June 2020 | Volume 23, Issue No. 6

# Healthcare Life Safety Compliance

*Credit: Loveguli. Image Source: www.gettyimages.com*

## In this Issue



HCPro
a Simplify Compliance brand

*Emergency management*

## California hospitals plan for power outages

*by John Palmer*

California hospitals already dealing with the effects of the COVID-19 pandemic must also be ready for another hardship—planned power outages.

Developed by the state's energy providers over the last two years as a response to historic wildfires that burned thousands of acres and threatened hospitals across the state, the rolling blackouts aim to prevent fires during the windy weather that often accompanies fire season.

Power companies such as Edison and Pacific Gas & Electric (PG&E) have begun the precautionary power outages to prevent high winds from downing power lines, a wildfire hazard.

Last October, PG&E shut off power to more than 248 hospitals and millions of customers to prevent uncontrolled power outages during the region's powerful Santa Ana winds. The winds have a tendency to exacerbate fire conditions, rushing in to coastal California from the Sierra Nevada mountains to the east.

The outages seem to be necessary to save lives, but the practice is also a money-saving move by utility companies like PG&E—which is still paying out billions as a result of damage from the deadly Camp Fire of 2018.

Of course, hospitals are required to be ready for anything—including power outages. Hospitals generally don't plan to evacuate unless there is no other option, or if they can't stay operational for long. In late 2016, the Centers for Medicare and Medicaid Services (CMS) passed emergency preparedness requirements for 17 types of healthcare facilities that receive benefits from the government. Among other things, CMS now requires hospitals to plan to stay operational for 96 hours after a major event, plus supply proof that their backup power systems can remain operational.

Healthcare watchdogs, however, say utility companies need to work with hospitals to make sure patient lives are not put in jeopardy during a power outage.

"Saving lives is paramount, of course, but hospitals—whose business is saving lives every day—are seeing troubling signs that the shutoffs are having unintended harmful effects," according to a January 2020 written statement by Carmela Coyle, president & CEO of the California Hospital Association, to members of a government sub-committee overseeing the situation. "Of greater concern is the suggestion some have

made that these planned shutoffs are a 'new normal' for California, and could be in place for a decade or longer. If true, that would create a virtual year-round disaster state, one where the adverse effects already seen in 2019 would be just the tip of the iceberg."

Some of the hardships that the planned power outages create for hospitals, she said, include the following:

- Challenges and stress for nurses, doctors, and other healthcare employees. If employees can't get to the hospital when their own families and homes are out of power and schools are closed, that could lead to delays in surgeries and other treatment, such as chemotherapy and dialysis.
- Patients who rely on a safe, powered home environment now needing hospital care. Coyle specified one case in which an elderly woman fell due to a lack of lighting. In another, a patient's respiratory function was compromised due to a lack of power for a home ventilator.
- Ensuring safe patient discharges, as patients who should be able to move to a nursing home or return home cannot do so without electricity. This can lead to significant logjams at the hospital and patients receiving a higher, more costly level of care than necessary.
- Patients enduring uncomfortable pre-surgical preparation and anxiety only to have their elective surgical procedure cancelled due to power limitations.
- Risk to expensive technologies when imprecise communication from power companies prevents hospitals from properly powering down equipment prior to a shutoff.
- Additional costs incurred by hospitals due to cancelled surgeries and procedures. Employee overtime could also be costly, with engineers and facility teams working around the clock and other caregivers taking extra shifts to cover for employees who have trouble getting to work.

Of course, this year's fire season hasn't gotten into full swing yet, and it's still too early to predict the COVID-19 pandemic's full effect on emergency contingencies. If risks to patients become too great or if hospitals are overwhelmed, there's always a chance that the rolling power outages will be canceled.

One thing is certain: California has become more of a tinderbox in recent times. Fires that threaten the perimeters of hospitals seem to be more commonplace and severe every year.

In August 2014, the Eiler Fire quadrupled in size almost overnight, causing what some termed a "fire tornado," and bore down on the Mayers Memorial Hospital Burney Annex in Burney, California.

The firestorm came within five miles of the hospital and rained ash and sparks onto the surrounding area, forcing at least 40 patients from the long-term care hospital to evacuate 65 miles away to Mercy Medical Center in Redding. From there, the patients were placed in nearby healthcare facilities until the danger receded, according to a report in the Redding Record Searchlight. This event and other fires that year burned more than 117,000 acres combined.

On October 10, 2017, at least two hospitals were forced to evacuate patients when wildfires in northern California got too close. About 130 patients were transported from Santa Rosa Medical Center to Kaiser Permanente San Rafael and other facilities. The Santa Rosa hospital was undamaged but was closed, with scheduled appointments and surgeries cancelled. Sutter Santa Rosa Regional Hospital also evacuated 70 patients.

"Literally, the fire was raging all around the hospital," says Lisa Amador, director of North Bay strategy and business development at Sutter. "Firefighters were defending the hospital right up to the door. It was a firestorm around the hospital. The patients were here in the hospital, and we had a full staff."

Then there was the 2018 Mendocino Complex fire, which took out 460,000 acres and remains California's largest wildfire to date.

As the fires get bigger, hospital officials continue to look for ways to mitigate the danger and keep healthcare facilities open. To their credit, the agreements with utility companies usually stipulate that the utility company will try to give potentially affected hospitals up to 48 hours' notice before a power outage happens—especially when anticipating windy conditions that might be hazardous.

That gives hospitals a chance to make sure their generators are in good working condition and ready to take over—usually within 10 seconds of an outage hitting. In addition, it lets hospitals institute contingency plans that may involve things such as rescheduling elective surgeries.

In some smaller hospitals and medical clinics that don't have emergency generators, their staff will send more critical patients to a backup facility, and use their cell phones to let patients know their appointments may need to be rescheduled. A bill is currently being considered in the California legislature that would reimburse


© 2020 HCPro, a Simplify Compliance brand.

these healthcare workers with backup batteries and unlimited cell tower usage.

Wildfires are not the only things that California hospitals are making contingency plans for—earthquakes remain a real threat in the state, too. Many hospitals are still struggling to meet regulations for the Alfred E. Alquist Hospital Facilities Seismic Safety Act (also known as SB 1953). The law was established in 1994 after the magnitude 6.7 Northridge quake, which caused major structural damage and the eventual loss of 12 hospitals. The event made it clear that California's hospitals were not ready for a large quake—and certainly could not be trusted to remain operational afterwards.

Just over 90% of hospitals are at least somewhat ready to withstand a major earthquake of at least magnitude 7. By 2030, they must be retrofitted to remain standing and operational following a quake, a mandate expected to cost facilities between $34 billion and $143 billion.

OSHPD is the agency that has been overseeing California's project to bring hospitals up to seismic compliance standards. The U.S. Geological Survey continues to estimate a 93% chance of a major quake hitting the San Francisco Bay area within the next 30 years. ■

# Q&A: Para-slides, hot water, generator battery heaters, rolling fire doors

*Editor's note: Each month, Brad Keyes, CHSP, owner of Keyes Life Safety Compliance, answers your questions about life safety compliance. Follow Keyes' blog on life safety at www.keyeslifesafety.com for up to date information.*

## Para-slides stored in the stairwell

**Q: We would like to hang our Para-slides in the stair towers. We would like to put them on wall-mounted brackets. Is there a reason that we can't do this? Towers are all sprinklered and all have fire-rated doors on every level. Please advise.**

**A:** There sure is a reason why you cannot do this: Sections 7.1.3.2.3 and 7.2.2.5.3 of the 2012 Life Safety Code® (LSC) prohibit anything being stored or placed in an exit stairwell.

Stairwells are supposed to be kept clean and clear of anything that would impede egress, and storing Para-slides in the stairwell would indeed impede egress during an emergency. The person who is attempting to grab the Para-slide and take it back to the floor would be working against the flow of those trying to exit the building and would definitely impede the flow of egress.

Sorry, you need to find a different location to store those Para-slides—and if they would project more than 4 inches into the corridor, you can't store them there either.

## Hot water

**Q: What is the standard for hot water in patient rooms?**

**A:** In a hospital setting, the temperature of domestic hot water for clinical use is typically regulated by the state. I'm aware that the FGI guidelines have a range of 105°F to 120°F, so perhaps that would be the range for your application if your state does not regulate it.

The FGI guidelines permit hot water for laundry use to be up to 160°F.

## Battery heaters for generators

**Q: I am with an ambulatory surgical center (ASC) in South Carolina. We passed our state inspection in March and we are currently awaiting and preparing for CMS and AAAHC. We recently had a mock life safety inspection at our facility, and the surveyor noted how the generator is significantly sized (approximately 600 KVA) and that battery-operated emergency lighting for the interior and exterior of the generator is required, as well as a heater for each battery. I have been looking through NFPA and the manuals trying to find a written requirement to justify these recommendations, but have not found it. It's very possible I'm overlooking it; I want to do what is needed, but I need to be able to justify it. Can you please provide standard references for these requirements?**

**A:** Did you ask your life safety consultant to provide NFPA code references in his or her report? Any decent consultant should provide references to any claim made in a report. But since you asked me, I will attempt to provide you with what you ask.

According to NFPA 110-2010, section 5.3.1, the emergency power supply system (EPSS) shall be heated as necessary to maintain the water jacket and battery temperature determined by the EPSS manufacturer for cold start and load acceptance for the type of EPSS. Many authorities having jurisdiction (AHJ) interpret this to mean that you need battery heaters.

According to section 7.3.1 of the same standard, the EPS equipment location(s) shall be provided with battery-powered emergency lighting. This requirement shall not apply to units located outdoors in enclosures that do not include walk-in access. So you do need

© 2020 HCPro, a Simplify Compliance brand. .

battery-powered emergency lights inside the generator location unless the device is outdoors and the enclosure is not large enough to walk inside.

## Positive latching on smoke barrier doors?

**Q: In regards to the new positive latching fire-door rule for existing doors, we have a smoke barrier in our hallway that has no latching device on it. My understanding is that some doors may not have to have new latching hardware as the written information is not clear. We are looking at a $30,000 fix to something that we may or may not need. Can you help clarify LS.02.01.30?**

**A:** Joint Commission standard LS.02.01.30 is pretty generic: "The hospital provides and maintains building features to protect individuals from the hazards of fire and smoke." There are 26 elements of performance (EP) for this standard. Which EP do you want clarification on?

Please understand that section 19.3.7.8 (2) of the 2012 LSC does not require smoke barrier doors to have latching hardware. However, if the smoke barrier door also serves as a fire-rated door, a corridor door, or a hazardous room, then it must also have positive latching hardware. You will need to determine if any of your smoke barrier doors also serve as a door that is required to latch.

## Testing AHU shutdown devices

**Q: I am looking for clarity on the requirements for Joint Commission's standard EC.02.03.05, EP 19. I have been under the impression each device that could shut an air handling unit (AHU) down needed to be tested and thus listed on the fire alarm report from our contractor showing they did. Our contractor is saying as long as one device shuts the air handler down, randomly selected, that is good enough. They said none of the other healthcare facilities they manage do every point, as I was under the impression had to be done. They said the air handlers would be on, off, on, off, and thus could cause other issues, such as if you were to do that in the ORs. I've been listing on our inventory each duct detector point for EP 19, but if the contractor is correct, should I just be listing air handlers to show they would shut down? Or am I correct and each device must be tested that way? Or are neither of us correct and we've got it all wrong? I appreciate any clarity you can provide.**

**A:** Your contractor is NOT correct. I give you credit for questioning what he said and not accepting it verbatim. As you are finding out, some contractors do not understand the codes as well as they think.

While constant on/off of the air handlers is indeed not desirable, you still need to test each and every duct detector in the system. There is nothing in the NFPA 72-2010 that allows you to randomly spot check duct detectors. But proper precautions may be taken to prevent unnecessary on/off of air handlers. For example, once it's confirmed that the initial duct detector does shut down the AHU, you can disconnect the wires to the AHU motor control center and put a volt-meter on the wires and confirm the next duct detector changes their polarity.

Also, for critical care areas (i.e., operating rooms), the duct detectors should be tested when the room is not in use, such as early morning. If the contractor is reluctant to schedule accordingly, then you need to be looking for a new service contractor.

## Generator battery heater

**Q: Are standby generator batteries required to be heated in healthcare?**

**A:** Yes, sort of. NFPA 110-2010 section 5.3.1 says the emergency power supply system (EPSS) shall be heated as necessary to maintain the water jacket and battery temperature determined by the EPSS manufacturer for cold start and load acceptance for the type of EPSS.

So, check with your generator manufacturer or the battery manufacturer and see what temperature you need to maintain the battery. If the generator is located inside a building, then it may already meet the minimum temperature. But if it is located outside, it may not meet the temperature unless it has a heater applied.

## Bulk oxygen storage tanks

**Q: What is the code or standard on the distance that combustibles may be stored from a bulk oxygen storage tank? Where is this documented?**

**A:** According to NFPA 50-2011, section 2.2.7, the minimum distance from any bulk oxygen system to solid materials that burn rapidly, such as excelsior or paper, shall be 50 feet.

According to NFPA 50-2011, section 2.2.8, the minimum distance from any bulk oxygen system to solid materials that burn slowly, such as coal and heavy timber, shall be 25 feet.

According to NFPA 50-2011, section 2.2.12, the minimum distance from any bulk oxygen system to any public sidewalk or parked vehicle shall be 10 feet.

## Overhead rolling fire door

**Q: In a fully sprinklered healthcare occupancy facility, our dietary window has a rolling steel fire door. The door is controlled by a fusible link. It is not**


© 2020 HCPro, a Simplify Compliance brand.

**connected to the fire detection/alarm system. How do you feel NFPA 80-2010, section 11.4.1.2 should be interpreted? Does the code require that it be connected to a local or system detector?**

**A:** Section 11.4.1.2 of NFPA 80-2010 says rolling steel doors shall close automatically upon activation or release of a fusible link or detector. So I would say a fusible link is acceptable in lieu of a smoke detector. But check with your state and local AHJs to determine whether they have more restrictive requirements.

### Conduit installed in the stairwell

**Q: In a multi-story hospital, which is partially protected by automatic sprinklers, are electrical conduit and junction boxes allowed in a stairway used for egress, with the electrical conduit penetrating the from floor to floor?**

**A:** According to section 7.1.3.2.1 (10) of the 2012 LSC, if the conduit is serving the stairwell, or the conduit contains fire alarm circuits (even if the fire alarm circuits do not serve the stairwell), then it would be permitted. Otherwise, it is not permitted.

Now, section 7.1.3.2.1 (10)(h) says existing penetrations are permitted as long as they are properly fire-caulked in accordance with 8.3.5, but if the conduit was installed during a time period when it was illegal to install, then it is illegal today and likely would be cited by the surveyor.

### Surgery center door to sub-sterile area

**Q: I am building a Category 1 ambulatory surgical center (ASC) and have to install a sliding doorway that separates the public area and semi-sterile area. I have been told that this requires a hermetically sealed door to a "clean" door. Do you know if CMS requires a certain type of door? I have tried to ask the accreditation organizations and contractors for hospitals, and I can't get a solid answer. Your input is greatly appreciated.**

**A:** CMS would not have a requirement for a hermetically sealed door. However, check with your state and local AHJs to see if they would require that.

I'm a bit surprised that you would build an ASC that is a Category 1 risk to your staff and patients. A Category 1 risk is one that would lead to a death or serious injury in the event of a system failure. Not that I need to know, but ask yourself what types of surgery you are doing in an ASC that would result in a death or serious injury if the following systems failed:

- Electrical
- HVAC
- Medical gas

Most (if not all) ASCs that I have seen and worked in are a Category 2 risk.

### Libraries as hazardous rooms

**Q: Would you consider a library in a healthcare facility to be a hazardous room? It is over 100 square feet with bookshelves on three of the four walls.**

**A:** That's subjective and would depend on the accreditation organization (AO). According to the LSC, a hazardous room is where combustible supplies are stored in quantities deemed hazardous by the AHJ.

In my opinion, books on a shelf in a library are not in storage, but rather on display. It would be similar in concept to a hospital gift shop. The Technical Committee for the LSC has ruled that hospital gift shops do not have combustible supplies in storage; therefore, they are not hazardous areas. The library does have combustible items (just like the gift shop), but they are not in storage, and one could argue they are reference books rather than supplies.

I suggest you get an official interpretation from CMS and your AO to be sure. ■

*Environment of care*

## Creating airborne infection isolation rooms in a crisis

*by Brian Ward*

When trying to isolate an infectious or immunocompromised patient from the rest of your facility, guidelines and regulations often require using an airborne infection isolation room (AIIR) to keep everyone safe. During the COVID-19 pandemic, however, many facilities have found themselves forced to set up extra patient beds in hospital rooms, parks, stadiums, and convention centers. While not ideal, it is possible even in locations like these to make a temporary working AIIR to help safeguard patients and staff.

Using air pressure controls, air filtration, and exhaust systems, AIIRs protect people within and without by minimizing the spread of contaminants. The air in an isolation room is typically cycled through a HEPA filter 12 times an hour to ensure its quality, explains **Eric Mitchell,** principal and director of mechanical engineering at Goldman Copeland, a New

© 2020 HCPro, a Simplify Compliance brand. .

York City–based consulting engineering firm.

"You're taking all the particles out of the air, you put it through the HEPA filter," he says. "It takes all the droplets, moisture, and quantitative bacteria completely out of the airstream. Then you can dump it back into the regular building system."

However, he says it's not uncommon for some facilities to not have HEPA filters as part of their AIIRs. In cases like that, Mitchell says extra attention must be paid to where the room's air is being vented.

"You can't just put an exhaust fan out the window and keep the room negative," he says. The contaminated air could find its way back into the hospital, or droplets and bacteria could fall on passersby.

Your exhaust should vent on your roof, or at an isolated area on the ground. If it's on the roof, he recommends having a high exhaust stack to ensure any droplets are blown up and away from people.

Be aware what happens to air inside the isolation room because that also makes a difference when it comes to patient safety and infection control.

"Pay attention to how the air flows in the room, making sure that the clean air flows over the patient with the immune issue," Mitchell says. "[And for] the HEPA filter and supply, we make sure there are no particulates that's going back in [the room] to hurt someone with an immune deficiency. We want to have our clean air flow over the occupants of that room, and then exhaust that air close to the patient who is infectious."

The major fear is that COVID-19–positive patients can easily infect others in a facility, especially at-risk groups like the elderly or patients with comorbid factors like diabetes, asthma, or heart disease. Thankfully, most healthcare rooms can be readily adapted into AIIRs with minimal cost, says Mitchell, and be compliant with the Facility Guidelines Institute code, provided a HEPA filter is used.

"Even before the current COVID-19 outbreak, there has been a need for isolation rooms and more importantly isolation room conservation and upgrades," Mitchell says.

## Makeshift AIIRs

As of May 12, there were over 1.38 million COVID-19 cases in the U.S. Facilities in hard-hit areas have more patients than available beds. *On April 7, CMS suspended many restrictions on care venues, allowing facilities to treat patients off campus while still collecting Medicare payments.* But even prior to that, many were already creating field hospitals to house excess patients. In one case, Mount Sinai Hospital in New York City set up tents in Central Park for patients who tested positive for COVID-19.

Turning spaces outside a healthcare setting into AIIR rooms can be fairly simple, says Mitchell.

"Hotel rooms can be retrofitted with exterior-mounted exhausts and HEPA filtration," he says. "Even large convention centers can be converted using isolation chambers [with the] construction of temporary modular walls or even fabrics."

Temporary partitions are sold as modular walls, modular booths, or fabric or Plexiglass tents that can be outfitted with a HEPA filter. Portable HEPA filters are readily available, says Mitchell, and can be easily reused in a normal hospital room during or after a crisis.

Mitchell cautions that putting together the purifying and exhaust equipment needed for an AIIR is very hard to do from scratch, and recommends purchasing one rather than crafting one. But if you are in dire need and there isn't another option, you can create the space yourself.

"Where there's a will there's a way," he says. "If you have a HEPA filter, a fan, and some ductwork, you can make it work."

Mitchell adds that standard practice is to have one patient per AIIR. However, there aren't any codes specifically forbidding multiple patients in the space, and in an emergency situation (like a pandemic) you might need to house patients this way.

"As history teaches us, tragic events on a massive scale have a way of changing how we approach design. Examples like 9/11 and Hurricane Sandy have changed the codes and how engineers approach design for safety and loss of property," Mitchell says. "The current pandemic will undoubtedly change our approach to flexibility in the design of hospital room environment control as well as energy conservation and, most of all, health and safety."

**We're seeking experts**

Contact me at *bward@hcpro.com* or 800-650-6787 ext. 3430.

– Brian Ward, Associate Editor



© 2020 HCPro, a Simplify Compliance brand.

"With respect to future hospital renovations and facility planning, it would be prudent to incorporate a flexible approach that would allow a typical patient room to be converted to an isolation room with variable airflow controls to achieve the proper pressurization while maintaining comfort control," he adds.

Much like the current design standards for research laboratories, future planning and designs should make use of variable airflow terminal devices and enhanced zone controls to adjust airflow rates and achieve proper pressurization. Increased use of HEPA filtration and controls could monitor and bypass these devices when not required. ■

*COVID-19*

## Field hospital resources

*by Brian Ward*

The surge of COVID-19 patients has forced healthcare facilities to find places outside their walls to house patients who test positive for this highly infectious disease. In late March, New York City's Mount Sinai Health System set up a *68-bed respiratory care unit in Central Park*. The city's Billie Jean King National Tennis Center also announced that a 350-bed facility was being built there.

Nationwide, *field hospitals are popping up* in hotels, convention centers, schools, and even in parks and fields. CMS endorsed this emergency practice in April, *suspending restrictions on care venues during the COVID-19 pandemic*. The sweeping "*Hospitals Without Walls*" initiative allows hospitals to bill Medicare and other government payers for providing services in unconventional settings.

There are several factors that need to be considered when designing a field facility, such as infection control, documentation, security, weather, electricity, and heating, says **Steve MacArthur,** a safety consultant for The Greeley Company. You'll have to deal with the unique life safety implications of the facility's structures, he says.

"They're probably not going to have sprinkler protection or perhaps even smoke detection," notes MacArthur. "There may be exit signs, but probably nothing like a fire alarm pull station."

While there may be existing processes that can be adapted for any field hospital, every location you set up in will have different challenges to surmount.

"The fact of the matter is that 'one size fits none' is much closer to the reality than anything else," he says.

As a result of the national emergency declared due to COVID-19, *1135 waivers are now in play*. These waivers allow facilities to temporarily suspend certain rules and regulations from CMS during a crisis. But they're not a magic wand for all your compliance issues, says MacArthur.

"While the 1135 waiver process can be used to smooth out any compliance bumps, it's still the responsibility of the organization to provide a safe environment, by whatever means necessary," he says. "Certainly, any time you embark on this type of a response, it requires a great deal of cooperation and coordination with local authorities having jurisdiction to ensure everyone is on board and working together."

The following is a list of resources from trusted sources to help you plan, set up, and maintain a field facility:

- *https://emergency.cdc.gov/shelterassessment*
- *https://asprtracie.hhs.gov/technical-resources/48/alternate-care-sites-including-shelter-medical-care/47*
- *https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/infection-prevention-and-hai/covid19/surge-hospitals.pdf*
- *https://www.cms.gov/files/document/qso-20-24-asc.pdf*
- *https://www.ashe.org/templates-submitting-inspection-testing-and-maintenance-waivers-cms*
- *https://www.cnn.com/2020/02/07/asia/wuhan-coronavirus-hospital-design-intl-hnk/index.html* ■

*PPE*

## Reusing N95 masks

### FDA says 4 million N95 masks could be reused thanks to emergency orders

*by Brian Ward*

The FDA issued two *emergency use authorizations* (EUA) for decontaminating and reprocessing disposable N95 masks this spring, saying these changes have the potential "to decontaminate approximately 4 million N95 or N95-equivalent respirators per day in the U.S. for reuse by health care workers in hospital settings."

© 2020 HCPro, a Simplify Compliance brand. .

The decontamination method described in the EUAs involves spraying single-use masks with vaporized hydrogen peroxide (H2O2). The concentration of H2O2, how long the masks need to be exposed, and the drying times vary depending on the system or products, but the basic steps are:

Place the used masks inside a room or chamber

- Fill the room with concentrated H2O2 vapor
- Drain the gas and let the masks dry
- Reuse and repeat

N95 masks filter out 95% of particulates. Because of their parts, their design, and the melt-blown fabric used to make them, *ramping up mask production to meet current demand is a challenge*.

Studies have demonstrated that using the H2O2:

- Decontaminates the mask material
- Doesn't degrade the mask material's ability to filter particulates
- Doesn't affect mask fit
- Doesn't create toxic byproducts

"Authorizing this sterilization system will make it easier for hospitals to ensure that heroic healthcare workers on the frontlines have the protection they need," wrote HHS Secretary Alex Azar. "Thanks to rapid work by the men and women of the FDA and President Trump's vision for an all-of-America response, innovators are giving our healthcare warriors new tools nearly every day to fight the COVID-19 pandemic."

On the CDC page about *decontamination and reuse of filtering facepiece respirators (FFR)*, the agency says that when the supplies are available, disposable face masks should be used. They note, however, that this has not always been an option during the coronavirus pandemic.

"Only respirator manufacturers can reliably provide guidance on how to decontaminate their specific models of FFRs," the page says. "In absence of manufacturer's recommendations, third parties may also provide guidance or procedures on how to decontaminate respirators without impacting respirator performance."

The FDA EUAs were issued to *Battelle Memorial Institute* and *STERIS*. The former was the first to test the H2O2 method, and the latter currently has H2O2 vaporization units equipped in 6,300 healthcare facilities nationwide.

## The study

The hydrogen peroxide method was first tested during a 18-month study conducted by Battelle Memorial Institute, an Ohio nonprofit. Battelle was awarded over $425,000 from the FDA to conduct the study, which was done between August 2014 and July 2016.

At the time of the study, there was no need to reuse face masks, so the technology was used for decontaminating other equipment and machinery. It wasn't until March 2020 that *a doctor from the OhioHealth network and her husband*, an engineer for Battelle, were talking over the dinner table about the mask shortage that the study was put into action against COVID-19.

At the end of each day, those enrolled in the Battelle CCDS Critical Care Decontamination System™ (CCDS™) program send their used masks to the company. Each mask is given a bar code so that the mask is returned to the person who originally wore it. Masks are also marked with the number of times they've been reused—Battelle says its system can reprocess masks 20 times, though other systems do it less often.

Operating around the clock, Battelle claims its system can decontaminate over 80,000 masks per day. And on April 10, the company announced it would provide its decontamination *services for free to healthcare providers*. To achieve this, they teamed up with Ohio Senator Rob Portman.

"Battelle is providing critical support to our healthcare professionals across the country who are in desperate need for N95 respirator masks. That is why I got personally engaged to help connect Battelle with the appropriate contacts in the administration as they sought to rapidly scale up the manufacturing of decontamination systems nationwide," said Portman. "The federal funding results in decontamination services at no charge to hospitals and helps protect frontline healthcare professionals across the country."

## Individuals

Individual facilities and health systems have also started using this method on their masks, such as the Duke Health system in Durham, North Carolina. Duke Health has been using aerosolized H2O2 to sterilize their biocontainment lab for years. Now, all three of its facilities are using the method on masks.

"We had never considered needing it for something like face masks. But we've now proven that it works and will begin using the technology immediately in all three Duke Health hospitals," Matthew Stiegel, PhD, director


© 2020 HCPro, a Simplify Compliance brand.

### Making your own mask decontamination system

Want to learn more about the nuts and bolts of setting up your own N95 mask decontamination process? Duke Health did a webinar on March 30, explaining how others can do this at their own facilities, with like H2O2 concentrations, duration of each step, and room layout. They say what a facility needs to do is:

- "Purchase the equipment (e.g., vaporizer, wire racks, clam-shell containers, bins, etc.).
- Find a room where you can shut off HVAC or find ways to seal using caulking and other means so the high levels of H2O2 don't leak out.
- Ability to monitor H2O2 levels to assure it is below relevant [occupational exposure limits] OELs (typically 1 ppm).
- Biological indicators to validate each cycle.
- Manage logistics of getting the used N95s to the de-con room/facility and then back to users for reuse after decontamination.
- Adequately protect the employees who will be handling the contaminated N95s"

The webinar recording and slides are free and available for on-demand viewing here *https://www.safety.duke.edu/news-events/ webinar-n95-decontamination-using-h2o2*.

of the Duke Health Occupational and Environmental Safety Office, said in a *March 26 press release*.

The *News & Observer* reports that Duke's method hangs masks loosely in racks in a 400-square-foot room, where they are misted with H2O2 vapor for about four hours.

"The ability to reuse the crucial N95 masks will boost the hospitals' ability to protect frontline health care workers during this time of critical shortages," added Cameron Wolfe, MD, associate professor of medicine and infectious disease specialist at Duke Health.

Meanwhile in Florida, healthcare facilities aren't the only places to adopt this technology. The Lake County Fire Rescue put out a *press release* in April announcing it would begin decontaminating masks for first responders. Lake County is approximately 1,200 square miles with about 70,000 residents. The agency's recently acquired H2O2 decontamination unit can sterilize up to 300 masks every three hours, and the masks will be routinely tested by National Institute for Occupational Safety and Health and OSHA officials for safety.

"This will put our first responders at ease knowing that there is a system in place that will ensure an unlimited supply of PPE," said Lake County Fire Rescue Chief Jim Dickerson. ■

# Reduce your workplace violence with initiatives from VCU Health

## The first step is admitting your organization has a problem, says VCU Health's chief quality and safety officer

*by Christopher Cheney, HealthLeaders Media*

Healthcare organizations carry a heavy workplace violence burden, with about three-quarters of U.S. workplace assaults occurring in healthcare settings, according to OSHA. Workplace violence is especially prevalent in emergency departments—78% of emergency physicians have reported being targets of workplace violence in the prior 12 months.

"There is not one single silver bullet that makes your environment safer," says **Robin Hemphill, MD,** chief quality and safety officer at VCU Health. Over the past five years, Hemphill says the Richmond, Virginia–based health system has taken several essential steps to address workplace violence: realizing that the organization had a problem, forming a committee to illustrate that the problem was systemwide rather than local, promoting incident reporting, and letting the staff know that abuse is not part of their job.

"A lot of this is selling initiatives to your senior leadership and having them turn around to become your biggest advocates," Hemphill says.

The initiatives are focused mainly on violent patients but also include measures to address staff-on-staff violence. Data shows the efforts are making a difference:

- Using its electronic medical record, VCU Health flags patients who are at risk of becoming violent, and VCU police and security staff round on those inpatients. In January, VCU police and security staff conducted 1,300 checks on potentially violent patients.
- From fiscal year 2012 to fiscal year 2015, 15%–32% of VCU Health assault cases resulted in the employee missing time from work. In the current fiscal year, which concludes in June, 1%–2% of assault cases have resulted in the employee missing time from work.
- In summer 2016, VCU Medical Center launched the Behavioral Emergency Rapid Response Team (BERRT) to address inpatients with urgent behavioral health needs and to help reduce workplace violence. In BERRT's first year, police assault charges at the medical center dropped more than 60%.

© 2020 HCPro, a Simplify Compliance brand. .

## Comprehensive approach

Over the past five years, VCU Health has launched more than 50 workplace violence–related initiatives, which include the following:

**BERRT:** The BERRT program is modeled after VCU Medical Center's medical response team, which responds to medical crises at the bedside. BERRT features psychiatric nurses who are mainly deployed in two scenarios. First, the psychiatric nurses round on patients who have been flagged as potentially violent to see whether there are any additional needs related to patient care plans. Second, BERRT team members respond to in-the-moment situations where a care provider sees potential danger.

"The BERRT team comes to the bedside and helps the care team members to make sure everyone involved is safe," says **Trina Trimmer, RNC-MNN, MSN,** nursing safety operations and resources director at VCU Health.

**Violence Prevention Committee:** This panel meets monthly and has about 50 members. Several departments and stakeholders are represented on the committee, including executive leadership, legal, nursing, occupational injury, physicians, psychiatry, risk management, and VCU police.

**Emergency department security rounding:** Patients are flagged in the electronic medical record at three levels, with Level 1 patients at the least risk of exhibiting violence and Level 3 patients at the highest risk. When Level 3 patients present at the emergency department, VCU Police and security are notified and round on the patients.

**Emergency department metal detectors:** Installation of metal detectors not only addressed a potential threat but also sent a clear message to patients, visitors, and staff members, says **Lisa Davis, MEd, RN-BC,** nurse manager for VCU Health's psychiatric nursing consultation service. "When we put the metal detectors in the ED, that was huge. It was very visible and showed that we wanted to take care of people," she says.

**Reporting:** In 2018, VCU Health implemented electronic reporting for workplace violence incidents with the launch of the Post Assault Huddle Form. The form gathers data on violent incidents and engages staff members to identify strategies to reduce future risk.

Filing this form triggers electronic notifications, says **C. Taylor Greene,** occupational injury prevention and safety manager at VCU Health.

"One sends a PDF file of the Post Assault Huddle Form to the key stakeholders, including the VCU police, our chief nursing officer, and the supervisor of the victim. There's also a notification that goes out to the claimant of the form that thanks them for submitting the report and lets them know what is being done," he says.

Reporting of violent incidents is not mandatory, but it is "strongly encouraged," Hemphill says. "Reporting is not supposed to be a shackle, where you get abused by somebody then get in trouble for not reporting it. We want people to give us this information, but we don't want a punitive response for failure to report," she says.

**Signage:** VCU Health approved the deployment of zero-tolerance violence prevention signs last fall, Greene says. "The introduction of those signs started at 14 of the primary entrances of our inpatient facilities. We did an additional rollout of a slightly different version of the signs at our 45-plus ambulatory locations," he says.

**Visitor identification:** In February, VCU Health rolled out visitor badging on a trial basis, Greene says. "It's very similar to what is utilized in school systems, where you come into a facility, drop an ID in a scanner, and get a sticker badge with your picture, the destination you are traveling to, and the time that you arrived. We are using self-expiring badges that say 'void' on them after 24 hours," he says.

## Future initiative

An upcoming initiative will focus on peer support for staff members who have experienced workplace violence.

"Although we have seen great progress in the number of the initiatives we have launched and have seen an anticipated increase in reporting, our staff members are now asking for peer support," Trimmer says.

VCU Health wants to move beyond focusing on why patients were becoming violent and what could be done to flag them and introduce intervention resources such as BERRT, she says. "Now, we are hearing our staff members say they want help for the team member who was a victim. The staff wants to know what we are offering for victims. We have initiated a group to work on that issue and we have looked at other organizations to see what they have in place." ■

Christopher Cheney is the senior clinical care editor at HealthLeaders.


© 2020 HCPro, a Simplify Compliance brand.

*ICYMI: COVID 19*

# EPA releases list of disinfectants for use on novel coronavirus

*By William C. Schillaci, EHS Daily Advisor*

The EPA has released a list of 82 registered disinfectant products that have been qualified for use against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the novel coronavirus that causes COVID-19. Products on the list have qualified for use against COVID-19 through the Agency's Emerging Viral Pathogen program. This program allows product manufacturers to provide the EPA with data, even in advance of an outbreak, that show their products are effective against harder-to-kill viruses than SARS-CoV-2. It also allows off-label communications intended to inform the public about the utility of these products against the emerging pathogen in the most expeditious manner.

## EPA's guidance

The EPA developed its Emerging Viral Pathogen Guidance in response to concerns about emerging pathogens, an increasing public health concern in the United States and globally. Because the occurrence of emerging viral pathogens is less common and predictable than established pathogens, few, if any, EPA-registered disinfectant product labels specify use against these infectious agents. Also, the pathogens are often unavailable commercially, and standard methods for laboratory testing may not exist.

The guidance was developed and finalized in 2016 to allow for a rapid response in the event of an emerging viral pathogen outbreak. It was triggered for the first time ever for COVID-19 on January 29, 2020. The guidance outlines a voluntary, preapproval process for making emerging viral pathogens claims. In the event of an outbreak, companies with preapproved products can make off-label claims (for example, in technical literature, non-label-related websites and social media) for use against the outbreak virus.

## Basic recommendations

The Centers for Disease Control and Prevention (CDC) has provided many resources to assist healthcare facilities, community sites, businesses, and households in preventing the spread of the virus. One CDC site provides the following recommendations:

- Routinely clean all frequently touched surfaces in the workplace, such as workstations, countertops, and doorknobs, using a detergent or soap and water before disinfection.
- Wear disposable gloves when cleaning and disinfecting surfaces. Gloves should be discarded after each cleaning. If reusable gloves are used, those gloves should be dedicated for cleaning and disinfection of surfaces for COVID-19 and should not be used for other purposes. Consult the manufacturer's instructions for cleaning and disinfection products used. Clean hands immediately after gloves are removed.
- For disinfection, diluted household bleach solutions, alcohol solutions with at least 70 percent alcohol, and most common EPA-registered household disinfectants should be effective.
- Diluted household bleach solutions can be used if appropriate for the surface. Follow manufacturer's instructions for application and proper ventilation. Check to ensure the product is not past its expiration date. Never mix household bleach with ammonia or any other cleanser. Unexpired household bleach will be effective against coronaviruses when properly diluted. Prepare a bleach solution by mixing 5 tablespoons (1/3 cup) bleach per gallon of water or 4 teaspoons bleach per quart of water.

The CDC's COVID-19 guidance specific to certain industries is available here. ■

*EHS Daily Advisor* is a partner publication to HSL and Simplify Compliance.

# HLSC quiz answers

1. True. Hospitals need to coordinate with power companies so that when an outage is planned, they're given advanced notice.
2. False. The answer is 90%.
3. False. Sections 7.1.3.2.3 and 7.2.2.5.3 of the 2012 Life Safety Code® (LSC) prohibit anything being stored or placed in an exit stair-well.
4. True. And for hot water for a patient room, FGI guidelines have a range of 105°F to 120°F.
5. True.
6. True.
7. True. Portable HEPA filters are readily available and can be easily reused in a normal hospital room during or after a crisis.
8. False. The FDA predicted that at full capacity up to 4 million masks could be decontaminated using H2O2.
9. False. Flagging potentially violent patients is a effective way to prevent healthcare violence.
10. True.

© 2020 HCPro, a Simplify Compliance brand. .

## Quiz

Use this quiz to test your understanding of articles, standards, and guidelines covered in this issue of **Healthcare Life Safety Compliance,** or as a discussion starter in your next employee or safety committee meeting *(answers, page 11.)*

1. Planned power outages in California are used as a way to prevent wildfires. True or False
2. 50% of California hospitals are somewhat ready to withstand a major earthquake of at least magnitude 7. True or False
3. You can put Para-slides in stair towers.
4. FGI guidelines permit hot water for laundry use to be up to 160°F. True or False
5. The minimum distance from any bulk oxygen system to solid materials that burn rapidly is 50 feet. True or False
6. The air in an airborne infection isolation room (AIIR) is typically cycled through a HEPA filter 12 times an hour. True or False
7. You can make temporary AIIRs out of modular walls, tents, partitions. True or False
8. The FDA says its emergency use authorizations will allow for 20 million N95 or N95-equivalent masks to be decontaminated per day in the U.S. True or False
9. CMS forbids facilities from using electronic medical records (EMR) to flag patients at risk of becoming violent. True or False
10. VCU rolled out visitor badging at its facility as a means of violence prevention. True or False

Simplify Compliance
Learn, Comply, Succeed

## SUBSCRIBER INFORMATION

Have questions on a story? Call or email us.

**QUESTIONS? COMMENTS? IDEAS?**
**Jay Kumar,** Manager, Content, *jkumar@blr.com*

**EDITORIAL ADVISORY BOARD**

**Jay Kumar**
Manager, Content
*jkumar@blr.com*

**John Palmer**
Contributing Editor

**AJ Plunkett**
Contributing Editor

**Brian Ward**
Contributing Editor

**Brad Keyes, CHSP**
Technical Editor Senior Consultant
Keyes Life Safety Compliance
*www.keyeslifesafety.com*

**Thomas Salamone**
Director, Healthcare Services,
Telgian Corporation
Atlanta, Georgia

**Alex Zivnuska, PE, CHFM**
Project Manager
Code Consultants, Inc.

**William Wilson,**
Fire & Life Safety Program Manager
Southfield, MI

**Dennis Schmitt**
Architect Supervisor,
Design and Construction Section,
Illinois Department of Public Health

**Follow Us!** Follow and chat with us about all things healthcare safety: **@hcprosafety**

**Healthcare Life Safety Compliance** (ISSN: 1520-8222 [print]; 1934-5453 [online]) is published monthly by HCPro, a Simplify Compliance brand. • 35 Village Road, Suite 200, Middleton, MA 01949. • Tel 800-650-6787 • Fax 800-785-9212. Single issues available from the publisher. Multiple subscription rates available. • 12 issues: $355 • 24 issues: $639. Some information contained in **Healthcare Life Safety Compliance** is carefully gathered from sources we believe to be reliable, but we cannot guarantee the accuracy of all information. No part of this newsletter may be reproduced in any form without written permission from the publisher. Copyright © 2019 by HCPro. All rights reserved.

HCPro
a Simplify Compliance brand

100 Winners Circle, Suite 300, Brentwood, TN 37027



© 2020 HCPro, a Simplify Compliance brand.