in the emergency department (ED). We discharged them and became a staging area, setting up areas where we could group similar patients. We had one mother in active labor and another who had just had a C-section. NICU nurses brought NICU patients down through smoky stairwells. ICU patients were evacuated while flames burned outside the windows. We double bunked those patients in our critical bay and kept the ventilated patients together in one room, and all NICU babies and nurses in another room. We strategically placed the sickest patients closest to the exit. The smoke was so thick it was hard for me to see all the way down the hall of the ED. Thankfully, the director of nursing was staffing the other end of the unit.

■ JH

As the smoke thickened and flames approached, did you stop asking ambulances to respond?

■ MD Fire

Our goal was to protect the hospital and the responders' ingress and egress to the parking lot. I spent a lot of time identifying pathways for ambulances, and one did drive through a flame wall to get to the hospital. We did not have good radio communications with anyone; I had to key up my radio a few times to send messages. And we had some younger paramedics respond to the scene; had I known the full extent of the situation, I might not have permitted that. Another challenge we faced was water supply; most of our engines were designed for defending single homes, not wildland firefighting. This fire caught everyone off guard. Another thing we will certainly be addressing in our plans is how to facilitate fire suppression for a large facility with low situational awareness while simultaneously trying to evacuate patients.

■ JH

How long did the evacuation process take?

■ NI

It took two hours from when we made the decision to evacuate to complete the process. Once all patients had been moved, we moved our incident command team to St. Anthony (12 miles away and about 15 minutes for an ambulance using the express toll road) and worked from that facility.

■ JH

Were you able to track patients from your facility to receiving facilities?

■ CM

Before COVID and after the HCC surge test, I had my EPIC group design an evacuation reporting function that calculated patient census and their needs to determine who we needed to move and with what resources. During the fire, we found it clunky and hard to access; we will work with team to make it more robust and easier to use.

Moving the patients electronically provided to be one of the most significant struggles we faced. We had to turn our obstetric triage area into a NICU and an informatics team had to set these beds up in EPIC very quickly.

We had to electronically discharge patients from Avista and admit them to St. Anthony. Once we discharged them, however, all of their ventilation and other resource order sets disappeared from the system. Luckily, staff at St. Anthony were able to quickly address these challenges. The fact that I overloaded them with patients did not help; they have shared that they wish they had known more about the patients they were receiving ahead of time.

We were also in the middle of a shift change during the evacuation, so while we knew St. Anthony had beds, they were not clean. This is another aspect we will include in future plans.

■ JH

The hospital is re-opened, and quite quickly. How did recovery go, and what services did you provide staff who were personally affected by the fire?

■ NI

We came back the next morning and noted that all the air filters had to be replaced. We also had to switch the boilers over, as we had turned off the natural gas source during the fire. We had a third-party industrial hygienist and recovery company meet us on site that morning, and we developed a plan and hit the ground running.

■ CM

The natural gas was brought back online quickly, but water presented another challenge. It was contaminated by lake water pulled into the

system to help fight the fire, and we were concerned about legionella. We flushed the system twice (once with heat and the second time with bleach) and administered a range of tests to ensure our water was potable before reopening the hospital.

■ NI

Determining which tests to use on the water presented another challenge, as we are both Joint Commission certified and receive CMS funds—so we administered several tests to prove the water was potable. We reopened the hospital 19 days after the fire, on January 18th, 2022. We are still trying to spread the word to the community, so they know we are fully functional. Residents lost homes or relocated after the fire. Some also heard that the hospital was closed, so our census is lower than before.

■ JH

How were hospital staff affected by the response and the fire in general?

■ CM

Twenty staff members lost their homes due to the fire. The Centura system provided each person compensation and housing for three months. The community continues to donate to support staff affected by the incident. Many continue to struggle emotionally, trying to process what happened. It truly was a surreal scene inside and outside the hospital.

■ JH

Any closing thoughts you would like to share with our stakeholders?

■ MD Fire

The relationships developed in advance, the trust in each other, and the existing plans were all integral to the speed of evacuation that day. It was remarkable that the response went as well as it did.

■ CM

One thing that helped us was that we exercised certain aspects of the evacuation plan repeatedly (e.g., acquiring patient census data, determining who we needed to move) over time, so when it came time to do it in real life, we knew how to quickly gather most of the information we needed.

When we compared our response against our written plan after the incident, however, we realized that while we checked every box, our evacuation plan was based on assumptions: we would have ample time, robust communications, and timely situational awareness while we coordinated with others in the region to evacuate and track patients. This was not the case, and we are reworking our plans to incorporate the lessons we learned during this evacuation.