



Integrated Standards for Disaster Risk Management in Healthcare Facilities: An Updated Review

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Abstract:

Background: Disasters have consistently posed challenges globally, with significant social, economic, and health implications. Healthcare facilities play a pivotal role in disaster risk management (DRM), yet many hospitals, especially in developing countries like KSA, lack adequate preparation due to insufficient DRM standards.

Aim: This study reviews integrated DRM standards tailored to healthcare facilities, with an emphasis on aligning KSA hospitals with global benchmarks to improve disaster readiness.

Methods: The review analyzed international DRM frameworks and accreditation standards from the U.S., Canada, Australia, and Japan. It outlined disaster management phases—prevention, mitigation, preparedness, response, and recovery—and evaluated KSA's progression in implementing these standards since 2010. It also explored key components such as the Incident Command System (ICS), triage protocols, and transportation in disaster scenarios.

Results: Findings indicate that global DRM standards have significantly enhanced hospital readiness. Examples include Japan's comprehensive response post the 1995 Hanshin/Awaji earthquake and updates to U.S., Canadian, and Australian hospital accreditation following major

disasters. KSA has made strides in DRM by incorporating crisis committees, staff training, and annual drills but lags in adopting a holistic DRM approach and ICS integration. Advanced triage protocols like SALT and JumpSTART and dynamic transportation strategies were identified as critical for mass casualty scenarios.

Conclusion: Enhancing DRM standards is essential for healthcare facilities to ensure operational efficiency during disasters. Comprehensive frameworks, ICS, and advanced triage systems can significantly improve disaster preparedness. KSA's hospitals require expanded accreditation standards to transition from traditional disaster management to integrated DRM practices.

Keywords: disaster risk management, healthcare facilities, hospital accreditation, Incident Command System, triage protocols, KSA hospitals, disaster preparedness

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Introduction:

Throughout history, disasters have presented civilizations with enormous obstacles, having a profound social and economic impact on both individuals and governments. Globally, there were an average of 347 natural disasters per year between 2001 and 2020, and 432 in 2021. The economic damages from these catastrophes were \$252 billion, which was almost \$100 billion more than the average for the previous two decades. In 2021, Asia accounted for over 40% of these events, 49% of disaster-related deaths, and 66% of impacted people [1]. KSA is susceptible to a number of natural and man-made calamities because it is a developing country in this region [2]. Because they ensure survival and protect public health, hospitals play a vital role in the welfare of the community, especially during catastrophes. The need for disaster readiness in healthcare facilities is highlighted by their capacity to perform healthcare services during and after disasters while preserving operational effectiveness and offering a safe environment for patients, guests, and employees [3]. Research shows that hospitals in KSA are between low to moderately prepared [4, 5]. The lack of strong disaster risk management (DRM) standards is a major cause of this deficiency [6]. Many countries have created and implemented detailed criteria to improve hospital preparation after learning from past mistakes. After the September 11, 2001 attacks, when hospitals came under fire for their tardy response to casualties, the United States, which has been a leader in hospital certification since 1917, stepped up its attention to DRM standards. As a result, DRM standards were added to hospital certification procedures by the Joint National certification Commission [7]. Similar to this, in order to improve hospital disaster readiness following incidents like the 2001 terrorist attacks and the 2003 SARS outbreak, Canada and Australia, which started hospital accreditation in 1953 and 1957, respectively, updated their requirements [8].

The catastrophic 1995 Hanshin/Awaji earthquake in Japan, which claimed 6,434 lives and injured over 43,000 more, revealed serious weaknesses in the country's emergency medical infrastructure. The "National Disaster Medicine System" was introduced by Japan's Ministry of Health, Labor, and Welfare in 1996 in response. It included hospitals designated for disasters, medical information systems, air relief services, emergency response teams, and comprehensive deployment guidelines. Hospital emergency management was greatly improved by these improvements [9, 10, 11]. In 2010, national certification criteria were introduced, marking the beginning of the evolution of DRM standards in KSA. A crisis committee and its operating norms were the only prerequisites for previous hospital evaluation systems. By 2012, accreditation requirements had been broadened to include staff training, yearly disaster drills, incident

command systems, and team mobilization procedures. Hospital catastrophe risk evaluations were incorporated into further versions in 2014 [12]. Current international frameworks promote standards throughout the DRM cycle, which includes prevention, mitigation, readiness, response, and recovery, and highlight a transition from traditional disaster management to a holistic disaster risk management strategy [3]. The goal of this study is to provide thorough hospital accreditation criteria that are specific to the DRM needs of KSA hospitals, given the vital significance of a comprehensive DRM framework in healthcare settings.

The Five Phases of Disaster Management

Prevention

Finding vulnerabilities is necessary for the first stage of disaster management, prevention, in order to facilitate efficient planning and preparation. For example, coastal locations often experience flooding and hurricanes, whereas desert interior areas are constantly threatened by drought and wildfires. While rural areas may experience isolated industrial risks, urban areas are frequently vulnerable to Active Shooter/Hostile Events (ASHE), including terrorist strikes. Mitigation is more successful when risks are identified and proactively addressed, regardless of the type of disaster. This stage entails creating plans for evacuation routes, setting up evacuee muster locations, and practicing for both man-made and natural disasters. However, major changes to policy or procedures are usually not necessary for prevention.

Mitigation

The second stage, mitigation, focuses on putting policies in place to lessen the possibility of fatalities and infrastructure damage before a disaster strikes. Effective mitigation improves recovery efforts, lowers financial losses, minimizes injuries, and increases public safety. Hazard mitigation entails four essential processes, according to the Federal Emergency Management Agency (FEMA): (1) planning and resource organization, (2) risk assessment, (3) mitigation strategy development, and (4) plan implementation [13,14,15]. Vulnerability assessments, for instance, can reveal structural flaws like inadequate drainage systems or windows with low impact ratings. The local population's awareness of emergency shelter locations and basic first-aid knowledge may be assessed through educational activities. Policy reviews evaluate compliance with zoning and safety requirements. Following these evaluations, plans for mitigation are successfully carried out and strategies are developed to address vulnerabilities that have been found.

Preparedness

The last stage before a disaster occurs is represented by the third phase, readiness. This phase builds on the mitigation plan and includes community education, exercises, and scenario preparation. Through exercises and simulations, training programs offered by institutions like the Emergency Management Institute (EMI) and the National Fire Academy (NFA) assist in filling in knowledge gaps. Ten crucial preparation stages are outlined in FEMA's Organizations Preparing for Emergency Needs (OPEN) program, which includes identifying risks, protecting data, addressing vulnerabilities, setting up supply chains, and educating staff [16-18]. Making sure that everyone participating in disaster response has the necessary training to carry out plans efficiently is a crucial part of preparedness. The National Preparedness System (NPS) was established as a result of the 2011 emphasis on disaster preparedness in U.S. Presidential Policy Directive 8 (PPD-8). By creating a unified framework for preparations, this program sought to improve national security and resilience against high-risk threats [19].

Response

Perhaps the most important stage is the response phase, which starts right after a disaster. It entails carrying out pre-planned strategies to counter dangers, save impacted people, and lessen risks. Evacuating people in danger and eliminating immediate threats, such turning off electrical grids during structural fires to protect emergency personnel, should be the top priorities. After these initiatives, resources are distributed according to needs that have been triaged. In order to resume regular operations, local assets are turned on and recovery procedures are started. Plans for long-term recovery initiatives are created concurrently.

Recovery

After reaction efforts have stabilized the current situation, the last stage, recovery, begins. The goal of recovery efforts, which may take months or years, is to restore basic utilities like food, water, electricity, and medical care. Rebuilding infrastructure, reintegrating displaced people into their communities, and repairing or tearing down damaged structures are some examples of restoration priorities. Recording lessons learnt to enhance future disaster preparedness and management plans is a crucial part of this step.

Incident Command Structure

Establishing a distinct and cohesive chain of command within an organized hierarchy of personnel is crucial for anticipating or responding to impending dangers. A planned and methodical structure called the Incident Command System (ICS) sets up a chain of command to improve readiness for disasters. Emergency services, equipment, and communication centers are all integrated into a single, recovery-focused network by this system. Six essential elements are needed for an effective ICS, according to the National Incident Management System (NIMS): (1) establishing a definitive command presence; (2) appointing an operations manager; (3) establishing a planning division; (4) establishing a logistics division; (5) gathering and investigating intelligence; and (6) creating a finance/administration division [20]. Coordinating all information by entering and leaving the scene, the Emergency Operations Center (EOC) usually acts as the command center. Operating from the EOC, the incident commander is in charge of all assets and has the final say over the response. Where needed, separate chains of command are maintained. While the operations section keeps track of developments and carries out the plan, the planning division creates and modifies an action plan in response to urgent needs. The logistics section oversees asset provision and personnel tracking in support of activities. The intelligence and investigations branch, meanwhile, determines the cause of the incident and obtains vital information to eliminate dangers. The division in charge of finance and administration oversees financial expenses and offers strategic direction for the distribution of financial resources. A graphical illustration of the ICS is shown in **Figure 1** [21].

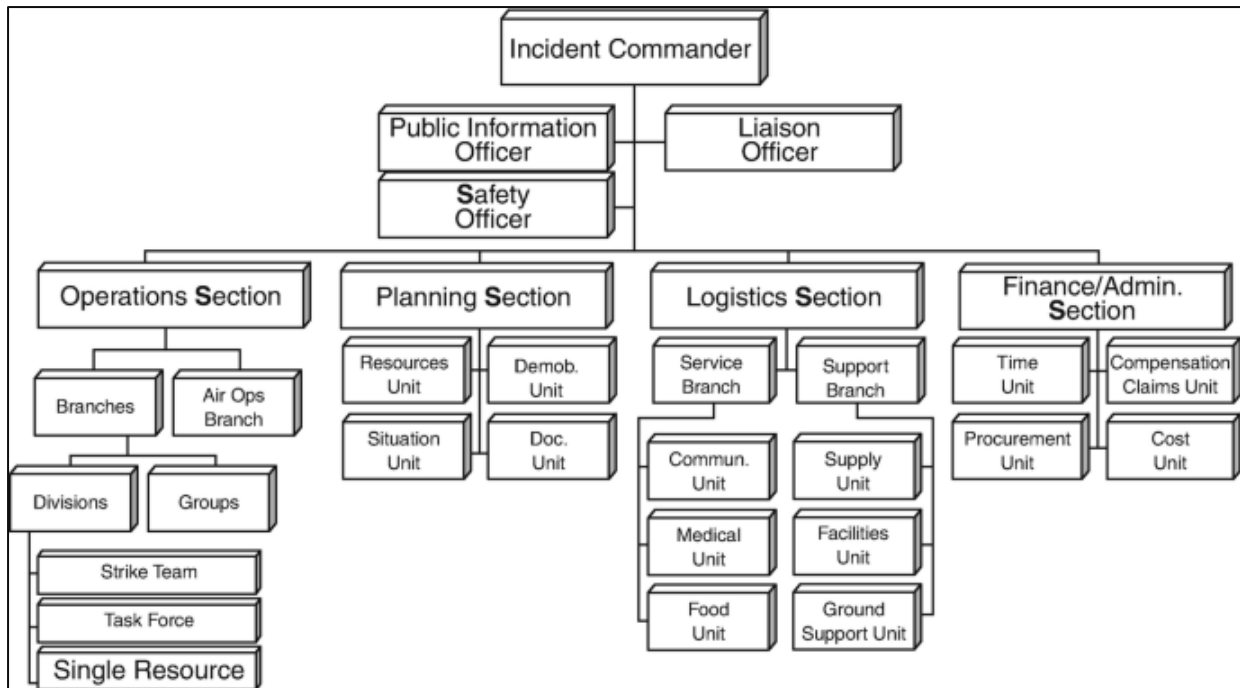


Figure 1: Incident Command Structure.

Specific Considerations in Mass Casualty Events

Immediate Triage

Strong triage systems are necessary because mass casualty scenarios frequently result in unavoidable human casualties. A consensus statement on disaster management techniques for incidents with high casualties was published in 2003 by the American College of Surgeons Committee on Trauma (ACS COT) [22]. The healthcare system may soon be overburdened as the number of casualties rises. Involving surgeons at all organizational levels—local, regional, state, and national—in disaster response planning is essential since many serious injuries necessitate surgical care. ACS COT offers international educational programs including Advanced Trauma Life Support (ATLS) and Rural Trauma Team Development Courses to improve readiness. These courses aim to educate hospital physicians in smaller systems with critical triage approaches. Emergency professionals who complete these courses will be better able to recognize system flaws, maximize available resources, and incorporate them into local networks. Furthermore, the Department of Homeland Security (DHS) created a community-based initiative called "You Are the Help Until Help Arrives," which teaches people five lifesaving behaviors: calling 911, making sure responders are safe, halting bleeding, strategically placing injured patients, and offering comfort until expert assistance arrives [23]. In the prehospital context, efficient triage is essential. Triage, which comes from the French word "to sort," is used in mass casualty situations to prioritize patient treatment according to the severity of injuries, the resources available, and the idea of "the greatest good for the greatest number" [24, 25]. Traditional triage methods, including Simple Triage and Rapid Treatment (START), use color-coded tags to put patients into four groups: walking wounded are marked with green tags, delayed care is marked with yellow tags, immediate care is marked with red tags, and patients who are anticipated to die from their injuries are marked with black tags. Such approaches, however, are not always able to adjust to changing circumstances, which could result in mistakes or delays.

Based on the SALT (Sort-Assess-Life-Saving Interventions-Triage) methodology, the Model Uniform Core Criteria (MUCC) suggests a global field triage standard [26-27]. SALT starts with global sorting, which uses the Walk-Wave-Still method to rank patients according to their capacity for following instructions. People who can walk on their own are considered low-priority (walking wounded), and those who can wave or carry out tasks are given secondary priority. Those who do not move are evaluated right away, and if necessary, life-saving measures such as chest decompression, airway management, or bleeding control are given [26]. Each patient is evaluated further to ascertain their treatment requirements after this initial classification. Patients who are not breathing are transferred to the anticipated collection point after being deemed unsalvageable. Depending on the severity of their injuries, breathing patients who move with purpose, have palpable pulses, and do not have a catastrophic hemorrhage are classified as either delayed or minimal. On the other hand, patients who display unclear symptoms, including irregular breathing, inaction, or bleeding, are classified as either imminent (likely to survive with timely intervention) or expectant (likely to survive notwithstanding intervention).

JumpSTART Triage Protocol:

Combining components of the START and SALT triage systems, the JumpSTART protocol is a pediatric-specific triage tool designed for mass casualty crises [28, 29]. Individual assessments come after an evaluation of ambulatory capacity. While non-ambulatory patients go through main triage, walking children are sent to a special location for secondary triage. Infants and toddlers are evaluated first in primary triage, then young children who are unable to walk on their own, and last, children who are being carried by adults. The JumpSTART approach assesses breathing while taking vital signs like pulse and respiratory rate into account, which sets it apart from adult triage. Unusual rates indicate a serious situation that has to be addressed right now. The assessment moves on to a mental status evaluation utilizing the AVPU scale (Alert, responsive to verbal, responsive to pain, unresponsive) if vital signs are normal. While normal AVPU results result in a delayed status, any abnormal findings cause prompt categorization. The airway is moved for reevaluation when breathing is absent. The patient is classified as immediate if breathing returns; if not, rescue breaths are given. If resuscitation is successful, the patient is immediately classified as dead; nevertheless, if there is no response and no pulse, the patient is classified as dead. Primary triage is quick, but it's still a dynamic procedure with regular reassessments that allow for status changes. Until every patient is given the proper care or is pronounced dead, secondary triage keeps going. Maintaining a precise record of patient progress through the system and recording interventions need rigorous patient surveillance.

Transportation in Disaster Scenarios:

There are two types of disaster scenarios: static and dynamic [26]. Patients can stay on-site until typical emergency services arrive because static occurrences, like auto accidents or industrial mishaps, have a known scope and duration. In these situations, traditional forms of transportation, such as ambulances, frequently work in conjunction with private automobiles, air travel, or other methods. Efficient patient transfers to secondary locations are ensured by clear communication, which is usually overseen by an Emergency Operations Center (EOC) or incident commander. Because they are always changing, dynamic events—such as active shooter scenarios, bombings, natural catastrophes, and CBRNE (Chemical, Biological, Radiological, Nuclear, and Explosives) incidents—present more difficulties. Patients are frequently forced to leave the scene in these situations, which results in ad hoc transportation to clinics and hospitals. Standard triage procedures may be disrupted by the ensuing mass confusion, requiring

emergency workers and healthcare institutions to be highly flexible and depart from established procedures.

Hospital-Based Triage:

Triage is mostly used in prehospital settings, but it is also used in hospital settings, when newly arrived casualties are further assessed to establish the order of operations and treatment priority. Following the operation, patients are assigned to the proper hospital units after being re-triaged according to their needs. Tertiary triage can often identify needs for escalation to advanced care, such as vascular repair for stabilized patients without access to specialized facilities. For the best care to be delivered on time, hospital-based triage procedures must continue to be adaptable.

Case Study: Sutherland Springs Incident:

A mass shooting at a rural church in Sutherland Springs, Texas, on November 5, 2017, left 25 people dead and 23 injured [30]. The small community's limited resources required quick coordination, which the EOC accomplished by allocating resources through the Incident Commander. There were two Level 1 trauma facilities in San Antonio that had vast capabilities but were an hour away by land, while the closest medical facility, a small community hospital, lacked significant capacity. Local and regional resources were deployed when scene security was confirmed. Critically injured patients were carried by helicopter units, while less serious cases were handled by ground transport. The EOC organized patient distribution to avoid overtaxing receiving facilities, and primary triage was carried out well. Trauma centers were able to quickly mobilize additional staff thanks to effective communication. Before being flown to a trauma center, a critically injured pediatric child with multiple gunshot wounds was stabilized at the closest facility using hemostatic measures and urgent transfusion. 22 of the 23 injured victims, including the pediatric sufferer, survived thanks to the coordinated response. Advancements including a prehospital whole blood resuscitation program and extensive Stop the Bleed® training were made possible by the lessons learned from this tragedy [31-32].

The Role of Healthcare Security Employees

Healthcare security employees play a critical role in maintaining a safe and secure environment within healthcare facilities. Their responsibilities extend beyond the typical functions of security personnel, encompassing a diverse array of duties aimed at protecting patients, staff, visitors, and sensitive medical information. As the healthcare industry faces increasingly complex challenges, such as rising incidences of workplace violence, data breaches, and emergency management scenarios, the role of healthcare security employees has become more essential than ever.

Ensuring Physical Security and Safety

One of the primary responsibilities of healthcare security employees is safeguarding the physical environment. Hospitals and clinics are open facilities with high traffic, making them vulnerable to various security threats. Security personnel monitor entry and exit points, patrol the premises, and enforce access control policies to prevent unauthorized entry. These measures deter potential offenders and ensure that only authorized individuals have access to restricted areas such as operating rooms, intensive care units, and medical records departments. Healthcare facilities often operate 24/7, requiring security employees to maintain vigilance at all times. Their presence serves as a visible deterrent against criminal activities, including theft, vandalism, and

violence. Security employees are also tasked with responding to emergencies, including active shooter incidents, bomb threats, or suspicious packages. Their ability to act swiftly and decisively in such scenarios can mitigate harm and ensure the safety of all individuals on the premises.

Addressing Workplace Violence

Workplace violence is a significant concern in the healthcare sector, with healthcare workers being at a higher risk compared to employees in many other industries. Security personnel play a pivotal role in addressing this issue by implementing prevention strategies and de-escalating potentially volatile situations. They are often the first responders to incidents involving aggressive patients, disgruntled visitors, or disputes between staff members. To manage workplace violence effectively, healthcare security employees collaborate with hospital administration to develop comprehensive policies and training programs. These initiatives include techniques for conflict resolution, recognizing warning signs of aggression, and employing non-violent crisis intervention methods. By fostering a secure environment, security personnel contribute to the well-being and productivity of healthcare staff, ultimately enhancing patient care quality.

Protecting Patient Privacy and Data Security

The digitization of healthcare records has introduced new challenges related to data security. Healthcare security employees are increasingly involved in protecting sensitive patient information from unauthorized access, theft, and cyberattacks. While cybersecurity experts handle technical aspects, physical security personnel ensure that computer terminals, servers, and other devices are physically secure. They enforce policies such as restricting access to areas where electronic health records (EHRs) are stored and ensuring compliance with regulations like the Health Insurance Portability and Accountability Act (HIPAA). Security personnel also monitor for insider threats, as breaches can occur through negligence or malicious actions by employees. Their vigilance helps maintain patient trust and safeguards healthcare institutions from reputational and financial harm resulting from data breaches.

Emergency Preparedness and Response

Healthcare facilities must be prepared to handle emergencies ranging from natural disasters to pandemics. Security employees are integral to emergency preparedness efforts, as they help develop, implement, and rehearse emergency response plans. These plans address evacuation procedures, lockdowns, and resource allocation during crises. In the event of an emergency, healthcare security personnel act as coordinators, facilitating communication between staff, first responders, and external agencies. For example, during a fire, they guide patients and visitors to safety while ensuring that critical care areas remain operational. Their training in emergency management allows them to respond effectively to unforeseen events, minimizing disruption to healthcare services.

Enhancing Visitor Management

Visitor management is another essential aspect of healthcare security. Security employees oversee visitor registration, issue identification badges, and enforce visitation policies. These measures are particularly critical in areas such as pediatric wards, maternity units, and mental health facilities, where patient vulnerability is heightened. In addition to ensuring physical safety, healthcare security employees provide directions, answer questions, and serve as a reassuring presence for visitors navigating complex healthcare environments. Their professional demeanor

helps create a welcoming yet secure atmosphere, balancing accessibility with the need for stringent security protocols.

Contributing to Risk Management

Healthcare security personnel collaborate with risk management teams to identify and mitigate potential security threats. By conducting regular risk assessments, they evaluate vulnerabilities within the facility and recommend improvements. These assessments cover physical infrastructure, surveillance systems, and staff compliance with security protocols. Security employees also play a role in incident reporting and investigation. Detailed documentation of security incidents provides valuable insights into trends and helps refine preventive measures. By addressing risks proactively, security personnel contribute to a safer environment for all stakeholders.

Training and Continuous Improvement

Ongoing training is essential for healthcare security employees to stay updated on best practices and emerging threats. Many institutions require their security personnel to undergo specialized training in healthcare-specific scenarios, including handling patients with mental health crises and managing large-scale events like protests or mass casualty incidents. Additionally, security employees participate in drills and simulations to enhance their preparedness for emergencies. Continuous professional development ensures that they remain competent and confident in their roles, enabling them to adapt to the ever-changing landscape of healthcare security.

Fostering a Culture of Safety

Beyond their immediate responsibilities, healthcare security employees contribute to fostering a culture of safety within healthcare organizations. Their collaboration with clinical and administrative teams emphasizes the importance of security as an integral component of healthcare delivery. By engaging with staff through safety briefings and educational sessions, security personnel encourage a collective commitment to maintaining a secure environment. Healthcare security employees are indispensable to the functioning of modern healthcare facilities. Their multifaceted role encompasses physical security, workplace violence prevention, data protection, emergency management, and visitor oversight. By addressing these diverse challenges, security personnel ensure a safe and supportive environment where healthcare professionals can focus on delivering quality care. The evolving threats in the healthcare landscape underscore the need for skilled and adaptable security employees who can anticipate and mitigate risks while upholding the highest standards of professionalism. Their contributions not only to safeguard lives but also enhance the operational resilience of healthcare institutions.

Conclusion:

Effective disaster risk management (DRM) in healthcare facilities is paramount to ensuring public safety and maintaining operational functionality during crises. This review underscores the transformative impact of globally recognized DRM frameworks, which have evolved to address vulnerabilities exposed by past disasters. Developed nations such as the U.S., Canada, Australia, and Japan have led these advancements, setting benchmarks in hospital accreditation and preparedness. For example, Japan's introduction of the National Disaster Medicine System after the 1995 Hanshin/Awaji earthquake significantly improved its healthcare response capabilities. KSA's efforts to incorporate DRM into hospital accreditation since 2010

reflect progress but also highlight areas requiring enhancement. Current measures, including crisis committees and staff training, provide a foundation; however, expanding these to include comprehensive disaster evaluations, Incident Command Systems (ICS), and community-centered mitigation plans is critical. The adoption of globally recognized triage protocols such as SALT and JumpSTART is particularly relevant in addressing mass casualty events effectively. These methodologies enable precise resource allocation, ensuring that the “greatest good for the greatest number” is achieved. Additionally, fostering preparedness through public awareness campaigns, drills, and scenario-based training for healthcare personnel can bridge existing gaps. Integrating transportation strategies that cater to dynamic disaster scenarios will further enhance healthcare resilience. Importantly, a continuous feedback loop, where lessons learned from disasters inform DRM updates, ensures adaptability to emerging challenges. KSA hospitals can achieve significant advancements by transitioning to a holistic DRM approach. This requires robust policy support, investment in infrastructure, and alignment with international standards. Such a shift will not only improve disaster readiness but also reinforce public trust in healthcare systems during emergencies. By embracing these recommendations, healthcare facilities can emerge as pivotal assets in disaster resilience, safeguarding both lives and societal stability.

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معايير المتكاملة لإدارة مخاطر الكوارث في المرافق الصحية: مراجعة محدثة

الملخص:

الخلفية: شكلت الكوارث دائماً تحديات على المستوى العالمي، مصحوبة بآثار اجتماعية واقتصادية وصحية كبيرة. تلعب المرافق الصحية دوراً محورياً في إدارة مخاطر الكوارث (DRM)، ومع ذلك، تفتقر العديد من المستشفيات، لا سيما في الدول النامية مثل المملكة العربية السعودية (KSA)، إلى الاستعداد الكافي بسبب نقص المعايير المتعلقة بإدارة مخاطر الكوارث.

الهدف: تهدف هذه الدراسة إلى مراجعة المعايير المتكاملة لإدارة مخاطر الكوارث المصممة خصيصاً للمرافق الصحية، مع التركيز على مواءمة مستشفيات المملكة العربية السعودية مع المعايير العالمية لتحسين جاهزيتها للكوارث.

الطرق: قامت المراجعة بتحليل أطر العمل والمعايير الدولية لإدارة مخاطر الكوارث في الولايات المتحدة، وكندا، وأستراليا، واليابان. تناولت الدراسة مراحل إدارة الكوارث مثل الوقاية، التخفيف، الاستعداد، الاستجابة، والتعافي، كما قيمت تقدم المملكة العربية السعودية في تنفيذ هذه المعايير منذ عام 2010. استكشفت المراجعة أيضاً مكونات رئيسية مثل نظام قيادة الحوادث (ICS) وبروتوكولات الفرز ونقل المرضى في سيناريوهات الكوارث.

النتائج: أظهرت النتائج أن المعايير الدولية لإدارة مخاطر الكوارث قد حسنت بشكل كبير جاهزية المستشفيات. تضمنت الأمثلة استجابة اليابان الشاملة بعد زلزال هانشين/أواجي عام 1995 والتحديثات التي طرأت على معايير اعتماد المستشفيات في الولايات المتحدة وكندا وأستراليا بعد الكوارث الكبرى. حققت المملكة العربية السعودية تقدماً في إدارة مخاطر الكوارث من خلال دمج لجان الأزمات، تدريب الموظفين، وإجراء التدريبات السنوية، لكنها لا تزال متأخرة في اعتماد نهج شامل لإدارة مخاطر الكوارث ودمج نظام قيادة الحوادث. وتم تحديد بروتوكولات الفرز المتقدمة مثل SALT و JumpSTART واستراتيجيات النقل الديناميكية كعناصر أساسية للتعامل مع حالات الإصابات الجماعية.

الخلاصة: يعد تحسين معايير إدارة مخاطر الكوارث أمراً ضرورياً لضمان كفاءة العمليات في المرافق الصحية أثناء الكوارث. يمكن أن تُحسن الأطر الشاملة ونظام قيادة الحوادث وبروتوكولات الفرز المتقدمة جاهزية المستشفيات بشكل كبير. تحتاج مستشفيات المملكة العربية السعودية إلى توسيع معايير الاعتماد للانتقال من الإدارة التقليدية للكوارث إلى ممارسات إدارة مخاطر الكوارث المتكاملة.

الكلمات المفتاحية: إدارة مخاطر الكوارث، المرافق الصحية، اعتماد المستشفيات، نظام قيادة الحوادث، بروتوكولات الفرز، مستشفيات المملكة العربية السعودية، الاستعداد للكوارث.