सत्यमेव जयते

UNDP India

GUIDELINES FOR HOSPITAL EMERGENCY PREPAREDNESS PLANNING

GOI-UNDP DRM Programme
(2002-2008)

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Government of India
For more information, contact:
National Disaster Management Division
Ministry of Home Affairs
Government of India, North Block, New Delhi.
Tel.: -91-11-2094019 Fax: -91-11-2093750
Webstie: www.ndmindia.nic.in

PREFACE

The GoI-UNDP Disaster Risk Management Programme is a national initiative to reduce vulnerabilities of communities in some of the most hazard prone districts of India (169 districts and 17 states). The Programme aims to contribute to the social and economic development goals of the National and State Governments, enabling them to minimize losses to development gains and to reduce their vulnerability to natural disasters. Urban Earthquake Vulnerability Reduction Project (UEVRP), a sub-component of the DRM Programme, essentially aims at strengthening capacities of communities, urban local bodies and administration in mitigation, preparedness and response in 38 cities in India. These cities have been chosen on the criteria of being located in Seismic Zones III, IV or V, with more than half a million population.

Health and Hospital systems are the most critical units of the Emergency Support Function. "Guidelines for developing Hospital Emergency Management Plan" intends to support the hospitals to formulate their own "all hazard" emergency plans in accordance with their manpower and infrastructural resources that will meet the demands of medical care more effectively during disasters/emergencies.

This document would guide in developing integrated Hospital Plans that are consistent with the city or community disaster management plans. Emphasis is laid on strengthening the functioning, coordination and response for an enhanced pre-hospital and hospital care. It is ensured that these guidelines are in accordance with the "National Disaster Management Guidelines for Medical Preparedness and Mass Casualty Management" brought out by National Disaster Management Authority (NDMA).

The first chapter provides an overview of Disaster Management, concepts of hospital emergency planning, and issues of coordination and networking both for pre-hospital and hospital care. The second chapter covers the principles and the steps involved in hospital planning. The third chapter presents the templates for developing the actual plan for different levels of health facilities from secondary to tertiary and the teaching hospitals. Vital inventories, tables and charts, job cards etc. form a part of the annexes.

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G. Padmanabhan.

Emergency Analyst & office in Charge
Disaster Management Unit
United Nations Development Programme, India

LIST OF ABBREVIATIONS

ANS/DNS	Assistant Nursing Superintendent /Deputy Nursing Superintendent
BDO	Block Development Officer
CHC	Community Health Center
CMO	Chief Medical Officer
CMS	Chief Medical Superintendent
CSSD	Central Stores and Supply Depot
CT	Computerised Tomography
CUG	Close User Group
DM Cycle	Disaster Management Cycle
ED	Emergency Department
EOC	Emergency Operations Center
HAZMAT	Hazardous Material
HDU	High Dependency Unit
ICU	Intensive Care Unit
IC	Incident Commander
I/C	In-Charge
ICDS	Integrated Child Development Services
HEICS	Hospital Emergency Incident Command system
HOD	Head of Department
HSC	Hospital Surgical Capacity
HTC	Hospital Treatment Capacity
MCI	Mass Casualty Incident
MICU	Medical Intensive Care unit
MLC	Medico Legal Case
MO	Medical Officer
MO I/C	Medical Officer In Charge
MRD	Medical Records Department
NGO	Non Governmental Organization
OPD	Out Patient Department
OT	Operation Theater
OTA	Operation Theater Assistant
PHC	Primary Health Center
PWD	Public Works Department
PRO	Public Relations Officer
QRMTs	Quick Response Medical Teams

CONTENTS

1

HOSPITALS AND DISASTERS

1.1 Background

India has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Floods, droughts, cyclones, earthquakes and landslides are regular phenomena. India also witnessed a hitherto new natural calamity in the form of Indian Ocean Tsunami in 2004 . Last few decades have witnessed an increased frequency in disasters causing tremendous human casualties, in terms of loss of life and disability in addition to huge economic losses. Although these may not be totally preventable but their impact can be minimized by effective planning. Equally important are the "peripheral emergencies" like road, rail and air accidents, fire, drowning and stampedes in mass gathering, industrial accidents, explosions and terrorist attacks that have an inherent potential to convert into a mass casualty incident (MCI). The loss of life and disability are compounded by the lack of adequate medical preparedness both qualitatively and quantitatively across the country.

Figure 1: Factors affecting 'Risk'

1.2 What are disasters?

Almost on daily basis there are reports of disasters around the world. So what do we understand? Are they accidents or something else.

A disaster is defined as: "…….. a serious disruption of the functioning of the society, causing wide spread human, material, or environmental losses which exceed the ability of the affected society to cope using its own resources." A disaster occurs when a hazard (natural or man made) strikes a vulnerable society. Vulnerability is defined as "the extent to which a community, structure, service, or geographical area is likely to be damaged or disrupted by the impact of a particular hazard, on account of their nature, construction, or proximity to a hazard prone area".

1.3 What is "risk"?

Risk is a measure of the expected losses (deaths, injuries, property, economic losses etc.) due to a hazard of a particular magnitude striking in a given area. The Fig. 1 illustrates the four factors that contributes to risk. They are:

- Hazards (natural such as earthquake, floods, landslides,cyclones etc. or manmade such as exposure to hazardous material, explosion etc.)
- Location of hazard relative to the community at risk.
- Exposure (the effect of hazard on infrastructure and lifeline systems serving the population such as water supply, communication, transportation network etc.)
- Vulnerability of the exposed society, structure and systems to the hazard

1.4 How can we reduce the risk?

Risk reduction can be done in two ways:

A. Preparedness: Preparedness encompasses all those measures taken before a disaster event which are aimed at minimizing loss of life, disruption of critical services and damage when the disaster occurs. Thus, preparedness is a protective process which enables governments, communities and individuals to respond rapidly to disaster situation and cope with them effectively. Preparedness includes development of emergency response plans, effective warning systems, maintenance of inventories, training of manpower etc.

B. Mitigation: Mitigation encompasses all measures taken to reduce both the effect of hazards itself and the vulnerable conditions in order to reduce the losses in a future disaster. Examples of mitigation measures include, making earthquake resistant buildings, water management in drought prone areas, management of rivers to prevent floods etc.

1.5 The Disaster Management Cycle

Disaster management can be defined as the body of policy and administrative decisions and operational activities which pertain to the various stages of a disaster at various levels. Broadly disaster management can be divided into pre-disaster and post-disaster contexts.

1.6 Role of Hospitals in Disasters/ Mass Casualty Incident (MCI)

Hospitals play a critical role in health care infrastructure. Hospitals have a primary responsibility of saving lives, they also provide 24x7 emergency care service and hence public perceive it as a vital resource for diagnosis, treatment and follow-up for both physical and psychological care. Hospitals are central to provide emergency care and hence when a disaster strike the society falls back upon the hospitals to provide immediate succor in the form of emergency medical care.

1.7 What constitutes a disaster/ MCI for a hospital?

Whenever a hospital or a health care facility is confronted by a situation where it has to provide care to a large number of patients in limited time, which is beyond its normal capacity, constitute a disaster for the said hospital. In others words when the resources of the hospitals (infrastructure, trained manpower and organization) are over-whelmed beyond its normal capacity and additional contingency measure are required to control the event, the hospital can be said to be in a disaster situation. This implies that a same event may have a disaster potential for a smaller hospital and not so 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".

In order to find out what constitutes a disaster or unmanageable incident for the hospital, the hospital needs to calculate its normal capacity, beyond which it has to act according to the Disaster Plan. According to WHO (***Reference:*** *http://whoindia.org/en/Section33/Section34/Section38_51.htm)* The Mass Casualty Emergencies can be categorized in one of the following ways.

• Based on the Number of Casualties:

Here the categorization is based on the number of casualties coming to a hospital at a time and the ability of the hospital to cope with those casualties. Categorization will differ from hospital to hospital and depend on several factors, such as the number of doctors and nurses available and the availability of supplies and support services. Assessment of the capacity of a hospital to respond to a given emergency situation can be assessed by the following two ways.

- **Hospital Treatment Capacity (HTC),** is defined as the number of casualties that can be treated in the hospital in an hour and is usually calculated as 3% of total number of beds
- **Hospital Surgical Capacity (HSC)** is the number of seriously injured patients that can be operated upon within a 12-hour period i.e. HSC= Number of operation rooms x 7x 0.25 operations/12 hrs.

Category 1: Up to thirty patients belonging to a single accident or any other emergency, coming to a hospital casualty at one time.

Category 2: Thirty to fifty patients belonging to a single accident or any other emergency, coming to a hospital casualty at one time.

Category 3: More than fifty patients belonging to a single accident or emergency coming to the hospital casualty at one time.

Note: Above categorization is for a 1000-bedded tertiary hospital, and modifications can be made depending on the bed strength and staff strength (doctors, nurses and support staff) for individual hospitals. **The Hospitals can devise and calculate their own treatment capacity depending on their previous experiences.**

- **Based on type of casualties:**

Category A: Patients in critical condition:

Include cases of polytrauma with head injuries, thoracic injuries, abdominal injuries, fractures of major bones with profuse bleeding etc. These patients require immediate resuscitation and supportive measures. About 10% of these are beyond salvage.

Category B: Patients in serious but not life threatening condition:

Include polytrauma cases of a less serious nature, for example, fractures and crush injuries of limbs with out major blood loss, facial injuries, spinal injuries, etc.

Category C: Walking wounded:

These patients may have minor injuries requiring wound toileting and dressing and / or limb fractures requiring closed reduction and immobilization.

- **Based on the categorization, it is advisable to further classify by the contingency plan into three classes:**

Class A:

The plan can be put into practice without any disruption to the normal and routine work of the institution.

Class B:

The plan can be put into practice with minor disruption to the day to day functioning of the hospital and with some readjustments. The plan may be upgraded to C if the numbers of casualties increase.

Class C:

There would be definite disruption of routine work: Major readjustments would be required in hospital functioning, inpatient treatment, duty arrangements, laboratory and operation theatre scheduling, and increased demand on stores, pharmacy etc.

A Hospital Emergency Plan is unique to each hospital as it depends upon its bed strength, staff and other resources.

1.8 Why have Emergency plans for hospitals?

Hospital disaster management provides the opportunity to plan, prepare and when needed enables a rational response in case of disasters/ mass casualty incidents (MCI). Disasters and mass casualties can cause great confusion and inefficiency in the hospitals. They can overwhelm the hospitals resources, staffs, space and or supplies. Lack of any tangible plan to fall back upon in times of disaster leads to a situation where there are many sources of command, many leaders, and no concerted effort to solve the problem. Everyone does his/ her own work without effectively contributing to solving the larger problem of the hospital. Therefore, it is essential that all Hospital Emergency Plans have the primary feature of defining the command structure in their hospital, and to extrapolate it to disaster scenario with clear cut job definitions once the disaster button is pushed. Chaos cannot be prevented during the first minutes of a major accident or disaster. But the main aim of Hospital Emergency Plan should be to keep this time as short as possible.

All hospitals should also have a realization that in a sudden mass casualty incident their hospital is actually running on full capacity. Due to greater number of patients coming in there is a tendency and pressure to practice disaster medicine and thereby reducing the quality of medical care in the interest of greater number of surviving persons. But under all circumstances, even in a disaster planning should be done in a way that the quality of care to the serious / critical patients is not compromised. The plan should aim at

- The survival and recuperation of as many patients as possible
- A proportional distribution of patients to other health care facilities

  Hospitals which provide full time emergency services on a 24hour-per-day, 7 days a week basis meet the standard requirements of receiving mass casualty incident patients at all times
- Hospital has sufficient number of personnel, including doctors and paramedical staff to meet the patient needs for emergency care.
- The Services are appropriate to patient needs.
- The emergency services provided are integrated with other departments of the hospital.

  Therefore it is imperative for these facilities to make a Hospital Emergency Plan.

1.9 Should smaller hospitals also have emergency plans?

The public health care infrastructure in India has been planned in a pyramidal fashion with primary and community health facilities at the base and tertiary health care facilities like medical college/University hospitals at the apex. In between there are many other hospitals like the district hospitals, municipal hospitals etc. having a moderate bed strength of 100 - 200.

Hospital planning in India has till now not focused on preparedness in case of disasters and MCI. Not only is there an urgent need to increase the preparedness of hospitals in mass casualties, but also the hospitals have to expand their focus to include both internal hospital planning as well as be a part of the 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 health center may actually only focus around providing either mobile emergency care 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 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. The emergency plan of such small hospitals would largely depend upon the concept of hospital networking.

1.10 What is hospital networking?

Hospital/ Health care networking is an essential step in medical preparedness planning for mass casualty incidents. Hospital networking does not necessarily mean linking up of various health care facilities with communication networks.

Network essential means a dynamic link between various health care facilities of a given geographical area for augmentation or optimization of available resources. It means that the district authorities must have the information about the available health resources in their area.

As illustrated in the Fig. 3 the health care facilities have to be networked for

1. Information
2. Materials
3. Manpower
4. Training

- ***What do we gain from networking?***

1. **Analysis of existing resources.**

   In order to network various health care facilities the district authority should analyse the available resources in terms of materials and trained manpower. This helps in assessing the existing capabilities and limitations. This analysis can be easily done by using the WHO questionnaire for inventory analysis (Appendix).

2. **Knowledge augmentation.**

   The sharing of inventory data between different hospitals, health care facilities, diagnosis laboratories, blood banks (public as well as private) etc. enriches the district medical authorities about various medical resources they have at hand in case of a mass disaster. It also helps the policy maker to critically analyse the available resources and augment them if and when required.

3. **Optimal utilization of resources.**

   In a disaster situation no single health care facility standing alone can provide optimal care to all the victims affected. Networking helps and identifies not only the strength and weaknesses of our own hospital but also other available resources in the area so that optimal care of patients can be taken. For example, a district hospital might not have a CT scanner but the same might be available at nearby private setup which can be utilized by the district authorities in case of disaster so that the final treatment of the victims is not delayed.

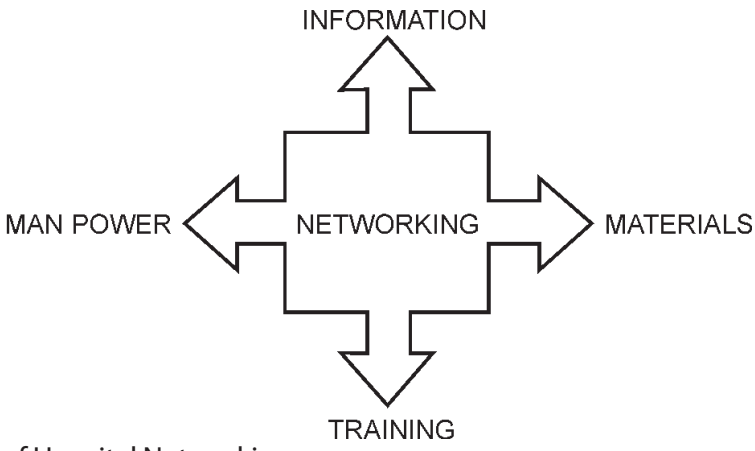


Figure 3: Components of Hospital Networking

Different state medical directorates and district medical authorities have to sit together with various health care providers in their areas and workout how to network these facilities.

1.10.1 Levels of hospital networking

Hospital networking can be done at various levels (Figure 4) within the district as well as with intervening bigger hospitals where available.

1.11 Role of District Medical Authorities

The administrative units under which the responsibility of disaster management lies is the district/ taluka/ block level. As we have pointed out that the medical preparedness and emergency medical planning is an integral part of any disaster management plan it becomes the responsibility of the district and taluka/block medical authority to chalk out their respective emergency plans which are dovetailed into the district and taluka/block disaster management plans. The role of medical authorities can be clearly defined in the pre-disaster and disaster phases.

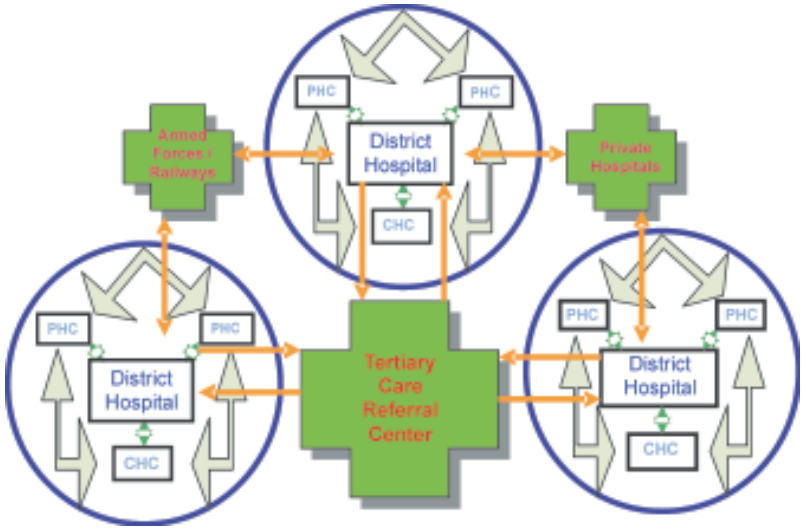


Figure 4: Levels of Hospital Networking

A. The Pre-disaster phase

The primary aim of the district medical authorities during the pre-disaster phase would be to critically asses the available medical resources within the district and share them with other neighboring districts. In other words the networking of the various medical resources and hospitals should be the main aim of the district medical authorities in the pre-disaster phase. The networking should not only be of facilities but of transport vehicles like ambulances, blood banks, CT scan and trained manpower like quick reaction medical teams (QRMT's) specialists like neurosurgeons etc.

Emphasis should also be laid down on the organizational and functional aspects of such a medical networking.

B. The disaster phase

The district medical authorities should play a leading role in medical treatment of victims once the disaster strike. The chief district medical officer/ equivalent position should take the role of incident commander and should set up a medical command structure which would work in tandem with the district administrative authorities. A proposed structure of such a district medical command systems is given in figures 6 and 7.

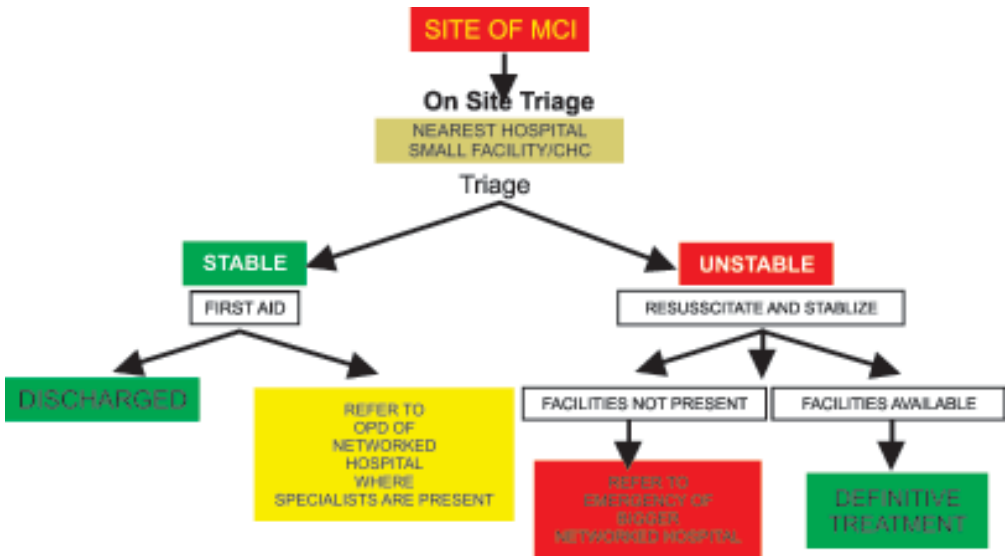


Figure 5: Suggested Flow of Patients in a network

1.12 Organization of Health Delivery System in Disaster/ Emergency situations

One of the important roles of the district medical authority would be to organize the overall health delivery system of the district according to the plan. The mass casualty medical preparedness plans should be dovetailed into the existing district disaster management plans.

Health delivery system management plays an important role in reducing morbidities and mortalities. In times of disasters the health delivery systems, all of a sudden, have to provide medical facilities to an unusually large number of patients out of which many would require the first-aid treatment only. In order to provide medical facilities to the, needy in time, it is necessary to screen out large number of minor injuries from the serious ones.

With the above intention, mass casualty management at the district level should be planned in two stages: -

i) Pre-Hospital Management

a) First aid Parties

b) First Aid Posts(static and mobile)

c) Ambulance service

d) Mobile Surgical Units.

ii) Emergency Hospital Organization

a) Emergency Hospital Services (including critical care facilities)

b) Emergency Surgical Services

c) Emergency Transfusion Services

d) Emergency investigation facilities

Pre-Hospital Management

Objective: To render first aid to victims at the spot of disaster and their transportation to nearby hospital as a part of life saving measures.

Responsibility: The duty of the Officer organizing pre-hospital management is usually performed by the Civil Surgeon or the Chief Medical Officer (CMO) of the district. The Officer In-charge/Civil Surgeon generally works under the general guidance of the District Magistrate. The scales of pre-hospital facilities which should be available in accordance with the population is given in Annexure A

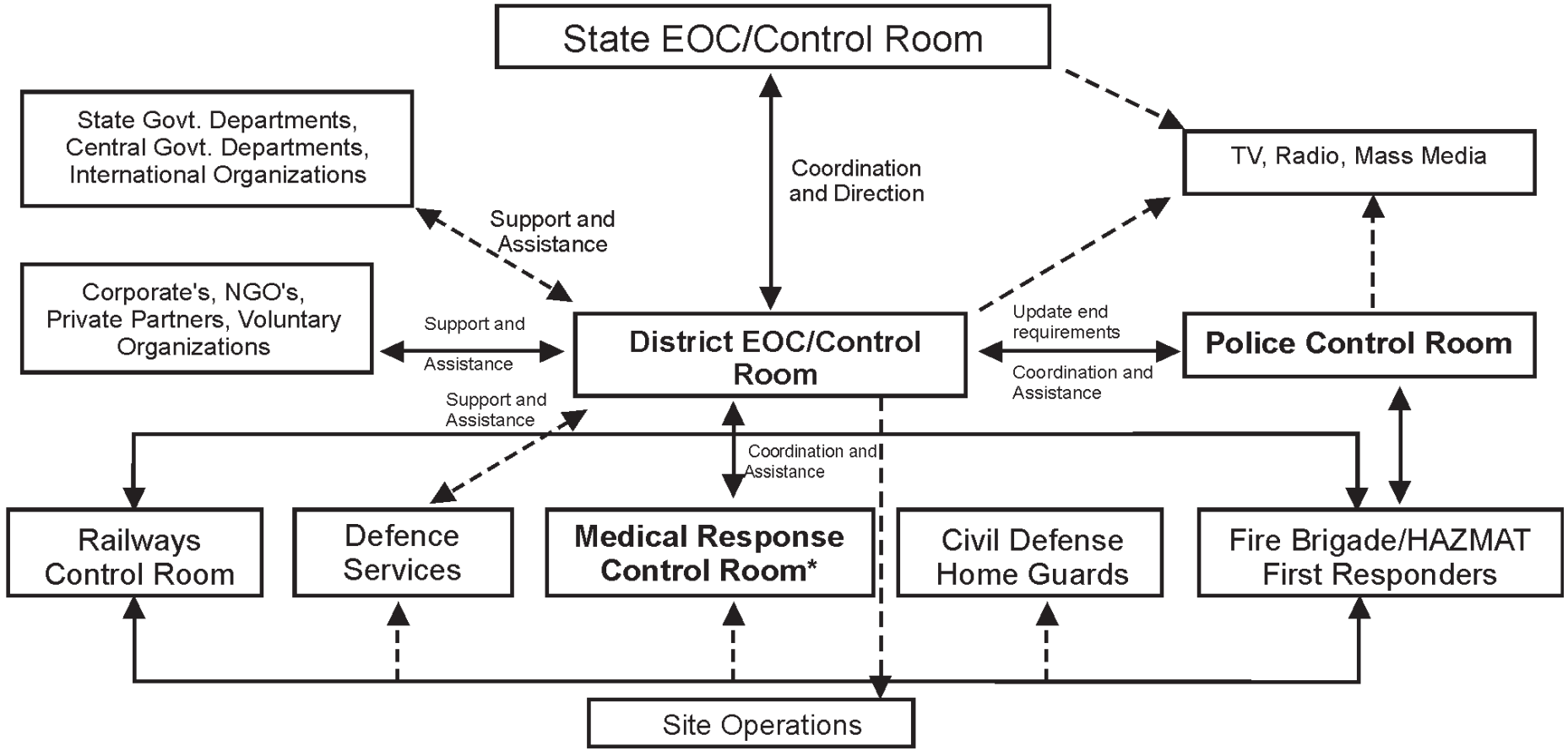
a) First Aid Parties

Objective: The Functions of the First Aid Party is to render First, aid to casualties at the place of incident and transport the casualties on stretchers to nearby first-aid post. In addition to the pre-hospital first aid parties available from the government set up additional requirements can be met by taking the services of other medical care providers such as the Armed Forces, Railways, Red Cross, NGO's and other private stake holders. The networking for this should be apart of pre-disaster planning.

b) First Aid Posts

Objective: Primarily First Aid posts are meant for treating the lightly wounded casualties those not requiring hospitalization 'thus relieving congestion at the hospitals. They are also responsible for screening casualties sent by First Aid Parties, to sort out those who need immediate hospitalization. Cases demanding urgent medical attention should be sent directly to the networked hospital without delay.

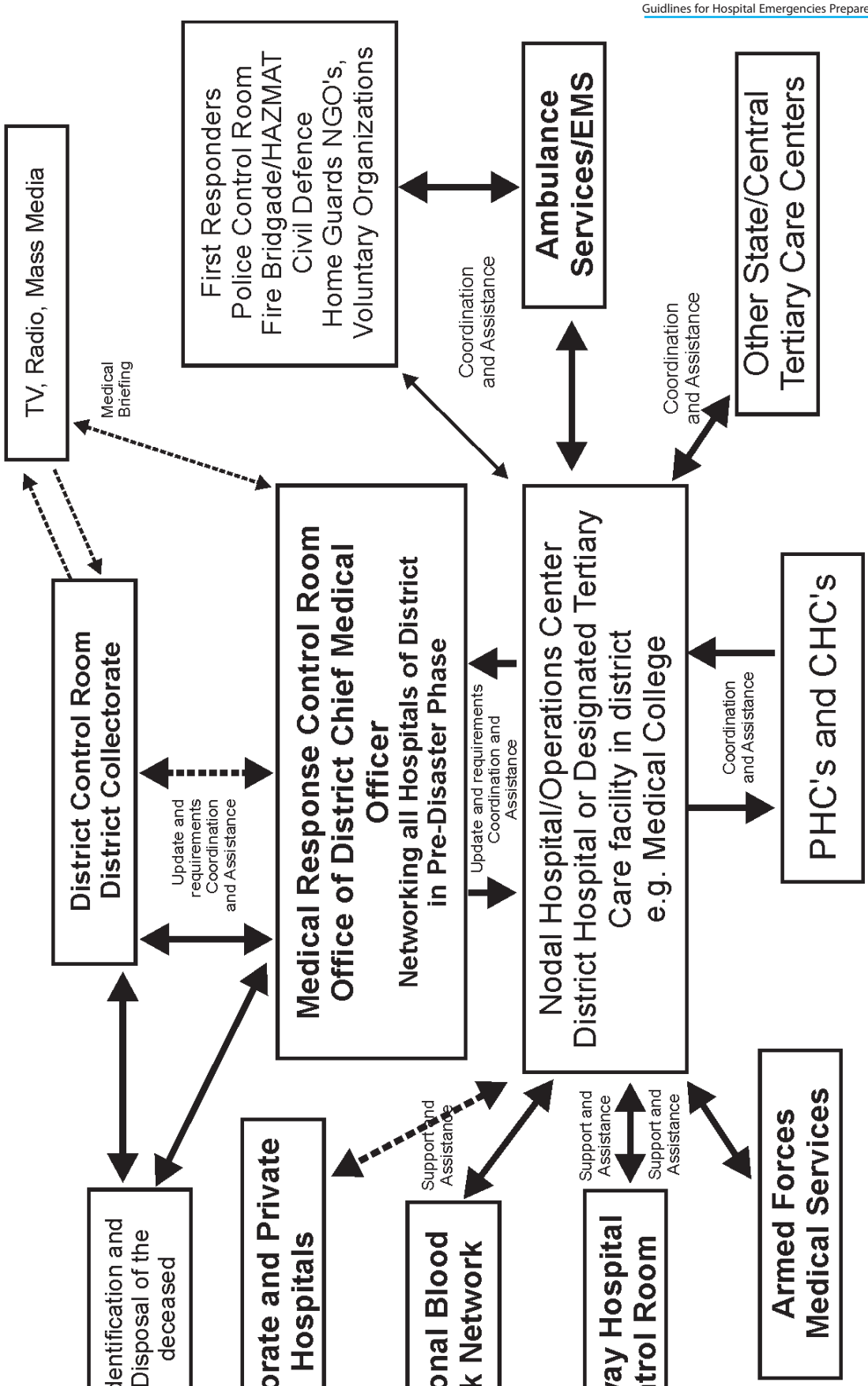
Figure 6: District Disaster Response Incident Command



Fire Brigade/HAZMAT First Responders	Police Control Room	Medical Response	Municipal Coporations	Civil Defense Home Guards	Defence Services	Railways Control Room
Evacuation Fire Fighting Rescue Salvage	Cordoning of Area Rescue Law and Order Corpse Disposal Traffic Management Rumor Control	Transport Seriously Injured Emergency on site treatment (Mobile Hospital) Corpse Disposal Prevantive Measures Health Monitoring	Emergency Water and food salvage Corpse Disposal Clearance of Debris Emergency repairs Coordinating Transport Temporary Shelters	Evacuation Rescue Salvage	Called for assistance in Emergency when district contingency measures are not sufficient	Transport Rescue Salvage Railway Hospitals

*** Detailed Meidical Response separate**

Figure 7: District Medical Response Incident Command



First aid post may be static or mobile. A mobile First Aid Post is meant to rush medical aid to the site of incident for the treatment of casualties on the spot.

Location: First Aid Posts may be housed in existing government, local body, charitable or private dispensary depending upon their situation and needs of the community. The location of these posts should be planned in advance and should find a mention in the mass casualty management plan of the district. Where possible these posts may be set up in the vicinity of a hospital as cases can be effectively screened and admitted to the hospital without delay.

Lay out and spacing: The post should ideally consist of three areas, namely Reception, Treatment and Waiting areas. They should be located in such a manner that adjacent posts should not be more than three kilometers apart so that no casualty has to travel long distance to get first aid.

Personnel: The First Aid Post should be kept manned round the clock' during die emergency. A nominal role of doctors and nurses volunteering to man the First Aid Posts may be maintained in each post along with their addresses and telephone numbers, if any.

Stores and equipment: The scale of stores and equipment is placed at Annexure B, these stores should be turned over periodically.

c) Ambulance Services

Objective: An efficient ambulance service is an essential part of the casualty service for the transportation of casualties from the scene of disaster to First Aid Posts and Hospitals.

Vehicles: Ambulances for lying cases may be improvised from trucks, lorries and buses with adequate stretcher fitments. Vehicles for First Aid Parties and sitting casualties may be improvised from private cars, vans, taxies, tempos and other similar light vehicles.

Stores and equipment: The scale of equipment is given in Annexure C.

d) Mobile Surgical Units

Mobile surgical units are generally required in catastrophic disasters like earthquakes where the hospital itself might be victim of the disaster. Mobile surgical units might not be available with the district or the state authorities but if available there number and location should be available with the district medical authority so as to call them whenever need arises. The district authority should also network with the existing health care providers like the Railways and Defence services who already have their own mobile surgical units.

Objective: Mobile surgical units are small surgical teams along with operation theatre setup on wheels. These units are sent to the disaster sites for performing life saving emergency surgeries. The unit should function in close coordination with the first aid posts.

Staff: Each mobile surgical unit should have three doctors including one anesthetic. It should also ideally have one fully trained nurse, one operation theatre assistant (OTA), two first aid assistants and a driver.

ii) Emergency Hospital Organization

The Director of Health, Medical Education, Medical Services or any other nominated official of the state should facilitate preparation of detailed plans for hospital services in the event of a disaster. These plans should ideally be district wise and should consider the assessment of all the hospital beds available in the district (government as well as private sector). The plan should also have detailed information about other medical facilities like CT Scans, Blood Banks, Investigation Labs etc. which can be utilized in the time of mass casualty incidents.

The detailed steps of hospital emergency planning are given in chapter II.

SOME IMPORTANT CONSIDERATIONS FOR MAKING YOUR HOSPITAL EMERGENCY PLAN

2

2.1 Aim of Hospital Disaster/Emergency Management Plan:

The aim of a hospital disaster plan is to provide prompt and effective medical care to the maximum possible, in order to minimize morbidity and mortality resulting from any MCI.

2.2 Objectives and goals of a Hospital Emergency Plan:

The main objective of a hospital emergency/disaster plan is to optimally prepare the staff and institutional resources of the hospital for effective performance in different disaster situations.

The hospital disaster plans should address not only the mass casualties which may result from MCI that has occurred away from the hospital, but should also address 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 and not affecting the hospital the further goals are:

To control a large number of patients and manage the resulting problems in an organized manner,

- ✓ By enhancing the capacities of admission and treatment.
- ✓ By treating the patients based on the rules of individual management, despite there being a greater number of patients.
- ✓ By ensuring proper ongoing treatment for all patients who were already present in the hospital.
- ✓ By smooth handling of all additional tasks caused by such an incident.
- ✓ To provide 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.
- ✓ By appropriate actions of the staff who have to know their tasks in such a situation.
- ✓ By soliciting help from outside in an optimal way.
- ✓ by re-establishing as quickly as possible an orderly situation in the hospital, enabling a return to normal work conditions.

2.3 Principles of a Hospital Disaster Plan

- ➢ **Predictable:** The hospital disaster plan should have a predictable chain of management.
- ➢ **Simple:** The plan should be simple and operationally functional.
- ➢ **Flexible:** (Plan should have organizational charts)

  The plan should be executable for various forms and dimensions of different disasters.
- ➢ **Concise:** (Clear definition of authority)

The plan should specify various roles, responsibilities, work relationships of administrative and technical groups.

- **Comprehensive:** (Compatible with various hospitals)

  It should 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.

- **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 should 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 have to be integrated with the regional (district/taluka/block) plan for proper implementation.

2.4 How to proceed for making Emergency Plan for your hospital?

To make the proceedings easier it is recommended that the hospital administrators embark upon disaster planning using a phase plan. The hospital emergency planning can be divided into three phases:

1) Pre disaster phase

a) Planning: Most of the assessment and planning is done in the pre disaster phase, the hospital plans are formulated and then discussed in a suitable forum for approval.

b) The disaster manual: The hospital disaster plan should be written down in a document form and copies of the same should be available in all the areas of the hospital.

c) Staff education and training: It is very important for the staff to know about and get trained in using the hospital disaster/emergency manual. Regular staff training by suitable drills should be undertaken in this phase.

2) Disaster Phase

a) Phase of activation: Alter and notification of emergency.

b) Activation of the chain of command in the hospital.

c) Operational phase: This is the phase in which the actual tackling of mass casualties is performed according to the disaster/emergency plan.

d) Phase of deactivation: An important phase of the hospital emergency plan when the administration/ command of the hospital is satisfied that the influx of mass casualty victims is not continuing to overwhelm the hospital facilities.

3) Post Disaster Phase

This an important phase of disaster planning were the activities of the disaster/ emergency phase are discussed and the inadequacies are noted for future improvements.

2.4.1 Pre Disaster Planning

Most of the planning of hospital emergency plans is done in pre disaster phase. It is recommended that all hospitals providing emergency care to patients start planning for the worst at the earliest. It is always good to have a ready working plan before next emergency strikes.

2.4.1.1 Hospital Disaster Management Committee

Formation of a disaster/emergency committee is the first step for making a disaster plan for the hospital. Most of the hospitals already have such hospital management committee; therefore, an emergency/

disaster management committee can be carved out from such already existing committees. The members of the disaster management committee should be from following basic facilities of the hospital.

Who should be in the committee?

The hospital administration:-

- ✓ The director/principal/dean/head of institution/medical superintendent.
- ✓ Member/members from hospital management board.
- ✓ The chiefs/heads of various clinical departments supporting the emergency services; e.g., casualty and emergency services, orthopedics, general surgery, medicine, neurosurgery (if present), cardio-thoracic surgery (if present), anesthesia.
- ✓ The chiefs/heads of various ancillary departments e.g., radio-diagnosis, transfusion medicine/ blood bank, laboratory services/pathology, forensic medicine.
- ✓ The chief nursing superintendent/matron.
- ✓ The finance department.
- ✓ The stores and supplies department.
- ✓ The hospital engineering department.
- ✓ The public relation and liaison office.
- ✓ The chief of security of the hospital.
- ✓ The sanitation department.
- ✓ Hospital kitchen/dietary services.
- ✓ The social welfare department (if present).
- ✓ Hospital unions.

2.4.1.2 Central Command structure (Incident command system) for your hospital

In order to ensure effective control and avoid duplication of action there should be a unified command system which should be based on the individual hospital hierarchical chain. The advantages of ICS are many. It has predictable chain of management; flexible organization charts allowing flexible response to specific emergencies; prioritized response checklists; accountability of position function; improved documentation; a common language to promote communications and facilitate outside assistance; cost effective emergency planning within the hospital.

Although this sort of chain of command is ideal to avoid chaos in emergency situations, it is seen that there is a strong opposition to formation of any such hierarchical command system by the physicians and hospital personnel. Nevertheless all doctors including the administrator should emphasis that such a command system would come into affect only at the time of mass casualty incident and would close down on withdrawal of disaster alert. Therefore all hospital personnel including doctors should respect the command hierarchy during emergencies and disasters.

Any command system may be used by the hospital but the most important rule is to make organizational chart. Each position on the chart should be function based and not position or individual based. An individual can be assigned more than one position on the chart, so a person might have to perform multiple tasks until additional support comes.

Sample organizational chart for different hospitals are given in Annexure D,E&F, Delineate the jobs according to your command system the disaster/emergency management plan describes many jobs which may need to be performed in an emergency, but how people are assigned to jobs or the jobs to people depends on

different circumstances existing in different hospitals. Therefore, the jobs delineated according to the command systems depend on the administrator or leaders of that particular hospital.

The titles used in a disaster/emergency plan are carried by functions and not individual people/designation.

2.4.1.3 Job Cards

Action sheets or job cards are basis of a successful disaster/emergency management plan. These sheets should be made for each and every position in the organizational chart of the command system. The job cards should be detailed; Stored safely (in disaster manual); Colour coded and laminated. Some sample jobs cards are attached as Annexure G

2.4.1.4 Plan activation of different areas of hospital

The areas which should find a mention in a hospital emergency plan are:

- ✓ Command centre.
- ✓ Communications office/paging/hotline area/telephone exchange.
- ✓ Security office/police picket (chowki).
- ✓ Reception and triage area.
- ✓ Decontamination area (if needed).
- ✓ Minor treatment areas.
- ✓ Acute care area (emergency department).
- ✓ Definitive care areas (OTs, wards).
- ✓ Intensive treatment area and activation of High Dependency Units (HDUs)
- ✓ Mortuary.
- ✓ Holding area for relatives/non-injured.
- ✓ Area for holding media briefings (separate media/PRO/spokesperson room).
- ✓ Area for holding patients in case a part of the hospital is evacuated.

All these areas should be mapped on the outlay map of the hospital. The normal capacities of the existing areas should be mentioned on these maps. Enhanced admission of patients requires an enlargement of suitable spots, if necessary even by changing their function.

2.4.1.5 Disaster beds/ how to increase bed capacity in emergencies?

The newly arriving patients would require admission for definitive treatment therefore plans should be there to increase the bed capacity when needed. This can be achieved by the following actions:

- ✓ Discharge elective cases.
- ✓ Discharge stable recovering patients.
- ✓ Stop admitting non emergency patients.
- ✓ Convert waiting/non-patient care areas into makeshift wards.

2.4.1.6 Planning of public information and liaison

We live in the age of mass and multimedia. Every news and information source will seek access to the latest and most up to date information. In most cases there is absence of clear and credible information. This leads to media speculations and increases the stress and pressure of the incident, especially on hospital and its staffs. The disaster committee should designate one person from the hospital for regular media/ press briefing.

One of the areas in the hospital should be designated as media room where media persons can be accommodated for controlled access to information.

Media always gets its information – the better way is controlled one.

2.4.1.7 Planning for security of hospitals in emergency situation

During emergency situation the hospital is the focus of not only the patients being brought in but a lot of other persons including relatives, by-standers, media etc. They more often than not block the entrance and other areas hampering the smooth functioning of the hospital. It is therefore recommended that all hospitals should have some security arrangements even in non disaster phases. The hospital security should be operational at a very early stage of disaster. Some of the duties recommended are

- Work in close coordination with local police
- Maintain order within and outside the hospital
- Direct traffic so as not block the free access of patient carrying vehicles to and outside the hospital
- Protect key installation of the hospital (Emergency Department, Hospital Working areas, Power Station/ Generators, Water Tanks/Water Supply etc.)
- Restrict and strictly control access to the hospital
- Direct the entry for authorized persons to appropriate areas (ambulances to emergency, relatives to waiting area, media to media room etc.)
- Protect hospital personnel and patients,
- All hospital personnel should carry Identity cards

2.4.1.8 Logistics planning

i) Planning for communications (within and outside the hospital)

Communications is one of the main problems in major emergencies and disasters. Information transfer has to be reduced to most important facts only. Multiple means of communications should be planned to communicate with hospital staffs and administrator. The currently available communication networks which should be looked into for availability in the hospital are;

- internal telephone exchange (for the hospital)
- landline phones
- private mobile/cellular phones
- mobile/cellular phones in closed user group (CUG) for hospital staffs only provided by the hospital
- Loudspeakers/ public address system
- Wireless sets for security and ambulance personnel
- The communications room

An area should be identified as communication room within the hospital and all internal and external communications must be made from here. This communication room should be in continuous contact with the command centre/control room.

All important numbers of hospital personnel, police, district functiones of administration other nearby hospitals etc. should be clearly mentioned in the disaster manual and a copy of this manual should also be present in the communication room/ telephone exchange.

On getting the go ahead from the control room the disaster message should be flashed/ communicated to all the numbers.

ii) Transportation (To and from the site/ other hospitals)

Transportation is necessary in emergency situation mainly to bring the patients from the site of mass casualty incident to the hospital. Transport is also required to transfer patients to other hospitals if the facilities at the hospital in question are overwhelmed or is unable to perform its functions due to internal damage.

The transport room/driver room should also have a telephone or any other means of communication like wireless to remain in touch with the control room.

iii) Stores planning

What is a disaster store?

It is recommended that adequate stores of linen, medical items, surgical items should be kept separately in the Emergency/Casualty and should be marked the "Disaster Store". The activation of this store is done only after the Disaster has been notified by the appropriate authorities.

As immediate measures the buffer stocks earmarked for the Casualty/Emergency Services should be utilized till the fresh stocks are replenished from main Hospital stores/ disaster stores.

Close liaison is kept between the Stores In – Charge and the Hospital administration (Central command). Any requirements to the Operational Areas/Treatment areas are conveyed to the Command Center.

Sample Stock Inventory for Disaster Stores is given as Annexure J

iv) Personnel Planning – Medical and Non-Medical

Medical Staffs:

In addition to the members of clinical staff, Para and preclinical disciplines (if present in the facility) should render their services in managing the casualties. Duty roster for standby staffs should be available in the control room/Command center, Nursing Staffs:

The Nursing Superintendent should be able to prepare a list of nursing staffs who may be made available at a short notice. The nursing personnel officer should be also able to mobilize additional nursing staffs from non-critical areas.

Other Staffs:

Duty roster (including those on standby duty) of all ancillary medical services (e.g. Radiology, Laboratory, Blood Bank) and also other hospital services (e.g. house keeping, sanitation, stores, pharmacy, kitchen etc.) should be available with the duty officer/ hospital administrator.

Volunteers:

The role which volunteers will assume in the course of a disaster should be predetermined, rehearsed, coordinated and supervised by the regular senior staff of the health facility.

Reserved Staff:

In cases of large scale disasters the recommendations are made for community participation and reserve staff concept.

Preparedness will be enhanced by development of a community-wide concept of "reserve staff" identifying physicians, nurses and hospital workers who are (1) retired, (2) have changed careers to work outside of healthcare services, or (3) now work in areas other than direct patient care (e.g., risk management, utilization review). While developing the list of candidates for a community-wide "reserve staff" will require limited resources, the reserve staff concept will only be viable if adequate funds are available to regularly train and update the reserves so that they can immediately step into roles in the hospital which allow regular hospital staffs to focus on incident casualties.

Hospital preparedness can be increased if state medical councils, working through the State Medical Services, develop procedures allowing physicians licensed in one system of medicine to practice in another under defined emergency conditions.

v) Financial Planning

An important aspect of any management plan is the financial management. It is recommended that the disaster plans are made in close association with the financial advisors of the hospital/institution. This will make them more cost effective and avoid unnecessary and repeated expenditure.

2.4.1.9 Operations Planning

The incident commander after notification of the hospital disaster activates and alerts the in-charges of different important areas of the hospital. The in-charges of various facilities in turn notify and alert the staff (medical / nursing / others staff) working in these areas to immediately reach the area and carry out their functions. The in-charges also call up the reserved staff which is not on duty to be ready in case they are needed.

- *Essential Medical/Non-Medical Staff Activation (In different Areas)*

1) Reception and Triage Area

This area is the first area of contact between hospital personnel and the incoming patients. This area should be manned by

- Registration officer on the registration desk
- Triage Doctors/ Nurses
- Adequate number of doctors in the emergency room/ casualty
- Adequate no. of stretchers/trolley bearers
- Hospital attendants

Initial registration and Triage should be done in this area.

- Triage criteria for disasters and the patients will be color coded according to the kind of treatment they deserve e.g.

ONE - Immediate Resuscitation (RED)

TWO - Potentially Life Threatening Injuries (YELLOW)

THREE - Walking Wounded (GREEN)

FOUR - Dead (BLACK/WHITE) (Annexure H)

(2) Decontamination Area (If needed in NBC Disasters)

(3) Acute Care Area (Emergency Department) Responsible person – casualty medical officer/ doctor in-charge emergency services

(4) Definitive Care areas (Operation Theaters, Wards)

Responsible person – zcy services.

(5) Intensive Treatment Area Activation (HDU/ICU'S)

Responsible person – Head of Anaesthesiology/ Critical Care/ Medicine.

(6) Minor Treatment Areas

The Staffs mainly nursing staffs and hospital attendants who are familiar with first aid, splinting and dressings can be sent to the Minor treatment areas and thus saving the Medical staffs for more intensive and resuscitation areas

(7) Holding Area for Relatives/Non-Injured

A hospital staff member will stay with the family members. (Social Services will be assigned here after reporting to the Command Center and other personnel assigned as needed) A list of the visitor's names in association with the patient they are inquiring about should be kept. Volunteers may be needed to escort visitors within the facility.

- **Essential Nursing Staff Activation**

To be done by the Matron / Chief Nursing Superintendent of the hospital in association with Deputy Nursing Superintendents and other nursing administrators.

- **Essential Ancillary Services (Lab, Radiology, Pharmacy)**

(1) Laboratory Services

Department Head or designee will call in their own personnel as needed after reporting to Command Center. Call personnel from nearby hospitals and clinics as necessary. Have arrangements made to obtain additional blood, equipment and supplies from area agencies.

(2) Radiology Services

Department Head or designee will: Call any or all personnel needed. Arrange for extra supplies to be brought in if needed. Coordinate flow of work and delegation of work areas. Other members of the Radiology staff will: Perform all x-ray exams/ CT scans/ Ultrasounds etc. as needed and assigned.

(3) Blood Bank:

(4) Mortuary Services (Care for the dead)

Mortuary should be situated away from the main entrance of the hospital. It should be adequately staffed with Senior Forensic Specialist/any designee appointed for that purpose. Patients pronounced DEAD ON ARRIVAL (DOA) should be tagged with a Disaster Tag and body should be sent to mortuary. The Emergency Department should also notify about all deaths to the Command Control room. Bodies should be stored in the alternate morgue area if the capacity of mortuary to store bodies is overwhelmed. Mortuary Personnel will remain with bodies until removed by Mortuary In-Charger. After bodies have been identified, the information will be filed on the Disaster Tag and Medical Records notified as to the identification of the patient. The bodies may be removed via a separate gate of the hospital with the knowledge of the Mortuary in-Charge. A complete record of all bodies must be maintained along with the name of the agency removing them, e.g., police, fire department, hearse, etc.

Be sure appropriate paperwork is filled out.

- **Other Ancillary Services**

(1) Hospital Dietary Services (Kitchen)

Department head or designee will call in their own personnel as needed after reporting to Command Center. Prepare to serve nourishments to ambulatory patients, in-house patients and personnel as need arise. Utilize additional areas for extra eating space. Be responsible for setting up menus in disaster situation and maintain adequate supplies.

(2) Sanitation Services

Adequate sanitation services within and around the hospital should be ensured by the hospital administration.

(3) Hospital Laundry and Sterile Supply

The hospital administration should ensure adequate supply of clean hospital linen, sterile dressing and sterile supply of instruments to the essential areas of the hospital.

(4) Essential Services

Water: Adequate provision should be made to meet the additional requirement of water. Planning should also be done for alternative sources of water such as storage tanks or tube well which can provide water in case of possible breakdown in the normal system of supply.

Light and Power: Provision should be made for standby generators to provide light and power to essential areas of the hospital like Emergency Department, Operation Theatres, ICUs etc.

2.4.1.10 Phase of Staff Education and Training

Once the Disaster Plan is ready the next phase would be the education and training of the staff of the hospital about the plan and specific roles of each staff member in case of a disaster.

- Concept of Common Language in Disaster Situation

  The initial chaos of any disaster scenario in a hospital can be minimized by proper training of the hospital staff about their roles and responsibilities in case of a MCI/Disaster so that, everyone knows his/her job and work continues in an orderly fashion without confusion

- Introduction of Disaster Management Training to Hospital Leadership

  A presentation made to all administrators, department heads and managers regarding the implementation of the Hospital Disaster Plan into the facility's emergency response plan will help solidify support in all areas of the hospital. This program should be a combination of education and public relations. Managers should be made to feel that they are all an integral part of the new system. Interested managers can be recruited to become part of a train the-trainer class.

- Introductory Lessons for all Hospital Staff

  An orientation and education program is required for personnel who participate in implementing the emergency preparedness plan. Education should address the following

  1. Specific roles and responsibilities during emergencies,
  2. The information and skills required to perform duties during emergencies
  3. The backup communication system used during disasters and emergencies, and
  4. How supplies and equipment are obtained during disasters or emergencies;

- **Disaster Drills**

As a part of the emergency management plan, every hospital is required to have a structure in place to respond to emergencies. This structure is routinely tested during drills. The evaluation modules for hospital disaster drills are designed to be a part of that testing. Viewed in this way, hospital disaster drill evaluations can provide a learning opportunity for all who participate in a planned drill. The disaster drill evaluation modules present topics for evaluation in a systematic manner. They should be used to identify strengths and weaknesses in hospital disaster drills, and the results gained from evaluation should be applied to further training and drill planning. Although the evaluation modules can be used to identify improvement in repeated drills, they are not intended to be used to make final or complete judgments about whether a hospital passes or fails in its planning and training endeavors. The value of this approach is to identify specific weaknesses that can be targeted for improvement and to promote continuing efforts to strengthen hospital disaster preparedness.

- **Table Top drills**

Table Top Exercise is a paper drill intended to demonstrate the working and communication relationships of functions found within the disaster organizational plan. The exercise is intended primarily for the administrators, managers and personnel who could conceivably be placed into an officer's position upon activation of the disaster plan.

- **Partial evacuation/Non-evacuation Drills**

Hospital evacuation may become a necessity if the hospital itself becomes a victim of any disaster. Such situations need to be foreseen and proper planning has to go into how to evacuate and which areas of the hospitals need to be evacuated first in case of an internal disaster.

(Appendix: I) gives and idea about the evacuation plans of the hospital.

- **Revision of Hospitals Disaster/Emergency Plan**

Continuous revisions should be made in the Hospital Disaster Management Plan taking leads from the regular disaster drills in the hospital. This would refine the plan and cover up the deficiencies faced in the Drill Phase.

- **Continuing Staff Education**

2.4.2 Phase of Disaster

2.4.2.1 **Disaster Activation** – Alert and Mobilization Phase (plans for alerting the disaster committee, staff, other facilities via phones/paging and mobilizing resources to appropriate activated areas) Several critical events must occur in this phase:

- **The Hospital Administration must appoint an Incident Commander.**

a. The Incident Commander must not be expected to carry out any patient care, logistical, security, or other activities, but must be free to command and coordinate the overall disaster response.

b. The Hospital Administration must choose the most competent person to be Incident Commander. (Competence in the context of coordinating a hospital during a disaster.) An Emergency Department physician with Emergency Medical Services and disaster experience would be ideal, but the Incident Commander need not be a physician, nurse, or administrator. (For example, if a security chief from another hospital just happens to be visiting, and has managed many hospital disasters before, the Hospital Administration could appoint him as Incident Commander.) The Incident Commander inherits authority directly from the Hospital Administration.

c. The hospital Incident Commander's job is to direct all aspects of the hospital's participation in the disaster operation. The effectiveness of the hospital is his responsibility.

- **Incident Staff**

A. The purpose of the Incident Staff (comprised of Command and General Staff) is to provide the hospital IC with enough manpower to meet all his or her responsibilities in conducting the disaster relief operation. This frees him or her to carry out the IC's primary functions of overall supervision, development and implementation of strategic decisions, approving the requesting and releasing of resources, and liaison with the Hospital Administration and any other participating agencies. For a small disaster operation, the hospital IC may discharge some or all of the Incident Staff duties himself or herself, but a large disaster operation might have an Incident Staff numbers of which can vary.

B. A Staff consisting of the seven positions most appropriate for a medium-sized disaster by grouping all hospital-related ICS functions into these seven positions. The seven positions in an ideal incident command system as are follows:

- **The operations chief:** The operations chief is overall in-charge of all patient care activities and supervises the following areas:

a. **Medical Care**

Emergency Department

In patient areas

Surgical services

Critical care units

b. ***Ancillary Services***

Laboratory Services

Radiology Services

Pharmacy Services

Mortuary Services

c. **Human Services**

Psychological Support

Social Work Support

- **The Logistics chief:** The logistics chief is overall in-charge of all support services of the hospital and supervises the following areas:
  a. Communication systems
  b. Transportation
  c. Dietary Services
  d. Stores
  e. Sanitation, Water and Power Supply
- **The planning chief:** The planning chief is overall in-charge of the manpower planning and is responsible for making immediate as well as extended rosters of the following staff:
  a. Medical Staff
  b. Nursing Staff
  c. Group 'C' and 'D' Staff
- **The public information officer/ Public Relations Officer:** The public information officer is responsible for dissemination of all the information, medical or otherwise, to the relatives coming to the hospital as well as to the media.
- **The Liaison Officer:** The liaison officer is responsible for maintaining a close liaison with the other agencies providing rescue and relief to the victims of MCI/ Disaster. His work is liaison with the following agencies:
  a. The Police
  b. The Ambulance Services
  c. The Defence Medical Services
  d. Railways or others agencies providing medical relief
  e. Others hospitals in the network/ Area
  f. Blood Banks or other ancillary medical services in the area
- **The Security and Fire Officer:** The security and fire officer is responsible for activating and alerting all the security staff within the hospital and mobilizing them to areas like hospital gate, emergency department etc. where they are needed most.
- **The Finance Officer:** The Finance Officer is responsible for allocation of emergency funds and facilitating emergency purchases if and when needed in the course of the disaster.

An important concept embodied in the Incident Command System is that of span of control. The ideal maximum span of control is five; this means that each member in the command structure should supervise no more than five others. (The functional imperative of this principle, for any management problem, is: when things get too complex, delegate.) It is not essential to unfold the whole incidence command structure of the hospital in all disaster. Depending upon the time of the day and the level of disaster the positions mentioned in the incidence command structure can be taken over by the staffs working in the hospital that time. Multiple roles can be performed by a single person till the time other people arrive to support the existing staff. Sample incident command system charts are provided as Annexure D,E & F

- **Different types of hospital Responses**

a) In-Hospital Response Phase (small multi-casualty incident, using only main Em. Dept. patient Care)

During this phase, extra resources are brought to areas such as the ICU's, OT, and Emergency Department, and some elective operations may be postponed, but otherwise hospital operations proceed much as normal.

Even if the situation presents with many patients, it is advisable to start in the Small Multi-Casualty Incident Phase, because it is only a slight extension of normal operations, and can be started without difficulty.

Later on the incident commander can order more staff to reach the hospital and help out in both direct patient care activities as well as support activities.

b) Additional Area/Out of Hospital Support Phase (Large multi casualty incident using additional areas of the hospital as overflow zones. Also utilizing other definitive care areas of the hospital like the OT's, ICU, HDU's, Pediatric/ Maternal facilities)

During this Phase, the number of patients disrupts normal functioning; the Emergency Department is no longer able to handle the patient load, even with extra resources. Other emergency patient care areas must be opened. This requires assigning extra nurses, physicians, and support personnel to the area, and establishing command and communication links to the area for adequate coordination.

The Emergency Department may be able to decongest by postponing care for trivial problems (sore throats, children with fever etc.) and take more serious patients.

c) Damage to Hospital Phase (Structural Assessment Plans, Damage Control Plans and Evacuation Plans are activated)

d) Catastrophic Disaster in City Phase (e.g. Earth quake/ Serial Bombings, hundreds of patients coming to hospital – Inter-hospital Transfer Protocol Plans come into force) If a particular Hospital is tasked with caring for hundreds of patients, hospital must be able to extend the hospital's resources out to nearby areas that can handle large numbers of patients During such an extended operation, we would have to some degree, merge our Incident Staff with that of the city, in order to form a Unified Command and to allow proper coordination.

- **Disaster Deactivation (Demobilization phase)**

Disaster Deactivation or declaring the disaster to be over is also a very important step in the hospital emergency plan. The decision to deactivate the hospital emergency plan should be taken after proper assessment of the situation by the incident commander and other hospital administrator. The deactivation should not be too early (premature) or too late. It is very difficult to reactivate the emergency plan once it has been declared over because staff fatigue sets in which is difficult to overcome.

2.4.2.2 Post Disaster Debriefing - Importance of debriefing exercises as a part of Planning cannot be stressed further. Debriefing is a process in which the Disaster Committee sits down after the Disaster has been deactivated and tries to figure out how things went. It can be best described as a critical self review of one hospital's own performance during a disaster. What went right is taken cognizance of and what went wrong is further incorporated into the disaster plans

MODEL EMERGENCY/ DISASTER PLANS FOR HOSPITALS

3

3.1 What is a Hospital Emergency Plan/ Disaster Manual?

The Hospital Emergency is a Plan written a document also known as "Disaster/ Emergency manual". The reporting, recording, coordinating and evaluating activities associated with disaster management should be specified in this disaster manual. The disaster manual should incorporate the following:

- Medical Command Authority (Unified Incident command)
- Control center location
- Names and contact numbers of all members of the staff and their position according to the Incident Command Structure.
- Disaster Alert Codes
- Quick reaction teams formation, responsibilities and movement details
- Responsibilities of individuals and departments
- Job Action Cards
- Chronological Action Plan
- Details of resource mobilization for logistics and manpower
- Details of Operational Areas (Patient Care Areas) this should include the existing patient care areas (Reception and Triage areas, Emergency and resuscitation areas, Definitive care areas, Intensive care areas, etc.) the plan should also label certain areas which are free in the hospital area which can be optionally used as patient care areas during the initial surge of patients.
- Standing Orders and Protocols for patient management
- Hospital Triage Criteria
- Documentation details
- Communications (Intra and Inter Hospital)
- Networking including capacities and capabilities of health facilities
- Pre-hospital transports
- Security arrangements
- Police networks
- Evacuation details
- Medico-legal responsibilities
- Disposal of the Dead (Role of Mortuary services and Forensic Departments in identification, storage and disposal of the deceased)

3.2 A Model Hospital Emergency Plan for a community level Hospital - The CHC

A community health center (CHC) is an intermediate level health care center between a Primary Health Center and a District Hospital. The CHC has the facilities for admission of up to 30 patients. It has a general physician, a

surgeon, a gynecologist, and a pediatrician and provides specialist care in Medicine, Obstetrics and Gynaecology,Surgery and Paediatrics. The approximate staff strength of a CHC is 6-7 doctors, 8-10 nurses, 8-10 other staffs (including clerical staff, paramedical staff, hospital attendants, drivers etc.)

3.2.1 Why should CHC have an emergency Plan?

Although strictly speaking a Community health Center is a very small facility not geared up for even taking serious emergencies in normal time, but in cases of Mass Casualty Incidents/ Catastrophic disasters the resources of a CHC can be utilized in order to decrease the unwanted burden at the District level or university level teaching hospitals. CHC's can hence be utilized for treating the Priority - 3 (the not so seriously injured walking wounded patients) and can also be utilized for mass storage of the deceased.

Therefore CHC can act as a primary level hospital where basic first aid can be given and patients can be triaged again. If needed some of them who become unstable can be shifted to a district/university level hospital.

3.2.2 Preperation of a hospital emergency plan for community health centers (CHC)

a) Listing of Manpower and formation of Incident Command.

The Medical Officer In-Charge (MOI/C) of the CHC is the administrative head of the CHC and has the responsibility to make an Emergency Plan. She should call a meeting of all the staff members of CHC (medical and non-medical) and distribute the work according to the Incident Command Structure. As the staff is less, one person has to do multiple roles.

b) The CHC should actually have two types of Emergency Plans.

i) Out of hospital plan (Plan – A): - It should come to force once the Chief Medical Officer (CMO) of the district decides that the resources of the CHC can be best utilized by mobilizing them to the field. The CHC should be ready with the plan to move required doctors/ nurses and medical supplies to the field for on spot triage, treatment and transport of victims to District/ Medical College/University Hospital.

ii) In Hospital Emergency Plan (Plan-B):- The District CMO asks the MOI/C of CHC prepare his team inside the CHC to treat the Priority - 3 (walking-wounded) patients and re-triage them to be transferred to bigger hospital if needed. The resources can also be utilized for sorting, identification and storage of the deceased temporarily.

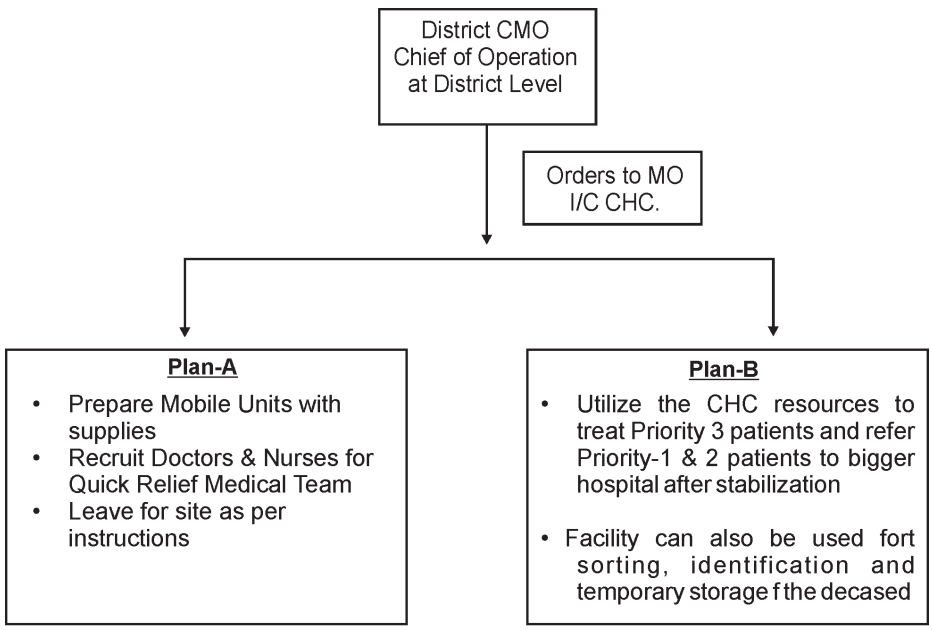


Figure : Activation of the specific plan according to the orders from District CMO

3.2.3 Pre Disaster Phase (Phase of Planning)

a) The MO I/C should start preparing the plan by first noting down the list of doctors, nurses and the manpower along with their contact numbers. He also delineates the jobs according to the Incident Command System discussed in chapter 2.

S.No.	Name	Designation in Hospital	Designation in ICS	Contact Nos./Address
1.	Doctor – 1	Medical Officer – I/C	Incident Commander, Chief of Planning/ Logistics, PRO	
2.	Doctor – 2	Surgeon	Chief of Operations and In-charge of all Medical Teams	
3.	Doctor – 3	Physician	Triage & First Aid Team	
4.	Doctor – 4	Gynecologist	Triage & First Aid Team	
5.	Doctor – 5	Physician/Surgeon	Triage & First Aid Team	
6.	Nurse 1	Nurses I/C	Nursing I/C Emergency Stores I/C	
7.	Nurse 2	Staff Nurse	Triage & First Aid Team	
8.	Nurse 3	Staff Nurse	Triage & First Aid Team	
9.	Nurse 4	Staff Nurse	Triage & First Aid Team	
10.	Clerk 1	-	I/C Registration & Tagging	
11.	Clerk 2	-	I/C Area for the Dead	
12.	Paramedical	Technician	In-charge to equip the transport vehicles	
13.	Hospital Attendant -1	Orderly	Helps in Triage & First Aid	
14.	Hospital Attendant -2	Orderly	Helps in Morgue Area	
15.	Sanitary Attendant -1	-	I/C of Cleaning the area	
16.	Sanitary Attendant -2	-	Responsible for sanitation & Cleaning	
17.	Driver – 1		Transport I/C	

b) The MO I/C of CHC should also have the contact nos. of District Medical Officials, District Administration and Police for smooth communication with them and good networking.

c) He should also have a ready list of other medical practitioners of the nearby area along with their contact numbers so that their services can be utilized in case of need.

d) The MO I/C designates the following areas in the CHC and mark them on the map of CHC complex.

- Control Room (with telephone & mobile).
- Incoming area (where patients are brought initially)

  i) Area for Triage

  ii) Area for first aid for walking-wounded

  iii) Patient referral area (from where they are taken to higher centers if needed)

  iv) Area for keeping the brought dead (Temporary Morgue)

  v) Area for keeping the Emergency Stores (pre packed) for 10 patients each (for treatment ease at center and also for quick relief medical teams)

e) Communications: Assure a functional telephone line in the CHC. Have a checklist for contact numbers all staff members. A loud speaker (megaphone) should be ideally present in control room and also the ambulance.

f) Security: Must have ready contact numbers of the nearest police picket/ station for information regarding disaster and also to ask the police to provide security to CHC. The police might also help in providing transport to the MCI victims.

g) Transportation: The ambulances should be periodically maintained and checked to be in functional condition. Utilized according to Plan - A (outside hospital) or Plan – B (transport to other facilities). Transportation can also be asked for form district headquarters, other departmental vehicles (ICDS/BDO) nearby community etc.

h) Water & Electricity: The MO I/C should have the contact numbers of the civic authorities/ PWD etc. for backup of electrical & proper water supply.

i) Medical Supplies: Adequate medical supplies should be assured along with the establishment of one disaster cupboard. The disaster cupboard should have supplies in the group of 10 patients each. It should be checked regularly for expiry of medical supplies.

j) Hospital Networking: MO I/C should have numbers of the entire district medical authorities, medical practitioners, Institutions, NGO's, Volunteer organizations located in the Block/ Tehsil, who can be of help when called upon.

3.2.4 The Disaster Phase Notification

a) Information comes to CHC by

i) District CMO

ii) Police

iii) Individuals

b) Person receiving the call gathers the following Information

i) Nature & Magnitude

ii) Possible no. of victims

iii) Location

iv) Time of incident

v) Time of arrival at CHC

c) Passes the Information to MO I/C CHC

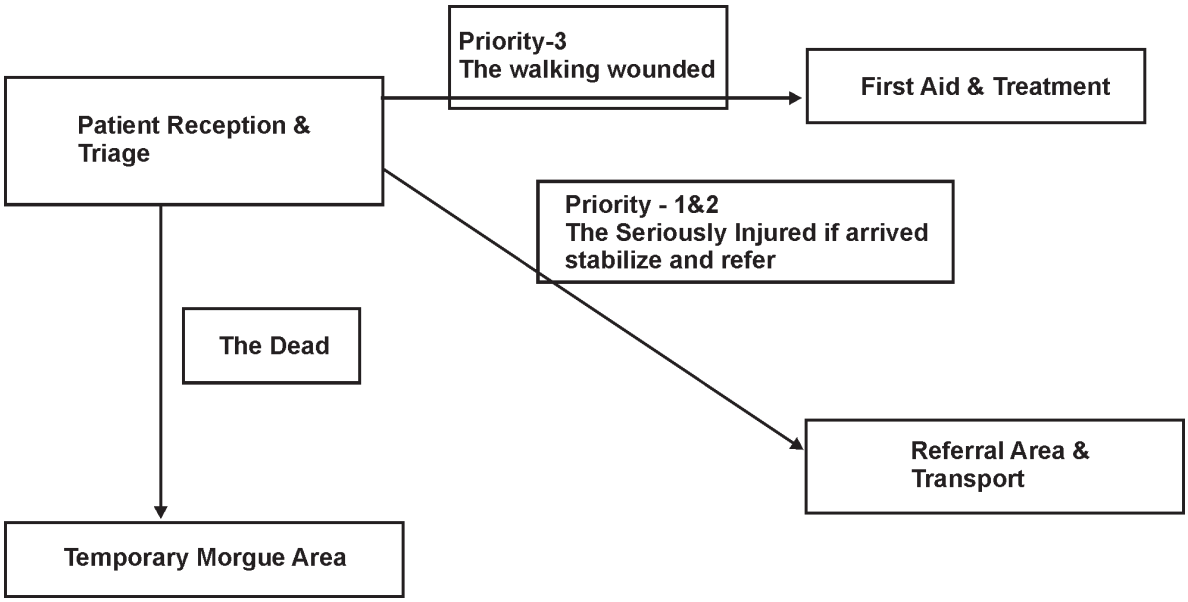
MO I/C CHC contacts District CMO and passes information to him They make a collective decision to:

Activate either

Plan – A (Outside CHC - Mobile Units – QRMT's)

Plan – B (Inside CHC)

Plan - A (Outside CHC)	Plan - B (Inside CHC)
1. MO I/C Informs all staff members and calls them to CHC. 2. The Emergency Stores I/C (Nurse) Open the stores & takes out the supplies according to the expected casualties 3. The Transport I/C /Driver checks the readiness of Ambulance and fuel. 4. 1 -2 teams of Medical Professionals (1 Doctor + 1 Nurse) are made. If present Hospital (Attendant/ Orderly) is added to the team for help. 5. Supplies & Manpower loaded onto the Ambulance. 6. Proceed to field for on-site tri age, treatment & Referral to higher center according to Triage.	It should be ke pt in mind that a CHC is capable to take care of the priority 3 patient and stabilize & refer priority 1&2 patients. It can also be used to sort, identity & store the dead bodies. 1. MO I/C to inform all staff members to reach CHC. 2. Inform Police for Security of CHC and additional Transport if needed. 3. Inform other nearby hospitals for supplies and manpower if needed 4. The Chief of operations reaches CHC reports to MO I/C & prepares the treatment Teams. 5. Transport I/C – Arranges ambulance in referral area for transporting Priority 1 & 2 patients to bigger hospitals



d) Post Disaster Debriefing

The MO I/C of the CHC should sit down with his team after the disaster has been called off and prepare a report as to how things went during the disaster and what were the problem areas. This will help in developing a more robust plan for the next time.

3.3 A model Hospital Emergency Plan for a District/Municipal level Hospital

A district hospital is the main general hospital in the district and is generally located at the district headquarter. Sometimes also referred to as civil hospital it is the tertiary level of health care set up provided by the state

governments. The average bed strength of a district hospital ranges from 150-250. The district hospital provides a wide variety of specialty care but do not provide super specialty care at most places. Lack of both physical resources and trained manpower leads to the added burden which a district level hospital faces. The district medical authorities through the Chief Medical Officer (CMO) constitute the administrative background of all rescue and relief measures in the district as far as medical preparedness for disasters and mass casualty incidents are concerned. The district hospital is generally the hub of hospital care in mass casualty incidents and is headed by the Chief Medical Superientendent (CMS) The average staff strength of a district hospital range from 100-200 which includes about 30-50 Doctors, 75-100 Nurses, 25-50 Ancillary staffs.

3.3.1 When to declare the Hospital Emergency Plan

The district hospital has a moderate bed strength of 100-200 beds and a running 24 x 7 emergency, hence can handle about 6-10 cases coming immediately without any disruption of services.

But receipt of more that 25-30 patients at one time or more than 50 patients over a few hours would developing require the activation of hospital emergency plans.

3.3.2 Preperation of Hospital Emergency Plan for District Hospital

a) Pre-Disaster Phase (Phase of Planning)

i) Formation of a Hospital Emergency/Disaster Committee:

The Chief Medical Superintendent (CMS) of the district hospital must constitute a disaster preparedness committee which would sit down and prepare the hospital emergency plan and the emergency manual. The following should be the members of the committee (individual hospital may choose different person):

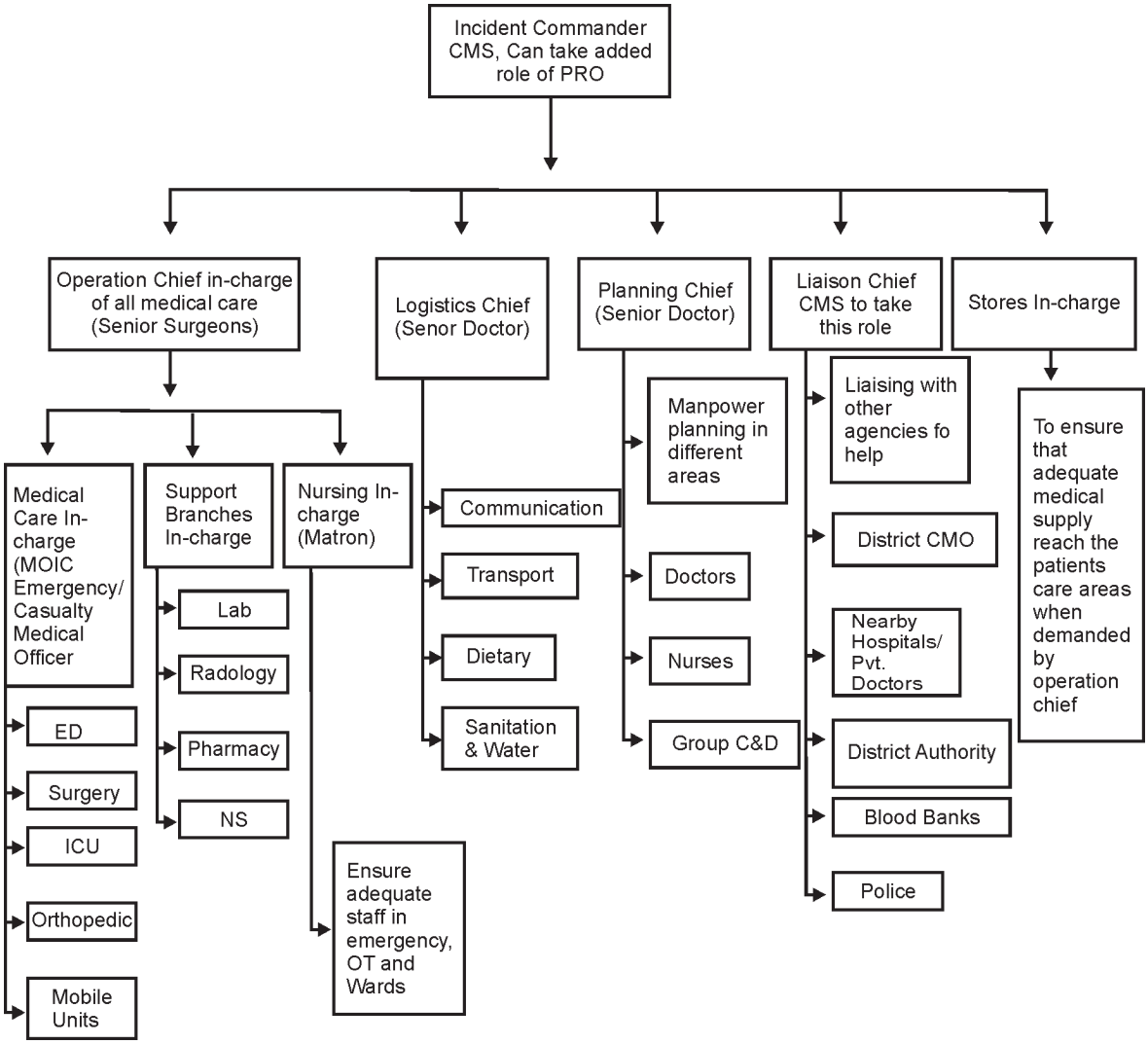
- Chief Medical Superintendent
- I/C Emergency Services
- I/C Surgery
- I/C Orthopedics
- I/C Anesthesiology
- I/C Medicine
- I/C Pediatrics
- I/C Gynecology
- I/C from any other clinical department of present
- I/C Nursing Superintendent
- Store Offices
- Account Officer
- Sanitation In-charge

ii) The formation of the Hospital Incident Command:

It is very important that the prominent members of the staff take up specific roles during an Emergency. This incident command structure should be written down so that there is no confusion and the persons are known by this position on the command structure e.g. Operations Chief, Logistics Chief etc.

The committee might decide that one person holds more than one position or work of one person is divided amongst different people.

Figure below shows the model incident command structure for a district level hospital.



iii) Control Room

The office of the CMS should act as the control and should have good communication network like landline, mobiles and if possible in-hospital CUG (Close User Group Mobile Connection). The CMS should ensure that the control room should have all contact numbers of the hospitals, staff which is mentioned in the incident command. The control room should Also have detailed contact numbers of District Medical Authorities, District Administration, Police, Fire Services, nearby hospitals, Private Physicians, Blood Banks, NGOs etc. which can be contacted if external help is needed.

iv) Organization of Patient Treatment Areas

The Operations Chief who is the senior surgeon should be actively involved in deciding about the organization of patient treatment areas as s/he will be the one responsible for all medical care in time of disaster.

The disaster management committee should look into and chart the following areas in the hospital for patient care activities:

1. Patient Reception Area: In this area the patients are received and triaged. The registration and documentation is also done in this area. This area should be just outside or nearby the emergency.

2. Patient Resuscitation Area: This area is for priority 1 patients who require immediate stabilization and transfer for surgery. This area should be inside the emergency premises.

3. Patient Observation Area: This area is kept for priority 2 patients who can wait for their definitive management for some time. This area should also be marked near the emergency.

4. Minor Treatment Area: This area is earmarked for the priority 3 (walking wounded patients) and it can be away from the emergency and is generally in the out patient department.

5. Operation Theatre: The committee should decide the policy regarding vacation of the operation theatre when the disaster is declared. All elective surgeries should be suspended and OT should get ready for emergency victims.

6. Organization of Wards: The emergency ward, surgery ward and orthopedic ward will be required to vacate some beds of elective patients by temporally discharging them. In case some other beds are vacant, these patients can be taken up on those beds.

7. Organization of the Mortuary: The Medical Superintendent along with the MO I/C mortuary services organize the existing mortuary to take the load of MCI in case the mortuary area is not sufficient one specific area which ideally should be at the back side of the hospital to be earmarked keeping the dead bodies temporarily till they are identified or disposed.

v) Organization of Patient Transfer after stabilization

An area in the hospital should be earmarked as "patients transfer area" from where all patients who cannot be treated at district level hospital because of lack of resources can be transferred to the further higher centers. This area also will be under the Operations Chief.

vi) The Medical Support Services

The Operation Chief also ensures that the necessary investigations (Radiology, Laboratory etc.) are not delayeds he is assisted by the Support Branch In-charge.

vii) The Nursing Services

The In-charge Nursing Services should directly report to the Operation Chief and provide adequately nursing staff where ever needed.

viii) Organization of the Logistics

The Logistics Chief has an important role to play once the disaster is declared she takes over the charge of all ancillary services of the hospital like

- Communication
- Transport
- Dietary Supply
- Sanitation
- Water & Electricity

ix) Medical Supplies

The Officer In-charge Stores should be called to the hospital if needed and s/he opens the hospital stores so that medical supplies are not hindered. In case there is a need s/he should be authorized to buy the necessary stocks on contingency basis.

x) Security

Most of the district hospitals do not have permanent security employed for the hospital premises and in general take the help of local police/ home guards for peace time security. In case the emergency plan is

activated the Medical Superintendent should immediately inform the police who will be responsible for clearing the area for smooth entrance of the patients and the doctors and also to provide security to the hospital.

xi) Public Relations Officer (PRO)

The disaster committee should decide one a person preferably the Medical Superintendent who knows the overall picture of the mass casualty incident to brief the media.

Media can also be used to disseminate public information regarding unknown and unattended patients in the hospital.

b) The Disaster Phase

i) Notification and Activation of Plan:

Information regarding the mass casualty incidents is received by the operator at district hospital from

- District CMO
- Police
- General Public

The person on the board verifies the incident and gather information regarding

- Nature and magnitude of event
- Possible numbers of victims
- Location
- Time of Incident
- Expected time of arrival of victims at district hospital

This person on the board passes the information to the Chief Medical Superintendent who after knowing number of expected casualties activates the hospital emergency plan.

- All staff present in the hospital is asked to reach the patient receiving areas as described earlier.
- All Chief of respective areas to be contacted and informed according to the incident command structure.
- All the Chiefs of respective areas to reach the hospital and report to Chief Medical Superintendent and carry out the requisite work of their areas.

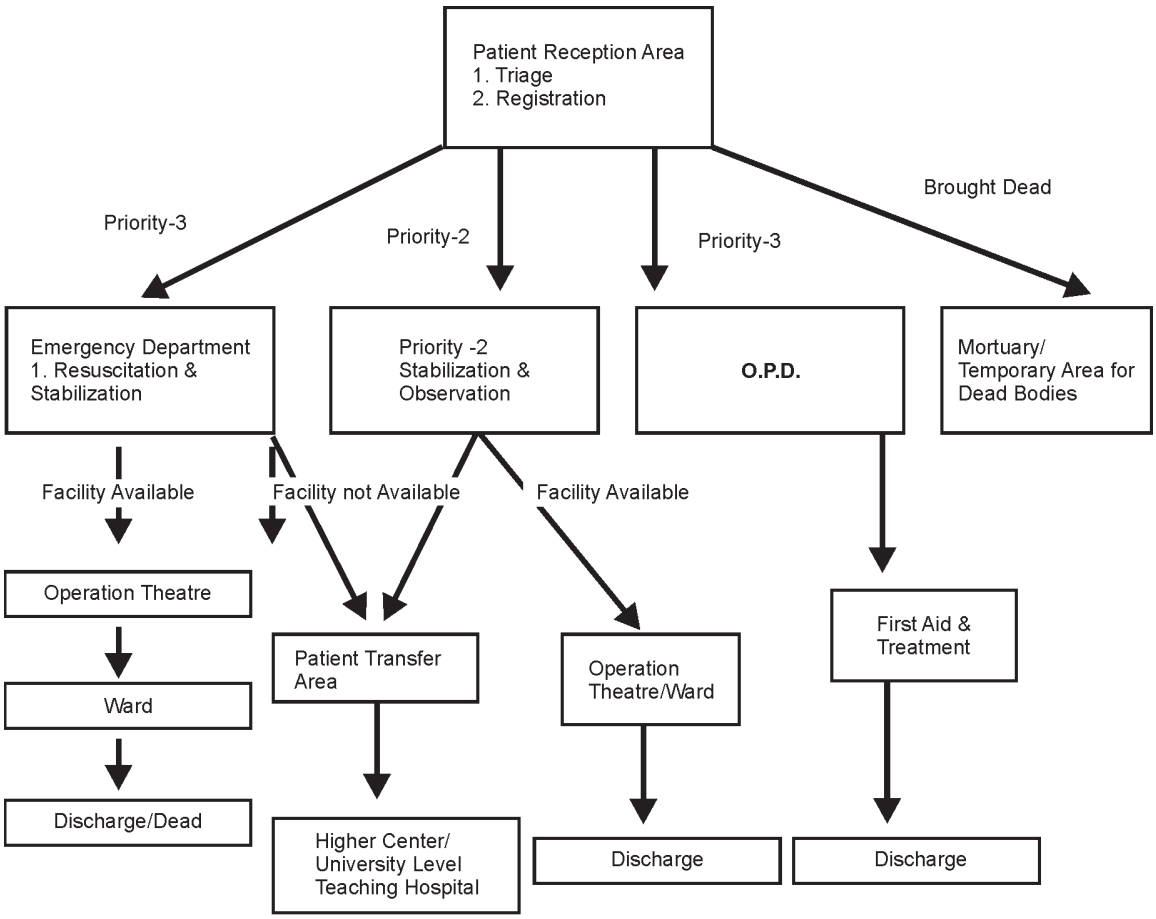
All the staff members report to the respective areas of work and take direct orders from their area Chief and also pass out the requirements to their superiors in vertical fashion who then passes on the requirements to the logistics/ stores department.

3.3.3 Deactivation of the Emergency Plan

Once the incident commander (Medical Superintendent) and the Chiefs of respective areas are convinced that there will be no more casualties who will come to the hospital they would take a decision to deactivate the plan and resume the normal functioning of the hospital. Once the decision is taken it is very difficult to reactivate the plan within a short period of time.

i) Post Disaster Debriefing

The Chief Medical Superintendent (CMS) of the district hospital should sit down with his/her team after the disaster has been called off and prepare a report as to how things went during the disaster and what were the problem areas. This will help in developing a more robust plan for the next time.



Expected flow of patients during a Mass Casualty Event in a District Hospital

3.4 A model Hospital Emergency Plan for a University/Teaching Hospital

Most of the States in India have their own Medical Colleges which are run by the State governments. In addition to the state run medical colleges there are many privately owned and run medical colleges in India The average bed strength of a University/ Medical College Hospital ranges from 1000 – 1500. The Teaching hospitals provide a wide variety of specialty care and most of the centrally located teaching hospitals in the state also provide Super Specialty care. As far as the physical resources and trained manpower is concerned the teaching hospitals are better off because of the resident staff strength. Most of the Teaching hospitals in the state are not inherently integrated with the state/ district health system, but even then, in the aftermath of a major mass casualty incident in the state these teaching hospitals provide the backbone of the specialty care to the victims. More often than not the victims are directly brought to the medical college hospitals. The average staff strength of a teaching hospital range from 1500 -2000 which includes about 250 -300 Doctors (Faculty & Residents), 500 – 750 Nurses, 100 - 150 Administrative staff and officers, 300 – 500 Group C&D staff.

3.4.1 When to Declare The Hospital Emergency Plan

The Teaching/ Medical College Hospital has a sufficiently good bed strength of 1000 - 2000 beds and run 24 x 7 emergency, hence can handle about 30 – 50 cases coming immediately without any disruption of services. But on receipt of more than 50 – 60 patients at one time or more than 75 – 100 patients over a few hours would definitely require the activation of hospital emergency plans.

3.4.2 Advantages of a Teaching/University/Medical College Hospital in preparing a Hospital Emergency/Disaster plan

1. **Infrastructure resources:** The infrastructural resources of a Teaching hospital are definitely superior to the district level hospitals. This includes the number of beds, facilities of medical equipment, provision of high dependency units and ICU's. The operating capacities of a teaching hospital are also more than that of the district/ municipal level hospitals.

2. **Trained Manpower:** One of the main advantages of a teaching hospital is the availability of 24 hour resident staff, who manage the patient care after the normal working hours. This is a big advantage in the times of Mass Casualty Incidents where the trained manpower is very essential for a good outcome. The staff strength apart from the medical staff, i.e. the stores officers, administrative staff, finance department, house keeping (including sanitation and laundry), dietary services, sterile supply department, security department, engineering department etc. provide the back bone for an effective mass casualty preparedness backup. Additional staff which can be readily utilized by a teaching hospital is the Non/ Para-clinical resident staff and the medical students (who can help as volunteers).

3. **Organization:** The organizational hierarchy in a teaching hospital set up is nearly the same as the one in hospital (HEICS) Incident Command System. Therefore formation of an Incident command does not pose much of problems to the administration.

   If and when required the Incident command structure should be fully opened up and utilized in a teaching hospital setup. (Annexure D,E&F)

3.4.3 Preperation of Hospital Emergency Plan for A University/ Teaching Hospital

The preparation of the hospital Emergency plan is in the same three phases as described in Chapter 2.

3.4.3.1 Pre-Disaster Phase (Phase of Planning)

a. Constitution of a Disaster/ Emergency management committee.

The following officers of the Hospital will form the 'Disaster Management Committee' under the Chairperson of the Director/ Dean/ Medical Superintendent.

It would comprise of the following members:-

1. Director/ Dean/ Medical Superintendent-Chairman
2. Addl. Medical Superintendent (Casualty) - Member
3. All Addl. Medical Superintendents - Member
4. Head of Deptt. Surgery - Member
5. Head of Deptt. Medicine - Member
6. Head of Deptt. Neurosurgery - Member
7. Head of Deptt. Anaesthesiology - Member
8. Head of Deptt. Burns & Plastic Surgery - Member
9. Head of Deptt. Radiology- Member
10. Head of Deptt. Orthopaedics - Member
11. Head of Deptt. Laboratory Medicine - Member
12. HOD of Deptt. Forensic Medicine - Member
13. Public Relation Officer - Member
14. Officer I/C Medical Store - Member

15. Officer I/C General Store - Member
16. Nursing Superintendent - Member
17. Blood Bank Officer - Member
18. Executive Engineer CPWD (Civil) - Member
19. Executive Engineer CPWD (Elec.) - Member
20. Chief Medical Officer I/C Casualty & Transport-Member Secretary

The Committee would co-opt any other functionary of the hospital depending upon the situation and the type of disaster. It would also form sub-committee/s to assist it as and when necessary. The Committee will meet at least once in 3 months to review the working of contingency plan, problem faced in recent disaster and amendment/ modification to be adopted in future.

The Committee will be responsible for overall managing the disaster situation, take administrative decisions as and when required, review the disaster plan and to inform the Government on the situation.

b. Delineation of Jobs according to Job Cards (Annexure G)

c. Control Room

The office of the Dean/ MS should act as the control and should have good communication network like landline, mobiles and if possible in-hospital CUG (Close User Group Mobile Connection).

The CMS should ensure that the control room should have all contact numbers of the hospitals, staff which is mentioned in the incident command.

The control room should also have contact numbers of District Medical Authorities, District Administration, Police, Fire Services, nearby hospitals, Private Physicians, Blood Banks, NGOs etc. which can be contacted if external help is needed.

d. Organization of Patient Treatment Areas

The Operations Chief who is the senior surgeon should be actively involved in deciding about the organization of patient treatment areas as she will be the one responsible for all medical care in time of disaster.

The disaster committee should look into and chart the following areas in the hospital for patient care activities:

1. **Patient Reception Area:** nearby the emergency.
2. **Patient Resuscitation Area:** emergency department.
3. **Patient Observation Area:** marked near the emergency.
4. **Minor Treatment Area:** away from the emergency (Out Patient Department).
5. Operation Theatre: The committee should decide the policy regarding vacation of the operation theatre when the disaster is declared. All elective surgeries should be suspended and OT should get ready for emergency victims.
6. Organization of Wards: Demarcation of Disaster Beds and Creation of new beds by discharging old recuperating patients, discharging patients for elective surgery.
7. Organization of the Mortuary: The Medical Superintendent along with the Head Forensic services organize the existing mortuary to take the load of MCI in case the mortuary area is not enough one specific area which ideally should be at the back side of the hospital could be earmarked keeping the dead bodies temporarily till they are identified or disposed.

e. The Medical Support Services

The Operation Chief also ensures that the necessary investigations (Radiology, Laboratory etc.) are not delayed. S/He is assisted by the Support Branch In-charge.

f. The Nursing Services

The In-charge Nursing Services should directly report to the Operation Chief and provide adequate nursing staff where ever needed.

g. Organization of the Logistics

The Logistics Chief (any of the senior faculty member) has an important role to play once the disaster is declared. She takes over the charge of all ancillary services of the hospital like

- Communication
- Transport
- Dietary Supply
- Sanitation
- Water & Electricity

h. Medical Supplies

The Officer In-charge Stores should be called to the hospital if needed and s/he opens the hospital stores so that medical supplies are not hindered. In case of need s/he should be authorized to buy the necessary stocks on contingency basis.

i. Security

Most of the Teaching/ Medical college hospitals have their own security. The security providing agency should be briefed about the modalities of declaring an emergency plan, and their role (chapter 2) once the emergency plan is in to force.

j. Public Relations Officer (PRO)

The identified officer/s would liaison with the relatives of the victims to inform them on their clinical status. For such purpose, the hospital will make efforts to establish information desk to provide the requisite information. The list of the casualties along with their status displayed at a prominent place outside casualty, in both English and local language, would be updated regularly.

Arrangements for drinking water, tent etc. to be made for attendants out side casualty.

The Medical Superintendent or the person authorized by him will brief the media.

k. Documentation

Documentation will be done at the Casualty by C.M.O. All the MLCs will be recorded properly. However, the treatment of the patients will get priority over the paper work. The Duty Officer will prepare the list of casualties including nature of injury sustained. For heavy load of Causalities, Officer In-charge of Record Section will post an additional Medical Records Assistant/ Technician to cater to the additional load of work. One nurse will be posted to check the documentation and identification of patients. Medical Superintendent will take a decision to involve NGOs for this purpose.

l. Mortuary

Those brought dead or died in hospital will be kept in the Mortuary to its fullest capacity. Required formalities as laid down for Medico Legal Cases will be followed. Whenever the space falls short temporary morgue for keeping dead bodies will be created at an appropriate place to be decided in consultation with MS and HOD of Forensic Medicine. Necessary identification and handing over of the bodies to the relatives after Medico Legal Clearance will be done in this area.

Officer In-charge photography section shall arrange to take photographs of dead bodies, if required.

m. Crowd Management

On receiving the information of disaster, immediate mobilization of security staff available within the hospital campus will be made to augment the security in the casualty department and to manage the crowd. The local police station will also be informed to provide assistance in managing the crowd. The incoming traffic needs to be regulated to provide unhindered passage to ambulances.

3.4.3.2 The Disaster Phase

a) Notification and Activation of Plan:

- As soon as any intimation regarding disaster is received/ Disaster patients arrive, doctor on duty shall receive them and attend to them promptly, efficiently and courteously.
- Nodal Officer will immediately alert all the staffs and concerned Heads of Unit and Departments with the help of central announcing system in central enquiry and central telephone exchange. All the available ambulances shall be put in service. List of all the categories of staff with addresses, telephone numbers is made available in the Control Room.
- The Nodal officer will immediately inform Officer I/C casualty, CMO and Addl. M.S. on call and also the Medical Superintendent.
- Nodal Officer and CMO on duty shall immediately put in service more no. of trolleys, wheelchairs from casualty as well as the emergency wards and in case of necessity from other wards also.
- Nodal Officer will immediately alert and press into service doctors from other wards, OT, Blood Bank, Burns Casualty , C.T. Scan, Ultra sound and X ray rooms in casualty block. He/ She will also deploy extra nursing staff, Nursing Orderlies, Stretcher-bearers, Safai Karamcharis & Security Guards with the help from ANS/DNS on duty, Sanitary Inspector on duty and Security Officer on duty. He will give instructions to regulate the patients and crowd with the help of security and police personnel.
- Doctors working in casualty will immediately conduct a triage i.e. sorting out case into 4 categories by putting coloured triage bands on patient's left/right upper arm and take steps accordingly, (i) Red: needing immediate resuscitation – in the red area i.e. Main Casualty Hall. (ii) Yellow: needing urgent medical attention and possible surgery after 4 to 6 hrs – in the yellow area i.e. disaster room. (iii) Green – walking wounded (non urgent ambulatory) needing first aid and delayed treatment – in the green area i.e. observation room. (iv) Black – dead, to be shifted to mortuary. Colour bands are available in the control room cupboard.
- Blood shall be indented immediately and patient taken to O.T. directly when so required.
- All the MLCs will be recorded properly and in details in MLC Register.
- More no. of O.T. Tables shall be made available to handle increased load of surgery.
- A comprehensive list of all patients coming to casualty shall be prepared and prominently displayed in English & Hindi outside casualty.
- Dedicated telephone lines shall be activated with the help of central telephone exchange, as disaster help lines.
- As far as possible all the cases shall be disposed of in the shortest possible time.
- Extra resuscitation bags should always be available in Casualty whenever required.
- Wherever necessary, emergency drugs, which are not available, shall be procured from the money kept in control room.

- If necessary extra dressing, suture trays and other equipment shall be indented from CSSD which is working round the clock.
- Creation of extra beds will take priority
- All the dead bodies shall be properly packed; identification tags put on them and then sent to mortuary.
- Arrangements for tent, drinking water etc. shall be made for attendants/ staff through kitchen, canteen, NGOs.

b) Deactivation of Plan

It is a very important phase of the emergency plan. The timing of the deactivation has a bearing on the successful outcome of the plan. An early deactivation might lead to a situation where casualties continue to come after Emergency Plan has been deactivated and a late deactivation would put undue pressure in the hospital resources and also delay in resumption of normal activity.

3.4.3.3 Post Disaster Debriefing

Under the chairmanship of the Director/ Dean/ Medical Superintendent.

Annexure

4

Annexure-A

SCALES FOR PRE-HOSPITAL FACILITIES ACCORDING TO POPULATION

Population Coverage	=> 3-5 lakhs
No. of first-aid parties	=> 40
No. of First Aid Posts.	=> 7, Mobile - 1, Static - 6
No. of mobile surgical units	=> 1
No. of Ambulances	=> 6
No. of Emergency Hospital Beds	=> 100-150

Annexure B

EQUIPMENT FOR A FIRST AID PARTY (EQUIPMENT FOR CASUALTY SERVICES)

S.No	Equipment / Particulars	Scale	Authoriz-ation	Recommendation /	Remarks
I)	**For Each Member of FA Party**				
1.	Helmet	Per member	1	1 fiber glass	-
2.	Water bottle with sling		1	1 steel glass	
3.	Electric torch		1	1 commander 4 cell	
4.	First aid pouch with contents		1	1	
II)	**For Driver of FA Party**				
5.	Vehicle Helmet	Per driver	1	1 fiber glass	
III)	**For First aid Party**				
6.	Stretchers	Per party	Per party	2 aluminum & preferably folding	
7.	+ Blankets		2	2	
8.	Durries		2	2 ground sheets	
9.	Leg splints sets		2	2	
IV)	**Haversack Containing The Following Items**				
10.	Bandages triangular		36	36	
11.	Bandages roll		36	36	
12.	Cotton wool		8	8 (100 gm packets)	
13.	Cans for tightening		8	Nil	
14.	Dressing pads*		24	24 (sterile)	
15.	Lint, cut in size of 8"x12"		6	6 (45m x 30cm)	
16.	Safety pin, large		2	2	
17.	Scissors (approx 7" long, one blade pointed and one blade blunt)		1	1 (approx 15cm)	
18.	Pencil, lead		1	2	
19.	Labels, casualty identity (packets of 20)		1	1	

20.	Safety razor blade		1	1 packet	
21.	New addition		1	1 liquid spray for	One each
22.	Sterile dressing pad on sticking		100	pains, wounds arrest Band Aids	for pains, burns, wound and bleeding
	plates				
23.	Tincture of iodine			1x1 pints bottle	
24.	Paracetamol tablets			100 NocX 0.5g	For pain
25.	Brufen tablets			100 Noc X 400 mg	relief in open wounds For pain
26.	Bathing Soap			1 cake	in closed wound
27.	Hand bellow type Ambu bag			1	
28.	Hand balloon attached suction apparatus			1	
V.	**Contents of First Aid**				
	POUCH (with each First Aider)				
29.	Bandages Triangular	Individual First	9	9	
30.	Bandage roller		9	9	
31	Dressing, sterile pads		9	9	
32	Labels casualty identity (packets of 20)		1	1	
33.	Safety pins, large		1 doz.	1doz.	
34.	New addition		1	1 safety razor blade	
35.	New addition			10 Band Aid dressing	
VI)	**Ambulance Equipments**				
a)	**Personnel Equipments**				
36.	Driver	Helmet per driver	1	1 fiber glass	
37.	Attendant	Helmet per attendant	1	1 fibre glass	
b)	**Ambulance Equipments**				
38.	Water bottle ambulance	Per	1	1 steel glass	
39.	Stretcher	4		4 light aluminum	
40.	Blankets	4	4		

41.	Hot water bottle	4	4		
42.	Torch	1			
c)	**Ambulance satchel containing**				
43.	Bandages triangular	6	6		
44.	Bandages, loosewave, 5 cm	6	6		
45.	Cotton wool	6	6 100g pkts		
46.	Dressing, First Field	12	12 (sterile)		
47.	Lint, unmedicated	6	6 100g pkts		
48.	Safety pins (large)	2 doz	2 doz		
49.	Scissors (approx. 7" cm long, 1 blade pointed, 1 blade blunt)	1	1 (15 cm long)		
50.	Pressure bandage	1	2		
51. 52.	Splints, Wooden set Snaps for splints	1 1	1 1		
53.	Canes for tightening improvised tourniquets	4	4		
54.	New addition	Nil		1 Hand Bellow type Resuscitator ambu bag	
55.	New addition	Nil		1 Foot operated suction	
VII)	**First Aid Party Drugs**				
56.	Tincture Benzoin	Per party		1 x 1 pint bottle	
57.	Tabs. Paracetamol	For each FA Party	Nil	100	100
58.	Tabs. Trimenthoprim (septran)	Nil	100	100	
59.	Cap. Ampiclox (500 mg)	Nil	10 Nos.	100	
60.	Tab. Diazepan 5 mg	Nil	50	100	
61.	Tab. Diazepam 10 ml Amp.	Nil	5	100	

Annexure C

MEDICAL STORES & EQUIPMENT FOR FIRST AID POSTS

S.No	Equipment / Particulars	Scale	Authorization		Recommendation		Remarks
			Basic requirement	Percentage of reserve	Basic requirement	Percentage of reserve	
1.	Tablets acetylsalicylic	For each	30 tab	100%	Disprin	100%	
	acid	FA post	100				
2.	Tablets sulphadiazine		50 tab	100	Septran	100	
					100		
3.	Lysol, 8 oz bottle		1	100	1 box	100	
4.	Morphine sulphate, 1/4g, 1 c.c. Ampoules, boxes of 6		1 box	100	1 box	100	
5.	Liq. Adrenalin Hydrochloride		1 amp	100	10 amp	100	
6.	Sod. Bicarbonate 8 oz		8 oz	100	500 gm	100	
7.	Sera ATS ampoules		3	100	Inj. TT 5	100	
	(inj.)				amp		
8.	Spirit, methytaled,		4	50	4	50	
	mineralized 500 ml						
9.	Air way medium I.R.		1	Nil	2	Nil	
10.	Forceps Torque (Cross		1	Nil	1	Nil	
	action)						
11.	Mouth gag		1	Nil	1	Nil	
	(sydenhauns)						
12.	Glucose saline giving		10	50	I/V sets	50	
			set	10			
13.	Bandages loose wove		100	75	5cm x	75	
			4" x 6 yards	6m 100			
14.	Bandages loose wove		100 2-1/2"x6 yards	75 metres	5cm x 6	75	
15.	Bandages triangular		18	50	18	50	
16.	Bandages many tailed		3	100	3	100	
17.	Dressing first field		25	100	25	100	
18.	Dressing shell		10	100	10	100	
19.	Gauze absorbent, 25" wide x 3 yards		6 pkts	50 pkts	60cm wide in of 3 m folded, 6	50	
20.	Lint, cotton absorbant		1 lb	100	500 pkts,	100	
	in 1 lb pkts		1 lb				
21.	Wool, cotton absorbant in 1 lb pkts		2 lb 2 lb	75	500 pkts,	75	
22.	Plaster, adhesive, zine		1 spool	50	1 spool	100	

	oxide 5 cm x 5 m yards spool						
23.	Silk, stabilized, no.3 (T) in vial		1	100	1	100	
24.	Wool, cotton absorbent		2 lb	50	2 lbs	50	
25.	Forceps astery 5" post	Per F.A.	4*	100	10cm 4	100	
26.	Forceps dissecting		1*	100	1	100	
27.	Forceps sinus 7"		1*	100	15cm 1	100	
28.	Forceps, dressing		1*	100	1	100	
29.	Forceps, sterilizer, chattels		1*	100	1	100	
30.	Probe		1*	100	1	100	
31.	Scissors, surgical		1*	100	1	100	
32.	Scalpal		1*	100	1	100	
33.	Knife B.P. Handle Blade No. 22		1 3	100 50	1 1	100 100	
34.	Splinter forceps		1*	100	1	100	
35.	Tongue depress forceps		1*	100	1	100	
36.	Smgeons overalls		*	2	100		
37.	Smgeons rubber gloves		2 pairs	100	2 pairs	100	
38.	Scissors, stretcher bearers (7" long) blade blunt		2 pointed - 1	50	2	50	1 blade
39.	Catcher No.8 I.R.		1	100	1	100	
40.	Catcher No.6 I.R.		1	100	1	100	
41.	Razor common *For medical officer on duty DISPOSABLE		1	100	1	100	
42.	Syringes Hypodermic 2cc with needles 2, in case	Per F.A. post	1	100	5	100	
43.	Syringo record, 10cc with needle space for 2cc		4	100	5	100	
44.	Syringe hypodermic		4	100	20	100	
	with needles space for 2cc						
45.	Syringe hypodermic with needles space for 10cc		2	100	10	100	
46.	Medicine glass, 2 oz		1	100	20 ml	100	
47.	Pins safety, tins of 36		1	100	1	100	
48.	Tourniquest		2	50	2	50	
49.	Splinting, Gooches wood 24" x 18" pieces	96cm, 2	2	50	60 x	50	
50.	Splints, arm, wood, plain sets of 8		1	100	1	100	
51.	Splints, knee, thomas's without foot pieces		3	100	3	100	

52.	Splints, dosterior, wood with a foot piece		4	100	4	100	
53.	Straps and buckles for spints doz		2	50	2	100	
54.	Eye sheds		3	50	3	50	
55.	Hot water bottle I.R. 12" x 8"		4	50	30 x 20cm, 4	50	
56.	Stevilizer, fish kettle with long size 15x4 cm cm, 1		1	100	40x10	100	
57.	Stoves, kerosene small gasstove (stand by)		1	100	1	100	
58.	Basin, Dressing, E.I. Kidney shape, 10cm		2	100	25cm, 2	100	
59.	Bowl, E.I. 8 cm		2	100	20cm, 2	100	
60.	Jug, measure, E.I. Graduateed 1 point		1	100	20 cm, 2	100	
61.	Jar, dressing 10"x7" E.I. with cover		2	100	25x15cm , 2	100	
62.	Tray, dressing E.I. 11"x9"x2"		1	100	30x20x5 in, 1	100	
63.	Basin , E.I. washing 14"		2	50	40cm, 2	50	
64.	Bed		1	100	1	100	
65.	Bin, Ash, Large		1	100	11	100	
66.	Bottle urine E.I		1	100	1	100	
67.	Brush, Nail, ward		1	100	1	100	
68.	Cup, feeding, E.I.		2	100	2	100	
69.	Mug, enameled		3	50	3	50	
70.	Pail, plastic		1	100	1	100	
71.	Table with trestles size		1	100	1	100	
72.	Lamp hurricane torch		6	100			
73.	Candles		6	50	6	50	
74.	Math boxes		6	50	6	50	
75.	Kerosene oil		2 gallone	50	10 litre	100	
76.	Towel handsize		4	25	4	25	
77.	Soap, hand-cake		2	50	2	50	
78.	Soda washing		1 lb.	50	½ kg.	50	
79.	Floor mop-shest handle		1	100	1	100	
80.	Stretcher, ambulance (modified light aluminium)		6	50	Modified light aluminiu m, 6	50	
81.	Sheets, water proof width 36"	3m	100	3m	100		
82.	Blankets	12	50	12	50		
83.	Crutches	2 pairs	50	2 pairs	50		
84.	Walking sticks	3	50	3	100		

85.	Pencils	1	100	2	100		
86.	Torches with dry battery	2	50	2	50		
87.	Casualty register	For F.A. Post	2	50	2	50	
88.	Tie-on-labels, set of 18 in an envelop		4 sets	100	4 sets	100	
89.	Tea-box contents: i. Tea ii. Condensed milk iii. Sugar iv. Cups & saucers v. Sauce pan vi. Spoons vii. Kettle E.I		 2 lb 2 lb 4 lb 3 sets 1 6 1		 2 lbs 2 lbs 4 lbs 6 sets 2 6 1		
90.	Chlorosol (P.G.M.S. Dettol)		1 lb	100 velon 500ml	Dettol/sa	100	
91.	Injectic thiopentiomi sodi, ampoule of 0.5cc (pentothel sodium)		6 amp	50	6 amp	50	
92.	Paraffirum Liouidum		8 oz.	100	8 oz.	100	
93.	Tab. Phenobarbitone gr.1 (Luminal, Gaudenal)		51 Nos.	100	51 Nos.	100	
94.	Pethidaine Hychochloride 500 mg. Amp Pethidaine Hychochloride 100 mg. Amp		25 Amp.	100	25	100	
95.	Tr. Benzoin Co		1 lb	100	1 lb	100	
96.	Antigas gangrene serum (4000 i.u.)		10 Amp	100	10 Amp	100	
97.	Bandages, elastic, adhesive, 2-1/2" x 5 yards		3 Nos.	100	3 Nos.	100	
98.	Needle, serum		4 Nos.	100	4 Nos.	100	
99.	Needle holder, Mayo		1 No.	100	1 No.	100	
100.	Nylon snuture material medium Hanks of 50		1 hank	100	1 Hank	100	
101.	Forceps, Dissecting, Toothed 7"		1 No.	100	1 No.	100	
102.	Splinting, wire, (Cramer) 60mm x 8cm		6 piece	100	6 piece	100	
103.	Listons Long Splint		1 set	100	1 set	100	
104.	Sphygmomanometre dial type		1 No	100	1 No	100	

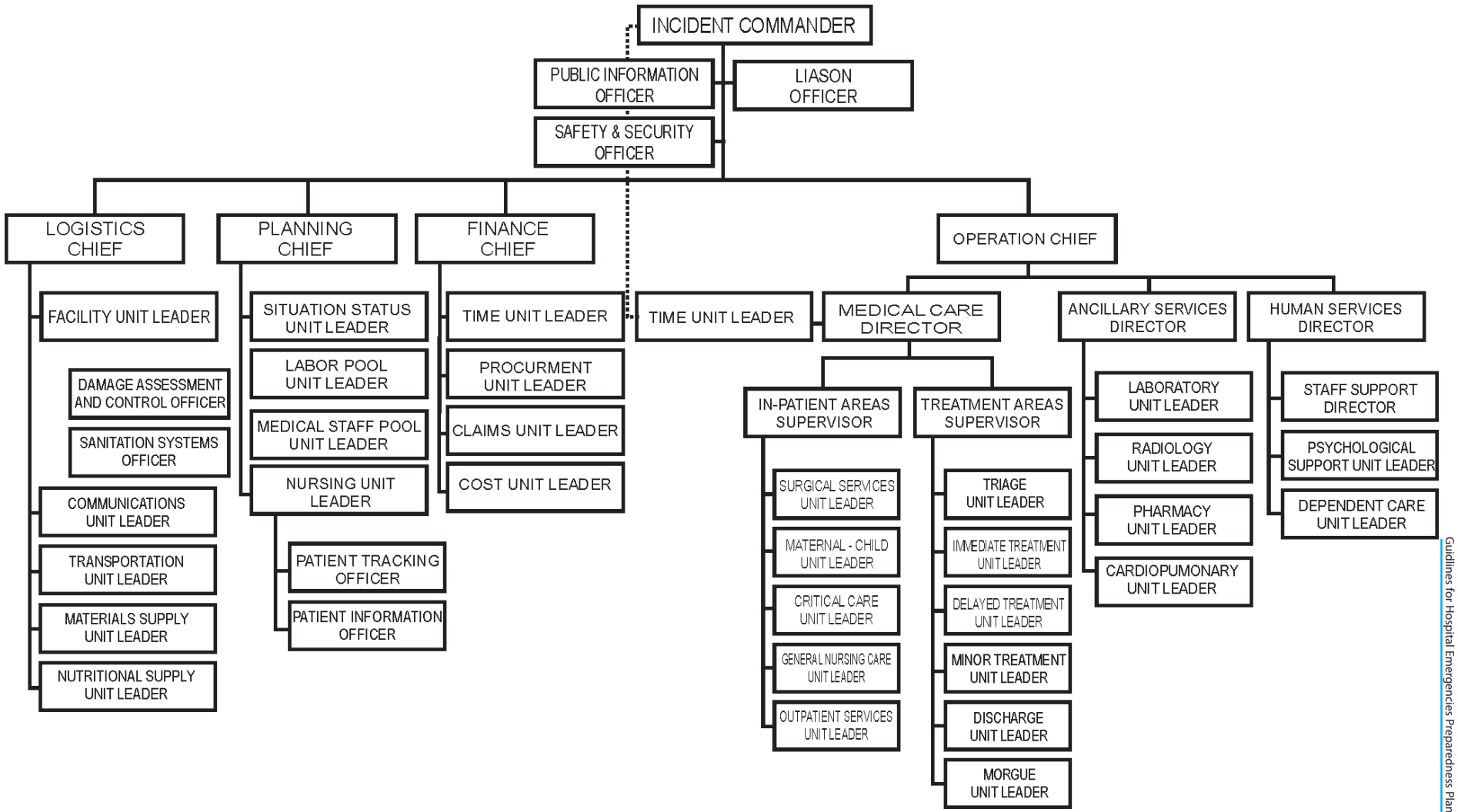
105.	Tubing Drainage 3/16"		1 metre	100	1 metre	100	
106.	Measure glass double (1/2 oz & 2 oz) 100		1	100	1		
107.	Bag, ice, head 1.R.7-1/2 ins		1 No.	100	1 No.	100	
108.	Bag, sand, empty, 16inx6in		3	100	3	100	
109.	Thermometer, cliniel case for		1 No.	100	1 No.	100	
110.	Tray, E.I. kidney shaped 10"		2	100	2	100	
111.	Transfusion equipment self		1 set	100	1 set	100	
112.	Mask (face)		6	100	6	100	
113.	Nose pads		10	100	10	100	
114.	Oxygen cylinder		1	100	1	100	
115.	Measuring tape		1	100	1	100	
116.	Needles, snuture, cutting, straight, triangular pointed, size 2 (large) packets of 6		1 pkts	50	2 pkts	50	
117.	Liner thread size 30-12 inch length(CENTRAL) MARKET, LAJPAT NAGAR-II (REGD.) hanks of 50		2	50	2	50	
118.	PERSONAL EQUIPMENTS: Doctors Nurses First Aiders Lay personnel Drivers Attendants	person		1 each			
119.	In xylocaine 50ml vial	For F.A. Party				1 vial	100
120.	Sunction Apparatus foot operated				1 No.	100	
121.	Ethyl Chloride						
	Spray				1 No.	100	
122.	Liquid spray for pains, burns, wounds and bleedinganest				1 each	100	
123.	Band-Aid strip				1		
124.	Hand bellow type Resuscitation				1 No.	100	
125.	Ryle's tube (Polythene)				5 Nos.	100	
126.	Butterfly hypodermic needle set				1 Nos.	100	
127.	Brufen tablets (400mg) each				100 Nos.	100	
128.	Oral rehyderation solution				100 Nos.	100	
129.	In. Tetanus Toxide 10 dosevial				10 gals	100	
130.	Pneumatic Splints				1	100	
	NBC WARFARE CASUALTIES AND PROTECTION OF STAFF						
131.	Gas Mask	Per individual			1	50	
132.	Impermeable N.B.C. suit				1	50	
133.	Rubber handgloves				1 pair	100	

134.	Gumboots				1 pair	100	
135.	Impermeable stockings				1	100	
136.	Chemical agent detection kit	Per F.A. party			1	100	
137.	Decontamination kit with perssmissed sprayers				1	100	
138.	Inj. Atropine Sulphater 2mg Amps.				10	100	
139.	Amyl Nitrile pearls				12	100	
140.	Inj. Sodium Thiosulphate				2	100	
	solution Amps (10ml of 30% sol each)						
141.	Inj. Sodium Thiosulphate solution Amps. (50 ml of 25% sol. Each)				2	100	
142.	Inj. Diethylenetriamine Amps. Pentacetic Acis (DTPA)				12	100	
143.	Aodium Alginate 6 pints and Aluminium Hydroxide Gel				50		
144.	Prussion blue				6 pints	50	
145.	Inj. Calcu. Gluconate 10 ml Amp.				12 Amp.	100	
146.	Inj. Ammonium Chloride Amps				12 Amps	100	
147.	Atomic contamination Monitors				1	100	
148.	NBC Decontamination Toilet				1		

Annexure D

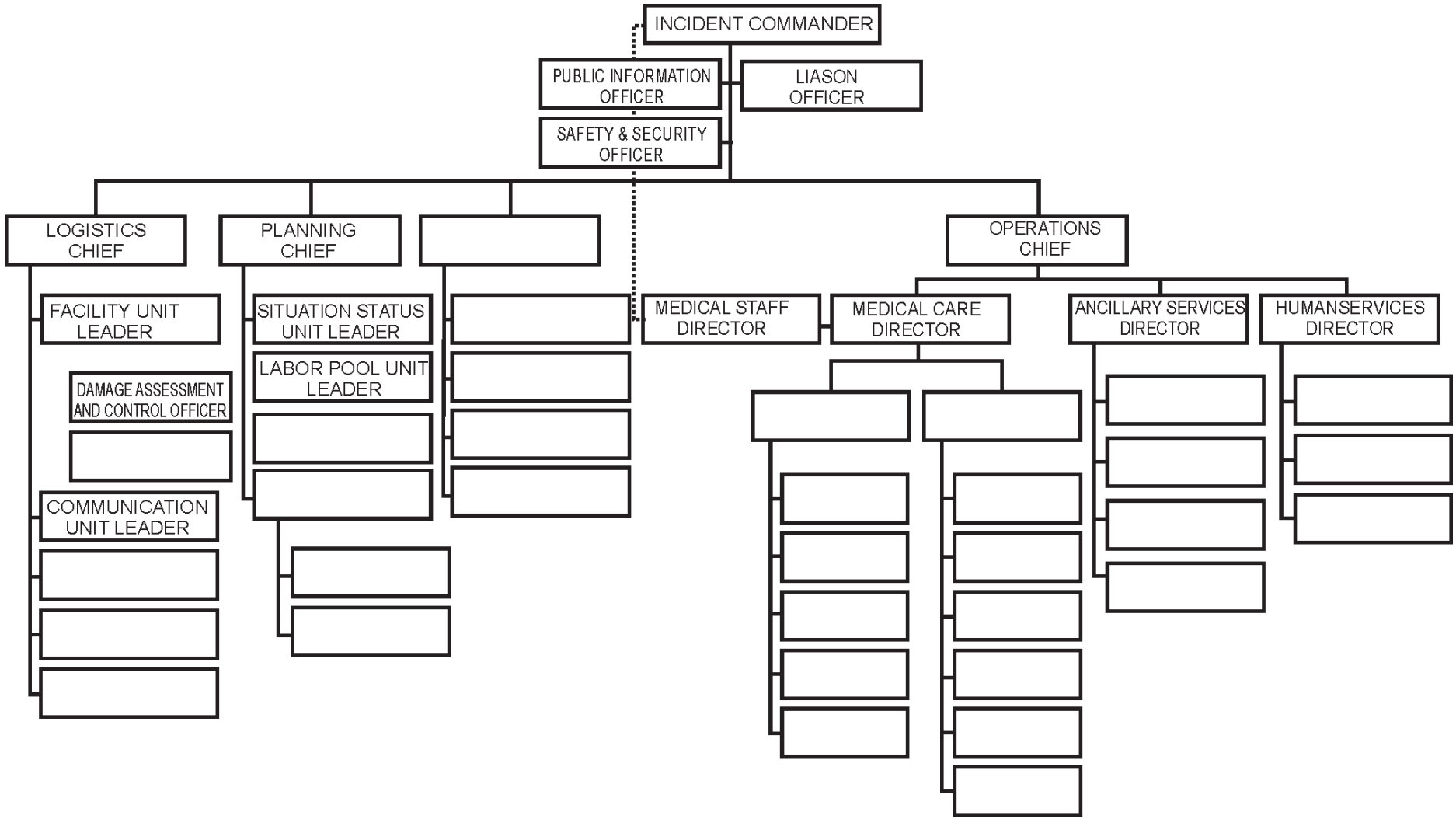
HOSPITAL EMERGENCY INCIDENT COMMAND SYSTEM (HEICS) ORGANIZATIONAL CHART FULLY OPERATIONAL

This organizational chart represents the response portion of a hospital's emergency or disaster plan. Th HEICS management system fits within a facility's overall Emergency Preparedness Plan, and is supported by policies and procedures which outline this response plan's activation.



Annexure E

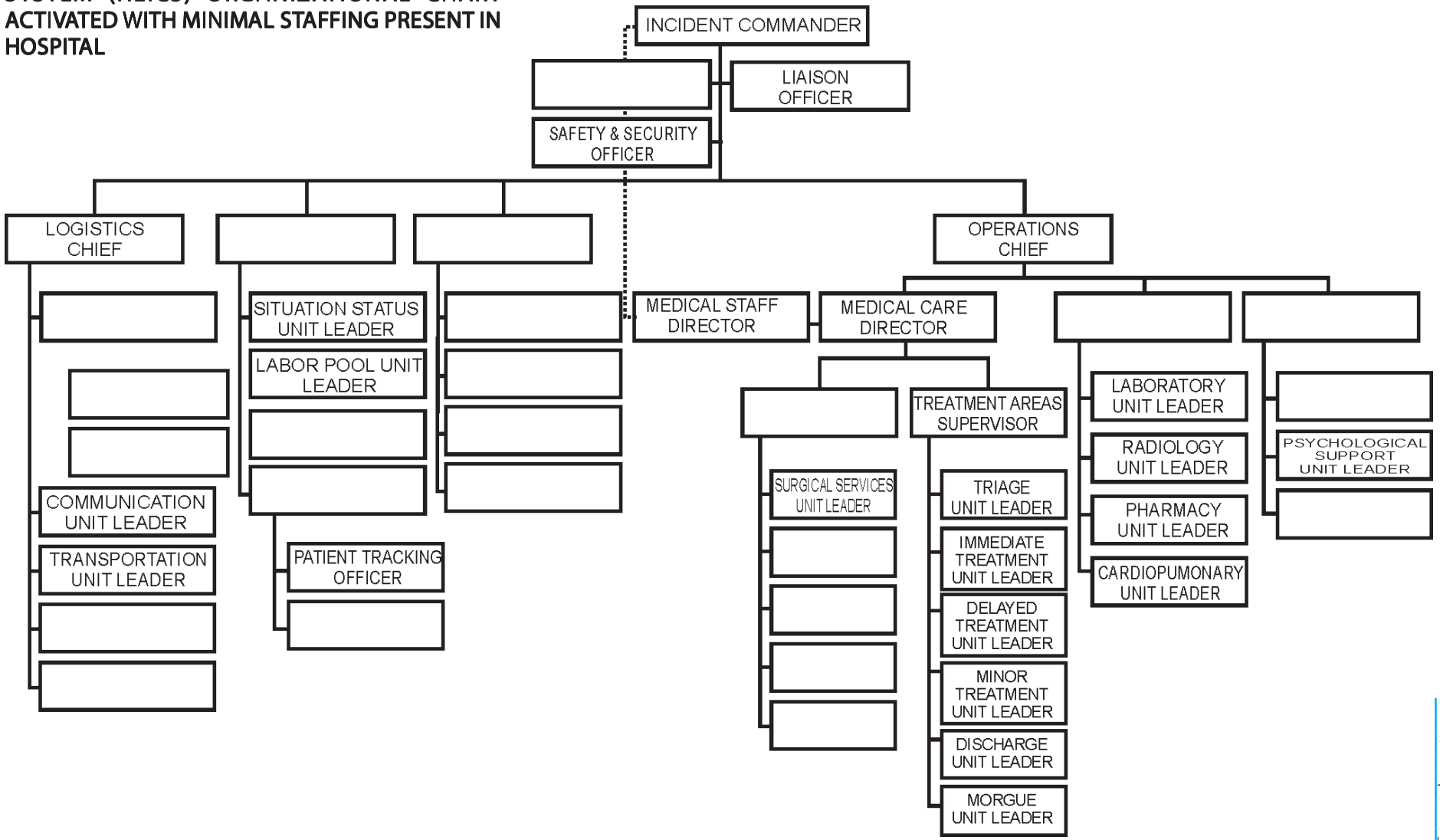
HOSPITAL EMERGENCY INCIDENT COMMAND SYSTEM (HEICS)
ORGANIZATIONAL CHART SHOWING FLEXIBILITY OF THE SYSTEM



The activation of positions for a mass casualty accident will be different than those activated for a hazardous material spill or an impending labor strike. HEICS will flex to accommodate the unique needs of each emergency. The above chart illustrates the positions which may be opened to address issuesassociated with a storm alert. This pre-disaster activation allows alerted staff to be in a "stand-by" mode in the event future positions need to be filled. Keep in mind, each emergency has its own set of priorities and circumstances. With easy to understand, pre-written checklists, almost anyone can assume a role after a few minutes of reading.

Annexure F

HOSPITAL EMERGENCY INCIDENT COMMAND SYSTEM (HEICS) ORGANIZATIONAL CHART ACTIVATED WITH MINIMAL STAFFING PRESENT IN HOSPITAL



A bus crash in the early A.M. hours will find hospital management and staff at a minimum. the HEICS system allows a minimum activation of positions necessary to care for the arriving injured. The 5 position with double-boxed borders are those which should be immediately activated upon notice of the crash. The other positions can be added as more personnel arrive. It should be remembered that a person might be required to perform more than one job. As more staff becomes available they relieve the individual with multiple assignments. For example: the Night Supervisor initially become the incident Commander and Labor Pool Unit Leader. Tasks (positions) which are assigned a high priority may be divided among arriving (available) individuals.

Annexure G

SAMPLE JOB CARDS

- Job cards will be made available in all areas concerned with the emergency management plan. Each card will contain a checklist of instructions for the key individuals in the respective areas to enable them to carry out their duties effectively.
- These cards will also have all the information required for the individual to carry out his instructions, e.g., phone numbers, pager numbers and addresses (updated periodically)
- These cards will be colour coded for different categories of staff for easy identification, e.g., consultants, senior residents, junior residents, nurses, etc.
- The cards will be kept in an easily accessible area in clearly labeled slots.
- In addition colour coded cards, as per International guidelines will be kept in the casualty for triaging and further management.

A. JOB CARDS-surgery

i) Surgical Consultant Admitting Unit

Reporting Area Casualty

Reporting Officer: Chief of the admitting unit

(1) Assess whether an emergency exists.

(2) Arrange for the entire surgery unit on call to report to the Casualty.

(3) Distribute treatment protocols to Senior/Junior Residents.

(4) Supervise treatment for patients who have been triaged.

(5) Assign residents to these patients

(6) Prioritize patients for surgery in order of urgency

(7) Communicate with relatives of surgical patients as and when required.

ii) Surgical Chief Admitting Unit

Reporting Area Casualty

Reporting Officer: Chief of surgery

(1) Triage the patients in the Casualty as per triage guidelines laid down for a disaster situation.

(2) Inform head of the Department of Surgery (Ph: Res Intercom: Mobile: Other:)

(3) Designate one consultant and residents to the designated ward if the Casualty is full.

(4) Depute one intern to contact hostels to mobilize all surgical residents.

(5) Alert the next day's duty team about looking after the operation theatres.

(6) Alert the previous days duty team to report to the Casualty to help.

(7) Supervise surgical treatment in the Casualty.

iii) Surgical Consultant OT

Reporting Area Operation Theatre

Reporting Officer: Chief of surgery

(1) Receive cases for surgery from the Casualty or the other designated ward and assign them to

different OTs.

(2) Make scrub teams for each table who will operate on cases assigned by you.

(3) Depute resident/intern for obtaining blood/communicating with other team.

(4) If you have to scrub for any case, ensure availability of another consultant to receive patients and to co-ordinate surgery.

(5) Supervise surgical teams in the OT.

(6) Ensure monitoring of patients while transferring back to ward/ Intensive care areas.

iv) Surgical Senior Resident

Reporting Area Casualty

Reporting Officer: Chief of Unit

(1) Report to your unit consultant to collect treatment protocols and for instructions.

(2) Assign one resident to each serious patient.

(3) Supervise and help in resuscitation and treatment of seriously ill patients.

(4) Have 2 interns on stand by for blood samples, reports, blood etc.

(5) Inform unit head of any problems

v) Surgical Junior Resident

Reporting Area Casualty

Reporting Officer Senior Resident

(1) Report to your unit consultant to collect treatment protocols & instructions.

(2) Organize and carry on the treatment of the case assigned to you as per treatment protocol given to you.

(3) Inform Senior Resident of any problem.

vi) Surgical Senior and Junior Residents OT

Reporting Area Operation Theatre

Reporting Officer: Chief of Unit

(1) Report to your unit head for instructions.

(2) Operate on cases assigned to you as per the instructions of your unit head.

(3) Report to your unit head when free.

(4) Don't change your scrub team unless ordered by your unit head.

(5) Ensure that the patient is personally handed back to residents in the designated post operative ward so that there is continuity of care.

B. JOB CARDS – Casualty

i) Senior Consultant Casualty

Reporting Area Casualty

Reporting Officer: Chief of Casualty

(1) Clear the emergency department of any patients, either admit or discharge them.

(2) Inform the Casualty chief.

(3) Inform the chief nurse to organize additional trolleys and drugs and disposables.

(4) Allot emergency residents and physicians to the different receiving areas of the department.

(5) As the patients come in inform the chiefs of units of the involved departments.

(6) Send an intern to contact casualty medical officers who are not on duty depending on the number of patients that have arrived.

ii) Chief of Casualty Services

Reporting Area Casualty

Reporting Officer: Medical Superintendent

(1) Clear and organize the incoming patient and triage area.

(2) Allot another consultant to the triage area.

(3) Contact the chiefs of units of the other service and support departments.

(4) Shift patients requiring acute resuscitation to the resuscitation rooms.

(5) Shift the walking wounded patients to the designated area for them.

(6) Shift those patients categorized as 'delayed' or beyond salvage' to the designated area for them and allot a nurse to man this area.

(7) Shift those received dead to the mortuary after identification and other medico legal procedures.

(8) Supervise the medico legal formalities.

(9) Reorganize the shifts for the next day.

iii) Resident Casualty

Reporting Area Casualty

Reporting Officer: Senior consultant Casualty

(1) Report to the senior consultant and collect treatment protocols and instructions.

(2) Organize and carry on the treatment of the case assigned to you as per the treatment protocol given to you.

(3) Inform the senior consultant of any problems.

C. JOB CARDS – Department of Orthopedics

i) Chief Orthopedic Unit on Call

Reporting Area Casualty

Reporting Officer: Chief Orthopedic Department

(1) Arrange for the entire orthopedic unit on call including the plaster technician to report to the Casualty

(2) Inform the chief of orthopedics about the emergency.

(3) Depute one intern to contact hostels to mobilize all orthopedic residents.

(4) Distribute treatment protocols to Senior/Junior Residents.

(5) Supervise orthopedic treatment for patients who have been triaged.

(6) Assign residents to these patients.

(7) Assign consultants and residents to the operation theatres.

(8) Prioritize patients for surgery in order of urgency.

(9) Communicate with relatives of patients as and when required.

ii) Orthopedic Consultant OT

Report Area Operation Theatre

Reporting Officer: Chief of Orthopedics Unit on call

(1) Receive cases for surgery from the Casualty or the other designated ward and assign them to different OTs.

(2) Make scrub teams for each table who will operate on cases assigned by you.

(3) Depute resident/intern for obtaining blood/communicating with other team.

(4) If you have to scrub for any case, ensure availability of another consultant to receive patients and co-ordinate surgery.

(5) Supervise orthopedic teams in the OT.

(6) Ensure monitoring of patients while transferring back to ward/Intensive care areas.

iii) Orthopedic Senior Resident

Reporting Area Casualty

Reporting Officer: Chief of unit

(1) Report to your unit consultant to collect treatment protocols and for instructions.

(2) Assign one resident to each serious patient.

(3) Supervise and help in resuscitation and treatment of seriously ill patients.

(4) Have 2 interns on stand by for blood samples, reports, blood etc.

(5) Inform unit head of any problems.

iv) Orthopedic Junior Resident

Reporting Area Casualty

Reporting Officer: Senior Resident

(1) Report to your unit consultant to collect treatment protocols & for instructions.

(2) Organize and carry on the treatment of the case assigned to you as per treatment protocol given to you.

(3) Inform Senior Resident of any problem.

v) Orthopedic Senior and Junior Residents OT

Reporting Area Operation Theatre

Reporting Officer: Chief of Unit

(1) Report to your unit head for instructions.

(2) Operate on cases assigned to you as per the instructions of your unit head.

(3) Report to your unit head when free.

(4) Don't change your scrub team unless ordered by your unit head.

(5) Ensure that the patient is personally handed back to residents in the designated post operative ward so that there is continuity of care.

D. JOB CARDS – Department of Anesthesiology

i) Anesthesiology Consultant on duty

Reporting Area **Operation Theatre**

Reporting Officer: Chief Anesthesiology

(1) Inform the nurse in charge of OT about the Emergency.

(2) Oversee the functioning of the Operation theatres.

(3) Send one junior resident to the Casualty to do a pre anesthetic check up for patients requiring surgery.

(4) Inform the anesthesiology chief about the emergency.

(5) Recruit additional residents and consultants depending on the number of surgical cases posted.

(6) Inform the concerned wards about the cancellation of the elective surgery list.

E. JOB CARDS – Department of Medicine

i) Chief Medicine Unit on call

Reporting Area **Casualty**

Reporting Officer: Chief Medicine

(1) Alert residents and consults of his unit.

(2) Take over the medical management of cases in the Casualty.

F. JOB CARDS – Department of Pediatrics and Pediatric Surgery

i) Chief Unit on call

Reporting Area **Casualty**

Reporting Officer: Chief of the department Medicine

(1) Alert residents and consultants of his unit.

(2) Take over the management of cases in the Casualty.

G. JOB CARDS – Nurse incharge of alternate ward to receive emergencies

i) Nurse incharge

Reporting Area **Alternate Ward**

Reporting Officer: Nursing Superindent.

(1) Arranges to shift patients from that ward to other hospital beds after getting a list of vacant beds from the reception

(2) Arranges for an adequate number of mattresses for the emergency patients.

(3) Contacts the nursing superintendent to depute necessary additional staff to her ward.

(4) The drugs, supplies and equipment required for the emergency as per the list has to be brought from the store and pharmacy.

(5) Allot nurses to receive, resuscitate and stabilize the urgent cases, triaged in from the Casualty.

(6) Shift these cases to the OT, MICU, dialysis unit or other areas as specified by the respective consultants managing the cases.

(7) Receive postoperative cases in a separate receiving area.

H. JOB CARDS – Chief of the Stores

Reporting Area **Casualty**

Reporting Officer: **Medical Superintendent.**

i) Arranges to shift medical supplies and equipment as previously designated in the ` disaster plan to the casualty and other designated areas.

I. JOB CARDS – Nurse in Charge of the OT

Reporting Area **Operation Theatre**

Reporting Officer: **Nursing Superintendent**

(1) Mobilizes adequate personnel and gets the theatres ready.

(2) Quickly gets the premedistation and recovery rooms ready.

(3) Organizes shift duties and sees that reserve operation theatre staff is available 24 hours a day.

(4) Ensures that additional supplies of clothing and sterile surgical instruments are readily available.

(5) Allots staff to receive and transfer out the operated cases.

(6) Allots staff to transfer postoperative cases back to the designated ward.

J. JOB CARDS – Nursing Superintendent

Reporting Area **Control Room**

Reporting Officer: **Medical Superintendent**

(1) Mobilizes adequate nurses to the casualty and other designated areas.

(2) Organizes shift duties so that the nurses can be replaced after 8 hours by a fresh batch of nurses

(3) To ensure efficient patient care.

K. JOB CARDS – Blood Bank Officer

Reporting Area **Blood Bank**

Reporting Officer: **Medical Superintendent**

(1) Makes necessary arrangements for grouping and issue of blood or blood components.

(2) Recruits additional technical staff.

(3) Assigns one of the consultants to mobilize voluntary donors as per the existing list.

(4) Liaisons with other blood banks to procure additional blood.

L. JOB CARDS – Chief of Clinical Pathology and Microbiology Laboratories

Reporting Area **Laboratories**

Reporting Officer: **Medical Superintendent.**

(1) Arranges additional residents, consultants and laboratory technicians.

(2) Deputes staff to the casualty to collect the specimens.

(3) Deputes a senior laboratory technician to keep all the required material for processing the specimens, like the stains, media and reagents for various biochemical tests ready.

M. JOB CARDS – Chief of Radiology

Reporting Area **Radiology Department**

Reporting Officer: **Medical Superintendent**

(1) Ensures the presence of adequate medical and technical staff in the department to handle requests for various radiological investigations including X-rays, Ultrasonography, CT Scan, etc.

(2) Ensures that the necessary quantities of film and developer are available.

(3) Collaborates with the HOD of Anesthesiology to ensure that facilities for resuscitation of patients are available in the department.

(4) Allots a separate portable X-ray machine for the Casualty and the other designated wards so that unstable patients do not have to be shifted to the radiology department.

N. JOB CARDS – Chief of Pharmacy

Reporting Area **Pharmacy**

Reporting Officer: **Medical Suerintendent.**

(1) Ensures the availability of drugs and supplies from the emergency reserves and keeps a record of items distributed and needs that may arise.

O. JOB CARDS – Chief of Forensic Medicine

Reporting Area **Casualty**

Reporting Officer: **Medical Superintendent**

(1) Handles autopsies and other medico legal procedures that may arise

P. JOB CARDS – Chief of Medical Records Department

Reporting Area **Medical Records Department**

Reporting Officer: **Medical Superintendent.**

(1) Mobilizes staff to the Casualty and the registration area to register victims in the emergency.

(2) Designates one staff from the MRD to keep up to date records of the hospital bed position and send the list of vacant beds to the Casualty nurse in charge.

Q. JOB CARDS – Chief of House Keeping Department

Reporting Area **House keeping department**

Reporting Officer: **Medical Superintendent**

(1) Mobilizes additional aides and helpers to the Casualty and other designated areas.

(2) Mobilizes extra staff to move patients to and from the theatre and radiology department, to bring linen, medicine, IV fluids, blood etc., to take specimens to the laboratories for analysis etc.

R. JOB CARDS – Chief of Maintenance Deparment

Reporting Area **Maintenance Department**

Reporting Officer: **Medical Superintendent**

Deputes additional people to look after the electricity, water supply, sanitation, oxygen and suction units required during the emergency.

S. JOB CARDS – Chief of Laundry

Reporting Area **Laundry**

Reporting Officer: **Medical Superintendent**

Ensures fresh supply of linen to the casualty, other designated areas and the operation theatres.

T. JOB CARDS – Chief of Sterilization Unit

Reporting Area **Sterilization Unit.**

Reporting Officer: **Medical Superintendent**

(1) Supplies sterile equipment and linen to the casualty, other designated areas and the operation theatres.

U. JOB CARDS – Chief of Dietary Department

Reporting Area **Dietary**

Reporting Officer: **Medical Superintendent**

(1) Makes the necessary arrangement to provide coffee and snacks to the casualty, other designated areas and the operation theatre.

V. JOB CARDS – Public Relations officer

Reporting Area **Public Relations Office**

Reporting Officer: **Medical Superintendent**

1) Is responsible for giving information to the press and public.

2) Issues periodic bulletins that provide information of general interest.

W. JOB CARDS – Chief of Security Services

Reporting Area **Control room**

Reporting Officer: **Medical Superintendent**

(1) Is responsible for maintaining order and safety within and outside the hospital

(2) Allots personnel to direct traffic so that ambulances are guaranteed free access to the incoming patient area.

(3) Allots personnel to protect the key installations of the hospital.

(4) If the hospital's security personnel are not sufficient to handle the situation, she requests help from the police.

(5) Deputes additional security staff to the Casualty and other designated wards.

(6) Designates a separate waiting area in the OPD block for relatives of the injured.

(7) Makes sure that on no account will be relatives be permitted into the Casualty or designated wards during the emergency.

(8) Deputes an officer to be in charge of ensuring the comfort and needs to the relatives. He will be responsible for obtaining information about individual patients to pass on to the relatives.

Annexure H

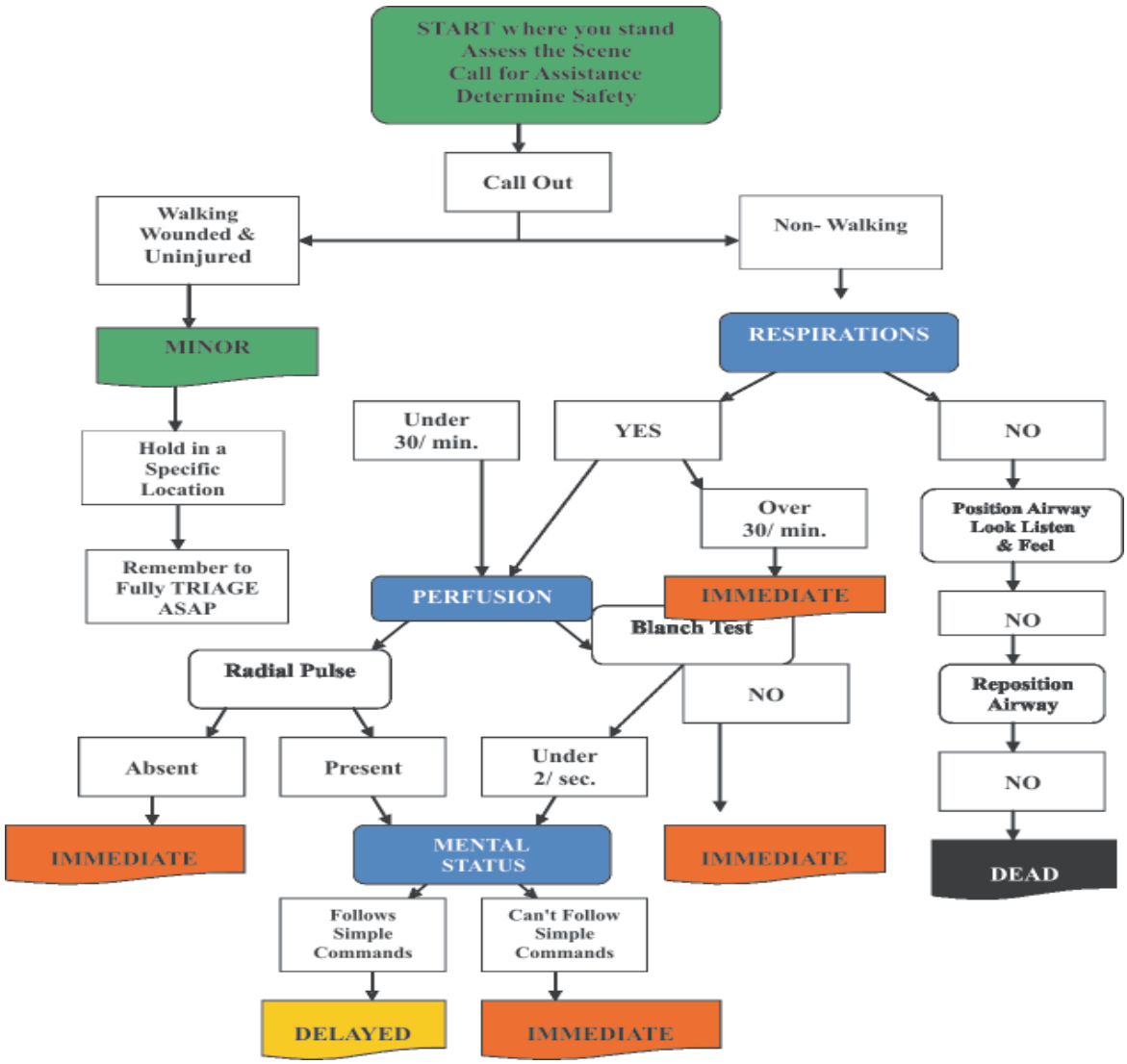
SAMPLE IN HOSPITAL TRIAGE PROTOCOL IN DISASTERS

TRIAGE

(COLOUR CODED WRIST BAND)

On the basis of:

- Respiration
- Perfusion
- Mental Status



PRIORITY
ONE - Immediate Resuscitation (RED) TWO - Potentially life threatening Injuries (YELLOW)
THREE - Walking Wounded (GREEN) FOUR - Dead (BLACK/WHITE)

Annexure: I

HOSPITAL EVACUATION PLANS AND GUIDELINES ACCORDING TO INTERNATIONAL BEST PRACTICES

I. Purpose:

Evacuation - the removal of patients, staff and/or visitors in response to a situation which renders any medical facility unsafe for occupancy or prevents the delivery of necessary patient care.

II. Policy Statement:

- **Partial Evacuation -** patients are transferred within the hospital. There are two levels of a partial response:
  1. Horizontal - first response; patient movement occurs horizontally to one side of a set of fire barrier doors.
  2. Vertical - movement of patients to a safe area on another floor or outside the building.

     This type of evacuation is more difficult due to stairways which will require carrying of non-ambulatory patients; elevators cannot be used.
- **Full Evacuation** - patients are transferred from Hospital to an outside area, other hospitals, or other alternatives areas.
  1. Paramedic escorted patients will be diverted from the Emergency Department due to internal disruption.
  2. The building should be evacuated from the top down as evacuation at lower levels can be easily accelerated if the danger increases rapidly.

III. Responsibility:

- **Authorization for Evacuation -**

a) Evacuation of the facility or portion thereof can only be authorized by:

1. Public Safety Officer (Fire or Police)
2. Chief Executive Officer or Administrator on call
3. Nursing Supervisor

b) The decision to evacuate from unsafe or damaged areas shall be based on the following information:

1. The Engineering Department's evaluation of the utilities and/or structure of the department.
2. The medical staff and/or Nursing Department's determination whether adequate patient care can continue.
3. Evacuation should only be attempted when you are certain the area chosen for the evacuees is safer than the area you are leaving.

- **Communication of Evacuation –**

a. This evacuation plan is based on the premise that an event has occurred, causing the Hospital to be in an internal disaster mode

IV. Procedure:

a. General Instructions-

1. Evacuate most hazardous areas first (those closest to danger or farthest from exit).
2. Use nearest or safest appropriate exit. Sequence of evacuation should be:

a. Patients in immediate danger

b. Ambulatory patients

c. Semi-ambulatory patients

d. Non-ambulatory patients

3. Close all doors. If time permits, shut off oxygen, water, light and gas, if able.

4. Elevators may be used, except during a fire or after an earth quake

b Hospital Emergency Incident Command Structure: -

1. Emergency Incident Command (in the Command Center/EOC)

a. All available information shall be evaluated and evacuation schedule established in coordination with the Section Chiefs. This information shall include:

i. Structural, non-structural, and utility evaluation from Engineering/Damage Assessment & Control Officer.

ii. Patient status reports from Planning Section Chief.

iii. Evaluate manpower levels and authorize activation of staff call-in plans, as needed.

b. Disaster evacuation schedule to:

i. Planning Section Chief

ii. Liaison Officer

iii. Safety and Security Officer

iv. Logistics Chief

v. Operations Chief

2. Liaison Officer

a. Maintain contact with Public Safety Officials, Health Dept. and Ambulance Agency.

b. Complete "Hospital Evacuation Worksheet"

3. Logistics Chief

a. Assign Transportation Officer to assemble evacuation teams from Labor Pool.

b. Notify Planning Section Chief of plans.

4. Transportation Officer

a. Assemble evacuation teams from Labor Pool.

b. Ensure coordination of off-campus patient transportation

c. Confirm implementation of Transportation Action Plan.

d. If able, assign six people to each floor for evacuation manpower.

e. Brief team members on evacuation techniques, (attached)

f. Arrange transportation devices (wheelchairs, gurneys, etc. to be delivered to assist in evacuation).

g. Report to floor being evacuated and supervise evacuation.

h. Report to Nurse Manager/Charge Nurse for order of patients being evacuated and method of evacuation.

5. Nursing Service Officer

a. Designate holding areas for critical, semi-critical, and ambulatory evacuated patients.

b. Organize efforts to meet medical care needs and physicians staffing of Evacuation Holding areas.

c. Distribute evacuation schedule to Nurse Managers.

d. Verify Nurse Managers/Charge Nurses have initiated evacuation procedure.

e. Request Medical Staff Officer to notify physicians of need for transfer orders.

f. Assign Holding Area Coordinators, and adequate number of nurses to holding areas.

g. Contact pre-established lists of hospitals, extended care facilities, school, etc. to determine places to relocate patients. Forward responses to Planning Section Chief.

6. Medical Staff Officer

a. Notify physicians of need for patient transfer orders.

b. Assist Nursing Service Officer as needed.

7. Nurse Managers or Charge Nurses

a. Determine patient status. Patients will be evacuated according to status.

b. Communicate status with large sticker on patient's chart according to the following criteria:

i) non-critical/Ambulatory

ii) non-critical/Non-ambulatory

iii) critical/requires ventilation or special equipment

c. Report patient status to Nursing Service Officer.

d. Assign specific nurses to maintain patient care.

e. Assign two nurses to prepare patients for evacuation.

1. *Place personal belongings* in a bag *labeled "BELONGINGS" with name Patient No. with medications, prosthetics, and special Patient need items the sinside bag.*

2. *Place KARDEX and addressograph in Patient's chart secured with tape, which is to remain with the patient.*

f. Designate a safe exit after determining location of patients to be evacuated.

g. Assign a person to record Evacuation Activity, including:

1. Time of evacuation

2. Method of evacuation

3. Name of patient

4. Evacuation status A B C

5. Evacuated from Rm. to (area)

h. Forward documentation of evacuation and patient disposition to Patient Tracking Coordinator or Patient Info Manager.

8. Patient Information Manager

a. Compile patient info on Inquiry Sheets.

9. Cardiopulmonary Services Manager

a. Assign staff members to perform ventilation on required patients.

b. Assess number of positive pressure breathing devices/bag-valve-masks available

10. Safety and Security Officer

a. If able, assign a security person to each area being evacuated for traffic control/safety.

b. Turn off oxygen, lights, etc. as situation demands.

c. Check the complete evacuation has taken place and that no patients/staff remain.

d. Place "Evacuated at " (date/time) sign up at main area exit/entrance of evacuated area after evacuation is complete.

11. Facilities Operation Officer

a. Obtain equipment/supplies needed for structural safety during evacuation.

b. Obtain portable toilets and privacy screens for use in areas where evacuated patients are relocated, if necessary.

12. Labor Pool Officer

a. All available Engineering, Housekeeping, Security staff, etc. not previously assigned to incident will assist in the movement of patients.

ANNEXURE - J

SAMPLE STOCK INVENTORY FOR DISASTER STORES

Sl. No.	Items	Total Quantity Required/ Place	
	I.V. Fluids	**Emergency Department**	**Emergency Ward**
1.	Normal Saline 500 ml	15 bottles	20 bottles
2.	Dextrose 5% 500 ml	10 bottles	10 bottles
3.	Ringer lactate 500 ml	30 bottles	50 bottles
4.	Normal Saline 25 ml	5 amps	10 ampls
5.	Haemaccel/ Hydroxyethyl Starch	20 bottles	20 bottles
6.	Inj. Glucose 50% (100 ml)	3 amps	3 amps
7.	Distilled water for injection	30 amps	30 amps
8.	Inj. Mannitol (20%) (100 ml)	5 bottles	5 bottles
	Resuscitation Drugs		
1.	Inj.Adrenaline Img	30 amps	20 amps
2.	Inj.Atropine sulphate 0.6 mg	50 amps	50 amps
3.	Inj. Lignocaine HCl (Xylocard) 2% (50%)	2 vials	2 vials
4.	Inj.Calcium gluconate/chloride 1 gm	20 amps	20 amps
5.	Inj.Hydrocortisone 100 mg	5 vials	5 vials
6.	Inj.Dopamine 200 mg	10 amps	5 amps
7.	Inj.Soda Bicardonate 25 ml	20 amps	20 amps
8.	Inj.Potassium Chloride 10 ml	2 amps	2 amps
9.	ORS	20 packets	20 packets
	Antibiotics		
1.	Inj.Cefotaxime 1 gm	10 vials	10 vials
2.	Inj.Crystalline Penicillin 6 lakh units	10 vials	10 vials
3.	Inj.Gentamicin 80 mg	5 vials	10 vials
4.	Inj.Ampicillin 500 mg	10 vials	10 vials
5.	Inj.Metronidazole 500 mg	5 vials	5 vials
	Antiallergics		
1.	Inj.Chlopheniramine Maleate (2 ml)	4 amps	4 amps
	Antidotes		
1.	Inj.ATG (Tetglob) 250 IU	10 ampoules	
2.	Inj.Tetanus Toxoid	10 amps	
	Bronchodilators		
1.	Inj.Aminophyllin 250 mg	5 amps	5 amps
2.	Liq.Salbutamol (15 ml)	5 bottles	5 bottles
	Analgesic and Anesthetic Agents		
1.	Inj.Diazepam 10 mg	5 amps	5 amps
2.	Inj.Midazolam 5 mg	5 vials	5 vials
3.	Inj.Ketorolac 30 mg	10 amps	10 amps

4.	Inj.Lingocaine HCl without adrenaline 2% (30 ml)	5 vials	2 vials
5.	Inj. Fentanyl 100 ug	10 amps	10 amps
6.	Inj.Pethidine 100 mg	5 amps	5 amps
7.	Inj. Tramadol 50 mg	5 amps	5 amps
8.	Syr. Trichloryl (30 ml)	2 bottles	2 bottles
9.	Inj.Haloperidol 10 mg	3 amps	3 amps
	Diuretic Agents		
1.	Inj.Frusemide 10 mg	10 amps	5 vials
	Antiepileptics		
1.	Inj.Phenytoin Sodium 100 mg	50 amps	50 amps
	Anti coagulants		
1.	Inj.Heparin 25,000 IU	2 vials	2 vials
	Anti Emetics		
1.	Inj.Ondansetron 4 mg	10 amps	10 amps
	Eye drops/ointment		
1.	Paracain eye drops	2 bottles	2 bottles
2.	Prednisolone Acetate eye drops	2 bottles	2 bottles
3.	Cyclopentolate eye drops	1 bottle	1 bottle
4.	Ciproflox eye ointment	2 tubes	2 tubes
	Antiseptic Solutions		
1.	Betadine solution 5% (1 litre)	2 bottles	2 bottles
2.	Irrigating fluid (1 litre packs)	25 litres	25 litres
3.	Handscrub 1 litre	2 bottles	2 bottles
4.	Surgical spirit 1 litre	1 bottle	1 bottle
5.	Tincture benzoin 400 ml	1 bottle	1 bottle
	Dressing Material (Disposable)		
1.	Small towel bins	3	3
2.	Gauze (Big bin)	3	3
3.	Bandage roll (6" rolls)	60	60
4.	Triangular sling	10	10
5.	Crepe bandage (4" rolls)	5	5
6.	Micropore tape 5 cms.	3	3
7.	Elastoplast 10 cms	5	5
8.	Zinc Adhesive tape rolls	5	5
9.	Safety pins	2 dozen	2 dozen
10.	POP (6" rolls)	10	10
11.	Eyepads (Small bin)	1	1
12.	Roller bandages (Big bin)	1	1
13.	Abdominal packs	2 bins	2 bins

	Dressing Material (non disposable)		
1.	Scissors	2	2
2.	Sponge holders	10	10
3.	Kidney trays (enamel)	5	10
4.	Bowls (12")	5	5
5.	Basins (18")	2	2
	Instruments and Trays		
1.	Dressing packs	25	
2.	Tracheostomy sets	2	2
3.	Venesection trays	2	2
4.	Catheterisation trays	6	2
5.	Suture trays	10	-
6.	Magil's forceps	1	1
7.	IC tube sets with under water seal	2	2
8.	DPL sets	1	1
9.	Pressure infusion cuffs	2	2
10.	IV infusion pumps	4	4
11.	Gauze pad bin	1	1
	Disposable Material		
1.	IV infusion sets	20	20
2.	Blood transfusion sets	10	10
3 a.	IV cannulae 16G, 18G	10 each	10 each
3 b.	IV cannluae 20G, 22G	5 each	5 each
4.	Disposable syringes 2 ml, 5 ml, 10 ml Disposable syringes 20 ml	50 assorted 20	50 assorted 20
5.	Disposable needles - 20 G, 21 G	10 each	20 each
6.	Surgical gloves (sterile) – Size 6 Sizes 6.5 and 7	5 15	10 35
7.	3-way Cannulae	10	10
8.	Disposable surgical masks	50	50
9.	Levine's tube-Size 18	3	3
10.	Suture material		
	3.0 atraumatic silk (reverse) 1.0 atraumatic chromic catgut 3.0 atraumatic Prolene reverse cutting	5 boxes 1 box 1 box	5 boxes 10 boxes 2 boxes

11.	Foleys catheter: Size 14 F, 16 F Size 8F, 10F, 12F	4 each 1 each	10 each 1 each
12.	Infant feeding tubes: Size, 8, 10	4 each	10 each
13.	Urosac	10	5
14.	Triple lumen cannluae	5 each	5 each
15.	Surgical blades no. 15	4 packets	10 packets
16.	Razor blades	2 packets	10 packets
17.	Disposable aprons	20	10
	Splints and Tourniquets + B168		
1.	Kramer wire splints	5	2
2.	Thomas' splints	5	2
3.	Aluminium arm splints	5	2
4.	Skin traction kits with weights 5 Kgs each set	0	2
	For Emergency Operation Theatre	For OT	Not Application
1.	External skeletal fixator for lower limb	3 sets	
2.	External skeletal fixator for upper limb	3 sets	
3.	Pelvic external fixator	3 sets	
4.	Skeletal traction kit	5	
5.	Skull tongs	2	
	Airway Equipment		
1.	Tracheostomy tubes (cuffed): Size 6,7,8	1 each	1 each
2.	Endotracheal tubes: Size 7.5, 8.5	5 each	5 each
2 a.	Size 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 8	1 each	1 each
2 b.	Stylets 3 sizes	1 each	1 each
3.	Ambu bags Paediatric	1	1
	Adult	2	2
4.	Oropharyngeal tubes: Sizes 3,4	5 each	5 each
4 a.	Oropharyngeal tubes: Sizes 1,2	2 each	2 each
4 b.	Suction Catheters Size 14	10	5
4 c.	Ryles Tube Size 14	10	5
5.	Simple Face masks	10	10
6.	Laryngoscopes (with all blades)	1	1
7.	Mobile suction apparatus (battery operated)	2	2
8.	Oxygen cylinder with trolley	4	4

	Linen		
1.	Bedsheets	10	10
2.	Drawsheets	10	10
3.	Pillow-cases	10	10
4.	Towels	10	10
5.	Leggins	10	10
6.	Gowns (patients)	10	10
7.	Caps (patients)	10	10
8.	Blankets	10	10
	Miscellaneous		
1.	Patient's trolleys with mattresses	2	2
2.	Wheel chairs	2	2
3.	Torch with batteries	2	2
4.	Portable emergency lamps	2	2
5.	Mackintosh	10	10
6.	Jet irrigation equipment	1	
7.	Sandbags (5 kg)	5	10
8.	Ventilators (battery operated)		1
9.	Ventilators fitted on trolleys		1
10.	Oxygen cylinders on patient's trolleys	2	5
11.	Humidifier	-	2
12.	Defibrillator	1	1
13.	Capnometer	-	1
14.	Portable Pulse Oximeter	1	1
15.	Nebuliser	2	2
16.	Mobile X-ray Unit (60 mA) with eliminator	1	-
17.	Arm bands (fluorescent)	20	-
18.	BP apparatus	2	2
19.	Bed pans	2	2
20.	Urinals	2	2
21.	Measuring jars: 1000 ml, 500 ml	1 each	1 each
22.	Thermometer	2	2
23.	Enamel buckets (4 lit.)	2	2
24.	SS containers for ORS	1	1
25.	Disposable cups	10	10

Annexure K

GUIDELINES FOR AVAILABILITY OF KNOWLEDGE, SKILLS AND RESOURCES FOR TRAUMA MANAGEMENT AT DIFFERENTS LEVELS OF CARE

SOLO PHYSICIAN RESUSCITATING THE PATIENT		
Airway	Skills/ treatment required	Assessment of airway compromise, manual maneuvers (chin lift, jaw thrust, positioning), insertion of oral and nasal airway insertion, bag and mask ventilation.
	Resources required	Oral/nasal airway, Ambu bag.
Breathing	Skills/ treatment required	Assessment of respiratory distress and adequacy of ventilation, administration of oxygen, needle thoracostomy, three way dressing.
	Resources required	Stethoscope, oxygen supply, face mask with associated tubing, needle and syringe. Ambu bag.
Circulation and shock	Skills/ treatment required	Assessment of shock, control of hemorrhage, arterial tourniquet, splinting of fractures, fluid resuscitation, peripheral IV access, recognition of hypothermia and external re-warming for it, use of fluids and antibiotics for shock, knowledge of resuscitation parameters, pelvic wrap for hemorrhage control.
	Resources required	Watch with second hand, stethoscope, BP cuff, gauze and bandage, arterial tourniquet, crystalloids, IV set, thermometer.
Chest injury	Skills/ treatment required	Adequate pain control and respiratory physiotherapy for chest injuries/ rib fracture.
	Resources required	Analgesics, local anaesthetics, syringes.
Abdominal injury	Skills/ treatment required	Clinical assessment.
	Resources required	
Head injury	Skills/ treatment required	Recognisation of altered consciousness, lateralizing signs, pupils.
Spinal injury	Skills/ treatment required	Assessment-recognisation of presence of spinal injury, monitering neurological function, immobilization.
	Resources required	Cervical collar, back board.
Neck injury	Skills/ treatment required	External pressure for bleeding.
	Resources required	Gauze and bandages.

Extremity injury	Skills/ treatment required	Recognisation of neurovascular compromise, basic immobilization (sling, splint), pelvic wrap for hemorrhage control, assessment and splinting of hand injury.
	Resources required	Slings and splints.
RESUSCITATION AND MANAGEMENT OF PATIENT AT PHC LEVEL		
Airway	Skills/ treatment required	Assessment of airway compromise, manual maneuvers (chin lift, jaw thrust, positioning), insertion of oral and nasal airway insertion, bag and mask ventilation, use of suction, endotracheal intubation.
	Resources required	Oral/nasal airway, Ambu bag, suction device with tubing and tip, laryngoscope, endotracheal tube, basic trauma pack.
Breathing	Skills/ treatment required	Assessment of respiratory distress and adequacy of ventilation, administration of oxygen, needle thoracostomy, three way dressing, chest tube insertion.
	Resources required	Stethoscope, oxygen supply, face mask with associated tubing, needle and syringe, nasal prangs, chest tubes, underwater seal bottle.
Circulation and shock	Skills/ treatment required	Assessment of shock, control of hemorrhage, arterial tourniquet, splinting of fractures, fluid resuscitation, peripheral IV access, recognition of hypothermia and external re-warming for it, use of fluids and antibiotics for shock, peripheral cut down access, knowledge of resuscitation parameters, pelvic wrap for hemorrhage control ,differential diagnosis of shock. urinary catheterization.
	Resources required	Watch with second hand, stethoscope, BP cuff, gauze and bandage, arterial tourniquet, crystalloids, IV set, thermometer, urinary catheter, NG tube, weighing scale for children, lab facility for hematocrit.
Chest injury	Skills/ treatment required	Adequate pain control and respiratory physiotherapy for chest injuries/ rib fractures, rib/intrapleural block.
	Resources required	Analgesics, local anaesthetics, syringes.
Abdominal injury	Skills/ treatment required	Clinical assessment.
	Resources required	
Head injury	Skills/ treatment required	Recognisation of altered consciousness, lateralizing signs, pupils, maintenance of normotension and oxygenation to prevent secondary brain injury, protein and calorie supplement, avoidance of overhydration in raised ICP.
	Resources required	
Spinal injury	Skills/ treatment required	Assessment-recognisation of presence of spinal injury, monitering neurological function, immobilization, maintenance of normotension and oxygenation to prevent secondary spinal injury, proper management immobilization patient to prevent complication e.g. bed sores, urinary retention/infection.
	Resources required	Cervical collar, back board.

Neck injury	Skills/ treatment required	External pressure for bleeding, recognisation of platysmal penetration, packing for bleeding.
	Resources required	Gauze and bandages.
Extremity injury	Skills/ treatment required	Recognisation of neurovascular compromise, basic immobilization (sling, splint), pelvic wrap for hemorrhage control, assessment and splinting of hand injury, application of spine board, proper management immobilization patient to prevent complication.
	Resources required	Slings and splints, spine board.
RESUSCITATION AND MANAGEMENT OF PATIENT AT CHC/DISTRICT HOSPITAL LEVEL		
Airway	Skills/ treatment required	Assessment of airway compromise, manual maneuvers(chin lift, jaw thrust, positioning), insertion of oral and nasal airway insertion, bag and mask ventilation, use of suction, endotracheal intubation, cricothyroidectomy.
	Resources required	Oral/nasal airway, Ambu bag, suction device with tubing and tip, laryngoscope, endotracheal tube, basic trauma pack, Magill forceps.
Breathing	Skills/ treatment required	Assessment of respiratory distress and adequacy of ventilation, administration of oxygen, needle thoracostomy, three way dressing, chest tube insertion.
	Resources required	Stethoscope, oxygen supply, face mask with associated tubing, needle and syringe, nasal prangs, chest tubes, underwater seal bottle, pulse oximetry.
Circulation and shock	Skills/ treatment required	Assessment of shock, control of hemorrhage, arterial tourniquet, splinting of fractures, fluid resuscitation, peripheral IV access, recognition of hypothermia and external re-warming for it, use of fluids and antibiotics for shock, peripheral cut down access, knowledge of resuscitation parameters, differential diagnosis of shock, urinary catheterization, central/ intraosseous venous access, pelvic wrap for hemorrhage control, transfusion knowledge, use of pressors for neurogenic shock, use of warmed fluids, interfascial packing for severe wounds, core rewarming.
	Resources required	Watch with second hand, stethoscope, BP cuff, gauze and bandage, arterial tourniquet, crystalloids, IV set, thermometer, urinary catheter, NG tube, weighing scale for children, blood transfusion capability, CVP line, intraosseous needle, lab facility for hematocrit and electrolyte, pressors, fluid warmers.
Chest injury	Skills/ treatment required	Adequate pain control and respiratory physiotherapy for chest injuries/ rib fractures, rib/intrapleural block, epidural block.
	Resources required	Analgesics, local anaesthetics, syringes, spinal-epidural set, X-Ray machine.
Abdominal injury	Skills/ treatment required	Clinical assessment, diagnostic peritoneal lavage(DPL), ultrasonograhy, skill for intermediate laparotomy.
	Resources required	Ultrasonograhy machine, laparotomy set, X-Ray machine, CT scan desirable.

Head injury	Skills/ treatment required	Recognisation of altered consciousness, lateralizing signs, pupils, maintenance of normotension and oxygenation to prevent secondary brain injury, protein and calorie supplement, avoidance of overhydration in raised ICP, burr holes.
	Resources required	X-Ray machine, CT scan desirable.
Spinal injury	Skills/ treatment required	Assessment-recognisation of presence of spinal injury, monitering neurological function, immobilization, maintenance of normotension and oxygenation to prevent secondary spinal injury, proper management immobilization patient to prevent complication e.g. bed sores, urinary retention/infection, non-surgical management of spinal trauma as indicated.
	Resources required	Cervical collar, back board, X-Ray machine, CT scan desirable.
Neck injury	Skills/ treatment required	External pressure for bleeding, recognisation of platysmal penetration, packing for bleeding, skill to explore neck.
	Resources required	Gauze and bandages, standard neck dissection set, X-Ray machine, CT scan desirable.
Extremity injury	Skills/ treatment required	Recognisation of neurovascular compromise, basic immobilization (sling, splint), pelvic wrap for hemorrhage control, assessment and splinting of hand injury, application of spine board, proper management immobilization patient to prevent complication, skin/ skeletal traction, internal/external fixation, operative wound management, debridement, closed/open reduction, tendon repair, amputation.
	Resources required	Slings and splints, spine board, X-Ray, instruments for skin/ skeletal traction, internal/external fixation, tendon repair and amputation, CT scan desirable.
RESUSCITATION AND MANAGEMENT OF PATIENT AT TERTIARY CARE/TEACHING HOSPITAL LEVEL		
Airway	Skills/ treatment required	Assessment of airway compromise, manual maneuvers(chin lift, jaw thrust, positioning), insertion of oral and nasal airway insertion, bag and mask ventilation, use of suction, endotracheal intubation, cricothyroidectomy.
	Resources required	Oral/nasal airway, Ambu bag, suction device with tubing and tip, laryngoscope, endotracheal tube, basic trauma pack, Magill forceps, esophageal detector device, other advanced airway equipment.
Breathing	Skills/ treatment required	Assessment of respiratory distress and adequacy of ventilation, administration of oxygen, needle thoracostomy, three way dressing, chest tube insertion.
	Resources required	Stethoscope, oxygen supply, face mask with associated tubing, needle and syringe, nasal prangs, chest tubes, underwater seal bottle, pulse oximetry, ABG analyzer, mechanical ventilators.
Circulation and shock	Skills/ treatment required	Assessment of shock, control of hemorrhage, arterial tourniquet, splinting of fractures, fluid resuscitation, peripheral IV access, recognition of

		hypothermia and external re-warming for it, use of fluids and antibiotics for shock, peripheral cut down access, knowledge of resuscitation parameters, differential diagnosis of shock, urinary catheterization, central/ intraosseous venous access, pelvic wrap for hemorrhage control, transfusion knowledge, use of pressors for neurogenic shock, use of warmed fluids, core rewarming, interfascial packing for severe wounds, CVP monitoring, ABG analyzer, right heart catheterization.
	Resources required	Watch with second hand, stethoscope, BP cuff, gauze and bandage, arterial tourniquet, crystalloids, IV set, thermometer, urinary catheter, NG tube, weighing scale for children, blood transfusion capability, CVP line, intraosseous needle, lab facility for hematocrit and electrolyte, pressors, fluid warmers, CVP monitors and more advanced patient monitoring system, colloids, ABG analysis.
Chest injury	Skills/ treatment required	Adequate pain control and respiratory physiotherapy for chest injuries/ rib fractures, rib/intrapleural block, epidural block, Autotransfusion from chest tubes, skill for thoracotomy.
	Resources required	Analgesics, local anaesthetics, syringes, spinal-epidural set, thoracostomy set, cell saver, X-Ray machine, CT scan desirable.
Abdominal injury	Skills/ treatment required	Clinical assessment, diagnostic peritoneal lavage (DPL), ultrasonograhy, skill for intermediate/advanced laparotomy, CT scan facility.
	Resources required	Ultrasonograhy machine, laparotomy set, X-Ray machine, CT scan.
Head injury	Skills/ treatment required	Recognisation of altered consciousness, lateralizing signs, pupils, maintenance of normotension and oxygenation to prevent secondary brain injury, protein and calorie supplement, avoidance of over hydration in raised ICP, burr holes, monitoring and treatment of raised ICP, surgical treatment of closed/open depressed skull fractures, more advanced neurosurgical procedures.
	Resources required	X-Ray machine, CT scans, MRI desirable.
Spinal injury	Skills/ treatment required	Assessment-recognisation of presence of spinal injury, monitering neurological function, immobilization, maintenance of normotension and oxygenation to prevent secondary spinal injury, proper management immobilization patient to prevent complication e.g. bed sores, urinary retention/infection, non-surgical management of spinal trauma as indicated, assessment by international classification system, surgical treatment of spinal injury/neurological deterioration in presence of spinal cord compression.
	Resources required	Cervical collar , back board, CT scans, MRI desirable, spinal surgery set,
Neck injury	Skills/ treatment	External pressure for bleeding, recognisation of platysmal penetration, packing/ balloon tamponade for bleeding, skill to explore neck, contrast radiography, endoscopy, angiography
	Resources required	Gauze and bandages, standard neck dissection set endoscope, X-Ray machine, CT scan, angiography facility, MRI desirable.

Extremity injury	Skills/ treatment required	Recognisation of neurovascular compromise, basic immobilization (sling, splint), pelvic wrap for hemorrhage control, assessment and splinting of hand injury, application of spine board, proper management immobilization patient to prevent complication, skin/ skeletal traction, internal/external fixation, operative wound management, debridement, closed/open reduction, tendon repair, amputation, repair/fixation of hand injury, measurement of compartment syndrome and fasciotomy
	Resources required	Slings and splints, spine board, X-Ray, instruments for skin/ skeletal traction, internal/external fixation, tendon repair and amputation, portable X-Ray, image intensifier, CT scan, MRI desirable

Annexure L

RAPID HEALTH ASSESSMENT
FOR MASS CASUALTY INCIDENT

(To be submitted within 24 hrs)

A. Description of the Event

Nature of the Event :_____
Time of the Event :_____
Date of the Event :_____
Place of the Event :_____

B. Number of persons affected

Death :_____
Injured :_____
Treated on site :_____
Referred to hospital :_____
OPD :_____
Admitted :_____
Missing :_____
Total :_____

C. Action Taken

_____
_____
_____
_____

D. Problems Encountered

_____
_____
_____
_____

E. Recommendations

_____
_____
_____
_____

Prepared by:_____
Position :_____
Office :_____
Date :_____

REFERENCES

1. Are you prepared? Learning from the Great Hanshin-Awaji Earthquake Disaster - Handbook for Disaster Reduction and Volunteer Activities
2. WHO-RGUHS, IEMPRES Project – Model Hospital Contingency Plan for Mass Casualty Management
3. http://whoindia.org/en/Section33/Section34/Section38_51.htm)
4. http://www.heics.com/download.htm
5. http://www.emsa.ca.gov/dms2/download.htm
6. National Disaster Management Guidelines – Medical Preparedness and Mass Casualty Management, NDMA, GOI
7. Guidelines for essential trauma care/Injuries and Violence Prevention Department, World Health Organization and the International Association for the Surgery of Trauma and Surgical Intensive Care (IATSIC), International Society of Surgery/Société Internationale de Chirurgie.
8. Holder Y et al., eds. Injury surveillance guidelines. Geneva,World Health Organization, 2000.
9. Public Health Emergency Response Guide For State, Local, And Tribal Public Health Directors
10. http://www.who.int/bct/Main_areas_of_work/DCT/documents/9241545755.pdf
11. World Health Organization. District health facilities: guidelines for development & operations. Manila: WHO Regional Office for the Western Pacific, 199