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Facing the Freeze

Carla Edmonds, BSN, RN, Ochsner/LSU Health, Shreveport, LA

During the winter of 2021, like the rest of the country, we were we facing incredibly sick COVID patients who were in desparate need of hemodialysis. It should be understood that in the South there are very limited resources when it comes to snow and ice. Inclement weather can be tolerated to a certain extend, but when there is more than a few inches of either snow or ice, and especially if either lasts for more than a day or two those resources are quickly depleted. Buildings and infrasctructure in Louisiana are (for the most part) not constructed to withstand freezing temperatures and especially not subzero temperatures.

The first day of snow began like most do here in north Lousiana. Everyone was excited and outside taking pictures and making tiny snowmen. Day two slowly faded into day three which brought freezing rain/ice, higher winds, and subzero tempertures. Going into day three was when water mains in the city began to burst and the power outages began. Up to this point the hospital had been fine. Staff were being brought in using four-wheel drives. They were provided food and places to sleep in the hospital. Supplies were well stocked and the basic plan was to make it through the next day or two and then return to business as usual. However, once water mains throughout the city began to burst everyone knew this was not going to end anytime soon. The hemodialysis department had run relatively smooth up to this point. But, having no water stopped us immediately. CRRT (Continuous Renal Replacement Therapy) was able to continue, but those supplies were being quickly depleted. The more critical patients were switched to this modality immediately but staffing and equipment for this were limited. Efforts were being made to bring more supplies from a sister hospital a few hours away, but these were not going to be delivered any time soon. After about 36 hours of being completely unable to run any form of hemodialysis there was a sense of urgency and ensuing panic. Something had to be done and done quickly. There was damage to so many water mains and pipes, it was now realized that water to the hospital was not going to be able to be restored for some time….days. A state of emergency was declared and requests for potable water trucks had been made. These trucks began arriving within 10-12 hours of the request and were greatly needed.

Prior to all this occuring the dialysis department was already operating in a temporary location due to renovation/construction being done in the primary location. A temporay DI (deionization) system was being used. In order to operate efficiently and push water to 9 patient stations an external booster pump had been installed. An observation was made that staff were pushing barrels of potable water (from the water trucks) to patient rooms and other areas to flush toliets, put in the broiler systems, and also being taken to the kitchen to boil and cook with. It was mentioned to the Medical Director that if some of those barrels could be brought up to the dialysis unit. It was thought that it may be possible to use the booster pump to pull water from the barrels using the end portion of the hose that was connected to

the domestic water source, it would then push the water through the DI system and then out to the patient stations, just the same as if it were connected to a domestic water source. This idea was discussed with hospital administration and being that the trucks contained potable water, the green light was given to see if this would work. At this point there were no other options for hemodialysis to occur.

Potable water was pumped from the water trucks into 55 gallon barrels that were then brought up to the dialysis unit. The external booster pump was disconnected from the main domestic water connection and the hose dropped into the barrel containing the potable water. The DI system and booster pump were then powered on along with the hemodialysis machine in patient station #1. After a few minutes the "no water" alarm on the screen of the hemodialysis machine turned off to much cheer and applause! The dialysis machine was then put into a rinse cycle. It needed to be determined if there was indeed enough water pressure for the machine to go through a rinse and disinfection cycle without issue. The machine cycled through each without any alarms going off. Water testing was performed to ensure the water was purified and there were no issues. The machines in patient station 2 and 3 was also powered on and went through the same cycles with no issues. After approximately 60 hours of having no access to any water source we brought our first patient into the dialysis unit and were able to begin hemodialysis treatments. Two additional patients were brought in and were able to receive a hemodialysis treatment as well. The following days were incredible. Eventually all 9 patients stations were able to run using barrels of potable water from tanker trucks and this booster pump. The hemodialysis staff was incredible. While patients were running a nurse was assigned specifically to keep the barrels filled for the booster pump and refilled barrrels from the water trucks.

Innovative thinking and resources were used during a time of emergency. Because of this life saving hemodialysis treatments were able to be given and these patients benefited greatly. It is always important to have an emergency plan in place, however sometimes life hands you something completely unexpected. Although an emergency plan was in place prior to this, it was never imagined that the entire city would have absolutely no access to running water. Emergency plans that included moving patients to another local facility no longer applied. Emergency plans now included having access to potable water with tanker trucks and always having a booster pump handy!

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