Staying on top of code requirements

It is not enough to prevent infection and always identify the right surgery site. It is not enough to have smooth hand-off procedures and to question patients thoroughly about their allergies and ailments. To keep patients (and employees and visitors) safe, the very architecture of an ambulatory surgery center (ASC) must conform to detailed standards. Both state and federal standards apply to surgery centers, and they extend far beyond such common-sense rules such as not overloading electrical circuits.

The Life Safety Code is complex, but meeting it is critical to compliance and accreditation. At the April 2009 annual meeting of the ASC Association in Nashville, Tennessee, facilities planner William Lindeman, AIA, NCARB, reminded ASC managers of some basic considerations.

“There’s a real need for organizations to understand what’s required,” he told them.

The National Fire Protection Association (NFPA) issues the Life Safety Code. In 2003, Medicare adopted the 2000 version of NFPA 101 for both new and existing ASCs. It addresses building design with the goal of minimizing danger from fire and its effects, including the ability of occupants to escape. The code is updated every 3 years, with the current edition effective in 2009, and the next update planned for 2011.

In addition, Lindeman noted, states have their own codes, which may be more restrictive than the national one.

The Centers for Medicare and Medicaid Services (CMS) mandates compliance with the code, which in general covers facility configuration, size, construction, emergency equipment, and accessibility for disabled persons. It is possible to obtain a waiver in some circumstances, Lindeman said, but the ASC must demonstrate there will be no loss of patient safety.

Compliance can be tricky

Merely having a certificate of compliance is not always enough, especially for older ASCs, he noted. Many regulatory officials and design professionals, he said, are not aware of all of the requirements, and yet erroneous approvals are never grandfathered.
Even a fully compliant building can go out of compliance because of the simplest of improvements or alterations.

“Just adding a storage closet, an improvement, can bring a building out of code,” he said, because it could affect space requirements or egress patterns.

“There’s a lot of things a survey can uncover,” he said. For example, running a wire through a wall or connecting new equipment improperly could change compliance status.

His advice for anyone contemplating a change is to first identify those conditions that must be maintained, which include anything related to mechanical or electrical systems or to safe exit patterns. Blocking required exits or opening firewalls for construction work, especially above ceilings, would jeopardize compliance.

“Document everything related to testing and maintenance,” he advised.

Understanding building codes

Understanding definitions and terms for building elements in the safety code is a big help in working toward compliance.

For example, minimum construction requirements depend on the size of the building. But how many stories does a particular ASC have? Lindeman noted that a space is not a story if more than 50% of the exterior wall surface is underground. Thus, an underground basement is not a story. The exception, in some but not all cases, is a walk-out basement.

The above-ground/below-ground rule is complicated by the fact that buildings often are constructed on sloped land. An apparent first floor may actually be more than 50% underground. Likewise, an attic not used or occupied does not count as a story.

Identifying the stories is an important first step in selecting the construction rules that apply. For example, if the building in which the ASC is located, whether shared or not, is found to be 1 story, it may be exempt from sprinkler requirements. Otherwise, all floors in the building must be protected by a supervised sprinkler system. “Supervised” means monitored by an emergency dispatching authority.

Besides sprinklers, there is a second option for protecting a multi-story building containing an ASC, and that is to have fire-rated construction throughout. Every structural component, including columns, bearing walls, floors, and roof must be enclosed with material rated fire-resistive for at least 1 hour.

Meanwhile, an ASC occupying only 1 floor might be able to establish “separate building” status by surrounding itself completely with a 2-hour firewall.

Getting out

Well-publicized fire department concerns about exits in any building take on added detail when the structure houses an ASC.

Any ASC of 2,500 square feet or larger must have a minimum of 2 exits. “If it is even close,” he advised, “make sure the ASC area is the number being used, not the leased area, which usually includes common areas outside the actual ASC.” The 2-exit minimum applies to any floor above ground level, in the form of separate stairwells.

The required exits must be separated by a distance equal to 1/2 of the facility’s maximum diagonal dimension. The exception is if the building has sprinklers, in which case the minimum distance is 1/3 the building diagonal (illustration).

The exit system must include lighting on the entire exit pathway “from the
most remote area to all required exits,” Lindeman noted. That means backup power must be available in the case of power loss, and it must be adequate for safe navigation for at least 90 minutes.

Speaking of lights, Lindeman noted there are specific standards for exit signs. Directional signs must be posted leading to an exit, with the exit sign itself located over the door. To indicate the direction of the nearest exit, an arrow will not do—a thick, illuminated chevron must show the way.

Doors or windows that could be mistaken for escape routes but are not must be labeled, “not an exit.”

**Fire and smoke**

An ASC of more than 5,000 square feet, or 10,000 square feet with sprinklers, must be divided into at least 2 “smoke compartments” to prevent smoke from spreading through the facility. To insure isolation, the walls must go through the ceiling to the upper floor or roof and must extend from 1 exterior wall to another. Connection to other areas must be through doors rated for at least 45 minutes.

There must be similar protection between the ASC itself and other building areas.

At each exit from the ASC, a manual fire alarm must be located. That doesn’t mean down the hall, but right at the exit, Lindeman explained: “If there’s a fire, one of the top priorities is to sound the alarm.”

Fire alarms must be tested regularly, and if inoperable for more than 4 hours, the building must be evacuated, and the fire department notified. Quarterly fire drills are recommended.

In addition to the alarms, ASCs must have fire extinguishers prominently located and tested at least once a year. The facility must have a fire emergency plan in place that includes checking and maintaining exits to be sure they are not blocked, as with furniture or equipment. Hanging fabrics and decorations must meet flame-retardant requirements. Trash and soiled linen containers must meet size and quantity-per-room limits.

Even hand sanitizer containers are hazards if they contain alcohol. Staff must control access to them, and they must be in range of sprinklers. Corridors with wall-mounted sanitizer dispensers must be at least 6 feet wide.

**Storing medical gases**

Like other locations where surgery is performed, ASCs have a built-in hazard in the form of piped medical gases, and the safety code gives them special attention. A facility has the choice, unless state regulations dictate otherwise, of installing a central (or remote) source or portable cylinders. The operative regulations are in the NFPA 1999 edition, which requires separate supports to hold up cylinder tanks.

Manifold rooms, where gas supplies or controls are stored, must be lockable. Components of gas cylinder storage rooms must be of noncombustible materials, including walls, floors, ceilings and supports. Doors must be metal. Electrical fixtures and switches in these rooms must be placed at least 60 inches above the floor.

Each cylinder must be individually supported, usually by a chain attached to the wall. This standard is sometimes ignored, Lindeman noted, displaying a photograph of a set of 4 cylinders connected by a single chain attached to a single wall support. Not legal, he said, because each container must have its own chain or be placed on a cylinder stand or cart.
The organization of stored gas cylinders is also important, he noted. They must be placed so that the cylinders can be used in the order in which they are received from the supplier. Empty cylinders must be segregated and marked to avoid being mistaken for full ones, because confusion could cause a delay in furnishing gas and threaten patient safety. No other equipment should be stored in cylinder rooms.

**What happens if the power fails?**

While changing light bulbs and checking electrical outlets for safe operation are indeed important to staying in compliance, the code also addresses emergency power, a critical factor in any medical facility.

Electrical system requirements are based on whether a facility uses only local anesthesia or if it ever uses general anesthesia.

The first may use a “type 3” system, “typically battery-based and fairly simple to achieve,” according to Lindeman. However, if the ASC even contemplates using general anesthesia, it must install a “type 1” system identical to that used in hospitals.

A type 1 system is designed to provide continuous operation on 2 levels: first, the building functions such as air conditioning, and second, the “critical” functions such as running ventilators, which will keep a patient alive. The 2 systems must have separate branch wiring and circuit protection.

“So be careful,” he advised. “If you want to go from local to general anesthesia procedures, you usually have to rewire the entire ASC.”

**Test and maintain**

Once in place, the system must be regularly tested and maintained. For example, check emergency batteries for corrosion on the terminals, he advised. If the backup is a generator, it should be run monthly, or 12 times per year.

“A test I like to do,” he said, “is to kill the power in the whole building on a weekend when there are no patients.”

Because it is so easy to fall out of compliance when making changes or in the course of normal operations (such as moving equipment that could block an exit), Lindeman advised fully documenting every action related to testing and maintenance, especially in these areas:

- piped medical gas systems
- emergency power
- egress and exit sign lighting
- fire sprinklers
- smoke and fire alarms.

In addition, ASCs should keep track of all mechanical and electrical components that need to be maintained. Even redecorating can affect compliance; for example, there are standards for carpet height where it intersects with bare floor, as it could become a tripping hazard.

For further guidance, ASCs should consult their state health departments “to help establish your conformance baseline,” Lindeman said. There are handbooks explaining the NFPA rules, but at least keep on hand the 2000 editions of NFPA 101 and the 1999 edition of NFPA 99. The Centers for Medicare and Medicaid Services (CMS) publishes the CMS State Operations Manual, and ASCs can also consult with their deemed status accrediting body for standards and checklists.

—Paula DeJohn
Life Safety Code resources

Accreditation Association for Ambulatory Health Care
AAAHC’s Physical Environment Checklist for Ambulatory Surgical Centers (CD-ROM).
—www.aaahc.org

CMS State Operations Manual
Appendix L: Guidance to Surveyors: Ambulatory Surgical Services.
—www.nfpa.org

Joint Commission
—www.jcrinc.com/ProductDetails1620.aspx

National Fire Protection Association
—www.nfpa.org