

# 2013



Assam State Disaster Management  
Authority & Doctors For You

## Hospital Preparedness and Mass Casualty Management

### Course Book



To provide medical relief, sustainable healthcare services, capacity building and risk reduction activities for vulnerable communities in both crises and non crises situations.

DOCTORS FOR YOU (DFY), a humanitarian organization based in India, formed by doctors, medical students and like minded people. The thrust of DFY's work is to provide medical relief, sustainable healthcare services, capacity building and risk reduction activities during crisis and non crisis situations. The organization has vast experience of working in disasters which include Mumbai floods 2005, Bihar floods 2008, Andhra Pradesh-Karnataka floods 2009, Orissa floods 2011 and Assam ethnic violence 2012. It has received various recognitions including the prestigious British Medical Journal Award under the best team in crisis zone category for its work during the Bihar Floods.

For more details on DFY please do visit [www.doctorsforyou.org](http://www.doctorsforyou.org)

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Health needs are the most pre-dominant during disaster times. Hospital Preparedness and Mass Casualty Management is one area where attention is required during disaster/emergency situations. Hospitals are considered as resources which are to be active during disaster response. If national and the local systems especially the health systems are ill-prepared to deal with the disasters, the vulnerability of both individuals and communities becomes even more pronounced. The sudden increase in demand for essential health services brought on by disasters often overwhelms health systems and their institutions, rendering them unable to provide the necessary life saving interventions.

Therefore, it becomes essential to build the capacity of the doctors, hospital administrators and other health staffs at all levels. Preparedness is the key while responding to emergency/disaster situations. The topics covered in this course handbook will help the readers to get better equipped, respond and prepared while dealing with mass casualty during disasters.

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## 1. Basic Disaster Terminologies

### Learning Objectives:

- Overview of disasters.
- To understand the different phases of disaster management cycle.
- To understand the type of disaster and resulting public health emergencies.

### Introduction:

Disaster is a sudden, unpredictable, unfamiliar, calamitous event, bringing great damage, urgency, uncertainty, threat, loss, and destruction and devastation to life and property. The damage caused by disasters varies with the geographical location, climate and the type of the earth surface, degree of vulnerability.

The Indian National Disaster Management Act, 2005 defines disaster management as a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary or expedient for:

- a) Prevention of danger or threat of any disaster;
- b) Mitigation or reduction of risk of any disaster or its severity or consequences;
- c) Capacity building;
- d) Preparedness to deal with any disaster;
- e) Prompt response to any threatening disaster situation or disaster;
- f) Assessing severity or magnitude of effects of any disaster, evacuation, rescue and relief;
- g) Rehabilitation and Reconstruction

A disaster is followed by following characteristics: large number of dead, injured and missing, large number of unaccompanied children, loss of normal source of food and potable water, loss of shelter and household necessities, loss of land tenure, loss of means of livelihood, overcrowding and communicable diseases, destruction of environment Communication and logistics problems, insecurity and tension.

Table- Type of Disaster

No	Category of Hazard	Type of Disasters
1	Geological	Earthquake Tsunami Landslide
2	Hydro-Metrological	Flood Flash Flood Strom Cyclone Drought
3	Biological	Outbreak Epidemic Pandemic Plant & Animal disease
4	Technological	Transportation Industrial

5	Environmental	Bush, Forest Fire
6	Political, Social, Extremism	Conflict Terrorism

## Disaster Management

Disaster Management can be defined as: the systematic process of using *administrative* decisions, *organization*, *operational* skills and *capacities* to implement *policies* and *strategies* and *enhance coping capacities* of the society and communities to *lessen the impacts* of hazards and related environmental and technological disasters. Disasters often differ in quantity of damage caused or in quality of the type of medical consequences. For example earthquakes cause a lot of physical injury and fractures, floods cause drowning deaths and infections, chemical leaks cause toxic manifestations, etc. The impact of different disasters demands different type of response or management approach.

Disaster Management follows a multi-sectoral approach which includes bringing together specialization of different domains into disaster management. Disaster Management Officials must have prior coordination and agreements in place with government hospitals, police authorities, fire- brigade personnel, youth organizations, NGOs. This will ensure immediate response to the disaster with minimum chaos. Disaster Managers must ensure that law and order is maintained and people receive adequate information about their missing family members and relatives, regarding their living status and location.

Disaster Managers must get a **resource mapping** done of the community so as to have available resources on time when required. Also, mock drill can be conducted with community so that they don't panic in times of disaster and quickly move to safe shelters which are pre-located during the time of resource mapping. Various resources to be located can be: Water source, safe shelter for community in times of flood, earthquake, cyclone etc., disaster helpline number, medical assistance number, fire brigade number.

## Disaster Management Cycle

**Disaster phase-** The phase during which the event of the disaster takes place. This phase is characterized by profound damage to the human society. This damage / loss may be that of human life, loss of property, loss of environment, loss of health or anything else. In this phase, the population is taken by profound shock.



**Response phase-** This is the period that immediately follows the occurrence of the disaster. In a way, all individuals respond to the disaster, but in their own ways. Almost everyone is willing to help. The first important step during first 48 hours after a disaster is to save maximum



number of lives. Food, shelter, clothing can be taken care of in later stage. The immediate need is to have **search and rescue** teams in place along-with **emergency medical assistance** which can save lives.

Disaster Management must stress on **immediate need assessment** after a disaster. This need assessment will be important for government organizations, NGOs as well as international bodies. The accuracy of need assessment will determine the efficiency of management.



**Relief phase-** During relief phase, there should be a need assessment of survivors and based upon that immediate relief like food, clothing and shelter must be provided. Depending on the initial needs assessment, relief is provided to the survivors. The relief must be adequate and appropriate to the culture of the affected community. The relief is generally provided by external agencies (NGOs, INGOs) and Government resources. Immediate medical need includes immediate medical assistance, safe drinking water, nutritious food, temporary shelters, food, clothing, information on missing relatives, psychosocial assistance to trauma victims, special care to children, elderly and physically challenged special attention to pregnant and lactating women.



**Rehabilitation phase-** The help from the government and other non-governmental organizations with the resources and facilities so as to enable victims to return back to their own homes, pursue their occupation, so that they can sustain their life on their own, is bound to taper in due course. Thus, they are provided with a whole new environment, adequate enough to pursue a normal or at least near normal life. This is called rehabilitation. During **rehabilitation** phase, adequate care is taken to follow all safety measure to prevent and minimize future impact of hazard. Also, the sustainable development approach is kept in mind while keeping restructuring the community. During this phase, earthquake resistant houses are built, tsunami preventions are taken while building houses, cyclone resistant houses and flood resistant raised platform houses are built. Also, during rehabilitation, the community is settled in a safe location and as far as possible mixed community settlements are preferred to eliminate social issues of caste and class.



**Prevention phase-** This is the phase which indicates the start of pre-disaster phase. It engrosses measures to be taken in order to prevent a specific disaster from happening. There are different measures required for different disasters. Working on this phase is the responsibility primarily of the government. The actions taken in this phase are required to be of high quality and long term benefit. Only the government has the strength to implement these activities with high funds and necessary resources in place. The measures include increasing the capacity of a dam to prevent floods, activities promoting Communal harmony at all levels to prevent riots, high construction and safety standards in industries and government offices and all other structures in order to prevent fire. Prevention should be at all levels- community level, local level and government level.



**Mitigation phase-** The notion of this phase is to mitigate the impact of a disaster if ever a disaster takes place. This phase includes technology and scientific techniques too. For example, predicting the path, time to be taken of a cyclone after knowing that it is approaching the country is one mitigation strategy so as to avoid losses of lives and property. Having a natural mangroves plantation along the coast is one mitigation measure. Construction of earthquake resistant buildings is another mitigation measure. Working on mitigation phase is also the



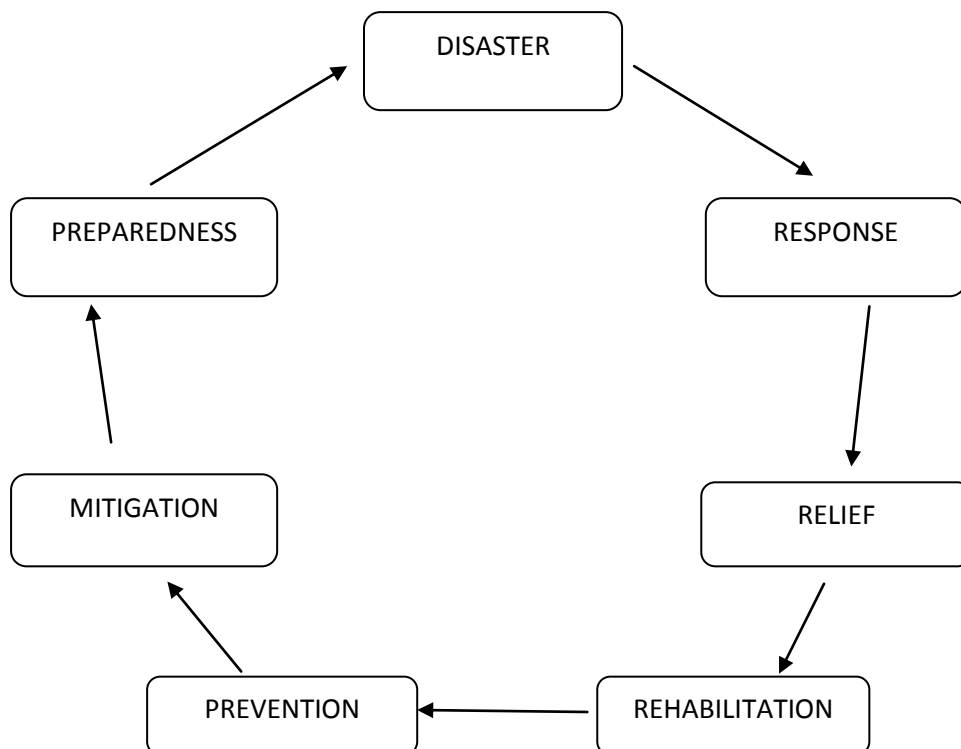
responsibility of the government because such initiative at the local and community level is very difficult as huge funds and resources are required.

**Preparedness phase-** This phase involves the development of awareness among the population on the general aspects of disaster and on how to behave in the face of a future disaster. This includes education on warning signs of disasters, methods of safe and successful evacuation and first aid measures. Preparedness must be on part of individual organizations as well as community as a whole. Preparedness phase also deals with the preparations which are needed on individual, community, authoritative level when a disaster occurrence cannot be avoided and a disaster is sure to happen.

Community based disaster management plans must be formed with the help of local NGOs.



**Disaster Management Cycle**



## Concepts in disaster management

**Hazards-** Hazard is a potential threat which can create disaster. A hazard poses a significant risk of a disaster. A hazard can be existence of fire, chemical industries, earthquake, flood, etc. All these hazards, when meet vulnerable population or exceed the coping capacity of population, turn into a disaster. E.g. earthquake in a desert will just be a hazard and not a disaster. However, earthquake in an urban or rural settlement where population resides will be a huge disaster.

**Vulnerability-** Vulnerability is defined as the characteristic of a person or group and their situation that influences their capacity to anticipate, cope with, resist and recover from the impact of a natural disaster. (Wisner et al., 2003) Vulnerability in simple terms can also be explained as the exposure of a community or an individual to a specific hazard.

1. **Physical vulnerability**
2. **Social vulnerability**
3. **Economical vulnerability**
4. **Geographical vulnerability**

**Capacity-** In real life the harm done does not only depend on hazard, vulnerability and exposure, but also on the coping capacity and the resilience of the element at risk. Coping capacity encompasses those strategies and measures that act directly upon damage during the event by alleviating or containing the impact or by bringing about efficient relief, as well as those adaptive strategies that modify behaviour or activities in order to circumvent or avoid damaging effects. Coping Capacity can be summed up as the ability of a group or household to resist a hazard's harmful effects and to recover easily.

**Disaster Risk-** Disaster risk is a function of hazard, vulnerability and coping capacity together. In mathematical terms it can be expressed as-

$$\text{Disaster Risk} = \frac{\text{Natural Hazard} \times \text{Vulnerability}}{\text{Capacity of Societal System}}$$

In order to reduce the impact of disaster, we need to focus on the disaster risk which is explained above. There are three ways to reduce the risk of a disaster. This are-

1. Avoid a hazard or minimize the probability of a hazard happening.
2. Reduce the vulnerability of the community residing.
3. Increase the coping capacity of the community residing.

**Disaster-** A serious disruption of the functioning of a community causing widespread human, material or environmental losses which exceed the ability of the affected community to cope using its own resources.

**Emergency-** Risk that can be managed using existing resources and support in a given condition and situation.

**Response-** Actions taken immediately following the impact of a disaster when exceptional measures are required to meet the basic needs of the survivors.

**Rehabilitation-** Actions taken in the aftermath of a disaster to:

- Assist victims to repair their dwellings;

- Re-establish essential services;
- Revive key economic and social activities

**Prevention-** Activities designed to provide permanent protection from disasters.

**Disaster mitigation-** Measures taken in advance of a disaster aimed at reducing its impact on society and the environment.

**Disaster Preparedness-** Ability to predict, respond to and cope with the effect of a disaster.

### **Types of Disasters and resulting Public Health Emergencies**

Some disasters strike unexpectedly and very rapidly, whilst other disasters begin with low-levels of deteriorating environmental and socio-economic conditions. The following table classifies disasters into five major categories:

<b>Natural Disasters</b>	<b>Public Health Emergencies (examples)</b>	<b>Disasters Owing to action/inaction of human beings</b>	<b>Public Health Emergencies (examples)</b>
<b>1. Sudden Impact:</b> earthquakes, cyclones, tsunamis, floods, volcanic eruptions, nuclear reactor explosion etc.	Mass casualties, food insecurity, disease outbreaks	<b>4. Industrial/Technological:</b> pollution, fires, spillage, explosion, etc.	Mass casualties, high respiratory diseases morbidity
<b>2. Slow-onset:</b> drought, famine, pest infestation, deforestation etc.	Epidemics, malnutrition, high maternal and child mortality, mental ill-health	<b>5. Complex Emergencies:</b> wars, civil strife, armed aggression, etc.	Mental ill-health, food insecurity, mass casualties, gender violence
<b>3. Epidemic Diseases:</b> waterborne, foodborne, vectorborne, etc.	Epidemics of cholera, dysentery, measles, respiratory infections, malaria, dengue and also HIV	Others: transportation accidents, material shortage	Mass casualties

## 2. HAZARD RISK AND VULNERABILITY ASSESSMENT

### Learning Objectives:

- Identification of Hazard, Risk and Vulnerabilities.
- Assessment of level of risk of different components

### Introduction:

Hospitals are required to conduct and annually review their Hazard Vulnerability Analysis (HVA). The HVA provides a systematic approach to recognizing hazards that may affect demand for the hospitals services or its ability to provide those services. The risks associated with each hazard are analyzed to prioritize planning, mitigation, response and recovery activities. The HVA serves as a needs assessment for the Emergency Management program. This process should involve community partners and be communicated to community emergency response agencies.

A hazard vulnerability analysis is a process for identifying natural and man-made hazards and the direct and indirect effect these hazards may have on the hospital and community. An HVA provides the hospital with a basis for determining the potential demands on emergency services and other resources that could occur during a crisis so that effective preventive measures can be taken and a coordinated disaster response plan can be developed.

Hospitals should develop specific plans for managing the top 3 to 5 hazards they have identified, and should build their training and exercises around managing those hazards.

It is important to note that state, districts and local authorities are also required to prepare HVAs; the hospital HVA should consider hazards identified in the community plans that may impact the hospital. In some communities the hospital and community HVAs are developed together.

### Steps for HVA:

Each hospital should be encouraged to pursue the following steps when completing the HVA:

- Research into vulnerability through public safety, emergency management agencies, and other sources of information;
- Organizational meeting of individuals to be involved in the deliberative process that would clarify the decision-making process as well as its importance within and outside the institution;
- Individual completion of the assessment instrument in private to encourage differing opinions;
- Group discussion and consensus;
- Documentation of discussion, including minority opinions and overall results;
- Documentation of action planning to address identified gaps; and

- Wide distribution of the results both outside and within the institution, including to the most senior decision makers.

### **Medical Centre Hazard and Vulnerability Analysis:**

Evaluate potential for event and response among the following categories using the hazard specific scale.

Issues to consider for **probability** include, but are not limited to:

- 1 Known risk
- 2 Historical data
- 3 Manufacturer/vendor statistics

Issues to consider for **response** include, but are not limited to:

- 1 Time to marshal an on-scene response
- 2 Scope of response capability
- 3 Historical evaluation of response success

Issues to consider for **human impact** include, but are not limited to:

- 1 Potential for staff death or injury
- 2 Potential for patient death or injury

Issues to consider for **property impact** include, but are not limited to:

- 1 Cost to replace
- 2 Cost to set up temporary replacement
- 3 Cost to repair

Issues to consider for **business impact** include, but are not limited to:

- 1 Business interruption
- 2 Employees unable to report to work
- 3 Customers unable to reach facility
- 4 Company in violation of contractual agreements
- 5 Imposition of fines and penalties or legal costs
- 6 Interruption of critical supplies
- 7 Interruption of product distribution

Issues to consider for **preparedness** include, but are not limited to:

- 1 Status of current plans
- 2 Training status
- 3 Insurance
- 4 Availability of back-up systems
- 5 Community resources

Issues to consider for **internal resources** include, but are not limited to:

- 1 Types of supplies on hand
- 2 Volume of supplies on hand
- 3 Staff availability
- 4 Coordination with MOB's

Issues to consider for **external resources** include, but are not limited to:

- 1 Types of agreements with community agencies
- 2 Coordination with local and state agencies
- 3 Coordination with proximal health care facilities
- 4 Coordination with treatment specific facilities



### 3. SAFE HOSPITAL

#### Learning objectives:

- To understand about the components of safe hospital

#### Introduction:

Hospitals are one of the essential institutions that must continue to function when an emergency event occurs. In spite of its importance, health facilities are themselves vulnerable to disasters and can get damaged risking the lives of patients and health workers.

Identification of the structural, non- structural and functional vulnerabilities is the first step towards reducing risks in hospitals and health facilities and ensuring that they will be resilient, safe and will continue to operate in times of emergency and disaster. This document provided a list of indicators that must be considered in assessing the vulnerabilities of hospitals and health facilities.

- I. Structural indicators are crucial for the building to withstand adverse natural events. These include:
  1. the building location;
  2. design specifications; and
  3. Materials used for the hospital or health facility.
- II. Non-structural indicators are essential for the daily operations of hospitals and health facilities. If these are damaged, they will not be able to function and even may cause physical injury to patients and personnel. These include:
  1. architectural elements such as ceilings, windows and doors;
  2. medical and laboratory equipment;
  3. lifelines (mechanical, electrical and
  4. plumbing installations); and
  5. safety and security issues .
- III. Functional indicators are important for the continuous operation of hospitals and health facilities. These include:
  1. site and accessibility;
  2. Internal circulation and interoperability; equipment and supplies;
  3. emergency standard operating
  4. procedures and guidelines;
  5. logistic system and utilities;
  6. security and alarm;
  7. transportation and communications systems;
  8. human resources; and
  9. monitoring and evaluation

After identifying the vulnerabilities, the next step is to plan for possible actions to reduce vulnerabilities, including improving building codes and designs, retrofitting, relocating critical services in a less vulnerable part of the building and use of protective barriers. In non-structural vulnerabilities, the focus is to ensure the safety of people and equipment, continuity of the delivery of services and emergency rehabilitation measures. These may include mitigating vulnerability, relocating activities, limiting mobility of the equipment, securing the equipment, reinforcement, emergency repair and rehabilitation procedures and contingency plans. In reducing functional vulnerabilities, some possible measures include optimizing the use of various areas and distributing critical services, maintaining quality improvement and quality

assurance, an early warning system for risk identification and management, supervising staff during emergencies, securing delivery of lifelines, maintaining equipment and using special procedures and protocols during emergencies .

Safe hospitals need to remain structurally sound, well-organized and fully operational in emergencies and disasters. Supporting hospitals and health facilities to make them safe in health emergencies involves everyone.

## 4. PRE-HOSPITAL CARE

### Learning Objectives:

- Principles of First Aid
- Basic Life Support
- Wound Management

### First Aid

#### Shock

Shock is a life threatening condition that develops when the body's blood pressure drops to very low levels. It can result from great pain, losing a lot of blood, severe illness, heart attacks, severe dehydration, severe burns, or severe allergic reaction. Shock should be treated on top priority. It may lead to death if not treated in time.

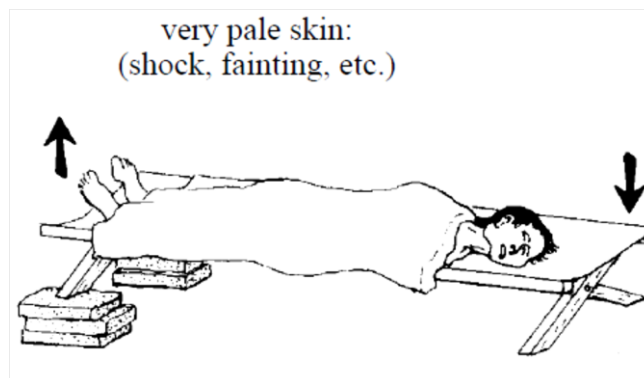
#### Signs of Shock

- weakness after fainting especially on standing up
- sensation of vomiting
- blurry vision
- feels cold with clammy skin
- too much sweating even in cold weather
- severe thirst
- blood pressure drops very low
- restlessness, mental confusion, or loss of consciousness.
- weak rapid pulse (more than 100 per minute for an adult, more than 140 per minute for a child over 2 years old, and more than 190 per minute for a baby)

#### What to do to prevent or treat shock

At the first sign of shock, or if there is risk of shock –

- ✓ Have the person lie down with his feet a little higher than his head, like this:



- ✓ **If the shock is due to a head injury , do not raise person's feet. Make him sit propped up (half sitting position against a pillow) (take illustration from pg 111 of WTND or pg -51 of PIPHC)**
- ✓ If the person feels cold, cover her with a blanket
- ✓ If she is conscious, give her warm water or other lukewarm drinks. But if shock is due to injury (accidents or injuries to chest or abdomen) then do not give anything to drink as she may need surgery or blood transfusion soon.
- ✓ If she is in pain then give her a paracetamol or other pain killers
- ✓ Keep calm, reassure the person
- ✓ If shock is due to allergic reaction , treat accordingly
- ✓ Loosen any belts or tight clothing the person may be wearing but do not remove clothing

#### **If the person is unconscious –**

- ✓ Lay the person on her side with her head low, tilted back and to one side. If there is choking, pull the tongue forward with your finger.
- ✓ If she has vomited, clear the mouth immediately. Be sure that the head is low, tilted back, and to one side (see above) so she does not breathe vomit into her lungs.
- ✓ If she has a neck or spine injury, do not tilt the head or move the back.
- ✓ Do not give her anything by mouth until she becomes conscious.
- ✓ If you or someone nearby knows how, give intravenous solution (normal saline) at a fast drip.
- ✓ Seek medical help fast.

#### **What to do when breathing stops**

Common causes for breathing to stop are –

- Something stuck in throat
- Tongue or thick mucus blocking the throat
- Drowning, choking on smoke or poisoning
- Strong blow to the head or chest
- Heart attack

**A person who has stopped breathing has only 4 minutes... You must act fast by starting mouth to mouth breathing and also calling for help**

**In case of drowning –**



Start mouth to mouth breathing at once – if possible, even before the drowning person is out of the water as soon as it is shallow enough to stand.

Always start mouth to mouth breathing at once even before trying to get water out of the drowning person's chest




**When a person is having trouble with breathing-**

- Lips, nails and tongue of the person turns blue
- Pulse is slow and irregular
- Breathing is irregular and absent
- Person may lose consciousness

Mouth to Mouth Breathing		
<b>Step1</b>	Quickly remove anything stuck in mouth or throat. Pull the tongue forward. If there is mucus in the throat, quickly try to clear it.	
<b>Step 2</b>	Lay the person face up, tilt his/ her head way back and pull his/ her jaw forward as shown in the picture	



<b>Step 3</b>	<p>Pinch and close his/ her nostrils with your fingers,</p> <p>Open his/ her mouth wide</p> <p>Cover his/ her mouth with yours</p> <p>Blow strongly into his/ her lungs so that the chest of the person rises</p> <p>Pause to let the air come back out and blow again</p> <p>Repeat about 15 times per minute.</p>	
	<p>In case of newborn babies breathe <b>very gently about 25times per Minute</b></p> <p>If the chest of the person does not rises then you should look for any obstruction in the airway –</p> <ul style="list-style-type: none"> <li>➤ Turn the person to the side and thump his/ her back, this will make the obstructing material come to the front of the throat. Open the mouth and remove it with your finger (covered with cloth)</li> <li>➤ In case of a child, hold it up by feet and thump the back.</li> </ul>	
<p>Continue mouth to mouth breathing until the person can breathe by himself/ herself or until there is no doubt that s/he is dead. You can try and keep it up for an hour.</p> <p>You should call for an ambulance for help and shift the person to the nearby functional health institution or camp as soon as possible.</p>		

**Note:** If there is an open sore or bleeding in the mouth, or hepatitis or HIV and it is not possible to give mouth-to-mouth breathing, then CPR should be given.

### **I. Loss of Consciousness**

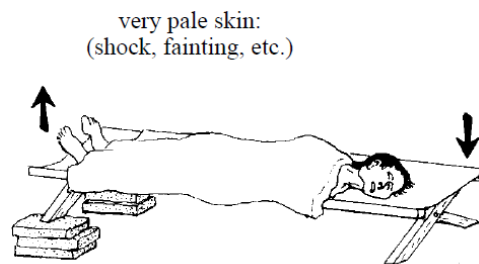
**Common causes of loss of consciousness are –**

- Fainting (from fright, weakness, low blood sugar, etc.)
- Heat stroke
- Stroke
- Heart attack

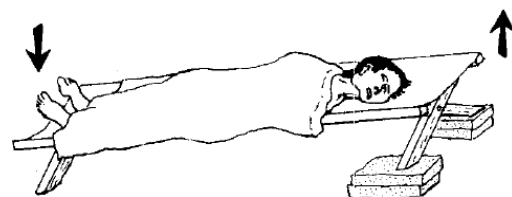
- Shock
- Seizures
- Poisoning
- Drunkenness
- A hit on the head (getting knocked out)

If a person is unconscious and you do not know why, **immediately check each of the following:**

1. Is he **breathing** well? If not, tilt his head way back and pull the jaw and tongue forward. If something is stuck in his throat, pull it out. If he is not breathing, use mouth-to-mouth breathing at once (as explained above)
2. Is he **losing a lot of blood**? If so, control the bleeding (as explained below)
3. Is he in shock (moist, pale skin; weak, rapid pulse)? If so, lay him with his head lower than his feet and loosen his clothing (as shown in the figure)
4. Could it be **heat stroke** (no sweat, high fever, hot, red skin)? If so, shade him from the sun, keep his head higher than his feet, and soak him with cold water (ice water if possible) and fan him. (as shown in the figure)



red or normal skin:  
(heat stroke, stroke, heart problems, head injury)



**If there is any chance that the unconscious person is badly injured:**

- It is best not to move him until he becomes conscious. If you have to move him, do so with great care, because if his neck or back is broken, any change of position may cause greater injury (as explained later).
- Look for wounds or broken bones, but move the person as little as possible. Do not bend his back or neck.

**Never give anything by mouth to a person who is unconscious**

**What to do –**

- ✓ Check responsiveness , shake the person
- ✓ Proceed to the A. B. C (Airway. Breathing and Circulation) assessment (box 1)
- ✓ If A. B. C is present and there is no spinal injury use recovery position (as explained below)
- ✓ If A.B. C not present perform CPR (Cardio Pulmonary Resuscitation)

**ABC**

- A- **Airway** – Check whether the passage from the nose and throat to the lungs should be clear of any obstruction. Obstructions can be food or foreign body in case of conscious casualty and tongue or foreign body in case of unconsciousness.
- B- **Breathing** – Check whether the person is breathing properly as a person can only survive for few minutes without oxygen. Give mouth to mouth breathing to the person if the breathing has stopped or is irregular (as explained above)
- C- **Circulation** – Check for the pulse, breathing or any movement to assess the status of circulation i.e., pumping of blood by heart

- **Any person who does not have normal ABC needs immediate medical help.**
- **If the person is breathing normally then turn him / her to the recovery position**

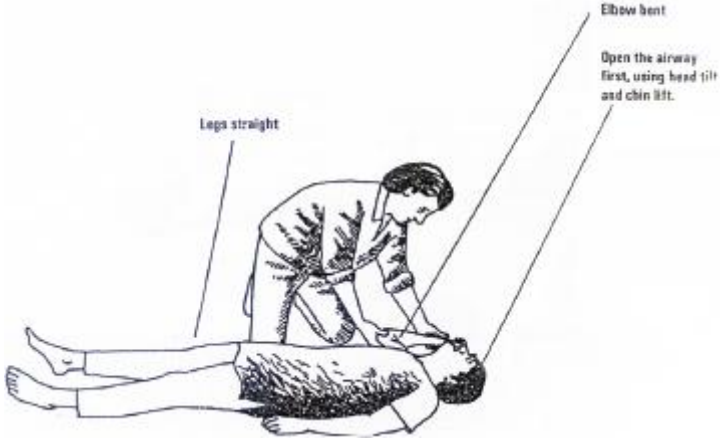

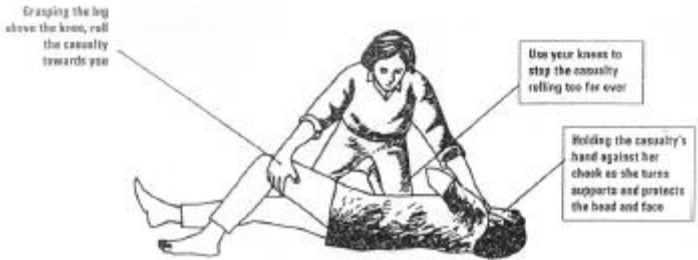
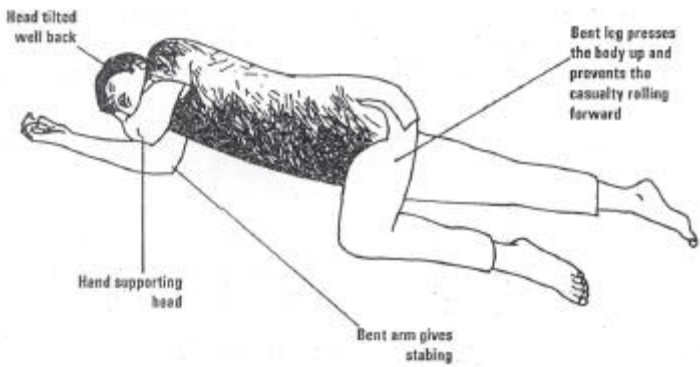
**The Recovery Position**

Any unconscious person should be placed in the recovery position as soon as possible. This position prevents the tongue from blocking the throat. Since the head is slightly lower than the rest of the body, it allows liquids to drain from the mouth, reducing the risk of inhaling the stomach contents.

The head and neck are kept in a straight line, while the bent limbs are kept in a straight line. The bent limbs keep the body propped in a secure and comfortable position. If you must leave the unconscious person unattended, s/he can safely be left in the recovery position while you get help.

The technique for turning shown below assumes that the person is lying on his/ her back from the start. Not all the steps will be necessary if the person is found lying on his/ her side or front.

Before turning the person, you should remove his/ her spectacles, if worn and any bulky objects from pockets.

Recovery Position		
<b>Step 1</b>	<p>Kneel beside the person, open his/ her airway by tilting the head and lifting the chin.</p> <p>Straighten his/her legs.</p> <p>Place the arm nearest to you at right angles to his/ her body, elbow bent and move the hand palm to the upper side.</p>	 <p>Legs straight</p> <p>Elbow bent</p> <p>Open the airway first, using head tilt and chin lift.</p>
<b>Step 2</b>	<p>Bring the arm furthest from you across the chest and hold the hand, palm outwards, against the person's cheek</p>	 <p>Place the back of the hand against her cheek and hold it there.</p>
<b>Step 3</b>	<p>With your other hand, grasp the thigh furthest from you and pull the knee up, keeping the foot flat on ground</p>	 <p>Grasping the leg above the knee, roll the casualty towards you</p> <p>Use your knees to stop the casualty rolling too far over</p> <p>Holding the casualty's hand against her cheek as she turns supports and protects the head and face</p>
<b>Step 4</b>	<p>Keeping his/ her hand pressed against his/ her cheek, pull at the thigh to roll the person towards and on to her side.</p>	 <p>Head tilted well back</p> <p>Hand supporting head</p> <p>Bent arm gives stabling</p> <p>Bent leg presses the body up and prevents the casualty rolling forward</p>
<b>Step 5</b>	<p>Tilt the head back to make sure the airway remains open. Adjust the hand under then cheek if necessary so that the head stays in this tilted position</p>	

<b>Step 6</b>	Adjust the upper leg, if necessary, so that both the hip and knee are bent at the right angles
<b>Step 7</b>	Arrange for transport to nearest functioning health institution or camp

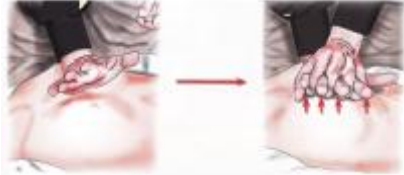


### Infant Recovery Position -

- ✓ Cradle the infant in your arms, with the head tilted downwards to prevent the child from choking on its tongue or by inhaling vomit
- ✓ Maintain this position until you get medical help




### Modifying the recovery position

Depending on the person's condition, you may have to modify the recovery position to avoid making injuries worse. For example, an unconscious person with spinal injury needs extra support at the head and neck during turning and in the final position, to keep the head and trunk aligned at all times. If limbs are injured and can not be bent, use extra helpers or place rolled back blankets against the person's body to avoid toppling forward.

### If the person is not breathing normally then start CPR - Cardio Pulmonary Resuscitation as follows-

CPR		
Step 1	Kneel by the side of the victim	
Step 2	Place the heel of one hand in the centre of victim's chest	
Step 3	Place the heel of your other hand on top of the first hand.	



Step 4	Interlock the fingers of your hands and ensure that pressure is not applied over the victim's ribs	
Step 5	Position yourself vertically above the victim's chest and with your arms straight, press down on the sternum 4-5 cm	
Step 6	After each compression release all the pressure on the chest without losing contact between your hands and sternum	
Step 7	Repeat at the rate of about 100 or 60 times a minute (a little less than 2 compression a second)	
Step 8	Compression and release should take equal amount of time	

#### **Combine chest compressions with rescue breaths –**

1. After 30 compressions give mouth to mouth breathing to the victim (as explained above)
2. Give a total of two rescue breaths and the return your hands without delay to the correct position on the sternum and give a further 30 chest compressions
3. Continue with chest compression and rescue breaths in a ratio of 30:2
4. Stop to recheck the victim only if he starts breathing normally; otherwise do not interrupt resuscitation.

#### **Only CPR –**

1. If you are unable or not willing to give rescue breaths, give CPR only
2. If chest compressions only are given these should be continuous at the rate of 100 per minute
3. Stop to recheck the victim only if he starts breathing normally; otherwise do not interrupt resuscitation.

#### **CPR in Children -**

The adult sequence may also be used for children but following minor modifications in the sequence will make it more suitable for use in children.

1. Give initial rescue breaths before starting chest compressions
2. If you are on your own perform CPR for approximately one minute before going for help
3. Use one or two hands as needed for a child over one year to achieve adequate depth of compression

### CPR in infants –



1. Open the Airway – open the airway using head tilt and lifting of chin. Do not tilt the head too far back
2. Give 2 gentle breaths – If the baby is not breathing give five small gentle breaths. Cover the nose and mouth of the baby. Each breath should be 1 second long and you should see the baby's chest rise with each breath
3. Give 30 compressions – Give 30 gentle compressions at the rate of 100 per minute. Use two fingers in the centre of the chest just below the nipples. Press down approximately one third the depth of the chest
4. Repeat with two breaths and 30 compressions
  - **Continue resuscitation until-**
  - **Qualified health arrives**
  - **Or the victim starts breathing normally**

### Choking

A foreign object sticking at the back of the throat may either block the throat, or induce muscular spasm. In case of choking, there will be difficulty in speaking and breathing and there may be blueness of the skin. Person may point towards the throat or grasp the neck to indicate the problem.

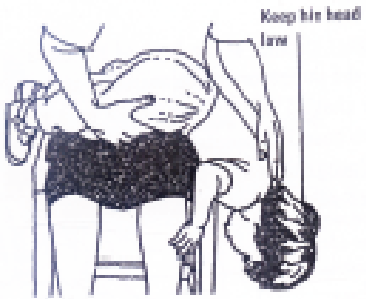
### Management

#### For adults –

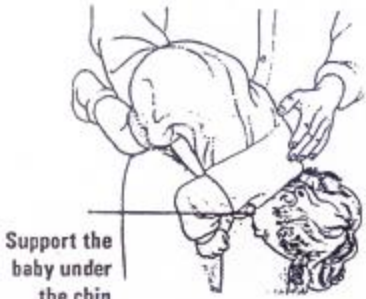
Step 1	Reassure the person	
Step 2	Bend him/ her forwards so that the head is lower than the chest	
Step 3	Encourage him/ her to cough if possible	
Step 4	Give up to five sharp blows on the back between shoulder blades with the flat of your hands.	
If the back slap fails, then try <b>abdominal thrusts</b> .		
Step 1	Stand behind the victim and put both arms round the upper part of his/her abdomen	
Step 2	Lean the victim forward	
Step 3	Clench your fist and place it between the umbilicus (navel) and the bottom end of sternum (breast bone)	
Step 4	Grasp this hand with your other hand and pull sharply	

	inwards and upwards	
Step 5	Repeat up to five times	
If the obstruction is still not relieved, continue alternating five back blows with five abdominal thrusts		


### For a child

Step 1	Place the child over your knee	
Step 2	Slap him on the back between shoulder blades using less force than for an adult	
Step 3	If blows fail use abdominal thrust only if you have been trained separately to do so in a child otherwise begin resuscitation	

### For a baby

Step 1	Lay the baby along your forearm	
Step 2	Slap him on the back between shoulder blades using less force than for a child	
	Do not use abdominal thrusts on a baby	

### For a person who becomes unconscious

Step 1	Loss of consciousness may relieve muscle spasm, so check first to see if the person can now breathe.	
Step 2	If not, then turn him/ her on side and give 4-5 blows between shoulder blades	
Step 3	If back blow fails, kneel on the side of the person and perform abdominal thrusts	
Step 4	Put the heel of one hand below the ribcage (between the navel and ribs) and cover it with	

	other hand.  (For fat persons, pregnant women, persons in wheelchairs, or small children, place hands on the chest, not the belly.)	
Step 5	Press sharply inwards and upwards up to five times	
Step 6	If the person starts breathing normally, place him/ her in the recovery position and call for medical help.	
Step 7	Check and record breathing rate every 10 minutes	
Step 8	If the person does not start breathing normally, call for medical help urgently.	

## II. Managing Wounds and bleeding

You may come across situations, where you will have to manage common wounds and injuries. This section would help you understand the management of different types of wounds.

Wounds are of three categories:

- ✓ Wounds without bleeding
- ✓ Wounds with bleeding
- ✓ Infected Wound

### Care of the wounds with no bleeding

These wounds include small abrasions, small cuts, scrapes and other small wounds. Bleeding is usually limited to oozing and is due to damage to minute blood vessels. Even these types of wounds need to be attended immediately as they may get contaminated and become infected.

Take the following steps while managing these wounds:

- ✓ Wash your hands using soap and water
- ✓ Clean the wound; using pre boiled and cold water (Soap can be used if the wound is contaminated with dirt. But remember excess soap may damage the flesh.)
- ✓ Or, gently wipe the dirt away using cotton without rubbing it. Rubbing disturbs the clot and restart bleeding, thus delaying the healing process. Use different cotton swabs each time

- ✓ Place a piece of clean gauze or cloth over the wound. Cloth should be light enough to allow passage of air for quick healing.
- ✓ Advise the person to change the gauze or cloth every day.

### **Remember**

*Any bit of dirt that is left in a wound can cause an infection. A clean wound will heal without any medicine. Cleanliness is of first importance in preventing infection and helping wounds to heal. If a person gets a cut, scrape or wound, he/she should be referred immediately to take Tetanus Toxic injection.*

### **Family members should be warned to:**

- ✓ Avoid using animal or human faeces or mud on a wound. These can cause dangerous infections, such as tetanus.
- ✓ Never put alcohol, tincture of iodine, or any medicine directly into a wound; doing so will damage the flesh and make healing slower.
- ✓ Avoid disturbing the scab (a dry covering over the wound) that has been formed.
- ✓ Visit a health facility if there is a deep/sharp cut for which stitches may be needed.
- ✓ Refer persons to nearby health facility immediately in case the cut is large

### **Care of the infected wounds**

- ✓ Any wound which is red, swollen, hot, and painful with pus, or a foul smell is an infected wound.
- ✓ A deep bullet or knife wound runs a high risk of dangerous infection. You can know that the infection is spreading to other parts of the body if there is fever and a red line above the wound.

Wounds which may become dangerously infected are:

- ✓ Wounds with debris or made with dirty objects
- ✓ Puncture wounds and other deep wounds that do not bleed
- ✓ Wounds made where animals are kept: in cowsheds, pigpens, etc
- ✓ Large wounds with severe laceration or bruising
- ✓ Wounds due to bites, especially from dogs or other animals
- ✓ Bullet wound or knife wound

Management of infected wounds - Infected wounds are serious and need immediate medical attention. Quick referral to a health facility for treatment with an antibiotic and injection for Tetanus Toxoid is needed. Leave the wound open and avoid covering the wound with bandages. Fresh air enables these wounds to heal faster

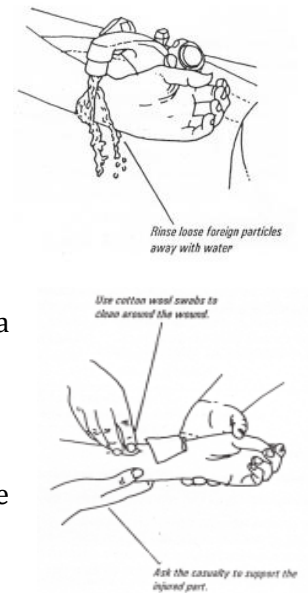
### **Care of the wound with minor bleeding:**

Minor bleeding can be controlled by pressure and elevation. A small adhesive dressing is normally all that is necessary. Medical aid is needed if the bleeding does not stop or if the wound is at a special risk of infection.



**Management –**

1. Wash your hand thoroughly with soap and warm water
2. If the wound is dirty, clean us by rinsing lightly under running water
3. Pat gently dry with a sterile swab or clean tissue
4. Temporarily cover the wound with sterile gauze. Clean the skin around it with soap and water. Swab away from wound and use a new swab for each stroke
5. Pat dry, the cover the wound with an adhesive dressing
6. If there is a risk of infection then advise the person to get the medical advice at the health institution or the camp.

**Severe external bleeding:**

Massive external bleeding is dramatic and can shift your focus from other first aid priorities; remember the ABC and resuscitation. Bleeding at the face or neck can obstruct the airway. Rarely blood loss is so great that the heart stops. You should also remember that shock may develop and person may lose consciousness.

**Protecting yourself**

If you have any sores or open wounds, make sure that they are covered with a waterproof adhesive bandage. Use disposable gloves whenever possible and wash your hands thoroughly with soap and water before and after treatment.

**Management –**

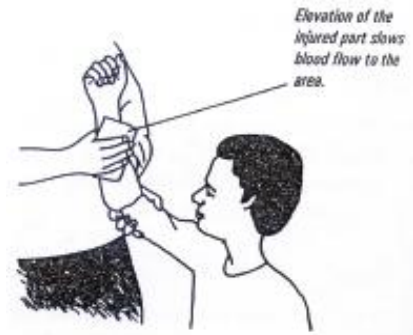
Your aims are –

- i. To control the bleeding
- ii. To prevent shock
- iii. To minimise the risk of infection
- iv. To arrange urgent removal to hospital

Steps to control bleeding from wound: (Take illustrations from page 66 – PIPHC)

1. Raise the injured part
2. Apply pressure on the wound directly by tying a clean cloth/bandage but do not waste time hunting for a dressing.

If you can not apply direct pressure E.g. - if an object is protruding – press down firmly on either side.



3. Raise and support injured limb above the level of person's heart. Handle limbs gently if the injury involves a fracture.
4. It may be useful to ask the person to lay down as this will reduce the blood flow from the site of injury and minimise the shock.
5. Hold the pressure. Don't keep checking to see if the bleeding has stopped because this may damage or dislodge the clot that's forming and cause bleeding to resume.
6. Bandage the injured part firmly but not so tightly as to impede the circulation. If bleeding strikes through the dressing, bandage another firmly over the top.

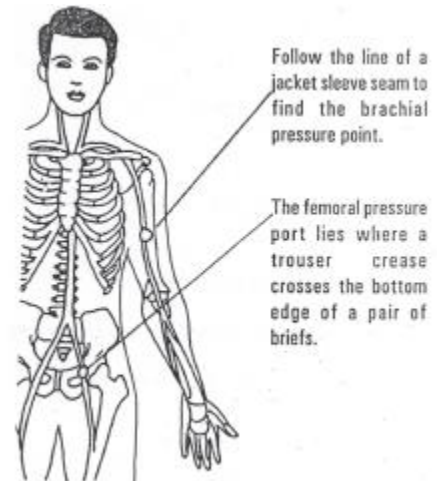


7. If there is protruding foreign body build up pads on either side of the object until they are high enough to bandage over the object without pressing on it.
8. Secure and support the injured part as for a broken bone (explained in the next section)
9. Arrange to shift the patient to the nearest functional health institution or camp.

Rarely direct pressure is impossible to apply or is insufficient to control the bleeding from a limb. In these cases, indirect pressure may be applied to a **“pressure point”**, where a main artery runs close to a bone. Pressure at these points will cut off the blood supply to the limb. It must not be applied for longer than 10 minutes.


### Pressure points –

- i. Brachial Pressure point – Brachial artery runs along the inner side of the upper arm. Press your finger tips in between the muscles to compress artery against the bone
- ii. Femoral Pressure point – The femoral artery crosses the pelvic bone in the centre of the groin crease. Lay the person down with knee bent to locate the groin fold and press very firmly with thumbs.



**Do not use a tourniquet. It can make the bleeding worse, and may result in tissue damage and even gangrene.**

**10. If the bleeding cannot be controlled by pressing on the wound, or the pressure point, and if the person is losing a lot of blood, do the following –**

Step 1	Keep pressing the wound	
Step 2	Keep the wounded part as high as possible	
Step 3	Tie the arm or leg as close to the wound as possible between the wound and the body. Tighten enough to control bleeding. <b>Do not make it so tight that the arm or leg becomes blue</b>	
Step 4	For the tie, use a folded cloth or wide belt; <b>never use thin rope, string or wire</b>	

### Precautions

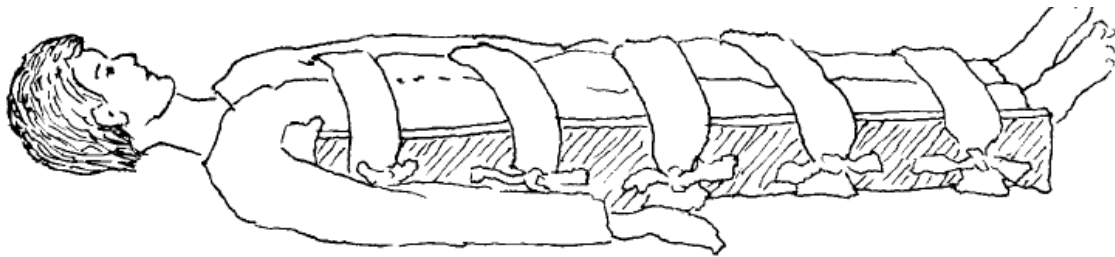
- ✓ Tie the limb only if the bleeding is severe and cannot be controlled by pressing directly on the wound or at the pressure point
- ✓ Loosen the tie for a moment every half an hour to see if it is still needed and to let the blood circulate. Leaving it too long may damage the arm or leg so much that it must be cut off
- ✓ If bleeding or injury is severe, raise the feet and lower the head to prevent shock

## Broken bones

When a bone is broken, the most important thing to do is keep the bone in a fixed position. This prevents more damage and lets it mend. Before trying to move or carry a person with a broken bone, keep the bones from moving with splints, strips of bark, or a sleeve of a cardboard. Later a plaster cast can be put at the fractured part at the functional health institution.

### Broken thigh or hip bone

A broken upper leg or hip often needs special attention. It is best to splint the whole body like this: and to take the injured person to a health centre at once.



### Broken necks and backs

If there is any chance a person's back or neck has been broken, **be very careful when moving him**. Try not to change his position. If possible, bring a health worker before moving him. If you must move him, do so without bending his back or neck. For instructions on how to move the injured person, (as explained below)

### Broken ribs

These are very painful, but almost always heal on their own. It is better not to splint or bind the chest. The best treatment is to take aspirin and rest. It may take months before the pain is gone completely. A broken rib does not often puncture a lung. But if a rib breaks through the skin, or if the person coughs blood or develops breathing difficulties (other than pain), use antibiotics and seek medical help.

### Broken bones that break through the skin (open fractures)

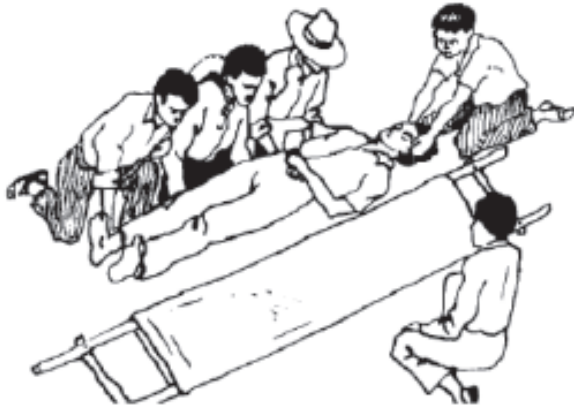
Since the danger of infection is very great in these cases, it is always better to get help from a health worker or doctor in caring for the injury. Wear gloves or plastic bags on your hands and clean the wound and the exposed bone very gently but thoroughly with cool, boiled water. Cover with a clean cloth. **Never put the bone back into the wound until the wound and the bone are absolutely clean.** Splint the limb to prevent more injury. If the bone has broken the skin, use an antibiotic immediately to help prevent

**CAUTION: Never rub or massage a broken limb or a limb that may possibly be broken.**

### How to move a badly injured person

With great care, lift the injured person without bending him anywhere. Take special care that the head and neck do not bend.

Have another person put the stretcher in place



With the help of everyone, place the injured person carefully on the stretcher.

If the neck is injured or broken, put tightly folded clothing or sandbags on each side of the head to keep it from moving

When carrying, try to keep the feet up, even on hills.



### Snake bite

All snakes are not poisonous, nor can they outrun man as commonly believed. Snakebites are common in rainy seasons and night hours. There are only four Common Krait (Hindi : Bangarus); Russel's Viper (Hindi : Daboia); Sawscaled Viper (Hindi : Phoorsa)

### Identification of poisonous and non-poisonous snake bite

- ✓ **Poisonous Snake:** The bite of a poisonous snake leaves marks of the two fangs ( and at rare times, other little marks made by the teeth).
- ✓ **Non – Poisonous Snake :** The bite of a snake that is not poisonous leaves only 2 rows of teeth marks, but no fang marks. This Identification is most reliable if we know the species of the snake.

### Sign of poisonous snake bite

- ✓ Pain at the site of bite. There may also be pain in abdomen and sometimes diarrhoea
- ✓ There may be local swelling.

- ✓ Blister formation around the site and spreading blister suggest a large dose of venom.
- ✓ Local tissue necrosis with an offensive, rotten smell
- ✓ Weakness of the muscle around the eyes (drooping of eyelids). The person may start seeing double (double vision) and may develop a squint. He may not be able to swallow anything.
- ✓ Cough difficulty in breathing leading to death. (Cough indicates severe poisoning and may not appear until 10 hours after the bite)
- ✓ Abnormal bleeding
- ✓ There may be vomiting and collapse
- ✓ Shock and haemorrhage may occur up to a week after the bite if anti venom is not given.

### **First aid in any snake bite**

Do it RIGHT also known as RIGHT approach for snake bite patients.

#### ***'Do it R.I.G.H.T.' approach means***

**Reassurance-** Reassure the patients that most of the snakes are non poisonous

**Immobilisation** as per a fractured limb-- (but no tourniquet application, earlier it was recommended method )

**Getting to Hospital** without delay - Take the patient to the nearest health centre at the earliest by any available method ---- even rickshaw will do (don't wait for the ambulance)

**Telling** the doctor of any symptoms that develop as it helps the doctors to identify the type of poison of snake whether it is Neurotoxin, Hemotoxic etc. Symptoms may include dropping of lids, unconsciousness, sleepiness, bleeding from bite site etc.

The effective and quick first aid can save most patients. No magic or temple prayers can undo the poison bites.

1. Make the person lie down and relax. Do not make the patient walk.
2. In case of non-poisonous snake bite, it is sufficient to clean and disinfect the wound.
3. Poisonous Snakebite is dangerous – refer to the health centre immediately after following first aid:
  - Keep the bitten area still, do not allow it to move.
  - Wrap the bitten area with wide elastic bandage or clean cloth to slow the spread of poison.

- Put on a splint to prevent the limb from moving.
- Carry the person, on a stretcher or a bed to the nearest health centre.
- If the snake has been killed, you can take along the snake, because different snakes require different treatment (anti-venom). If an anti-venom is needed, leave the bandage on until the injection is given. Bandage should be removed in hospital only after the doctor advice.

You should know about the hospitals in your area, where anti snake venom drugs and doctors are available to undertake the treatment.

## 5. TRIAGE

### Learning objectives:

- To understand about the triage.
- To understand different types of injury management.

### Introduction

When disaster strikes, effective management of resources can significantly influence the overall outcome of the response. If the number of victims and the complexity of their injuries are low and resources are abundant, resource allocation will have little impact on the disaster outcome. However, if there is a high number of victims with complex injuries and available resources

are limited, how those resources are used will determine the outcome for some individuals. Historically, decisions regarding disaster resource allocation and triage have largely been in the domain of emergency medicine; however, Roccaforte and Cushman observe, “The pinnacle of the medical response to any disaster takes place in definitive care areas [DCA] (operating rooms, intensive care units). Thus, a critical component of disaster planning must be the preservation of DCA capability and effectiveness”. Given this, it is essential that critical care physicians understand and are skilled in resource management during surges in demand for critical care.

### Nature of Surges

A *critical care surge* refers to any increase in the number of critically ill or injured patients beyond the baseline rate a hospital or critical care unit usually experiences. Minor surges are a normal part of a hospital’s day-to-day pattern of activity. For example, it is not unusual to see the number of visits to the ED increase during long summer weekends. Such surges are typically small, in the range of 15% to 20% above usual capacity, and they are often predictable. Moderate surges, such as those due to seasonal influenza or summer heat waves, are known to occur regularly, but their exact timing is less predictable. Large surges, which are typically caused by disasters, tend to occur infrequently and with little or no advance warning. Such events may demand up to double the resources required for day-to-day activities. Finally, it may be helpful to distinguish between large surges and megasurges, such as those seen during influenza pandemics and following large-scale natural disasters (eg, tsunamis) and terrorist attacks. Megasurges may demand more than 200% of usual resources, which would overwhelm most healthcare systems. This chapter will primarily address large surges and megasurges.

The number of patients in a surge is only 1 factor that influences the impact of a surge. The types of illnesses and injuries patients present with as well as the timing of patients’ arrivals are also key factors. *Surge capacity* refers to the ability to respond to an increased number of patients, whereas *surge capability* is defined as the ability to address unusual or specialized medical needs of an increased number of patients. Thus, while a relatively small surge of patients with typical illnesses or injuries will not overwhelm a system, the same number of patients all requiring specialized services (eg, burn management) may overwhelm that same system. Further, as Aylwin illustrates well in his analysis of the response to the July 2005 bombings in London, although the absolute number of patients matters, even more important is



the time over which those patients present to the hospital. A hospital is less likely to be overwhelmed if a moderate number of patients present at an even rate over 8 or 12 hours than if the same number of patients present over 2 to 3 hours.

It is important to take all factors into consideration when planning how resources will be allocated during a surge. Those factors include the potential size of the surge, specialized resources that are likely to be required, and the anticipated rate of patient flow. If specific resources are likely to be depleted, it is crucial to begin implementing allocation processes early in the disaster to optimize resource availability.

## **Resource Management**

### **A. Resource Allocation**

Resource management strategies should reflect the relationship between the demand for resources and their supply. *Allocation* is a general term that refers to the assigning of resources for specific purposes. Allocation strategies vary greatly depending on whether resources are plentiful or scarce. During minor and moderate surges, when resources are typically adequate, strategies such as discharging patients early, cancelling elective operations and outpatient clinics help redirect resources to the surge event, thus mitigating resource shortfalls.

### **B. Resource Rationing**

The term *rationing* refers to the resource allocation strategies employed when supply will not meet demand. During sudden or large surges, emergency mass casualty critical care is a form of rationing that can improve resource utilization. In medicine, triage has evolved as a tool to address significant resource shortfalls.

## **IV. Principles of Triage**

Triage has 2 components: 1) sorting patients and prioritizing their care based on the severity of their illnesses and 2) rationing resources to optimize their availability and direct them to the patients who are most likely to benefit from them. The primary goal of triage, as originally used in mass casualty incidents, was to do the greatest good for the greatest number. However, triage has evolved over time. Today, triage is used to identify priorities for patient care in emergency departments and most surge situations in which resources are rarely limited. Triage is seldom used to ration care.

During a mass casualty incident, triage may occur at multiple points as patients progress from prehospital management to definitive care in operating rooms or ICUs. At the various points triage is usually classified as primary, secondary, or tertiary. Environment and safety, resource constraints, treatment options, and specificity of decisions vary considerably at each level.

### **A. Primary Triage**

Primary triage occurs in the field. It is often performed by paramedics and based on very simple criteria that can be rapidly assessed. If, for example, a patient requires intubation due to acute respiratory distress, in all likelihood providers will perform that procedure if the scene is safe, they have the time, there is no risk to the providers (ie, highly transmissible infection), and they

have accurate tools to determine if the patient will survive higher levels of care in the ED or ICU. Intubation and other procedures may also require related treatment, such as manual ventilation during transport.

## B. Secondary Triage

Secondary triage is typically performed by emergency physicians or surgeons immediately upon a patient's arrival at the hospital. They prioritize patients by assigning them to treatment areas for initial interventions. Efficient flow of critically injured or ill patients through this part of the system to definitive care is critical. Here treatment decisions may be more accurate than in the field, but they will remain limited until further information about the event or predicted outcomes can be ascertained. The goal is to provide critical initial ABC (airway, breathing, circulation) interventions rather than full resuscitation. After initial interventions, tertiary triage will assign patients to definitive care in surgery or intensive care, and only judiciously to radiology, for ongoing management

## C. Tertiary Triage

Tertiary triage should be conducted by surgeons or intensivists in keeping with the best practices for triage officers discussed later in this chapter. At each stage of the triage process accuracy can be increased by measuring physiologic parameters and introducing structured physical examination. This third stage of triage is of primary relevance to critical care physicians because the situation and the patients' characteristics call for definitive critical care management. In disasters where most injuries are not life threatening or where few critically injured patients survive long enough to present to the hospital there will be less need to conduct tertiary triage.

Using triage to ration resources should be done only when the system is overwhelmed and the resources are or will be insufficient to meet the demand. Critical care resources that may be depleted in a disaster include ventilators, medications, monitors, and trained personnel. Although the specific resources required vary with the nature of the disaster, some resources, such as ventilators, are key to the provision of critical care and lack a reasonable substitute. Further, it is important to remember that only a single pool of critical care resources exists to serve the needs of those directly affected by the disaster and all other patients with critical illnesses or injuries unrelated to the major incident.

## Common Types of Triage

**ED triage:** Used daily to prioritize patient assessment and treatment in the emergency department during routine functioning. Priority is given to those most in need. Resources are not rationed.

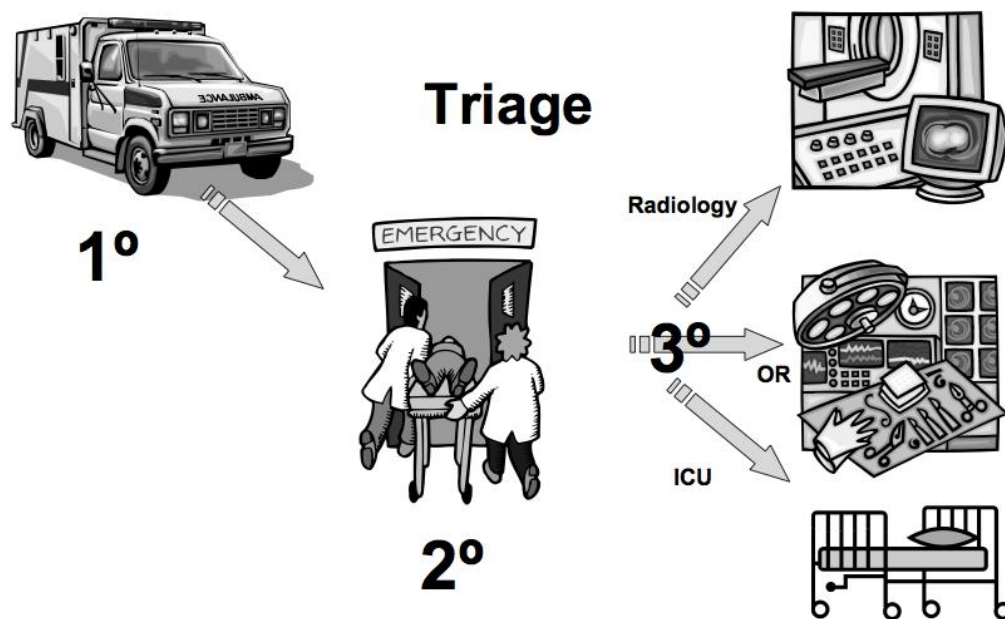
**Inpatient triage:** Applied day-to-day in a variety of medical settings, such as the ICU, medical imaging, surgery, and outpatient areas, to allocate scarce resources. Priority is given to those most in need based upon medical criteria. Resources are rarely rationed.

**Incident triage:** Used in multiple casualty incidents such as bus accidents, fires, or airline accidents to prioritize the evacuation and treatment of patients. These events place significant

stress on local resources but do not overwhelm them. Resources are rarely rationed, and most patients receive maximal treatment.

**Military triage:** Used on the battlefield, modern military triage protocols most reflect the original concept of triage and include many of the same principles. Resources are rationed when their supply is threatened.

**Disaster triage:** Used in mass casualty incidents that overwhelm local and regional healthcare systems. Disaster triage protocols both prioritize salvageable patients for treatment and ration resources to ensure the greatest good for the greatest number.

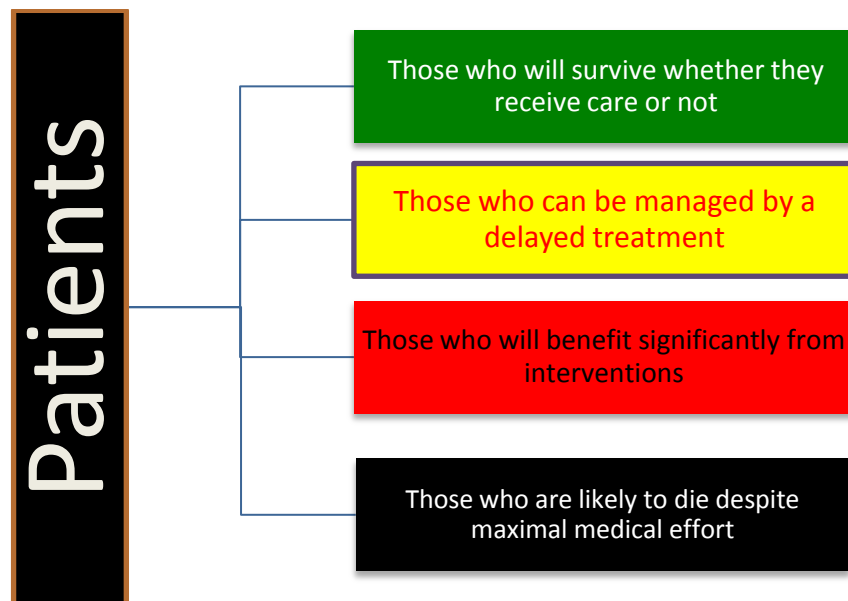


#### .D. Overtriage and Undertriage

Effective triage requires balance not only between the demands on the system and the supply of resources but also between overtriage and undertriage. Overtriage and undertriage are related to the accuracy with which patients are triaged. Undertriage occurs when the severity of a patient's illness or injury is not appropriately recognized, which results in delayed treatment that places the patient at risk of dying. Particularly in day-to-day situations, undertriage is minimized through the use of protocols that tend to overtriage patients to higher levels of care than they require.

Such protocols are not foolproof, however, because overtriage has been shown to decrease overall survival rates among critically ill or injured victims. Overtriage may increase mortality by depleting resources, fatiguing staff, and impairing efficient flow of critically ill or injured patients through the system to definitive care. The accuracy of triage depends on both the

reliability of the protocol in predicting patient outcomes and how the protocol is applied by the triage officers. Triage is a dynamic process that makes it more likely to correct inevitable instances of undertriage and overtriage.



#### Triage Protocols

- START (Simple Triage and Rapid Treatment)
- The Ontario Protocol / SOFA-Sequential Organ Failure Assessment
- Convergent triage
- Divergent triage
- 30-2-Can do

At present no ideal tertiary triage algorithm exists for use in critical care.

#### Systems and Processes of Triage

- Planning and preparation should be undertaken well before disaster strikes
- Triage protocol must be quickly activated
- Information about both the demand for and the supply of resources
- Legal protection
- Provision of palliative care and other alternatives for these patients.

#### Ethical Considerations

- Principle of Equal Chances: First Come, First Served
- Utilitarianism: The Greatest Good for the Greatest Number
- Egalitarianism: Those Most in Need Should Receive

## Key Points

- The ability of a healthcare system to respond to a surge is determined by such factors as the resources available, the number of patients, the time period over which those patients arrive, and the need for specialized services.
- Resource allocation strategies must take into account both supply and demand. When demand exceeds supply, scarcities will ensue and triage will be required to prioritize and ration resources.
- Triage is a dynamic process requiring protocol adjustments to ensure that rationing (infringement on individual liberties) does not exceed the expected or experienced shortfall between demand and supply.
- Triage is commonly used throughout the healthcare system to set priorities for patient care. Only in rare disaster circumstances does it form the basis for rationing resources.
- Disaster triage occurs at various points along the continuum of care and is classified accordingly as primary, secondary, or tertiary. Tertiary triage involves decisions related to allocating critical care resources.
- Standard tertiary triage protocols are lacking. Effective tertiary triage requires significant planning and an infrastructure that can support the process during a disaster.
- A strong ethical framework is necessary to guide the development and implementation of a triage protocol.

## 6. INCIDENT COMMAND SYSTEM

### Learning objectives:

At the end of the session, the participants should be able to:

1. Define the Incident Command System
2. Describe the command and Staff Functions
3. Describe the management principles and features of ICS
4. Explain the Incident Command Structure at different levels

Lecture / Presentation / Group Exercise

This Module briefly describes the principal features which constitute the Incident Command System. Collectively, these features identify the unique quality of the ICS as an incident or event management system.

Objectives: Describe and explain the use of:

- Primary management functions
- Management by Objectives
- Unity and Chain of Command
- Establishment and transfer of command
- Organizational flexibility
- Unified Command
- Span of control
- Common terminology
- Personnel accountability
- Integrated communications
- Resources management
- The Incident Action Plan

### The Features of ICS

The Incident Command System is a management system. The information that you acquire from this training module will help to sharpen your management skills, and better equip you to be fully effective incident or event managers.

The ICS has a number of attributes or system features.

Because of these features, ICS has the flexibility and adaptability to be applied to a wide variety of incidents and events both small and large.

It is these features working together which make ICS a real management system.

ICS is more than just an organizational chart. The organization is just one of ICS's major features.

In this module, twelve of the major features of the system will be briefly introduced.

### Primary ICS Management Functions

- Command
- Operations
- Logistics
- Planning
- Finance/Administration

The individual designated as the Incident Commander (IC) has responsibility for all functions. That person may elect to perform all functions, or delegate authority to perform functions to other people in the organization. Delegation does not, however, relieve the Incident Commander from overall responsibility.

The principal ICS management functions are:

### **Command**

The Incident Commander is responsible for all incident or event activity. Although other functions may be left unfilled, there will always be an Incident Commander.

### **Operations:**

The Operations Section is responsible for directing the tactical actions to meet incident objectives.

### **Planning:**

The Planning Section is responsible for the collection, evaluation, and display of incident information, maintaining status of resources, and preparing the Incident Action Plan and incident-related documentation.

### **Logistics:**

The Logistics Section is responsible for providing adequate services and support to meet all incident or event needs.

### **Finance/Administration:**

The Finance/Administration Section is responsible for keeping track of incident-related costs, personnel and equipment records, and administering procurement contracts associated with the incident or event.

Each of these functional areas can be expanded as needed into additional organizational units with further delegation of authority.

## **1. Management by Objectives**

Within ICS, Management by Objectives covers four essential steps. These steps take place on every incident regardless of size or complexity.

Understand agency policy and direction

Establish Incident objectives

Select appropriate strategy

Perform tactical direction (applying tactics appropriate to the strategy, assigning the right resources, and monitoring performance) A detailed discussion of these steps is included in Module C.

## **I. Unity and Chain of Command**

In ICS, Unity of Command means that every individual has a designated supervisor.

Chain of Command means that there is an orderly line of authority within the ranks of the organization with lower levels subordinate to, and connected to, higher levels.

In probably ninety-five percent of the incidents, the organizational structure for operations will consist of:

Command

Single Resources

However, as incidents expand the Chain of Command is established through an organizational structure which can consist of several layers as needed.

- Command
- Sections
- Branches
- Divisions/Groups
- Units
- Resources

## **II. Establishment and Transfer of Command**

Command at an incident is initially established by the highest ranking authority at the scene that has jurisdiction for the incident.

Transfer of Command at an incident may take place for the following reasons:

A more qualified person assumes command.

The incident situation changes over time to where a jurisdictional or agency change in command is legally required, or it makes good management sense to make a transfer of command.

Normal turnover of personnel on long or extended incidents.

### **Organizational Flexibility**

The ICS organization adheres to a "form follows function" philosophy. In other words, the organization at any given time should reflect only what is required to meet planned tactical objectives.

The size of the current organization and that of the next operational period is determined



through the incident action planning process.

A number of organizational elements may be activated in the various sections without activating sectional chiefs.

Each activated element must have a person in charge of it. In some cases a single supervisor may initially be in charge of more than one unit.

Elements which have been activated and are clearly no longer needed should be deactivated to decrease organizational size.

### **Unified Command**

Unified Command is an ICS management process which allows all agencies who have jurisdictional or functional responsibility for the incident to jointly develop a common set of incident objectives and strategies.

This is accomplished without losing or giving up agency authority, responsibility, or accountability.

Unified Command is an important feature of ICS. It allows agencies having a legitimate responsibility at an incident to be part of the Incident Command function.

Under Unified Command, the following always applies:

- The incident will function under a single, coordinated Incident Action Plan.
- One Operations Section Chief will have responsibility for implementing the Incident Action Plan.
- One Incident Command Post will be established.

### **Span of Control**

Span of control pertains to the number of individuals one supervisor can effectively manage. Maintaining an effective span of control is particularly important on incidents where safety and accountability have top priority.

In ICS, the span of control for any supervisor falls within a range of 3 to 7. If a supervisor has fewer than three people reporting, or more than seven, some adjustment to the organization should be considered.

The rule of thumb for span of control in ICS is one supervisor to five subordinates.

### **Common Terminology**

In the ICS, common terminology is applied to:

- Organizational elements
- Position titles
- Resources
- Facilities

**Organizational Elements:** There is a consistent pattern for designating each level of the organization (e.g., sections, branches, etc.).

**Position Titles:** Those charged with management or leadership responsibility in ICS are referred to by position title such as Officer, Chief, Director, Supervisor, etc. This is done to provide a way to place the most qualified personnel in organizational positions on multi-agency incidents without confusion caused by various multi-agency rank designations. It also provides a standardized method for ordering personnel to fill positions.

**Resources:** Common designations are assigned to various kinds of resources.

Many kinds of resources may also be classified by type, which will indicate their capabilities (e.g., types of helicopters, search and rescue teams, mobile kitchen units, etc.).

For example, in ICS a vehicle that is used in fire suppression is called an engine. Recognizing that there is a variety of engines, a type classification is given based on tank capacity, pumping capability, staffing, and other factors.

### **Personnel Accountability**

Several procedures within ICS ensure personnel accountability.

- Check-In: Mandatory for all personnel upon arrival at an incident.
- Unity of Command: Ensures everybody has only one supervisor.
- Resource Status Unit: Maintains status of all assigned resources.
- Division/Group Assignment Lists: Identifies resources with active assignments in the Operations Section.
- Unit Logs: A record of personnel assigned and major events in all ICS organizational elements.

### **Integrated Communications**

The ability to communicate within ICS is absolutely essential.

Communications can be looked at in at least three different ways.

- a) The "hardware" systems that transfer information.
- b) Planning for the use of all available communications frequencies and resources.
- c) The procedures and processes for transferring information.

Just as every incident requires an Incident Action Plan, every incident also needs a Communications Plan. Like the action plan, it can be very simple and stated orally, or it can be quite complex, and form a part of a written

### **Incident Action Plan**

Several communication networks may be established depending upon the size and complexity of the incident. These may include:

**Command Net:** Established to link supervisory personnel from Incident Commander down to and including division and group supervisors

**Tactical Nets:** Established in a variety of ways, e.g., by agency, department, geographical area, or function. Tactical nets may be established for each branch, or for divisions and groups, depending on hardware and frequency availability, and specific incident needs.

**Support Nets:** Established on larger incidents to handle logistics traffic and resource status changes.

**Ground-to-Air:** Established to coordinate ground-to-air traffic.

**Air-to-Air:** Assigned for coordination between aircraft assigned to an incident.

An awareness of available communications systems and frequencies, combined with an understanding of incident requirements, will enable the Communications Unit Leader to develop an effective Communications Plan for each operational period.

An essential part of an effective multi-agency incident management system is for all communications to be in clear text. That is, do not use radio codes.

## **Resources Management**

Resources assigned to an incident are managed in one of the following ways:

**Single Resources:** Single Resources include both personnel and their required equipment.

**Task Forces:** A Task Force is any combination of single resources within span of control guidelines. They are assembled for a particular tactical need, with common communications and a leader. Task Forces can be pre-determined or assembled at an incident from available single resources.

**Strike Teams:** A Strike Team is a combination of a designated number of the same kind and type of resources with common communications and a leader. The number of resources to be used in the team will be based on what is needed to perform the function. Span of control guidelines should apply. Strike Teams can be pre-determined or assembled at an incident from available single resources.

The use of Task Forces and Strike Teams:

- Maximizes effective use of resources
- Reduces span of control
- Reduces communications traffic

Tactical resources assigned to an incident will always be in one of three status conditions.

- Assigned: Resources performing an active assignment
- Available: Resources ready for deployment
- Out of Service: Resources not assigned or not available

## **The Incident Action Plan**

Every incident needs an action plan.

The purpose of the plan is to provide all incident supervisory personnel with appropriate direction for future actions.

The plan may be oral or written.

Written plans should be used when it is essential that all levels of a growing organization have a clear understanding of the tactical actions associated with the next operational period. It is important to use written action plans whenever:

Two or more jurisdictions are involved.

The incident will overlap major changes in personnel changes or go into a new operational period.

There is a partial or full activation of the ICS organization.

In ICS, an Incident Briefing Form is used on smaller incidents to record initial actions and list assigned and available resources. As incidents grow in complexity and/or size ICS provides a format for a written action plan.

## 8. NETWORKING OF HOSPITALS

### Learning objectives:

- To understand about the importance of hospital networking.
- To understand about the proper ways of networking.
- To understand about the role of small hospitals.

### Introduction:

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. The health care facilities have to be networked for

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

### Importance of 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.
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.

**Levels of hospital networking-** Hospital networking can be done at various levels within the district as well as with intervening bigger hospitals where available. 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.

**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.

- **The Pre-disaster phase-** The primary aim of the district medical authorities during the pre-disaster phase would be to critically assess the available medical resources within the district and share them with other neighbouring 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.
- **The disaster phase-** The district medical authorities should play a leading role in medical treatment of victims once the disaster strikes. 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.

**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.

- 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 a part of pre-disaster planning.

b) **First Aid Posts**

**Objective:** Primary 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. 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 kilometres 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; these stores should to 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.

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 anaesthetic. It should also ideally have one fully trained nurse, one operation theatre assistant (OTA), two first aid assistants and a driver.

## **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, and Investigation Labs etc. which can be utilized in the time of mass casualty incidents.

**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.

## **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: 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 Part of a Regional Health Plan in Disasters: 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.

### **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 is discussed and the inadequacies are noted for future improvements.

### **Role of Small Hospital:**

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 centre 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 centres 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.

## 9. MANAGEMENT OF ICU IN CRISIS SITUATIONS

### Learning objectives:

- To understand the management of ICU in crisis situation
- To understand the role of triage in ICU.

### Introduction:

“The pinnacle of the medical response to any disaster takes place in definitive care areas [DCA] (operating rooms, intensive care units). Thus, a critical component of disaster planning must be the preservation of DCA capability and effectiveness”

-Roccaforte and Cushman

### Problem statement

- Excess critical care capacity for a disaster is extremely limited.
- Most critical care units routinely function at or near capacity
- Space and staffing issues
- Countless medical equipment and supplies are maintained in quantities sufficient only for daily operations
- Additional supplies and equipment may not be readily obtainable.
- Substitutes inadequate for prolonged care needed at times of disaster

### Ethical and operational goals

- Focus of medical care shifts from the needs of the individual (autonomy) to the needs of the community as a whole (distributive justice) so that the ‘greatest good for the greatest number’
- Weight is on objective prognostic criteria and less on subjective and individual patient factors
- Provide patients as much comfort and dignity as the situation allows regardless of other interventions available.
- Medical personnel should *not* apply subjective criteria in their decision-making
- Medical providers *must* be protected legally for making these difficult decisions. Under no circumstances should a health care facility be in a position of having to make systematic triage decisions without activation of state or national emergency health powers

### Allocation decision-making

- First goal of health care emergency preparedness planning is to augment the actual capacity and capabilities of the system
- Resource stockpiling,
- Staff cross-training,
- Altering staff responsibilities
- Documentation requirements
- Mobilization of available health care and non-health care personnel
- External workforce augmentation
- Make the system ‘fault-tolerant’ or to ‘bend’ rather than ‘break’

- Minimum adaptive changes necessary, with an emphasis on administrative changes (for example, limiting documentation and having non-clinical staff serve meals) rather than clinical changes (for example, triaging persons away from the emergency department and allocating limited ventilators), and to reverse the adaptations as soon as adequate resources become available
- Degree of adaptation or resource triage
- A clinical care committee or similar group must review the facility resources and community needs and determine what services will be offered, how and where these services will be provided, and by what process triage decisions will be made should that become necessary.

### **Clinical care committee sample membership**

- Administrator or designee
- Medical director
- Infection control
- Infectious disease
- Critical care
- Emergency medicine
- Pediatrics
- Nursing supervisor
- Respiratory care supervisor
- Hospital ethicist (if possible)
- Legal counsel
- Community representative (if possible, similar to Institutional Review Board role)
- Other (may include lab, radiology, bioelectronics, and pharmacy)

### **Fault-tolerant systems**

- To continue operating properly in the event of the failure of some of its components. If its operating quality decreases at all, the decrease is proportional to the severity of the failure, as compared to a naively designed system in which even a small failure can cause total breakdown.
- Engineered system failure – Similar to a circuit breaker, this allows system components to fail in order to prevent catastrophic damage to the system as a whole. An example might be a hospital switchboard that gives preference to internal hospital calls (rather than to calls from external sources) to preserve internal communications during an emergency.
- Redundancy – Having adequate duplicate supplies or services available in case of failure (for example, extra intravenous pumps or ventilators).
- Diversity – Having many ways of providing the same service, but via different techniques (for example, triaging patients in multiple areas of the hospital: emergency department, lobby areas, and so on).

### **Allocation decision-making**

- Critical care staff should be aware of the process for decision-making when demand exceeds resources so that they are prepared to act, rather than spend valuable time reacting to a completely new health care paradigm.

### **Decision support tools**

- Difficult process from both a clinical and a psychological perspective
- No perfect/ near perfect models
- Ideal model/ criterion
  - Graphically clean,
  - Easy to apply
  - Objective,
  - Accurate,
  - Reproducible,
  - Predictive of resource use and outcome
  - Would not discriminate against vulnerable populations.
- Key areas that should be evaluated when considering a patient for critical care services:
- Organ system function (and severity of impairment)
- Duration of ventilator use and duration of benefit related to
- Disease-specific predictors (for example, pandemic influenza)
- Underlying disease (for example, severe chronic obstructive pulmonary disease)
- Response to a trial of mechanical ventilation (if received based on above factors)
- SOFA
- Difference in prognosis/demand/duration likewise should be clear-cut for ventilator reassignment to occur; otherwise, 'first-come, first-served' applies.

	Ventilator reallocated		Patient keeps ventilator
1. Organ system function	High potential for death according to predictive model	Intermediate potential for death according to predictive model	Low potential for death according to predictive model
2. Duration of benefit/ prognosis	a. Poor prognosis based on epidemiology of specific disease/injury (for example, pandemic influenza) b. Severe underlying disease with poor short- term prognosis	a. Indeterminate/intermediate prognosis based on epidemiology of specific disease/injury b. Severe underlying disease with poor long-term prognosis and/or ongoing resource demand (for example, home oxygen-dependent, dialysis- dependent)	a. Good prognosis based on epidemiology of specific disease/injury b. No severe underlying disease
3. Duration of need	Long duration – for example, acute respiratory distress syndrome, particularly in setting of pre-existing lung disease (estimate more than 7 days on ventilator)	Moderate duration – for example, pneumonia in healthy patient (estimate 3 to 7 days on ventilator)	Short duration – flash pulmonary edema, chest trauma, other conditions anticipating less than 3 days on ventilator
4. Response to mechanical ventilation	Worsening ventilatory parameters over time	Stable ventilatory parameters over time (judged by clinician as failure to improve after adequate trial of mechanical ventilation based on disease process)	Improving ventilatory parameters

## 10. FIRE SAFETY MANAGEMENT IN HOSPITALS

### Learning objectives:

- To understand about the fire safety guidelines.
- To understand about the evacuation process.
- To understand about how to overcome exit strategies.

### Introduction:

Safety management is a very important aspect of planning in every form of infrastructure. Safety management as a whole include aspects of not only fire safety, but also security measures in terms of safety from other unsafe encounters like thefts, pilferages, extortion, riots, natural calamities, etc. safety measures should be so designed to ensure safety of all services renderers, service recipients, infrastructure (property, other fixed assets), etc. however let us focus on one major aspect of safety management and i.e. fire safety.

Fire can cause irreparable losses, particularly to any hospital. Hospitals are infrastructures with a high density of life in terms of patients, doctors, staff, etc. therefore utmost care needs to be taken and precautions followed to imbibe good safety measures and practices amongst planners, employees and healthcare workers in any hospital.

The hospital as an infrastructure has many heat dissipating equipments, combustible gasses/fuel, chemicals, a lot of electrical wiring, etc. that stand as prone to hazardous incidents, if proper precautions not taken while planning the infrastructure.

Adequate measures need to be considered, designed and practiced to ensure safety to all. Indicators like architectural designs, interior designs, electrical wiring, and appropriate equipment planning and proper waste management are considered while planning such safety measures.

### Architect & Layout Planner:

While planning the layout, care should be taken to design the building such that there is sufficient open space around the building to minimize fire spread possibilities from or to neighbouring structures. Also there should be enough space for movement and parking of fire fighting vehicles, ambulances, etc in the premises.

The design & construction of every building structure should incorporate features of prevention of fire & fire loss:

- Considering the type & density of occupancy, lobbies, staircases, aisles, etc should be sufficiently wide to ensure easy movement of traffic at all times and at the same time to permit easy and orderly evacuation during emergencies.
- The design of the building structure should be so planned that it allows pressurized exclusion of smoke in case of fire or any smoke leak.
- Adequate emergency rescue aids and suitable refuge area should be incorporated in the design. The critical areas should be well protected with such measures and extra precautionary measures should be implemented in such critical areas, for e.g.: use of fireproof doors.

- Ideally a heavy-duty elevator especially for use of fire fighting personnel only & used in case of emergency only should be incorporated.

In addition to the above the planner also needs to incorporate the following:

- The building should be so designed that it can resist damages due to earthquakes to a fair extent.
- Safe & easy means of access should be provided to and in every place of work /occupancy. This should enable access to all including the disabled to move easily.
- In case of an emergency safe and rapid egress should be provided for all occupants.
- The floor should be so designed that they are free from obstructions, slip-resistant & even. Openings in floors should be securely fenced or covered.
- Staircases, ramps & aisles should be provided with substantial handrails and other suitable support means to prevent slipping, wherever necessary.
- Easy access for the servicing and maintenance of plant, machinery and buildings should also be incorporated in a design.

The "National Building Code of India, 1980 issued by the Indian Standards Institution serves as an excellent references to safety management for infrastructures. The Tariff Advisory Committee of the General Insurance Industry & The Metropolitan City Government Authorities recognize fire hazards with large buildings and have developed rules and regulations for fire protection & fire fighting requirements in large buildings. Architects, layout planners, interior designers & construction authorities need to follow these rules and regulations diligently.

#### **Interior Designer & Electrical and Engineering (Plant & Machinery) Planner:**

The interior designer needs to keep in mind to incorporate the environment safety measures, the clean green ambience & comfort levels for the occupants of the infrastructure especially the patients here. Indicators like adequate natural light, fresh air and colour therapy need to be considered in such designs. The designs should be such that there is minimal use of combustible materials. The designs should use plenty of good quality fire retardant material for furnishing & decoration purposes. Appropriate waste management systems also need to be designed to prevent accidents due to hazardous waste.

#### **For electrical wiring designs and plant & machinery designs:**

- The electrical wiring could be enclosed in metal/ heavy gauge screwed conduits.
- The cable passing from one floor to the other should be suggestively sealed off effectively to minimize fire-spread possibilities.
- A master control switch for each floor should be located at the ground floor for easy switching off of systems in case of emergency.
- It is highly advisable to use individual air conditioning or space heating systems for each floor in large buildings. However in case of centralized systems that we generally use in hospital infrastructures; care should be taken to provide appropriate automatic fire dampers for each floor in the common ducting system.
- Proper cooling facilities to dissipate heat should be provided for overheated equipments/plants/machinery.

- Boilers, Plant rooms, Freezers, manholes and similar confined spaces should have effective means to ensure safe access & exits.
- All equipments should be bonded and earthed properly to dissipate the static charges to the earth.
- Incorporate totally enclosed switchgear systems/ miniature circuit breakers instead of ordinary fuses.
- Always an emergency power supply arrangements need to be designed & incorporated in case of total system switch-offs during emergency.
- Appropriate fire fighting equipments, fire detection, smoke & heat detection alarms should be incorporated in the design.
- The fire fighting equipments should be planned as per quality standards & norms.

### **Safety Practices:**

Finally after taking adequate precautionary measures in the conceptual & design stage itself there is a need to implement safety measures & protocols in the infrastructure:

- Prepare a guideline manual to be followed by all the staff for prevention & precautions against fire & related accidents.
- A manual stating actions/steps to be taken in case of emergencies should be effectively designed and followed stringently by all.
- The staff should be trained to handle such emergencies & chaotic situations.
- The organization should call for regular safety audits & drills so as to train the staff effectively.
- The fire audit survey should be conducted as per standard norms and the changes if any should be implemented diligently.
- Appropriate delegations of tasks should be implemented for safety management protocols.
- Preferably a head/supervisor should be designated to look into the safety measures of any infrastructure.

The above stated indicators & guidelines are only some of the vital tools & protocols considered for fire safety management. There are many more protective measures & safety norms to be implemented & practiced for proper safety management. For e.g.: Implementation of electrical wiring as per ISI standards, etc.

To conclude, safety for all is a responsibility of all. It is not only the staff of the hospital but also the occupants. However it becomes more important for the healthcare service renderers to follow all precautionary measures for effective safety management of self & the infrastructure, especially the patients. We have come across so many instances where in there have been casualties in terms of injuries & loss of life of patients in a hospital in the advent of fire & inadequate measures taken thereof or as a result of untimely help. Hence it is of high importance that the staffs are well trained and equipped with knowledge & preliminary equipments to handle such calamities. Further it becomes necessary for every planner to take all the precautions & consider all safety management protocols and incorporate them in the design of the infrastructure especially for a hospital infrastructure; where care, safety & well being of mankind is of utmost importance.

## Overcome Exit Strategies in Case of Fire:

Guidelines to overcome the strategies:

**Access level-** A level used for normal access to a building that either incorporates, or leads directly to, a place of safety.

**Accommodation stairway-** A stairway additional to that or those required for escape purposes, provided for the convenience of occupants.

**Alternative escape routes** - Escape routes sufficiently separated by either direction or space, or by fire-resisting construction, to ensure that one is still available should the other be affected by fire.

**Atrium** (plural atria) - A space within a building, not necessarily vertically aligned, passing through one or more structural floors (other than enclosed lift wells, enclosed escalator wells, building service ducts, and enclosed stairways which are not classified as atria).

**Bedroom** - A room within a dwelling, Residential (Institutional) or Other Residential building which is used as sleeping accommodation.

**Dead-end** - Area from which escape is possible in one direction only.

**Direct distance** - The shortest distance from any point within the floor area, measured within the external enclosures of the building, to the nearest storey exit, ignoring walls, partitions and fittings, other than the enclosing walls/partitions to protected stairways (2 /3rd permitted travel distance can be used for design purposes).

**Emergency lighting** - Lighting provided for use when the power supply to the normal lighting fails.

**Escape lighting** - That part of the emergency lighting which is provided to ensure that the escape route is illuminated at all material times.

**Escape route** - A route by which a person may reach a place of safety, and, in relation to any point in a building, a route from that point to a place of safety.

**Evacuation lift** - A lift that may be used for the evacuation of disabled people in a fire.

**Final exit** - The termination of an escape route from a building giving direct access to a street, passageway, walkway or open space, and sited to.

**Storey** - means any of the parts into which a building is divided horizontally above or below ground level but excluding any part of a building situated above the level of the roof or in the roof space, or below the level of the lowest floor, which is intended for the protection of a water tank, or lift motor room, or similar use and is not intended for, or adapted to be used for habitable purposes, or as a work room, or as a store room.

(a) any gallery in an assembly and recreation building; and

(b) any gallery in any other building if its area exceeds half of the space into which it projects.



**Storey exit** - A final exit, or a doorway opening into a protected stairway, fire fighting lobby or external escape route, or a doorway in a compartment wall that is common to two or more buildings (a separating wall).

**Travel distance** - (unless otherwise specified) the actual distance to be travelled by a person from any point within the floor area to the nearest storey exit, having regard to the layout of walls, partitions and fittings

## **11. COMMUNICATION AND MEDIA MANAGEMENT DURING EMERGENCIES**

### **Learning Objectives:**

- Components of communication during emergencies
- Media management and role of spoke person for liaison with media

### **Principals of effective media communication during emergencies:**

#### **Points to remember while dealing with media during disasters –**

##### **3-9-27 Template**

- While talking with media one should only convey a maximum of 3 short messages while are important.
- One message should be completed within 9 seconds ( a sound bite – best chance to get audience attention)
- The 3 message should cover an average of 27 words i.e. each message should cover an average of 9 words in length.

##### **Average Standard Level (ASL) – 4**

- The message should be conveyed in average standard level minus 4 i.e. if the average education level of the place is class 10 standard then deliver the message in class 6 standard (class 10 minus 4= class 6).
- In high stress situations, the human brain typically process information at Average Standard Level (ASL) minus 4.

##### **1 Negative = 3 Positive Template**

- In Low Stress situations 1 Negative statement can be equalized with 1 Positive statement.
- But, during disasters/ high stress situation if one delivers 1Negative statement/news it should be equalized with 3 positive statements/news.

#### **Listed below is a brief summary of the principles and techniques of effective media communication:**

This summary is based upon a review of the scientific and practitioner literature. These principles and techniques are covered in the seven steps. They are repeated and summarized here for the convenience of the reader. More information on each principle and technique can be found in the WHO handbook.

### **I. Principles and techniques**

## **1. Accept the media as a legitimate partner**

- Recognize that effective media communication in an emergency or crisis:
- Enables the media to play a constructive role in protecting the public's health;
- Enables public health officials to reach a wide range of stakeholders; and
- Enables public health officials, in cooperation with the media, to build trust, calm a nervous public, provide needed information, encourage cooperative behaviors, and save lives.
- Demonstrate respect for the media by keeping them well informed of decisions and actions.
- Establish good working relationships with media contacts before an emergency arises.
- Include journalists in public emergency response planning exercises.
- Be polite and courteous at all times, even if the reporter is not.
- Avoid embarrassing reporters.
- Provide information for on-site reporters on the location of electrical outlets, public telephones, rest rooms, hotels, restaurants and other amenities.
- Avoid being defensive or argumentative during interviews.
- Include elements in interviews that make a story interesting to the media, including examples, stories and other aspects that influence public perceptions of risk, concern and outrage.
- Use a wide range of media communication channels to engage and involve people.
- Adhere to the highest ethical standards – recognize that people hold you professionally and ethically accountable.
- Strive to inform editors and reporters of agency preparedness for a public health emergency.
- Offer to follow-up on questions that cannot be addressed immediately.
- Strive for “win-win” media outcomes.
- Involve the media in training exercises and preparedness drills.

## **2. Plan thoroughly and carefully for all media interactions**

- Assess the cultural diversity and socioeconomic level of the target populations.
- Assess internal media-relations capabilities.
- Recognize that all communication activities and materials should reflect the diverse nature of societies in a fair, representative and inclusive manner.
- Begin all communication planning efforts with clear and explicit goals – such as: informing and educating;
- Improving knowledge and understanding building, maintaining or restoring trust;
- Guiding and encouraging appropriate attitudes, decisions, actions and behaviours; and
- Encouraging dialogue, collaboration and cooperation.
- Develop a written communication plan.
- Develop a partner communication strategy.
- Establish coordination in situations involving multiple agencies.
- Identify important stakeholders and subgroups within the audience as targets for your messages.
- Prepare a limited number of key messages in advance of potential public health emergencies.

- Post the key messages and supporting information on your own well-publicized web site.
- Pre-test messages before using them during an interview.
- Respect diversity and multiculturalism while developing messages.
- Train key personnel – including technical staff – in basic, intermediate and advanced media communication skills.
- Practice media communication skills regularly.
- Never say anything “off-the-record” that you would not want to see quoted and attributed to you.
- Recruit media spokespersons who have effective presentation and personal interaction skills.
- Provide training for high-ranking government officials who play a major role in communication with the media.
- Provide well-developed talking points for those who play a leading role in communication with the media.
- Recognize and reward spokespersons who are successful in getting their key messages included in media stories.
- Anticipate questions and issues that might be raised during an interview.
- Train spokespersons in how to redirect an interview (or get it back on track) using bridging phrases such as “what is really important to know is...”.
- Agree with the reporter in advance on logistics and topic – for example, the length, location, and specific topic of the interview – but realize that the reporter may attempt to stray from the agreed topic.
- Make needed changes in strategy and messages based on monitoring activities, evaluation efforts and feedback.
- Work proactively to frame stories rather than waiting until others have defined the story and then reacting.
- Carefully evaluate media communication efforts and learn from mistakes.
- Share with others what you have learned from working with the media.

### **3. Meet the functional needs of the media**

- Assess the needs of the media.
- Be accessible to reporters.
- Respect their deadlines.
- Accept that news reports will simplify and abbreviate your messages.
- Devise a schedule to brief the media regularly during an emergency, even if updates are not “newsworthy” by their standards – open and regular communication helps to build trust and fill information voids.
- Refer journalists to your web site for further information.
- Share a limited number of key messages for media interviews.
- Repeat your key messages several times during news conferences and media interviews.
- Provide accurate, appropriate and useful information tailored to the needs of each type of media, such as sound bites, background videotape, and other visual materials for television.
- Provide background material for reporters on basic and complex issues on your web site and as part of media information packets and kits.

- Be careful when providing numbers to reporters – these can easily be misinterpreted or misunderstood.
- Stick to the agreed topic during the interview – do not digress.
- If you do not know the answer to a question, focus on what you do know, tell the reporter what actions you will take to get an answer, and follow up in a timely manner.
- If asked for information that is the responsibility of another individual or organization, refer the reporter to that individual or organization.
- Offer reporters the opportunity to do follow-up interviews with subject-matter experts.
- Strive for brevity, but respect the reporter's desire for information.
- Hold media availability sessions where partners in the response effort are available for questioning in one place at one time.
- Remember that it benefits the reporter and the agency when a story is accurate.
- Before an emergency occurs, meet with editors and with reporters who would cover the story.
- Work to establish durable relationships with reporters and editors.
- Promise only that which can be delivered, then follow through.

#### **4. Be candid and open with reporters**

- Be first to share bad news about an issue or your organization, but be sure to put it into context.
- If the answer to a question is unknown or uncertain, and if the reporter is not reporting in real time, express a willingness to get back to the reporter with a response by an agreed deadline.
- Be first and proactive in disclosing information about an emergency, emphasizing appropriate reservations about data and information reliability.
- Recognize that most journalists maintain a “healthy scepticism” of sources, and trust by the media is earned – do not ask to be trusted.
- Ask the reporter to restate a question if you do not understand it.
- Hold frequent media events to fill information voids.
- Do not minimize or exaggerate the level of risk.
- Acknowledge uncertainty.
- Be careful about comparing the risk of one event to another.
- Do not offer unreasonable reassurances (i.e. unwarranted by the available information).
- Make corrections quickly if errors are made or if the facts change.
- Discuss data and information uncertainties, strengths and weaknesses – including those identified by other credible sources.
- Cite ranges of risk estimates when appropriate.
- Support your messages with case studies and data.
- If credible authorities disagree on the best course of action, be prepared to disclose the rationale for those disagreements, and why your agency has decided to take one particular course of action over another.
- Be especially careful when asked to speculate or answer extreme or baseless “what if” questions, especially on worst-case scenarios.
- Avoid speaking in absolutes.
- Tell the truth.

#### **5. Listen to the target audience**

- Do not make assumptions about what viewers, listeners and readers know, think or want done about risks.
- If time and resources allow, prior to a media interview, review the available data and information on public perceptions, attitudes, opinions, beliefs and likely responses regarding an event or risk. Such information may have been obtained through interviews, facilitated discussion groups, information exchanges, expert availability sessions, public hearings, advisory group meetings, hotline call-in logs, and surveys.
- Monitor and analyse information about the event appearing in media outlets, including the internet.
- Identify with the target audience of the media interview, and present information in a format that aids understanding and helps people to act accordingly.
- During interviews and news conferences, acknowledge the validity of people's emotions and fears.
- Be empathetic.
- Target media channels that encourage listening, feedback, participation and dialogue.
- Recognize that competing agendas, symbolic meanings, and broader social, cultural, economic or political considerations often complicate the task of effective media communication.
- Recognize that although public health officials may speak in terms of controlling "morbidity and mortality" rates, more important issues for some audiences may be whether people are being treated fairly in terms of access to care and medical resources.

## **6. Coordinate, collaborate and act in partnership with other credible sources**

- Develop procedures for coordinating the activities of media spokespersons from multiple agencies and organizations.
- Establish links to the web sites of partner organizations.
- Recognize that every organization has its own culture and this culture impacts upon how and what it tries to communicate.
- To the extent possible, act in partnership with other organizations in preparing messages in advance of potential emergencies.
- Share and coordinate messages with partner organizations prior to media interviews or news conferences.
- Encourage partner organizations to repeat or echo the same key messages – such repetition and echoing by many voices helps to reinforce the key messages for target audiences.
- In situations involving multiple agencies, determine information clearance and approval procedures in advance when possible.
- Aim for consistency of key messages across agencies – if real differences in opinion do exist be inclined to disclose the areas of disagreement and explain why your agency is choosing one course of action over another.
- Develop a contingency plan for when partners cannot engage in consistent messaging – be prepared to make an extra effort to listen to their concerns, understand their point of view, negotiate differences, and apply pressure if required and appropriate.
- Devote effort and resources to building bridges, partnerships and alliances with other organizations (including potential or established critics) before an emergency occurs.

- Consult with internal and external partners to determine which organization should take the lead in responding to media enquiries, and document the agreements reached.
- Discuss ownership of specific topics or issues in advance to avoid one partner treading upon the perceived territory of another.
- Identify credible and authoritative sources of information that can be used to support messages in potential emergencies.
- Develop a plan for using information from other organizations in potential emergencies.
- Develop contact lists of external subject-matter experts able and willing to speak to the media on issues associated with potential emergencies.
- Cite as part of your message credible and authoritative sources that believe what you believe.
- Issue media communications together with, or through, individuals or organizations believed to be credible and trustworthy by the target audience.

## **7. Speak clearly and with compassion**

- Be aware that people want to know that you care before they care what you know.
- Use clear, non-technical language.
- Explain medical or technical terms in clear language when they are used.
- Use graphics or other pictorial material to clarify and strengthen messages.
- Respect the unique information needs of special and diverse audiences.
- Express genuine empathy when responding to questions about loss – acknowledge the tragedy of illness, injury or death.
- Personalize risk data by using stories, narratives, examples and anecdotes that make technical data easier to understand.
- Avoid distant, abstract and unfeeling language about harm, deaths, injuries and illnesses.
- Acknowledge and respond (in words, gestures and actions) to the emotions people express, such as anxiety, fear, worry, anger, outrage and helplessness.
- Acknowledge and respond to the distinctions people view as important in evaluating risks, such as perceived benefits, control, fairness, dread, whether the risk is natural or manmade, and effects on children.
- Be careful to use risk comparisons only to help put risks in perspective and context, and not to suggest that one risk is like another – avoid comparisons that trivialize the problem, that attempt to minimize anxiety, or that appear to be trying to settle the question of whether a risk is acceptable.
- Give people a sense of control by identifying specific actions they can take to protect themselves.
- Identify significant misinformation, being aware that repeating it may give it unwanted attention.
- Recognize that saying “no comment” without explanation or qualification is often perceived as guilt or hiding something – consider saying instead “I wish I could answer that. However...”
- Be sensitive to local norms, such as those relating to speech and dress.
- Always try to include in a media interview a discussion of actions under way by the agency, or actions that can be taken by the public.





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