

**STUDY OF RISK MATRIX AND FORMULATION OF
EFFECTIVE RESTORATION METHODS IN HOSPITAL
SECTOR**

Final Year Project Report

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ABSTRACT

Considering the accidents happened in the recent past in the hospital sector in India, it points out, for the need for extensive studies in the risk management in the facilities. The number of the affected community in most of the cases is the patients. The risk matrix should consider the least to the most possible risks which are connected with the services offered in the hospital sector. Unlike most of the developed countries where the health standards are very high, India has a sector which has a great population as the service beneficiary. Indian healthcare industry is growing at a rapid pace. The lack of timely monitoring and up gradation of the essential services also makes the situation worse. This enables the hospital to have a procedural response to both internal and external disaster situations. Unidentified risks in this sector may end up in the loss of life of those who are the receivers of the services.

The identified risks should be prioritized by using the risk matrix. And therefore find the effective restoration methods that could cure the wounds and avoid the further accidents. This literature also suggests the possible potential type of exposures in the Indian scenario. As a scope for improvement, the need for a network as well as a resource sharing pool for the hospitals is also commended. The tools like making up a composite patient safety score that provides patients, health care providers, and health care purchasers with a standardized method to assess patient safety in general acute care hospitals will gain out the needful.

Keywords :- *Hospital Safety, Business Continuity Plan, Risk Assessment, Health, Safety, Risk Matrix*

CHAPTER 1

INTRODUCTION

1.1 General

The purpose of the Business Continuity Plan (BCP) is to promote persistence and rapid retrieval of critical services or functions involved to sustain the core concern of the Health Service. It is a continuous improvement process of finding and keeping Business Continuity Plans and other criteria in order to respond to and recover from disruptions that threaten key resources, fixes and roles. Major disruptions can come up from both dramatic crises and from the escalation of routine management and business failures within an organization, and poor decision making.

Business continuity is an all-encompassing term which addresses organizational recovery following a calamity. It assumes that prevention arrangements have broken and that an incident has taken place which has interrupted normal business to the extent that corrective action is taken. It aspires to offer the availability of processes and resources in order to assure the continued achievement of wellness inspection and repairs.

As the country with the second largest population in the world, India's healthcare sector is one of the biggest in the world. The extend of services provided by this sector have a big population as direct and indirect beneficiaries. Due to its growing coverage, services and increasing investment by public as well private players the Indian healthcare industry is growing at a rapid pace. On the other side of the coin, this sector is highly prone to hazards both man made and nature's act. In the recent past, several unfortunate incidents happened in India attracts specialists in the concerned fields like the disaster management authorities towards the fabrication of various plans in order to stitch the flaws as well as to avoid future accidents. Such studies throw light to the need for Business Continuity Plans which enables the system to experience a detailed risk assessment of the various services and to find effective restoration methods in case if any of the services did not do what it is said to serve. This enables the hospital to have a procedural response to both internal and external disaster situations. Unidentified risks in this sector may end up in the loss of life of those who are the receivers of the services.

The identified risks should be prioritized by using the risk matrix. And therefore find the effective restoration methods that could cure the damages and avoids the further accidents.

1.2 Business Continuity Plan

The need for business continuity planning has grown rapidly in the 21st century, driven by both the regulatory compliance requirements and the stakeholders' demands. Requirements for business continuity suggest that organizations review plans and test results of those which they deem critical to their operational process. The objective is to minimize the disruptions in business in order to maintain high trust and confidence in the organization. Management should proactively incorporate business continuity considerations into the overall design of its business model to mitigate the risk of service disruptions.

In today's fast-paced, volatile business climate, organizations cannot risk having outdated, incomplete, or inefficient plans. They need to automate the plan building and maintenance processes. For this reason, many organizations are searching for a planning tool developed to meet specific needs and regulatory requirements.

The business continuity plan (BCP) should identify actions that organizations should take to minimize the adverse effects of potential disasters. Specifically, the organization's BCP should include a preventive program that supports a documented BCP strategy, a comprehensive BCP framework, a testing program, and an oversight program to ensure that the plan is reviewed and updated regularly. Most organizations implement a phased methodology to analyze potential areas of vulnerability, define viable strategies, and implement business continuity plans.

- **Phase 1 - Initiation:** In phase one, an organization sets to the fullest extent practicable.” forth the overall goal for the BCP effort - validating the scope of the plan, and taking an inventory of the processes or business units needed for the project. It identifies key stakeholders in the process including executive sponsors, steering committee, and any other subject matter experts. This phase sets the parameters, and trains the team in the project objectives and methodology.
- **Phase 2 - Business Impact Analysis and Risk Assessment:** The business impact analysis is the next step in creating a business continuity plan. This part of the process serves as the foundation of any viable recovery planning effort. It includes all the critical

business functions and processes, along with their potential threats. Here risks are identified, prioritized, and managed; the various single points of failure for the business including external dependencies are identified; and the overall business impact of these risks and SPOF are calculated. Recovery Time Objectives, Recovery Point Objectives and Recovery Communication Objectives are also identified for each critical business process.

- **Phase 3 - Strategy Development:** Leveraging the information from the BIA and risk assessment, organizations determine which business functions are “core” or “mission-critical” and determine a strategy to manage the risks identified in the risk assessment process (address, mitigate, or accept). The critical time frames and impacts from the BIA are used to determine which contingency strategies are viable. The strategy alternatives must satisfy the BIA for both cost effectiveness and response times. The planners usually present three to four alternatives to management with the most cost effective alternative as the recommendation.
- **Phase 4 - Business Continuity Plan Development:** On the basis of phases I, II and III, the Business Continuity plan is created. Being the main deliverable of the project, the BC plan includes department level DR plans, external supplier response plans, and the like. The BC Plan is updated regularly. The primary components of the BCP include, but are not limited to:
 - Communication/ Coordination Plan: Communication is the key in any crisis. The Communication and Coordination plan establishes the communication channels to be used during the execution of a BCP; determines a chain of command for coordination of the BC effort; defines authorized media contacts; and includes notification procedures for key suppliers, vendors and clients.
 - Emergency Response Plan: The Emergency Response Plan specifies responses to the emergency situations, which are defined as risks that pose a danger to life, property, or the environment. This includes Emergency Notification tools like Email, Phone, SMS, FAX or Pager.
- **Phase 5 - Business Continuity Plan Testing:** In a quest to know whether their BCP is viable and usable, planners conduct thorough functional testing of their mission-critical

applications and personnel to verify that all business processes work as expected. Plan testing is a regulatory requirement as well. It defines the methodology used to test the BCP, deciding on “how often do we test?”, “how much do we test?”, and “how do we judge the success or failure of the test?”. Once the test methodology is decided upon, business continuity plan is tested as an iterative task, at least twice annually.

- **Phase 6 - Plan Maintenance:** An outdated plan is as good as no plan. Most organizations strive to keep their Business Continuity Plans up to date with the latest and most efficient recovery processes. Elements regarding Recovery time objectives, Recovery Point Objectives, are evaluated and included in the plan. Testing and managing of the recovery strategy is kept consistent with the latest changes to the enterprise. Education is ongoing to maintain awareness of responsibilities when an emergency strikes.

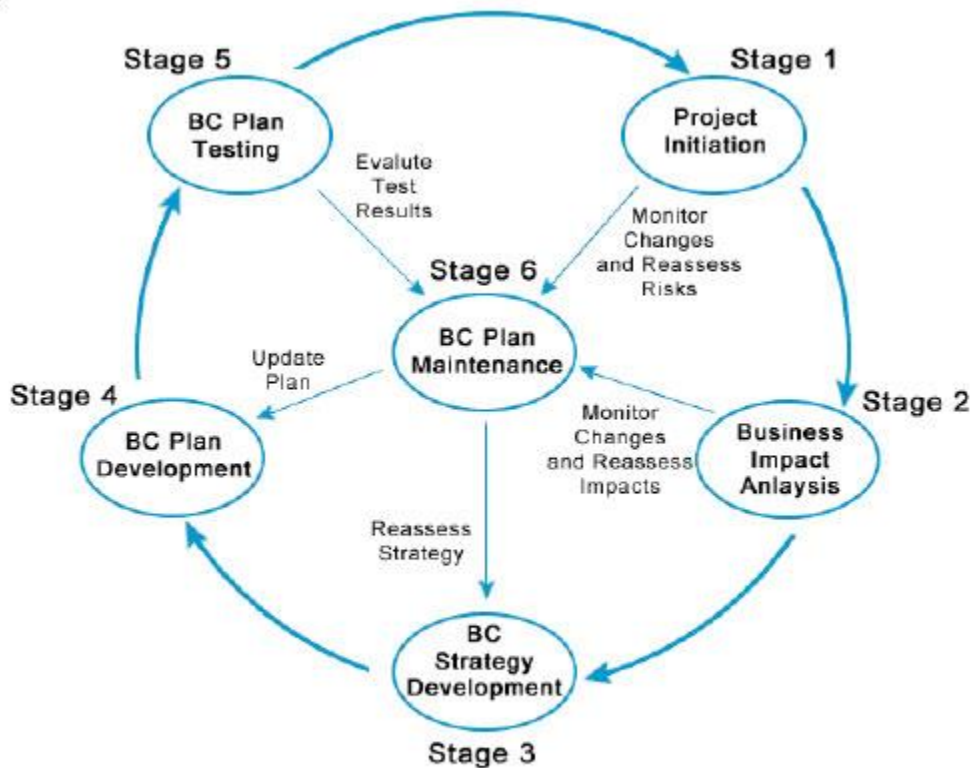


Figure 1: Phases of BCP Process

Business Continuity Management is an ongoing process with several different but complementary elements mentioned below:

- **Risk Mitigation Plan:** Organizations, today, are taking a comprehensive and methodical approach to risk mitigation to ensure their business continuity. By developing, implementing and testing risk mitigation strategies, they provide their business with a level of resiliency and operational insurance which positions their business to continue, perform and succeed against unexpected threats. A viable Business Continuity plan involves a detailed plan for risk identification, prioritization, monitoring, and mitigation as a part of project planning. It covers all business units, verticals, service offerings, support groups and subsidiaries; and offer a deeper, more diverse, and quantified feedback on risks. This enables organizations to address the actual and the potential risk events in a systematic manner.
- **Business Continuity Plan:** The value of a business continuity plan can never be exaggerated. Business Continuity plan is one of the pillars in the overall framework of Project Business Continuity Management. Organization should develop a comprehensive BCP based on the size and complexity of the institution. The goal of the BCP should be to minimize losses to the institution, serve customers with minimal disruptions, and mitigate the negative effects of disruptions on business operations.
- **Pandemic Plan:** BCP planning cannot be restricted only to breakdown of critical operations and controls. Business can also get hampered in the event of a pandemic, which leads to human-resource disruption. An absence of staff can result in stalling of key functionalities which are important to keep an organization functional. It thus becomes important to prepare your company for organizational downtime during the health crisis; by considering the risk of pandemic outbreak while planning for business continuity.
- **Contingency Plan:** The key to attain and sustain success is by being prepared for the unexpected. Contingency planning is thus imperative for every organization so that they can have advance plans and strategies ready, to effectively handle unexpected problems, emergencies and catastrophic events. This is an important component of BCP which ensures the continuity and survival of a business - by devising a series of actions that can prevent the disruption of critical business functions.

- **Business Recovery:** BCM aims at devising plans which keep businesses operational despite all odds. Business Recovery forms one of the most crucial aspects of BCP as the efficiency of an organization depends on its effective business recovery plans which can restore critical business functions and data within acceptable time frame. Depending on the defined recovery strategies, Business Recovery can include temporary manual processing, recovery and operation on an alternate system, or relocation and recovery at an alternate site. Whatever be the mode of recovery, Business Recovery needs to look at various aspects like cost, allowable outage time, and a secure and fast restoration and resumption of business operations.
- **Audits:** Examining the business continuity process's readiness; reviewing the documented plans for adequacy and completeness; examining the regular update and relevance of continuity plans; and identifying actions for enhancement of organization through proper risk analysis are all essential components of BCP. These requirements demand the need for auditing, which provides assurance to board on business continuity. Auditing is essential yet complex, encompassing audit planning, scheduling, implementation and management to ensure compliance with BCP. The need of the hour is to implement high quality audit management software which can automate certain aspects of auditing to enhance the efficiency of an organization.

Challenges

Terrorist attacks, natural disasters and power breakdowns have made compliance to BCP an indispensable aspect of business planning. However, adhering to the BCP is an uphill task for most organizations. Along with the difficulty in realistically simulating disaster scenarios, there are also various challenges involved in it. That is the reason why many enterprises still side step the issue or hold plans which are out of date or inadequate.

- **Conducting Risk Analysis:** Simulating disaster scenarios is a tough task for any organization. It involves the time consuming challenge of identifying risks to effectively handle them through risk management techniques. The whole process of risk management in terms of BCP involves moving to the finest details of the data so as to track down all risk factors. A proper risk analysis not only prepares an organization for

compliance to BCP, but helps in improving the overall performance and efficiency of the organization.

- **Managing Distributed Tasks:** BCP brings with it the challenge of organizing the distributed and fragmented data. Every organization has numerous risk management techniques and internal control activities for various purposes, but they are usually not coordinated to act as a whole. This can lead to redundancies and inconsistencies which can hamper an organization's contingency plan. Organizing distributed activities and data is thus one of the biggest management challenge faced while complying with the BCP.
- **Managing Internal Audits:** High level internal audits are a must for every organization to comply with regulations along with enhancing their performance through enhanced operational efficiency and risk analysis. However, manual handling of a wide range of audit-related programs processes, and data not only increases management activity but also decreases performance level. The main challenge then for an organization is to automate these manual processes through optimum audit management software solutions which are effective yet cost-friendly.
- **Testing and Monitoring:** Adhering to the BCP standards is iterative, which requires regular testing and monitoring to ensure BCP is up to date and operational. This also involves the challenge of monitoring the ongoing backup processes so that any backup failure can be rectified before impacting the BCP lifecycle.
- **Updating Business Plan regularly:** Organizations need to ensure that their business continuity plan is updated according to the changing requirements of their company. It also involves the challenge of hiring and training staff on compliance with BCP and functioning skills, so that business does not get hampered by any disaster.
- **Identifying Cost Effective Solution:** Gaining maximum from minimum is the general progressive rule of an organization. The main challenge in complying with BCP regulations lies in identifying high performance business continuity solution with lowest cost. The cost aspect is a major challenge with BCP; as Business Continuity Programs are generally viewed as blocked money which provides no return in normal circumstances. This poses a challenge while identifying backup storage systems, which are efficient and robust along with being cost-friendly.

- **Ensuring Data Security:** When data becomes your invaluable treasure, you face the challenge of ensuring optimum data security by protecting it from unauthorized access and theft. This requires proper encryption techniques and lock mechanisms to ensure that the backed-up data remains safe even if it is kept in remote locations. Companies following conventional manual handling of data are all the more vulnerable to risk of data loss.
- **Restoring Data:** You need to ensure that your backed-up data is not hardware or platform dependent. This is an essential technical requirement to be kept in mind so that the backed up data can be easily restored when required.

Services to overcome the problems

- **Risk Assessment and Analysis:** . It supports risk assessment and computations based on configurable methodologies and algorithms; giving an insight into the organization's risk profile, and enabling the risk managers to prioritize their business continuity strategies for optimal risk/reward outcomes. Risk Control Self Assessment (RCSA) forms a core part of the MetricStream solution. The solution's risk self-assessment capabilities enable organizations to document and evaluate their risk frameworks, including processes, risks, events, key risk indicators (KRI) and controls. Executive-level dashboard and reports provide visibility into the risk analysis, highlighting key risk metrics and policy compliance. Business process automation capabilities provide for real-time event escalation, automated risk processes, and streamlined remediation of issues and action items.
- **Risk and Control Framework Assessment:** Through Risk and Control Framework Assessment, it helps companies identify and understand the misalignments, challenges, and improvement opportunities in their risk and control frameworks. The system supports assessments based on predefined criteria and checklists and has a mechanism for scoring, tabulating, and reporting results. The repository of all assessments with an easy search capability ensures that the users can check to see if a specific control was tested, access the assessment results, and confirm whether it requires a remedial action plan. This assessment provides a clear definition of focus areas and efforts that can help

management drive incremental improvements that will mitigate risk and enhance overall performance.

- **Internal Audit:** It provides the flexibility to manage a wide range of audit-related activities, data, and processes to support risk management. It supports all types of audits, including internal audits, operational audits, IT audits, supplier audits, and quality audits. Advanced capabilities like built-in remediation workflows, time tracking, email-based notifications and alerts, and offline functionality for conducting at remote field sites allow organizations to implement the industry-best practices for efficient audit execution and ensure integration of the audit process with the risk and compliance management system.
- **Risk Monitoring:** track risk profiles, control ownership, assessment plans, remediation status, etc. on graphical charts that can be accessed globally and display real-time information. Ability to drill-down provides an easy way to access the data at finer levels of detail. In addition to pre-configured standard risk reports, the system provides flexibility by enabling stakeholders to configure ad-hoc or scheduled reports to view metrics on a variety of parameters such as by process, by business units, by status, etc. Quarterly and monthly trending analysis along with the ability to drill-down into each report and dashboard to see the underlying details enables risk managers and process owners to stay in constant touch with the ground reality and progress on business continuity programs. Automated alerts for events such as exceptions and failures eliminate any surprises and make the process predictable.
- **Risk Remediation:** Risk remediation solution focuses on risk mitigation, by improving the efficiency of the related processes and controls. The process and control reviews, provided by the solution, display a tremendous potential to provide added business insight. By uncovering deficiencies, these reviews help identify performance and control improvement opportunities. The solution also helps enterprises organize their multiple security risk remediation initiatives into a project-level roadmap that helps meet requirements for regulatory compliance.

1.3 AMRI HOSPITAL accident

A fire at the hospital occurred at Dhakuria in South Kolkata in the early morning of 9 December 2011. The fire was due to alleged negligence, which caused flammable substances kept in the cellar of the building to catch fire after a short circuit in the electrical arrangement. It is reported that 95 people, including members of the staff, died due to asphyxiation. Six board members of the hospital have been halted on the charges of alleged culpable homicide. The permission of the hospital was revoked after the incident.



1.4 Safe hospitals and health facilities

Safe hospitals and other health facilities must remain operational in the aftermath of emergencies and disaster. Disruption of health services due to damage to hospitals and the lack of adequate preparedness to respond effectively are two major factors that can prevent people from receiving facility-based life-saving medical care and other essential health services.

The price we pay for the failure of hospitals or health facilities due to disasters is too high. In comparison, the cost of making hospitals safe from disasters is very low. Disaster damage to

health systems is a human tragedy, results in huge economic losses, deals devastating blows to development goals, and shakes social confidence. Making hospitals and health facilities safe from disasters is an economic requirement, and also a social, moral and ethical necessity.

Special attention must be given to ensuring the physical and functional integrity of hospitals and health facilities in emergency conditions. This is about more than just protecting buildings. Health facilities are only truly safe from disasters when they are accessible and functioning, at maximum capacity, immediately after a hazard strikes.

Action to make hospitals and other health facilities safe and operational before, during and after disasters through the implementation of the Safe Hospitals Initiative must remain a priority for disaster risk reduction.

At the 3rd World Conference for Disaster Risk Reduction in Sendai, Japan, WHO released the Comprehensive Safe Hospital Framework (LINK) that will guide the development and implementation of Safe Hospital programs at national, subnational and facility levels. It is a guiding document developed for use by governments, health authorities, financial institutions and disaster management organizations.

WHO has also launched the Hospital Safety Index (2nd Edition) which is an assessment tool for giving a snapshot of the safety and preparedness of hospitals to remain operational in emergencies and disasters.

WHO encourages national health decision-makers to use this tool and to allocate adequate resources to those health facilities that are most at risk. The next steps will include the roll out of the Hospital Safety Index and the development of a training program for evaluators to apply the tool and for countries to use the tool as a key element of a safe hospital program.

1.5 Hospitals And Disasters

Disasters have an uncanny ability to bring to the forefront vulnerabilities of systems, structures, processes and people which in turn cause large scale damages; and hospitals are no exception in this matter. In the last two decades, countries across the world have suffered a huge loss of confidence, as well as economic losses on account of damages incurred by hospitals from disasters.

In India, experiences from the Gujarat earthquake of 2001, the Indian Ocean Tsunami of 2004 and the Kashmir Earthquake of 2005 have shown that disasters affect not only the population but also health facilities. Particularly when the Children's Hospital in Jammu collapsed and in the city of Bhuj, where thousands of people died and the civil hospital was reduced to a heap of debris when it was needed most. And more recently the fire in AMRI Hospital in Kolkata where more than 90 people died, reminded us that it is not simply the structural resilience but also operational resilience of hospitals that need to be addressed, if we wish to reduce the impact of disasters on hospitals.

Both these instances of the civil hospital collapsing in Bhuj and the fire in AMRI Hospital in Kolkata, provided evidence based lessons of the underlying vulnerabilities that cause hospitals to get affected by disasters, which may be broadly grouped as follows:

- Inadequate or complete non-compliance of structural elements of hospitals to building codes and other safety norms which result in the failure of hospital structures and their component non-structural elements;
- Absence of a documented Hospital Disaster Management Plan;
- Lack of planning and preparedness to respond to disasters;
- Inadequate or complete lack of internal and external communication; and
- Lack of networking amongst hospitals.

As a result, when hospitals are affected by disasters the repercussions are three dimensional – health, social and economic. The health impact of hospitals being affected by disasters include, other than the very obvious lapses in medical care that hospitals provide to victims of a disaster, lapses in preventive medicine and public health response. This is because hospitals host laboratories and can contribute to the diagnoses and issuance of warnings of imminent communicable diseases that may spread post a disaster.

The social impact of hospitals being affected by disasters include a loss of confidence/morale in the affected community which can affect the long-term recovery and sense of well-being of the community. It can also lead to social and political instability, as hospitals are expected not only to provide good medical care but also ensure the safety of their patients from disasters. The economic impact of hospitals being affected by disasters is a little more obvious, given the

enormous investments required to be made to construct hospitals and the expensive equipment that is lost when disasters strike hospitals. Even the use of temporary field hospitals as a contingency measure is economically unviable. It is an attested fact that the costs involved to mitigate and prepare hospitals for disasters are far less than those required for re-building hospitals after they have been damaged by disasters.

1.6 Expected Disaster Scenarios For Hospitals

Hospitals may face both internal and external disasters. The impact of internal disasters such as a fire, hazardous material exposure, utility failures, etc., is typically limited to the hospital/healthcare facility while external disasters include scenarios such as earthquakes, mass casualty events or epidemics where the hospital itself may or may not be affected but is a critical part of the larger response. As such three scenarios can be expected when disasters strike. They are as follows:

(1) Community Affected – Hospital Unaffected: During such scenarios, hospitals play a vital role in the larger disaster response being undertaken. For hospitals such scenarios would imply a sudden increase in demand because of the surge in the number of patients seeking medical attention. There is a possibility of the hospital facility getting overwhelmed if adequate preparedness and response mechanisms are not swung into action as soon as the disaster occurs.

(2) Community Unaffected – Hospital Affected: Such scenarios arise from the internal disasters of hospitals. As such, partial or complete evacuation and transfer of critical patients to networked hospitals is the key to successful response. Such scenarios also demand a high degree of preparedness on the side of the hospital administration and staff, as well as a speedy response from the surrounding community and hospitals.

(3) Community Affected – Hospital Affected: Such situations exacerbate the challenge posed to hospitals, as they not only need to cater to the existing demand on their facilities but also need to address the sudden increase in demand on their facilities because of the surrounding community being affected by a disasters. In such situations the hospitals may even find themselves facing the added challenges of loss of essential services, like water supply, electricity, medical gases, etc. and a reduction in man-power.

Hence, the only rational manner in which hospitals can be prepared for disasters is by increasing their resilience and reduce their vulnerability by strengthening both structural and operational aspects of the hospital, such that they achieve a reasonable degree of safety.

1.7 Accreditation Standards-Useful Resources and Tools

NABH Accreditation Standards addresses all the requirements related to hospital safety, risk management, disaster planning, monitoring and evaluation under various chapters. These standards provide a framework for quality assurance and quality improvement and focus on patient safety, employee safety, community and environment safety and quality of patient care. NABH Accreditation Standards for Hospitals 3rd Edition in a Nutshell contains 636 Objective Elements under 102 Standards. The standards encompass patient safety aspects in all the 10 chapters. However, the chapter on Facility Management & Safety provides criteria for implementation of Emergency Management Plans. The intent of this Chapter FMS is to provide safe and secure environment for patients, development and implementation of Plans for emergencies within the facilities and the community and well established Program for clinical and support service equipment and management. Standard FMS 6, FMS 7 & FMS 8 include requirements for developing, maintaining, and implementing a comprehensive Emergency Operations Plan that covers the critical areas in emergency management. Emergency Response capacity and Preparedness of a hospital can be achieved by complying with NABH Accreditation Standards. The accreditation standard through various chapters covers following aspects of disaster mitigation and management: 104 S.No Action NABH Chapter 4.1 Current disaster planning strategy FMS 4.2 Regular Testing and Evaluation of the Plan CQI 4.3 Resources and Assets ROM 4.4 Staff Responsibilities HRM 4.5 Patient and Clinical Support Activities AAC & COP 4.6 Blood transfusion resources COP 4.7 Communication IMS 4.8 Transport availability COP NABH Accreditation Standards and objective elements specifically related to aforementioned topics are divided into two categories Standards specific to Disaster Management and Associated standards for effective implementation of Disaster management plans and strategy. They are as follows: Standards Specific to Disaster Management: NABH Standards and objective elements of Chapters namely Facility Management & Safety (FMS) and Continuous Quality Improvement (CQI) directly focuses on Emergency response and

management including disaster management and relevant indicators and their monitoring to check the compliance to these standards on continuous basis. The standards and objective elements ensuring the compliance to Current disaster planning strategy and Regular Testing and Evaluation of the plan are as following: The Associated Standards for Effective Implementation of Disaster Management Plans and Strategy. These Standards are from Chapters Care of Patient (COP), Responsibility of Management (ROM), Human Resource Management (HRM), Information Management System (IMS) etc. Compliance to these standards ensures that essential requirements for Disaster mitigation and management like availability of Resources and assets, Staff trainings on roles and responsibilities during emergency, availability of patient and clinical support activities, 105 Transport Facility, Blood transfusion facility and management and communication facilities required are available in the HCO. Standards also ensure that the organization timely and regularly tests the availability of these resources for effective implementation when the disaster strikes.

1.8 Need for the study

Emergency management typically focuses on the use of a hospital as a first responder – mostly outward facing to ensure that clinical operations can keep no matter what happens to the physical hospital or residential district. IT disaster recovery, another field of focus, addresses protecting critical clinical systems that, if unavailable, would affect patient care and prophylactic. While important, emergency management and IT disaster recovery miss key areas of “the clientele” that could specify if a health care establishment is able to reopen following a line disruption.

For hospitals and other organizations caring for people at their most vulnerable, risk to the enterprise is always top of mind. It can literally be a life-and-death business issue. As a result, most health care organizations have a long history of identifying, assessing and prioritizing risks. Yet prior efforts at risk quantification, especially outside the traditional clinical arena, have generally been dismissed as expensive, bureaucratic and overly compliance oriented, failing to deliver clear or measurable value that could be convincingly articulated. Few regularly quantify their key risks or usage metrics analyzing those risks to take in job decisions. Even fewer integrate risk metrics into their workforce budgeting and planning process, which is especially surprising given that today, virtually half the tax income of most hospital systems is budgeted to

workforce-related costs, and this one action has the greatest potential to defuse risk and better operating margins. But immediately, risk has risen to the top of management's agenda. Unprecedented economic pressures and an increasing focus on the value rather than the quantity of services performed are generating new risks and exacerbating traditional ones. Increasingly, hospital executives and boards recognize that the time has come for a more strategic and quantitative approach to risk management for the enterprise — one that transforms it from an ad hoc activity in a core strategic business-planning process.

1.9 Objectives Of The Study

- To prioritize the possible events which may negatively affect the functioning of the hospital;
- To study about the risk matrix
- To enable the concerned authority to take actions that could overcome the negative outcomes which might have happened;
- To find ways to properly channelize the mitigation process;
- To fabricate the risk matrix by considering;
 - 1.probability factor
 - 2.Consequence severity
 - 3.Risk rating
- To study about how to enable the execution of the business restoration process perfectly;

CHAPTER 2

LITERATURE REVIEW

Author's name	Book or thesis	Year
Queensland Government	Mackay Hospital and Health Service Business Continuity Plan	2013
Towers Watson	Strategic Risk Management for the hospital industry in transition	2012
National Patient Safety Agency	A risk matrix for risk managers	2008
John Snider	Hospital Resilience: Business continuity Planning for Disaster	n.a
J. Matthew Austin, PhD, Guy D'Andrea, MBA, John D. Birkmeyer, MD, Lucian L. Leape, MD, Arnold Milstein, MD, Peter J. Pronovost, MD, PhD, Patrick S. Romano, MD, Sara J. Singer, MBA, PhD, Timothy J. Vogus, PhD and Robert M. Wachter, MD	Safety in Numbers: The Development of Leapfrog's Composite Patient Safety Score for U.S. Hospitals	2013

2.1 Mackay Hospital and Health Service Business Continuity Plan

The aim of the Mackay Hospital and Health Service (MHHS) Business Continuity Plan (BCP) is to promote continuity and rapid recovery of critical services or functions required to support the core business of the Health Service. It is a continuous improvement process of establishing and maintaining Business Continuity Plans and other measures in order to respond to and recover from disruptions that threaten key resources, locations and functions. Major disruptions can arise from both dramatic crises and from the escalation of routine management and business failures within an organization, and poor decision making.

In this plan, business continuity is an all embracing term which addresses organizational recovery following a disaster. It assumes that prevention arrangements have failed and that an incident has occurred which has interrupted normal business to the extent that corrective action is required. It aims to provide the availability of processes and resources in order to ensure the continued achievement of critical objectives

2.2 Strategic Risk Management for the hospital industry in transition

For hospitals and other organizations caring for people at their most vulnerable, risk to the enterprise is always top of mind. It can literally be a life-and-death business issue. As a result, most health care organizations have a long history of identifying, assessing and prioritizing risks. Yet prior efforts at risk quantification, especially outside the traditional clinical arena, have generally been dismissed as expensive, bureaucratic and overly compliance oriented, failing to deliver clear or measurable value that could be convincingly articulated. Few regularly quantify their key risks or use metrics analyzing those risks to make business decisions. Even fewer integrate risk metrics into their workforce budgeting and planning process, which is particularly surprising given that today, nearly half the revenue of most hospital systems is budgeted to workforce-related costs, and this one action has the greatest potential to defuse risk and improve operating margins.

2.3 A risk matrix for risk managers

The following guidance has been developed for the purpose of assisting NHS risk managers in implementing an integrated system of risk assessment. It can be adapted, depending on the needs of individual NHS trusts. The guidance has been developed following consultation with risk

experts from different organizations and from institutions that teach or are experts in risk management. It is supported by background guidance along with the findings from workshops and consultations.

2.4 Hospital Resilience: Business continuity Planning for Disaster

It discusses

- Natural and man-made disasters that have had public health consequences
- Need for future disaster planning
- Business continuity for health care

2.5 Safety in Numbers: The Development of Leapfrog's Composite Patient Safety Score for U.S. Hospitals

To develop a composite patient safety score that provides patients, health care providers, and health care purchasers with a standardized method to evaluate patient safety in general acute care hospitals in the United States

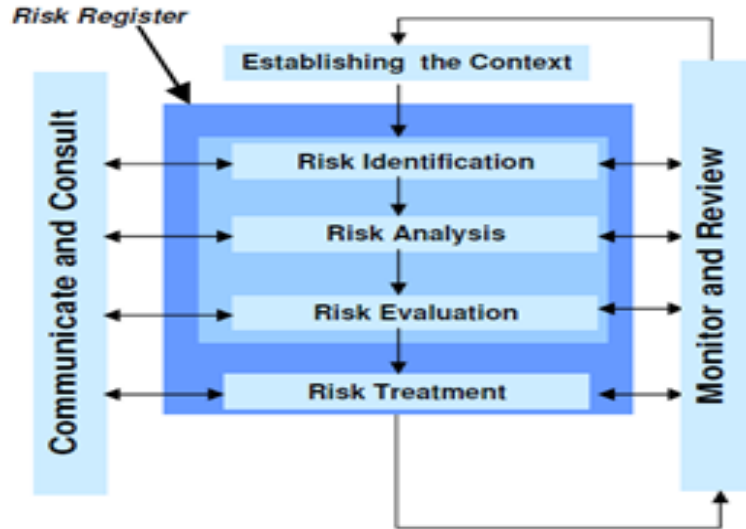
CHAPTER 3

METHODOLOGY

3.1 Risk Management Process

The forces reshaping the health care industry are easily documented and are already ushering in new challenges and risks, ranging from new payment mechanisms and quality standards, to coordinate care delivery models and changing competition. With federal health care reform legislation upheld, many of its significant measures — focused on quality, results and efficient care — have been, or soon will be, implemented by employers, insurance companies and Medicare. In summation, with more hospitals now hiring physicians and acquiring physician groups, they demand to rethink both the duration and magnitude of their risk exposures. Amid all this change, hospital executives and boards are asking important questions: Are our risk management practices on a par with industry norms or those of specific competitors? Are we adequately prepared to handle the perils linked with significant capital projects — from upgrading facilities and restructuring operations, to merging with another organization or taking a physician group? Act, we have processes in place to address specific critical risks, such as a doctor or nurse recruiting and retention, leadership succession, patient privacy and pharmacy management? Are we well positioned to comply with the regulatory requirements regarding our industry?

The management of risk is integral to the business process of all stages in the HSE. This is not only a HSE Board requirement as set out in the HSE's Integrated Risk Management Policy but is likewise key to the HSE's system of inner mastery



3.2 Risk Matrix

Risk assessment is a systematic and effective method of identifying risks and determining the most cost-effective means to minimize or remove them. It is an essential part of any risk management program, and it encompasses the processes of risk analysis and risk evaluation. organizations, therefore should have in place efficient assessment processes, covering all areas of risk. To separate those risks that are unacceptable from those that are tolerable, risks should be evaluated in a consistent manner. The risks are usually analyzed by combining estimates of consequence (also described as severity or outcome) and likelihood (frequency or probability) in the context of existing control measures. In general, the magnitude or rating of a given risk is established using a two-dimensional grid or matrix, with consequence as one axis and likelihood as the other. The aim was to identify or develop a risk assessment matrix that could be recommended for use across the Indian Health sector. The review revealed the following properties as being essential for such a risk assessment matrix:

- It should be simple to use.
- It should provide consistent results when used by staff from a variety of roles or professions.
- It should be capable of assessing a broad range of risks, including clinical, health and safety, financial risks, and reputation.
- It should be simple for organizations to adapt to meet their specific needs.

This guidance can be used on its own as a tool for introducing risk assessments in an organization, or for improving consistency or scope of risk assessments already in place in organizations and for training purposes. It is, however, strongly recommended that where elements of this guidance are to be used as part of an organization-wide risk assessment system, the guidance is integrated with, or directly referred to within, a Board-approved risk management policy or strategy. In particular, a health sector organization should use this guidance only within the framework of its strategic risk appetite and risk management decision-making process.

3.2.1 Guidance on consequence scoring

When undertaking a risk assessment, the consequence or ‘how bad’ the risk being assessed must be measured. In this context, consequence is defined as: the outcome or the potential outcome of an event. Clearly, there may be more than one consequence of a single event. Note that consequence scores can also be used to rate the severity of incidents, and there are some advantages to having identical or at least parallel scoring systems for risk and incidents. This document does not give detailed guidelines on incident scoring, but gives a brief explanation of how this scoring system can be used for scoring incidents. The consequences can be assessed and scored using qualitative and quantitative data. Wherever possible, consequences should be assessed against objective definitions across different domains to ensure consistency in the risk assessment process. Despite defining consequence as objectively as possible, it is inevitable that scoring the consequences of some risks will involve a degree of subjectivity. It is important that effective, practical-based training and use of relevant examples form a part of the implementation of any risk assessment system to maximize consistency of scoring across the organization.. First ,define the risk(s) explicitly in terms of the adverse consequence(s) that might arise from the risk being assessed. Then use table to determine the consequence score(s) for the potential adverse outcome(s) relevant to the risk being evaluated.

3.2.2 How to use consequence table

Choose the most appropriate domain for the identified risk from the left hand side of the table. Then work along the columns in the same row to assess the severity of the risk on the scale of 1–25 to determine the consequence score, which is the number given at the top of the column.

3.2.3 Guidance on likelihood scoring

Once a specific area of risk has been assessed and its consequence score agreed, the likelihood of that consequence occurring can be identified by using table 2 below. Note that the table is intended as guidance and trusts are encouraged to populate the table with their own probability and frequency descriptions. As with the assessment of ‘consequence’, the likelihood of a risk occurring is assigned a number from ‘1’ to ‘25’: the higher the number the more likely it is the consequence will occur:

When assessing likelihood, it is important to take into consideration the controls already in place. The likelihood score is a reflection of how likely it is that the adverse consequence described will occur. Likelihood can be scored by considering:

- frequency (how many times will the adverse consequence being assessed actually be realised?)
- or
- probability (what is the chance the adverse consequence will occur in a given reference period?).

It is possible to use more quantitative descriptions for frequency by considering how often the adverse consequence being assessed will be realized. For example, when assessing the risk of staff shortages on a ward, the likelihood of it occurring could be assessed as expected, to occur daily or even weekly depending on staffing levels. However, if staff shortages are unlikely, it could be graded as expected to occur annually. However, frequency is not a useful way of scoring certain risks, especially those associated with the success of time-limited or one-off projects such as a new IT system that is being delivered as part of a three-year program or business objectives. For these kinds of risks, the likelihood score cannot be based on how often the consequence will materialize. Instead, it must be based on the probability that it will occur at

all in a given time period. In other words, a three-year IT project cannot be expected to fail ‘once a month’, and the likelihood score will need to be assessed on the probability of adverse consequences occurring within the project’s time frame.

With regard to achieving a national target, the risk of missing the target will be based on the time left during which the target is measured. A trust might have assessed the probability of missing a key target as being quite high at the beginning of the year, but nine months later, if all the control measures have been effective, there is a much reduced probability of the target not being met. This is why specific ‘probability’ scores have been developed for projects and business objectives . Essentially, likelihood scores based on probability have been developed from project risk assessment tools from across industry.

3.2.4 Risk scoring and grading

1. Define the risk(s) explicitly in terms of the adverse consequence(s) that might arise from the risk.
2. Determine the consequence score(s) (C) for the potential adverse outcome(s) relevant to the risk being evaluated.
3. Determine the likelihood score(s) (L) for those adverse outcomes. If possible, score the likelihood by assigning a predicted frequency of occurrence of the adverse outcome. If this is not possible, assign a probability to the adverse outcome occurring within a given time frame, such as the lifetime of a project or a patient care episode. If a numerical probability cannot be determined, use the probability descriptions to determine the most appropriate score.
4. Calculate the risk score by multiplying the consequence by the likelihood: $C \text{ (consequence)} \times L \text{ (likelihood)} = R \text{ (risk score)}$

CHAPTER 4

RESULT AND DISCUSSION

4.1 Types of Hazards

A disaster, event or hazard will cause stress and extra load for the hospital's health care facilities. Hazards are often associated with injuries and death. The aftermath of a hazard may lead to an increase or a perception that there will be an increase in disease, placing stress on the hospital to maintain continuity in health care provision and recovery.

Hazards and associated risks include:

- Earthquakes—deaths and injuries, mainly due to building collapse;
- Flooding—drowning and injuries;
- Storms and cyclones—deaths and injuries due to debris impact or building collapse, drowning;
- Fire—deaths and injuries due to burns, smoke-inhalation or respiratory failure in vulnerable people:
- Explosions—deaths and injuries due to building collapse, burns;
- Chemical spills or leaks may cause a range of injuries from burns to respiratory problems;
- The perceived risk of epidemics will place significant extra load on health-care facilities;
- Primary health-care services must be maintained while the stress levels associated with an emergency or disaster may actually increase normal rates of heart attacks, strokes, childbirths (as hyperbaric pressure decreases during cyclones), psychological effects and availability of medication; eg. Methadone etc. immediately after the event; and
- Lack of power may increase loads on health systems by:
 1. The general public using naked flames for heating or lighting, with increased fire risk and respiratory problems;
 2. use of generators with inadequate ventilation may cause suffocation or respiratory problems. Handling generator fuel may cause fire risks;

3. Eating contaminated foods or out-of-date foods may lead to gastric disorders;

4. Injuries to persons trying to navigate flooded areas and

5. Lack of power for in-home care of disabled or ill people may lead to these people seeking in hospital care

- Damage to health infrastructure, housing the facilities that may make them unsafe for continuing service;
- Water damage (mould), cladding damage or smoke damage that may make the facility unserviceable

Equipment may have been damaged, records lost or cleanliness compromised;

- Some facilities may not have emergency power or their premises may be inundated or damaged and may be unable to provide services.
- Staff shortages may occur following hazards, as casualties elsewhere in the community, damage to transportation and general community disruption may mean that staff rostered on cannot come to work.
- Some equipment may have been affected by the hazard itself. Mobile or portable equipment is vulnerable to damage in cyclones & earthquakes. Equipment that makes use of gas or gases (critical services ,in particular) may be compromised by leaks in pipes or damage to reticulation system or lack of supply, and gas storage areas could be compromised.
- Many of the above effects have the added complication that the staff and patients of these facilities may need to be evacuated, placing extra load on surrounding facilities, and also risking the safety of people who require continuous care or specialised equipment

4.2 Pandemic influenza

The hospital must work with other health related agencies to determine how best to assist in responding to the health and wellbeing needs of the community during a pandemic, as well as minimising the impact of a pandemic on the service.

In order to reduce the impact of a pandemic on core business and maintain business continuity, absenteeism needs to be effectively managed. Items to be considered are:

4.2.1 Reducing the likelihood of staff becoming exposed to the virus

Education can reduce fear through understanding and help protect through knowledge. Basic information that staff should be made aware of includes:

- What is pandemic influenza and how is it spread?
- What are the signs & symptoms?
- When are people considered infectious?
- What can be done to reduce the risk?

4.2.3 Management of illness and absenteeism

Well developed workplace policies are integral to the protection of the workforce and the organisation's operations during a pandemic. Policies that can be considered include, but are not limited to the following topics:

- Hygiene and cleaning practices
- Social distancing strategies incorporating - working from home, using company vehicles, restricting access to the workplace, change to working rosters / hours of operation
- Work related restrictions on travel to affected areas

4.2.4 Maintaining service/business delivery with specific reference to the maintenance of essential services

A Pandemic may create the need for staff members to remain at home to care for their dependants, and may reduce the numbers of staff that attend work due to fear of the disease, or as an unwillingness to place themselves at a risk of infection.

Key tasks to be undertaken are:

- Identify the core people required to keep the essential functions of the business running

- Identify opportunities for cross training/multi skilling of staff where appropriate with the intent of creating a larger internal resource base from which to draw on
- Identify retired staff that may be employed for knowledge as opposed to physicality
- Identify critical resources and projected quantities (required to maintain functioning of key areas) over the peak period of the pandemic. This can be used to assess the feasibility of bulk purchases/stockpiling
- Discuss preparedness planning with key suppliers/contractors.
- Identify all suppliers of the required resources beyond current contractual arrangements.
- Identify temporary alternatives and suppliers
- Identify the Critical Breaking Point.

4.2.5 Staffing

The effects of a pandemic on staffing numbers can only be estimated before the actual occurrence. It is not unreasonable to assume that at various times during a Pandemic the hospital will experience significant levels of absenteeism whether directly related to influenza infection, family care responsibilities or fear and fatigue. This may be as high as 30 - 40% absenteeism at the height of an outbreak..

Staff will be required to work flexibly to meet increased demands; usual clinical and infection control practices may need to be altered to accommodate the exceptional circumstances. Depending on the epidemiology and virulence of the virus the hospital may have to rationalize certain services in order to maintain the ability to provide services directly related to a Pandemic Influenza outbreak.

Historically, Pandemics have come in waves of between 6-12 weeks; changes to service provision will be necessary but temporary. Staff should be discouraged from presenting to work with flu like symptoms, especially in the early stages where prevention of spread will be paramount to the governments' containment strategies. As the stages of a Pandemic wave progress the staff who have recovered will have immunity and be able to work in the front line of the response with little risk of further infection from pandemic influenza.

4.2.6 Staff accommodation

During some stages of a critical incident or pandemic, there may be a need for staff accommodation within or close to the Hospital. The reasons include:

- Reduced staff available, increasing the need for overtime and extra shifts
- Staff wishing to remain at hospital rather than risk transmission to family.

If the Hospital staffing is hit hard then it may be that many staff will be required to work extended hours and extra shifts, all possible measures should be taken to ensure safe practice and to keep fatigue to a minimum.

4.2.7 Communications

Locally, where an incident threatens to disrupt normal operations, immediate decisions are required to minimise the impact of the incident and to resolve issues where possible. In the event of a crisis, the delegated Health Incident Controller will initiate the Emergency Operation Centre to manage immediate response activities—for example, authorising and releasing communications with staff and stakeholders, authorising the activation of business continuity and information disaster recovery arrangements, standing down staff, declaring the crisis over.

4.3 Risk Management

Possible Types of Exposure and the Risk Assessment:

It is assumed that any major loss of hospital/facility global essential resources (eg. Power, fuel, gases, water, communications etc) will be addressed and co-ordinated through the Hospital Disaster Coordination Centre.

Risk Description	Likelihood	Consequence	Risk Rating
Earthquake (deaths & injuries due	Rare	Extreme	High 15

to building collapse			
Storms & Cyclones	Rare	Extreme	High 15
Flooding (drowning & injuries)	Unlikely	Major	High 14
Fire (deaths & injuries due to burns, smoke inhalation or respiratory failure in vulnerable people)	Rare	Major	Medium 11
Fire Alarm Failure	Rare	Extreme	High 15
Water Failure	Rare	Extreme	High 15
Electricity Failure (public or staff may use a naked flame for heating or lighting with an increased fire & respiratory problems)	Possible	Moderate	High 13
Gas Supply failure	Rare	Moderate	Low 5
Medical Gas Failure	Rare	Extreme	High 15
Damage to Infrastructure (following an event – impact upon ability to provide health service)	Rare	Extreme	High 15
Water Damage making the facility unserviceable	Unlikely	Major	High 14
Capacity of the Hospital is exceeded	Likely	Major	Very High 20
Industrial Disputes	Possible	Major	Very High 19
Epidemic/Pandemic	Possible	Major	Very High 19
Computer system failure – greater than 1 day	Possible	Moderate	High 13

Bomb or Explosions (deaths & injuries due to building collapse & burns)	Rare	Extreme	High 15
Chemical Spills & Leaks (range of injuries from burns to respiratory problems)	Rare	Major	Medium 11
Biological Incident – escape, spillage or contamination	Rare	Major	Medium 11
Radiological incident	Rare	Major	Medium 11
Adverse Public interest	Possible	Major	High 19

- **Major engineering failures** -burst water mains, electrical sub-station failure, generator failure etc.
- **Impact upon buildings** - helicopter or aircraft
- **Chemical spill in vicinity of hospital** - road tanker
- **Communication Systems failure**
- **Medical Gas Reticulated Systems failure** - oxygen, suction

4.4 Integrated Risk Management Analysis Matrix

The use of integrated Risk Management Analysis Matrix is mandatory when communicating risks (risk Ratings) to Executive and Senior Management throughout the Department. The Integrated Risk Management Analysis Matrix is used to assess Consequence(s) should the risk occur and Likelihood (Probability) of the Risk occurring. Together, the Likelihood and Consequences(s) determines an overall Risk Rating or Level of risk.

4.4.1 Consequence table

CONSEQUENCE TABLE						
Degree of Severity						
Type of Consequence	Negligible	Minor	Moderate	Major	Extreme	
Adverse Clinical Event	No injury or harm caused, minor adjustment to operational routine	Minimal harm caused, minor interruption to routine	Loss of function, major harm caused	Permanent loss of function or disability	A loss of life	
Outrage/Damage to Reputation	Minimal adverse local publicity	Significant adverse local publicity	Significant adverse Statewide publicity	Significant and sustained Statewide adverse publicity	Sustained national adverse publicity, reputation significantly damaged	
Litigation	Potential exposure to State's Health	Minor exposure to State's Health	Exposure will result in a single claim	Multiple claims resulting from single exposure	multiple claims resulting from multiple similar exposures	

Disruption to Established Routines/ Operational Delivery	No interruption to service	Some disruption manageable by altered operational routine	Disruption to a number of areas within a location possible flow on to other locations	All operational areas of a location compromised, other locations are affected	Total system dysfunction and/or total shutdown of operations
Staff Morale (may include absenteeism, establishment)	Staff dissatisfaction within local unit.No effect on services or programs	Alteration to routine practice required in local area	Disruption spreads across services or programs	Disruption spreads to routine practice Statewide	Statewide cessation of service or programs
Workplace Health & Safety	No injury/illness – no time lost, minor adjustment to operational routine	No lost time injury First aid or medical treatment required	Lost time injury involving a temporary loss of function or a notifiable event	Permanent loss of function or disability	A loss of life
Security (may include fraud/theft.Unauthorised access and areas of suspected	Event noted by local staff/management, no change to routine operations	Monitored by local staff, some effect on routine	A security event that may threaten a /service. An	Major event that threatens a /service across the wider	Extreme event affecting a program / service

official misconduct)		operations	event requiring internal investigation	organisation. Events requiring referral to Police	areas ability to continue its operation resulting in total shutdown
Environmental Impact (may include discharge of hazardous or dangerous substances, carbon footprint etc)	No lasting detrimental effect on the environment	Local detrimental effect on the environment	Short term local detrimental effect contained with outside assistance	Long term detrimental effect contained with outside assistance	Having a long lasting effect on the environment
Workforce Issues (may include recruitment and retention, capability)	No effect on services or programs	Some effect on specific service or program – alteration to routine practice required	Restrictions to service/program availability within a location	Cessation of service/program of a location	Statewide cessation of a program or multiple programs
Operational	No impact on	Minor	Moderate to	Major impact	Cessation

Management	local operations	impact on local operations	long term impact on wider operations	on operations across other areas of organisation	of some operations
Corporate Management	Local management review	Local management review on a broader basis	Senior management review or intervention	Health Service Executive Management review or intervention	Statewide management review
Financial (anything that has a financial impact)	~ 1% of monthly/cost centre budget	~ 2% of monthly/cost centre budget	~5% of monthly /cost centre budget	~10% of monthly / cost centre budget	~ 15% of monthly / cost centre budget

*Please note that the severity for each consequence type is to be considered separately and not relative to each other

4.4.2 Likelihood (probability) Table

This table defines the likelihood or probability of the risk occurring, based on the information available at the time of assessment

Rare	May occur in special circumstances only
Unlikely	May occur sometime, but not expected
Possible	Could occur, capable of happening, foreseeable
Likely	Is expected to occur occasionally

Almost certain	Is expected to occur frequently in most circumstances
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4.4.3 Integrated Risk Management Analysis Matrix

Likelihood	Consequences				
Rare	Low (1)	Low (4)	Low (5)	Medium (11)	High (15)
Unlikely	Low (2)	Medium (8)	Medium (10)	High (14)	Very High (21)
Possible	Low (3)	Medium (9)	High (13)	Very High (19)	Very High (22)
Likely	Medium (6)	High (12)	Very High (17)	Very High (20)	Extreme (24)
Almost certain	Medium (7)	Very High (16)	Very High (18)	Extreme (23)	Extreme (25)

4.4.4 Legend

Low risk (1-5)	Manage by routine procedures, unlikely to need specific application of resources
Medium Risk (6-11)	Manage by specific monitoring or response procedures locally
High Risk (12-15)	Management attention needed and management responsibility specified to control the risk
Very high risk (16-22)	Detailed research and management planning required at a senior management /executive level
Extreme risk (23-25)	Immediate action and involvement required at a senior management /executive level to control the risk

4.4.5 Actions required in response to the level of risk

- Risks with a residual risk rating of Very High (16-22) and Extreme (23-25) must be reported.
- The management must consider the need for legal advice or guidance.
- All notifiable events (as per the local policy or procedure) must be reported as directed.

- All incidents including near misses must be reported.
- The risk assessment process is applicable to all processes and levels within the Department

4.5 Business restoration

Coming after the activation of business recovery arrangements to re-establish all core services, placements will be initiated to restore normal operations to pre-crisis capacity. The extent and continuance of business restoration planning will depend on the impact and nature of the crisis. Business restoration might require, for model, sourcing new accommodation and equipment, re-establishing non core or strategic processes or projects, transitioning temporary service delivery systems established under business recovery to a permanent status or relocating staff and resources to new permanent accommodation.

Pre-planning for business restoration is hard due to its circumstantial nature and the inbuilt number of unknowns. The tools like making up a composite patient safety score that provides patients, health care providers, and health care purchasers with a standardized method to assess patient safety in general acute care hospitals will gain out the needful.

Hospitals & the facilities they provide are critical to a community's coping capacity during emergencies/disasters. Therefore, hospitals shall coordinate and collaborate with various health sector and general disaster management preparedness and response initiatives to enhance their own disaster preparedness and response readiness. Hospitals shall make efforts to fit into the district disaster management plan and disaster response activities; as well as incorporate into their own HDMP relevant elements of the district disaster management plan and the district's planned response activities to be in rhythm with larger disaster management goals of the district/state/country. Further, hospitals shall comply with various Acts, Standards, Regulations and development programmes pertinent to hospitals in the country (Annexure has details of some important initiatives of health sector and general disaster management initiatives which have some bearing on hospital safety)

CHAPTER 5

CONCLUSION

As part of the work the study of risk matrix was done. After identifying the hazards associated with the hospital sector, an Integrated Risk Management Analysis Matrix was made considering the consequence and likelihood tables. As a response to the level of risk defined, the actions required were also mentioned. The comments about business restoration was made considering several factors like population, nature of the crisis etc. Since the number of people, which may get affected is a big figure, there is always a space of continuous improvement in the hospital sector. If the system as a whole is elevated, the extend of research and growth in this area is possible.

Intensive studies should be applied in the hospital sector in India in order to achieve the zero accidents. For that there should be a fruitful relation as well as sound communication between the private and public players. The need for possessing a network, which joins all the hospitals, which enables mutual aid at the time of an unfortunate incident which may cease up in the loss of liveliness and/or a threat to the environment is inevitable. And a resource pool from which the concerned can acquire the needed information on a sharing basis also serves the scenario.

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