About five years ago, Det Norske Veritas Healthcare (DNV) was approved by CMS as a deeming authority to accredit acute care hospitals in the United States. DNV joined the ranks of The Joint Commission and the American Osteopathic Association/Healthcare Facilities Accreditation Program (HFAP) as the only nationally recognized agencies to have such deeming authority. With its background in quality certifications and risk management for complex industries, DNV set its sights on hospital accreditation, investing four years to create a new, modern accreditation program that integrates ISO 9001:2008 (quality management systems) into the Medicare Conditions of Participation. This unique program is called NIAHO (National Integrated Accreditation of Healthcare Organizations).

Many readers have asked if we could share more information about the junior member of the “big three.” While one could access DNV’s website and read its literature on how it differs from the other accreditors, we thought you would be more interested in hearing about the survey process from a fellow facility manager.
The key to life safety compliance is education. Relating better to caregivers will open their eyes to the importance of Life Safety Code® (LSC) requirements.

Almost all hospitals struggle with nurses failing to observe LSC provisions. Because nurses’ main focus is patient care, and because they have plenty of more pressing issues to worry about than the LSC, the solution has to start with safety and accreditation professionals.

http://keyeslifesafety.com/communication-with-nurses

**Door locks in hospitals**

Locks on doors are utilized nearly everywhere we go, and we don’t give them much of a thought. But in the highly regulated industry of healthcare, we must keep in mind what the codes and standards will and will not permit. Unfortunately, locks on doors in the path of egress are a subject hospitals greatly misunderstand—and widely abuse.


**FROM THE FIELD**

“A Condition Level finding is something where the process is really broken … you have more than a few hiccups. You have 45 days to resolve a Condition Level finding, and DNV will return within 45 days to make sure we corrected the problem.”

John Gaetano, CHFM

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We interviewed John Gaetano, CHFM, director of facilities management at Faxton St. Luke’s Healthcare in Utica, N.Y. Faxton St. Luke’s Healthcare recently received a visit from DNV and shared its experience with us.

“We have been with DNV for four years now,” says Gaetano. “This last visit was our fourth-year visit. They come once each year, but by the fourth year we are expected to be ISO 9001 compliant. Actually, we did achieve ISO certification a year earlier, so that really helped us with our documentation.”

Gaetano explains that being ISO certified holds Faxton St. Luke’s to a higher level of documentation throughout the organization. The ISO recertification is reviewed annually and is usually integrated with the DNV accreditation process. But since the organization’s ISO recertification is a couple of months off from the DNV inspection date, he notes that Faxton was trying to get ISO certification on the same month so DNV would only need to make one trip to the hospital.

“There is a reason why I’m saying that,” says Gaetano. “Based on some of the findings that we received from our last DNV inspection, we have a limited time to get them resolved.”

DNV has three levels of findings, or nonconformities, as Gaetano refers to them.

“A NC-2 is the lightest finding and is basically just a hiccup,” says Gaetano. “The correct process, procedures, and policies are in place, and the organization is doing everything right, but there are minor issues.”

The next level of findings is a bit more severe. “A finding classified as a NC-1 is a breakdown in a process or system; not doing things right,” says Gaetano. “DNV will check on it a year later when they come back for their annual visit.”

The most severe finding by a DNV surveyor, classified as a Condition Level finding, has immediate implications.

“A Condition Level finding is something where the process is really broken ... you have more than a few hiccups,” says Gaetano. “You have 45 days to resolve a Condition Level finding, and DNV will return within 45 days to make sure we corrected the problem.”

Herein lies the timing issue that the hospital is working to resolve. Since Faxton St. Luke’s ISO recertification is due to take place before the 45-day window for the Condition Level findings has completely elapsed, the hospital doesn’t have the full 45 days to resolve the problems before DNV returns, leaving Gaetano’s team hustling to correct them before the return visit.

The same DNV team conducts the accreditation inspection and the ISO recertification, although DNV sends an individual who specializes in the ISO recertification process.

“No, the way DNV works, if you have a NC-1 finding from a previous visit, and it is not corrected when they come back a year later, that can affect your ISO certification,” says Gaetano. “So a hospital could still be ISO 9001–approved, but they would get a nonconformity in their ISO review due to the non-corrected NC-1. It is imperative that the organization resolves the NC-1 findings.”

When asked how the ISO certification process affects the facilities management department, Gaetano says it involves all departments.

“Basically the ISO process is built around process improvement,” he says. “When a failure is detected in the system, there needs to be a process in place with documentation on how it was fixed. We use what we call Corrective Action Request [CAR] forms, and we identify on the documentation the immediate action taken, interim action taken, root cause, action to prevent recurrence, remedial action, and the full compliance date. This certainly applies to any deficiency in the facilities management department.”

The CARs then become part of the organization’s quality management system, and during the next annual visit DNV will review and validate that the actions were successful.

“One of the findings that the surveyors identified was a contractor was running cable in our nursery and our NICU,” Gaetano says. “The contractor had a number of ceiling tiles out and did not take the proper precautions as far as dust containment is concerned. Staff had relocated an infant to an adjoining room but did not close the door to an adjacent nursery.”

And that wasn’t the only problem DNV surveyors found with this contractor. “The second thing they found was the contractor did not have a hospital-issued...
ID badge,” he says. “Even though the contractor was wearing a company-issued picture ID badge, he did not have the proper hospital badge indicating he was cleared to work there. It turns out he did sign in at the engineering department, but was not issued a hospital badge. Without it, staff would not have known if the contractor had gone through the hospital procedures to work in the facility.”

Gaetano explains that while DNV does not require contractors to wear hospital-issued ID badges, Faxton St. Luke’s does.

“The contractors had been working in the nursery area for a week, and since it was a secured area, DNV was looking to see if the contractor was escorted in and out of the area,” he says. “The nursery staff could have been more involved to say what the work limitations of the contractor were. So in fairness to the staff, that didn’t happen.” Specifically, the nursery staff did not contact engineering when they saw the contractors fail to take the proper precautions.

Gaetano explains that staff working in a high-risk area, such as a ICU, an oncology unit, or the surgery department, could be more aware of the risks involved concerning dust from contractors working above the ceiling. “We hope they would have called us,” he says. “But sometimes the staff is under the assumption that we know all about what the contractor is doing, which is not always the case. That was a break in our process, and we put a quick plan of correction together.”

Gaetano explains what changes the hospital made as a result of this finding.

“We changed the infection control risk assessment form and required that even an activity such as cabling will require an infection control permit,” he says. “We will now require an above-ceiling permit for all contractor work. We tightened up our pre-construction risk assessment forms as well, and we are now working with the department liaisons so they understand fully what the scope of work involves.”

That finding by the DNV surveyor was classified as Condition Level, but Gaetano says there were other findings as well.

“The surveyor was looking above the ceiling and found an electrical cord that was tied into an electrical box,” he says. “He traced the cord to an abandoned security camera system, which we removed on the spot. He also found some low-voltage wiring that was cut but not capped off in a junction box. He also found the door to our compressed gas cylinder storage room was not properly fire rated. The walls were properly rated, but the door was not.”

Gaetano notes that originally, the surveyor was going to score all of these findings as NC-2, which would not have required any follow-up documentation—but that changed when another finding was uncovered.

“A microwave was found on one of the floors to be used to warm supplies for peritoneal dialysis treatment, which is not an acceptable practice,” says Gaetano. “There was no way to accurately determine the temperature of the solution with this method. The surveyor considered this an immediate threat to patient safety, and combined that finding with the others (which should have been NC-2), making them all Condition Level, which will bring DNV back on-site.”

The surveyors did have some positive news, though.

“They said, ‘Look ... your accreditation is not affected by this. This is not something we are going to pull your accreditation for. But it is something that is critical enough that it needs to be addressed and addressed quickly,’ ” Gaetano says. “So that is a whole different process than somebody saying, ‘We are going to deny you your accreditation status,’ which places the staff in a sense of scariness.”

When asked to compare the DNV survey process to other accreditors, Gaetano had good things to say.

“It’s definitely a better process than what we previously had,” he says. “Some of the DNV process is OSHA-focused, which is different than just life safety. We feel DNV is acting as a partner, helping us with our documentation. An example would be if a sprinkler contractor failed to place our company’s name or even our address on his report, it may not be admissible in a court of law if needed. Also, the test reports should only review what the standards require. If the contractor has other recommendations that are not code-related, they should be made on a separate report. That way no one in court can ask why you didn’t follow the recommendations made by a contractor.”
Unsprinklered hospitals are at risk

The Life Safety Code® (LSC) does not require existing hospitals to be fully protected with automatic sprinklers. In fact, it wasn’t until the 1991 edition of the LSC that sprinklers were even required in new construction of hospitals and nursing homes. Many states and local authorities did require them, but when The Joint Commission adopted the 1991 LSC in 1993, it was the first national authority over healthcare organizations to mandate sprinklers.

In 2003, when CMS adopted the 2000 edition of the LSC, it got on board with requiring sprinklers in new construction as well. But by 2008, CMS decided that all existing nursing homes also needed to be fully protected with automatic sprinklers, and gave them five years to do so. This decision did not include hospitals, primarily because the number of fatalities in hospital fires was significantly less than the number of fatalities in nursing home fires.

Statistics have shown that the installation of sprinklers saves lives by confining the fire to the room of origin and not allowing it to spread. Why then, are so many hospitals reluctant to install sprinklers even though they may not be required?

One answer lies within the question itself: Nobody is making hospitals do it, so they won’t. That’s not the smartest answer, but consider that healthcare organizations are seeing less Medicare reimbursement from CMS and skyrocketing costs in other areas—funds for capital improvements that are not mandatory or have no payback are simply not available.

There are other reasons why existing hospitals are not fully sprinklered. The fear of water from a discharged sprinkler damaging medical records or causing havoc in an operating room or an IT computer room also drives the decision not to pursue water-based sprinklers. But there are tried and true solutions to these issues as well. Paper medical records may be protected from water by using specially designed shields or encased shelving units. Water-based sprinkler systems in operating rooms can be dry pre-action type systems where water is not present in the pipe until a fire is actually detected. IT computer rooms, meanwhile, can be protected with clean agent fire suppression systems, such as FM-200, Inergen, and CO2.

The bottom line is that hospitals that choose not to be fully protected with sprinklers are putting their patients at risk, even though they may well be within minimum requirements of applicable codes and standards. Many years ago, patients were still allowed to smoke in hospitals, and the careless use of smoking materials by patients caused many fires that resulted in fatalities. Even though smoking has been banned in hospitals, patients still sneak cigarettes in their rooms, and it is only a matter of time before we see another serious situation. It’s not just smoking that presents a threat, either: Cooking appliances, cauterizing pens used in surgery, and electrical equipment mechanical rooms are some of the other common sources of ignition.

The American Society for Healthcare Engineering (ASHE) reported in an online article that the International Code Council (ICC) adopted a change in 2009 that will retroactively require all hospitals to be fully sprinklered. According to the article, the evidence supporting this change is indisputable: When fully operational fire suppression systems are installed, there is no loss of life.

The ICC publishes the International Building Code (IBC), which has been adopted by most states or municipalities across the country. As these states and municipalities adopt more recent editions of the IBC, the requirement to retroactively sprinkle all hospitals will come into effect.

Unofficial comments from members of the LSC’s healthcare technical committee indicate they are ready to require hospitals to be retroactively fully sprinklered in future editions as well. Finally, the ASHE article notes that CMS is also considering adopting regulations that would require existing hospitals to become fully sprinklered, and would allow them nine years to accomplish it.

What does all this mean? Simply put, the time is coming. If your hospital is not fully protected with sprinklers, then you need to begin working to make it so. You can wait until an authority requires you to install the sprinklers, or you can proactively begin the process to place your patients in a safer environment.
Frequency of surgical fires on the rise

A fire in a healthcare setting is a serious and potentially deadly issue. As discussed in our previous article (“Why do we need the Life Safety Code?” featured in the May 2013 HLSC) many fires have been prevented simply by banning smoking materials in the hospital. But that does not mean fires have been abolished altogether. As previously reported, the healthcare industry still averages 3.8 fires per day in hospitals across the United States.

Nowhere are fires more deadly than the operating room, where patients are unable to take action to protect themselves. With the presence of oxygen used in the procedure, cauterizing devices that create a heat source, and the sterile drapes and cloths that offer a fuel load, all three components of the fire “triangle” are present, and tragedy is just a spark away.

The FDA, according to data released in 2003, estimated there were 100 surgical fires each year, resulting in 20 serious injuries and two patient deaths. However, the FDA today believes there are up to 650 surgical fires each year in the United States, which is a 550% increase. Why the sudden rise in just 10 years? Most likely the difference is not due to more actual fires occurring, but instead due to more of them being reported.

Fires involving a patient during surgery are preventable; therefore, to save embarrassment and unwanted publicity, self-reporting of these fires to accreditation organizations and other regulatory agencies was very lax in 2003. In fact, it is documented that surgical staff often deliberately decided not to activate the building’s fire alarm system to keep events quiet. As such, the accounting of surgical fires in 2003 was probably not very accurate, making the FDA’s number of 100 per year a “best guess” based on available information.

Hospitals today, however, realize the value in identifying these serious events, as it allows them to conduct a root cause analysis to prevent future occurrences. Healthcare administrators also insist on a more transparent approach to leadership, which requires a full investigation and accountability when a fire breaks out.

The FDA has posted recommendations on its website regarding the prevention of surgical fires. They are repeated here as talking points for the surgical department:

- **Use supplemental oxygen safely.** Evaluate whether supplemental oxygen is needed for each patient, as any increase in oxygen concentration in the surgical field heightens the chance of fire. If supplemental oxygen is necessary, particularly for surgery in the head, neck, or upper chest area:
  - Deliver the minimum concentration of oxygen needed to maintain adequate oxygen saturation for the patient.
  - Use a closed oxygen delivery system such as an endotracheal tube or laryngeal mask whenever possible, especially if high concentrations of supplemental oxygen (greater than 30%) are being delivered.
  - Take precautions to exclude oxygen from the field if using an open delivery system. These precautions include draping techniques that avoid accumulation of oxygen in the surgical field, the use of incise or fenestrated drapes that may help isolate oxygen from the surgical site, blowing air to wash out excess oxygen, or scavenging oxygen from the field.

- **Use alcohol-based (flammable) skin preparation agents safely.** Prevent alcohol-based antiseptics from pooling during skin preparation. For example, use the appropriate size applicator for the surgical site, and remove alcohol-soaked materials from the prep area. Allow adequate drying time, as prescribed in the labeling, for the specific product. If the product is used on hairy areas or in skin folds, extend the drying time. Also, ensure that the skin is dry before draping the patient and beginning the surgery.

- **Use devices and other surgical equipment safely.** Consider alternatives to using an ignition source near the head, neck, and upper chest if high concentrations of supplemental oxygen (greater than 30%) are being delivered. If an ignition source must be used, it is safer to do so after allowing time for the oxygen concentration to decrease. It may take several minutes for the oxygen concentration in the area to be reduced even after stopping the gas or lowering its concentration. When
not in use, place ignition sources such as electrocautery devices in a holster, not on the patient or drapes. It is important to understand that surgical drapes and other fuel sources can ignite easily and burn in an oxygen-enriched environment, even if the products are described as “flame-resistant.”

- **Encourage communication among members of your surgical team.** Ensure the anesthesia professional delivering the gases is communicating with the surgeon controlling the ignition source and the clinician applying the skin preparation agent.

- **Plan how to manage a surgical fire.** For example, understand how to extinguish a fire burning on a patient. Develop evacuation procedures and conduct fire drills to test those procedures. Keep saline handy to put out a fire.

**Kenneth L. Silverstein, MD**, chair of the department of anesthesiology and medical director of perioperative services at Christiana Care Health System in Wilmington, Del., was interviewed by the FDA and the video of the conversation was posted on its website. Silverstein shared that Christiana had two surgical site fires within an eight-month period in 2003, and as a result, the organization decided to take positive action to prevent fires from occurring in the future.

“We conducted an analysis which showed the root cause was clearly the high concentration of oxygen during the surgery,” said Silverstein. “One of the most important contributing factors was we found that the staff had a general lack of appreciation for what constitutes risk for fire in an operating room setting.”

Silverstein and his staff concluded there needed to be a high awareness about the risk of a surgical fire breaking out. “So we developed the fire risk assessment score and then incorporated that into something that is done in every single case, which is the Universal Protocol” or the process by which a patient is confirmed to be the correct patient having the correct procedure at the correct time,” he said. “By marrying the fire risk assessment to the Universal Protocol, we found a way to introduce into the consciousness of the staff an awareness of the elements of the fire triangle in every single procedure.”

Silverstein explains that the fire risk assessment is brief yet effective: It asks three basic questions, and any “yes” answer receives a single point. The first question asks whether an open oxygen source exists, the second question asks whether a heat source exists, and the third question asks whether the first two are in close proximity. Fuel is not discussed—it’s assumed to always be present in every operating room setting.

“Once we have determined the score from the fire risk assessment, we have set protocols to follow that are associated with the risk and are adhered to,” said Silverstein. “Even a risk score of 1 is deemed to be a low risk, not a ‘no-risk,’ and has certain protocols associated with it. To address the highest-level risk procedure, we look specifically at things such as how the drapes are applied, whether an occlusive drape is used, and that’s mandated as part of our policy in a risk-level 3 procedure.”

Silverstein shared that Christiana Care surgical staff always observed appropriate drying times when using alcohol-based prep solutions, but this observation is now mandated as part of the risk-level 3 procedures.

“We look at appropriate safe use of electrosurgical units and other heat sources,” he said. “There is a great deal of attention that’s paid to that, particularly for risk-level 3 procedures. Oxygen concentration is monitored and very carefully delivered, and it’s mandated to be started at a low level ... at 30% in procedures that are the highest risk.”

Once the surgery begins, the procedure must be continually reassessed. “A closed oxygen system can become an open oxygen system inadvertently,” Silverstein noted. “So it’s not appropriate to rest on the initial assessment but to be monitoring throughout the procedure for such changes.”

Communication between the anesthesiologist and the surgeon is key in monitoring the fire risk. “Communication has to continue throughout the procedure,” said Silverstein. “If I’m taking care of the patient and I have to increase the oxygen concentration during the procedure, I’m required to communicate that to the surgeon. The surgical assistant will acknowledge the increase in oxygen concentration and may even go so far as to remove the heat source from the field during certain parts of the operation. Embedding this fire-risk assessment into the Universal Protocol is the novel aspect of it all, and was really the genius behind the process.”

**EDITOR’S NOTE**
See p. 12 for a surgical site fire risk assessment form.
Conflicts with codes on corridor projections

Hospitals have been installing items on corridor walls for decades without much thought as to whether doing so is code compliant. Wall-mounted telephones, mailboxes, bulletin boards, and even suggestion boxes are a common sight in healthcare occupancies.

Unfortunately, the Life Safety Code® (LSC) didn’t allow any of these items to be mounted on the surface of the wall—at least not until recently. The 2000 edition of the LSC originally disallowed corridor projections above the handrail height of 38 inches. That means all of the aforementioned wall-mounted objects would be considered noncompliant, and surveyors and inspectors could cite an organization for having them.

That all changed when NFPA adopted Tentative Interim Amendment (TIA) number 787 in April 2004, which retroactively changed the 2000 and 2003 editions of the LSC to allow items mounted on the corridor wall to project 6 inches into the corridor. The original intent of the TIA was to only allow the installation of alcohol-based hand-rub (ABHR) dispensers on corridor walls in healthcare occupancies, and its language was specific:

Where the minimum corridor width is 6 feet, projections of 6 inches from the corridor wall, above the handrail height, shall be permitted for the installation of hand-rub dispensing units in accordance with 18.3.2.7.

Section 18.3.2.7 was modified in the same TIA to describe in detail the requirements for the proper installation and placement of ABHR dispensers.

All of this action was the result of a publication released by the Centers for Disease Control and Prevention in 2002, which highly recommended the placement of ABHR dispensers in convenient locations for staff to reduce the spread of infections. Infection control professionals quickly had ABHR dispensers placed strategically throughout the corridors on the nursing units, only to be followed by fire marshals and inspectors who ordered their removal due to the highly flammable material contained inside. It wasn’t until the American Hospital Association sponsored a computer model of the dispensers’ effects on egress during a fire condition that a scientific approach to their placement was developed.

Within a few months after the NFPA issued the TIA in 2004, CMS issued memo S&C-04-41 to its state survey agencies. The memo stated that CMS would permit a 3-½ inch projection in the corridor wall, provided it was at least 60 inches above the floor. The memo explained that this exception was to allow computer screens to be mounted on corridor walls, but it did not address the recent NFPA TIA allowing ABHR dispensers.

That subject was addressed in another CMS memo (S&C-05-33), released June 2005; this memo essentially adopted the NFPA TIA and clarified its position on accepting the placement of ABHR dispensers in corridors. Then, in May 2010, CMS issued another memo (S&C-10-18-LSC) revising its previous position: The 2010 memo allowed any wall-mounted item in a corridor, as long as the item did not project more than 6 inches into the corridor and was mounted at least 40 inches above the floor. Additionally, the memo’s guidance on wall projections was clearly no longer limited to ABHR dispensers.

This is all well and good, except the 6 inches allowed by the NFPA is inconsistent with the restrictions of the Americans with Disabilities Act of 1990 (ADA). In section 4.4.1 of the ADA Standards for Accessible Design, wall-mounted objects may not project more than 4 inches into corridors. The ADA also denotes a different height above the floor for wall-mounted projections: 27 inches rather than the 38 inches that the NFPA goes by.

Furthermore, the ADA Standards for Accessible Design states that wall-mounted objects at or below the 27-inch point above the floor may project any amount. However, the LSC only permits 3-½ inches of projection in corridors below the 38-inch height.

So, we have different codes with different requirements: Above the handrail height, the NFPA says projections can extend up to 6 inches; the ADA limits them to 4 inches. Below the handrail height, the ADA does not limit projections, but the NFPA limits them to 3-½ inches. Naturally, there’s no consensus on the handrail height either.

The American Society for Healthcare Engineering advocacy team is looking into these differences and is working to develop a proposal to harmonize the two sets of requirements.
Editorially speaking …

Editor's note: Each month, Senior Editor Brad Keyes, CHSP, offers his thoughts, concerns, and comments on issues pertaining to healthcare life safety.

Surgical fires on the rise

The continuing problem of surgical fires troubles me personally. Having worked at a hospital that had experienced multiple surgical fires, I was very concerned when my wife had to have surgery. When the time came to have a meeting with the surgeon and anesthesiologist prior to the start of the surgery, I asked many questions about their procedures to prevent surgical fires, to the point where the surgeon decided to cancel the surgery. He did not know that I worked in the healthcare industry, and he considered my questions to be an infringement upon his abilities. Ultimately, we found another surgeon who was very patient with me and answered all of my concerns, without feeling subjected to an inquisition.

Organizations other than the FDA are actively educating their members about surgical fires. The Joint Commission issued Sentinel Event Alert #29 in 2003 concerning surgical fires, and the accreditor offers tips on preventing surgical fires in the March 20, 2013, issue of Joint Commission Online. The Emergency Care Research Institute (ECRI) is an independent, nonprofit organization that researches the best approaches to improving the safety, quality, and cost-effectiveness of patient care. ECRI has published a list of the top 10 health technology hazards for 2013, and surgical fires remains on the list. Go to www/ecri.org/2013hazards to review the entire list.

As the article shows, fires can and do occur anywhere, especially when staff becomes inattentive to the basic components for fire—the “fire triangle.” For a fire to occur, there must be oxygen, heat, and fuel.

Lessons are being learned in hospitals every day because surgical fires still occur. Take the information from this month’s article and share it with your surgical staff to be proactive in keeping your organization free from surgical fires. You just may save a life.

Hospital water features under scrutiny

According to an online article from the American Society for Healthcare Engineering (ASHE), the Facility Guidelines Institute (FGI), who reviews and revises the Guidelines for Design and Construction of Health Care Facilities, is considering prohibiting open, indoor water features in new hospitals for its 2014 guidelines. This is due to the potential for disease caused by waterborne pathogens. Health officials say outbreaks of illness attributed to water features are rare, but the ones that do occur can result in serious consequences—not just patient deaths or illnesses, but also expensive lawsuits, bad press, and lost business.

However, researchers argue that indoor water features can play a significant role in creating a healing environment that reduces stress and provides psychological support. Studies have shown that blood pressure rates can drop with a water feature present. And positive scores from patient satisfaction surveys would seem to indicate that healthcare consumers favor water features.

Apparently, ASHE does not agree that the advantages of a water feature outweigh the disadvantages. The online article announced that ASHE is supporting the change to prohibit open water features in new hospitals in the next edition of the FGI Guidelines. Readers are reminded that the FGI Guidelines are only that: guidelines. They do not form a standard unless and until an authority adopts the language as its own standard. It is important to understand that if passed, the ban will only apply to new construction in hospitals and will not affect water features that have already been installed.

The currently used 2010 edition of the FGI Guidelines states that any open water feature must be equipped to safely manage water quality to protect occupants from infection or irritating aerosols. H
Sprinkler main drain test

Q Where is the main drain test supposed to be conducted? Is it supposed to be at the sprinkler riser or low point drain?

A According to NFPA 25, Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems (1998 edition), the main drain test of the sprinkler system is to be conducted at the sprinkler system riser. The purpose of the main drain test is to determine whether there has been any change in the condition of the water supply piping and control valves. There has been some confusion about main drain tests, as one accreditation organization permits its hospitals to conduct the main drain test at the low point drain where the supply main enters the building. But they are confusing the NFPA 25 standard, which does allow the main drain test to be conducted at low point drains on standpipe systems, only when standpipe systems are separated from sprinkler system risers. Main drain tests for sprinkler systems must be conducted annually, and after every time a control valve has been closed. A successful main drain test will record the static pressure of the water, the residual pressure after the main drain valve is opened, and the time to return to static pressure after the main drain valve has been closed. The results of each test must be compared to previous results to determine whether there is any change in the water supply.

Generator load tests

Q Is it allowed to combine the three-year four-hour generator load test with the annual two-hour load test? Our generator test company plans on running the generator at 50% load for the first two hours and then elevating to 75% load for the last two hours. In your opinion, would this satisfy both the two-hour and the four-hour load test?

A You are allowed to combine the two-hour load test and the four-hour load test. The two-hour load test is required to be conducted once per year when the generator cannot meet the load test of 30% of nameplate rating every month. When this occurs, you still conduct the monthly load tests, but once per year you need to conduct a two-hour load test (usually by connecting the generator to a resistive load bank) that consists of the following continuous two-hour sequence:

1. 25% load for 30 minutes
2. 50% load for 30 minutes
3. 75% load for 60 minutes

The scenario that you described allows 50% load for the first two hours and 75% load for the last two hours. This would be acceptable in meeting both test requirements since the percentages listed in the standards are minimum settings, and you are permitted to exceed them. But you need to be careful, because if you combine these two tests and start out at 25% load (as required for the two-hour load test) for the first 30 minutes, then you are out of compliance with the four-hour test, unless you run an extra 30 minutes after you reach or exceed 30%.

Who is the authority?

Q We recently had a survey where we were cited for not having a paved sidewalk from the exit door of a stairwell to the parking lot. The surveyor said the path to the public way needed to be a smooth walking surface. Our architect said this is not true and...
The spacing requirements are not listed by specific distance, but by decibel ratings at a specific distance. The *LSC* requires compliance with NFPA 72 (1999 edition) for the installation of fire alarm system devices. Section 4-3.3 says:

- Audible devices must have a sound level of not less than 45 dBA or more than 120 dBA at the minimum hearing distance from the audible appliance (10 feet)
- Audible devices must have a sound level at least 10 dBA above the average ambient sound level or 5 dBA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured at 5 feet above the floor

The manufacturer of the audible device will list dBA ratings per feet in a chart, so once the installer knows what decibel rating is needed, the manufacturer’s chart will indicate the distances needed for the devices. It is surprising how many audible devices are needed for an average hospital environment. Many large conference rooms would require multiple devices.

**Locks versus latches**

A surveyor cited us for not having positive latching doors to the entrance of the ICU suite. We have magnetic locks on those doors and pointed out that they serve as positive latching. He refused our position and cited us anyway. Don’t magnetic locks qualify as positive latching hardware on doors?

No, they do not. Locks are not the same as positive latches. The magnetic locks that you mentioned are most likely access-control locks as described in section 7.2.1.6.2 of the 2000 edition of the *LSC*. Those electronic magnetic locks are required to unlock upon activation of the fire alarm system. That’s when you need the corridor door to positively latch the most: during a fire. Also, make sure there is a motion sensor mounted on the egress side of the doors served by the magnetic locks, along with a button mounted on the wall within 5 feet of the doors that, when activated, will unlock the magnetic locks for a minimum of 30 seconds. The button must be labeled “Push to Exit.”

**Fire alarm notification devices**

What is the spacing requirement for fire alarm occupant notification devices?

A provided us with a document from the city building authorities approving the design without the sidewalk. Who do we have to follow, the surveyor from the accreditation organization or the city building authorities?

You definitely must follow the most restrictive of all the authorities who inspect your facility. If the city says you do not need a sidewalk but the accreditation organization says you do, then you must follow the accreditation organization, since its interpretation is more restrictive. Keep in mind that the accredditor is an authority as well. You always have the right to appeal the surveyor’s decision through the clarification process, but you must abide by whatever result arises from that process. There are many different authorities having jurisdiction (AHJ) who inspect hospitals and tell them how to operate. The typical hospital has five or six different AHJs who may inspect the hospital according to the requirements of the *Life Safety Code® (LSC)*:

- Accreditation organizations (Joint Commission, Healthcare Facilities Accreditation Program, Det Norske Veritas)
- CMS
- State department of public health
- State fire marshal
- Local fire inspector
- Insurance carrier

Any of these AHJs can make an interpretation of the code, and the hospital would need to comply with it. No single AHJ can overrule another AHJ’s decision; however, any AHJ can order you (within reason) to comply with its own interpretation, even when it differs from another AHJ’s interpretation. Local architects rarely, if ever, deal with accreditation organizations, so that is probably why the architect felt the surveyor was wrong. It is perfectly within the right of accreditation organizations to interpret the code to require a paved sidewalk at the exit discharge even if the local AHJs disagree.
# Quick tip

## Surgical fire risk assessment

**Date:** ____________________________  **Planned Procedure:** ____________________________

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<thead>
<tr>
<th></th>
<th>1 (Yes)</th>
<th>0 (No)</th>
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<tbody>
<tr>
<td>Procedure site or incision above the xiphoid</td>
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<tr>
<td>Open oxygen source (face mask/nasal cannula)</td>
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<tr>
<td>Ignition source (cautery, laser, fiberoptic light source)</td>
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**SCORE 1 or 2:** [ ] Initiate routine protocol

**SCORE 3:** [ ] Initiate high-risk protocol

(see below for specifics)

Initial: _______________

Total score: _____________

### Routine protocol:

1. **Fuel:**
   a. When an alcohol-based solution is used, use minimal amount of solution and allow sufficient time for fumes to dissipate before draping. Observe drying time (minimum three minutes). Do not drape patient until flammable prep is fully dry.
   b. Do not allow pooling of any prep solution (including under the patient).
   c. Remove bowls of volatile solution from sterile field as soon as possible after use.
   d. Utilize standard draping procedures.

2. **Ignition source:**
   a. Protect all heat sources when not in use. (Cautery pen holster, laser in standby mode, etc.)
   b. Activate heat source only when active tip is in line of sight.
   c. Deactivate heat sources before tip leaves surgical site.
   d. Check all electrical equipment before use.

### High-risk protocol (includes all of routine protocol):

a. Use appropriate draping techniques to minimize oxygen concentration (i.e., tenting, incise drape)
   b. Electrical surgical unit (ESU) setting should be minimized
   c. Encourage use of wet sponges
   d. Basin of sterile saline and bulb syringe available for suppression purposes only
   e. Anesthesia care provider considerations:
      – A syringe full of saline will be available, in reach of the care provider, for procedures within the oral cavity.
      – Documentation of oxygen concentration/flows. Use “MAC circuit” for oxygen administration.

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<th>Initials</th>
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Source: FDA and Christiana Care Health Services. Used with permission.
1. (T) (F) Det Norske Veritas Healthcare (DNV) was approved by CMS to be the first deeming authority to accredit hospitals.

2. (T) (F) The DNV ISO process is built around process improvement.

3. (T) (F) The 2000 edition of the Life Safety Code® does not require existing hospitals to be fully sprinklered unless the construction type requires it.

4. (T) (F) Surgical fires are not as serious as other fires since they can be put out very quickly.

5. (T) (F) If alcohol-based skin preparation agents are used prior to the start of surgery, then time must be taken to allow the alcohol to dry.

6. (T) (F) A score of 3 is considered a high risk in the Christiana Care Health System Fire Risk Assessment format.

7. (T) (F) The NFPA codes and standards are in sync with the federal Americans With Disabilities Act (ADA) requirements for corridor projections.

8. (T) (F) The American Society for Healthcare Engineering is supporting the change in the Facility Guidelines Institute Guidelines to ban open water features in new hospital construction.

9. (T) (F) Sprinkler main drain tests may be conducted at the low point drain where the main enters the building.

10. (T) (F) A magnetic lock cannot be used in place of a positive latch.
1. False. DNV was actually the second authority approved by CMS, after the Healthcare Facilities Accreditation Program and before The Joint Commission.

2. True.

3. True.

4. False. Surgical fires are just as serious, if not worse, because patients are unable to protect themselves.

5. True.

6. True.

7. False. The ADA allows 4 inches of corridor projection; the NFPA codes and standards allow 6 inches, measured above the handrail height.

8. True.

9. False. Even though one accreditation organization does permit it, conducting a main drain test at the low point drain is not allowed by NFPA codes and standards.

10. True.