



**DISASTER
RECOVERY
SERVICES**

RECONSTRUCTION WITH RESILIENCE: STRENGTHENING HEALTHCARE FACILITIES AFTER CATASTROPHE

**(800) 400-9353
ATIrestoration.com**



TABLE OF CONTENTS

Introduction	3
Healthcare Risks	4
Techniques & Technology	5
Importance of Finding Specialized Technicians	7
Conclusion	8



Introduction

Unusual and extreme weather is becoming a more frequent occurrence across the United States. Deadly tornadoes swept several states in the Midwest just before Christmas 2021, and the Marshall and Middle Fork Fires devastated northern Colorado as 2022 began. These catastrophic events happened far outside the typical seasons where tornadoes and wildfires are expected, catching residents and businesses off guard.

Healthcare facilities are not exempt from similar devastation, and according to a study published by the National Health Service, 97.8% of hospitals have natural disaster plans in place. When disaster strikes, healthcare facilities have an opportunity to reconstruct a more resilient facility, built not only to better withstand the forces of nature, but also to better protect the health of patients and the community. In the healthcare industry, facility resiliency also refers specifically to the ability of the facility to continue to provide patient care during and after a disaster or during a surge of patients.

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



THERE ARE 6,090 HOSPITALS IN THE UNITED STATES, WITH 919,559 BEDS AVAILABLE FOR PATIENTS*.

*AMERICAN HOSPITAL ASSOCIATION, 2021



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 to the structure and equipment from water-loving microorganisms like mold are extremely common across various disasters. High winds from storms like tornadoes and hurricanes are often accompanied by rain, which can cause flooding or enter buildings through damages made to the structure. Fires come with water damage from fire suppression methods like sprinklers and hoses. Unexpected freezes or earthquakes that lead to burst pipes cause water damage as well.

Water damage and the accompanying risks of water-borne 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, or children. Particulate contaminants in the air and on surfaces from soot and smoke after a fire, or from damage to the structure 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. Structural damage from storms, fires, or earthquakes can also impact a facility's access to the power grid or the facility's electrical wiring directly, jeopardizing the hospital's ability to provide power for vital medical equipment.



31 KILOWATT-HOURS (KWH) PER SQUARE FOOT IS THE AVERAGE AMOUNT OF ELECTRICITY USED ANNUALLY BY A HOSPITAL IN THE UNITED STATES. THE AVERAGE FOR A STANDARD COMMERCIAL FACILITY IS 22.5 KWH PER SQUARE FOOT*.

*BUSINESS ENERGY ADVISOR, 2021; DEPARTMENT OF ENERGY, 2020



The risks of a damaged healthcare facility extend beyond the human cost. The medical equipment needed to run a modern healthcare facility is often specialized and costly to repair or replace, especially when compromised by smoke, fire, or water damage. Digital assets are also at risk when electrical failure comes into play, especially if servers are not adequately protected from issues like power surges or flooding. It is crucial to assess what can be repaired and restored and prevent further damages to physical assets in healthcare facilities as soon as possible in order to provide the best possible outcomes for patients whose care is impacted by the catastrophe while keeping costs down.

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 providing the continued, necessary standards of care on a 24/7 basis, while preserving the safety of all building inhabitants.

Techniques & Technology

Resiliency—the ability to continue to provide patient care despite catastrophe—relies on hospitals having access to disaster recovery firms and general contractors who can bring in workers offering specialized techniques and technology 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, like clothes and tools to the work areas themselves. During the disaster recovery and reconstruction process, decontamination and sanitation technology are also required to meet the stringent standards for working in a healthcare setting necessary for protecting patient health. Examples of technology that may be used include ultraviolet germicidal irradiation (UVGI) technology and hydrogen peroxide vapor decontamination.

Utilizing infection control response 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/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.



When unavoidable catastrophes occur that damage or destroy a healthcare facility, it can present an opportunity to introduce new technologies to the facility to make it more resilient to disasters in the future. Every kind of disaster has led to advancements in technologies for buildings that can help mitigate future damage. One example is building in elements of flood protection into basement and ground levels, such as removing basement-level ramps and loading docks. Reconstructing stronger building envelopes—especially roofs, the housing for machineries like air handling units or generators, and windows—to withstand high speed winds from storms such as tornadoes and hurricanes can be instrumental in reducing damage. In areas where earthquakes are a concern, ensuring the building is reconstructed or renovated to meet or exceed modern earthquake standards is vital for facility resiliency as well.

Perhaps the most essential element for a healthcare facility is having independent power resources 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 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 utilize new energy technology is another possibility healthcare facilities should consider after a disaster.

Lessons from COVID-19 have highlighted the importance of strengthening a healthcare facility's ability to be resilient to pathogens and pandemics. This can include improved high-quality air filtration systems with high-efficiency particulate air (HEPA) filters, which are already a requirement for hospital HVAC systems. These systems may be aging and in need of an upgrade. Pandemic resilience can also include touch-free designs in reconstruction for common areas like shared bathrooms, doors, elevators, and cafeterias, to reduce contact transmission.

Introducing resilience to a facility should incorporate strengthening and improving climate control capabilities to maximize energy efficiency and stabilize climate control. These considerations serve to protect sensitive patients and sensitive areas of the facility, such as operating rooms. Improving climate control energy efficiency also covers the hospital's ability to provide power for itself in case of emergency without sacrificing the benefits of a stabilized level of humidity or temperature.



WINDOWS AND GLASS FOR HEALTHCARE FACILITIES CAN BE DESIGNED TO WITHSTAND WINDS UP TO 250 MPH*.

*HEALTH FACILITIES MANAGEMENT MAGAZINE, 2020



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 vendors familiar and experienced with the stringent needs of healthcare facility protocols for contamination control is vital for a successful disaster recovery effort. This means vendors should be familiar with ICRA, which can also be supplemented by a protocol called interim life safety measures (ILSM). These protocols, and the technologies and techniques associated with them, help ensure that every consideration is taken to protect patient health, facility operations, and occupant safety while work is in progress. In particular, the implementation of ILSM ensures that emergency exits and equipment are accessible during construction and disaster recovery work.

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 that has impacted their building. It ensures that patient health and safety are prioritized along with high quality, efficiently completed 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.

According to the Centers for Disease Control and Prevention (CDC), any healthcare facility that reopens after dealing with water damage of any kind must take long-term monitoring for contaminants like mold into consideration. 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 both handle the initial clean up of such hazards and the long-standing monitoring required afterward can improve the quality of service that the facility provides.



The COVID-19 pandemic also illustrated the need for healthcare facilities to supplement their existing environmental services teams with outside support for decontaminating and sanitizing patient care areas, especially rooms that housed patients infected with SARS-CoV2 and its many variants that cropped up in 2020-2022. Such outside support can help ensure higher quality infection control, especially in light of these environmental services teams falling ill themselves due to their intense workloads. As the United States enters the third year of the pandemic, technicians who are familiar with navigating healthcare facilities and trained in the infection control methods required to safely complete decontamination services in sensitive environments are invaluable to healthcare facilities.



33% OF ALL REPORTED PATIENT SAFETY EVENTS RELATED TO THE PANDEMIC INVOLVED INSUFFICIENT INFECTION CONTROL IN HOSPITALS AND OTHER HEALTHCARE FACILITIES*.

*JOINT COMMISSION'S OFFICE OF QUALITY AND PATIENT SAFETY, 2021

Conclusion

Resilience is an achievable goal for healthcare facilities to reach after a disaster has impacted their building. Now, more than ever, modern technology has made reconstructing a facility to be more physically resilient to catastrophe, especially after severe weather events. While the pandemic created many challenges for medical buildings to remain resilient in providing patient care due to the unexpected influx of so many sick patients, part of their solution can be to call in experienced disaster recovery firms who are ready to employ expertise and technology to get the facility patient care-ready quickly, efficiently, and safely.





ATI RESTORATION HEADQUARTERS

3360 E. LA PALMA AVENUE
ANAHEIM, CA 92806

CONTACT US

P: 800-400-9353
E: INFO-MC@ATIRESTORATION.COM

WITH 60+ LOCATIONS NATIONWIDE

ATI RESPONDS TO MAJOR EVENTS AND
DAY-TO-DAY EMERGENCIES ACROSS THE U.S.

VISIT US TO LEARN MORE:

ATIrestoration.com

