

DISASTER MANAGEMENT

“Disaster means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or manmade causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area”

Types of disasters

Natural disaster	Geophysical	<ul style="list-style-type: none">● Earthquake● Volcano● Tsunami
	Hydrological	<ul style="list-style-type: none">● Flood● Landslides● Wave action
	Meteorological	<ul style="list-style-type: none">● Cyclone, storm, tornado, high wind● Cold wave● Extreme temperature, fog, frost, freeze, hail, heat- wave● Lightning, heavy rain● Sand-storm, dust-storm● <u>S</u>now, ice
	Climatological	<ul style="list-style-type: none">● Drought● Extreme hot/cold conditions● Forest wildfire

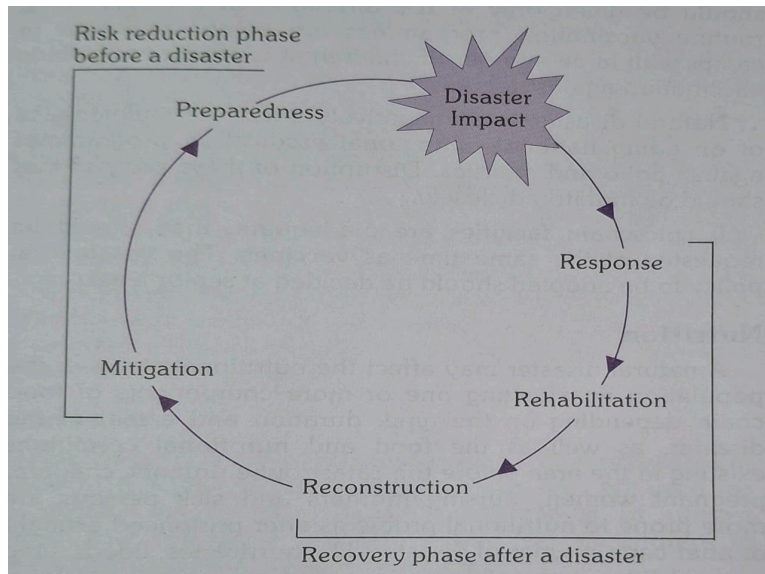
	Biological	<ul style="list-style-type: none"> ● Epidemics: viral, bacterial, parasitic, fungal or prion infections ● Insect infestations
Man made disaster	Caused by warfare	<ul style="list-style-type: none"> ● Conventional ● Nuclear ● Biological ● <u>C</u>hemical
	Caused by accidents	<ul style="list-style-type: none"> ● Vehicular- Air crafts, train, ship, four wheelers, two-wheeler ● Collapse of building ● Explosions ● Fires ● Chemicals including poisoning

Disaster Management

Three fundamental aspects

- Disaster response
- Disaster preparedness
- Disaster mitigation

Disaster cycle



I) Disaster impact and response

Search, rescue and first aid

- From organised relief services may not be sufficient so immediate help is received the from the uninjured survivors.

Field care

- Basic amenities like food, shelter should be provided.
- Health care resources are redirected to provide care to injured.
- Helpline centre should be established to respond to patient's relatives and friends.
- Priority should be victim's identification and adequate mortuary space.

Triage

- The injured survivors are classified depending upon the severity of injuries and chances of survival with medical supervision.
- The categories are red, yellow, green and black.

Tagging

- The patients are identified with the tags which provide the information such as name, age, contact address, triage category diagnosis and initial treatment given.

II)Relief phase

- Measures are taken to prevent the occurrence of epidemics.
- Arrangements are made to provide food, blankets, clothes, shelter, drug, sanitary equipment and construction material.
- The principal components in managing humanitarian supplies are acquisition of supplies, transportation, storage and distribution.

Vaccination

- Due to public and political pressure mass vaccination against typhoid, cholera and tetanus were usually done.
- Mass vaccination is not recommended in disaster because sterilisation technique, cold chain maintenance and supervision may not be adequate.
- If tetanus immunization was received more than 5 years ago in a patient who has sustained an open wound, a tetanus toxoid booster is an effective preventive measure. In previously unimmunized injured patients, tetanus toxoid should be given only at the discretion of a physician

III)Rehabilitation and Reconstruction

Following services are restructured and reorganized

- Water supply: A survey of all public water supplies should be made. The water should be chlorinated with residual chlorine of 0.2-0.5 mg/L.
- Food supply: Food borne outbreak can be prevented by kitchen sanitation, food hygiene and personal hygiene practices.
- Sanitation: Sanitary disposal of excreta, emergency latrine and toilet facilities. Washing, cleaning and bathing facilities be provided.

- Vector control: Environmental measures to control the breeding of mosquitoes should be taken. Insecticidal spraying should be carried out.

IV) Disaster Mitigation

- Measures to lessen the likely effects of emergencies, thereby reducing the rehabilitation and reconstruction cost.
- These include flood mitigation works, appropriate land use planning, improve building codes and protection of vulnerable population and structures.

For example,

- Improving the structural qualities of schools, houses and such other buildings
- Ensuring the safety of health facilities and public health services including water supply and sewerage system

This mitigation complements the disaster preparedness and disaster response activities

V) Disaster preparedness

- A programme of long-term developmental activities whose goal are to strengthen the capacity and capability of a country to manage effectively all types of emergencies.
- The country should provide assistance to the victims and bring back life to normal. Preparedness is in form of money, manpower and material.

Measures for disaster preparedness

Community preparedness is a vital step in disaster management

- Community members have the most to gain from emergency preparedness

- When transport and communication is affected, it is the local community that can respond immediately.
- Every community has the resources and the capabilities; and these resources should be maximised.
- Community is allowed to design, manage, implement assistance of programmes.

A disaster management unit should

- Evaluate the risk of the country or particular region to disaster;
- Adopt standards and regulations;
- Organize communication, information and warning systems;
- Ensure coordination and response mechanisms;
- Adopt measures to ensure that financial and other resources like food, drugs and other essential commodities.
- Develop public education programmes;
- Coordinate information with news media;
- Maintain national and international relationships

Triage in disaster management

To classify the injured depending on the severity of injuries and chance of survival with medical supervision. This is called as 'triage approach'.

Triage approach system consists of colour coding of the victims carried out at the site.

- Priority I: **Red colour** - This group consist of critically ill patient/high priority who need immediate medical attention/surgical treatment within 6 hours.
- Priority II: **Yellow colour** This group consists of moderately ill/medium priority requiring medical attention within 24 hours.

- Priority III: **Green colour** - This group consists of ambulatory patient of minimum risk who can be provided first aid and treated on ambulatory basis.
- Priority IV: **Black colour** This group consists of dead and moribund patients.

Triage is to be done

- At the site of disaster, so patient's priority for transportation to the hospital is determined.
- At the hospital the patients are again prioritized for medical care.

FLOODS [UQ]

What to do before-hand

- Individuals should find out about risks in the area where they live.
- For example, people who live in areas downstream from a dam should know the special signals (such as foghorns) used when a dam threatens to break.
- Small floods can be foreseen by watching the water level after heavy rains and regularly listening to the weather forecasts.

During a flood

- Turn off the electricity.
- Protect people and property: Move vulnerable people (children, the old, the sick, and the disabled) and personal belongings to an upper floor or raised shelter provided.
- Beware of water contamination, it is vital to use some means of purification.
- Evacuate danger zones as ordered by the local authorities and also recommend families to take emergency supplies, they have prepared.

After a flood

- People do not return home until told to do so by the local authorities,
- Wait until the water is declared safe before drinking.
- Clean and disinfect any room that has been flooded;
- Get rid of any food that has been in or near the water including canned food and any food kept in refrigerator
- Sterilize or wash with boiling water all dishes and kitchen utensils;
- Get rid of all consumables (drinks, medicines, cosmetics etc.)

EARTHQUAKES

What to do before hand

- Build in accordance with urban planning regulations for risk areas.
- Ensure that all electrical and gas appliances in houses, together with all pipes connected to them, are firmly fixed.
- Avoid storing heavy objects and materials in high positions.
- Hold family evacuation
- Prepare a family emergency kit.

During an earthquake

- Keep calm, do no panic.
- People who are indoors should stay there but move to the central part of the building.
- Keep away from the stairs, which might collapse suddenly.
- People who are outside should stay there, keeping away from buildings and electric cables.
- Anyone in a vehicle should park it, keeping away from bridges and buildings.

After an earthquake [UQ]

- Obey the authorities' instructions.
- Do not go back into damaged buildings since tremors may start again at any moment.

- Give first-aid to the injured and alert the emergency services in case of fire, burst pipes, etc.
- Do not go simply to look at the stricken areas: this will hamper rescue work.
- Keep emergency packages and a radio near at hand.
- Make sure that water is safe to drink and food stored at home is fit to eat.

ESSAY [META + TEXT]

You are posted as the medical officer of a PHC in a flood prone area of central Kerala. Following heavy rain fall, it was decided to shift families to the camps organized in the area.

- a) What are the issues that can occur in the camps.
- b) What measures will you take to tackle those issues.
- c) What are the medical relief operations you would organize in the area to mitigate the problem.

Issues that can occur in the camps:

- **Water-borne diseases:** Disruption and contamination of water can lead to outbreaks of diseases like cholera, diarrhoea, and typhoid fever.
- **Vector-borne diseases:** Stagnant water can breed mosquitoes, increasing the risk of diseases like malaria, dengue fever, and chikungunya.
- **Acute Respiratory infections:** Overcrowding and poor ventilation can lead to the spread of respiratory infections like pneumonia and influenza.
- **Food-borne illnesses:** poor hygiene, poor kitchen sanitation and improper food handling and storage can lead to food-borne illnesses like gastroenteritis and food poisoning.

- **Zoonotic infections:** Due to displacement of domestic and wild animals can cause leptospirosis, rickettsiosis usually following large floods.
- **Skin infections:** Poor sanitation and hygiene can lead to skin infections like scabies and fungal infections.
- **Mental health issues:** The trauma of displacement and loss of property can lead to mental health issues like anxiety, depression, and post-traumatic stress disorder (PTSD).
- Provision of emergency food, water and shelter from new source may itself a source of infectious disease.

Measures to tackle those issues:

- Provide safe drinking water: Ensure access to clean and safe drinking water through water purification systems or distribution of bottled water.
- Vector control measures: Implement measures to control mosquito breeding, such as distributing bed nets, using insecticides, and eliminating standing water.
- Crowd control and ventilation: Ensure adequate ventilation and crowd control measures to prevent the spread of respiratory infections.
- Food supply: Food borne outbreak can be prevented by kitchen sanitation, food hygiene and personal hygiene practices.
- Veterinary services to evaluate zoonotic conditions.
- Improve sanitation and hygiene: Sanitary disposal of excreta, emergency latrine and toilet facilities. Washing, cleaning and bathing facilities be provided.
- Medical screening and treatment: Provide medical screening and treatment for skin infections, respiratory infections, and other health issues.
- Mental health support: Provide mental health support and counselling services to address trauma and stress.

Medical relief operations

- Establish medical camps

- Deploy medical teams including doctors, nurses, and paramedics, to provide medical care and support.
- Provide essential medicines including antibiotics, antivirals, and painkillers.
- Conduct medical screenings for hypertension, diabetes, and respiratory infections.
- Provide vaccination services to prevent outbreaks of vaccine-preventable diseases.
- Establish referral systems
- Coordinate with other agencies such as the Red Cross and non-governmental organizations (NGOs) etc.

Natural disaster	Man made disaster
Caused by natural phenomena	Caused by human activities
Often unpredictable and uncontrollable	Often predictable and preventable
Often caused by extreme weather conditions	Usually caused by human error, negligence or intentional
No liability involved	Often involve liability
Require more focus on preparedness, response and recovery	Often prevented or mitigated with proper safety measures
e.g. flood, earthquake, landslides, tsunamis etc.	Transportation accidents, industrial accidents, explosions, fires etc.