Climate Informed Hospital Emergency Preparedness and Response Plan

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World Health Organization
Bangladesh

Introduction

Hospitals play a critical role in health care infrastructure. Hospitals have a primary responsibility of providing treatment to preventing disease, saving lives; they also provide 24x7 emergency healthcare service and hence it is perceived as a vital resource for diagnosis, treatment, and follow-up for both physical and psychological healthcare. Hospitals have to provide emergency health care even during the disaster.

Whenever a hospital or a health care facility meets a situation that requires healthcare facility to manage a large number of patients in a limited time, which is beyond its normal capacity, constitute a disaster for the said hospital. This implies that an event of similar magnitude may pose a disastrous challenge for a small hospital but not for a bigger hospital. Therefore, disaster for a hospital is "a temporary lack of resources which is caused due to sudden influx of unexpected patient load". To find out the constituents of a disaster or potential incident, the hospital needs to identify its normal capacity to understand its strength and could look for the additional resources which need to be included in disaster plan.

Hospital's emergency preparedness and response plan provides the opportunity to plan, prepare and enable a rational response during disasters/ mass casualty incidents (MCI). Disasters and mass casualties can overwhelm the hospitals resources, staff, space and or supplies. Lack of any tangible plan can cause a situation of no command, many leaders, and no coordinated effort to solve the problem. Everyone does his/ her own work without coordination to solve the problem of the hospital in emergency. Therefore, it is essential that all Hospital's Emergency Plans need to be clearly defined command structure.

Hospital planning in Bangladesh has not focused on preparedness in case of disasters and MCI till now. There is an urgent need to increase the preparedness of hospitals in mass casualties. The hospitals must expand their focus to include both internal hospitals planning as well as regional plan for disasters and mass casualties. Since the disasters do not strike at the vicinity of only bigger hospitals, it is imperative that all hospitals whether small or big providing emergency care have an emergency plan. The emergency plan for smaller hospitals such as community clinics may only focus around providing either mobile emergency healthcare on the site of incident or providing intermediate stabilization and forward referral of serious patients to the

nearest networked hospital. In most mass casualty incidents, it has been observed that the majority of the victims are not seriously injured and come in the walking wounded category. Such small centers can provide immense help in case of disasters/MCI by providing definitive care to such victims who are not seriously injured.

Goals, objectives, and principles of hospital emergency response plan

The aim of a climate informed hospital emergency preparedness and response plan is to provide prompt and effective medical care to the maximum possible, to minimize morbidity and mortality resulting from disaster.

The main objective of a climate informed hospital emergency preparedness and response plan is to prepare institutional staff and resources for effective performance in different emergency situations. The climate informed hospital emergency preparedness and response plans not only address the mass casualties which may result from MCI that has occurred away from the hospital but also addresses the situation where the hospital itself has been affected by a disaster – fire, explosion, flooding or earthquake. In case of MCI away from the hospital, which is not affecting the hospital, the further goal of the plan is to control a large number of patients and manage the resulting problems in an organized manner by:

- enhancing the capacities of admission and treatment.
- treating the patients based on the rules of individual management, despite there being a greater number of patients.
- ensuring proper ongoing treatment for all patients who were already present in the hospital.
- smooth handling of all additional tasks caused by such an incident.
- providing medications, medical consultation, infusions, dressing material and any other necessary medical equipment.

In case of incidents affecting the hospital itself the further goals of the plan would be: To protect life, environment, and property inside the hospital from any further damage by

- putting into effect, the preparedness measures.
- appropriate actions of the staff who must know their tasks in such a situation.
- soliciting help from outside in an optimal way.

- re-establishing as quickly as possible an orderly situation in the hospital, enabling a return to normal working conditions.

The major principles (characteristics) of a hospital emergency preparedness Plan are presented as follows:

- Predictable: The plan should have a predictable chain of management.
- Simple: The plan should be simple and operationally feasible.
- Flexible: The plan should be executable for various forms and dimensions of different disasters (Plan should have organizational charts).
- Concise: The plan should specify various roles, responsibilities, work relationships of administrative and technical groups (Clear definition of authority) .
- Comprehensive: It must be comprehensive enough to look at the network of various other health care facilities along with formulation of an inter-hospital transfer policy in the event of a disaster (Compatible with various hospitals) .
- Adaptable: Although the disaster plan is intended to provide standard procedures which may be followed with little thought, it is not complete if there is no space for adaptability.
- Anticipatory: All hospital plans need to be made considering the worst-case scenarios.
- Part of a Regional Health Plan in Disasters: A hospital cannot be a lone entity making its plans in isolation. The hospital plans must be integrated with the regional plan for proper implementation.

Developing a hospital emergency response plan

Without appropriate emergency planning, health systems can easily become overwhelmed in attempting to provide healthcare during emergencies. Limited resources, a surge in demand for medical services, and the disruption of communication and supply lines create a significant barrier to the provision of healthcare. To enhance the readiness of health facilities to cope with the challenges of a disaster, hospitals need to be prepared to initiate fundamental priority action.

This plan provides an all-hazards list of key actions (check list) to be considered by hospitals in responding to any disaster event. In defining the all-hazards priority action required for a rapid, effective response to a critical event, this checklist aims to support hospital managers and emergency planners in achieving the following:

(1) the continuity of essential services.

(2) the well-coordinated implementation of hospital operations at every level.

(3) clear and accurate internal and external communication.

(4) swift adaptation to increased demands.

(5) the effective use of scarce resources; and

(6) a safe environment for health-care workers.

In this plan, a tool suggested by World health Organizations is used for the emergency response. The tool was built on previous work by the World Health Organization to assist hospitals with pandemic management[1]. The tool is structured according to nine key components, each with a list of priority actions. Hospitals experiencing an excessive demand for health services due to a critical event are strongly encouraged to be prepared to implement each action of hospital emergency preparedness and response plan effectively and as soon as it is required.

It is essential to conduct a 'Risk Analysis' as a part of pre disaster planning phase and capacity building activities for every staff every year. A stakeholder analysis also requires to be done in that phase. The tool presented below is also a part of the annual exercise that needs to be practiced by every hospital. The "recommended reading" listed for each component of the climate informed hospital emergency response plan includes tools, guidelines, and other resources,

Hospital emergency management is a continuous process requiring the integration of planning and response efforts with local and national programs. The principles and recommendations outlined in the tool are generic, applicable to a range of contingencies and based on an all-hazards approach. The checklist is intended to complement existing multisectoral hospital emergency-management plans and, when possible, augment standard operating procedures during non-crisis situations. The principles and recommendations included in this tool may be used by hospitals at any level of emergency preparedness.

Components of the tool are explained in the following sub sections and are intended to help hospital administrators and emergency managers to respond effectively to all types of disasters. Health facilities experiencing a surge in demand for healthcare

[1] Hospital preparedness checklist for pandemic influenza: focus on pandemic (H1N1) 2009

services as a result of a disaster-related event should check the status of each of the listed actions below and will take action to implement as soon as possible.

Risks Analysis (Climate and Non-Climate)

There is a difference between a risk and a hazard. A hazard is anything that has the potential to do harm to property, the environment, and/or people. Risk is the probability of that hazard occurring. The hospitals must be aware of and consider both as they develop the plan. No community is equally likely to experience every possible type of disaster or emergency. Climate and earthquake zones, proximity to the seacoast or a major river, local industrial activity, and the presence or lack of transportation hubs can affect the likelihood of each type of hazard occurring. The hospitals located in an area should identify the more likely hazards based on local risk factors and take them into account in developing the plan.

Some examples of different types of hazards are:

- Natural, man-made, or technological disasters (e.g., snowstorms, drought, cyclone, riverbank erosion, fire, terrorism, a blackout etc.)
- Accidental and intentional events (e.g., a burst pipe, an active shooter)
- Internal and external events (e.g., a fire or flood)
- Controllable events and those beyond an organization's control (e.g., undiagnosed persons, a flu pandemic)
- Events with warning and those without (e.g., hurricanes vs. most earthquakes).

The local or state emergency management agency, local health department, or primary care association will consider these risks and will conduct a local hazard assessment or vulnerability analysis. Although each hospital may need to make small adjustments to its assessment based on the geographic, social and natural characteristics of the area and experience.

The "lesson identified" after disasters is often the importance of cultivating relationships among the agencies and groups responsible for emergency management and response before the emergency occurs. Fostering a relationship with the community's fire, emergency medical services, local health department, county executive's office and others can accelerate the planning process, reduce the burden on hospital's resources when doing drills or exercises, and make any

response to a real emergency easier. Whether adapting an available analysis or developing its own, the following table will help the hospital authority to complete its local hazard assessment.

A simple tool is presented below (Table 1) for the calculation of a healthcare center's vulnerability, where one needs to enter the probability score and the overall impact score to get the total score for any hazard. A list of hazards in each category that are of concern is provided; one may want to add one or more hazards, or describe one of the hazards in more detail, because of the local concerns. The higher the total point, the greater the overall impact of the event on the community.

Probability is the frequency at which the hazardous event occurs. The scoring criteria for probability is as below:

- 5 points: Happens annually.
- 4 points: Has happened within the past 2–5 years.
- 3 points: Has happened within the past 5–10 years.
- 2 points: Has happened over 10 years ago.
- 1 point: Has never happened before.

Overall Impact on Hospital is the impact that the hazard has caused (or could cause) in the way of physical damage to the center, staffing shortages, interruption of patient services, and/or supply disruption. The scoring criteria are:

- 5 points: Severe impact on center (has caused center to close)
- 4 points: Significant impact on center
- 3 points: Moderate impact on center
- 2 points: Minimal impact on center
- 1 point: No impact on center

The maximum total score will be 25 and the minimum score will be 1. After putting a score for both probability and overall impact, the total score can be found by multiplying those. Comparing the total score of all the identified hazards, the highest risk for a hospital in an area could be known. An example is shown in Table 1.

Table 1: Risk analysis for hazards

Hazards	Probability	Overall Impact	Total Score (Probability x Overall Impact)
Natural Hazards			
Flood	5	3	15
Earthquake	1	1	1
Cyclone	3	5	15
Industrial Hazards			
Fire	2	5	10
Blackout	3	3	9

In this instance, the likelihood of a flood occurring is greater than a tornado. Although the impact of the tornado on the health care center would be high, it is advisable to spend more time or energy preparing for an event that happens annually, as compared to one that happens less frequently. The authority should be certain to include in the plan contingencies for any hazard that scores higher. This is not to say that those hazards that have low points should not be planned for but rather that greater emphasis should be placed on the more frequently occurring, higher impact hazards.

A sample of hazard vulnerability assessment form is provided in Annex-III.

Components of the hospital and emergency response plan

The plan is structured according to nine key components, each with a list of priority actions. These nine components are:

1. Command and Control
2. Communication
3. Safety and Security
4. Triage
5. Surge Capacity
6. Continuity of Essential Services
7. Human Resources
8. Logistics and Supply Management
9. Post Disaster Recovery

Hospitals experiencing an excessive demand for healthcare services due to a critical event are strongly encouraged to be prepared to implement each action effectively

and as soon as it is required. The "recommended reading" listed for each component includes tools, guidelines, and other resources.

Command and Control

A well-functioning command and control system is essential for effective hospital emergency management operations. Some actions are recommended to establish a proper command and control system in the place.

Action-1:

Activate as quickly as possible the hospital incident command group (ICG) or establish an ad hoc ICG, i.e., a supervisory body responsible for directing the hospital-based emergency management operations.

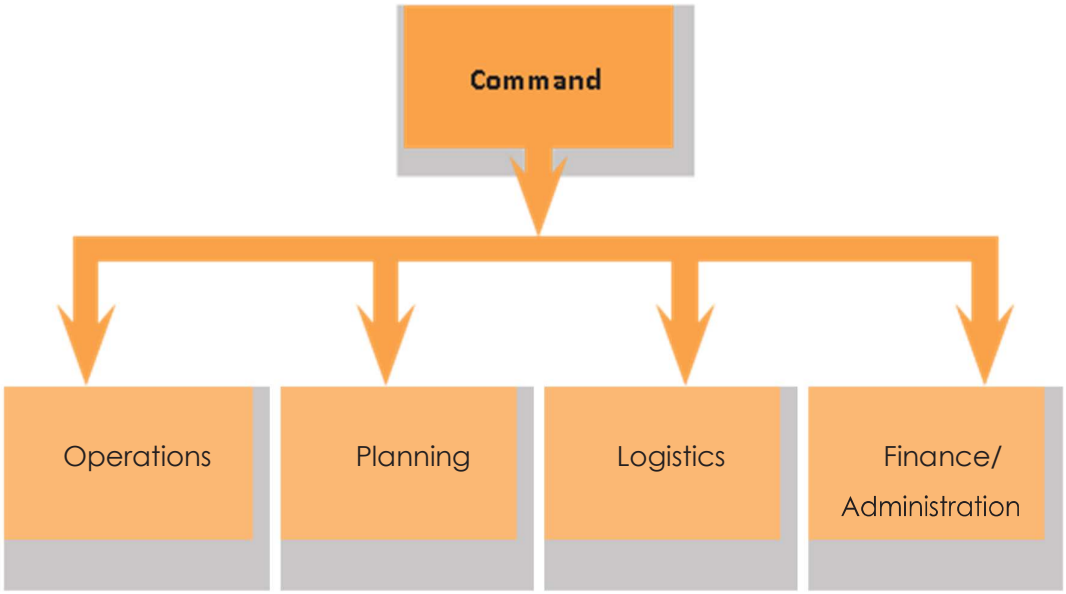


Figure 1: Organizational structure of the incident command system (ICS)

An ICG is required for the effective development and management of hospital-based emergency response systems and procedures. The ICS will take overall operational leadership and will deliver response and mitigation plans, coordinate logistic supply, oversight for all aspects of crisis management, coordinate the overall response, approve all actions and serves as the final authority of all activities and decisions made during emergency response operations. To implement the incident command system (ICS), an incident command group (ICG) will have to be formed, with representatives from all hospital services.

When organizing a hospital incident command group, consider including representatives from the following services (if those services/departments are available).

- Hospital administration
- Communications
- Security
- Nursing administration
- Store management
- Pharmacy
- Infection prevention and control (IPC)
- Emergency Department management
- Medicine or respiratory medicine department
- Surgery and casualty department
- Engineering and maintenance
- Laboratory
- Nutrition or food department
- Social service department
- Laundry, cleaning, and waste

In addition, medical staff working, for example, in emergency medicine, intensive care, internal medicine or pediatrics, should be represented. An illustrated chart that provides an example of Incident Command Group (ICG) structure is shown in Annex-I. The functional roles of ICG members are provided in Annex-II.

Incident Command Group (ICG) allows for the efficient transfer of command by recognizing that personnel initially assuming a command position may be relieved by someone with more experience as additional personnel arrive and share the incident command workload or shift change.

- The transfer of command begins with a transition meeting in which the outgoing commander briefs the replacement on the current situation, response actions, available resources, and the role of external agencies in support of the hospital.
- Health, medical, and safety concerns are addressed, and, if relevant, political sensitivities and business continuity capabilities may also be discussed.
- After the transfer of command is completed, proper documentation is prepared and, where appropriate, broadly communicated to staff.
- Hospital Incident Commander (IC) ensures each appointed Command/General Staff member is adequately briefed on response issues and objectives.

Action-2:

Designate a hospital command Centre, i.e., a specific location prepared to convene and coordinate hospital-wide emergency response activities and equipped with effective means of communication.

Action-3:

For each of the nine key components listed in this document, designate an individual (focal point) to ensure the appropriate management and coordination of related response activities. The table below shows a format that could be used in this regard and should be disseminated among the ICG members as well as all concerned hospital staff.

Table Heading: Serial No.	Designation	Name of the individual
1	Command and control	Director/UH&FWO/RMO
2	Communication	Media wing
3	Safety and security	Security In charge
4	Triage	In-charge Nurse
5	Surge capacity	Facilities manager
6	Continuity of essential services	Director/UH&FWO/RMO
7	Human resources	Head of admin
8	Logistics and supply management	Supply chain manager
9	Post-disaster recovery	Emergency management team

Action-4:

Designate prospective replacements for directors and focal points to guarantee continuity of the command-and-control structure and function.

ICG position	Hospital position	Remarks
Incident Commander	Director/UH&FWO/RMO	Primary
	Deputy Director/RMO	Alternative
		Weekends, Holidays and Off hours
Public Information Officer		Primary

		Alternative
		Weekends, Holidays and Off hours
Security Officer		Primary
		Alternative
		Weekends, Holidays and Off hours
Liaison Officer		Primary
		Alternative
		Weekends, Holidays and Off hours
Clinical Management Supervisor		Primary
		Alternative
		Weekends, Holidays and Off hours
Logistics Officer		Primary
		Deputy Chief/Alternative
		Weekends, Holidays and Off hours
Finance and Admin Officer		Primary
		Deputy Chief/Alternative

Action-5:

Consult core internal and external documents (e.g., publications of the national health authority and WHO) related to hospital emergency management to ensure application of the basic principles and accepted strategies related to planning and implementing a hospital incident action plan).

Action-6

Implement or develop job action sheets that briefly list the essential qualifications, duties and resources required of ICG members, hospital managers and staff for emergency-response activities.

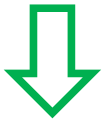
The Job Action Sheets, or job descriptions, is the component that tells responding personnel "what they are going to do; when they are going to do it; and who they will report it to after they have done it."

Each Job Action Sheet defines and outlines the responsibilities of each job position. The universal titles and mission statements, found in HERC, allow emergency responders from a variety of organizations to communicate quickly and clearly with other users of ICS. Changing job titles and mission statements will go against the very purpose of having common terminology and structure.

Action-7

Ensure that all ICG members have been adequately trained on the structure and functions of the incident command system (ICS) and that other hospital staff and community networks are aware of their roles within the ICS (Recommended reading 1).

Tool 1: Command and Control

Steps	Actions		Use these cells to write the action's output for practice
Step 1	Designate a hospital command centre, i.e., a specific location prepared to convene and coordinate hospital-wide emergency response activities and equipped with effective means of communication		
Step 2	Designate an individual (focal point) to ensure the appropriate management and coordination of related response activities.		
Step 3	Designate prospective replacements for directors and focal points to guarantee continuity of the command-and-control structure and function		

Step 4	Consult core internal and external documents related to hospital emergency management to ensure application of the basic principles and accepted strategies related to planning and implementing a hospital incident action plan.		
Step 5	Implement or develop job action sheets		
Step 6	Ensure that all ICG members have been adequately trained on the structure and functions of the incident command system (ICS) and that other hospital staff and community networks are aware of their roles within the ICS		

Communication

Effective communication is another important aspect of emergency management. Shared information should be precise and clear. Multiple means of communication should be planned to communicate with hospital staffs, administrator, patients, and communities. Clear, accurate and timely communication is necessary to ensure informed decision-making, effective collaboration and cooperation, and public awareness and trust. Consider taking the following action.

Communication with the affected community is especially important during an emergency. Alerts and warnings; directives about evacuation, curfews, and other self-protective measures; and information about response status, family members, available assistance, and other matters affecting response and recovery are all examples of emergency communications. Emergency messages that are well-conceived and effectively delivered can help ensure public safety, protect property, facilitate response efforts, elicit cooperation, instill public confidence, and help families reunite. Many factors influence people's response to a warning message, including individual characteristics and perceptions, whether the message comes from a credible source, how the message is delivered, and the message itself.

Several communication tools are used during emergencies which includes in-person events, print and broadcast media, the Internet, and social media. Each tool has advantages and disadvantages depending on the communication goal and intended audience. Regardless of the communication tools, ensure that emergency communications are in sync with other information being disseminated and are accessible to the entire community. In the following certain steps are advised to be maintained for effective lines of communication with the public, employees, and the media below.

1. Appoint/designate a public information spokesperson to coordinate hospital communication with the public, media/press briefing, and health authorities. The absence of transparent and credible information leads to media speculations and increases the stress and pressure of the incident, especially on the hospital and its staff. Every news and information source will seek access to the latest and most up-to-date information.

   The ICS will establish a protocol for providing timely and accurate information to the public during crisis or emergency situations. During an event, the Public Information Officer (PIO) will be assigned to manage:

   - Media and public inquiries;
   - Emergency public information and warnings;
   - Rumor monitoring and response;
   - Social Media monitoring;
   - Clearing messages with appropriate authorities and disseminating accurate and timely information related to the incident, particularly regarding information on public health, safety and protection, and patient care and management issues.

   All media and community inquiries will be managed through the PIO. The effective use of the media to convey information during and following an incident is critical. The information provided to the public must include directions on what actions should and should not be taken, along with appropriate details about the incident and the actions being taken by the hospital. The PIO will work closely with PIO's at other community response agencies, so that any contradictory or confusing messages coming from different sources can be avoided.

2. Designate a space for press conferences (outside the immediate proximity of the emergency department, triage/waiting areas, and the command Centre).
3. Draft the brief key messages for target audiences (e.g., patients, staff, public) for the most likely disaster scenarios. For patients whose family members are not at the hospital prior to an emergency, the PIO in conjunction with Social Services will communicate family members as needed.
4. If a hospital can no longer sustain, operations and relocation of patients becomes necessary. The PIO will establish processes to communicate pertinent information to patients and their families – including when patients are relocated to an alternative care site. Consistent with laws and regulations surrounding confidentiality of patient information, families may be apprised of the following:
    1. Verification that the patient is at the organization.
    2. The general condition of the patient
    3. If the patient is going to be moved to an alternate care site, then his/her name, address, and specific care area of that site, as well as the anticipated timeframe for relocation must be recorded.
4. Ensure that all communications to the public, media, staff (in general) and health authorities are approved by the incident commander or ICG. The main responsibility in talking to the media and conducting press briefing / interview will be with the IC unless this responsibility is delegated to the Public Information Officer (PIO).
5. Establish streamlined mechanisms of information exchange between hospital administration, department/unit heads and facility staff Modern communication methods (e.g., WhatsApp, messenger) can be used for this purpose.
6. Brief hospital staff on their roles and responsibilities within the incident action plan. The IC or PIO will be responsible for briefing all hospital staff on their roles in accordance with the Incident Command Group and job action sheet provided in the annex section.
7. Establish mechanisms for the appropriate and timely collection, processing and reporting of information to supervisory stakeholders (e.g., the government, health authorities), and through them to neighboring hospitals, private practitioners and prehospital networks (). A representative from the hospital should be appointed to act as an in-person Liaison of ICS. This person would be responsible for facilitating timely communication between the respective Command Centers.

8. During large-scale events, a Joint Information Center (JIC) may be established in an attempt to communicate timely accurate information through a Joint Information System (JIS). This communication may be channeled through the hospital Public Information Officer (PIO), Liaison or other facility representative assigned to communicate with the stakeholders, government, health authorities or other governing bodies. If the nature of the emergency is internal, then the PIO or liaison officer will notify the appropriate external authorities as soon as possible. These authorities should be provided with pertinent information including:
    - The nature and scope of the emergency
    - The potential or actual impact on the organization
    - A summary of actions taken (or to be taken) by the organization in response to the emergency
    - What assistance – if any – will be needed from the external authorities.
9. Ensure that all decisions related to patient prioritization (e.g., adapted admission and discharge criteria, triage methods, infection prevention and control measures) are communicated to all relevant staff and stakeholders.
10. Ensure the availability of reliable and sustainable primary and back-up communication systems (e.g., satellite phones, mobile devices, landlines, Internet connections, pagers, two-way radios, unlisted numbers), as well as access to an updated contact list. Incident Commander has to ensure that the hospital has several methods of internal and external communication. It is the responsibility of the Incident Commander to confirm that multiple means of communication are utilized appropriately and when needed. Communication devices include:
    - Portable radios
    - Walkie Talkie Motorola system (house wide)
    - Runners
    - Satellite phones (one in DRC- future purchases for Facilities and Materials Management)
    - Cell phones
    - HAM Radio in Disaster Resource Center
    - Email or Social Media blasts
    - Overhead paging

    Through various activities, the facility participates in advance preparation to support communications during an emergency. These include:

- Maintenance of communication equipment
- Practice with alternate communications during drill exercises
- Receiving communications 24/7 from Reddinett (LA County) and Nixel (LA County Sherriffs and Long Beach Police Department)

Tool 2: Communication:

Clear, accurate and timely communication is necessary to ensure informed decision-making, effective collaboration and cooperation, and public awareness and trust. Steps are as bellow:

Steps	Actions		Use these cells to write the action's output for practice
Step 1	Appoint a spokesperson to coordinate hospital communication with the public, the media and health authorities.		
Step 2	Designate a space for press conferences (better if it is near to the immediate proximity of the emergency department, triage/waiting areas and the command centre).		
Step 3	Brief and simple key massages for target audiences (e.g., patients, staff, public) in preparation for the most likely disaster scenarios		
Step 4	Ensure that all communications to the public, media, staff (in general) and health authorities are approved by the incident commander or ICG.		
Step 5	Establish streamlined mechanisms of information exchange between hospital administration, department/unit heads and facility staff		
Step 6	Brief hospital staff on their roles and responsibilities within the incident action plan		
Step 7	Ensure that all decisions related to patient prioritization (e.g., adapted admission and discharge criteria, triage methods, infection prevention and control measures) are communicated to all relevant staff and stakeholders		

Step 8	Ensure the availability of reliable and sustainable primary and back-up communication systems (e.g., satellite phones, mobile devices, landlines, Internet connections, pagers, two-way radios, unlisted numbers).		

Safety and security

During the emergency response and recovery phases, safety and security measures, as well as monitoring activities, are critical. The health-care system is dedicated to providing a safe and secure environment for patients, staff, and visitors. The hospital's security measures protect patients, staff, and visitors from inappropriate behavior such as violence and aggression. Well-developed safety and security procedures are essential for operating the hospital functions and incident response during a disaster. Consider taking the following action as part of safety and security.

1. Appoint a hospital security team responsible for all hospital safety and security activities. When ICG is activated, safety and security measures, as well as monitoring activities, play a critical role in the emergency response and recovery phases. Designated Safety and Security Officers keep an eye on different events during emergency drills and when emergency measures are put in place.
2. Prioritize security needs in collaboration with the hospital ICG. Identify areas where increased vulnerability is anticipated (e.g., entry/exits, food/water access points, pharmaceutical stockpiles). When the ICS is activated, Security Officers on duty will be responsible for locking all exits and entrances except the Emergency Department entrances. All hospital healthcare workers must always wear ID badges.
3. Ensure the early control of facility access point(s), triage site(s) and other areas of patient flow, traffic and parking. Limit visitor access as appropriate. During emergency conditions, it becomes necessary to control the movement of visitors to facilitate a safe and controlled environment during emergencies. Movement within the hospital will be controlled by security through security checkpoints, control of elevators, and control of doors. Health care facilities that do not perform essential functions may be redirected.
4. Establish a reliable mode of identifying authorized hospital personnel, patients, and visitors.

5. Provide a mechanism for escorting emergency medical personnel and their families to patient care areas.
6. Ensure that security measures required for safe and efficient hospital evacuation are clearly defined.
7. Ensure that the rules for engagement in crowd control are clearly defined.
8. Solicit frequent input from the hospital security team with a view to identifying potential safety and security challenges and constraints, including gaps in the management of hazardous materials and the prevention and control of infection.
9. Identify information insecurity risks. Implement procedures to ensure the secure collection, storage and reporting of confidential information. During hospital emergency there is a high possibility of spreading wrong information that can mislead people, hospital staff and patients. So, it is essential to secure the information and provide it to the officer who oversees communication and press briefing.
10. Define the threshold and procedures for integrating local law enforcement and military in-hospital security operations.
11. Establish an area for radioactive, biological, and chemical decontamination and isolation. The hospital has set aside a space for radioactive or chemical isolation, as well as radioactive, chemical, and biological decontamination. Healthcare workers should be trained to respond to hazardous material contamination. The Disaster Resource Center, Facilities Department, Security, Safety, and Emergency Management Committee maintains and coordinates the decontamination facilities.

Tool 3: Safety and Security

Well-developed safety and security procedures are essential for the maintenance of hospital functions and for incident response operations during a disaster.

Steps	Actions		Use these cells to write the action's output for practice
Step 1	Appoint a hospital security team responsible for all hospital safety and security services	⇩	
Step 2	Prioritize security needs in collaboration with the hospital ICG. Identify areas where increased vulnerability is anticipated (e.g., entry/exits, food/water access points, pharmaceutical stockpiles).	⇩	
Step 3	Ensure the control of facility access point(s), triage site(s) and other areas of patient flow, traffic and parking. Limit visitor access as appropriate	⇩	
Step 4	Establish a well-accepted mode of identifying hospital personnel, patients and visitors	⇩	
Step 5	Provide a mechanism for escorting emergency medical personnel to patient care areas.	⇩	
Step 6	Ensure that security measures for safe and efficient hospital evacuation are clearly defined	⇩	
Step 7	Ensure that the rules for engagement in crowd control are clearly defined	⇩	
Step 8	Identify potential safety and security challenges and constraints, including gaps in the management of hazardous materials and the prevention and control of infection	⇩	
Step 9	Integrate local law enforcement and military in hospital security operations, if needed	⇩	

Step 10	Establish an area for radioactive, biological and chemical decontamination and isolation		

4.3.4 Triage

Ideally, the first people who require medical treatment should receive it. In less-than-ideal circumstances, someone must decide who receives care first. Even when there is no disaster or health emergency, some health facilities must make these decisions daily. Natural disasters (e.g., earthquakes) or other events (e.g., train crash or bombing) can, on the other hand, result in a large number of injured or sick people at the same time. When this occurs, decisions must be made about how to best allocate care when resources are insufficient to care for everyone who requires it. This is referred to as triage.

Triage's goal is to save as many lives as possible. During a severe pandemic, expect the period when the need for healthcare exceeds the available resources to last weeks or months. Using scarce medical resources to healthcare for patients who may be critically ill but will likely die even with intensive care may result in other less ill patients not receiving care, becoming sicker, and dying. Triage, when done correctly, results in the best outcome for the greatest number of people. Without a triage plan, resources are likely to be wasted, and more people will die. As a result, ICG must include a triage plan and execute it properly.

Maintaining patient triage operations, based on a well-functioning mass-casualty triage protocol, is essential for the appropriate organization of patient care. Consider taking the following action.

1. Designate an experienced officer to oversee all triage operations (e.g., a trauma or emergency physician or a well-trained emergency nurse in a supervisory position).
2. Ensure that areas for receiving patients, as well as waiting areas, are effectively covered, secure from potential environmental hazards and provided with adequate workspace, lighting, WASH facilities and access to auxiliary power.
3. Ensure that the triage area is in close proximity to essential personnel, medical supplies and key care services (e.g., the emergency department, operative suites, the intensive care unit).

4. Ensure that entrance and exit routes to/from the triage area are clearly marked.
5. Identify a contingency site for receipt and triage of mass-casualties.
6. Identify an alternative waiting area for wounded patients able to walk.
7. Establish a mass-casualty triage protocol based on severity of illness/injury, survivability and hospital capacity that follows internationally accepted principles and guidelines
8. Establish a clear method of patient triage identification; ensure adequate supply of triage tags
9. Identify a mechanism whereby the hospital emergency response plan can be activated from the emergency department or triage site.
10. Ensure that adapted protocols on hospital admission, discharge, referral, and operative suite access are operational when the disaster plan is activated to facilitate efficient patient processing.

Tool 4: Triage

Maintaining patient triage operations, based on a well-functioning mass-casualty triage protocol, is essential for the appropriate organization of patient care.

Steps	Actions		Use these cells to write the action's output for practice
Step 1	Designate an experienced triage officer to oversee all triage operations	⇩	
Step 2	Ensure that areas for receiving patients, as well as waiting areas, are effectively covered, secure from potential environmental hazards and provided with adequate workspace, lighting and access to auxiliary power	⇩	
Step 3	Ensure that the triage area is in close proximity to essential personnel, medical supplies and key care services	⇩	
Step 4	Ensure that entrance and exit routes to/from the triage area are clearly identified.	⇩	
Step 5	Identify a contingency site for receipt and triage of mass-casualties	⇩	
Step 6	Identify an alternative waiting area for wounded patients able to walk	⇩	
Step 7	Establish a mass-casualty triage protocol based on severity of illness/injury, survivability and hospital capacity	⇩	
Step 8	Establish a clear method of patient triage identification; ensure adequate supply of triage tags	⇩	
Step 10	Ensure that hospital admission, discharge, referral and operative suite access are operational when the disaster plan is activated to facilitate efficient patient processing	⇩	

Surge capacity

Surge capacity is a critical component of hospital readiness for responding to emergencies and disasters. It is the ability of a health service to expand beyond normal capacity to meet increased demand for clinical care which is an important factor of hospital disaster response and should be addressed early in the planning process.

In a healthcare facility, during emergency the number of incoming patients usually increases, hence the ability to expand services and increase of beds by the healthcare facility becomes critical. Although temporary increases in capacity can result from the cancellation or postponement of routine patient loads, there must eventually be an expansion of overall facility capacity or the addition of new facilities into the system. This can be accomplished by adding portable facilities, taking administrative space within the institution, or using community buildings (e.g., schools) for treatment space. Unless providers and supplies can be brought in from outside the disaster zone, creative resource allocation is the only option.

When new patients arrive, primary level hospitals may need to increase bed capacity for definitive treatment. Discharging elective cases and stable recovering patients, ceasing non-emergency admissions, and converting waiting/non-patient care areas into makeshift wards are among the suggestions. Consider taking the following action.

1. Calculate maximum capacity required for patient admission and care based not only on a total number of beds required but also on the availability of human and essential resources and the adaptability of facility space for critical care.
2. Estimate the increase in demand for hospital services, using available planning assumptions and tools
3. Identify methods of expanding hospital inpatient capacity (taking physical space, staff, supplies and processes into consideration).
4. Designate additional healthcare areas for patient overflow (e.g., auditorium, lobby).
5. Increase hospital capacity by outsourcing the care of non-critical patients to appropriate alternative treatment sites (e.g., outpatient departments adapted

for inpatient use, home care for low-severity illness, and chronic-care facilities for long-term patients)

6. Verify the availability of vehicles and resources required for patient transportation.
7. Establish a contingency plan for inter facility patient transfer should traditional methods of transportation become unavailable.
8. Identify potential gaps in the provision of medical care, with emphasis on critical and emergent surgical care. Address these gaps in coordination with the authorities and neighboring and network hospitals.
9. In coordination with the local authorities, identify additional sites that may be converted to patient care units (e.g., convalescent homes, hotels, schools, community centers, gyms
10. Prioritize/cancel nonessential services (e.g., elective surgery) when necessary.
11. Adapt hospital admission and discharge criteria and prioritize clinical interventions according to available treatment capacity and demand.
12. Designate an area for use as a temporary morgue. Ensure the adequate supply of body bags.
13. Formulate a contingency plan for postmortem care with the appropriate partners (e.g., morticians, medical examiners and pathologists).

Tool 5: Surge Capacity

Steps	Actions		Use these cells to write the action's output for practice
Step 1	Calculate maximal capacity required for patient admission and care focusing human and essential resources and the adaptability of facility space for critical care	⇩	
Step 2	Estimate the increase in demand for hospital services, using available planning assumptions and tools	⇩	
Step 3	Identify methods of expanding hospital inpatient capacity, in case of any need	⇩	
Step 4	Designate care areas for patient overflow	⇩	
Step 5	Increase hospital capacity by outsourcing the care of non-critical patients to appropriate alternative treatment sites	⇩	
Step 6	Verify the availability of vehicles and resources required for patient transportation	⇩	
Step 7	Establish a contingency plan for interfacility patient transfer	⇩	
Step 8	Identify potential gaps in the provision of medical care, with emphasis on critical and emergent surgical care. Address these gaps in coordination with the authorities and neighboring and network hospitals	⇩	
Step 10	In coordination with the local authorities, identify additional sites that may be converted to patient care units	⇩	
Step 11	Prioritize/cancel nonessential services	⇩	
Step 12	Adapt hospital admission and discharge criteria and prioritize clinical interventions according to available treatment capacity and demand	⇩	
Step 13	Designate an area for use as a temporary morgue	⇩	
Step 14	Formulate a contingency plan for postmortem care with the appropriate partners	⇩	

Continuity of essential services

A disaster should not stop essential medical and surgical services (e.g., emergency care, urgent operations, maternal and childcare) that exists under normal circumstances. Rather, the availability of essential services needs to continue in parallel with the activation of a hospital emergency response plan The determination of services are considered essential is guided by the burden of disease, local and national priorities. The existing Essential Service Package of the Ministry of Health and Family Welfare is to be followed. The actions of the packages are as follows. List all hospital services, ranking them in order of priority.

1. Identify and maintain the essential hospital services, i.e., those that need to be always available in any circumstances. Take the Essential Service Package (ESP) into consideration.
2. Identify the resources needed to ensure the continuity of essential services in hospital, for the critically ill patients and other vulnerable groups (e.g., pediatric, elderly and disabled patients)
3. Ensure the existence of a systematic and implementable evacuation plan that seeks to safeguard the continuity of critical care (including, for example, access to mechanical ventilation and life-sustaining medications)
4. Coordinate with the higher health authorities, neighboring hospitals and private practitioners on defining the roles and responsibilities of each member of the local health-care network to ensure the continuous provision of essential medical services throughout the community in disasters.
5. Ensure the availability of appropriate back-up arrangements for essential lifelines, including water, power and oxygen.
6. Anticipate the impact of the most likely disaster events on hospital supplies of food and water. Take action to ensure the availability of adequate supplies.
7. Ensure contingency mechanisms for the collection and disposal of human, hazardous and other
8. Hospital waste management

Tool 6: Continuity of essential services

Steps	Actions		
Step 1	List all hospital services, ranking them in order of priority	⇩	Use these cells to write the action's output for practice
Step 2	Identify and maintain the essential hospital services	⇩	
Step 3	Identify the resources needed to ensure the continuity of essential hospital services, in particular those for the critically ill and other vulnerable groups	⇩	
Step 4	Coordinate with the health authorities, neighboring hospitals and private practitioners on defining the roles and responsibilities of each member of the local health-care network to ensure the continuous provision of essential medical services throughout the community	⇩	
Step 5	Ensure the availability of appropriate back-up arrangements for essential lifelines, including water, power and oxygen	⇩	
Step 6	Anticipate the impact of the most likely disaster events on hospital supplies of food and water. Take action to ensure the availability of adequate supplies	⇩	
Step 7	Ensure contingency mechanisms for the collection and disposal of human, hazardous and other hospital waste.	⇩	

4.3.7 Human resources

In an emergency, the hospital must mobilize an adequate number of staff. Lessons learned show that having the right people at the right time is critical to the success. This includes having the appropriate human resource management staff, skills, policies, and support.

Effective human resource management is essential to ensure adequate staff and the continuity of operations during any incident that increases the demand for healthcare services Consider taking the following action.

1. Update the hospital staff contact list.
2. Estimate and continuously monitor staff absenteeism.

3. Establish a clear staff sick-leave policy, including contingencies for ill or injured family members or dependents of staff.
4. Identify the minimum needs in terms of health-care workers and other hospital staff to ensure the operational sufficiency of a given hospital department
5. Establish a contingency plan for the provision of food, water and living space for hospital personnel.
6. Prioritize staffing requirements and distribute personnel accordingly.
7. Recruit and train additional staff as volunteers (e.g., retired staff, university affiliates/students and community volunteers) according to the anticipated need. Local community support will be needed.
8. Trained health-care providers in high-demand services (e.g., emergency, surgical, and intensive care units).
9. Provide training and exercises in areas of potential increased clinical demand, including emergency and intensive care, to ensure adequate staff capacity and competency.
10. Identify domestic support measures (e.g., travel, childcare, care for ill or disabled family members) to enable staff flexibility for shift reassignment and longer working hours.
11. Ensure adequate shift rotation and self-care for clinical staff to support morale and reduce medical error.
12. Ensure the availability of multidisciplinary psychosocial support
13. Ensure that staff dealing with epidemic-prone infectious diseases are provided with the appropriate vaccinations, in accordance with national policy and guidelines of the health authority.

Tool 7: Human Resources

Steps	Actions		Use these cells to write the action's output for practice
Step 1	Update the hospital staff contact list.	⇩	
Step 2	Estimate and continuously monitor staff absenteeism.	⇩	
Step 3	Establish a clear staff sick-leave policy, including contingencies for ill or injured family members or dependents of staff.	⇩	
Step 4	Establish a contingency plan for the provision of food, water and living. space for hospital personnel	⇩	
Step 5	Prioritize staffing requirements and distribute personnel accordingly.	⇩	
Step 6	Recruit and train additional staff according to the anticipated need	⇩	
Step 7	Address liability, insurance and temporary licensing issues relating to additional staff and volunteers who may be required to work in areas outside the scope of their training or for which they have no license	⇩	
Step 8	Establish a system of rapidly providing health-care workers	⇩	
Step 9	Provide training and exercises in areas of potential increased clinical demand, including emergency and intensive care, to ensure adequate staff capacity and competency.	⇩	
Step 10	Identify domestic support measures to enable staff flexibility for shift reassignment and longer working hours.	⇩	
Step 11	Ensure adequate shift rotation and self-care for clinical staff to support morale and reduce medical error	⇩	
Step 12	Ensure the availability of multidisciplinary psychosocial support teams that include social workers, counsellors, interpreters, and clergy for the families of staff and patients.	⇩	
Step 13	Ensure that staff dealing with epidemic-prone respiratory illness are pro-vided with the appropriate vaccinations, in accordance with national policy and guidelines of the health authority.	⇩	

Logistics and supply management

During a disaster, supply chain vulnerabilities such as power, transportation, and communication can disrupt the delivery of medications and medical supplies, limiting the ability to provide critical care services. Disasters can also disrupt information technology (IT) in health-care systems, causing disruptions in patient care, particularly critical care, and other health-care business functions.

Continuity of the hospital supply and delivery chain is often an underestimated challenge during a disaster, requiring attentive contingency planning and response Consider taking the following action.

1. Develop and maintain an updated inventory of all equipment, supplies and pharmaceuticals; establish a shortage-alert mechanism.
2. Estimate the consumption of essential supplies and pharmaceuticals, (e.g., amount used per week)
3. Consult with authorities to ensure the continuous provision of essential medications and supplies (e.g., those available from institutional and central stockpiles and through emergency agreements with local suppliers and national and international aid agencies).
4. Assess the quality of contingency items prior to purchase; request quality certification if available.
5. Ensure the procurement and prompt delivery of equipment, supplies and other resources in times of shortage
6. Identify physical space within the hospital for the storage and stockpiling of additional supplies, taking ease of access, security, temperature, ventilation, light exposure, and humidity level into consideration. Ensure an uninterrupted cold chain for essential items requiring refrigeration.
7. Stockpile essential supplies and pharmaceuticals in accordance with national guidelines. Ensure the timely use of stockpiled items to avoid loss due to expiration.
8. Define the hospital pharmacy's role in providing pharmaceuticals to patients being treated at home or at alternative treatment sites.

9. Ensure that a mechanism exists for the prompt maintenance and repair of equipment required for essential services. Postpone all non-essential services when necessary.
10. Coordinate a contingency transportation strategy with prehospital networks and transportation services to ensure continuous patient transferal.

Tool 8: Logistic and supply management

Steps	Actions		Use these cells to write the action's output for practice
Step 1	Develop and maintain an updated inventory of all equipment, supplies and pharmaceuticals; establish a shortage-alert mechanism.		
Step 2	Estimate the consumption of essential supplies and pharmaceuticals, (e.g., amount used per week) using the most likely disaster scenarios		
Step 3	Consult with authorities to ensure the continuous provision of essential medications and supplies.		
Step 4	Assess the quality of contingency items prior to purchase; request quality certification if available.		
Step 5	Establish contingency agreements (e.g., memoranda of understanding, mutual aid agreements) with vendors to ensure the procurement and prompt delivery of equipment, supplies and other resources in times of shortage.		
Step 6	Identify physical space within the hospital for the storage and stockpiling of additional supplies, taking ease of access, security, temperature, ventilation, light exposure, and humidity level into consideration. Ensure an uninterrupted cold chain for essential items requiring refrigeration.		
Step 7	Stockpile essential supplies and pharmaceuticals in accordance with national guidelines. Ensure the timely use of stockpiled items to avoid loss due to expiration.		

Step 8	Ensure that a mechanism exists for the prompt maintenance and repair of equipment required for essential services.	⇩	
Step 9	Coordinate a contingency transportation strategy with prehospital networks and transportation services to ensure continuous patient transfer.	⇩	

Post disaster recovery

Post disaster recovery planning with activities for the health sector includes pre-hospital resources, hospital-based care, and out-of-hospital care delivery systems should ideally be focused on a continuum of community needs, ranging from short-term early recovery needs to long-term healthy community goals. The later goals, if properly developed, can assist communities in not only recovering from a disaster but also addressing chronic community health concerns such as access to healthcare services.

Recovery planning is important as response planning. Recovery plans should ideally be developed prior to a disaster and implemented while the response is still underway to assist healthcare facilities and providers in returning to normal operations or establishing a new normal state. This will allow hospital authority to continue providing care to the community while also maintaining financial viability in the aftermath of a disaster. This collection of resources highlights recovery planning guidance/guidelines, tools, lessons learned, and promising practices to assist healthcare emergency planners.

Post-disaster recovery planning should be performed at the onset of response activities. Prompt implementation of recovery efforts can help mitigate a disaster's long-term impact on hospital operations Consider taking the following action.

1. Appoint a disaster recovery officer responsible for overseeing hospital recovery operations.
2. Determine essential criteria and processes for system recovery
3. In case of damage to a hospital building, ensure that safety assessment is performed (
4. If evacuation is required, determine the time and resources needed to complete repairs and replacements before the facility can be reopened

5. Organize a team with hospital staff to carry out a post-action hospital inventory assessment. The team must be composed of staff familiar with the location and inventory of equipment and supplies. Consider including equipment vendors to assess the status of sophisticated equipment that may need to be repaired or replaced
6. Provide a post-action report to hospital administration, emergency managers and appropriate stakeholders that includes an incident summary, a response assessment, and an expenses report.
7. Organize professionally conducted debriefing for staff within 24–72 hours after the occurrence of the emergency incident to assist with coping and recovery, provide access to mental health resources and improve work performance.
8. Establish a post-disaster employee recovery assistance program according to staff needs, including, for example, counselling and family support services.
9. Show appropriate recognition of the services provided by staff, volunteers, external personnel and donors during disaster response and recovery.

Tool 9: Post-disaster recovery

Steps	Actions		Use these cells to write the action's output for practice
Step 1	Appoint a disaster recovery officer responsible for overseeing hospital recovery operations.		
Step 2	Determine essential criteria and processes for incident demobilization and system recovery.		
Step 3	In case of damage to a hospital building, ensure that a comprehensive structural integrity and safety assessment is performed.		
Step 4	If evacuation is required, determine the time and resources needed to complete repairs and replacements before the facility can be reopened.		
Step 5	Provide a post-action report to hospital administration, emergency managers and appropriate stakeholders that includes an incident summary, a response assessment, and an expenses report		
Step 6	Establish a post-disaster employee recovery assistance programme according to staff needs, including, for example, counselling and family support services		
Step 7	Show appropriate recognition of the services provided by staff, volunteers, external personnel and donors during disaster response and recovery.