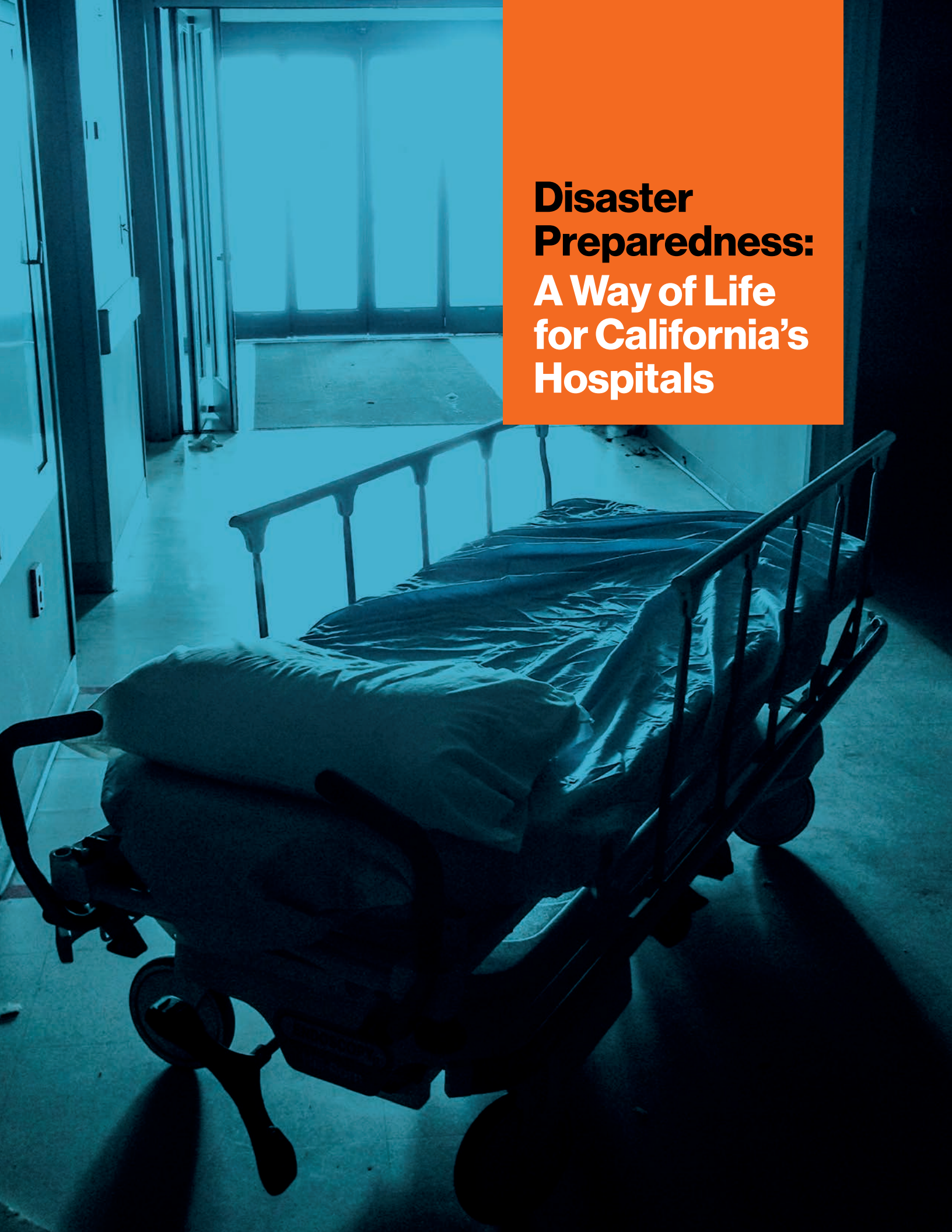

Disaster Preparedness: A Way of Life for California's Hospitals

Disaster Preparedness:

A Way of Life for California's Hospitals

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Executive Summary

Hospital Disaster Preparedness

Whether it's an earthquake, mudslide, fire, or another type of disaster, California's hospitals stand ready whenever disaster strikes — because being well-prepared literally means the difference between life and death. This is accomplished through constant planning, training, coordination, and practice.

All of this preparation and training is governed by rigorous state and federal emergency preparedness requirements designed to protect both patients and staff during and after a disaster. This document provides a thorough review of federal and state regulations and hospital accrediting rules, as well as in-depth interviews with hospital leaders in California. It is intended to facilitate understanding of how these rules affect hospitals' preparedness efforts, and how that preparation is drawn upon during and after actual disasters.

Being well-prepared literally means the difference between life and death, which is why hospitals constantly plan, train, coordinate, and practice their disaster response.

Key facts include:

- **Hospital personnel train rigorously, multiple times a year, to prepare for any type of disaster, because they understand and embrace the critical role they play during and after any crisis.**
- **Year-round, hospital emergency preparedness professionals work closely to integrate their own emergency preparedness plans with those of local, state, and federal officials. This includes first responders, like police and firefighters, as well as other health care partners.**
- **Disaster response, by its nature, necessitates in-the-moment decision-making and extreme flexibility in determining the best way to keep people and property safe.**
- **Recognizing that earthquakes, specifically, are among the ever-present threats in California, hospitals in the state abide by some of the most stringent seismic standards in the world, making them capable of withstanding large earthquakes.**

Figure 1 *on Page 4 summarizes the various requirements that hospitals must comply with in order to operate, remain accredited, and ensure they are prepared for any disaster.*

California's Disaster Vulnerabilities

California is at risk for a variety of natural disasters, and the state has experienced an unprecedented number in the past few years: the 2017, 2018, and 2019 wildfires, the 2018 mudslides,

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Noah Berger/AP

and most recently, the 2019 Ridgecrest earthquake. In addition to wildfires and earthquakes, hospitals must prepare for public health disasters, such as outbreaks of highly contagious diseases. Examples in recent years include the Zika virus outbreak (2016), the Ebola outbreak (2014) and H2N3 Influenza outbreak (2017-18). Despite an inability to control or predict any of these events, hospitals routinely and continuously plan and prepare for them so they can be a resource for the community when most needed.

Effective Disaster Response Demands Flexibility

For earthquakes, there are additional safeguards beyond training and preparation. California's hospitals are among the safest buildings in the world, complying with the nation's strictest building code requirements. These requirements ensure that within the next couple of years, every hospital in California will be able to structurally withstand a major earthquake.

But safe buildings are only part of the equation when it comes to hospitals' role during and after a disaster. Hospitals are just one component of any community's interconnected infrastructure, which includes roads and bridges, water and wastewater services, electricity and fuel, medical equipment, pharmaceutical and supply delivery, food service, and telecommunications and internet services.

When a major disaster strikes, there is likely to be significant damage throughout a community. Power lines may be down, water pipes may be compromised, toxic chemicals and gases may be released, and roads may be impassable. It is quite possible that after a major earthquake, the best option for patients and staff is to evacuate from the disaster zone — which is why hospitals and other first responders prepare and drill for multiple situations that may call for evacuation or a "shelter-in-place" strategy.

Safety is paramount, and there will be cases where conditions dictate that it is more beneficial to evacuate, rather than consolidate, patients after a major disaster — especially if doctors, nurses, and other caregivers cannot get to the hospital because of damage in the broader community. Such cases are guided by the California Patient Movement Plan, which is designed for local emergency medical services (EMS) systems that require regional, state, or federal assistance to mitigate the movement of patients from an incident.

California Patient Movement Plan

The plan focuses on the evacuation of existing health facilities that require triage, treatment, stabilization, transport to definitive care, tracking and repopulation of their facility.

The plan also addresses the primary responsibilities of the California Public Health and Medical Emergency Function (CA-ESF 8) in coordination with the California Emergency Medical Services Authority (EMSA), California Department of Public Health (CDPH), The California Governor's Office of Emergency Services (Cal-OES) and local, state and federal response partners.[i]

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Noah Berger/AP

Conclusion

Through a thorough review of state, federal, and accreditation laws and rules, it is evident that California's hospitals are well-prepared to care for patients and communities during and after a variety of disasters. Hospitals take their responsibility to be ready for disasters very seriously. Further, insight gleaned from in-depth interviews with hospital leaders in California demonstrates that planning, preparation, and training are only part of the equation. The two other major factors in ensuring the best possible response following a disaster are cooperation and coordination among those charged with response and flexibility to make decisions based on rapidly evolving conditions.

Figure 1

Examples of state and federal requirements for preparedness:

Every California hospital must:

- **Have a comprehensive emergency operations plan** that identifies known potential risks and mitigation strategies and is reviewed and updated every two years, as required by the Centers for Medicare & Medicaid Services (CMS).
- **Provide training in emergency preparedness policies and procedures to all staff** and volunteers at least every two years as required by CMS. Hospitals are required to test their plans in exercises at least twice each year.
- **Conduct at least one full-scale community-based exercise annually,** or participate in the Statewide Medical and Health Exercise each November,[ii] as required by CMS. These exercises are conducted in partnership with local emergency response partners and ensure close coordination and collaboration among health care partners in the region.
- **Have 24 hours of back-up power**, as required by California Department of Public Health regulations. National Fire Protection Association regulations additionally require acute care hospitals to have a plan to access 96 hours of backup power.
- **Have a detailed process for the safe evacuation of patients,** including transportation arrangements, agreements with other providers, methods to track patients and staff, and procedures to send needed medications and supplies as required by CMS. These processes ensure that patients will get the care they need whenever calamity strikes.

Full Report

I. Background

Hospital Disaster Preparedness

California is vulnerable to a range of disasters. The state's size, varied geography, and exposure to natural hazards such as fires, floods and earthquakes makes disaster preparedness and emergency management as complex as the state itself. Because disasters in California are a matter of "when" and not "if," preparedness is a way of life for hospitals. Hospital disaster management is an ongoing process of planning for and responding to an event, as well as addressing continuation of care and recovery following the event.

In the past decade, California has experienced a number of disastrous events — and hospitals have played a critical role in responding to all of them. Recent examples include the devastation caused by the Camp Fire in Northern California and the Woolsey and Hill fires in Southern California.

California is vulnerable to a range of disasters. The state's size, varied geography, and exposure to natural hazards such as fires, floods, and earthquakes makes disaster preparedness and emergency management complex. Because disasters in California are a matter of "when" and not "if," preparedness is a way of life for hospitals.

II. Requirements for Disaster Preparedness

Ready to Save Lives

California's hospitals are a critical pillar of the disaster medical response system and work collaboratively with local government, other health care providers, and state and federal agencies to plan, prepare for, and respond to injuries and illness following natural or man-made disasters, bioterrorism, and other public health emergencies. Hospitals are subject to extensive state and federal disaster preparedness requirements. They devote extensive time and resources to planning, education, and training to ensure medical care is uninterrupted and patients, staff, and visitors are safe during and after a disaster.

To be prepared, hospitals must comply with numerous state and federal regulations, including standards set by the Centers for Medicare and Medicaid Services (CMS) Emergency Preparedness Rule, the National Fire Protection Association (NFPA) 99 101 and 1600 Standard on Disaster/Emergency Management and Business Continuity Programs, and accreditation organizations such as The Joint Commission.

Hospitals are subject to extensive state and federal disaster preparedness requirements.

Title 22 of the California Code of Regulations (CCR) includes disaster preparedness requirements for hospitals.

Figure 2.0 *on the next page provides a detailed summary of these requirements.*

At the federal level, CMS has requirements of hospitals in each of these areas:

- **Risk assessment and planning**
- **Policies and procedures**
- **Communication plans**

Figure 3.0 *on page 7 provides an overview of these requirements.*

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Figure 2 | State

Title 22 Requirements for Acute Care Hospitals

A written disaster and mass casualty program shall be developed and maintained in consultation with representatives of the medical staff, nursing staff, administration and fire and safety experts. The program shall be in conformity with the California Emergency Plan of October 10, 1972 developed by the State Office of Emergency Services and the California Emergency Medical Mutual Aid Plan of March 1974 developed by the Office of Emergency Services, Department of Health. The program shall be approved by the medical staff and administration. (22 CCR §70741(a))

The program shall cover disasters occurring in the community and widespread disasters. It shall provide for at least the following:

- Availability of adequate basic utilities and supplies, including gas, water, food and essential medical and supportive materials
- An efficient system of notifying and assigning personnel
- Unified medical command
- Conversion of all usable space into clearly defined areas for efficient triage, for patient observation and for immediate care
- Prompt transfer of casualties, when necessary and after preliminary medical or surgical services have been rendered, to the facility most appropriate for administering definite care
- A special disaster medical record, such as an appropriately designed tag, that accompanies the casualty as he is moved
- Procedures for the prompt discharge or transfer of patients already in the hospital at the time of the disaster who can be moved without jeopardy
- Maintaining security in order to keep relatives and curious persons out of the triage area
- Establishment of a public information center and assignment of public relations liaison duties to a qualified individual, including advance arrangements with communications media to provide organized dissemination of information
(22 CCR §70741 (b))

The program shall be brought up to date, at least annually, and all personnel shall be instructed in its requirements. There shall be evidence in the personnel files, e.g., orientation checklist or elsewhere, indicating that all new employees have been oriented to the program and procedures within a reasonable time after commencement of their employment.
(22 CCR §70307 (c))

Figure 3 | Federal

CMS Emergency Preparedness Requirements for Acute Care Hospitals

The hospital must comply with all applicable federal, state, and local emergency preparedness requirements. The hospital must develop and maintain a comprehensive emergency preparedness program that meets the requirements of this section, utilizing an all-hazards approach. The emergency preparedness program must include, but not be limited to, the following elements:

Emergency Plan

The hospital must develop and maintain an emergency preparedness plan that must be reviewed and updated at least every two years. The plan must:

- Be based on and include a documented, facility-based and community-based risk assessment utilizing all-hazards approach.
- Include strategies for addressing emergency events identified by the risk assessment.
- Address patient population, including, but not limited to, persons at-risk; the type of services the hospital has the ability to provide in an emergency; and continuity of operations, including delegations of authority and succession plans.
- Include a process for cooperation and collaboration with local, tribal, regional, state and federal emergency preparedness officials' efforts to maintain an integrated response during a disaster or emergency situation.

Policies and Procedures

The hospital must develop and implement emergency preparedness policies and procedures, based on the emergency plan set forth at paragraph (a)(1) of this section, risk assessment at paragraph (a)(1) of this section, and the communication plan at paragraph (c) of this section. The policies and procedures must be reviewed and updated at least every two years. At a minimum, the policies and procedures must address:

- The provision of subsistence needs for staff and patients, whether they evacuate or shelter in place, including:
  - Food, water, medical, and pharmaceutical supplies
  - Alternate sources of energy to maintain:
    - Temperatures to protect patient health and safety and for safe and sanitary storage of provisions
    - Emergency lighting
    - Fire detection, extinguishing, and alarm systems
    - Sewage and waste disposal
- A system to track the location of on-duty staff and sheltered patients in the hospital's care during the emergency. If on-duty staff and sheltered patients are relocated during the emergency, the hospital must document the specific name and location of the receiving facility or other location.
- Safe evacuation from the hospital, which includes consideration of care and treatment needs of evacuees, staff responsibilities, transportation, identification of evacuation location(s), and primary and alternate means of communication with external sources of assistance
- A means to shelter in place for patients, staff, and volunteers who remain in the facility
- A system of medical documentation that preserves patient information, protects confidentiality of patient information, and secures and maintains the availability of records
- The use of volunteers in an emergency and other emergency staffing strategies, including the process and role for integration of state and federally designated health care professionals to address surge needs during an emergency
- The development of arrangements with other hospitals and other providers to receive patients in the event of limitations or cessation of operations to maintain the continuity of services to hospital patients
- The role of the hospital under a waiver declared by the Secretary, in accordance with section 1135 of the Act, in the provision of care and treatment at an alternate care site identified by emergency management officials

(42 CFR §482.15 Condition of participation: Emergency preparedness.)

Planning Never Stops

Hospitals throughout California regularly confront and manage emergencies, whether external (e.g., earthquakes, fires, or floods) or internal (e.g., utility failure or workplace violence). Hospitals invest time and resources to ensure robust emergency plans are in place and personnel are sufficiently trained to respond. To ensure uninterrupted care and protect patients and workers during a disaster, hospitals are required by federal CMS emergency preparedness regulations to develop a far-reaching emergency management program that includes policies and procedures, plans for educating and training all staff and contract personnel, and a plan for an annual training exercise for the hospital's emergency operations plan (EOP). The program implements the organization's mission, vision, goals, and objectives as related to emergency management. It utilizes organized analysis, planning, decision-making, and assignment of available resources to mitigate, prepare for, respond to, and recover from all hazards.

To ensure uninterrupted care and protect patients during a disaster, hospitals have far-reaching emergency management programs.

An emergency preparedness program describes a facility's comprehensive approach to meeting the health, safety, and security needs of the facility, its staff, the patient population, and the community prior to, during, and after an emergency or disaster. It includes:

- **An emergency plan based on a risk assessment as well as an "all hazards" approach**
- **Policies and procedures**
- **A communication plan**
- **A training and testing program**

Part of developing any emergency management program is developing a hazard vulnerability analysis, or HVA, as required by CMS emergency preparedness regulations. There are several models used to develop an HVA, but the basic process is to identify the hazard (such as an earthquake), assess the facility's vulnerability to the hazard, and provide a risk analysis for the threat. Identification of the hazards can include physical characteristics, probability, magnitude, frequency, causative factors, severity, and factors that the actual hazard may affect, such as loss of utilities, environmental extremes, or change in air quality.

One approach to the HVA analysis, referred to as the "all-hazards approach," focuses on developing emergency preparedness capacities and capabilities that can address identified hazards as well as a wide spectrum of emergencies or disasters. All facilities must develop an all-hazards emergency preparedness program and plan, as required by CMS emergency preparedness regulations.

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This approach includes preparedness for natural, man-made, and facility emergencies such as:

- **Care-related emergencies**
- **Equipment and power failures**
- **Interruptions in communications, including cyberattacks**
- **Loss of a portion of or an entire facility**
- **Interruptions in the normal supply of essentials, such as water and food**
- **Emerging infectious disease threats, like influenza, Ebola, Zika virus, and others.**

An HVA also includes a vulnerability assessment, which estimates the damage to physical structures and the illness or injury to local residents that may result from the hazard, as well as a risk assessment that calculates each hazard with the associated vulnerability to provide a ranked list of probability and vulnerability. Through risk assessment, facilities assess and document potential hazards that are likely to impact their geographical regions, communities, facilities and patient populations, and identify gaps and challenges that should be addressed by the emergency preparedness program. The term "risk assessment" is meant to be comprehensive and may include a variety of methods to assess and document potential hazards and their impacts.

Based on the HVA, the hospital develops policies and procedures for the top hazards, and, if appropriate, any additional categories of disasters that present a concern. The hospital also coordinates with local officials to compare threats and hazards so all agencies are aligned.

Once the HVA has been completed, the next step in developing a comprehensive emergency management program is to develop the EOP. Hospitals are required by CMS to have an EOP, which describes how they will respond to, and recover from, all hazards. It provides the framework and detailed processes to respond to and initially recover from an event and is the vehicle by which response and recovery plans are outlined and acted upon.

An EOP — the framework for the emergency preparedness program — is developed based on facility- and community-based risk assessments that help anticipate and address facility, patient, staff and community needs, as well as support continuity of business operations.

This approach enables a hospital to respond to a range of emergencies varying in scale, duration, and cause. The EOP addresses response procedures, capabilities and procedures when the hospital cannot be supported by the community, recovery strategies, initiating and terminating response and recovery phases, and who activates the plan, as well as identifying alternative sites for care, treatment, and services. To satisfy Medicare Conditions of Participation, many hospitals seek accreditation by accreditation organizations approved by CMS. Figure 4 details the emergency operations plan requirements of one of these CMS-approved accreditation organizations, The Joint Commission.

Within the program, hospitals also rely on the Hospital Incident Command System[iii], or HICS. HICS is an incident management system based on principles of the Incident Command System (ICS), which assists hospitals with emergency management planning, response, and recovery capabilities. HICS is consistent with ICS and the National Incident Management System (NIMS) principles.

When developing the EOP, HICS has identified 16 hazards for which hospitals are at risk or to which they would be expected to respond:

- **Active shooter**
- **Chemical incident**
- **Earthquake**
- **Evacuation, shelter-in-place, and hospital abandonment**
- **Explosive incident**
- **Hostage or barricade incident**
- **Infectious disease**
- **Information technology (IT) failure**
- **Mass casualty incident**
- **Missing person**
- **Radiation incident**
- **Severe weather with warning**
- **Staff shortage**
- **Tornado**
- **Utility failure**
- **Wildland fire**

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Figure 4

Emergency Preparedness Accrediting Rules for Acute Care Hospitals

The Joint Commission's Emergency Management Standards mandate that emergency operations plans include six critical elements:

- **Communication:** Names and contact information for staff, physicians, other hospitals, volunteers, entities providing services under arrangement, and relevant federal, state, tribal, regional, and local emergency preparedness staff, as well as a process for communicating information and documentation of completed and attempted contact with the local, state, tribal, regional, and federal emergency preparedness officials in the organization's service area (EM.02.02.01)
- **Resources and assets:** How the organization will obtain and replenish nonmedical supplies (including food, bedding, and other provisions consistent with the organization's plan for sheltering on site) that will be required in response to an emergency (EM.02.02.03)
- **Safety and security:** How the organization will manage security and safety during an emergency (EM.02.02.05)
- **Staff responsibilities:** A system to track the location of on-duty staff during an emergency (EM.02.02.07)
- **Utilities management:** Alternate means of providing electricity, lighting, and essential utility systems during an emergency (EM.02.02.09)
- **Patient, clinical, and support activities:** A system to track the location of patients sheltered on-site during an emergency (EM.02.02.11)

All of this work must be relayed to the frontline hospital staff — like nurses, doctors, and other health care professionals — so they can be trained and ready. Education must be conducted at least every two years and include all staff and contract personnel as required by CMS. Hospitals must also conduct training exercises for the EOP twice a year with at least one patient surge[iv] exercise. A patient surge exercise measures the hospital's ability to provide adequate medical evaluation and care during events that exceed the limits of the normal medical infrastructure of an affected community. It encompasses the ability to survive a hazard impact and maintain or rapidly recover operations that were compromised (a concept known as medical system resiliency).

Following each exercise that tests the EOP, the hospital must write an "After Action Report" and create an improvement plan for any identified issues.

California conducts an annual Statewide Medical and Health Exercise[v] with all acute care hospitals and their response partners. The statewide exercise facilitates this annual training for jurisdictions, organizations, and facilities. The program utilizes the Homeland Security Exercise and Evaluation Program and aligns with the federal Public Health Emergency Preparedness and Hospital Preparedness programs.

Communication

During any emergency, hospital staff must rely on data supplied through technology; information from the community, county, or state; and the facility's own disaster plan to take rapid, decisive actions that ensure patient and staff safety. As with any disaster or emergency, communication — and redundant communications systems — is key to successful navigation and execution.

Hospitals use multiple methods to communicate when disaster strikes, including landline phones, cellular phones, high- and low-band radios with dedicated frequencies, satellite phones/data transmission, alphanumeric pagers, public address systems, email, web-based desktop notification banners, and reverse 911 technologies.

Hospitals must also conduct training exercises for their emergency operations plans twice a year with at least one patient surge exercise.

Common Procedures Enhance Coordination

The Public Health and Medical System in California includes many public and private partners. The majority of health care system assets are privately owned. During disasters, coordination among public and private partners is essential to effective emergency management. The California Public Health and Medical Emergency Operations Manual (EOM) provides a common operating procedure for all organizations involved in medical response during a disaster.

The processes identified in the EOM enhance coordination among system participants, helping save lives and protect the public's health. The EOM builds upon the Standardized Emergency Management System and the State Emergency Plan to further define the role of key participants in the Public Health and Medical System during emergencies.

The EOM describes the basic roles and activities within the Public Health and Medical System and strengthens coordination with the emergency management structure at all levels of California's Standardized Emergency Management System. The EOM supports California's ability to provide assistance to local governments when disasters overwhelm available resources.

Hospital Seismic Safety

California is vulnerable to earthquakes. Following the 1994 Northridge Earthquake, which resulted in $3 billion damage to hospitals, the Alfred E. Alquist Hospital Facilities Seismic Safety Act was amended under Senate Bill 1953 (Chapter 740, Statutes of 1994). The seismic mandate established five structural and five non-structural classifications of hospital building seismic safety levels, as well as deadlines for certain classification upgrades. The mandate has been amended a number of times since its enactment.[vi]

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California's hospitals are among the safest buildings during an earthquake.

Current Law

Life Safety Standard: Hospitals must remain standing after a seismic event. As of December 2018, 94% of California hospitals have met this standard. All hospitals will by 2025.

Fully Operational Standard: By 2030, hospitals must ensure all services are available and remain fully operational after a seismic event.

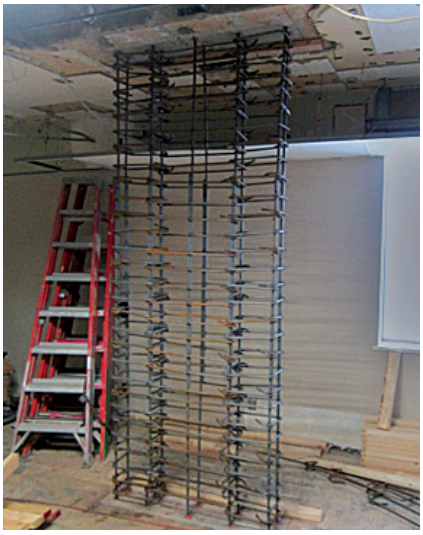
Current law requires all hospital buildings to be replaced or retrofitted to ensure they will remain standing in future quakes. By December 2018, 94% of California hospital buildings had met this standard.[vii] All California hospitals will meet this life safety standard by 2025. State law further requires hospitals to be fully operational post-earthquake by 2030.

As hospitals ensure their buildings are able to withstand an earthquake, it's important to remember that there are situations where an evacuation, rather than a shelter-in-place strategy, is necessary. This may be due to the fact that hospitals are just one component of a communities interconnected infrastructure, which includes roads and bridges, electricity and fuel, food service, and telecommunications.

Safety is paramount, but it may make more sense to evacuate patients — especially if doctors, nurses, and other caregivers cannot get to the hospital because of damage in the broader area. For example, not every patient — even after a disaster — needs to be cared for at a hospital. Today, patients can be safely treated in a number of ways, including through mobile technologies, at alternative care sites, or via mobile health or otherwise portable units. In many cases, transporting patients outside of the walls of the hospital may be preferable to caring for them inside a disaster zone to ensure safety.

The National Fire Protection Association requires acute care hospitals to have access to a minimum of 96 hours of fuel supply for emergency standby power. In addition, hospitals have evacuation plans in place in case the entire region is affected — which is why evacuation to areas beyond the disaster zone may be the most prudent course of action.

Not every patient — even after a disaster — needs to be cared for at a hospital. Today, patients can be safely treated in a number of ways, including through mobile technologies, at alternative care sites, or via mobile health or otherwise portable units. In many cases, transporting patients outside a hospital's walls may be preferable to caring for them inside a disaster zone to ensure safety.



Photos courtesy of
Aaron Reynolds, KPFF

V. No Two Disasters Are Alike: Real Stories from the Front Lines

2017 Tubbs Fire

Mitch Saruwatari, Director of Emergency Management, Kaiser Permanente
Suzy Fitzgerald, MD, Emergency Physician, Kaiser Permanente

As high winds whipped the flames of the Tubbs Fire toward the Kaiser Permanente Medical Center in Santa Rosa in the early morning hours of October 9, 2017, the hospital's staff and leaders quickly moved into disaster response mode — putting the needs of their patients ahead of even their own families and homes that were threatened or engulfed by the inferno.

The firestorm had started near the town of Calistoga at the northern end of the Napa Valley shortly after 9:30 p.m. on October 8. By 3:30 a.m., it had consumed thousands upon thousands of acres in its 12-mile run between Calistoga and Santa Rosa — and was growing in size the equivalent of a football field every minute. By the time the blaze tore

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"We were in constant communication with local public safety officials to determine what was the safest thing to do for our patients – shelter-in-place or evacuate." — **Mitch Saruwatari**

through a mobile home park directly adjacent to the hospital, heavy smoke had already filled the facility.

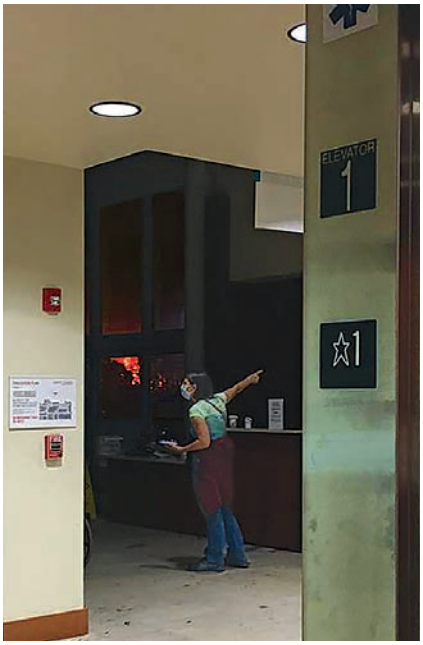
"The fire was moving very close to the hospital grounds," recalls Dr. Suzy Fitzgerald, a Santa Rosa-based emergency physician and director of Kaiser Permanente's Northern California regional emergency management training program. "We were in constant communication with public safety officials to determine the safest course of action for our patients and staff – shelter-in-place or evacuate."

As the flames roared just yards away from the hospital's campus, fire department officials informed hospital leaders they were "making a last stand" in an effort to keep the flames away from the facility. Faced with an unpredictable and rapidly unfolding event, hospital officials decided to evacuate the facility.

According to Mitch Saruwatari, Kaiser Permanente's national director of emergency management, the ability to quickly determine the best course of action during a disaster results from the organization's "levels of anticipatory protection – pre-planning expertise that provides guidance and resources for whenever a disaster strikes."

Kaiser conducts disaster drills every quarter — one per shift in different hospital units every three months, according to Saruwatari. This simulates horizontal patient movement should it be necessary to quickly and safely relocate patients to other care areas. And each year, every Kaiser hospital participates in two or more disaster exercises that test their response plans. Learnings from these exercises are shared within the hospital, and best practices are discussed through peer forums to ensure that every Kaiser Permanente facility is well-prepared and ready to respond to a disaster at a moment's notice.

Another benefit of being a part of the Kaiser Permanente system, Saruwatari noted, is that hospitals are connected to "Regional Command Centers" located within each of Kaiser Permanente's eight geographic regions across the country. This interconnectedness enables disaster response personnel to determine in real-time which hospitals within the region or broader system can take which patients.



"Their dedication to keeping our patients safe and figuring out how to continue providing care while the hospital was closed was incredibly inspiring."

— Suzy Fitzgerald, MD

"No hospital stands alone," Saruwatari said. "Our hospitals are part of a much larger safety net, so no matter what type of a problem an individual hospital faces in a disaster, we have support systems in place to help."

In the case of the Tubbs Fire, as a wall of flames was descending upon the Santa Rosa hospital, officials determined that the safest action was to evacuate everyone. Ultimately, all patients were safely evacuated over a 2 ½-hour period, including a large number of patients who were transferred to Kaiser Permanente's San Rafael hospital, 37 miles away.

As it happened, another hospital in the area — Sutter Santa Rosa Medical Center — also was evacuating patients due to the firestorm, so ambulances were in short supply. As a result, the decision was made to use private cars and city buses with medical staff on board to transport patients with less critical medical needs.

During its three-week run, the Tubbs fire destroyed more than 5,600 structures in the California wine country — half of which were homes in Santa Rosa. Among those who lost their homes were more than 200 Kaiser Permanente employees – physicians, nurses, and leadership. Yet, through it all, the hospital's staff put their patients' needs ahead of their own.

"Many of our colleagues worked tirelessly the night of the fire and into the days and weeks following, despite having lost their own homes," Dr. Fitzgerald notes. "They were right there every step of the way — their dedication to keeping our patients safe and figuring out how to continue providing care while the hospital was closed was incredibly inspiring."

Although the Tubbs Fire did not burn any of the hospital's buildings, there was smoke damage. It took two weeks to thoroughly clean the hospital and restock supplies before the facility was ready to reopen.

As she reflects back on the events of two years ago, Dr. Fitzgerald is confident that the decision to evacuate patients in the face of the Tubbs Fire was absolutely the right thing to do.

"The decision to evacuate is never easy, but in rare cases it may be the safest option for patients and staff — particularly when medical care is available outside of the disaster environment," she says. "Hospitals routinely train to evacuate — and work closely with local, state and federal partners to do whatever it takes to keep patients safe during an event."

2018 Woolsey Fire

Andrew Ward, Hospital Preparedness Program Coordinator & Emergency Management Office, Providence Health & Services Southern California

The scenic beach town of Malibu west of downtown Los Angeles is known for its celebrity residents and wide, sandy beaches. But on the afternoon of November 8, 2018, a devastating wildfire ignited in the Woolsey Canyon above Simi Valley, 30 miles inland from the coastal enclave. It would ultimately consume 97,000 acres and more than 1,600 structures in two counties, including more than 400 homes in Malibu.

"As soon as the fire broke out, we reached out to our community partners to assess the situation and determine what we needed to do to ensure the safety of our patients," said Andrew Ward, hospital preparedness program coordinator and emergency management officer with Providence Health &

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"When a disaster strikes, it's because of our strong relationships and our exhaustive training that we are able to immediately respond." – Andrew Ward

Services Southern California. "Our first priority is always patient safety — and that includes making real-time decisions whether to evacuate patients or shelter-in-place."

A paramedic by background, Ward also serves as Providence's representative to the Los Angeles County Disaster Resource Center (DRC), a countywide program comprised of 13 regions strategically located throughout Los Angeles County's vast 4,000-square-mile territory. Each DRC includes umbrella hospitals and community-based coalition partners (long-term care facilities, dialysis centers, clinics, etc.) who work collaboratively with local emergency medical services and public safety officials on disaster preparedness, mitigation, response, and recovery activities.

Multiple hospitals closest to where the Woolsey Fire burned are located within the DRC region overseen by a team that includes Ward.

All hospitals and coalition partners in each DRC participate together in annual hazard vulnerability (risk) assessments, as well as tabletop exercises and full-scale disaster drills. The risk assessments include looking at such factors as the region's dense urban and suburban populations; the area's natural landscape, including chaparral-covered steep canyons and hillsides; and daily traffic congestion, which can impede traffic flow if an evacuation becomes necessary.

"The DRC structure really facilitates effective collaboration between hospitals and other community partners," Ward said. "Hospitals don't work in silos — we collaborate with our community partners all the time. When a disaster strikes, it's because of our strong relationships and our exhaustive training that we are able to immediately respond."

Although the Woolsey Fire did not cause any direct damage to the hospitals in the firestorm's path, two facilities — Los Robles Regional Medical Center in Thousand Oaks and West Hills Hospital and Medical Center — were affected by heavy smoke in the region. Ultimately, more than 50 patients were evacuated from Los Robles Regional Medical Center and transported to surrounding area hospitals.

"These events are very dynamic, and the situation can change in a moment's notice. We are constantly asking ourselves — 'what is in the best interest of our patients?'" — Andrew Ward

"These events are very dynamic," Ward said, "and the situation can change in a moment's notice. We are constantly asking ourselves — 'what is in the best interest of our patients?'"

Among the concerns that disaster response personnel take into account when deciding whether to evacuate patients or shelter-in-place are the availability and quality of resources that are essential to providing safe patient care, such as water and power.

"Even if a hospital building is operational after a disaster, it may not be safe to provide patient care if the quality of water is compromised or if it is limited supply," Ward said. "For dialysis patients, it may be in their best interest to evacuate them as soon as possible because they need an adequate supply of safe, clean water for their life-saving treatments."

In the case of the Woolsey Fire, air quality across the region was extremely poor for days on end as ash and huge plumes of smoke filled the autumn sky. Air quality was listed as "unhealthy" in Thousand Oaks and "unhealthy for sensitive groups" in other parts of Ventura and Los Angeles counties.

"Because we had expert lines of communication within the structure of the DRC, we are able to make sound decisions among our hospitals," Ward said. "The public may not be aware of the enormous work that goes on within counties and across the state to prepare and plan for any and all disasters, but it is this planning that assures the safest outcome for our patients."

2019 Ridgecrest Earthquake

Stephanie Meeks, Emergency and Regulatory Compliance Manager, Ridgecrest Regional Hospital

It was hot on the morning of July 4, 2019. Residents of the small town of Ridgecrest in northeastern Kern County were getting ready to celebrate the holiday with friends and family when the earth began to shake. And shake. And shake. A magnitude 6.4 earthquake hit the town of 27,000 at 10:33 a.m.

At Ridgecrest Regional Hospital, it was a day like any other. The 25-bed critical access facility located on the edge of the Mojave Desert had 17 patients being cared for in a building constructed in 2010 – 15 people on the medical-surgical unit and two patients in the ICU. An older building, constructed in the 1960s, housed four women who had just given birth and their newborns.

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"Evacuating patients is the last thing a hospital ever wants to do but in that moment, what mattered was doing the right thing for our patients." — **Stephanie Meeks**

U.S. Geological Survey

Stephanie Meeks, the emergency and regulatory compliance manager at the hospital, was off for the holiday. But when the earthquake hit, everything changed. She rushed to the hospital to check on patients and staff. Patients were fine and none of the buildings on the hospital campus had suffered structural damage. In fact, the relatively new 2010 building, designed to meet California's strict 2030 seismic safety standards, swayed back and forth just as it was designed to do. But within minutes, water was gushing on the second floor, filling the elevator shafts and the operating rooms on the first floor — the result of a water pump on the roof that failed, along with several broken water lines.

Stephanie and Ridgecrest CEO Jim Suver quickly made the decision to evacuate the 17 patients in the 2010 building. The four new moms and their babies were all ready to go home and did not need to be evacuated.

"We knew we needed to move the med-surg patients because of the flooding on the second floor," Meeks recalled. "And, we weren't sure what might be coming next — we were being told to prepare for additional, potentially larger, earthquakes. We had to make real-time decisions based on the information we had — and in the moment, patient safety was our primary concern. At that time, we knew the best way to ensure the safety of our patients was to evacuate them."

For the staff at Ridgecrest, like those at hospitals across California, the process of safely evacuating patients when circumstances warrant is a well-planned and well-rehearsed process. Under state and federal laws, hospitals are required to practice patient evacuations at least once a year as part of their disaster preparedness drills.

"We practice both horizontal and vertical evacuations," Meeks said. "During a drill several years ago, we realized that we needed to have special gurneys that would fit through the narrow hallways of our outpatient services building, which is connected to the main facility, in case we ever need to evacuate patients from the second floor. We have had those gurneys in place for more than five years for this exact emergency situation."

"We had to make real-time decisions based on the information we had — and in the moment, patient safety was our primary concern."

— Stephanie Meeks

She added that it was because of the hospital's "pre-planning processes and disaster training" that made the evacuations that July 4 holiday as safe as possible.

Once the evacuation order was given, patients were initially moved out of the hospital building and into triage tents set up in the hospital parking lot so their conditions could be assessed and decisions about where to transport them could be made. But with outside temperatures running near 100° and little air conditioning in the tents, the patients were ultimately moved back inside the outpatient services lobby — once it was cleared by fire inspectors — before being transported by ambulances and helicopters to other hospitals within the region.

"Evacuating patients is the last thing a hospital ever wants to do," Stephanie says, "but in that moment, what mattered was doing the right thing for our patients — and in this situation, it was clear to us that the right thing was to safely transport our patients out of harm's way."

Ridgecrest Regional Hospital, along with the other hospitals in Kern County and the county's emergency medical services agency, use the ReddiNet emergency medical communications system to facilitate real-time response in the event of a disaster. On July 4, the system was used to coordinate the evacuation of patients, ensuring that each person was sent to a facility capable of providing appropriate care.

The 6.4 temblor on July 4 wasn't the strongest earthquake to hit Ridgecrest over the Independence Day holiday. The following day, a stronger 7.1 quake shook the community at 8:19 p.m. This quake is now considered to be the main shock, with the July 4 tremor now deemed a foreshock. It was the most powerful earthquake to hit California in 20 years. Throughout the community, numerous fires broke out and severe damage was reported, with many homes knocked off their foundations and numerous gas leaks. Multiple rockslides also occurred, making some roads to the city temporarily impassable. Experts have estimated the 7.1 quake caused more than $5.3 billion in damage to the community, including major damage to the China Lake Naval Air Weapons Station.

The only impact to the hospital from the 7.1 quake was a brief power outage resulting from a fallen power line behind the facility.

"Our back-up generators kicked in when the power line fell," Meeks said. "And, because we had already evacuated our patients, there was no additional impact to the hospital. I'm convinced we made the right decision to evacuate our patients when we did."

California's Hospitals Work Every Day to be Prepared for Disasters

Disasters are the "new normal" for California and preparedness is a way of life for hospitals. Regulations, standard practices, and hospitals' own commitment to their work help ensure a constant state of readiness for patients and caregivers who work at hospitals. This means that when disasters strike, hospitals, alongside other first responders, are at the ready for all in need.

Cal Fire

VII. Appendix

A. To ensure hospitals coordinate with local, regional, state, tribal, and federal partners for disaster planning, CMS established national emergency preparedness requirements in its emergency preparedness rule, available at www.cms.gov/medicare/provider-enrollment-and-certification/surveycertemergprep/emergency-prep-rule.html.

The four core elements of the emergency preparedness rule are:

- **Risk assessment and planning**
- **Policies and procedures**
- **Communication plans**
- **Training and testing**

CMS EMERGENCY PREPAREDNESS RULE	CORE ELEMENTS
Risk Assessment and Emergency Planning	*(Include but not limited to):* • **Hazards likely in geographic area** • **Care-related emergencies** • **Equipment and power failures** • **Interruption in communications, including cyber attacks** • **Loss of all/portion of facility** • **Loss of all/portion of supplies** • **Plan is to be reviewed and updated at least every two years**
Communications Plan	• **Complies with federal and state laws** • **System to contact staff, including patients' physicians, and other necessary persons** • **Well-coordinated within the facility, across health care providers, and with state and local public health departments and emergency management agencies**
Policies and Procedures	• **Complies with federal and state laws**
Training and Testing	• **Complies with federal and state laws**

B. Links to Resources on Disaster Preparedness

- **California Hospital Association Disaster Preparedness Website:** www.calhospitalprepare.org/
- **California Public Health and Medical Emergency Operations Manual:** www.cdph.ca.gov/Programs/EPO/CDPH%20Document%20Library/FinalEOM712011.pdf
- **Technical Resources, Assistance Center, and Information Exchange (TRACIE):** https://asprtracie.hhs.gov/
- **Hospital Incident Command System Resource:** https://emsa.ca.gov/disaster-medical-services-division-hospital-incident-command-system-resources/
- **California Statewide Medical and Health Exercise Program:** https://www.cdph.ca.gov/Programs/EPO/Pages/swmhe.aspx
- **Federal Emergency Management Agency:** https://www.fema.gov/
- **Centers for Disease Control:** https://emergency.cdc.gov/
- **The Great California Shake Out:** https://www.shakeout.org/healthcare/

Endnotes

i https://emsa.ca.gov/wp-content/uploads/sites/71/2019/03/Patient-Movement-Plan_Final-3-6-19.pdf

ii https://www.calhospitalprepare.org/statewide-medicalhealth-exercise

iii https://emsa.ca.gov/disaster-medical-services-division-hospital-incident-command-system-resources/

iv https://www.phe.gov/Preparedness/planning/mscc/handbook/chapter1/Pages/whatismedicalsurge.aspx

v https://www.cdph.ca.gov/Programs/EPO/Pages/swmhe.aspx

vi To view all legislation that has amended the seismic mandate, go to the Office of Statewide Planning and Development's (OSHPD's) Changes to Seismic Safety Law website. https://oshpd.ca.gov/construction-finance/seismic-compliance-and-safety/seismic-legislation/

vii https://www.rand.org/pubs/research_reports/RR3059.html