

Healthcare Safety Leader

Fundamental safety measures for ambulatory surgery centers

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by Dom Nicastro

As ambulatory surgery centers (ASC) strive to maintain high standards of safety and compliance, understanding key aspects of life safety and fire safety codes is essential.

In this article, we delve into what may seem like basic—but crucial—topics with insights from **Dale Lyman, CFPS**, a retired fire chief and author of the *Ambulatory Surgery Center Safety Guidebook*.

Self-contained battery-powered emergency lights

In ASCs, reliable emergency lighting is critical to ensure the safety of patients, staff, and visitors during power outages or emergencies. Lyman says it is necessary to have self-contained battery-powered emergency lights in addition to the facility's backup emergency power system.

"NFPA 101 and NFPA 99 require the installation of self-contained battery-powered emergency lights in designated areas within ambulatory surgery centers," Lyman says. These lights provide immediate illumination when primary power systems fail, ensuring safety in critical areas.

Key areas requiring emergency lights

Lyman breaks down some areas where emergency lights are required:

- **Sites of sedation or anesthesia administration:** Emergency lights are essential in areas where deep sedation or general anesthesia is administered. They provide immediate illumination, especially during active surgical procedures, ensuring safety until the generator starts.
- **Emergency power system transfer switch locations:** Installing emergency lights at emergency power system transfer switch locations is crucial in case workers need to access these areas to investigate why the emergency power system didn't come on.
- **Interior spaces with alternate power generators:** These areas need emergency lights for adequate illumination during generator malfunctions.
- **Battery-based alternate power sources:** Supplemental emergency power supply systems (SEPSS) or uninterruptible power supply (UPS) systems require emergency lights to ensure illumination during malfunctions.

Lyman advises regular testing and maintenance of these lights to ensure their reliability.

Inspection, testing, and maintenance

Maintaining the reliability, efficacy, and compliance of self-contained battery-powered emergency lights entails regular inspection, testing, and maintenance protocols. The NFPA requires both monthly and annual testing of these lights.

Monthly testing involves a 30-second trial of battery backup emergency lights, manually switching them to battery mode to confirm proper illumination. Comprehensive documentation of the test, including date, time, and any observations, is imperative.

Annual testing extends to a 90-minute trial to ensure sustained illumination during prolonged power outages. Again, it is essential to document the test, along with observations and any issues noted.

"Keep documentation of inspection and testing. This is a commonly cited deficiency," Lyman says.

Fire alarm systems

According to Lyman, the key components and functions of a standard fire alarm system are:

- **Control panel:** The control panel acts as the central nervous system of the building's safety infrastructure. "Ensuring accessibility to the control panel is paramount for a swift response in the event of an emergency," Lyman notes. The control panel monitors building conditions and alerts the fire department and responsible parties when a potential threat is detected. "The fire alarm control unit or panel is typically a large red or black box on a wall (approximately 24 inches by 36 inches) with some type of small digital display panel," he

adds.

- **Smoke/heat detectors:** Essential for early detection, these devices monitor the environment for both smoke and heat, initiating an alarm when predetermined thresholds are surpassed. "Some buildings have heat detectors, some have smoke detectors, and some have both," Lyman explains.
- **Manual pull stations:** Activated by individuals, these stations serve as a manual override, allowing people to initiate the fire alarm system when necessary. "These are the red boxes on the walls," Lyman describes.
- **Notification devices:** These devices play a crucial role in alerting occupants to the presence of a fire. They can issue alerts either visually (strobes) or audibly (horns, tones, or chimes). "These devices ensure that people with different sensory needs can receive timely warnings," Lyman says.
- **Fire sprinkler monitoring:** This component monitors the fire sprinkler system, detecting changes in water flow or valve positions and relaying this information to the control panel. "Flow switches monitor water flow in the sprinkler system, activating the fire alarm when water begins to flow," Lyman says.

Fire alarm control panel

The fire alarm main control unit or panel constantly monitors the status of the overall system and building conditions. The control panel displays this status via various indicators:

- **Normal:** Everything is functioning as it should.
- **Trouble:** The system requires attention right away due to an issue or fault with the fire alarm system itself.
- **Supervisory:** The system requires maintenance or attention due to an issue with a process or piece of equipment that the system is monitoring. For example, a fire sprinkler valve may have been closed.

Maintenance under NFPA 72

To comply with fire and life safety codes, fire alarm systems must be inspected, tested, and maintained in accordance with NFPA 72, the *National Fire Alarm Code*. Lyman says, "Ensure that only properly trained and competent persons perform inspections, testing, and maintenance on fire alarm systems."

In between formal inspections, here are some other recommended testing and maintenance regimens that should be performed for fire alarm systems:

- **Regular visual and circuitry inspection:** Check components for damage or obstructions
- **Control panel status checks:** Verify normal operation and promptly address trouble alarms
- **Recordkeeping:** Maintain detailed records of all inspections, testing, and maintenance, as well as actions taken
- **Stay informed:** Stay updated on fire codes and standards for compliance
- **Professional inspections/maintenance:** Schedule regular professional inspections, as required by code, for in-depth assessments

"Understanding these fundamental components and their roles is essential for staff, managers, maintenance personnel, and anyone responsible for the safety of occupants," Lyman says. Regular checks, maintenance, and prompt response to issues contribute to the reliability and effectiveness of fire alarm systems, safeguarding lives and property.

Smoke compartments

Smoke compartments are sections of a building separated by smoke barriers, which are designed to restrict the movement of smoke during a fire. These compartments play a crucial role within healthcare facilities, offering multiple layers of fire protection.

The primary purpose of smoke compartments is to contain smoke within a limited area. "By confining smoke to its point of origin, these compartments prevent it from spreading rapidly through the building," Lyman says.

Smoke compartments also facilitate safe evacuation by creating areas of refuge. This is particularly important in healthcare settings where patients may have limited mobility. "[If] patients have limited mobility, it is often safer to move them to an adjacent smoke compartment rather than evacuate the building entirely," Lyman says.

By limiting the spread of smoke and fire, smoke compartments help control the situation until emergency responders arrive. They also provide critical protection by reducing healthcare staff and patients' exposure to harmful smoke and fumes. "Smoke is toxic and deadly," Lyman says.

Finally, smoke compartments help limit the extent of property damage, protecting valuable equipment and infrastructure.

Adhering to building codes and regulations, such as NFPA 101 (the *Life Safety Code*®), is mandatory. Smoke compartments ensure that facilities meet these standards.

Regular inspections and maintenance of smoke barriers and doors are crucial to ensure their effectiveness. Lyman advises conducting periodic drills and training for staff on emergency procedures related to smoke compartments to enhance preparedness and response.

Alcohol-based hand rub dispensers

Alcohol-based hand rubs (ABHR) are a common sight in healthcare facilities, serving as a vital tool in infection prevention. However, their use also requires adherence to safety protocols to prevent fire and emergency incidents. Lyman outlines key guidelines for the safe deployment of ABHR dispensers in compliance with NFPA 101 standards and CMS requirements.

Key guidelines for ABHR dispensers include:

- **Proper spacing:** Dispensers should be spaced at least 4 feet apart to prevent ignition transfer in case of fire.
- **Capacity limitations:** Individual liquid dispenser capacity should not exceed 40.5 fluid ounces (1.2 liters) in rooms and corridors. Aerosol dispenser capacity should not exceed 18 ounces.
- **Clearance from ignition sources:** Dispensers should be positioned at least one inch clear, horizontally and vertically, from any potential ignition sources.
- **Corridor width:** Corridors that house ABHR dispensers should be a minimum of 6 feet wide to facilitate safe evacuation during emergencies.
- **Protection over carpeted floors:** If installed over carpeted floors, the involved smoke compartment must be fully protected with an approved supervised automatic sprinkler system.
- **ABHR solution concentration:** ABHR solutions should contain less than or equal to 95% alcohol to minimize fire risk.

"Adhering to these guidelines is crucial not only for ensuring the safety of patients, staff, and visitors but also for maintaining compliance with CMS regulations," Lyman says. Proper installation, maintenance, storage, and handling of ABHR dispensers can significantly reduce the risk of fire incidents in healthcare facilities.

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Eyes on LSC compliance

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by Dom Nicastro and Brian Ward

Like many healthcare compliance professionals, **Scott Wytosick, CFPS, CHFM**, consultant for Jensen Hughes, is looking ahead to 2025.

We asked Wytosick what's top of mind in terms of changes coming down the pike, and the answer was that things are pretty much status quo—though that doesn't mean less work. Life safety never sleeps, after all.

"Because we are still on the 2012 edition [of the *Life Safety Code*® (*LSC*)], there isn't anything new," Wytosick says. "I think the biggest focus is maintaining older systems combined with new construction projects and rehabilitating departments. It's very important to keep track of areas defined by 2012 edition NFPA 101 *LSC* Chapter 43, Building Rehabilitation, and to know the distinctions between renovations and modifications."

On renovations, *LSC* 43.4.1.3 states that, "All new work shall comply with the requirements of this code applicable to existing buildings." Whereas for modifications, *LSC* 43.5.1.3 includes the statement, "Newly constructed elements, components, and systems shall comply with the requirements of other sections of this Code applicable to new construction."

"It is very important to know Chapter 43 definitions and compare that to the scope of work," Wytosick says. In addition, he says that being part of the construction meetings helps solve a lot of issues on the front end, which saves time and money.

"Industry meetings called page turns helped me have a voice during the design phase," Wytosick says. "A lot of architects and engineers can be less experienced with NFPA standards and may not have best-practice knowledge for maintaining buildings. It is not uncommon for subcontractors to be given the responsibility for ensuring compliance with specific life safety regulations. Many times, I've reminded fire alarm designers that up to two smoke detectors can be required for a fire-rated door assembly with automatic door openers where the 'depth of wall section above the door is greater than 24 inches on both sides,' as per NFPA 72 17.7.5.6.5.1(C). Additionally, this is a great opportunity to speak on behalf of departments that may not be included in these discussions such as infection control, environmental services, and even facilities."

"One very important lesson I have learned performing fire door inspections during construction is this is the best time to ensure fire door frames are plumb," Wytosick adds. "Fire door frames not plumb will have the facilities fighting to ensure the 1/8-inch gap requirement around the top and sides of fire doors to the frame before the painters arrive and before the drywallers leave."

Fire alarm parts issues

Wytosick notes that facilities may run into problems sourcing replacement parts for fire alarm and sprinkler systems. Fire alarm parts are engineered to specific manufacturers, which means parts become obsolete.

"I experienced an issue where a manual fire alarm box (aka pull station) was installed but had set itself off within a few days after installation. [The] fire alarm programmer came on-site and discovered the pull station is only compatible with a newer fire alarm control panel software package," Wytosick says.

Inspections and maintenance

Another matter is keeping track of when inspections are due and being prepared for dealing with their outcomes.

Let's say your facility is up for its five-year internal pipe inspection. You need to be ready to fix any repairs found during the inspection—including budgeting for those repairs. "If obstructions are found, your impairment coordinator will have to ensure proper fire watch protocols are followed," says Wytosick.

He also recommends crafting a system to keep track of when multiyear inspections are due. "I had an Excel® list that contains the last inspection date and due date for next inspection frequency," he says. "We'd also maintain drawings of sprinkler groups and the dates when those sprinkler heads were installed. Sprinkler documentation can be difficult because of sprinkler head representative sampling, internal inspection vs investigation, and sprinkler head spares installed during construction rehabilitations. We would have one sprinkler company install and do repairs, so we'd work with them managing the drawings that lay out the sprinkler head year, type, and ratings for each sprinkler head grouping."

Common fire trouble spots

While preparing for the turn of the calendar, it's worth looking at some of the most common causes of fires in healthcare facilities in 2022, taken from the most recent NFPA data.

According to ServiceMaster Restoration, a disaster restoration company, the most common causes include:

- **Cooking equipment.** Cooking equipment is the leading cause of fires in healthcare facilities. Unattended equipment, cooking fats, toaster ovens, electric ovens, and open flames cause many fires. Luckily, most of these fires don't spread or cause damage beyond the cooking area or kitchen.
- **Electrical equipment.** The second leading cause of fire in healthcare facilities is electrical malfunctions. They're associated with small appliances, overworked sockets, extension cords, and other small equipment. These fires can usually be extinguished by turning off the electricity.
- **Cigarettes and smoking materials.** While hospitals typically ban cigarettes and other smoking materials, certain assisted living or healthcare facilities have designated smoking areas, or people might sneak cigarettes indoors. Cigarettes, cigars, tobacco pipes, and other materials can all ignite and cause fires if a smoker carelessly disposes of them.
- **Heating equipment.** Furnaces, radiators, fireplaces, space heaters, and water heaters can all overheat or otherwise malfunction and cause a fire. These fires are more likely to happen during the winter.

Building a solid team, document management process

Outside of fire prevention, staffing is top of mind for Wytosick. After all, compliance can't happen without the right people in position to succeed.

When hiring life safety professionals, managers should be looking for well-organized people who care about safety. These individuals need to be assertive but friendly, according to Wytosick.

"They need to be organized but ready to drop everything and respond because they are the subject matter experts on what is allowed per the regulations," Wytosick says.

Wytosick says life safety compliance is also difficult because of all the regulations and systems in play, and the challenge of keeping all the related documentation organized. Having the right document management systems in place is therefore critical for life safety compliance professionals.

As for Wytosick, document management is always top of mind. He explains that when he worked as a life safety coordinator, "our life safety team had the responsibility to handle documentation for the physical environment. Facilities were responsible for maintaining the building, but we would help coordinate inspection and testing for them. We organized our required documents via software and Microsoft Office®. We kept hard copies in binders in our office as well."

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