ATI RESTORATION

Reconstruction of Healthcare Facilities After a Catastrophe

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Introduction

Extreme and unpredictable weather is no longer an exception — it's becoming the norm across the United States. In recent years, record-breaking hurricanes, unprecedented wildfires, devastating floods, and winter storms have struck in unusual places and far outside their traditional seasons. Events like Hurricane Helene's historic inland flooding in 2024 and the growing trend of year-round wildfire risk in the West continue to catch communities and businesses off guard.

Healthcare facilities are not exempt from similar devastation. But when disaster does strike, it also presents an opportunity not just to repair but to rebuild with greater resilience. A resilient healthcare facility is designed to withstand extreme events, protect patients and staff, and continue delivering critical care both during and after a disaster, including during times of patient surges.

This white paper explores what reconstruction with resilience looks like in practice, details technologies and techniques that need to be implemented, and outlines the benefits of using technicians and contractors experienced in working with healthcare facilities to complete this work.

Healthcare Risks

Any time a healthcare facility is compromised by a natural disaster or other forms of catastrophe, it poses a significant risk to the patients, and by extension, the facility's staff. No single form of catastrophe is more likely than any other to strike a hospital. The risks for natural disasters vary according to the region where a facility is located. However, water damage and subsequent contamination of the structure and equipment from water-loving microorganisms like mold are extremely common across various disasters.

Common Types of Catastrophes

Tornadoes and Hurricanes: These storms often bring high winds and heavy rain, which can cause flooding or enter buildings through damage to the structure.

Fires: In addition to direct structural damage, fires can come with water damage from fire suppression methods like sprinklers and hoses.

Earthquakes and Unexpected Freezes: These events can lead to burst pipes, causing significant water damage.

Storms, Fires, and Earthquakes: Such disasters may cause structural damage that can also impact a facility's electrical wiring or access to the power grid, jeopardizing the hospital's ability to provide power for vital medical equipment.

Health and Safety Hazards

Water damage and the accompanying risks of waterborne pathogens or environmental hazards like mold pose health risks across the board for the people in the facility. These risks are especially acute for patients with already compromised immune systems, like cancer patients, and children.

Particulate contaminants in the air and on surfaces from soot and smoke after a fire, or from structural damage after earthquakes, also pose serious health risks to patients in the healthcare setting. Structural damage causes safety risks to everyone in the building. It can also cause damage to ventilation systems, which increases the risk of airborne illnesses becoming a more acute threat to patients and staff alike.

The Impact on Operations and Infrastructure

The risks of a damaged healthcare facility extend beyond the human cost. Medical equipment, often specialized and costly to repair or replace, can be compromised by smoke, fire, or water damage. Digital assets are also at risk, especially if servers aren't protected from power surges or flooding. It is crucial to assess what can be repaired and restored quickly to prevent further damage, helping ensure the best possible outcomes for patients while keeping recovery costs down.

The Urgency of Response and Restoration

Regardless of the type of catastrophe that has struck a healthcare facility, time and cleanliness are the most crucial considerations when addressing the damage. Healthcare facilities must prioritize both speed and care when repairing and restoring their facilities after a disaster. This is critical to protect patient health, medical equipment, and records. It also facilitates delivering the necessary standards of care 24/7 while preserving the safety of all building inhabitants.

Techniques and Technology

Resiliency — the ability to continue to provide patient care despite catastrophe — requires hospitals to have access to disaster recovery firms and general contractors with technology and workers skilled in specialized techniques to quickly restore the facility to a safely functioning condition. Operating as a disaster recovery firm or general contractor in a healthcare facility requires a level of care not commonly needed in disaster recovery work, particularly around the cleanliness of everything workers bring in the work areas themselves, like clothes and tools.

DECONTAMINATION AND SANITATION

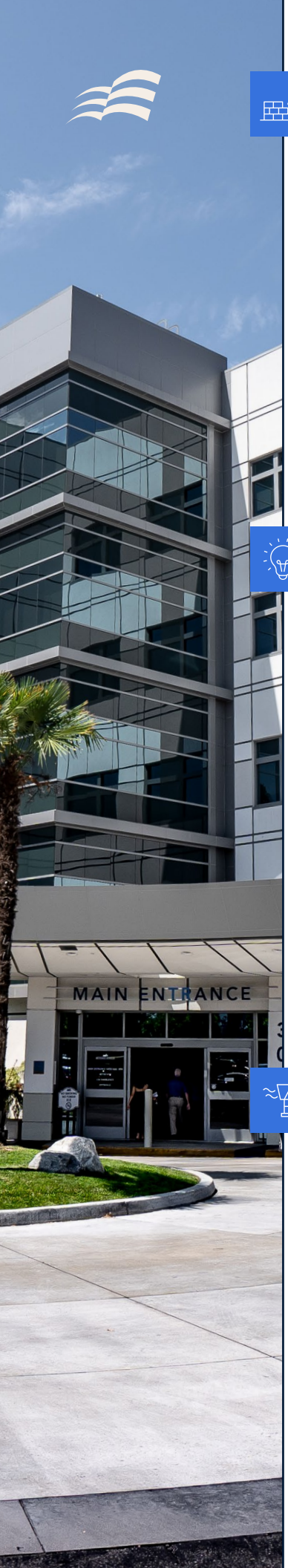
During the disaster recovery and reconstruction process, decontamination and sanitation technology are required to meet the stringent standards necessary for protecting patient health in a healthcare setting. Examples of technology that may be used include ultraviolet germicidal irradiation (UVGI) technology and hydrogen peroxide vapor decontamination.

INFECTION CONTROL

Using Infection Control Risk Assessment (ICRA) approved methods and barriers is the best way for hospitals to handle reconstruction and disaster recovery needs while maintaining active patient care in other areas. ICRA barriers include isolating the HVAC system and dust and debris control methods, such as maintaining negative air pressure rooms, to ensure that air quality remains acceptable for sensitive patients and treatment needs elsewhere in the hospital.

On any given day, 1 in 31 hospital patients will contract a healthcare-associated infection.

Sources: Centers for Disease Control



REBUILDING FOR DISASTER RESILIENCE

When unavoidable catastrophes damage or destroy a healthcare facility, they also present an opportunity to introduce new technologies that improve future disaster resilience. Advancements in construction can mitigate damage from future events. For example, facilities may build in flood protection features at basement and ground levels, such as removing basement-level ramps and loading docks. Strengthening building envelopes — roofs, enclosures for machinery like air handling units and generators, and windows — can help structures withstand high-speed winds from tornadoes or hurricanes. In earthquake-prone areas, buildings should be reconstructed or renovated to meet or exceed modern seismic standards.

EMERGENCY ENERGY SYSTEMS

Healthcare facilities must have independent power sources, such as generators or solar panels as a safeguard when the power grid is disrupted or destroyed. This allows for uninterrupted care for patients with critical needs, like those on ventilators or infants in incubators, and preserves delicate medications and supplies that need refrigeration, like organ transplants, blood products, and insulin. Reconstruction of a facility to improve the ability to use new energy technology is another possibility that healthcare facilities should consider after a disaster.

Hospitals spend, on average, $3.16 per square foot on energy costs each year. A 237,400-square-foot, 75-bed hospital spends about $9,800 per bed on energy costs — about $735,000 per year.

Sources: U.S. Environmental Protection Agency

ENHANCING PATHOGEN AND CLIMATE RESILIENCE

Lessons from COVID-19 have emphasized pathogen and pandemic resilience. This includes upgrading high-efficiency particulate air (HEPA) filtration systems, already required in hospital HVAC systems, which may now be outdated. Additional enhancements may include touch-free designs for doors and high-traffic areas like bathrooms, elevators, and cafeterias to reduce contact transmission. Resilience planning should also prioritize climate control improvements that maximize energy efficiency and maintain stable humidity and temperature levels. These measures protect sensitive patients and critical spaces, such as operating rooms, while supporting self-sufficient energy use in emergencies.

The Importance of Finding Specialized Technicians

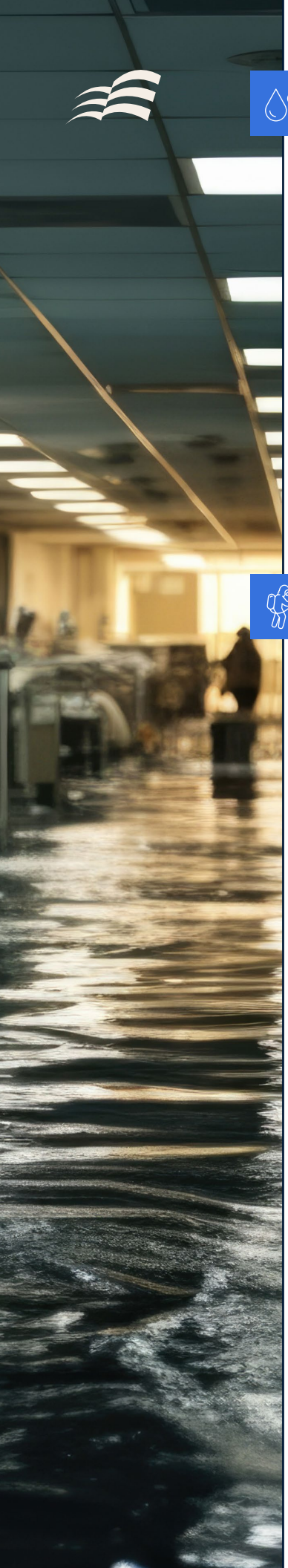
When a healthcare facility needs disaster recovery and restoration services, the balance of speed and quality of work is of utmost importance due to the direct impact on patient outcomes. This adds an additional layer of complexity and resulting protocols for the healthcare facility and disaster recovery partners. Contracting experienced providers familiar with the stringent needs of healthcare facility protocols for contamination control is vital for a successful disaster recovery effort.

ADHERING TO SAFETY PROTOCOLS

Vendors working in healthcare disaster recovery must be familiar with ICRA guidelines, which may be supplemented by a protocol called Interim Life Safety Measures (ILSM). These protocols, along with the technologies and techniques that support them, help ensure that patient health, facility operations, and occupant safety remain fully protected throughout every phase of the work. In particular, the implementation of ILSM ensures that emergency exits and equipment remain accessible during construction and disaster recovery work.

PRE-ESTABLISHED EMERGENCY AGREEMENTS

Having existing emergency response agreements with reputable disaster recovery firms experienced in the patient care setting helps save a healthcare facility time and money when responding to a catastrophic event. It ensures that patient health and safety are prioritized along with high-quality, efficient work. Even general contractors responsible for large-scale renovation and reconstruction projects for a healthcare facility typically have existing contingency agreements with disaster recovery firms equipped to handle environmental restoration needs when needed.



MONITORING AFTER WATER DAMAGE

According to the Centers for Disease Control and Prevention (CDC), any healthcare facility that reopens after dealing with water damage must consider long-term monitoring for contaminants like mold. They must rely on professional monitoring and remediation to keep such contaminants under control. Engaging experts in this field ensures that environmental monitoring and remediation are done thoroughly and correctly, preventing any risk to patient health by addressing any lingering issues swiftly. Having an ongoing relationship with a firm and technicians who can handle initial hazard cleanup and the long-standing monitoring required afterward can improve the facility's quality of service.

STAFFING SUPPORT FOR INFECTION CONTROL

Infection prevention remains a critical priority for healthcare facilities, especially as multi-drug resistant organisms, emerging pathogens, and healthcare-associated infections continue to pose significant risks to patient safety.

To maintain high standards of infection control, many facilities choose to supplement their internal environmental services teams with outside support, particularly during periods of high patient volume, staffing shortages, or complex decontamination needs.

Partnering with trained technicians who understand the unique protocols of healthcare environments helps ensure that patient care areas, procedure rooms, and isolation units are thoroughly and safely decontaminated. These technicians bring valuable expertise in working within sensitive spaces while adhering to the latest infection control standards and facility-specific protocols.

Conclusion

Resilience is an achievable goal for healthcare facilities in the aftermath of any disaster. Advances in building materials, systems, and design strategies now make it possible to reconstruct facilities that are stronger, smarter, and better equipped to withstand today's increasingly severe weather events, natural disasters, and operational disruptions.

Beyond physical resilience, healthcare facilities must also be prepared to maintain continuity of patient care — whether facing an influx of patients due to a disaster, a community emergency, or other high-demand scenarios. Engaging experienced disaster recovery partners gives healthcare leaders access to the expertise, technologies, and healthcare-specific knowledge needed to bring facilities back online quickly, efficiently, and safely, with resilience built in from the ground up.

By taking a proactive approach to resilient reconstruction, healthcare facilities can ensure they are better prepared to protect patients, staff, and the communities they serve, no matter what the future brings.

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