

ASHE Advocacy

REPORT

An update on the quest
for responsible regulation
of **health facilities**



Save billions a year—while keeping
health facilities safe



Ways to update and resolve conflicting
codes regulating health facilities



How you can help health facilities direct
more resources toward patient care

VOLUME 1, 2012


American Hospital
Association


American Society for Healthcare Engineering
of the International Brotherhood of Engineers

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The American Society for Healthcare Engineering (ASHE) is a personal membership group of the American Hospital Association. More than 11,000 members rely on ASHE as a key source of professional development, industry information, and advocacy, including representation on key issues that affect their work in the physical health care environment. For more information about ASHE, contact 312-422-3800 or visit www.ashe.org.

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Letter to Readers



Although often unnoticed, the health care physical environment plays a critical role in keeping hospitals and other health care facilities safe.



Dear Reader,

If you've ever visited a hospital as a patient or guest, you've no doubt paid close attention to the medical care you or a loved one received. But unless you are involved with hospital facility management, you may not have thought much about the health care physical environment—the air pressure in operating rooms, the placement of hand sanitizers, the smoke barriers hidden behind patient walls, or even the amount and type of wall decorations.

Although often unnoticed, the health care physical environment plays a critical role in keeping hospitals and other health care facilities safe. This special environment is heavily regulated by various codes and standards administered by local, state, and federal authorities. While regulations are a critical part of keeping patients, staff, and visitors safe, current codes and standards leave much room for improvement. The American Society for Healthcare Engineering (ASHE), a personal membership group of the American Hospital Association, estimates that the health care industry wastes potentially billions of dollars a year because of overlapping and conflicting codes, over-regulation, unjustified code enforcement, and code misinterpretations.

In the current economic climate, hospitals and other health care facilities are looking for every avenue to save resources while improving care for patients. By revamping codes—and reducing code conflicts—hospitals have the potential to focus more of their valuable resources on patient care.

ASHE and its members are dedicated to optimizing the health care physical environment. This magazine outlines some of the work ASHE is doing to deal with problematic areas of code compliance, including:

- ♦ **Conflicting codes:** When hospitals have to comply with codes written by different organizations, those codes often include different requirements, leading hospitals to waste resources trying to comply with directives that may conflict.
- ♦ **Outdated codes:** Codes and standards are updated every few years, but some jurisdictions lag behind in adopting the latest editions. A code written in 2000 may not seem that old, but it was written

before lessons were learned from the Sept. 11, 2001, terrorist attacks and Hurricane Katrina. Adopting new codes is critical to reducing waste in hospitals.

- ♦ **Codes not based on science:** Some regulations have vastly improved the safety and health of hospital patients, including codes requiring quick response sprinklers that save lives. Yet some codes seem to protect a company's bottom line more than patients. We should avoid codes that do not advance safety but simply allow companies to promote their "required" products or services.
- ♦ **Inappropriate code interpretations:** When codes are not completely clear, local authorities and regulators can misinterpret them, leading hospitals to waste resources unnecessarily.

ASHE created this magazine to outline some of the problems with existing codes and standards and explain what ASHE is doing through its advocacy program to help remedy these issues. Read the last page of this magazine to learn how you can get involved in the effort to direct more hospital resources where they belong: patient care.

Thank you,

Dale Woodin, CHFM, FASHE
ASHE Executive Director

Chad Beebe, AIA, SASHE
ASHE Director of Codes and
Standards



A handwritten signature in black ink, appearing to read "Dale Woodin".



A handwritten signature in black ink, appearing to read "Chad Beebe".

Who Is ASHE?

The American Society for Healthcare Engineering is the largest association devoted to optimizing the health care physical environment. ASHE is a personal membership organization of the American Hospital Association and has more than 11,000 members. ASHE members design, build, and operate hospitals, and are involved in improving the health care physical environment from the time hospital blueprints are drawn throughout the lifespan of a hospital. Members rely on ASHE for continuing education, professional information, and advocacy efforts focused on pushing for science-based codes and standards that keep patients and staff safe.

ASHE members include:

- Architects and other design professionals
- Contractors
- Facility management professionals
- Consultant engineers
- Clinical and biomedical engineers
- Health care construction managers
- Infection control practitioners
- Maintenance engineers
- Plant management services personnel
- Safety and security professionals
- Support service personnel

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**ASHE Executive Director
Dale Woodin**
Chicago, Ill.



ASHE has more than 11,000 members across the country, including members in more than 2,500 U.S. hospitals.

ASHE uses a committee structure of volunteers to help carry out directives from the Board of Directors. ASHE has committees working on advocacy, education, chapter relations, and membership issues. ASHE's Advocacy Advisory Committee includes experts who work to advance the codes and standards that affect hospitals. The Advocacy Advisory Committee includes:

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 Director of Plant Operations and Security
 Wentworth Douglass Hospital
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Vice Chairman Robert Gance
 Director of Facility Services
 McKee Medical Center @ Banner Health
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David Howard
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Zachary Zapack
 Senior Vice President
 Carolinas Healthcare System
 Charlotte, N.C.

Chad Beebe
 ASHE Director of Codes and Standards
 Chicago, Ill.

How Are Hospitals **Regulated?**

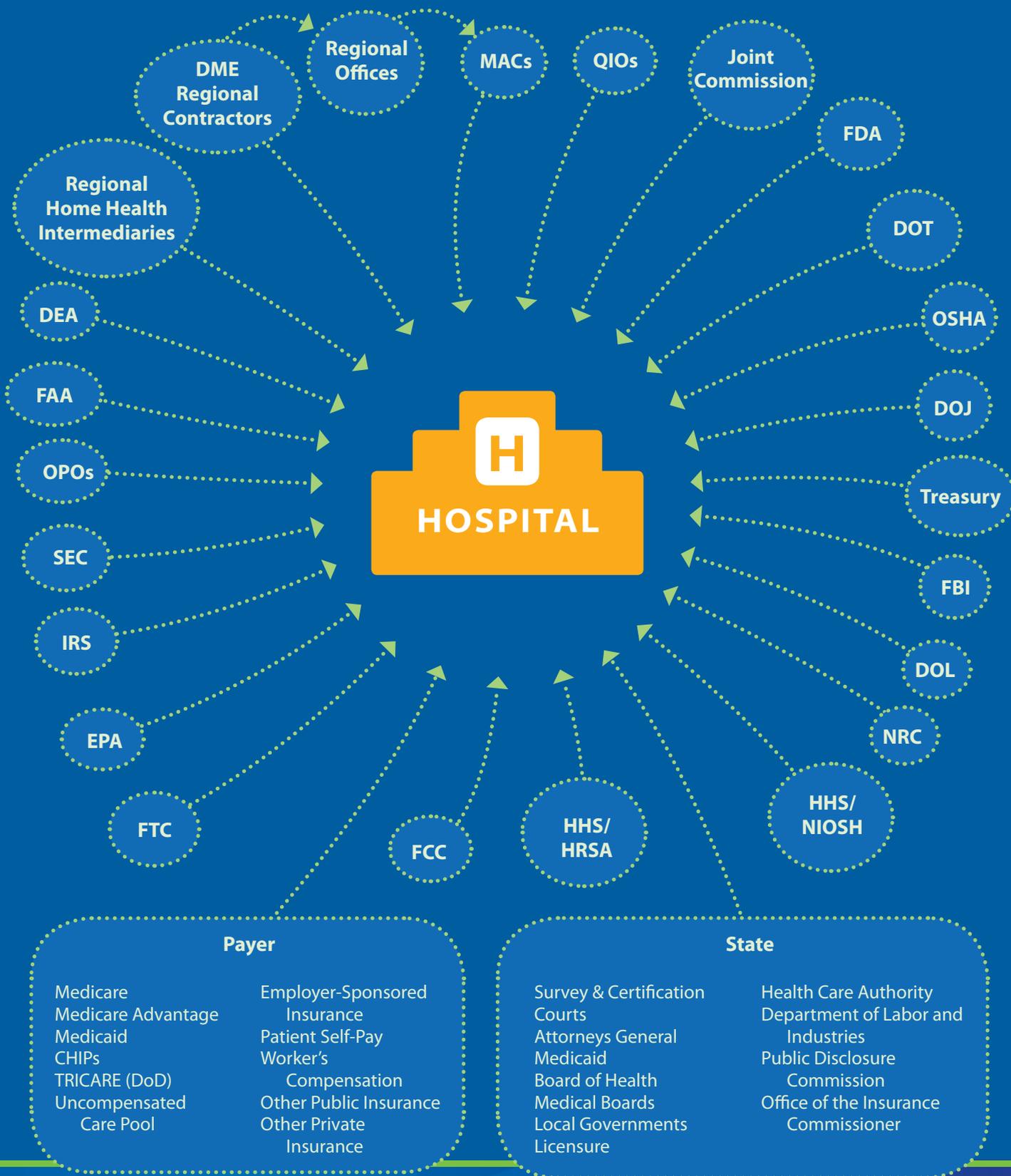
Dozens of federal, state, and local regulations apply to hospitals and the health care physical environment. Complying with various codes and standards is an ongoing process for hospitals. As hospitals are built or renovated, they must comply with locally mandated building codes such as the *International Building Code*. About 98 percent of U.S. jurisdictions use the *International Building Code*.

But once hospitals open their doors, they are surveyed to ensure they comply

with a code written by the National Fire Protection Association—NFPA 101: *Life Safety Code*®. Compliance with that code is required to receive Medicare and Medicaid reimbursements from the federal government. Problems can arise when the two codes conflict.

Problems also arise when some officials adopt a new version of a code while others lag behind, causing wide gaps in code requirements. A chart on the right shows some of the agencies that regulate hospitals in the United States.

Agencies Regulating Hospitals



The Importance of **Unified Codes**

Overlapping codes regulating health care facilities would be manageable if they included similar practices that hospitals could follow. But conflicts between various codes—and various editions of codes—can cost hospitals millions of dollars. Imagine the following scenario: Your community has just finished building a new hospital following the most recent edition of the codes issued by the International Code Council (ICC)—the I-Codes. Your community's hospital meets these up-to-date standards, and hospital leaders are confident that patients and hospital staff will be safe in this new code-compliant facility.

But once the doors are opened and patients come in, the facility undergoes a validation survey by the Centers for Medicare & Medicaid Services (CMS) and is inspected for compliance with codes more than a decade old, including the 2000 edition of the National Fire

Protection Association's NFPA 101: *Life Safety Code*®, which is required by CMS.

The new codes written by one organization can conflict with the old codes written by another, and hospital leaders are stuck spending possibly hundreds of thousands—if not millions—of dollars rebuilding a brand new hospital to comply with outdated codes.

Conflicting and unnecessary building and fire code requirements lead to needless frustration, delays, and expenses every year. The American Society for Healthcare Engineering (ASHE) of the American Hospital Association estimates that health care organizations waste potentially billions of dollars annually because of overregulation, unjustified code enforcement, misinterpretations, and conflicting codes and standards. That's an astonishing amount that otherwise could be spent

on infection prevention, upgrades to medical technology, more nursing care, or other expenses that would directly benefit a hospital's patients.

"We've plateaued at a level of safety where adding more regulations doesn't necessarily improve patient safety," said ASHE Director of Codes and Standards Chad Beebe, AIA, SASHE. "In fact, wasting money on unnecessary regulations uses resources that could otherwise improve patient care."

ASHE and the ICC recognize the problems stemming from inconsistent and outdated codes, and have partnered to create the ICC Ad Hoc Committee on Healthcare.

The committee—a diverse group that includes fire officials, architects, building officials, hospital leaders, facility managers, and engineers from around the country—is taking a fresh look at current codes in light of modern practices. They are recommending appropriate updates to the I-Codes, such as the *International Building Code*, *International Fire Code*, and others, through the ICC code development process.

"This is really a groundbreaking opportunity for health care professionals to work side by side with code enforcement officials to collectively craft codes that address the unique needs of health care facilities," said ASHE Executive Director Dale Woodin, CHFM, FASHE. "We are thrilled by the committee's use of research and data to sup-

port code changes and to determine the optimal level of safety."

Many ad hoc committee members hope the group's efforts are a first step toward the long-term goal of having hospitals built and reviewed under one set of uniform requirements. They eventually want to have one set of codes that do not conflict, that are created using the best science available, and that provide optimal levels of patient safety without burdening hospitals with unnecessary capital expenditures.

"That's the ultimate goal," said committee chair John Williams, CBO, plans reviewer with the Washington State Department of Health. "If we can sing out of the same songbook, it's going

"We've plateaued at a level of safety where adding more regulations doesn't necessarily improve patient safety," says ASHE Director of Codes and Standards Chad Beebe, AIA, SASHE. "In fact, wasting money on unnecessary regulations uses resources that could otherwise improve patient care."



New hospitals are built to comply with the latest edition of building codes. But once the doors are opened and patients come in, the facility is surveyed to ensure it complies with different codes. The codes can conflict, leading to wasted money and construction delays.



to make it easier for authorities having jurisdiction, for designers, and for health care facilities as well.”

Having one set of requirements may not prevent misapplications of the codes, but it would help hospitals funnel resources to patients instead of wasting resources to comply with conflicting codes, said committee vice chair Jeffrey O’Neill, AIA, ACHA, senior project manager at the University of Pennsylvania Health System in Philadelphia.

“That’s why this process is so exciting to all of us,” O’Neill said. “We’ll always have our state departments of health, our local fire groups, and building plan review groups, but having them looking at the same book at least begins to have some consistency throughout what we’re doing.”

The committee is focused solely on examining the I-Codes and determining appropriate changes to submit. It is only dealing with changes affecting hospitals and ambulatory care facilities, not nursing homes and other residential care facilities.

The committee’s goal of providing high levels of safety without wasting resources requires a comprehensive examination of code concepts developed decades ago. In recent years, hospitals have had exemplary fire safety records largely due to the shift toward fully sprinklered buildings; improved construction practices; the reduction of flammable liquids; better electrical, medical gas, and ventilation systems; more staff training; and the proliferation of nonsmoking policies.

While those changes have drastically improved hospital safety, other code requirements added over the years have done little to protect hospital patients, health care workers, and first responders. And many involved with the code process fear that certain requirements are being written into codes simply to advance a product line and protect a

company's bottom line without providing significant improvements to safety.

Jon Nisja, with the Fire Marshals Association of Minnesota, wrote in an editorial published in the spring 2011 edition of *Fire Marshals Quarterly* that code development is approaching a crossroads.

"Will it continue to be a tool to save lives, reduce fires, and minimize property damage or will it transition into a process that favors profits, turf, and market share over protecting society as a whole from the ravages of fire?" he wrote. "Will it continue to be a valuable resource for a community wishing to positively influence fire and life safety, or will it become a book of confusing and incongruent regulations that cost billions of dollars and provide minimal benefit?"

The ad hoc committee's proposals sometimes reference other consensus codes, including those published by the NFPA.

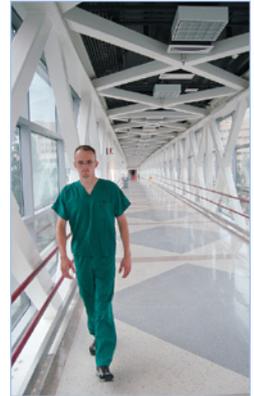
"We're trying to reference the documents out there that were built on science and work away from those elements that had no science behind them when they were put in the code," said David Howard, director of facilities management for Penrose-St. Francis Health Services in Colorado. "We're not trying to slight safety or do anything but provide the ultimate level of safety, but

from a cost standpoint that really does make sense."

In working to pull together proposals on appropriate code changes, the committee has sifted through research from the National Institute of Standards and Technology, NFPA, and computer modeling being performed by fire protection engineers. Because the group contains professionals from different backgrounds, the committee and work group meetings have led to lengthy discussions about some issues.

But bringing everyone together has led to a better understanding, said committee member Tim Peglow, PE, associate vice president for patient care and prevention facilities at the University of Texas MD Anderson Cancer Center in Houston. "The best part of the process is the hospital people sitting next to the fire code people and helping to educate each other about the issues and challenges," he said.

Beebe said it's critical for health care professionals and others who have a stake in hospital regulations to get involved with the process. "This is a great chance for people to make their voices heard and have a real impact on codes," Beebe said. "We know all too well about the problems with conflicting codes, and now we have a chance to do something about it."



Portions of this article originally appeared in the Dec. 2011 edition of *Health Facilities Management* magazine.

The History of Hospital **Design and Construction Codes**

In 1946, the Hospital Survey and Construction Act, also known as the Hill-Burton Act, was created to improve the nation's health care infrastructure. The program would be funded and enforced nationally by the Public Health Service, which needed to ensure that all of the projects funded were created equally on a level playing field.

Hospitals are one of the more complex types of institutions to design and build, and the Public Health Service needed a single comprehensive code that could be used equally in all states to ensure that a minimum standard would be met for the design and construction of nearly 9,000 health care facilities partially funded by the federal government. Of primary concern was the ongoing protection of patients from hazards such as fire.

There were multiple model building codes being used in different states



across the country, including codes from the Building Officials Code Administrators International, the International Conference of Building Officials, and Southern Building Code Congress International. All three codes contained similar but differing requirements. Complex building codes may have the same goal—limiting loss of life during a catastrophic event—but they can use a dif-

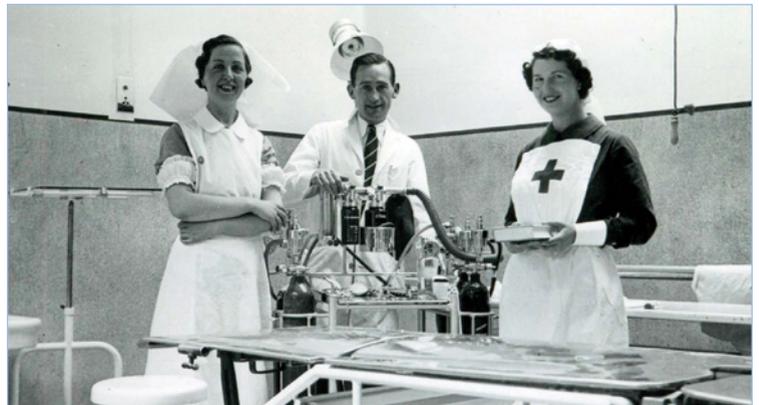


Multiple model building codes were once used in various parts of the country, including codes from the Building Officials Codes Administrators International (BOCA), the International Conference of Building Officials (ICBO), and the Southern Building Code Congress International (SBCCI). The three codes united to form the *International Building Code* in the 1990s.

ferent philosophical approach to reach that goal.

The Public Health Service, the enforcement agency at the time, wanted consistency across the nation but couldn't interpret regional building code differences and resolve the conflicts between various codes. So the agency chose the *Building Exits Code*, the forerunner of what is now known as the National Fire Protection Association's NFPA 101: *Life Safety Code*®, to apply to health care facilities across the nation.

The *Building Exits Code* contained the balance desired between minimum



life safety requirements and minimum ongoing maintenance and performance requirements.

Nearly 50 years after the Hill-Burton Act, the three building codes, referred



to as the model building codes, united to form the *International Building Code*. The International Code Council was formed in 1995 to oversee this code, and the other model codes were dissolved. This daunting effort to merge several codes into one code was backed by the American Institute of Architects (AIA). The AIA contended that creating a comprehensive national code would improve efficiency and ultimately safety, especially since more design teams were working more often across state lines. The opposition to this effort contended that regional differences in construction would be too difficult to manage in one code. Yet today, there seems to be agreement from both sides that creating one code was a good idea, and any anticipated problems have not been an issue.

The merging of these codes eliminates one of the initial reasons why Public Health Services opted for what would become the *Life Safety Code*. There is now a single comprehensive building code used across the nation

that could easily be enforced by the federal government and applied consistently throughout the Medicare and Medicaid system.

Over the past decade, the *International Building Code* has incorporated the minimum maintenance and performance requirements through the *International Fire Code* and portions of other codes that apply to existing buildings, not just new construction.

Currently the *International Building Code* has been adopted in every state. Almost any permit for construction—whether it's a large storage shed or hospital building—is issued in compliance with that code or a locally amended code based on it, such as the Florida State Building Code. Yet once hospitals open, they must meet *Life Safety Code* requirements in order to receive Medicare and Medicaid reimbursements.

The philosophies behind the *International Building Code* and the *Life Safety Code* are slightly different. The International Code Council historically uses preemptive safety strategies in the design and construction of facilities, while NFPA uses proactive measures in design and construction along with outlined responsibilities for the building owner to maintain and prevent incidents. The differences in the two approaches have led to conflicts between the documents.

However, in the most recent code development cycle, the two codes seem



to be becoming more aligned. Some feel that the provisions are similar enough that the Centers for Medicare & Medicaid Services (CMS) should accept the *International Building Code* as a viable alternative standard for compliance. Federal requirements give CMS the flexibility to allow this to happen, and CMS wouldn't have to endorse either standard. Allowing this change could be another way CMS can help hospitals by promoting more consistent regulations.

Slow Movement Toward Updated Codes

Hospitals around the country are waiting to see whether the Centers for Medicare & Medicaid Services (CMS) will soon adopt an updated version of the National Fire Protection Association’s NFPA 101: *Life Safety Code*®. In the mean time, CMS has taken a favorable approach to several portions of the latest edition.

CMS issued a Survey & Certification Group memo indicating it will ease waiver requirements for health care facilities that want to take advantage of four provisions in the 2012 edition of the *Life Safety Code*. One of these provisions allows for previously restricted items to be placed in exit corridors, which is of particular importance to hospitals because the issue is currently a top cause of survey citations. The 2012 edition allows specific items to be in corridors: in-use carts, emergency equipment such as crash carts, and patient transportation devices.

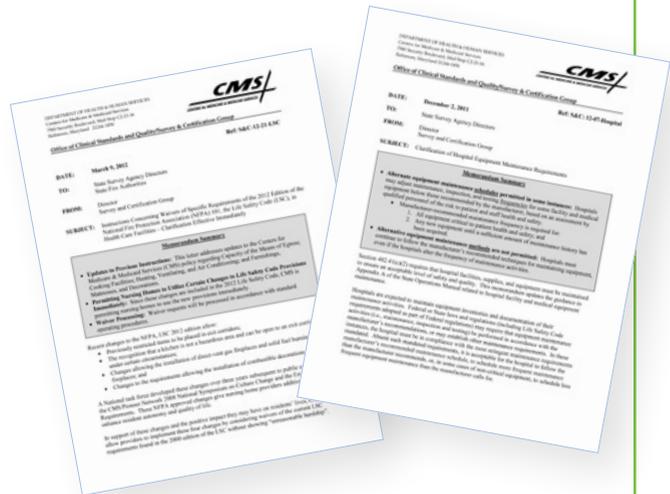
To allow facilities to enact the four provisions from the 2012 *Life Safety Code*, CMS said in the memo that it will consider waivers of its current requirements (the 2000 edition of the *Life Safety Code*) without requiring facilities to show “unreasonable hardship.”

CMS is considering waivers to permit facilities to take advantage of the following provisions from the 2012 edition of the *Life Safety Code*:

- Some previously restricted items can be placed in exit corridors.

- Kitchens can be open to an exit corridor under certain circumstances.
- Installation of direct-vent gas fireplaces and solid-fuel burning fireplaces will be allowed.
- Use of combustibles decorations is allowed in certain areas.

It is important to note that hospitals taking advantage of these waivers cannot use corridors for storage. CMS states in the memo that “not-in-use” criteria found in a previous memo—which said an item is considered not in use if it is left unattended or not moved for more than 30 minutes—are still applicable.



CMS is still requiring hospitals to comply with the 2000 edition of the *Life Safety Code*, although the agency has issued memos taking a favorable approach to several portions of the 2012 edition.

Adopting the Latest Edition of the **Life Safety Code**

In addition to conflicting codes, hospitals also face issues in trying to comply with outdated codes. Codes regulating the health care physical environment are updated every three to four years. Some states have adopted legislation that automatically require hospitals to comply with the latest versions of required codes, while others revisit legislation periodically and update to newer versions. Some states have started skipping revision cycles, adopting every other new edition, which means that codes reflecting new safety and technological advancements may not be adopted for eight years.

Adopting new codes and standards as they are released is important. An updated code may include only a few differences—but waiting for years to adopt new codes means the amount of changes will pile up, making it more difficult to train both code enforcers and

those in hospitals responsible for compliance.

One important example of the problems with outdated codes can be seen in the fact that the Centers for Medicare & Medicaid Services (CMS) still requires compliance with a code written more than a decade ago.

CMS currently requires hospitals to comply with the 2000 edition of the National Fire Protection Association's NFPA 101: *Life Safety Code*®. Since the 2000 edition was released, a total of four updated editions of that code have been released—one each in 2003, 2006, 2009, and 2012. CMS is currently considering adopting the 2012 edition of the *Life Safety Code*, an action that has the potential to save hospitals billions of dollars.

Codes issued in 2000 may not seem that old, but the edition of the *Life Safety Code* currently required by CMS was

CMS is currently considering adopting the 2012 edition of the Life Safety Code, an action that has the potential to save hospitals billions of dollars.



Hospitals spend potentially billions of dollars a year and suffer lengthy delays in bringing new and updated spaces online because of conflicting codes and standards, overregulation, unjustified code enforcement, and misinterpretations.

written before the September 11, 2001, terrorist attacks and Hurricane Katrina in 2005. The 2012 edition of the *Life Safety Code* incorporates lessons learned in those tragedies and other events that have occurred over the last decade.

The 2000 edition of the *Life Safety Code* references more than 50 other technical codes and standards. When the 2000 edition was written, these reference codes were current. But these referenced standards have also been updated over the years, and some have undergone major changes. Yet hospitals are stuck using reference codes from as far back as 1995 because they are mandated by the 2000 edition of

the *Life Safety Code*. In particular, NFPA 99: *Health Care Facilities Code* has undergone dramatic changes since the 1999 version referenced in the 2000 edition of the *Life Safety Code*. Allowing hospitals to comply with the latest version of NFPA 99 would save facilities significant resources through updates to medical gas, smoke control, power, and other systems.

Using old codes is especially problematic given the speed of advances in safety and technology in recent years. The widespread use of quick response sprinklers, adoption of non-smoking policies, a variety of code advancements, and other efforts have led to

tremendous progress in lowering the number of hospital fires. Hospitals and hospice facilities now average about one fire death a year, according to the National Fire Protection Association. Older codes do not reflect the technical advances behind these trends, however.

New hospitals are built to comply with up-to-date codes, such as the 2012 *International Building Code (IBC)*, which will be used by most local municipalities and code officials to regulate the design and construction of health care facilities. About 98 percent of U.S. jurisdictions use the IBC. But once hospitals open, hospitals are surveyed using the outdated 2000 edition of the *Life Safety Code*.

New codes can conflict with old codes. Hospitals spend potentially billions of dollars a year and suffer lengthy delays in bringing new and updated spaces online because of conflicting codes and standards, overregulation, unjustified code enforcement, and misinterpretations. That's money that could be spent on patient care.

The 2012 edition of the *Life Safety Code* is more closely aligned with the International Codes published by the International Code Council, including the IBC. Adopting the 2012 edition will save hospitals resources and time because they will face fewer instances of conflicting codes.

The 2012 edition of the *Life Safety Code* provides added levels of patient safety compared to the 2000 edition.

For example, the 2012 edition allows hospitals to keep critical equipment in corridors outside patient rooms so staff can quickly access it for patient care, diagnostics, and patient movement. Older versions of the *Life Safety Code* don't allow that, and the issue is reported among the top causes for Joint Commission survey citations.

The 2012 edition is also superior to the 2000 edition because it:

- Recognizes that hospitals use defend-in-place fire protection techniques and clarifies that authorities cannot require full evacuations during fire drills. This protects patients who would be harmed by a sudden evacuation.
- Allows controlled exit access doors, limiting the number of infant abductions and instances of patient wandering.
- Allows an increase in suite sizes from 5,000 square feet to 7,000 square feet, making nursing units more efficient and improving staff communication and patient care.

ASHE can provide more information on the numerous other changes in the 2012 edition of the *Life Safety Code* and explain how they will help hospitals.

Corridor Width Rules Show the Need for **Updated Codes**

One of the biggest sources of code citations issued to U.S. hospitals by organizations surveying on behalf of the Centers for Medicare & Medicaid Services (CMS) is “corridor clutter,” which includes items like medical crash carts that are sometimes located in hospital hallways. The 2000 edition of the National Fire Protection Association’s NFPA 101: *Life Safety Code*® (a CMS compliance requirement) requires 8 feet of clear space in hospital corridors, leading to citations when a crash cart is left outside a patient room. The 2012 edition of the *Life Safety Code*, on the other hand, allows certain key items, including life-saving crash carts, to be placed in hallways.

The advocacy team at the American Society for Healthcare Engineering (ASHE) of the American Hospital Association (AHA) points out that the need for quick access to critical equipment like crash carts far outweighs the prob-

ability of needing 8 feet of completely clear space during emergency evacuations, which are rare now that hospitals use quick response sprinkler systems and defend-in-place fire protection procedures. A look at the history of corridor width requirements further supports the argument that 8 feet allows plenty of space to position certain portable equipment in hallways without endangering hospital patients, visitors, staff, firefighters, and others who may be present during an emergency.

Decades ago, the *Life Safety Code* required hospitals to have corridors at least 4 feet wide. The rationale behind the requirement was that 4 feet would allow enough space for patients to be safely evacuated during a fire and give firefighters sufficient space to get into the facility. The 1961 edition of the *Life Safety Code* was the first to state that hospitals needed to have 8-foot cor-



ridors, said J. Armand Burgun, FAIA, FACHA, a past chairman of the NFPA's Safety to Life Committee. The purpose of the change was to provide enough hallway space so that a patient confined to a bed could be safely wheeled to the exit in his or her bed, Burgun said.

Over the years, technological advancements outpaced the corridor width requirements. In 1988 the *Life Safety Code* Subcommittee on Health-care Occupancies considered narrowing the corridor width requirement or removing it outright for the 1991 edi-

tion of the *Life Safety Code*. Hospitals were making the switch to full installation of quick response sprinklers, so the goal was no longer to wheel hundreds of bed-ridden patients out of the building during a fire. Instead, most patients would stay in their rooms while the fire was quickly extinguished in its room of origin. The advancement of quick response sprinklers and the advent of defend-in-place concepts meant that the 8-foot corridor issue was no longer relevant for life safety issues. The subcommittee questioned why it should dictate the width of the corridor if it no longer helped improve life safety, according to Douglas Erickson, FASHE, CHFM, HFDP, CHC, a senior project manager at Northstar Management Company who has been involved with code development for years.

"The subcommittee said, 'We don't have a dog in the hunt anymore—it's no longer a fire safety issue, so we shouldn't be dictating the width of the corridor,'" Erickson said.

But the health care industry didn't want to eliminate the requirement outright. AHA and others argued at the time that hospitals needed 8-foot corridors to function properly on a day-to-day basis. Keeping the requirement in the code would bring added functionality to ensure hallways remained wide enough for needed equipment, according to William Koffel, PE, FSFPE, president of Koffel Associates, Inc.

"We were concerned that people might see that [elimination of the requirement] and start designing facilities with corridors less than 8 feet in width, and that would present some operational problems in the facility," Koffel said.

However, requiring 8 feet of completely clear corridor space can be impractical for hospitals concerned with patient safety. The 2012 edition of NFPA 101 recognized that fact and listed specific items that can be staged in corridors under certain conditions—marking the first time that clarification was made in the body of the *Life Safety Code*. While the changes to NFPA 101 give existing hospitals more freedom to operate, new hospitals can avoid the issue by including alcoves and other storage areas off the corridor where carts can be stored near patient rooms, Erickson said.

NFPA 101 now allows certain equipment to be staged in 8-foot corridors as long as 5 feet of clear width remains and hospital employees have a plan for removing the equipment during an emergency. That rule works well because the wheel base of many portable carts and pieces of equipment is less than 3 feet, Erickson said, easily leaving 5 feet of clear corridor width.

In the unlikely event that patients would need to be wheeled out of their rooms, the requirement for 5 feet of clear space provides an adequate width to safely move patients. Hospitals that had

to evacuate during a fire or other emergency would likely transport patients on narrow gurneys or stretchers that are less than 3 feet, said Chad Beebe, AIA, SASHE, director of codes and standards for ASHE. If a patient needed to be wheeled out on his or her bed, there would still be enough space to do so. Beebe conducted an experiment using a patient bed that was 40 inches wide, and found it could be wheeled out of the patient room and have enough room to turn the corner into the corridor with only 5 feet of space.

While 5 feet is enough space for hospital staff to move patients through the corridor, health care operators have no intention of cluttering the remaining 3 feet with fax machines, file cabinets, and other basic storage needs, and that type of storage would not be permitted. The 2012 edition of the *Life Safety Code* outlines specific wheeled items that can be staged in corridors to ensure that hallways don't become storage closets. Items allowed are:

- Equipment and carts being used by hospital workers;
- Medical emergency equipment not in use, such as crash carts and isolation carts; and
- Patient transportation devices, such as portable lifts and wheelchairs.

This issue is just one example of an improvement found in the 2012 edition of the *Life Safety Code*, and illustrates the importance of using updated codes that reflect advancements in technology and safety.

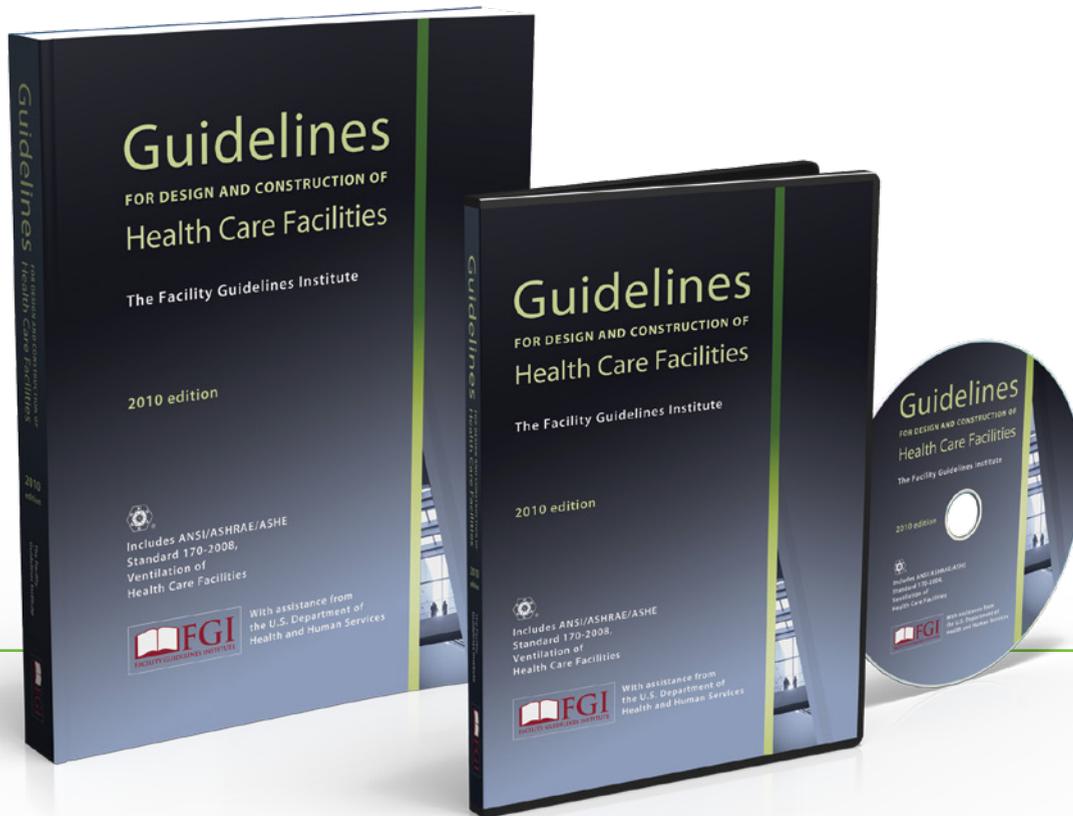
FGI Guidelines: States Should Adopt the New Edition

More than 42 states and several federal agencies use the *Guidelines for Design and Construction of Health Care Facilities* created by the Facility Guidelines Institute (FGI). However, the Guidelines are updated every four years, and not all jurisdictions automatically adopt the new edition. (The current edition is the 2010 FGI Guidelines.)

ASHE encourages all states to adopt the latest edition of the *Guidelines*, which provides minimum requirements for the design and construction of clinical and support areas of hospitals, including

critical access and psychiatric hospitals; long-term care facilities, including nursing homes, hospice facilities and assisted living facilities; and outpatient and rehabilitation facilities. The document includes recommendations on patient handling, infection prevention, and architectural details, as well as engineering design criteria for mechanical, electrical, and plumbing systems.

Currently FGI is working on the 2014 edition of the *Guidelines*. Will your state be ready to quickly adopt the new edition?



Wall Decorations: The Need for **Science-Based Codes**

Those not familiar with hospitals codes and standards may be surprised to learn the extent of the regulations. Even the decorations put on hospital walls are regulated to ensure fire safety. But this regulation is one example of a code that was not based on scientific data when it was created. When code proposals are developed without using science and data to support them, hospitals are left with regulations that sometimes make little sense and do little to protect patients and staff.

As part of its work with the International Code Council (ICC) Ad Hoc Committee on Healthcare, the American Society for Healthcare Engineering (ASHE) is working with fire protection engineers to collect scientific data to determine the appropriateness of potential changes to certain codes affecting hospitals. Committee members want to reduce conflicts caused



by overlapping code requirements and use research to back up their suggested changes.

But engineers using computer modeling to explore the possible effects of proposed changes have run into some technical challenges. Quick response sprinklers extinguish virtual hospital fires so rapidly that the differences between various scenarios cannot be assessed. The difficulty in distinguishing

Decorations and signs put on hospital walls are regulated by codes and standards. But one code regarding wall decorations is an example of a regulation created without using scientific data to support it.

Quick response fire sprinklers installed in hospitals drastically reduce the spread of fire, making previous regulations regarding wall decorations less of an issue.



the effects of these proposed changes illustrates the need for codes written to make a real difference in protecting lives and property, not simply to pile on unnecessary requirements.

ASHE partnered with Rolf Jensen & Associates (RJA) to do engineering research that would provide the ICC ad hoc committee members with data to help them decide whether proposed changes to the codes make sense. For example, one change the committee is considering would allow an increase in the amount of wall decorations hung in hospitals from 10 percent of wall space to 20 percent. The expansion would not only allow more artwork to be displayed, which can please patients, but also would provide more space for posting important signs like infection control notices, staff information, and the patient bill of rights.

Michael Crowley, SASHE, FSFPE, PE, senior vice president at RJA, said his

team pulled data on typical wall decorations found in hospitals, including paper, canvas, and corkboard. Some materials burn quickly and others burn slowly, but the key conclusion seemed to be the same for all types of materials: In tests where sprinklers were present, there was no problem. In fact, the sprinklers put out the fires so quickly that no differences could be measured between fires in spaces with 10 percent and 20 percent of the wall covered with decorations. Without sprinklers, of course, conditions were worse. "One of the things we keep coming back to is that if it's not sprinklered, we have a problem. If it is sprinklered, we don't have a problem," Crowley said.

New hospitals and hospitals that undergo major renovations are required by code to use quick-response sprinklers, and ASHE estimates that more than 90 percent of hospital spaces in the United States are fully sprinklered (often, office space is the last area to be sprinklered). More recent code updates are requiring hospitals—both new and existing—to be completely sprinklered.

Not only are sprinklers present in most hospitals, but they are reliable. In fact, the NFPA report found that sprinklers operated in 91 percent of *all* structure fires (not just those in hospitals) large enough to activate them from 2005 to 2009. In the 9 percent of fires where sprinklers did not operate, the most common reason (accounting

for 65 percent of failures) was that the sprinklers had been shut off before the fire began, as may occur in the course of routine inspection or maintenance.

Crowley points out that hospitals do not face all the problems with sprinklers that other building occupancies have because hospitals use advanced building automation systems that notify staff when a problem arises or if sprinklers are turned off. This practice effectively eliminates the chief concern of depending on sprinklers for fire extinguishment—that a sprinkler may not function for some reason.

ASHE Codes and Standards Director Chad Beebe, AIA, SASHE, said codes such as the 10 percent limit on wall decorations were understandable when hospitals were not sprinklered, even though there was little scientific evidence to support a limit of 10 percent and not another number.

“When we had unsprinklered hospitals and had 10 percent, it made sense,” Beebe said. “Now that we are adding a sprinkler requirement for all hospitals, we need to go back and take a look at some of these other limitations we included in the previous codes and make some revisions.” ASHE and RJA were unable to find original scientific data supporting the 10 percent rule, but think they are heading in the right direction now with some actual modeling to support the proposal to move to 20 percent.

“We’ve piled on so many rules and requirements for health care facilities that we may have piled on some rules that essentially don’t improve safety,” Beebe said.

Safety in hospitals has improved dramatically over the last few decades. Of all the U.S. structure fires from 2003 to 2006, less than 1 percent occurred in health care facilities, and structure fires in health care facilities have fallen 71 percent, according to a 2009 NFPA report. Much of the improved safety climate can be attributed to code changes, such as those requiring sprinklers, and the advent of non-smoking policies.

On the other hand, some code requirements have contributed little to protecting hospital patients, staff, and firefighters who respond to emergencies. Although some of these requirements may seem small or unimportant, the time and money hospitals spend to make sure they are in compliance with these and hundreds of other code requirements adds up and take away resources from a hospital’s chief responsibility—its patients.

“Every dollar a hospital spends on unnecessary codes is a dollar that is drawn away from direct patient care,” said Douglas Erickson, FASHE, CHF, HFDP, CHC, a senior project manager at Northstar Management Company who has been involved with code development for years.

Codes Should Be Revisited as **Science Advances**

Code requirements are created with the knowledge developers have at the time, but as more scientific data are gathered, codes must be revisited or they become outdated and are no longer based on the best information available. One example of this problem is the compartment size requirements for hospitals.

Hospitals, like submarines, are separated into compartments in order to control and contain fire, which could prove disastrous if allowed to spread unabated. This approach allows hospitals to keep patients inside the facility rather than evacuating them to the outside—something that could kill or harm critical patients relying on life support machines, continuous monitoring, and other treatments.

It was up to the technical committees of code developing organizations to create a sensible approach to outline requirements for compartmentation.



The committees had great intentions but little or no scientific data to work from. Sometimes codes have to be developed by trial and error and, in this particular case, the committee developed a solution that worked well with the health care industry practices of the time. The technical committees first looked at travel distances to see how far someone in a smoke-filled environment could go before they needed to reach a

Hospitals are designed to be compartmentalized, similar to a submarine, to prevent the spread of fire and smoke. Smoke barriers protect patients while allowing them to stay in the hospital and continue receiving care.

smoke-free compartment. Stories have filtered down about rudimentary trials in which committee members would hold their breath and then measure the distance they could travel before needing to take another breath. They found that 150 feet seemed to be a conservative and consistent distance that worked. Then they multiplied that travel distance in either direction to determine that the maximum size of a compartment should be 22,500 square feet.

For decades this size has been acceptable to the industry, but there has been little analysis of whether this number is actually appropriate given today's construction practices. Many things have changed since the requirements were first developed: fire sprinkler systems are now required in health care occupancies, non-combustible construction materials are more prevalent in hospitals, smoke detection is provided to give occupants more time to react, and health care staff routinely practice fire containment and delay techniques. If these advancements were in place when the rules were first written how, would that have affected the rule governing the size of compartments?

ASHE recently conducted scientific computer modeling of several different compartment sizes. Since the compartment size regulations were created, rules outlining the allowable travel distances to an exit have increased.

Within compartments, individual rooms act as additional compartments that can either contain or at least delay the migration of smoke from a fire. Also, some computer modeling has been done that addresses the issue of toxicity of smoke outside the room of fire origin. Using all of this new information—combined with more recent regulations regarding travel distances—a compartment size as large as 100,000 square feet would arguably have the same level of protection as a 22,500-square-foot compartment did decades ago when the regulations were written.

There are also clinical advantages to larger compartments. Each compartment has barriers within it, such as walls and doors that essentially “hide” patients behind barriers. With more open spaces and more visibility, doctors, nurses, and other staff have greater access to patients, leading to better patient care.

While a compartment of 100,000 square feet is feasible from a fire safety standpoint, does the industry really need compartments that big? After all, the more compartments, the more options hospitals have when protecting patients. The key is to have balance—providing as many compartments as possible without hindering the delivery of patient care.

To determine the ideal compartment size for both fire safety and patient care, ASHE looked at the accessibility that clinical staff need for patients. A 36-bed

unit would need roughly 40,000 square feet.

While hospitals are working to protect patients from fires, they must also remember that taking care of the patient is key. Florence Nightingale said that the “very first requirement in a hospital is

that it should do the sick no harm.” Code developers must keep in mind that this concept includes both fire protection and clinical patient care and remember that codes and standards affecting hospitals should be based on scientific data and research.



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Sacred Heart Medical Center
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The Cost of **Inappropriate Code Interpretations**

ASHE believes codes should be written clearly so their intent and application is easily understood. Vague or unclear codes can lead to poor interpretations of codes and standards, another source of unnecessarily wasted resources. The two examples given here illustrate some of the issues hospitals have with inappropriate code interpretations. And they show how a directive issued to one hospital with a cost that might seem minor can balloon into an industry-wide expense of millions of dollars.

A citation issued in 2010 by a state fire marshal surveying for the Centers for Medicare & Medicaid Services (CMS) mandated that all wall-mounted operating room supply storage cabinets have automatic sprinkler heads installed inside the cabinets or have holes drilled into their tops to permit sprinkler water to penetrate the cabinets. The facility cited has 40 operating rooms with

numerous cabinets in each operating room. No specific information was provided about the size of the cabinets that would be subject to this requirement, but it is understood they are similar to typical cabinets mounted in most operating rooms across the country. No specific code citation was provided in the fire marshal's final report.

Without a specific code chapter and verse provided by the fire marshal, it is not clear what code violation is being addressed by the citation. ASHE assumed it is a reference to the *Standard for the Installation of Sprinkler Systems*, although that document has specific provisions that exempt cabinets from the sprinkler installation requirement.

The concern may have been that objects that obstruct the spray of a sprinkler from reaching the seat of a fire may allow the fire to grow and overwhelm the sprinkler system. However,



The cost to install sprinklers in storage cabinets in operating rooms—as suggested by one code interpretation—is estimated to top \$425 million.

studies have shown that small enclosures such as wall and base cabinets are not capable of holding a significant fire load. Should a fire originate in these cabinets, tests have shown that sprinklers installed in the room are capable of preventing the spread of the fire beyond the cabinet.

Assuming the cabinets could be protected with one sprinkler in each cabinet, ASHE estimates that eight to ten sprinklers with appropriate piping could

be installed in a day for approximately \$2,600 per sprinkler. When including the costs for taking an operating room out of service for a day and the subsequent clean-up that may be required for infection prevention, the overall cost of response to this interpretation could be approximately \$13,000 per operating room. If states across the country require similar sprinklered cabinets, the estimated cost to the U.S. health care industry would exceed \$425 million.

Another example involves small appliances found in hospitals. Reports from a number of facility managers indicate that CMS surveyors are citing them if all electrical equipment in the hospital, including microwave ovens and toasters, is not listed as “hospital grade.” This means that use of high-end, household-style products would not be permitted anywhere in a health care facility. The surveyors asked the facilities to remove all “non-hospital grade” microwaves from service and to replace them with appropriately designated “hospital grade” microwaves. However, no “hospital grade” microwaves or toasters are currently available on the market.

Two issues are brought up by these CMS citations—one has to do with the required “hospital-grade” Underwriters Laboratories (UL) listing for non-patient care equipment and the other with the extent to which surveyors applied code requirements to areas beyond the scope of the code.

A review of the UL electrical equipment directory indicates there is no specific “hospital grade” category for equipment used in patient care areas. Also, the *Standard for Health Care Facilities* clearly states that all electrically powered appliances used in the patient care vicinity (a space intended for patient sleeping, examination, and treatment) must be double-insulated and have a three-pin, grounding-type plug. This requirement effectively eliminates the



use of appliances with metal cases and two-prong plugs from use in patient sleeping, exam, and treatment rooms. At the same time, it clearly eliminates the need for “hospital grade” devices in areas outside the patient care vicinity (e.g., nourishment rooms, medication preparation rooms, nurse stations, staff lounges, visitor lounges, etc.).

The actual cost of compliance in this instance is difficult to assess since no truly “hospital grade” electrical equipment is available. Assuming that use of commercial-grade electrical appliances would satisfy the intent of CMS, hospitals would have to replace all household-grade electrical products with commercial-grade versions. Thus, because purchase of a commercial-grade microwave oven could cost from \$250 to approximately \$2,000, at a minimum a hospital needing to replace 20 “household” electrical appliances would have to spend \$5,000. This would mean an estimated cost to the health care industry of approximately \$30 million.

Some hospital surveyors are citing hospitals for not having “hospital grade” appliances, such as toasters and microwaves, even though no “hospital grade” appliances are available on the market. Inappropriate code interpretations can cause needless headaches and added expenses for hospital professionals.



ASHE's Advocacy Network Helps **Shape Codes and Standards**

The American Society for Healthcare Engineering (ASHE) of the American Hospital Association has long been involved in helping to revamp and revise codes and standards affecting hospitals. Recently, ASHE kicked off a renewed effort to increase advocacy communications between ASHE and its chapters and to get more people involved in advocacy work.

ASHE hopes this effort will support its goal of achieving science-based health care codes that provide an optimal level of patient safety without burdening hospitals with unnecessary expenses.

"This is a grassroots effort," said Mark Kenneday, MBA, CHFM, FASHE, the 2011 chairman of the ASHE Advocacy Advisory Committee and the ASHE president-elect for 2013. "We've been able to bring together from across the nation

people we know have an incredible passion for advocacy."

ASHE leaders urge all chapter liaisons and all ASHE members to get involved in advocacy work.



"ASHE needs to know about what's happening in states," said ASHE Director of Codes and Standards

Chad Beebe, AIA, SASHE. "We want to hear about misapplication of codes, inconsistencies among interpretations, and duplicative enforcement activities."

The ASHE Advocacy Highway was created a few years ago as a two-way means of communication on advocacy issues, allowing local issues to quickly gain national attention when needed and allowing chapters to become more engaged in setting national codes and standards. The new initiative to "repare the Advocacy Highway" aims to spark

more timely communications regarding codes and standards.

“Advocacy has always been one of our concerns, but there didn’t seem to be a method for collecting this information and acting on it on a national level,” said Jim Gross, the advocacy liaison for the Genesee Valley Regional Association for Healthcare Engineers in New York. “If we can come together as a cohesive group to address the most significant issues, our voice can be better heard.”

Diane Hughes, with the Arkansas Association for Healthcare Engineering, said meeting with other chapter advocacy liaisons helps drive home the point that hospitals across the country face some of the same regulatory interpretation issues.

“We all go through the same problems and issues,” Hughes said. “When we talk and learn from each other, we don’t have to reinvent the wheel.”

David Dagenais, CHSP, CHFM, SASHE, the 2012 chairman of ASHE’s Advocacy Advisory Committee, said it’s critical for ASHE to hear from members in the field about problems and issues they encounter with codes and standards.

“We cannot do this advocacy work without those in the field,” he said.

To help collect information from

around the country, ASHE has added a page to its website (www.ashe.org/advocacyhighway) that people can use to inform ASHE about code interpretations and other advocacy issues affecting them. ASHE also urges local advocacy liaisons to engage with their local authorities and network with potential advocates.

Creating opportunities for talking with potential advocates is an important step in the advocacy process, said Jeff O’Neill, AIA, ACHA, senior project manager for the University of Pennsylvania Health System. “Knowing advocacy contacts can be tremendously helpful,” O’Neill said. “Conversations can help open up the door.”

ASHE Executive Director Dale Woodin, CHFM, FASHE, said it’s important to note that information ASHE collects from across the country helps support big goals such as more appropriate codes and standards.

“This information helps build the case for uniformly applied and interpreted codes for health care facilities,” Woodin said. “That accomplishment could potentially save our industry billions of dollars. That’s a huge amount of resources that could go toward hospitals’ first priority—patient care.”

ASHE

Education Programs

In addition to advocacy work, ASHE also hosts education events, including webinars, in-person classes, and conferences, to help keep members informed and engaged in the latest code developments. The following is a list of some upcoming ASHE programs and events. Find more information at www.ashe.org/learn.

Annual Conference & Technical

Exhibition: Provides seminars, education sessions, and networking opportunities on a wide range of topics of interest to ASHE members.

International Summit & Exhibition on Health Facility Planning, Design & Construction™ (PDC Summit):

Provides seminars, education sessions, and networking opportunities for those interested in the planning, design, and construction of health care facilities.

Boot Camp for Health Care Facility

Managers: Provides intensive training that focuses on the issues facing new health care facility professionals, including the attributes that make health care unique in terms of terminology, financing, utility management, emergency preparedness, available resources, and career development.

Certified Healthcare Constructor (CHC)

Preparation Workshop: Prepares candidates for the Certified Healthcare Constructor exam.

Certified Healthcare Facility Manager (CHFM) Preparation Workshop:

Prepares candidates for the Certified Healthcare Facility Manager exam.

Healthcare Construction Certificate

Program: Provides an understanding of the latest compliance issues in health care construction, and what owners, staff, and patients expect of constructors working in the health care environment.

Healthcare Construction Project

Management Program: Provides information on how to manage successful health care construction projects from functional programming through occupancy and project closeout.

Infection Control: Managing Risk During Construction, Operation, and Maintenance of Facilities:

Provides health care contractors with information on processes used to protect patients, staffs, and visitors from health care-associated infections.

Managing Joint Commission Compliance in the Physical

Environment: Explains various codes and standards and their effect on the health care physical environment.

Managing Life Safety (e-learning

program): Provides information on the various requirements of NFPA 101: *Life Safety Code*® and other codes and standards affecting hospitals.

ASHE Needs Your Help

The goal of creating streamlined, science-based codes and standards is a major undertaking that requires support from people in a wide variety of professional positions.



Lawmakers: ASHE urges lawmakers to support local and national efforts to streamline codes and standards while protecting patients. Lawmakers at every level can check with local hospitals to see if a facility manager there is an ASHE member, and can encourage hospital leaders to support ASHE advocacy efforts. State lawmakers can urge their legislatures to adopt the most recent edition of the FGI *Guidelines* as soon as new editions are released. Senators and Congressmen can urge the Centers for Medicare & Medicaid Services to adopt the most

recent edition of the *Life Safety Code*. For more ideas on how lawmakers can get involved and help direct more hospital resources to patients, see contact information below.



Health care administrators: ASHE encourages health care administrators to ensure that their facility managers, as well as others in related positions, are members of ASHE and are actively engaging in ASHE's codes and standards efforts. ASHE is always looking for active volunteers to help promote better codes and standards, and it is important to have health care administrators support these undertakings. Administrators can also reach out to local building officials to discuss code issues and explain the ways hospitals protect their patients. To learn more

about the advantages of ASHE membership for hospital employees, see contact information below.



Code enforcers and building officials:

ASHE encourages code officials and those involved in the code development process to learn more about hospitals and the regulations affecting them. Many building officials and other authorities involved in the code development process do not have hospitals in their jurisdictions and may not fully understand the regulatory measures in place to ensure safe operation and maintenance of health care facilities. ASHE encourages code

officials to talk to local ASHE members about the safety measures hospitals take. Officials can also speak with ASHE staff by using the contact information below.



ASHE members:

ASHE members can turn to the weekly electronic newsletter included as part of ASHE membership, the *ASHE Insider*, for information about upcoming ways to get involved with advocacy efforts, including public comment periods on various codes. ASHE members can talk to their local chapter's advocacy liaison for more information, or contact ASHE using the contact information below.

To get involved, contact ASHE Executive Director Dale Woodin at dwoodin@aha.org or 312-422-3812; or ASHE Director of Codes and Standards Chad Beebe at cbeebe@aha.org or 312-422-3824. Visit ASHE's website at www.ashe.org for more information.

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