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Managing a Mass Casualty Incident with the RAD-57

In May 2008, the Worcester Fire Department responded to a call for a woman feeling ill at work. Engine 13 was dispatched to an old 5-story office building, known as the Stevens Block. It was during the work day, so the building was filled with employees. As we made our way to the fourth floor to evaluate the patient, other occupants began complaining about feeling ill. Right away, we knew this was more than just "the flu". Something serious was going on and we needed to evacuate the building. The incident was escalated to increase the number of fire companies and personnel on the scene that were equipped with four-gas monitoring instruments.

Triage Made Easy by Onsite CO Screening

As 150 panicked people poured out of the building—many complaining of nausea and sickness—EMS crews, firefighters and police worked to assist them to the designated triage area for assessment. Using the Masimo Rad-57 Pulse CO-Oximeter we were able to quickly assess all occupants evacuated from the building for carbon monoxide poisoning. Based on that assessment, we identified two people with severe CO poisoning (29% and 43%) and transported them directly to the hyperbaric center in Boston for treatment. In addition, we transported 19 other office workers with elevated levels of CO (10% to 20%) to the hospital for treatment.

Using the Rad-57 to assess all evacuees also served to alleviate the worries of the building occupants who were not poisoned. This helped us to manage the majority of people on scene and avoid unnecessary transport. It could have turned into a nightmare if all 150 evacuees had to be transported to local hospitals. Both the city's EMS system and ERs would have been quickly overwhelmed, causing long wait times at the hospitals and unnecessary costs for the patients, ambulance services and hospitals.

Rad-57 Helps Reveal the CO Source

The paramedics did not have a Rad-57 so we were the only ones with the ability to measure CO blood levels on the scene. Our Rad-57 was an extremely useful diagnostic tool that benefited everyone involved. In fact, the Rad-57 even helped us to solve another big problem because initially, we couldn't isolate the source of the CO poisoning. But, by using the Rad-57, we were able to connect the occupants with higher CO measurements to the floor they worked on, which helped us zero in on the source— a faulty furnace in the basement circulating CO gas to the fourth floor through a void in the wall.

Our safety committee initially ordered the Rad-57 for rehab of our own firefighters during fire operations. Now, we use them on a variety of calls because they help us to make more accurate diagnoses by either confirming, or ruling out CO poisoning. We currently have two units—one for fire crews serving the South End and the other for the North End. So, regardless of the location or situation, we know that a Rad-57 will be on the scene.

At this incident, the Rad-57 did more than just triage victims. It effectively integrated itself into the city's mass casualty response system. For us, our Rad-57s are worth their weight in gold!

Worcester Fire Engine

Worcester Fire Department, located in Worcester, MA, covers a 40 square mile territory serving a population of 176,000. The department includes 406 career firefighters in 21 companies, with 13 engines, 7 ladders and 1 heavy rescue. The basic life support (BLS) unit responds to 25,000 - 30,000 runs per year.