Hospital EOP

**Abstract**

King Fahad Hospital Madinah is one of the most crucial hospitals in Saudi Arabia. This project reviews the emergency operations plan of the hospital, does a hazard vulnerability analysis, and a tabletop exercise. Although the hospital already has an EOP, it is difficult to determine the quality of planning and process, given the ever-changing nature of disasters and emergencies. Thus, an evaluation is mandatory to assess these factors and make recommendations to ensure emergency preparedness at King Fahad Hospital is excellent. The study will consist of a literature review on all three dimensions of emergency preparedness. The methods the study employs include a threat and hazard assessment, and a tabletop exercise to review best planning practices, principles as well as weaknesses of King Fahad Hospital’s EOP.

**Reviewing the EOP for King Fahad Hospital**

Emergency preparedness is a crucial component and should be a priority in the facility management plan of every healthcare organization. This explains why The Joint Commission has set an emergency operations plan and its annual review as mandatory requirements for hospitals it accredits. Communication, resources and assets, safety and security, staff responsibilities, utility management, patient and clinical support activities, and regular testing and evaluation are the seven primary components of emergency operations plan in a hospital setting.

King Fahad Hospital in Madinah, being one of the largest hospitals in Saudi Arabia, has a functioning emergency operations plan. However, the effectiveness of the hospital's EOP is subject to review, which will be the main focus of this study. Crises, emergencies, and disasters, can be financially imposing, strenuous, and chaotic to organizations, including hospitals. Thus, having an EOP alone without conducting regular reviews is inadequate in curbing disasters in case of an occurrence. Consequently, the hospital’s EOP could be a compliance mechanism to the guidelines of The Joint Commission hence calling for the need for a review.

King Fahad Hospital’s current EOP is quite comprehensive. It consists of both an internal and an external disaster plan with clear definitions of what qualifies as a disaster in each of the categories, the purpose of having the plan, hazard vulnerability analysis, preparedness, communication, procedures, disaster response, staffing, and equipment. Therefore, the hospital’s emergency response plan addresses most of the key areas of EOP that ensure efficient preparations, response, and mitigation of emergencies or disasters.

Nevertheless, it is still difficult to conclude that the EOP of King Fahad Hospital rests on the three building blocks of preparedness, which are identification, review, and verification. Establishing the process of preparedness remains a challenge unless all the three aspects are in motion. Thus, determining whether King Fahad Hospital’s EOP complies with all these three elements by reviewing it, doing a hazard vulnerability analysis, and a tabletop exercise is the primary purpose of this project.

**Need for the Study**

An emergency operations plan is a requirement for any hospital since it outlines the facility’s course of action in responding to and recovering from potential hazards. The all-hazards approach is inclusive of the seven critical elements as prescribed by The Joint Commission’s Emergency Management Standards. As already mentioned, the critical components of an efficient EOP include communication, resources and assets, safety and security, staff responsibilities, utilities, clinical support activities, and regular testing and evaluation practices.

In other words, an EOP acts as a manual that provides the structure and processes of disaster preparedness and response that helps an organization respond to and recover from various types of hazards (Fulmer, 2015). It assures facilities the ability to respond to a range of emergencies with varying causes, duration, and scale. At the same time, the EOP of an organization, especially a healthcare facility such as King Fahad Hospital, should address response, procedures, and capabilities in the absence of community support. In simple terms, an EOP is the critical response and recovery component of an organization’s emergency management program (EMP).

King Fahad Hospital’s EOP has addressed all of the key elements of EOP as required by The Joint Commission’s Emergency Management Standards. This means that the hospital already recognizes that certain incidents that may impact or disrupt routine operations and requires efficient emergency may occur (Fulmer, 2015). The components of the hospital’s EOP are sufficient evidence of its awareness of such possibilities and are armed to respond and recover from various kinds of emergencies. The EOP consists of an outline of response strategies, including coordination between departments in readiness for a listed number of emergencies.

King Fahad Hospital's EOP, therefore, requires an evaluation and assessment to identify areas that need improvement or a complete overhaul. Thus, it is an excellent subject for this review, as the findings will be useful in designing more strategies to strengthen its emergency response mechanisms (Fulmer, 2015). An evaluation of the EOP through a review, hence, is a strategy of determining the effectiveness of the EOP, which in this case is that of King Fahad Hospital. Lastly, the review of King Fahad Hospital, an analysis of hazard vulnerability, and evaluation through tabletop exercises will reveal its best practices and principles. After that, other healthcare facilities can also adopt it in preparing and responding to emergencies and disasters.

Simply, conducting a review on King Fahad Hospital’s EOP, doing a hazard vulnerability analysis, and a tabletop exercise, which are the main objectives of this study, will have several benefits. For instance, it will enhance the implementation and enforcement of the plan, provide a management tool to support the revision of procedures, and reveal both weaknesses and strengths of the current practices (Fulmer, 2015). After that, the findings will play a critical role in the training and simulation of events within the hospital by ensuring that the responsible person understands what is required of them in mitigating various emergency situations.

Consequently, given the financial strain that emergencies impose on hospitals or any other organization, the findings of this study will assist in effective resource allocation for potential hazards that King Fahad hospital may encounter. This is because the outcomes will impact every dimension of the EOP and encourage improved coordination between the staff and the system, operations improvement, technology acquisition, and identification of opportunities for preparedness enhancements.

**Literature Review**

Emergency preparedness requires a continual sequence of analysis. Thus, the existence of an EOP within an organization is not an adequate measure of disaster preparedness (Kapucu & Hu, 2016). Organizations need to recognize variables such as the changing nature of threats as well as operational consolidation and growth for them to respond effectively to emergencies. In simple terms, organizations should routinely identify and analyze relevant risks and threats and incorporate them into their preparedness plan for it to be considered up-to-date, compliant, and practical. Thus, this section is going to be a review of literature on the importance of reviewing EOPs, conducting a hazard vulnerability analysis, and a tabletop exercise.

**Review of EOP**

Every practical and effective emergency operations plan should address seven elements (Kapucu & Hu, 2016). Regarding the communication factor, an organization’s EOP ought to outline key internal and external emergency response details of communication. Issues such as who will be responsible for the development and sharing of information with the relevant internal authorities, and who will be involved in the communication command center need to be addressed. Externally, the plan should outline effective communication strategies with external sources such as other emergency response agencies and stakeholders.

The second key area that an effective EOP should address is resources and assets. Enumeration of the available emergency response resources and assets is a significant component of an EOP. It helps the facility know their limits and have an alternative for when the resources run short. Also, The Joint Commission recommends that any hospital facility includes in its EOP emergency resources such as supplies for effective mitigation of potential hazards. Therefore, reviewing an EOP should involve checking whether the plan has outlined the available emergency response resources and how relevant these resources are to the changing nature of hazards.

Safety and security is also an important element of an emergency operations plan. An efficient EOP of a hospital, for instance, should outline safety and security procedures for both patients and other involved personnel in the event of an emergency (Shah et al., 2016). The hospital should acknowledge within its EOP security measures such as the management of hazardous materials and waste, coordination with other relevant security agencies, and evacuation processes if necessary. This helps the hospital or organization avoid the exacerbation of the situation that could lead to more casualties.

According to Lock et al. (2016), staff responsibilities are another element that an EOP should have and whose review should occur more frequently. This is due to the ever-changing nature of hazards, which calls for the assignment of roles that fit the expertise of personnel. The specificity of roles in the occurrence of an emergency and inclusion in the EOP improves an organization’s emergency response. Having an effective chain of command ensures effective communication and, in turn, response to emergencies (Kapucu & Hu, 2016). The individual responsibilities in this area should be subject to constant review to ensure that emergency personnel are conversant with their responsibilities, the use of available assets and resources as well as communication techniques.

Another key area is utility management. In the event of an emergency, a facility such as a hospital should have in its EOP details of how the flow of its utilities will continue. Utilities such as medical gas and fuel, water, and electricity are critical in a hospital setting. Hence, the facility ought to ensure that the plan has a way of providing them undisrupted, especially in the case of an emergency. A review of an EOP, therefore, is to make sure that strategies of continuity of operations are in place (Lock et al., 2016). For example, the labeling of systems and valves is a crucial component of utility management with regard to emergency planning. An EOP review should aim at ensuring that the labels indicated in the response plan align with the exact tags.

The patient and clinical support activities are only an essential element of EOP in a healthcare facility setting. Regardless of the nature of an emergency, the response mechanism should ensure continual care for patients. According to Lock et al. (2016), the plan should include appropriate reactions to crises in a way that clinical services continue undisturbed. Therefore, the EOP should have a projection of a hazard’s level of impact on the facility as well as its patient care and treatment services. Basically, the patient and clinical support activities element are designed to help a hospital or medical care facility design patient care alternatives in case of a hazard or emergency.

Regular testing and evaluation is the last critical factor that an EOP should have and review regularly. Regular testing and evaluation of communication strategies, resources and assets, safety and security measures, staff responsibilities, utility management, and patient and clinical support activities should be mandatory (Lock et al., 2016). This is because it is the only avenue of knowing whether the facility’s EOP is practical and useful. Regular testing and evaluation of an EOP, especially of a hospital, should be as frequent as twice a year given that hospitals are primary emergency response organizations.

Emergency preparedness does not end with a complete EOP that checks all of the seven necessary elements. Organizations, in this case, hospitals, should move ahead and develop site-specific response plans that identify risks, threats, and preparedness needs for each particular hazardous event (Shah et al., 2016). In other words, the hospital should review its EOP at least twice a year for effective and accurate responses to newly identified risk variables.

The review processes should consider operational requirements, response objectives, best practices and principles, mitigation opportunities, and response procedures that are necessary for efficient handling of emergencies (Shah et al., 2016). Therefore, EOP reviews include but are not limited to data and computer needs, notification lists, communication needs, supply chain, essential personnel, and equipment needs as prescribed by The Joint Commission.

Effective EOP reviews also involve debriefings of all the collaborative response entities. During the meetings, the responsible personnel should confirm specific response and plan details with the rest of the response team, particularly outside responders, for compliance and consistency of the emergency operations plan with the hospital’s protocol and best practices. Some of the parties to include in an EOP review are local responders who may be emergency services, police, and the fire department. Government agencies like emergency management offices are also crucial for review segments (Shah et al., 2016).

Community organizations such as weather services and the Red Cross also play a vital role in disaster response thus should be a part of a hospital’s EOP reviews. Utility companies such as gas, public works, and telephone service companies should be present to represent the review of the utility management section of an EOP (Shah et al., 2016). Other parties that could be relevant to EOP reviews are contracted emergency responders and neighboring businesses such as hospitals to which patients could be transferred depending on the magnitude of the hazard.

After the debriefing segment of an emergency operations plan, what should follow is its effectiveness and accuracy verification. The most appropriate strategy for the verification process and testing of an EOP’s readiness is training and exercise (Lock et al., 2018). This technique is the most valuable tool for confirming preparedness efforts and effective response planning.

Some of the activities in the verification process include but are not limited to the development of an emergency assessment system and prioritizing scenarios for incidents. Also, procedures and thresholds for activating the crisis management or incident management team should undergo verification (Lock et al., 2018). The verification of notification information is also mandatory to determine the best communication techniques as well as the potential challenges that the response communication team may encounter. Still, on communication, the verification of the effectiveness and accuracy of the notification procedures also facilitates interactions among the incident management team and the rest of the responders (Lock et al., 2018).

Training and exercise also enable verification and testing of the accuracy of roles and responsibilities assigned to the responsible staff. As Liu et al. (2018) state, verifying checklists and guidelines of an EOP is necessary to assist organized and efficient response during emergency situations. The last factor to check in determining the accuracy and effectiveness of an EOP is on-site response times, response equipment, and hazardous materials.

The process of reviewing a facility’s emergency operations plan should be in-depth and objective. This is because it is the only way to measure the effectiveness and accuracy of its details with regard to emergency response (Liu et al., 2018). However, tools and technology such as web-based emergency response planning systems are readily available to assist with most of the processes (Liu et al., 2018). Thus, it is easy to determine site-specific regulatory criteria and enterprise-wide standardization of an EOP.

**Hazard Vulnerability Analysis (HVA)**

A hazard vulnerability analysis (HVA) refers to a systematic approach of identifying risks or hazards that are likely to occur and have an impact on the operations of the facility. Conducting an HVA assessment helps hospitals prioritize their planning efforts by focusing on the most prevalent hazards (Baybutt, 2017). As is the norm in the digital world, multiple tools and technological resources are available to assist with this process. Just like an emergency operations plan, a hazard vulnerability analysis is also subject to regular review for accuracy and effectiveness of hazard projection.

Baybutt (2017) states that facilities mostly rely on experts from outside agencies or institutions to conduct HVA for them. This is because the institutions gather and store large amounts of data on hazards and their magnitude. As a result, the institutions have an additional context for the assessment of potential hazards due to the possession of both qualitative and quantitative probability and impact data based on actual events and risk assessment of a given geographical area. Such institutions include state agencies and jurisdictional emergency management agencies, among others. The institutions provide valuable data that is vital to the designation of input and resources for emergency preparedness and response.

Designing an effective and accurate emergency response plan is almost impossible without first conducting a hazard vulnerability assessment. This is particularly true in the case of hospitals because the occurrence of a hazard, whether natural or caused by human activities, can have an enormous direct or indirect impact on their operations (Du et al., 2015). An HVA, therefore, provides hospitals with a basis for determining the precise demands and standards of emergency resources and services that could effectively mitigate a hazard. In simple terms, an HVA is the foundation of the development of a coordinated disaster response plan irrespective of the context.

According to the provisions of The Joint Commission, hospitals are required to develop event-specific response and mitigation plans for identified top three to five hazards within their geographical location. However, this identification can only be successful when the hospital conducts a hazard vulnerability analysis. After the development of a response plan based on an HVA, the hospitals should emphasize training and exercises of the relevant personnel around the identified hazards.

Hospitals should not conduct a hazard vulnerability assessment independently. Counties, cities, and communities also do their HVAs, which hospitals ought to be a part of because of the potential impact of the identified hazards by the institutions on their operations. This is due to the fact that victims or casualties of hazards always end up in hospitals despite the existence of other emergency response agencies (Borron, 2015). Hence, there needs to be a coordinated and collaborative analysis of hazard vulnerability between the hospital and outside institutions or agencies for the development of efficient EOP.

Kaiser Permanente is widely documented as the most effective tool for conducting HVA. KP comes with an instructions sheet that assists the planning process of an emergency response plan. This tool is readily available for download for organizations or individuals for purposes of hazard assessment (Waters, 2017). Thus, organizations can prioritize risks based on actual incident information identified through the Kaiser Permanente hazard analysis tool.

Other tools for HVA also exist, such as the threat and hazard identification and risks assessment (THIRA) and stakeholder preparedness review (SPR) guide. The combination of THIRA and SPR is a model that is more community-based but incorporates healthcare facilities as well. It is an advanced version of a comprehensive preparedness guide (CPG) with a three-step process of identifying and analyzing threats and hazards (Pine, 2017). The steps include identifying community-specific hazards and threats through an explained standard process. Next is setting capability targets for identified key core capabilities. The third step is estimating the required resources that can meet the capability targets. These steps are often incorporated with SPR’s three-step process due to their interconnectedness. Therefore, through THIRA and SPR, hospitals need to ensure their input uses accurate numerics (Borron, 2015).

**Tabletop Exercise (TTX)**

A tabletop exercise refers to a meeting of critical emergency response personnel to discuss or handle simulated emergency situations in a non-threatening environment. Emergency personnel practice their roles and responsibilities and review their actions in a hypothetical emergency scenario. Thus, a tabletop exercise is an excellent way of clarifying roles and responsibilities in disaster preparedness as well as identifying new mechanisms of mitigating emergency needs (Skryabina et al., 2017). Consequently, a TTX is part of an EOP review as it defines the strengths and weaknesses of the emergency plan. Hence, hospitals should do tabletop exercises on a regular basis.

Since a TTX does not always take place in a threatening or harsh environment, responsible personnel with emergency management roles always rehearse their duties, troubleshoot problem areas, and ask questions as a way of polishing the emergency response plan (Skryabina et al., 2017). A TTX could occur in a variety of ways, including walkthroughs and orientation seminars or workshops, functional exercises, full-scale exercises, or tabletop exercises.

 During a walkthrough exercise, emergency response personnel are taken through plans of continuity of operations and the different ways of responding in the event of a hazard. A walkthrough, therefore, familiarizes the emergency response team members with their roles and responsibilities in preparation for potential hazards (Pate et al., 2016). Also, walkthrough exercises provide ample opportunities to make every involved emergency response personnel understand the communication process. This type of TTX is considered an effective hazard response exercise because the calm environment improves the personnel’s ability to grasp their preparedness roles.

Full-scale exercises are common among healthcare organizations, municipal government workers, and the military. Just like the name suggests, this is a vigorous exercise where situations are simulated to resemble real emergency scenarios (Dausey et al., 2017). During the training, law enforcement agencies, local businesses, and all the relevant stakeholders are often notified and given roles to play. Thus, it is an effective exercise that familiarizes emergency preparedness personnel with every possible situation in a disaster setting.

A tabletop exercise is also another individual exercise of the wider TTX. In this type of exercise, team members get together and hold discussions on how to react in various situations and their roles during an emergency as well. A tabletop exercise is not very different from a walkthrough exercise only that the latter mostly requires a facilitator and takes longer because of engaging in action plans (Chandra et al., 2015). Tabletop exercises, on the other hand, can be completed in a few hours, depending on the objectives.

The primary objective of a TTX is to let the participants, who are mostly emergency response personnel, understand what is expected of them in hazardous scenarios. However, the exercises always include the participants, a facilitator, an evaluator, and an observer. The participants are the main subjects of the exercise. Hence, they are expected to be proactive during the entire process (Dausey et al., 2017).

Facilitators act as moderators by controlling the flow and pace of the exercise. They ensure the smooth running of the exercise and are tasked with drawing out solutions from the process. Evaluators are more like observers, but they have the role of reporting the strengths and weaknesses of the emergency response plan and areas that need improvement (Dausey et al., 2017). Lastly, involving observers is always optional. Their role is to provide feedback or ask questions on areas they see as loopholes to the entire response plan.

TTX is a method of evaluating the accuracy and effectiveness of an emergency operations plan. Thus, it has its strengths and weaknesses in assessing a facility’s EOP. The first advantage of a TTX is that it is a low-cost but effective technique of assessing emergency roles, responses, resources, and the overall plan in a stress-free environment (Pate et al., 2016). Due to the calmness of the situation during a TTX, it becomes easy to work out issues collaboratively, which is another strength.

On the cons of TTX, lack of urgency during the exercise can give the emergency personnel a false impression of what real emergencies look like. Therefore, the personnel may experience challenges during actual emergency operations. Consequently, using hypothetical situations during a TTX may lull the participants into assuming emergency response, and planning is a simple task (Joplin et al., 2018). Hence, obstacles during real emergency situations may deter them from effectively handling their roles. Lastly, a TTX may lead participants to overlook various aspects of emergency response, such as resource strain. This may lead to inefficiencies during actual emergencies.

**Methodology**

Evaluating the effectiveness of King Fahad Hospital’s EOP is one of the primary objectives of this project. Therefore, the appropriate methods for accomplishing this task will be to do an HVA and a TTX on the emergency operations plan of the hospital. During the HVA process, the project will use the Kaiser Permanente hazard vulnerability analysis method to assess potential emergencies that will impact the demand for King Fahad Hospital services as well as its ability to issue those services.

This method will go hand in hand with THIRA (threat and hazard identification and risk management), which is mostly combined with SPR (stakeholder preparedness review) guide and used as one approach. The THIRA and SPR guide is more community-based; hence, it will help in the reviewing and assessment of community-specific threats and the setting of targets with regard to the hospital’s resource capabilities.

 Further, the hazard vulnerability analysis process will be compared to the hazards identified in King Fahad Hospital’s EOP to determine the relevance of the EOP and make amendments where necessary. The use of both Kaiser Permanente’s HVA tool and a combination of THIRA and SPR guide, thus, will ensure the hospital’s EOP covers all bases both internally and externally in terms of emergency preparedness (Chandra et al., 2015). Also, it will assist the hospital in knowing the relevant potential emergency response partners for different types of hazards.

The other method that the project will use is the use of a TTX to verify the effectiveness and accuracy of King Fahad Hospital’s EOP. The TTX will determine the expectations of the emergency response personnel by involving a facilitator, an evaluator, and observers. The main goal of using a TTX will be to identify the strengths of the EOP as well as areas that need improvement, develop an after-action report, and to help policymakers within the hospital evaluate their EOP plans and procedures (Chandra et al., 2015).

The TTX will include various types of exercises such as walkthroughs, functional, full-scale, and tabletop exercises so that every responsible emergency personnel can take part in the review of the EOP. This will be effective in ensuring they understand their roles, the hospital knows its resource limits, and all the stakeholders, both internal and external, understand the communication process of the emergency response plan.

The two methods will lead to a successful EOP review for King Fahad Hospital. This is because a hazard vulnerability analysis presents the foundation of all emergency operations plans, whereas tabletop exercises help in the identification of weak areas leading to necessary modifications. All the review processes will be done against the hospital’s current EOP for ease of identification of loopholes and modifications. Also, both methods will ensure every emergency response personnel included in the King Fahad Hospital EOP participates.

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