Hospitals Contain Unique **Safety Features**

By Deanna Martin
ASHE Senior Communications Specialist

Most hospital patients and visitors are unaware of the various protections surrounding them in the facility. Hospitals use many fire protection features—including quick-response fire sprinklers, fire-rated doors, and compartmentalized construction—to keep patients, visitors, and staff safe. Hospitals also have a well-trained staff dedicated to protecting patients. All of these features contribute to the safety record of hospitals, and all of these features must be taken into account by code development organizations creating health facility regulations.

Hospitals are certainly unique facilities. When a fire alarm goes off in most buildings, people instinctively head toward the nearest door. But in clinical facilities such as hospitals, nursing homes, and other health care facilities, many building occupants lack the ability to get up on their own and leave during an emergency. Patients with limited mobility or cognitive challenges, those confined to beds, and patients on vital monitors or life support need special consideration during a fire or other life safety situation. The impracticality of completely evacuating health care facilities has led to decades of advancements in fire safety systems and emergency procedures that allow people to remain safely within the building during an emergency. This approach, called "defend-in-place," has a long history of success in preventing injuries and deaths.

Hospitals are able to use defend-in-place because of the additional protections hospital structures offer. Hospitals include advanced fire suppression systems, compartmentalized construction and fire-resistive building materials, intense staff training, carefully drafted emergency preparedness plans and life safety protocols, and coordination with fire and emergency officials.

Sprinkler systems are critical because they reduce fire size and smoke development. Hospital sprinkler systems often contain locks, monitors, and alarms to prevent systems from being turned off, which can be a cause of sprinkler failure in other types of buildings.

Compartmentation also helps hospitals keep patients safe. Medical facilities are constructed into isolated compartments that can restrict the passage of smoke or flame from adjacent spaces or floors. These separate compartments retain their structural integrity even if an adjacent section fails. If a fire occurs in one compartment, patients and staff can move to an adjacent compartment on the same floor with little difficulty and remain safe.

Smoke barriers and advanced air handling systems are used to provide an additional layer of protection, keeping smoke from traveling to other compartments in the event of a fire.

Staff training and emergency plans are a key aspect of hospital safety. Hospital staff train regularly on emergency procedures and are dedicated to protecting patients. Staff members move patients when needed, close the fire-rated doors, and take steps necessary to keep patients safe. Hospitals also have detailed emergency plans coordinated in advance with emergency officials.

Experts in life safety and hospital engineering say health care buildings are among the most controlled and protected of any structure class in terms of fire protection, which helps explain the relatively low number of fires at hospitals. Since 1980, fires in U.S. medical facilities have dropped by 71 percent, according to the National Fire Protection Association's (NFPA) Fire Analysis and Research Division. A 2012 NFPA report on structure fires from 2006–2010 found no hospital deaths.

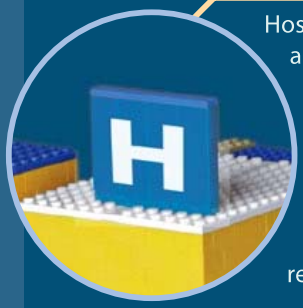
ASHE Director of Codes and Standards Chad Beebe, AIA, SASHE, said it is vital that the codes and standards that regulate hospitals accommodate the special circumstances of health facilities. He said codes should allow for use of fire protection features such as sprinklers and compartmentation as well as the removal of extra doors and barriers that can inhibit staff ability to perform defend-in-place techniques.

For those unfamiliar with the health care environment, it can be surprising to learn how common defend-in-place is and how well hospital staff members perform this proven approach.

"Every time I have been in a hospital and a fire alarm is activated, it has been encouraging to see all the staff spring into action," Beebe said. "As if it's instinctual, they grab fire extinguishers, start closing all the doors, and check on patients. Even after many false alarms in these very large and very complex buildings, staff continually have the same response without hesitation. Maybe this comes from their clinical training and the Hippocratic oath—they do whatever it takes to protect their patients' safety."

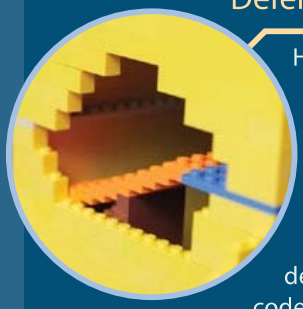
Portions of this article originally appeared in the Winter 2012 edition of *Inside ASHE* magazine

Hospital Regulation



Hospitals are among the most regulated of all industries. Health care facilities are unique because they house vulnerable patients, operate around the clock, and contain complex medical and safety systems not found in other types of commercial buildings. The numerous codes and standards regulating health care facilities help keep patients, staff, and visitors safe. To prevent these codes from unnecessarily diverting hospital resources away from patient care, codes should be updated regularly, should be based upon science, and should not conflict with other requirements.

Defend-in-Place Techniques

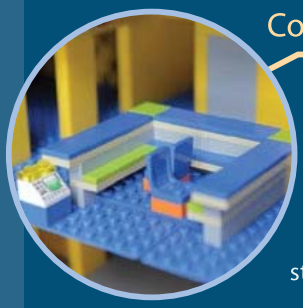


Hospitals do not typically evacuate patients during most emergencies. Instead, hospitals are designed with special features, including compartmentation and smoke and fire protection, to accommodate defend-in-place techniques. This prevents the unnecessary movement of patients who rely on life-sustaining equipment or who would be harmed by a sudden evacuation. Recent code changes reflect use of defend-in-place techniques in hospitals, but some outdated codes do not accommodate this, showing the importance of adopting updated codes.

Fire Protection Systems

Hospitals use multifaceted systems for fire protection. Recent code developments require hospitals to be fully sprinklered, which means putting sprinklers in spaces such as offices and data storage centers that are often the last areas to gain sprinkler protection. ASHE supports the requirement to fully sprinkler all hospital areas. Hospitals also use smoke and fire dampers to prevent the spread of fire. Some previously required equipment is no longer needed because of technological advancements in fire protection, and codes need to reflect these changes to prevent the unnecessary wasting of resources. For example, duct smoke dampers are not needed once quick response sprinklers are installed in hospitals with fully ducted HVAC systems, and in some situations duct dampers can actually hamper safety efforts. While some codes recognized this fact, others still required them until recently. This illustrates why it is important for codes to mesh together well, and also shows the need to adopt the most up-to-date versions of codes and standards.

Compartmentation



In addition to active fire protection such as sprinklers, hospitals use passive protection such as compartmentation to keep patients safe in the event of an emergency. Each compartment is separated from other areas by fire-rated walls and doors. Recently codes were changed to allow a larger compartment size, which accommodates the expanding size of hospital rooms while keeping patients safe. This is another reason for authorities to adopt the most recent versions of codes and standards.

Hospitals Contain Unique Safety Features

Conflicting Codes

Requiring elevator lobbies can pose a significant hazard to patients in the event of an evacuation. The addition of extra doors and limited space slows the evacuation process and are not needed in hospitals, which are built using fire-rated separate compartments to provide added safety. Some regulations recognize that hospitals are a unique environment and do not require the lobbies, but other codes do require them—an example of conflicting codes.

Safety and Security

One recent code change provides greater protection against the threat of child abduction from hospitals. Previously, codes conflicted over whether doors had to automatically unlock if the fire detection system is set off, a security concern in areas where special door systems are used to prevent the abduction of infants and children. One code allowed a delayed egress system that would provide for emergency evacuations while still slowing the progress of an abduction, but another code did not allow that until recently—showing the importance of codes that do not conflict and the value of adopting the most updated codes available.

Highly Trained Staff

In addition to active and passive protection, hospitals also have another resource to help keep patients safe during emergencies—a highly trained staff that takes an oath to protect patients. Hospital staff members train regularly for various emergencies and are well prepared for the defend-in-place techniques accommodated by updated codes.

Decorative Items

Even the types of decorations in hospitals are regulated by codes. Codes and standards regulate live trees and fake plants, fire retardants on other decorations, and limit the amount of decorative material on walls. As science develops and the industry learns about certain items, codes should change to reflect the latest developments. For example, one set of guidelines for hospital construction will soon ban open waterfalls and fountains in new hospitals for fear of waterborne disease, a proposal ASHE supports. Data supports the fact that bacteria can live in water features and cause illnesses to patients, and updated codes reflect this fact.