Book 17

PUBLIC HEALTH RESOURCE NETWORK

PHRN

PUBLIC HEALTH MANAGEMENT OF DISASTERS

NATIONAL RURAL HEALTH MISSION
राष्ट्रीय ग्रामीण स्वास्थ्य मिशन
(2005-2012)

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ICICI Foundation for Inclusive Growth

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The Public Health Resource Society (PHRS) is the core group that has initiated, facilitated and managed the Public Health Resource Network (PHRN).

Contents

Public Health Resource Network

Preface

Public Health Resource Network

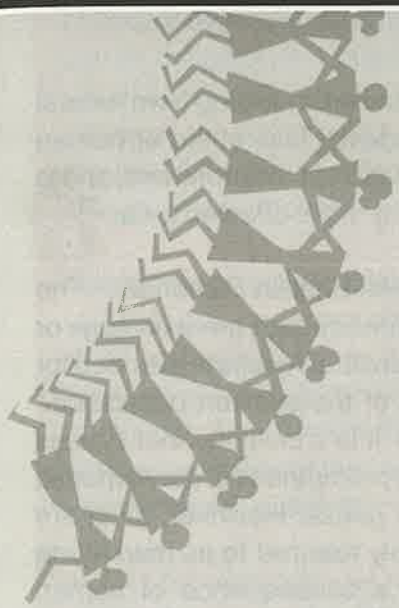
Public Health Resource Network (PHRN) aims to provide support to public health practitioners working in the districts in all aspects of district health planning and public health management. The central element of this initiative is a capacity building effort structured as a distance learning programme. This distance learning programme is not a substitute to formal professional public health training and it does not carry with it any guarantees of increased employment or career options. It is meant to support individuals and organizations both within and outside the health department who are committed to working for a more equitable and effective public health system. This programme complements official training and education programmes through an open-ended, more informal and immediate reaching out with information, tools and a diversity of programme options and perspectives.

The Health Mission needs a combination of dedication and professionalism, where being a professional is not one more form of privilege- but a competence that anyone willing to put in the time and effort - and a little expense- can acquire!! Thus the contact programmes at district, regional and state level would evolve into mechanisms of sharing of resources, and building mutual solidarity amongst those who work for change. The immediate context is the National Rural Health Mission. But hopefully the voluntary network that emerges will contribute over the years to the evolution of a network of district and block level resource groups who provide technical support to all efforts at decentralized planning and decentralized governance and to all societal efforts towards an equitable and just society.

This book, the seventeenth in the series, deals with a highly specialized issue - that of disaster management, with focus on the public health issues that emerge from disasters. Since the issue is specialized beyond the domain of the health sciences alone, we have depended heavily upon the work done by other organizations on disaster management and the resources made available by them. However, what we hope will emerge strongly from this module, is the understanding that the management of health issues in a context of disaster requires an overall and basic strengthening of health systems, especially at District level.

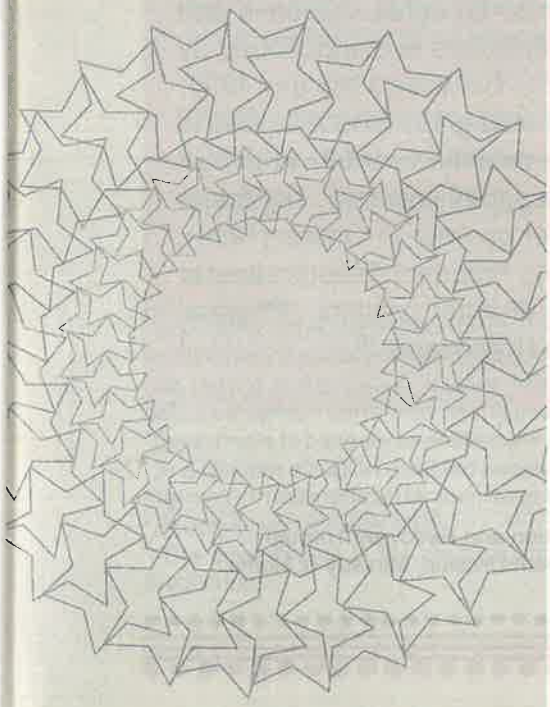
Lesson ONE

Understanding Disaster[1]



In this lesson we shall discuss:

- What a disaster is
- Types of disaster
- Some terms and concepts used in dealing with disasters
- Existing government framework for dealing with disasters



[1] "A Compendium On Disaster Risk Management India's Perspective: A Primer For Legislators" GoI- UNDP Disaster Risk Management Programme 2002-2007 has been mainly referred for this lesson

DEFINITION OF DISASTER

The Disaster Management Act of 2005, which lays down institutional mechanism for Disaster Mechanism, defines disaster as:

"Disaster" means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man made 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 nature or magnitude to be beyond the coping capacity of the community of the affected area.

Disaster is defined as "a calamity, sudden or great misfortune" by the Collins English Dictionary. The Oxford Advanced dictionary defines it as "a sudden accident or natural event that causes great damage or loss of life". In public health terms disaster can be defined as a destructive event that results in the need for a wide range of emergency responses to assist and ensure the survival of the stricken population.[2] Disaster by definition has elements that require public health intervention – it is a calamity that causes damage or loss of life. The reduction or mitigation of it depends entirely on the promptness of the response to it. Disasters can be categorised into various types based on the origin/ cause. However, most are grouped under Natural Disasters and Human- Induced Disasters (commonly referred to as man made disasters). It is argued that most so-called natural disasters are also a consequence of human intervention. It is also argued that disasters can not be termed 'natural' as it is the human involvement that makes disaster. For example, earthquakes, by themselves do not kill, it is the secondary events triggered by earthquakes such as tsunamis or collapse of buildings that affect human lives and are hence termed a disaster.

"The Indian sub continent is highly prone to natural disasters. Floods, droughts, cyclones and earthquakes are a recurrent phenomenon in India. Susceptibility to disasters is compounded by frequent occurrences of manmade disasters such as fire, epidemics etc. Between 1988 and 1997, disasters killed 5,116 people and affected 24.79 million every year. The changing topography due to environmental degradation has also increased the vulnerability of the country. In 1988, 11.2 % of total land area was flood prone, but in 1998 floods inundated 37 % geographical area. The major disasters that India has experienced in the recent past are the Super cyclone in Orissa (1999), Earthquake in Gujarat (2001) and Tsunami in the Southern Coast (2004). Frequent disasters lead to erosion of development gains and restricted options for the disaster victims. Physical safety—especially that of the vulnerable groups—is routinely threatened by hazards."[3]

[2] http://www.medind.nic.in

[3] Disaster Risk Management Programme [2002-07]: Community Based Disaster Reduction and Recovery Through Participation of Communities and Local Self Governments, National Disaster Management Division, Ministry of Home Affairs, GOI and UNDP.

Disasters impede development and consume resources marked for growth and welfare. The budget earmarked for Relief and Rehabilitation programmes of the Government is about 2 % of our GDP. This amount is also not just for current disasters or disaster preparedness but rather for rehabilitation of people displaced by development projects. Disasters need not only be managed but also its effect can be mitigated by planning that is inclusive of prevention, preparedness, response and mitigation activities. Prevention and Preparedness is the main strategy to reduce the risk of disasters. Certain practices of humans are known to engender the environment and responsible nations which regulate its industries also go a long way in preventing disasters. Such actions also form a part of Disaster Preparedness.

Some disasters like cyclone, floods and droughts can be fairly predicted. With the usage of various technologies for forecasting disasters it is now easy to predict disasters and disaster prone areas. Such technologies and the information that it provides should be consulted in the warning and formulation of disaster preparedness plans for disaster prone states (Disaster management is deemed to be a 'state subject'). The formulation of disaster preparedness plans that is inclusive of different sections of the society with emphasis on vulnerable population will be discussed in detail in Lesson 4 and Lesson 5.

It is to be remembered here that recognising vulnerabilities and capacities of disaster-affected populations is crucial. While it is important to acknowledge the various vulnerabilities, needs and capacities of different groups it is also to be kept in mind not to see them as helpless victims. Specific factors like gender, age, disability and HIV/AIDS status need to be looked into as it furthermore affect vulnerability and outline people's ability to cope and survive in a disaster context. Some population may suffer from specific disadvantages in coping with a disaster and may face physical, cultural and social barriers in accessing the services and support to which they are entitled. Specific disaster situations may render people of certain ethnic origin, religious or political affiliation, at risk who otherwise might not be considered vulnerable.

Drawing from the above certain cross cutting issues viz. age – children[4] and older people[5], gender[6], disability[7], PLWH/A[8] and also environment[9] have been recognised. While the book has concentrated mainly on management of natural disasters it can be pointed out that amongst the man made

[4] According to the Convention on the Rights of the Child, a child is considered to be an individual below the age of 18. Depending on cultural and social contexts, however, a child may be defined differently amongst some population groups.

[5] According to the United Nations older women and men are those aged over 60. Cultural and social factors mean that this definition varies from one context to another.

[6] Everyone is to have same entitlements to humanitarian assistance – women, men, girls, boys or sexual minorities

[7] In a disaster situation disabled people are people who have physical, sensory or emotional impairments or learning difficulties that make it more difficult for them to use standard disaster support services – are particularly vulnerable.

[8] People living with HIV/ AIDS

[9] The environment is the physical, chemical and biological surroundings in which local communities live and develop their livelihoods.

disasters currently faced by populations armed conflict has claimed an escalating casualty. Protection is crucial in situations of armed conflict as humanitarian agencies are frequently faced with situations where the act of a person or group threatens the security of people and communities or specific ethnicities. It is of paramount importance to protect people against such forms of direct threat to well-being, or to their means of survival, or to their safety. Here, the humanitarian concern is to protect people against such threats. In this context it is also important to make a distinction between combatants and non-combatants[10]. Non-combatants[11] are protected and are entitled to immunity from attack under the 1949 Geneva Conventions and their Additional Protocols of 1977.

UNDERSTANDING SOME TERMS

Disasters result from the combination of **hazards,** conditions of **vulnerability** and insufficient capacity or measures to reduce the potential negative consequence of risk.[12]

The above statement uses some crucial elements of disasters, hazards, vulnerability and capacity. Let us understand some of the terms that will come up time and again in the text.

Hazard is a dangerous condition or event that threatens or has the potential for causing injury to life or damage to property or the environment.

Vulnerability is the condition determined by physical, social, economic and environmental factors or processes which increase the susceptibility of a community to the impact of hazards.[13]

Capacity in the context of disaster management is the combination of all the strengths and resources available within a given community, society or organisation that can reduce the level of risk arising out of disasters

Disaster Management is a general term covering the entire range of activities designed to maintain control over disasters/ emergency situations and to provide a framework for helping people to avoid, reduce the effects of, or recover from impact of a disaster.

The Disaster Management Act of 2005 defines "disaster management" as a "continuous and integrated process of planning, organising, coordinating and implementing measures which are necessary or

[10] People actively engaged in hostilities
[11] People not engaged with hostilities (civilians and others including the sick, wounded and prisoners) who play no direct part in the hostilities but living in the situation of conflict.
[12] Living with risk, UN ISDR 2002
[13] ibid

expedient for-

(i) prevention of danger or threat of any disaster;

(ii) mitigation or reduction of risk of any disaster or its severity or consequences;

(iii) capacity-building;

(iv) preparedness to deal with any disaster;

(v) prompt response to any threatening disaster situation or disaster;

(vi) assessing the severity or magnitude of effects of any disaster;

(vii) evacuation, rescue and relief;

(viii) rehabilitation and reconstruction."

Disaster Risk is the probability of harmful consequences, or expected loss of lives, people injured, property, livelihoods, economic activity disrupted and environment damaged resulting from interactions between natural or human induced hazards and vulnerable conditions.[14]

Disaster Risk Management is the systematic management of administrative decisions, organisation, operational skills and abilities to implement policies, strategies and coping capacities of the society or individuals to lesson the impact of natural and related environmental and technological hazards.[15]

Disaster Risk Reduction is the systematic development and application of policies, strategies and practices to minimise vulnerabilities, hazards and the unfolding of disaster impacts throughout the society, in the broad context of sustainable development.[16]

EPIDEMIOLOGICAL STUDY OF DISASTERS
(Refer to Lesson 2)

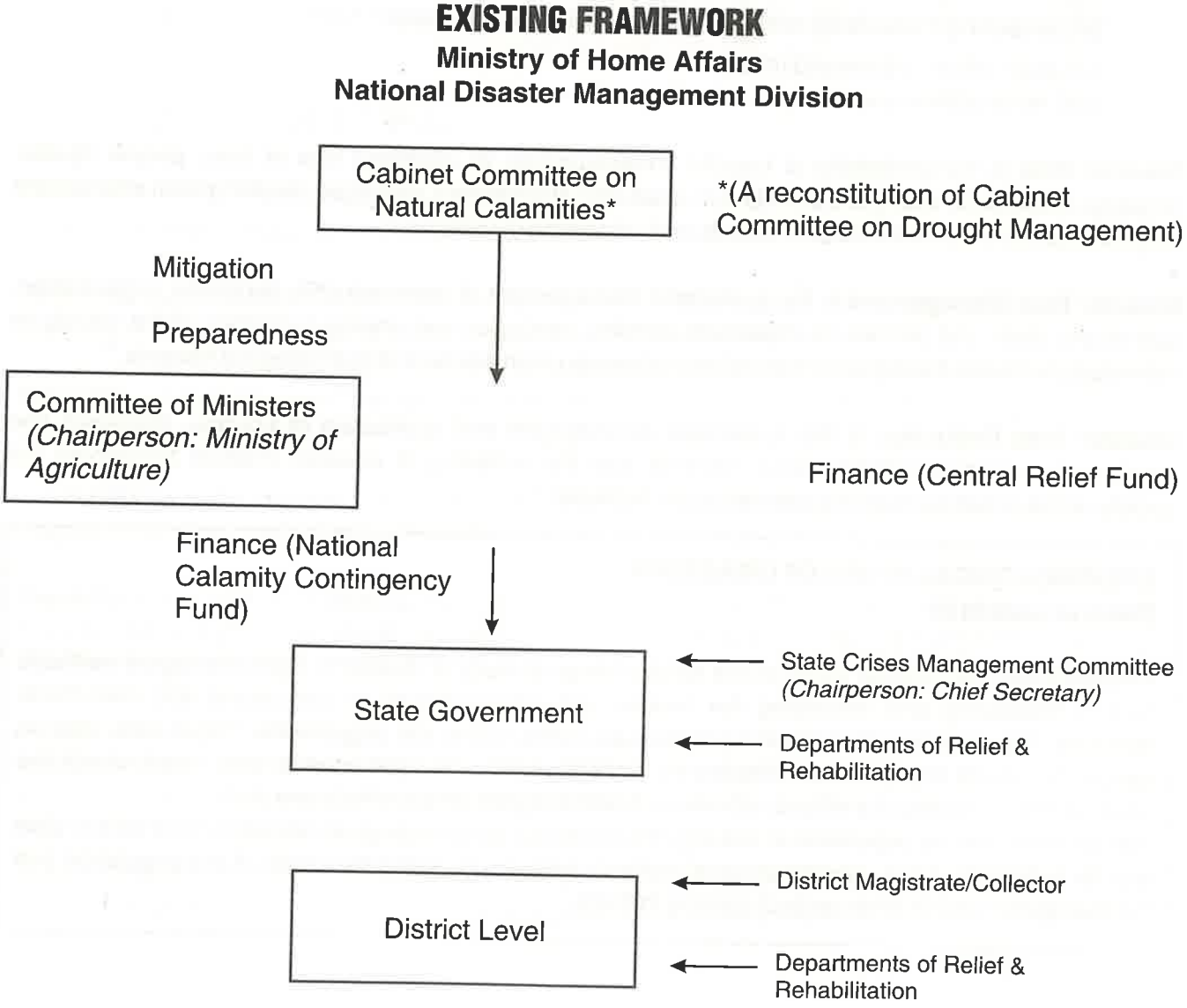
Preparedness plan should focus on the epidemiological study of disasters. Epidemiological methods help in measuring and describing the causes and consequences of the natural and man-made disasters. The common tools for this purpose are rates, ratios and proportions. These tools help us gauge the needs of population affected by disaster, relate the resources to their need, check the adverse effects, review the efficacy of various health programmes and help one plan.

We need to know the population at risk in terms of various epidemiological indicators to be able to plan well for a disaster. Thus, epidemiological methods help in assessing the health of the population and the distribution and determinants of disease in them.

[14] UNDP, 2004
[15] ibid
[16] ibid

EXISTING FRAMEWORK FOR DISASTER MANAGEMENT IN INDIA

Disaster management in India occupies an important place in this country's policy framework. The government has made institutional as well as policy framework for Disaster Management. The Existing Framework is diagrammatically shown as under.



Source: Adapted from Government of India report, *Disaster Management in India,* Ministry of Home Affairs

Convergence

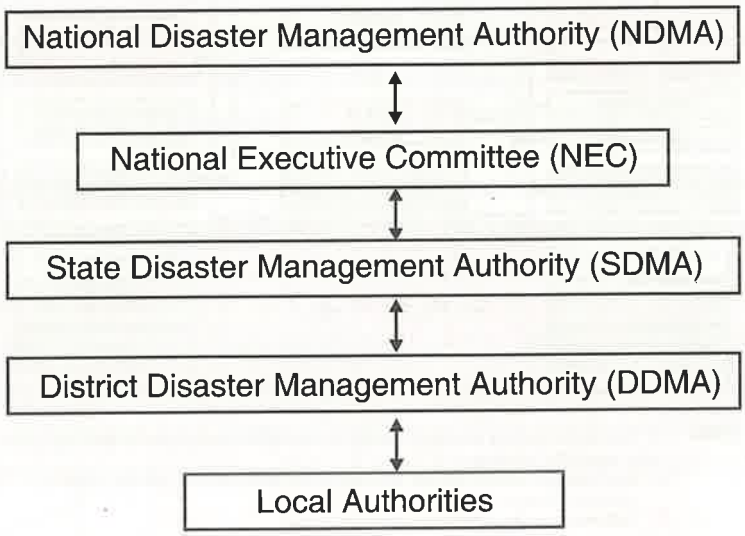
As stated earlier the Ministry of Home Affairs is the nodal Ministry for coordination of relief and response and overall natural disaster management. The table below shows the various ministries in charge of Disaster situations.

Disaster	Nodal Ministry
Natural Disaster Management (excluding drought)	Ministry of Home Affairs
Drought Relief	Ministry of Agriculture
Air Accidents	Ministry of Civil Aviation
Railway Accidents	Ministry of Railways
Chemical Disasters	Ministry of Environment & Forest
Biological Disasters	Ministry of Health
Nuclear Disaster	Department of Atomic Energy

(Source: GOI, 2004)

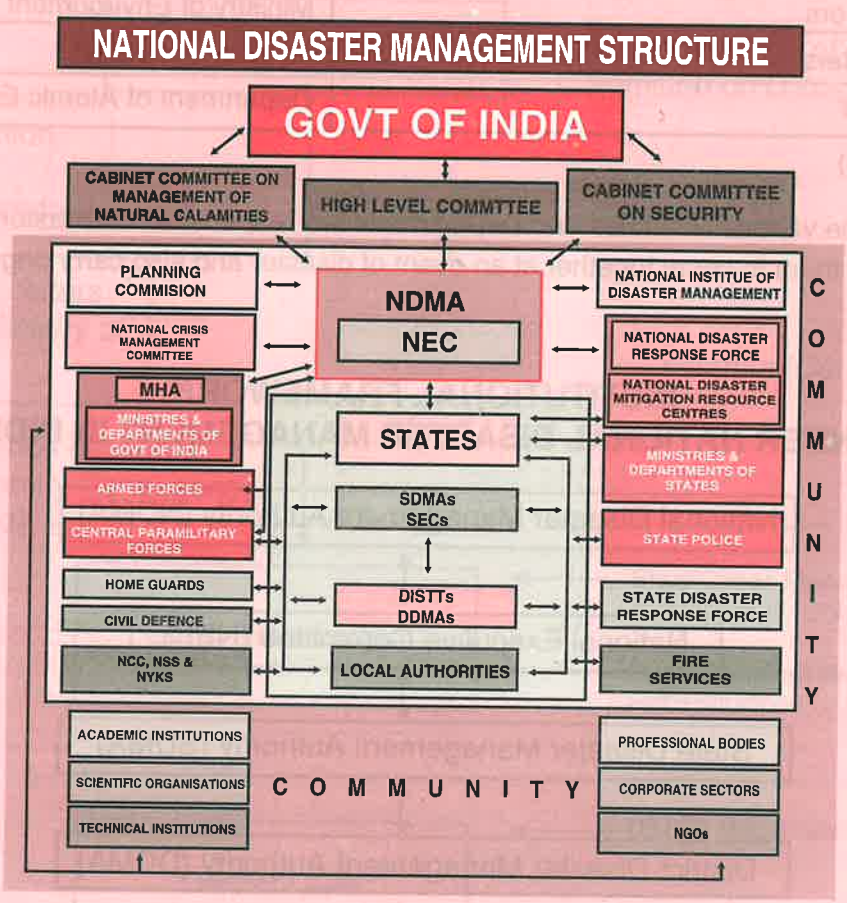
Needless to say, the various Ministries and Departments are responsible of disaster management and hence the need for them to come together at an event of disaster and also carry ongoing processes for disaster mitigation.

INSTITUTIONAL FRAMEWORK UNDER NATIONAL DISASTER MANAGEMENT IN INDIA



National Disaster Management Authority (NDMA)

In India, the states have been primarily responsible for relief efforts and activities in the aftermath of a serious natural disaster. The central government too associates itself with measures aimed at ameliorating the sufferings of the people on account of natural calamities. The government decided to bring in a law to provide for a requisite institutional mechanism for drawing up and monitoring the implementation of the National Disaster Management Plan. On 23 December 2005, the Government of India enacted the Disaster Management Act, which envisaged the creation of the National Disaster Management Authority (NDMA), headed by the Prime Minister, and State Disaster Management Authorities (SDMAs) headed by respective Chief Ministers, to spearhead and implement a holistic and integrated approach to Disaster Management in India.



Notes:
1. This diagram reflects interactive linkages for synergised management of disasters and not a hierarchical structure.
2. Backward and forward linkages, especially at the functional level, are with a view to optimise efficiency.
3. Participation of the community is a crucial factor.

The responsibilities of the NDMA include laying down plans and policies for disaster management and approving the national disaster management plans. The NDMA is assisted by an executive committee of secretaries, which will be responsible to draw up the disaster management plan, coordinate and monitor its implementation. They would also coordinate the response to a disaster under the guidelines of the authority. The NDMA lays down the guidelines to be followed by state authorities in drawing up plans for disaster management. It focuses on preparedness, relief, response, risk reduction and mitigation.

Source: http://ndma.gov.in/ndma/dmstructure.html

Disaster Management: Institutional Arrangement

Central Level: As disaster management is a state subject the primary responsibility is the concerned state governments. However the Central Government plays a key role for providing financial and logistic support in case of major disasters and also in coordinating the effort of all Central Ministries, Departments and Organisations involved with Disaster Management. The Cabinet Committee on Natural Calamities is placed at the apex level. Mitigation and preparedness measures are included as a responsibility of this Committee. Financial support for the state is from two sources: A High Level Committee of Ministers under the Chairmanship of Minister of Agriculture deals with financial support required to be provided to the State Governments from the National Calamity Contingency Fund. The state also receives from the Central Relief Fund.

Cabinet Secretary, the highest executive officer heads the National Crises Management Committee (NCMC). This committee has as members secretaries of all the concerned Ministries/ Department as well as organisations that are members of the committee. Secretary/ Ministry of Home Affairs is responsible for ensuring that all developments are brought to the notice of the NCMC promptly. The NDMC directs concerned Ministries/ Departments/ Organisations for specific action for meeting the crises situation

The Central Relief Commissioner in The Ministry of Home Affairs is the Chairman of the Crises Management Group (CMG) consisting of senior officers (nodal officers) from concerned ministries.

The CMG functions are:

- To review annual contingency plans formulated by the Ministries/Departments/ Organisations in their respective sectors, measures required for dealing with natural disaster,
- Coordinate the activities of the Central Ministries and the State government in relation to disaster preparedness and relief and to obtain information from the nodal officers on related measures

- To meet in the event of a disaster and review relied operations
- Extend all possible assistance required by the affected States to overcome the situation

State level: At State level, response, relief and rehabilitation are handled by Departments of Relief & Rehabilitation. The states are asked to set up Disaster Management Authorities under the Chief Minister with Ministers of relevant Departments as members. Under the Chairmanship of Chief Secretary, the State Crisis Management Committee is set up. All the concerned Departments and organisations of the State and Central Government Departments located in the State are represented in this Committee. This Committee reviews the action taken for response and relief and gives guidelines/directions as necessary. 11 states and Union Territories – Tamil Nadu, Arunachal Pradesh, Uttaranchal, Orissa, Gujarat, Kerala, Nagaland, Rajasthan, Delhi, Andaman and Nicobar administration and Chandigarh Administration have notified the authority. Other states are in the process of setting up similar authorities.

Disaster/Emergency Management Authorities at the National and the State levels with representatives from relevant Ministries/Departments has been proposed. The National Emergency Management Authority is proposed to be constituted. This is proposed as a combined Secretariat/ Directorate Structure – a structure with combination of Government as well as field organisation. The changed approach of the government also includes institutional changes, enunciation of policy, legal and techno-legal framework, mainstreaming mitigation into development process, streamlining funding mechanism, developing schemes for addressing mitigation, preparedness measures, capacity building all the level of government officials involved in disaster management as well as various departments as a part of mainstreaming mitigation, human resource development and community participation.

How does one collate efforts and departments and available resources at the district level where the need for converging efforts is greatest in the case of disasters?

District Level: The various framework discussed above trickle down to the district level. The district is the key level for disaster management and relief activities. Planning for disaster management at the district level will be discussed in each unit of this block. At the district level the District Magistrate/ Collector is the chief administrator and becomes an important nodal point for disaster mitigation and management efforts. He is strongly involved in the preparation of district plans and in directing, supervising and monitoring calamity relief. The District Level Coordination and Relief Committee is constituted and headed by the Collector as Chairman with the participation of all other related government and non governmental agencies and departments in addition to the elected representatives.

All subsequent units in this block will deal with possible responses to disasters and the responsibility of Governments, Civil Body Organisations and Community to converge efforts to deal with Disasters.

The National Emergency Management Authority will be responsible for:

- Providing necessary support and assistance to State Government by way of resource data, macro management of emergency response, specialised emergency response teams, sharing of disaster related data base etc
- Coordinating/ mandating Government's policies for disaster reduction/mitigation
- Ensuring adequate preparedness at all levels in order to meet disasters
- Coordinating response to a disaster (in the event of a disaster)
- Assisting the Provincial Government in coordinating post disaster relief
- Coordinating resources of all National Government Department agencies involved
- Monitor and introduce a culture of building requisite features of disaster mitigation in all development plans and programmes
- Any other issues of work, which may be entrusted to it by the Government

1.3 Restructuring of the Relief Department in the states

The GOI is wrking with the State Governments to restructure the Departments of Relief and Rehabilitation, which handled the work of post calamity relief into Department of Disaster Management. The restructured Department will have an enhanced area of responsibility to include mitigation and prepartedness apart from their present responsibilites of relief and rehabilitation. The States have been advised to restructure/re-group the officers/staff within the Department of Disaster Management with definite functions to pursure the holistic approach to disaster management. The restructuring proposes formations of four functional groups which will be assigned with specific tasks within the departments. These Functional Groups proposed are indicated below:

- Functional Group 1 : Hazard Mitigation
- Functional Group 2 : Preparedness and Capacity Building
- Functional Group 3: Relief and Response
- Functional Group 4: Administration and Finance

Source: Disaster Management in India: A status report, August 2004, GOI

Review Questions:

1. How are disasters defined?
2. What are the types of disasters?
3. What are the institutional arrangements at State level for disaster management?
4. What are their main tasks?

Application Questions:

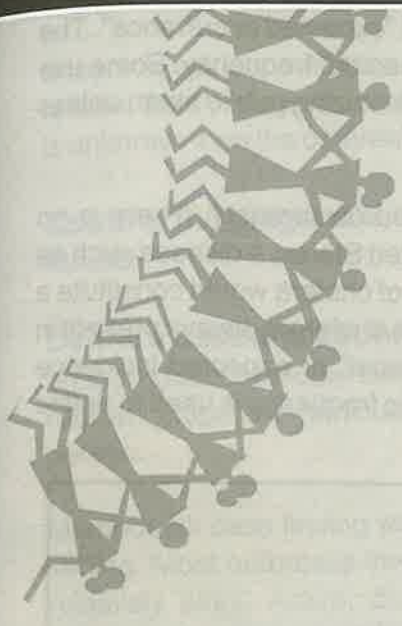
1. Briefly analyse a conflict situation (such as the conflict in Kashmir, or in a Naxal affected area in your State) historically. Describe the impact on the health of the affected community with evidence.
2. List the groups you would consider vulnerable in a disaster situation and describe in what way they are specially vulnerable with respect to impact of the disaster on their health (be as specific as possible and do not give general answers like 'women and children')

Project Assignment:

1. Try to locate the minutes of a meeting of the district level committee for disaster management and analyse its contents. If it is not available, interview a member of the committee and find out what the committee has achieved or plans to do.
2. Find out about any disaster that has affected your state and identify the various roles played by the district authorities. Make recommendations for the future.

Lesson TWO

Epidemic Management and Surveillance in the District Plan



In this lesson we shall discuss:

- The methodological approach to a systematic Epidemic Investigation
- The operational aspects of an epidemic management
- The optimum resource utilization during epidemic investigation
- The role of laboratory back up during and outbreak management
- The role of surveillance in epidemic management

WHAT IS AN EPIDEMIC?

The unusual occurrence in a community or region of disease, specific health related behavior (e.g., smoking) or health related events (e.g., traffic accidents) clearly in excess of "expected occurrence". The amount of disease occurring in the absence of an epidemic, defines the "expected" frequency. Some use the term "outbreak" for a small usually localized epidemic in the interest of minimizing public alarm unless the number of cases is indeed very large.

The key words in the definition of an epidemic are: "in excess of expected occurrence". There is no agreement on what constitutes a significant excess. For example, in the United States, a disease such as cholera is not normally present in the population. Therefore, even one case of cholera would constitute a potential epidemic in US. But in the countries like India or Bangladesh, where cholera is always present in some population subgroups, a few hundred cases a year may be the "usual" or expected incidence (endemic situation). An arbitrary limit of two standard errors from the endemic frequency is used to define the epidemic threshold of common diseases.

STEPS FOR EPIDEMIC INVESTIGATION

1. Verify the existence of the epidemic
2. Confirm the diagnosis
3. Define a case and count the cases
4. Orient the data in terms of time, place and person
5. Determine who is at risk of becoming ill
6. Develop an hypothesis that explains the specific exposure that caused disease and test this hypothesis by appropriate statistical model
7. Compare the hypothesis with the established facts
8. Plan a more systematic study
9. Prepare a report
10. Execute control and prevention measures

Verify the Existence of an Epidemic:

The preliminary step of the outbreak investigation would be to verify the outbreak. One should check:

- If there is abnormal increase in the number of cases or

- If there is a clustering of cases or
- If the cases are epidemiologically linked or
- If some trigger events have occurred or
- If many deaths have occurred

If there is evidence of an outbreak, and if the etiology, the source and the route of the transmission is known, then the specific control measures need to be immediately instituted. If however, any of the above is unknown then the outbreak must be investigated the specific cause.

Confirm the diagnosis: To verify the diagnosis one should review the clinical findings and laboratory results.

Define a case and count the cases: A case definition is a standard set of criteria for deciding whether an individual should be classified as having the health condition of interest. A case definition includes clinical criteria and particularly in the setting of an outbreak investigation- restriction by time, place and person.

Methods for case finding will vary considerably according to the disease in question and the community setting. Most outbreaks involve certain clearly definable groups at risk, therefore, finding cases will be relatively easy. Active, direct contact with selected physicians, hospitals, laboratories, schools, or industries or using some form of public announcement will help find most of the remaining, unreported cases.

Orient the data in terms of time, place and person

Once cases have been confirmed, epidemic can be characterized in terms of when patient became ill, where they lived to become ill, and what special attributes the patients had.

Determine who is at risk of becoming ill:

After knowing the number of ill, when and where they were when they became ill, what their general characteristic, and usually, a firm diagnosis or a good "working" diagnosis is possible. This data frequently provide enough information to determine with reasonable assurance how and why the epidemic started. For example, a time, place, and person description of the epidemic will strongly suggest that the only people in a particular community supplied by a specific water system were at risk of getting sick, or that only certain student is a school of worker in single factory became ill, perhaps it was only a group of people who attended a local restaurant who reported illness. In the case of disasters, the risk is even more self evident.

Developing Hypothesis

The hypothesis should address the source of the agent, the mode and vehicle or vector of transmission and the exposure that caused the disease. Also, the hypothesis should be testable, since evaluating it is one of the goals of the next step in investigation.

Evaluating Hypothesis

The step after developing the hypothesis to explain an outbreak is evaluating the credibility of it. In a field investigation, one can evaluate hypotheses in one of two ways: either by comparing the hypotheses with the established facts, or by using analytic epidemiology to quantify the relationships.

One would use the first method when the clinical, laboratory, environmental, and/or epidemiologic evidence so obviously support the hypotheses that formal hypotheses testing are unnecessary. This is usually the case in disaster situations. In other situations specific studies may be done to confirm or reject the hypothesis.

Implementing Control and Prevention measures

In most outbreak investigations, the primary goal will be control and prevention and to implement control measures as soon as possible. One can usually implement control measures early if you know the source of an outbreak. In general, you aim control measure at the weak link or lines in the chain of infection. You might aim control measures at the specific agent, source, or reservoir. For example, an outbreak could be controlled by destroying contaminated foods, sterilizing contaminated water, or destroying mosquito breeding sites or an infectious food handler could be removed from the job and treated.

In other situations, you might direct control measures by interrupting transmission or exposure. For example, you could have nursing home residents with a particular infection cohorted (grouped) put together in a separate area to prevent transmission to others

Preparing Report - Communicating findings

The Final task in an investigation is to communicate findings. This communication usually takes two forms:

1. Oral briefing to local authorities and;
2. A written report.

Oral briefing should be attended by the local health authorities and persons responsible for implementing control and prevention measures. Usually these persons are not epidemiologists, so you must present

your findings in clear convincing fashion with appropriate and justifiable recommendations for action.

You should also provide a written report that follows the usual scientific format of introduction, background, methods, results, discussion and recommendations. By formally presenting recommendations, the report provides a blueprint for action. It also serves as reference if the health department encounters a similar situation in future. Finally, a report that finds its way in the public health literature serves the broader purpose of contributing to the knowledge base of epidemiology and public health

LEADS TO DETECT AN OUTBREAK:

Rumour register

The rumour register is to be maintained in each public health institution. Source of information from the community should be verified to identify outbreak. It is an important source of information and should not be neglected. On the other hand, key informants in the community should be assiduously cultivated, so they become the eyes and ears of the health services in the community.

Community informants

Community informants could be Teachers, AWW, ASHA, Panchayat members, and Ward members. The could also be SHG members/Health club, youth club, farmers club

Media

The media is an effective source of information on any unusual health event in the community. This important source is unfortunately neglected and ignored by he health services. It may help to tap this resource.

Review of routine data

The first step in investigating an outbreak is to detect it. One of the common ways of early detection is to review the data from the routine surveillance and check if it crosses threshold levels.

One another method is to be alert for any unusual events that may be reflected in the routine data. Some examples are given below

- Clustering of cases or deaths in time and /or place
- Unusual increase in cases or deaths

- Even single cases of AFP, Cholera, Plague, Dengue, or JE
- Acute febrile illness of unknown etiology
- Occurrence tows or more epidemiologically linked cases of meningitis, measles.
- Unusual isolate
- Shifting in age distribution of cases
- High vector density
- Natural disaster

Trigger events

In a non endemic area even one case of suspected epidemic prone disease should initiate a trigger response at various levels.

In an endemic region change in pattern of diseases or evidence of clustering of diseases should be considered trigger event.

Response to an outbreak

In an established outbreak, the response includes the following:

- Emergency case management
- Referral to an appropriate level of care
- Epidemiological Investigation
- Laboratory investigation to identify the etiology
- Presumptive and definitive control measures
- Upgrading the response to a higher level by informing the DSO if outbreak is confirmed.

Who should respond to an outbreak?

At the PHC and CHC level, the MO of the concerned institution will be the nodal officer who will respond to an outbreak. At the district, the Corporation, the State and the Central level special Rapid Response Teams need to be formed whose prime responsibility is to investigate outbreaks.

Rapid Response Team (RRT)

RRT is a multidisciplinary that looks into the various aspects of an outbreak. A suggested composition of this team is an epidemiologist, a clinician and a microbiologist

The main role of the RRT will be to investigate and confirm outbreaks. It is to be noted that RRT is not a permanent team who is waiting for an outbreak. They are individuals who are normally performing their usual roles, but in the event of an outbreak come together to undertake a special function. They should be working in close coordination with the local health staff in the event of an outbreak.

EPIDEMIC PREPAREDNESS AND RESPONSE

- Early anticipation/prediction of possibility of outbreak so that epidemics can be prevented there by saving precious lives e.g., meningitis, measles.
- Early detection of signs of epidemics to when there is a problem through system of Early Warning and Response System (EWRS)
- To mount a rapid response as and when outbreak occurs by being in state of preparedness by having necessary guidelines, train staff and uninterrupted supplies in place before epidemic.
- To launch an effective response during epidemics through appropriate control methods an adequate resources and logistics.

Components of Epidemic Preparedness

Establishing Epidemic committee: This committee could have persons from technical and political background. This committee will chalk out tasks of the committee in terms of action to be taken before, during and after the epidemic.

Role of Epidemic and Response committee before the epidemic

- Set Priorities.
- Write epidemic and response plan
- Define prevention and control strategy (versatility, adaptability)
- Assign specific responsibility for surveillance, preparedness and response.
- Identify and mobilize resources.

Priority Setting:

1. What are the major epidemic prone diseases?
2. What is the risk of an epidemic?
   (Time since last outbreak, frequency of previous outbreak and recent disease Trend)

3. What would be the likely impact of an epidemic?
   (Potential number of cases, potential deaths and likelihood of spread)
4. What Control measures?
   Are effective and affordable measures available?
5. Resources?
   Do we have adequate resources?

Measure to be taken:

- List the priority disease
- Define the surveillance, preparedness and response measures to be implemented
- Identify responsibility (who does what)
- Identify coordination mechanism (leadership)
- Specify resources available for preparedness and response (budget)

Role of Epidemic and Response committee during Epidemic

- Implement the plan
- Rapid and coordinated response
- Implement prevention and control strategies
- Identify and mobilize resources

Role during Rapid Response

- Early Epidemic Control team meeting
- Early assessment of the potential scale of the outbreak
- Coordinated investigation and implementation of control measures
- Public information – Health education, Media strategy.

Role of Epidemic and Response committee after the Epidemic

- Evaluate the preparedness and the response.
- Review and update the plan
- Modify prevention and control strategies
- Identify and mobiles resources
- Anticipate new outbreaks.

Other functions of Epidemic preparedness:

- Preparatory action before an outbreak
- Formation of the RRT
- Training of the RRT
- Regular review of the data
- Identifying outbreak seasons
- Identifying outbreak regions
- Ensuring that these regions have the necessary drugs and materials (including transport media) prior to the outbreak season
- Identifying and strengthening the appropriate labs
- Designating vehicles for outbreak investigations.
- Ensuring that communications channels like telephones are in working condition.

Verification of the outbreak

The preliminary step of the outbreak investigation would be to verify the outbreak. Much time may be wasted due to a false alarm. Even if the outbreak is suspected from the routine surveillance data, it must be verified (lest it may be data entry error). The fastest way to verify is to contact the MO nearest to the location of the outbreak and request him /her for confirmation. This may be done telephonically or through a special messenger. The MO should check:

- If there is an abnormal increase in the number of cases or,
- If there is clustering of cases or,
- If the cases are epidemiologically linked or,
- If some trigger event has occurred or,
- If many deaths have occurred.

Sending the RRT

A RRT should be immediately formed with those readily available and they should initiate a medical/epidemiological and laboratory investigation. If the source and transmission is known then they may recommend instituting control measures. If the etiology, source and transmission is not known then a detailed description is necessary in terms of place, time and person. The next step is to develop a hypothesis regarding source, transmission, etiology and people at risk. If the hypothesis fits with the facts then control measure could be instituted and if not then special studies might be needed.

Monitoring the situation

The District Surveillance Officer (DSO) should monitor situation on a regular basis. Ideally they should review the status on a daily basis and give feedback to the RRT as well as forward it to the state. The main points to monitor are:

- The trends in the cases and deaths.
- The containment measures that are being implemented
- Drugs/vaccine stock
- Logistic issues- communications, vehicles
- Community involvements
- Media response

Declaring the outbreak to be over

The DSO should declare the outbreak to be over only when there have been no new cases for period of two incubation periods since the onset of the last case. This implies that a very active case search should continue since the onset of the last case.

Review the final report

THE ROLE OF LABORATORIES IN SURVEILLANCE AND EPIDEMIC RESPONSE

Accurate and timely laboratory information has become the foundation upon which current disease treatment, prevention and control programmes are based.

Laboratory services are useful in:

- Detection and confirmation of clinical case/epidemics
- Identification of immunological status /carrier rate/use of vaccine
- Disease elimination/eradication/surveillance
- Detection of new pathogen
- Detection, treatment and surveillance of antimicrobial/parasite resistance
- Food and environmental analysis
- Study of pathogenesis, immunogenesis, development of diagnostic reagent, antimicrobial drugs and vaccines

The Role of Laboratory in epidemic detection

Many diseases with epidemic potential are detected using "syndromic surveillance"
e.g., suspected measles = fever with rash
Suspected cholera = Acute watery diarrhoea
Suspected meningitis = fever with headache and neck stiffness
It is important that when an outbreak is suspected that laboratory confirmation of the diagnosis occurs as quickly as possible.

Role of Laboratory during outbreak

- Confirm the pathogen in the early cases
- Monitor antimicrobial resistance (e.g., cholera)
- Special studies (e.g. Sero-prevalence)
- Confirm the end of epidemic (It is usually not necessary to confirm all the cases during epidemics)

Monitor the trends in Endemic diseases

Laboratory has the role to play in the surveillance of diseases like

- Sexually Transmitted Disease
- Japanese Encephalitis
- Dengue
- Rabies
- Meningitis
- Malaria
- Food poisoning
- Tuberculosis
- Swine Flu

Laboratory surveillance plays an important part confirming diseases since regular summary data can be at best be presumptive. The validity of changing trends in suspect cases (syndromes) and presumed cases made by medical officers can be confirmed only laboratory.

Under IDSP the laboratory network will report independently all confirmed cases in a prescribed format. This will allow understanding and validating the changes in pattern of syndromes and probable cases seen at the reporting centers

Testing water samples for organisms is a measure to determine the risk of waterborne outbreaks. Water quality monitory is recommended in vulnerable pockets and from sources supplying drinking water to large population.

Checking the chlorination level of the water is also important especially during the monsoon and post monsoon period. These measures by the health department are precautionary measures in addition to the mandatory requirements of concerned department.

THE ROLE OF SURVEILLANCE IN EPIDEMIC MANAGEMENT

What is Public Health Surveillance?

Surveillance is defined as ongoing systematic collection, collation, analysis and interpretation of data and dissemination of information to those who need to know in order that action is taken.

A more complete definition of surveillance is "The ongoing systematic collection, analysis and interpretation of health data essential to planning implementation and evaluation of public health data essential to planning, implementation, and evaluation of public practice closely integrated with timely dissemination of these date to those who need to know. The final link in the surveillance chain is the application of these data to prevention and control. A surveillance system includes a functional capacity for data collection, analysis and dissemination linked to public health programs (CDC 1988)

Surveillance is the backbone of public health programme and provides information so that effective action can be taken in controlling and preventing diseases of public health importance. In some cases action must be immediate and within hours in order to prevent large scale epidemic and deaths (Cholera, meningitis, food contamination).

In others, control and prevention activities are long term response to information about diseases such as tuberculosis, HIV and non-communicable diseases risk factors, for which action may be over longer periods.

Key elements of surveillance system:

1. Detection and notification of health event
2. Investigation and confirmation (Epidemiological, clinical, laboratory)
3. Collection of data.
4. Analysis and interpretation of data.
5. Feed back and dissemination of results.
6. Response- a link to public health programme specially actions for prevention and control.

Uses of Surveillance

1. Recognize cases or cluster of cases to trigger intervention to prevent transmission or reduce morbidity and mortality.
2. Assess the public health impact of health events or determine and measure trends.
3. Demonstrate the need for public health intervention programmes and resources and allocate resources during public health planning
4. Monitor effectiveness of prevention and control measures.
5. Identify high risk group or geographical areas to target interventions and guide analytic studies.
6. Develop hypothesis that lead to analytic studies about risk factor for disease causation, propagation or progression

The IDSP proposes a comprehensive strategy for improving disease surveillance and response though an integrated approach. This approach provides for a rational use of resources for disease control and prevention.[1]

Criteria for selection of diseases for surveillance:

1. Does the disease condition have high health impact (morbidity, mortality and disability), [Malaria, NCD risk factors, Road traffic accidents]
2. Does it have a significant epidemic potential? (Cholera, Measles)
3. Is it a target of a specific national, regional or international disease control programme (HIV, TB, Polio)
4. Will the information collected lead to significant public health action

There are five steps in the surveillance procedure, which must be carried out at each level, starting from Primary Health Centre (PHC) Each level must have capacity for analyzing the using surveillance data for early detection, prevention and control of outbreaks. The five recommended steps are:

- Collection of data
- Compilation of data
- Analysis and interpretation
- Follow up action
- Feedback

Pre-requisite for effective Surveillance

- Use of standard case definition

[1] For more details on IDSP refer to PHRN Book 8

- Ensure regularity of reports
- Action on the reports

For developing an effective disease surveillance system, the district health officer, PHC medical officer must be clear about:

- What information to gather?
- How often to compile and analyze the data?
- How often and whom to report?
- What proforma or formats to use?
- What action to take?

The data collected should be uniform, regular, and timely. Standard case definitions are important to ensure uniformity in reporting so that all reporting units use the same criteria for reporting cases. It is also important to have a list of all reporting units so that the regularity and timeliness of the reports is checked. If no cases are seen, a nil report should be submitted. All levels in the system must be:

- Have the standard case definition
- Have a list of all reporting units
- Monitor receipt of reports in time
- Monitor completeness of reports

Types of Surveillance

Syndromic surveillance: Diagnosis made on the basis of clinical pattern by paramedical personnel and members of the community.

Presumptive: Diagnosis made on typical history and clinical examination by medical officer

Confirmed: Clinical diagnosis confirmed by an appropriate laboratory

Presumptive and confirmed disease surveillance

Though it is ideal to have all the diseases under surveillance confirmed by laboratory tests this is often not feasible. During routine surveillance the diagnosis made by the medical officer is considered presumptive in nature. The validity of presumptive diagnosis of surveillance will be higher than that of syndromic one undertaken by the health worker.

Under IDSP the MOs of the PHC, CHC, Medical colleges and sentinel surveillance will conduct the presumptive surveillance routinely. This will be supplemented confirmation of diseases by laboratory reporting.

Methods of Data collection

Several methods can be used for collecting data. While routine reporting (passive surveillance) is universalized, other methods are need and area specific. These include:

1. Sentinel Surveillance
2. Active Surveillance
3. Vector Surveillance
4. Laboratory Surveillance.
5. Sample surveys
6. Outbreak investigations

Routine reporting (Institutional based or passive reporting)

All the national health programmes require that the cases and deaths recorded in the out-patient or in-patient departments of hospitals, dispensaries, CHC, PHC and other health facilities manned by medical officer are reported to the local health authority on a monthly basis. In the Integrated Disease Surveillance Programme the essential surveillance components will be identified and transfer of information to programme officer facilitated so that information for action is available on weekly basis

At each level in the system, the report is required to analysed and appropriate action taken as indicated. The reports should be checked for completeness and regularity as these factors can influence the analysis of the reports.

Sentinel Surveillance

A Sentinel Surveillance system is developed to obtain more reliable and extensive disease related information than the one that is available through the routine reporting. A hospital, health centre, laboratory or a rehabilitation centre which caters to a relatively large number of cases of the disease of the disease can be considered as a sentinel centre. A Sentinel centre can provide information on one or more diseases. Since the sentinel centers are carefully selected and because the number of reporting units is much smaller, it is easier to maintain the quality and regularity of reports.

There should a close liaison between the sentinel center and the local health office. The sentinel provider

from the private sector can help in providing the early warning signals which should trigger action for outbreak investigation

The sentinel center data will not include all the cases in the area. However, if one or more sentinel centers have been carefully selected, it will include sufficiently large number of cases for epidemiological analysis. Data from sentinel centers are useful to determine trends in the incidence of the reported diseases. The district hospital, infectious diseases hospital, medical college hospital (if located in the district) and other large hospitals or laboratories should be included as sentinel centers and reports from theses centers should be analysed separately. These centre would also be submitting the routine monthly report under the passive surveillance system.

Regularity of reports

Monitoring regularity of surveillance reports is an important function of the surveillance system. A list of all reporting units must be kept. The chief medical officer of health of the district must identify the reporting units. Besides the PHCs and CHCs, hospitals, large dispensaries and clinics should be included as reporting units.

Frequency of reporting

A system of monthly reporting of diseases and programme specific data already exists in the districts. Many epidemic prone communicable diseases have short incubation period. If a review of data is made only on monthly basis, it might delay the timely identification of an outbreak in the early phase. Reporting units need to move in to weekly reporting of cases of epidemic prone diseases seen in their institutions if surveillance has to be action oriented. If pre-determined trigger levels are breached for a disease, it should serve as a warning signal for investigation. The area of residence of the patients should be checked and if these cases are clustered with respect to time and place, an immediate field visit is indicated. An epidemic can be averted by taking appropriate control measures in time. If an outbreak is suspected or identified, the next level should be notified immediately.

Some outbreaks may be explosive and become apparent in a short time. This should be investigated immediately. Cases of acute hemorrhagic fever or encephalopathy should be investigated and reported immediately.
Daily reports are necessary once an outbreak has been identified so that the situation can be monitored. Neighboring areas would also need to set up surveillance activities also to rule out the spread of the outbreak. After the outbreak has subsided, weekly reports should be continued for at least double the maximum incubation period of the disease.

Only data that is used should be collected, otherwise it will clutter and overburden the system. All the data

collected at PHC or district is not required to transmit to the state or central levels unless a special request is received.

Active Surveillance

However good the routine reporting system may be there will still be cases that will not be recorded under this system. Patient's mild or moderate severity may not seek treatment and some may go to private practitioners. It is also possible that patient in severe condition are taken directly to a large hospital in another district for specialized care. Some cases may die within a short period of onset of symptoms without receiving care at a health facility such as cases of neonatal tetanus.

Active surveillance or active search for cases is resource intensive. The decision to start active surveillance depends on many factors and ground situations. Active search may be called for:

1. During outbreaks to determine the extent of the outbreak and keep mortality rates low by initiating early treatment. Active surveillance is carried out to know the magnitude of the problem which will help in planning logistics or control .In addition it will give baseline data to evaluate control strategy. It also helps in understanding the genesis of the outbreak

2. To check if reports received by rumor registry are true.

3. As the number of cases of disease decline to negligible levels and it becomes important to receive information one every singly case as quickly as possible so that further transmission is interrupted by initiating outbreak control measures. For example, active surveillance is recommended for acute flaccid paralysis (AFP)

4. To confirm the absence of even a single case. This is done during the pre certification phase for disease eradication, as 'zero' incidence has to be maintained for the period of three years.

During the field visits by the supervisor, absence of disease can be confirmed by contacting few key persons such as school teacher, gram pradhan, anganwadi worker and others.

The health personnel, outreach personnel of other government departments, non governmental organizations, panchayats and the members of the community must be encouraged to report cases. The lay case definition of the disease should be widely circulated for the purpose. The health personnel should not be punished or discouraged in any way from reporting cases as this will lead to suppression of vital information.

Review Questions:

1. What is the definition of an epidemic?
2. What is surveillance?
3. What are the steps of managing an epidemic?
4. What is the role of laboratories in epidemic management?
5. What is the role of laboratories in surveillance?
6. What needs to be clear to district personnel for the purposes of surveillance?

Application Questions:

1. Trace the history of an epidemic during a natural disaster through available literature and comment on its management.
2. There is a rumor that swine flu has started spreading in your area. Three deaths have been reported from a particular private nursing home with limited lab facilities and the residents of the area feel they were due to swine flu. You are the area public health officer. Outline the steps you would take from here onwards.d

Project Assignment:

1. Read the lesson on IDSP in PHRN book 8 and analyse the district plan of your district to see if IDSP objectives are reflected.

Lesson THREE

Medical and Health Response to Various Disasters

In this lesson we shall discuss:

- The components of disaster medicine
- The public health impacts of disasters
- The epidemiological management of disasters

Keeping the mind the need for certain skills to be in place for including disaster management in the district health plan, every topic will be discussed with reference to preparedness, response and recommendations.

Disaster Medicine: The public health management of disasters within the discipline of Disaster Management addresses various issues such as casualty area management and hospital management. "Disaster medicine involves the modification and expansion of health and medical capabilities to counter a situation, which has the potential to overwhelm the services in situation"[2]. "Disaster medicine is the study and collaborative application of various health disciplines to the prevention, preparedness, response and recovery, from the health problems arising from disaster" (Gunn, 1992). Both the definitions point to the fact that disaster medicine involves collaboration of various health disciplines and medical capabilities. It also makes it clear that the situation of disaster pressurizes the available health services and hence there is the need to be prepared and work with various agencies. The components of Disaster Medicine as given in the definition – prevention, preparedness, response and recovery will now be discussed in detail

COMPONENTS OF DISASTER MEDICINE

A. Preparedness : The following steps can be followed as preparatory measures

a) Preparation of Mitigation Plans – Plans need to be necessarily prepared with medical and health component. The planning process should have the involvement of medical and health professionals. There is a need to train and have a pool of skilled physicians and surgeons and on the other hand a rapid decision and logistical management to ensure timely intervention of a multidisciplinary focused task force. Ensuring timely management requires that local capacity of disaster prone areas need to be strengthened in the pre disaster phase. Thus preparedness involves training and creation of adequate facilities.

b) Prevention of health risk – There are chances of increase of infectious diseases, communicable diseases and malnutrition. Timely emergency medical intervention –treatment of injuries and wounds, surgical intervention and trauma care will go a long way in prevention further health risk. Another risk during disasters is that of an outbreak of epidemic (e.g. cholera, diarrhoea). The following intervention will be useful in prevention of health risk:
   i. Maintenance of hygiene and sanitation (adequate system of garbage disposal, vector control, provision of clean drinking water etc.)
   ii. Proper food and nutrition
   iii. Immunisation and vaccination

c) Psychological debriefing (PD) – As an early intervention of exposure to trauma single-session

[2] American Journal of Disaster Medicine

psychological debriefing is thought of as a way to reduce and prevent unwanted psychological effect of trauma. "Debriefing typically involves promoting some form of emotional processing/catharsis by encouraging recollection/ventilation/reworking of the traumatic event in a single session in the near aftermath of the trauma".[3]

There are two schools of thought – One believes that talking through traumatic experiences may assist in psychological recovery of those affected. This belief has led to the expansion of debriefing programmes and thus sees it as meeting the needs of workers in emergency services, victims of disasters, and those who have been affected by trauma and violence. This school recommends PD as a preventive response and also contributing to developing suitable public health interventions and strategies; however another school suggests PD as an early intervention to be ineffective and counterproductive. PD was used as an intervention to minimize trauma during the Tsunami as well as during the Gujarat earthquakes.

d) Medical Preparedness: Medical Preparedness implies plans for allocation as well as reinforcement of supplies, resources as well as medical care functioning, it implies planning for medical and health related aspects for meeting disasters. Ideally it should also take into account effective medical training. Disasters usually bring a huge load to existing resources and therefore needs some preparedness for mobilization of additional resources. When the situation requires services from outside to be mobilized preparing for it requires careful planning taking into account the magnitude of the disaster.

Medical preparedness planning consists of:

i. Formulation of medical plan – Medical plan entails three stages, the pre-hospital, the hospital and the rehabilitation stage

- ✓ Pre-hospital stage entails the organization of medical care at the site of disasters. Here the plan would consist of setting up of emergency control rooms and command posts in the disaster area, site assessment, evacuation / casualty clearing teams, site medical teams for first aid and resuscitation, triage, tagging, mobile hospital units (for areas lacking medical care facilities / where number of victims exceed their capacity). The plan should also include communication between various field teams, command post and hospital.

- ✓ Hospital stage preparedness plan will emphasize on the management of casualties in the hospital. The plan will be prepared by a committee consisting of medical and para-medical staff. The plan has to provide job description, check lists and standard operating procedures for the staff. It has to provide resources in terms of human power, logistics[4] and

[3] www.helid.disastres.net

finances to meet the emergency. The evacuation plan of the hospital should be familiar to both staff and authorities and the drill should have been practised. There should be a public relation system with a public relations officer providing accurate information. The plan should be disseminated and regularly appraised.

- ✓ Rehabilitation stage in the context of the medical plan refers to mental health rehabilitation of disaster victims. This plan is to focus on psychological intervention which will address the people psychologically affected by disaster, such as, acute stress disorder, post traumatic stress disorder, grief, anxiety and depressive disorders. Planning at this stage is aimed at strengthening of local resources, provision of information, establishment of support and information centres, training in mental health medical personnel, debriefing of rescue workers, assistance to bereaved families, preparation of resource guide/manual and promotion of research

ii. Remote planning area- Planning for far flung areas (remote areas) can be divided into two phases. First aims at putting the local resources at the disaster site. The second aims at sending the casualties to the hospitals for treatment and specialist care. Telemedicine is also thought of as an important part of remote area planning.

iii. Logistics Planning- The hospitals and medical centres require additional logistics at times of disaster. The basic principles of logistics planning are: standardization of supplies, utilization of locally available resources, assessment of the disaster specific to needs of the affected community, proper planning of resources from outside, inventory control system, efficient distribution system, adequate warehousing and efficient transportation system.

iv. Education and Training- Education and training is required in disaster planning and rehearsal; integration of local, regional and national resources into a disaster management system; hospital emergency incident command system; communication and security; protection of healthcare delivery personnel and facilities; detection and decontamination of biological, chemical and radiation exposure; triage principles and implementation; logistics of medical evaluation, stabilization, disposition and treatment of victims; record keeping; post disaster briefing, critique and reporting; critical incident stress management and published research and experience in disaster management.

v. Epidemiological study of disasters- Preparedness plan should focus on epidemiological study of disasters to help in measuring and describing the consequences of the natural and man made

[4] Logistics would include number of ambulances for transportation of victims from disaster sites, food and stay arrangement; temporary morgue facilities with relative guidance cell etc.

disaster on health. With the help of epidemiological methods, it is possible to gauge the needs of populations affected by disaster, relate the resources to the needs, check the adverse effects, review the efficacy of various health programmes, and prepare better plans for the future. Strategies can be adopted to lessen morbidity and mortality by identifying risk factors, planning the warning and evacuation system

vi Networking- Collaboration with various agencies working in rescue and relief operations is necessary. A preparedness plan should list out the various agencies in order to facilitate joint working. Those affected by disaster should also be involved.

vii. Media- Media should steer away from sensationalizing and hyping up disaster events. This requires skilled briefing of the media on a regular basis. A single spokesperson would be designated to speak with the media and the reset of the team should not comment directly. The media can play an important role in the dissemination of timely information, do's and don'ts, location of medical and health facilities , contact details of relevant personnel, resource mobilization etc.

B. Response:

a. Casualty site management: Management of casualties at the site of disasters mainly aims at preventing deaths, disabilities and diseases. The activities are centered on immediate care and attention to the victims. This includes provision of first aid and medical facilities, and transportation of the affected to the health camps. Here, one should adhere to the principle of rescuing victims without aggravating their existing injuries. An important element of evaluation of the state and condition of the victims - triage helps in sorting and categorizing of the victims as per their condition and treatment required. This should be followed by primary trauma care.

Communication forms an important part of the casualty site management especially between disaster sites and hospitals, so that patients can be distributed to various hospitals depending upon their capacity and load. The communication network should be good enough to remain operational under severe weather conditions. Communications should leave little room for ambiguity and misunderstandings. The ambulatory service has a very important role to perform in the transportation of disaster victims from the field to the hospitals. This service is also concerned with triage and treatment of casualties, on-site communication, setting up of triage area and casualty collection point, liaisoning with medical personnel for the selection of the most appropriate hospitals and also liaison with fire stations and police.

Casualty site management thus is not only a medical intervention but administrative as well.

[25] Chandra, J.S.

A 200 bedded mobile hospital, fully trained and equipped has been set up by the Ministry of Health and attached to a leading Government hospital in Delhi. Three additional mobile hospitals with all medical and emergency equipments are proposed to be located in different parts of the country. These mobile hospitals will also be attached to the leading Government hospitals in the country. This will enable the mobile hospitals to extend assistance to the hospitals with which they are normally attached. Affected persons can be airlifted during emergencies with additional doctors/paramedics taken from the hospitals with which the mobile hospitals are attached to the site of disaster. It is proposed to purchase dedicated aircraft and helicopters with a view to reducing the response time. The issue is pending for consideration and approval of Empowered Group of Ministers on Disaster Management. Once the airlift facilities are developed for exclusive use for disaster management, it will be possible to provide airlift facilities to specialist search and rescue teams, mobile hospitals and equipments.

Source: Disaster Management in India, GOI

b. Clinical casualty management: Management of casualties once they arrive in the hospital emergency. Response begins with communication and arrangement of transportation for victims/ patients. The hospital is alerted in order to ensure their ability to response to the victims. Expansion of the casualty area, security, hospital triage, clinical care and support services (medicines, blood bank, light arrangements, sterilization arrangements, medical records etc.). Public relations and information system, medico-legal aspects, discharge system, documentation and disposal of death forms a part of this.

c. Community participation: It is one important aspect of community health management. Response becomes effective with community involvement and this is discussed in lesson 4, more details of community participation will be discussed in the same lesson.

d. Health Response and Information and Communications Technology ICT: Communication is one crucial aspects of disaster management. It becomes imperative in disaster prone areas to have communication systems in place which are less vulnerable. Satellite based ICT is useful in disaster management precisely for reason of ability to withstand the disaster situation.

ICT helps in

i. Prediction, warning, forecasting – In the case of the South Asian Tsunami it seemed that no technology exist to detect/ predict the tsunami which would have in turn helped in warning and forecasting to vulnerable populations. Instead, the aftermath pictures were beamed into each

and every household.

ICT can play an important role in prevention of disasters, many organizations work towards prediction and forecasting of natural and manmade disasters. There is a need for well developed common platform to integrate all these efforts towards a high end complex simulation of various disasters. The availability of spatial information and the dissemination of the same is of primary concern during any disaster.

ii. Risk assessment and vulnerability analysis – It is possible to minimize the risk associated with disasters by developing disaster early warning strategies, preparing and implementing developmental plans. While technology is used is still limited there is a tremendous potential for efficient and effective usage of technology to assess risk and vulnerability.

iii. Disaster preparedness, response and recovery –The role of ICTs is critical after the onset of disasters and before its impact on the population. It is vital for communication as population can be evacuated to safer areas. The extremely difficult aftermath period of a disaster calls for prompt action within an exceptionally short period of time. Disaster recovery which is to start after the initial disaster cleanup is a complex process requiring an array of skills. There is an increasing variety of ICT tools and solutions for disaster preparedness, response and recovery.

iv. Epidemiological surveillance –"Disaster epidemiology, has been viewed in a broader perspective; it links data collection and analysis to an immediate decision-making process"[5]. ICT can be used as the crucial link that would tie up the collected data to decision making. The adverse health effect of natural and man-made disasters and measured and described by the Disaster epidemiologists assess the needs of disaster-affected populations and to match available resources to needs, preventing further adverse health effects, evaluating program effectiveness, and planning for contingencies.

v. Tele- medicine – ICT is used in Telemedicine to provide accessible, cost-effective, high-quality health care services. In the disaster scenario telemedicine models provide for patients/victims of disasters to be connected to trained physicians over telephone or Internet, can become the first point of access for a variety of illnesses, diseases and casualties. The most important element however is for the disaster to not have affected the communication system. Once the system is set victims get into health system early and do not delay care seeking.

vi. Tele-monitoring – Tele-monitoring is a medical practice that involves remotely monitoring patients who are not at the same location as the health care provider. A monitoring device stationed at the disaster site will transmit via telephone/satellite the conditions of a victim to health care team. Tele-monitoring is a convenient way for in the disaster scenario as those requiring treatment can avoid

[5] Noji, 1992

travel and perform some of the more basic medical work themselves. In addition, most Tele-monitoring programs include subjective questioning regarding the victim's health and comfort.

vii. Tele-conferencing –A Tele-conference is a telephone meeting among two or more victims with a disaster management team. At its simplest, a tele-conference can be an audio conference with one or both ends of the conference sharing a speaker phone. With considerably more equipment and special arrangements, a Tele-conference can become a Video-conference, in which the participants, the victims and the disaster management team members can see still or motion video images of each other. Because of the high bandwidth of video and the opportunity for larger and multiple display screens, a Video-conference requires special telecommunication arrangements and a special room at each end. In areas where high-bandwidth cabling become a problem, video--conferences can be held through computer or even in a mobile setting

viii. Communication – Communication in times of disaster is needed for an efficient disaster management system. All available media can be used. However one should remember that these media should be reliable and operational in remote areas and some time even inaccessible locations. So a communication system adopted for disaster management should be reliable and must be in working condition at all times.

ix. Medical transcription – Medical Transcription or MT deals with the process of transcription, or converting voice-recorded reports as dictated by physicians and/or other healthcare professionals, into text format. MT involves transcribing the spoken word of the patient's care information into a written, easily readable form. MT requires correct spelling of all terms and words, correcting medical terminology or dictation errors. In times of disasters, when medical teams do not have direct access to victims, MT professional can function as a link between victims on ground zero and medical teams stationed far from the affected areas.

x. Documentation – Documentation is a term used for a systematic collection of multiplicity of documents in a chosen mix of media – electronic or manual. Documentation also refers to the process of providing evidence. Documentation in disaster areas includes all forms of data collected by the disaster management team members which include health professionals in relation to the provision of patient/victim care. Documentation also includes a record of the care and the clinical assessment, professional judgment and critical thinking used by a health professional in the provision of that care.

xi. Records management – Record Management include the proper management of the documentation systems and appropriate sharing of information amongst the disaster management teams. A good record management will aid in people accessing valuable sources of data for victims' profile, health research etc.

xii. Studying environmental hazards – Studying environmental hazards is part of disaster management. Environmental hazard is a generic term for any situation or state of events which poses a threat to the surrounding natural environment and adversely affects people's health. Natural and manmade disasters do pose hazards for the environment.

xiii. Land use planning – Land use planning provides a detailed discussion on land use planning options and techniques when an area is struck with disaster. The primary objectives of land use planning are mainstreaming disaster risk reduction and integrating disaster mitigation and local land use planning. The importance of land use planning as a tool includes identification and assessment of hazard, vulnerability and risk. It also calls for familiarization with the local policy, legal and institutional bases of land use and disaster risk management.

xiv. Simulation modelling and scenario analysis –Most of the time disaster warning systems do not adequately warn people of impending catastrophes. In such situations, simulation modelling can be designed to ensure that after the first occurrence of a disaster, we can simulate the same as a model and built a system to warn the risk and impacts such disasters to people. It should be done in such a way that the people affected are effectively communicated. The simulation model can be used as an educational tool by disaster management teams and be disseminated to the general population.

xv. Spreading awareness –Even if disaster management teams are well informed, their efforts will have less impact if they fail to popularize and spread awareness about the ways and techniques of facing major disasters. This is way spreading awareness using all available media are of utmost importance.

C. Recovery:

a. Psychological Interventions: The psychological impact of disasters is immense. People affected thus are to be given immediate and adequate psychological support. Also people already suffering from prior psychological problem will have interrupted treatment and therefore their condition has a tendency to aggravate due to inaccessibility to/deteriorating medical services. Disaster victims tend to have various kinds of reactions that are sometimes emotional, cognitional, physiological and interpersonal. Immediate post disaster phase experiences of insomnia, mood swings, nightmares etc. are common but should not be dismissed. Post Traumatic Stress Disorder (PTSD) is usually experienced a few months post-disaster. The PTSD affected people re-experience the incidents and experiences. They suffer from symptoms like withdrawing themselves from others, high irritability, impulsive reactions and sleep disturbances.

Remedial and curative measures include:

i. Preparing people to meet impending disaster

ii. Provision of food, shelter, and transition to safer places and arranging for group stays

iii. Educating people who are likely to develop traumatic signs and indications

iv. Disseminating, information-sharing and problems-sharing amongst peers

v. Training the community leaders and active members of the community in psychological counselling

Health Impact in Specific Types of Disasters

Public Health Impact of Selected Disasters					
Effect	**Complex emergencies**	**Earthquakes**	**High winds (without flooding)**	**Floods**	**Flash floods/ tsunamis**
Deaths	Many	Many	Few	Few	Many
Severe injuries	Varies	Many	Moderate	Few	Few
Increased risk of communicable diseases	High	Small	Small	Varies	Small
Food scarcity	Common	Rare	Rare	Varies	Common
Major population displacements	Common (may occur in heavily damaged urban areas)	Rare	Rare	Common	Varies

Source: adapted from Pan American Health Organization, *Emergency Health Management After Natural Disaster,* Office of Emergency Preparedness and Disaster Relief Coordination: Scientific Publication No. 47. Washington, DC. Pan American Health Organization, 1981.

MEDICAL AND HEALTH RESPONSE TO EARTHQUAKES

Earthquake is one of the most destructive events in nature having caused more than a million deaths and injuries worldwide in the past 20 years. Hospitals and other health care facilities are also vulnerable to the damaging effect of earthquakes. The primary cause of death and injury is the collapse of buildings.

Deaths in earthquake are due to severe crushing injuries to the head or chest, external or internal haemorrhage or drowning from earthquake induced tidal wave (tsunamis). "Rapid death occurs within minutes of hours and may come from asphyxia from dust inhalation or chest compression, hypovolemic shock, or exposure. Heavy dust, produced by crumbling buildings immediately following an earthquake, may cause asphyxiation or upper airway obstruction. Asbestos and other particulate matter in the dust are both sub acute and chronic respiratory hazards for trapped victims as well as for the rescue and cleanup personnel. Burns and smoke inhalation from fires are also major hazard after earthquakes" (Patil, 2010). Earthquakes cause population displacement, financial losses, and also subject the population to psychological trauma. Death and injuries occur as people get trapped under debris or rubble of falling buildings. As with other disaster situations the sick, old, physically challenged and children become more susceptible at such times. Medical and health services get affected and sometimes the health centres or referral hospitals, also come under the magnitude of earthquakes. The primary concern at such situation is to save lives and provide medical help. Here, immediate response and relief become crucial, the greatest demand of medical intervention being within the first 24 hours while injured people due to various reasons of inaccessibility usually seek medical attention at emergency department only during the first 3-5 days. Proactive action by medical and health officials and departments is required to serve the affected.

A large number of patients require active care of non surgical problems such as active heart attacks. Chronic diseases such as diabetes or hypertension, anxiety and other mental health problems might exacerbated due to breakdown of medical services

Preparedness includes training, education and simulation exercises for medical and health personnel; training would also include a list of do's and don'ts to be made aware to the community which should be adhered to during and after the earthquake; education and training of the community in first aid, transportation etc is also essential. Last and most importantly, it is necessary to identify medical and health services (medical camps, health centres and referral hospitals) for the casualties of disasters.

The various possible 'Response' includes first aid, triage and tagging (classifying) the affected and subsequent evacuation/ transportation of the injured to hospitals. Those requiring special emergency based support systems (life supporting first aid, advanced trauma life support, resuscitative surgery, field analgesia and anaesthesia, resuscitative engineering, and intensive care) need to be transported to hospitals. Those not physically affected also need to be assessed for psychological help. After assessing the need of the affected, provisions of nutritious food, potable water, and safe shelters with hygiene and sanitation facilities needs to be made. This along with environmental measures including investigation and control of infectious diseases would go a long way in prevention and control of epidemics.

Damage assessment also needs to be done for medical and health infrastructures. To make possible further health response proper collection and recording of data must be consistently done. The local

community must be kept involved in all these processes and most importantly in relief and response activities. In order to avoid duplication as well as wastage of critical and scarce resources coordination and communication with other agencies is essential.

Medical and health response can be effective when based on epidemiological and surveillance data of the impact and post impact phase of earthquakes, disaster epidemiologist also need to measure the health impact of natural and manmade disasters and match resources to prevent future adverse health effects. In situation of earthquakes it becomes necessary to collect data of injuries and deaths due to building design and construction techniques; related deaths and injuries due to exposure to certain areas in the house/ building and the needs of entrapped people. This is also important for engineers to develop new parameters to review vulnerability of structures, develop building codes and improve and modify design and construction techniques for buildings. Antiseismic housing design will help in lessening morbidity and mortality due to collapse of buildings in situation of earthquakes.

MEDICAL AND HEALTH RESPONSE TO CYCLONES

Communities living along coastal areas are vulnerable to deaths and injuries resulting from tropical cyclone. During cyclones the velocity of the wind during cyclones can be high enough for people to get blown away and killed or people to get trapped under debris of collapsed buildings and houses. In spite of the great damage it causes wind velocity is not the biggest cause of deaths and injuries. It is the secondary effects triggered by it such as tornadoes and flooding together with storm surges that can cause extraordinarily high rates of morbidity and mortality from drowning. Relief and rescue operations in such situation are also difficult. The major rescue problem is locating persons stranded by rising waters and evacuating them to higher land. Other causes of deaths and injuries include being trapped beneath houses collapsed by wind or water, penetrating trauma and broken glasses of wood, blunt trauma and floating objects or debris or entrapment by mud slides that may accompany hurricane associated floods. In such cases it is not sophisticated surgical or intensive care services that is required but outpatient treatment by primary care physicians. The great majority suffer from lacerations caused by flying glass or other debris. A few have closed fractures, and others, mostly penetrating injuries. As with flood related wounds, emergency medical care providers should be aware that such wound may contain highly contaminated material such as soil or faecal matter.

People are often severely crowded in storm shelters. Crowding increases the probability of disease transmission via aerosol or faecal–oral routes particularly when sanitary facilities are insufficient. The major public health problem is the need for water, food, clothing, sanitation anther hygienic measures. Like other disasters cyclone results in spurt of infectious disease such as gastro-enteritis, measles and skin infections along with injuries; affects the mental health and disrupts medical and health infrastructure consequently affecting health services.

Medical and health response to cyclones depend on preparedness, as cyclones can be predicted much in advance, with the usage of early warning systems it is possible to evacuate people from coastal areas. Safe shelters and locations with adequate provisions need to be identified before this.

Responses consist of properly disseminated and coordinated early and reliable warning; evacuation of vulnerable communities to safer locations after receiving prior warning. The locations should be prepared for receiving the communications and care should be taken to ensure maintenance of hygiene and sanitation standards. Organizing medical camps in affected areas to consist of first aid (for immediate administration of injured to hospitals), immediate hospitalization for the critically injured. It is necessary for ambulances to be kept ready for reaching out to those needing hospitalization and critical medical intervention.

Like in the case of other disasters it is essential to ensure nutritious food, safe drinking water, immunization, hygiene and sanitation; Vector control, garbage disposal, disposal of dead, disposal of carcasses should be taken up immediately to prevent outbreaks of disease. Epidemiological study is required to obtain data pertaining to cyclone related deaths and injuries. Other than the visible injuries it is also important to look into and respond to people with mental health problems. Community to assist in first aid and evacuation as well as carrying out need assessment in affected area and needs/ requirements along with community members. Furthermore damage assessment on public health infrastructure has to be taken up; restorative action to be thereafter planned.

It is necessary that design and construction techniques for building should be made cyclone resistant. As mentioned earlier scientific and engineering codes suitable to local conditions can be developed for this purpose. Land use planning should also be done properly so that institutions like hospitals, fire stations, etc are located in safer areas.

MEDICAL AND HEALTH RESPONSE TO FLOODS

The Indian subcontinent with its coastal lines and network of rivers is prone to floods and its consequent related injuries and deaths. Floods disrupt normal life and also result in widespread death and diseases especially among coastal communities. The main cause of death in floods is drowning, followed by various combinations such as trauma and hypothermia. "Among the flood survivors, the proportion requiring emergency medical care is reported to vary between 0.2% and 2%". Most injuries in floods require minor medical attention e.g. lacerations, skin rash and ulcers. However there are also instances of outbreaks of fire during floods and its consequent casualties when fast flowing water breaks oil or gasoline storage tanks.

Water purification and sewage disposal system may be disrupted during floods. It can also cause toxic

waste sites to overflow, or dislodge chemical stored above ground. Waterborne diseases (e-coli, cholera, shigella, hepatitis A and E, leptospirosis, and giardiasis) are common and can be fatal. Viral diarrhoea due to water contamination and non-practice of hygiene during floods can lead to deaths. Vector borne diseases like 'endemic malaria, typhoid, dengue and helminthes' due to vector breeding and transmission can become disastrous. In displaced population owing to conditions of shelter, improper relocated spaces aerosolized diseases such a pneumonia, TB, conjunctivitis, meningococcal meningitis, influenza, and other viral infections.

However in such situations mass immunization programs are almost always counter productive as limited personnel and resources will be diverted from the critical relief tasks.

Deaths, diseases and damage in floods occur due to drowning during sudden release of water; the severity and duration of flood, animal bites (snake bites as well as other animals in water); lack of adequate health and hygiene/sanitation during evacuation and in shelters such as food, drinking water, vector control, inadequate epidemic control measures which leads to overall poor health condition of the affected people. These could be aggravated by damage to hospitals and health shelters or inaccessibility/ cut-off from the shelters which would lead to delay in medical response.

Response and intervention should be made at various different sites and locations. Firstly, an on-site reporting room is required for collecting reports and monitoring the situation. The disaster site also needs an Emergency medical centre with stocks and stores at the safer areas. This is to ensure proper delivery and distribution of medical supply. Measures for disease control at the site of disasters as well as the rehabilitations camps is a necessity - immunisation, vector control, garbage disposal, hygiene and sanitation, proper disposal of dead and mortuary services, provision for safe water. The responsibilities of the medical team entails not only distribution of medicine and managing medical supplies, transportation of injured to hospital, disseminating information about health and safety measures, conducting diseases surveillance but also to ensure safety of medical/ health and rescue workers. Evacuation protocol need to be prepared with medical teams assigned to different areas to provide immediate relief. For all these coordination with multiple agencies is a necessity.

Media can play a role is dissemination information, project condition of affected areas and also generate vital statistics by way of surveillance of the impact and post impact of floods

MEDICAL AND HEALTH RESPONSE TO FIRES

Fires are caused by natural or non-natural factors. Natural fires are associated with disaster such as earthquakes, volcanoes, lightning etc. Factors associated with human recklessness, improper heating, faulty electrical lines/ gadgets etc along with newer threats of bomb explosion also causes fires.

An outbreak of fire has to be immediately controlled and trapped people evacuated. Massive fires causes great loss to live and property. Those who get affected suffer from various health complications. Fire may also destroy and cause damage to medical and health infrastructure.

The impact of fires is immense and public health would need to respond to burn injuries; long term cardio vascular, pulmonary, ophthalmic, renal or neurological diseases; disfigurement, deformity, amputation and fractures; asthma, sinusitis, upper respiratory diseases, laryngitis, nasal irritation, pharyngeal oedema, bronchospasm, bronchiolitis, bronchorrhea etc; heart attacks; psychological trauma.

Deaths can also be caused by inhalation of smoke, asphyxia (caused by presence of carbon-monoxide), carbon dioxide poisoning or oxygen deficiency.

The responses include a contingency plan which entails treatment and rehabilitation with the medical and administrative staff operating and implementing the plan. key medical, para medical and administrative staff needs to be imparted training in contingency plan. Medical practitioners need to be trained to render effective triage to enable proper diagnosis and treatment of burnt patients. The medical teams should be fully equipped in terms of resources- ambulances/ logistics/personnel to immediately respond to the needs in the disaster sites. For this effective, coordination, communication, and transportation between disaster sites and medical centres is also required. Equipments of resuscitation, fluid therapy, oxygen etc should be kept ready. Trauma units, isolation wards and facility for plastic surgery should be kept ready. Taking into account the trauma related to fire outbreaks Psychological and Mental Health intervention also needs to be in place. Occupational safety to be ensured (especially for the rescue workers). Equipped fleet of fire brigades is required to be maintained at all hours. As with the other disasters coordination with other agencies working in the same site/sector/community is a must.

Assessment of disasters, emergencies and responses to it can be viewed in terms of stages, and the type of information collected must be appropriate for every stage of emergency response

Stage1 (Day 1)

The first response in sudden-impact disasters comes from the affected community, and local priorities are to simultaneously assess and respond rapidly to the crisis. This implies that medical measures are usually implemented without complete information. Local resources are spontaneously and often effectively reassigned and adjusted before the first results of rapid assessment are available.

During this period, when additional resources have not yet arrived; the highest health priority is the emergency medical response.

The first injury estimates are needed within 24 hours following impact to the guide requests for assistance. However, in many sudden impact disasters, it is difficult to project number casualties during this period. An important task of preparedness is to review the experience gained in past disasters (e.g. earthquakes and floods) and prepare guidelines for estimating causalities (for instance, in the case of earthquakes, based on recorded magnitude , population density, and construction type)

Stage 2 (Day 2)

By this time, most critical patients in accessible areas have already received initial medical attention and immediate life-saving measures become less important.

During this stage, a rapid assessment should determine

- Needs for emergency medial response
- Shortage in primary health care resources
- Secondary needs : health care, shelter, food and water for the population
  Needs for additional national and internationals resources (to re-establish essential health service), and restock medical supplies and equipment)

Stage III (Day 3-5)

At this point, restoring primary health care, lifeline systems, and adequate shelter becomes priorities.

Therefore, a rapid assessment should focus progressively on needs for:

- Environmental health, food security and safety, and public health
- Special protection and shelter for vulnerable groups
- Re-establishing the primary health care system, and restoring health facilities

Stage IV (After Day 5)

After day 5, emergency should be fully implemented, and a response and recovery operation ideally in place, covering all sectors.

From this stage on, health assessment should be

- Based on and established surveillance system

- Incorporate information on both disease surveillance, and the health care system
- Focus on health trends as they relate to the response and recovery operation itself
- Contribute to the most effect use of the national and international resources.

EPIDEMIOLOGICAL MANAGEMENT OF DISASTERS

Disaster epidemiology as a study/discipline evolved as a result of the increasing realization that epidemiologic methods can be used in studying the effects that disasters have on the health of populations (Lechat, 1990). It can include - impact assessment; surveillance; description of the public health impact of a disaster; needs to survivors and the health services ability to respond.

Conducting the assessment

The information collected must highlight the population and areas most severely affected the damage to the health system and the status of the affected and unaffected health resources. Information previously obtained from other sources (such as government departments) should be included in the assessment. Rapid assessment activities should provide the basis for establishing ongoing surveillance.

Estimating the disaster's impact on a population requires basic demographic information (such as age and sex distribution of the population) and a good knowledge of the affected area (for example, the mapped location of health facilities, water sources, and high-risk communities) this information is often available from government department, academic institutions or response and recovery organizations.

Assessing the impact on health

a. Injuries

Primary injuries: Injuries patterns and their importance vary according to the type of disaster. For example, earthquakes are associated with large number of traumatic injuries, while floods are associated with many deaths, but relatively few injuries. A rapid assessment should:

i. Estimate the number of persons injured
ii. Assess the severe of injuries (using simple scale of ranking severity such as "those requiring and not requiring hospitalization within 24 hours"

Other useful information includes

i. Types of injuries (such as laceration, fracture and burns)

ii. Injury sites (such as arm, back , leg and head)
iii. Approximate age and sex distribution of affected persons.

b. Secondary injuries

Secondary injuries may occur in the post impact phase of a disaster:

i. From secondary effects of the disasters, such as fires and toxic releases
ii. In association with clean-up and rescue operation and as people return to their homes. Risk groups include residents, response and rescue workers, volunteers, and others in the affected area.

Methods for collecting information

Potential sources of information include any place where the injured may have gone to seek care. The number of seriously injured is more important than number of ambulatory patients. Therefore, information should be collected from second and third level health facilities, where most of the seriously injured seek help.

Information may be obtained by site visits or contacting the officers responsible. As soon as possible, a surveillance system should be established to monitor changing health conditions.

Missing persons

Other critical information for determination the severity of sudden-impact natural disaster is the number of persons who are missing or unaccounted for the information on their possible location and expected health conditions may be needed to plan the medical aspects of search and rescue operation.

Accurate tally of missing persons and the number of dead bodies recovered will be essential, as least at a late stage of the operations.

Information sources include the following.

a. Preliminary indication will come from interviews with families of the missing persons and the community at large (e.g. through a survey)

b. The most important sources for this information are those entities which are responsible for search and rescue: i.e. the police, army and fire brigade.

c. In some cases, schools and hotels for example, will have register of pupils or guests that can help in this task.

Survivor in need

Many of the survivors in the affected area, even if not physically injured, may have been left homeless and deprived of all lifeline systems and services.

a. Sources of information

During immediate post-impact stages
Hospitals (those with usable emergency room and inpatient records, including mobile hospitals, are the best sources)

During the later stages

i. Pharmacies
ii. Community health centers
iii. Evacuation centers
iv. Local officials and leaders
v. Non governmental organisations
vi. Community organisations

Many among them may also need psychological support to overcome the stress of the disaster or the loss of relatives or friends.

Obtaining figures of estimates on their number is essential to plan immediate medium-term response and activities

Data can be collected from:

i. local officials and leaders
ii. evacuation centres
iii. NGOs
iv. Community organization

b. Other illness

Communicable disease outbreaks are quite rare in the days immediately following sudden natural disasters. However, with continued lack of utilities (such as water supplies and sewage treatment)

disrupted health services, and poor environmental conditions, there is an increased risk of communicable disease outbreaks.

Careful considerations should be given to identifying those communicable diseases of increased risk in the disaster affected area because only those pathogens present in the affected area are likely to cause outbreaks.

The rapid assessment should:

i. Identify pathogens already present, or likely to introduced from outside the affected area (e.g. by external health workers or displaced persons or migrants from other locations)
ii. Identify the best measures for disease control

Following a disaster, mass immunization campaigns are frequently unnecessary and counterproductive because they divert resources from more essential services. However, attention should be paid to the immunization status of children against measles, pertussis, diphtheria and polio in densely populated areas.

c. Deaths

Mortality information is the first to be reported by the communities affected, but there is important consideration in using it. For immediate decision making purposes following a sudden impact disaster, mortality data are not as useful as information on injury patterns. However, of setting future priorities in emergency preparedness and responses, it is useful to determine the leading causes of mortality and associated risk factors in specific types of disasters.

Key considerations in assessing information on deaths include the following.

i. In a rapid –impact disaster, it may be particularly difficult to estimate the number of unrecovered bodies: reported mortality is limited to the number of bodies recovered, thus underestimating true mortality.
ii. It is a important to differentiate between mortality estimated based on body counts and those which include the number of people missing
iii. Sources of mortality information that may be useful for a slow-onset disaster may not be useful after a rapid impact disaster (i.e. registration of dead persons may lag in the latter case)

In addition to crude mortality information, other data can be collected after the emergency period may be helpful in setting future preparedness priorities. They include

i. age-specific and sex-specific death rates
ii. causes of death
iii. Risk factors for death.

Depending on the setting and culture of population(s) affected, the range of potential sources for mortality data includes

i. hospitals
ii. cemeteries and burial grounds
iii. health centers or posts
iv. religious leaders
v. offices that register deaths
vi. donor organisations
vii. local officials and leaders
viii. NGOs

Assessing the Impact on Health Services

Medical services

A rapid assessment must provide essential information for determining the extent of damage, and the location of undamaged and functioning services in relation to health needs. Immediately following the disaster or when facing time constrains, the information below should be gathered

i. number, location and type of facilities and previous level of functioning
ii. structural integrity of health care facilities after the event
iii. current capacity of health facilities
iv. disrupted communication and supply line
v. injuries and death of staff
vi. functioning electricity and water supplies(yes or no)
vii. gaps in coverage by key personnel
viii. acute gaps in key supplies and medicines

If time permits, or at a later state, the following information may be collected:

i. number and types of injuries or illness reported at facilities
ii. need for evacuation of injured or ill persons to other types of facilities
iii. need for specialized care (e.g. burn treatment)

iv. number and functions of medical operations (e.g. types of injuries treated and resources needed)
v. Number and types of medicines available, vaccines, blood, laboratory supplies, and key emergency supplies most urgently needed.

Information needed could be collected by visiting the facilities in the stricken area or communicating by radio or telephone with outlying areas.

Environmental Health

Assess the status of health-related services, such as water supply, sanitation, vector control, shelter and transport. Also look at the secondary hazards, such as fires, chemical releases, and collapse of infrastructure, such as dams, roads, and bridges that may occur after extensive structural damage in the affected area.

The priorities are to assess the quantity and quality of untreated water supplies. For example, in earthquake, ensuring an adequate quantity of water is a major problem if supply lines are cut. Particular attention should be paid to

i. structural or functional damage to water supplies
ii. size and location of population with an adequate water supply to identify groups at increased risk of communicable disease and
iii. Actual or potentially contaminated water sources and populations exposed to such sources.

In determining the sate of sanitation the following should be examined

i. structural integrity of sewage treatment system
ii. signs of functional damage (such as overflowing of septic pits)
iii. Presence of vectors.

Floods are often associated with vector-related problems. This is due to several factors, including the emergence of new breeding sites, overcrowding in shelters and camps, and the disruption of vector control activities. Later assessment should identify the types of vectors present in the affected area, as well as the populations at increased of related illness

Assessing the impact on health related sectors

Health status and, consequently, emergency health response depend heavily on other key services. Key

sectors that affect health include

i. food
ii. shelter and hosing
iii. transport and communication

After a sudden impact disaster, assessing the nutritional status is not a priority, though it's important to consider that the disaster may have affected food stocks and pipelines, and shortage may occur. Rapid nutritional assessment will be necessary, however, if the affected population had inadequate or marginal food security before the event

Sources of errors

Injuries may be under reported owing to poor record keeping, or because health facilities may be inaccessible for many of the injured. On the other hand, they may be over reported because they are registered or countered several times at the Red Cross station, the health centres and the hospital.

In the later stages of sudden impact natural disaster, other factors emerge that may reduce the usefulness of morbidity and injury data collect from health providers. For example, the availability of health care may actually improve because of the disaster response, leading to increased medical care of both disaster-related and other injuries.

Furthermore, better diagnostic equipment in more sophisticated facilities may allow more specific or accurate diagnosis in some locations than in others. This may limit the comparability of data gathered from different sites.

A rapid assessment that concentrates on health services in the worst stricken but easily accessible areas may exaggerate the acuteness of need for the entire population affected. On the other hand, the needs of isolated areas with disrupted road, air, and telecommunications may be underestimated and easily forgotten.

Methodological issues in post disaster assessment and Surveillance

1. Compromise between timeliness and accuracy
2. Competing priorities for information
3. Logistical constraints
4. Absence of baseline information
5. Denominator data unavailable
6. Under reporting of health events.

7. Lack of representation
8. Resource costs of collecting and analyzing data
9. Lack of standard reporting mechanism

The overall objectives of post-disaster epidemiologic investigations are to assess the needs of disaster-affected populations, match available resource to needs, prevent further adverse health effects evaluate relief programme effectiveness and permit better contingency planning. Just after a disaster, when no information is available about the medical needs of the populations, you may have to provide advice about the probable health effects, establish priorities for action, and convince the powers that be to get accurate information to make intelligent decisions about relief efforts. More specifically you may also be responsible for performing one or more of the following:

i. Starting a surveillance system
ii. Evaluating the effectiveness of clinical management
iii. Determining the risk factors
iv. Assessing the disaster's public health impact
v. Describing the natural history of the disaster and its long term effect.

The success of any efforts after a disaster will be measured directly by

1. How rapidly the data is collected and analyzed to identify appropriated prevention strategies
2. How effectively decision makers implement these measures. Therefore, successful investigation require, among other activities continuous coordination between epidemiologist who gathers data and identifies issues or strategies and the decision makers, who must understand the data and strategies presently and implement the required policies and intervention

Logistics

Logistic constraints will influence the collection, analysis, interpretation and dissemination of surveillance data. For example, disasters can sever telecommunications systems; impede normal transportation routes; or disrupt or destroy the public health infrastructure such as hospitals, health department and their personnel. Such disruptions may require hiring untrained personnel as field workers possible affecting the quality of data collected. Their unfamiliarity with local language, customs might compromise data quality or impair the delivery of preventive services. If possible, at least one member of assessment team should be familiar with local language, customs and conditions (cultural norms, practices and usual medical care received.). It is also a skilled task to manage community volunteers and assign them appropriate tasks. This requires clear directions and management by the team leader to whom the volunteers have been assigned.

Determination of Rates

Baseline population and health information may be absent or unavailable. The size of the population at risk may be difficult to obtain; one must obtain denominator data to calculate rates and make valid comparisons. Comparing absolute number of health event in two groups may be misleading if the underlying population at risk differ in size or other characteristics.

Rapid Epidemiologic Assessment

Objectives:

- Overall magnitude of the impact of the disaster (geographic extent, number of affected , and estimated duration)
- Impact on health (no. of casualties, morbidity and mortality)
- Number of damaged houses, homeless persons.
- Integrity of health services delivery system (e.g. nonfunctioning hospitals, clinic)
- Specific health –care needs of survivors (surgical , primary health care, reproductive)
- Disruption of other services sector (e.g. community "lifelines" such as electrical power , water, gas, sanitation)that can potentially affect public health
- Extent (and effectiveness) of response to the disaster by local authorities

Planning the Rapid assessment

Rapid assessment time frame requirements and opportunities vary with the type of event and the accessibility of affected are. In general the following holds true:

- Rapid-onset emergencies, such as earthquake, and chemical accidents require the most immediate assessment in a matter of hours after the impact.
- Epidemics, flood and sudden displacement of population should be assessed at the latest within two to four days.
- In the case of suspected famine, where the onset is usually slower and an adequate investigation requires sampling of population, the assessment may take somewhat longer.
- In some situations, logistic or security considerations (e.g. in complex emergencies) may reduce the time available for conducting the assessments at field level to a few hours.

Distance or difficult access to the affected area, or both can delay the initial assessment. If several areas have been affected, or the emergency is thought to have had widespread impact, several small

assessment teams may be needed. In almost all situations, the initial rapid assessment should be followed by a more thorough and focused one. In particular when the effectiveness of emergency response is being evaluated, it is necessary to collect baseline information through surveys that use probability sampling of the population.

Making the final preparation

The final preparations include: determining what information to gather, coordinating different organization, selecting team members, identifying the team leader and assigning tasks, and making administrative arrangements.

Determining what information to gather

The two most important criteria for deciding what information to collect in a rapid assessment are its usefulness for timely decision-making and its public health importance

Coordinating different organisations

Members of the rapid health assessment team should contact as many as possible of the organisations delivering emergency response, to coordinate activities and avoid duplicating efforts. Coordination and pooling of resources can produce more complete and rapid assessment.

Selecting Team members

The rapid health assessment should be performed by multidisciplinary team of qualified personnel, representing an appropriate range of expertise. For example a team to assess the health needs of a refugee population should include an individual from each of the following fields: Public health and Epidemiology, nutrition, logistics and environment health. The following criteria should be taken into account in selecting team members:

- Familiarity with the region or population affected
- Knowledge of and experience with the type of emergency being assessed
- Personal qualities, such as endurance, motivation, and personal health, the capacity for team work, and local acceptability for team member recruited abroad.
- Analytical skills, particularly the ability to see trends and patterns: and
- The capacity to make correct decisions in unstructured situations on the basis of relatively sparse data.

Identifying the team leader and assigning tasks

One team leader must be identified to coordinate technical preparations for the field assessment, such as delegating responsibilities among members, ensuring consistency in approach and use of questionnaires, and preparing laboratory supplies and other equipment.

Making administrative arrangements

These include:

- Obtaining travel and security clearances
- Organizing transportation and other logistics(e.g. vehicles , fuel, and in some cases, camping equipment, food and beverages)
- Setting up the communications system and informing the authorities in the affected area of the assessment's time table.
- Organizing other equipment such as computers, height boards, scales and checklists and
- Ensuring safety and security of team members from violence, infection or other hazards in the emergency affected area.

Conducting Rapid Health Assessment

The steps for carrying out the assessment are: collecting data, analyzing them, presenting results and conclusions and monitoring. Always take into consideration the following questions:

- How feasible is it to collect this information, given available personnel and resources
- Is it worth the cost?
- How reliably do the data reflect the situation of the entire population affected by the emergency, i.e., how representative are they?

Collecting the data

- Emergencies are often chaotic, and data collection during a rapid health assessment may not proceed in a step-by-step approach. Yet the plan for data collection and analysis must be systematic. In addition, the limitations of the various sources of information must be borne in mind during data collection and analysis. In accessibility may be the greatest constraint to the assessment. Try to quantify how much of the situation is actually reflected by your data, defining the accessible areas, the "grey zones" and the "black holes" on the map.

There are four main methods of collecting data.

- Review of existing information
- Visual inspection of affected area
- Interview with key informants and
- Rapid surveys

Review of existing information

Review baseline health and other information at national and regional levels from government, international, bilateral, and NGO source about the following.

- The geographical environmental characteristics of the affected area
- Administrative and political division of the affected area.
- The size, composition, and prior health and nutritional condition of the population affected by the emergency.
- Health services and programmes functioning before the emergency and
- Resources already allocated, procured or requested for the emergency response.

Visual inspection of the affected area

A walk through the emergency-affected area may give you a general idea of the adequacy of shelter, food availability, environmental factors (such as drainage and vector breeding) other potential hazards, and the status of the population. The age and sex distribution and size of the population should be estimated.

During the observation, the affected area should be roughly mapped... Such maps should indicate the extent of the area affected; the distribution of the population; and location of resources, including medical facilities, water resources, food distribution points, and temporary shelters.

Even careful observation may result in a biased impression. If the area visited is more or less severely hit than the rest, the observer may think the overall condition of the entire affected area is better or worse than it is. In addition, the most severely affected persons are often the least visible: injured or sick persons are more likely to be inside shelters and less accessible to visitors.

Interviewing the key informants

Conduct interviews with key personnel in the area and with persons from every sector of the affected

population.

- Clan, village and community leaders
- Area administrations or other government officials , teachers
- Health workers (including traditional birth attendant and healers)
- Personal from local and international emergency response organisations , including United nations bodies working in the area; and
- Individuals in the affected populations

The information collected from these interviews should include:

- The interviewees' perception of the event (cause and dynamics)
- Pre-emergency conditions in the affected area
- Geographical distribution and size of the affected population
- Age and sex distribution f the population and average household size
- Adequacy of security and prevalence of violence
- Current morbidity, death rates and causes
- Current food supplies, recent food distribution and future food needs
- Current supply and quality of water
- Current adequacy of sanitation
- Other priority needs of the affected population, such as shelter and clothing.
- Current status of transport, fuel, communication and other logistic necessities: and
- Current resources available in the affected community, including medical equipment, drugs, and personnel.

Concerns expressed by the people interviewed can be further investigated during the rapid health assessment. For example, if health workers report an outbreak of the cholera in the emergency-affected area, this should be confirmed or refuted immediately by the assessment team. The interview with key personnel should be used for planning the establishment of surveillance system monitoring morbidity, mortality, and nutritional status.

Methods

Surveys

The technique used to collect this information (primarily simple and systematic surveys and simple reporting system) are usually methodologically straightforward. The most valuable data are generally

simple to collect and analyze. Use standard clinical case definition like fever, cough with fever, watery or bloody diarrhea, and fever with rash and put the definitions in writing so others can use them.

Since this information will be used to plan and implement immediate responses , the earliest assessments should address the most basic question for which decision makers need answers, Later on , surveys can more carefully examine availability and quality of medical care, the need for specific interventions (surgery) nutrition , immunization status and epidemic control.

Sometimes after rapid onset disaster, time constraints and disruptions required you to conduct rapid assessment surveys using non-probability sampling methods. However, you may get biased results because they are often based on purposive, conveniences, or haphazard selection samples. Triangulation of data from different sources can be helpful in commenting upon its quality.

Recently a modified cluster sampling method was designed to perform a rapid assessment after hurricane. In the first survey conducted 3 days after Hurricane Andrew struck, clusters were systematically selected from a heavily damaged area by using a grid that had been overlaid on aerial photographs. Survey teams interviewed seven occupied households in consecutive order in each selected cluster. Results were available within 24 hours of beginning the survey. Surveys of the same heavily damaged are and of a less severely affected areas were conducted 7 and 10 day later, respectively. The survey team found few household with injured residents, but a large proportion of household was without telephones or electricity. This directed relief workers to focus their limited resource on providing primary health and preventing services to paediatric, gynaecologic, and elderly populations. Otherwise efforts would have been diverted to establish unnecessary high-tech surgical and mass causality trauma services.

Source: Patil, Rajan (2010), Draft Module Epidemic and Disaster Management

Surveys take more time and resources and therefore, they should be reserved for data which are essential but may not be available from other sources. Such data could include:

- Sex and age distribution of the affected population
- Average family size
- Number of persons in vulnerable groups, such as unaccompanied children, single women, households headed by women and destitute elders.
- Recent death rates
- Recent rates of health conditions that are specific to the type of emergency, such as diarrhoea, traumatic injuries, and burns and respiratory distress.

- Nutritional status
- Vaccination coverage among children
- State of housing; and
- Access to health care, food, water, and shelter.

Analyzing the data

The data collected during the rapid assessment must be analysed quickly and thoroughly, and the results made available to decision-makers as soon as possible to derive the greatest benefit from the information.

The analysis should be as specific as possible to ensure the best targeting for interventions. Data should be disaggregated and treated separately, according to administrative area, period, and type of population, to get specific estimates. The sources of data should always be specified, and an attempt made to assess their reliability.

Presenting results and conclusions

The presentation of the results and conclusion of the rapid assessments should have the following characteristics.

It should be clear; user-friendly language should be used; graphs can hold make complex data and trends more easily understood.

It should be standardized. The results should be presented in widely recognized formats so than they can be compared with other assessments. For example, the prevalence of moderate and severe malnutrition should be expressed as a percentage of the target population. In an emergency due to sudden population displacement, mortality should be calculated as number of deaths per 10000 people per day.

It should give clear indication of the highest priority needs and how to address them. Chronic or pre-existing conditions and needs should be distinguished from the new ones related to the emergency. The members of rapid assessment team should arrive at clear recommendations for implementing organizations.

It should be widely distributed. Copies of the report should be distributed to all organisations involved in the emergency response operation

Monitoring

The rapid health assessment should be only the first step in collecting data. Ongoing data collection is necessary to evaluate the effect of health programmes implemented before or as a result of the rapid assessment. For example, after recent death or morbidity rates are care calculated from data derived from a survey conducted during the rapid assessment, a surveillance system should be established, or re-established, to monitor future trends.

Presenting the Results of the Assessment

The following format can be adapted for presenting the results of the assessment in different situations.

a. Reasons for emergency (type of actual or imminent hazard)
   i. Onset and evolution
   ii. Additional hazards
b. Description of the affected area (add at least a sketch map)
c. Description of affected population
   i. Number, estimated breakdown by age, sex, and special risk or vulnerability factors.
   ii. Estimated total number of deaths and injuries
d. Impact in terms of mortality and morbidity
   i. daily crude mortality
   ii. other indicators , such as malnutrition rates, losses in vital infrastructure, financial losses and other socio-economic data can be use
e. Existing response capacity (in terms of human and material resources);
   i. local, sub national , and national capacity
   ii. international organisations(bilateral, non governmental)
   iii. overall authority and national focal point
   iv. distribution of tasks and responsibilities
   v. coordination mechanisms
   vi. Logistics, communications and administrative support.
f. Additional requirement
   i. immediate vital needs of the affected population
   ii. immediate and medium term needs for national capacity building
   iii. implementation, monitoring evaluation mechanisms

Whenever possible, this section should include medium term and long term outlines for rehabilitation and vulnerability reduction

While giving recommendations indicate the following:

- Priority actions by projects
- Responsible office (national focal point and national and international partners)
- Time frame
- Break down of requirement by project (estimated cost)

An annex should illustrate the time table of the assessment, give a summary of the methods used and list of the sources. It will also include maps and copy of the questionnaires used and the background documents that may have been collected in the field.

Nutritional Emergencies

The existence of a nutritional emergency should be considered whenever population has reduced access to food, associated with actual or threatened increase in morbidity and mortality.

A food emergency is usually an acute event but develops over time. Early signs for e.g. decreased rainfall can appear before access to food is reduced. At a later stage, there are indications of diminished access to food (for example, low food supplies and an increase in prices: "intermediate indicators"). Actual weight loss, mortality and population migration usually occur at a relative late stage in a nutritional emergency ("trailing indicators")

For the rapid assessment must be sensitive to the signs of famine's various stages: for instance, occurrence of precipitating factors, implementation of coping strategies, destitution, migration, and epidemic mortality and morbidity.

Patterns of work and climate such as exposure to cold also affect food requirements an related mortality, and should also be considered in the assessment. Information on potential nutritional emergency may come from a range of sources: a famine early warning system, health or other government officials, and non governmental organisations. Therefore, it is essential to carry out a rapid assessment to confirm or refute these initial reports

The rapid assessment should not take longer than four to seven days. By comparison, a more thorough assessment requires between two and three weeks, because it includes large-scale population based surveys. It is most effectively carried out as a team effort, with specialists, input on food logistics, agricultures and health.

The below table would help in assessing the situation and guide on the actions that can be taken:

FINDING	ACTION REQUIRED
Food availability at household level below 2100 kcal (8.79MJ)	Unsatisfactory situation Improve general rations until local availability and access can be made adequate
Malnutrition rate 15% or over OR 10-14% with aggravating factors.	Serious situation General rations (unless situation limited to vulnerable groups) plus ➢ Supplementary feeding generalized for all members of vulnerable groups (especially children , and pregnant and lactating women) ➢ Therapeutic feeding programme for severely malnourished individuals
Malnutrition rate 10-14% Or 5-9% plus aggravating factors	Risky situation No general ration, but: - Supplementary feeding targeted to individuals identified as malnourished in vulnerable groups. Therapeutic feeding programme for severely malnourished individual
Malnutrition rate under 10% with no aggravating factors	Acceptable situation No need to for population intervention Attention to malnourished individuals through regular community services.

Note :

The above are only general indication. The best way to ensure that the nutritional needs of young children an other vulnerable group are met is on a case-by-case basis, taking account of the particular local (including socio-cultural) circumstances.

Malnutrition rate: proportion of child population (aged six months to three or five years) who are below median -2SD or 80% of reference value of weight -for -height.

Aggravating factors :

iv. general food ration below the country specific- mean energy requirement
v. crude death rate > 1 /10000 per day
vi. epidemic of measles or whooping cough
vii. high prevalence of respiratory or diarrhoea disease

Source: Patil, Rajan (2010), Draft Epidemic and Disaster Management

Review Questions:

1. Explain the components of medical preparedness for disasters
2. What is the specific public health impact of floods?
3. What is the specific public health impact of earthquakes?
4. What are the challenges of data collection in a disaster situation?
5. What are the challenges of data analysis?

Application Questions:

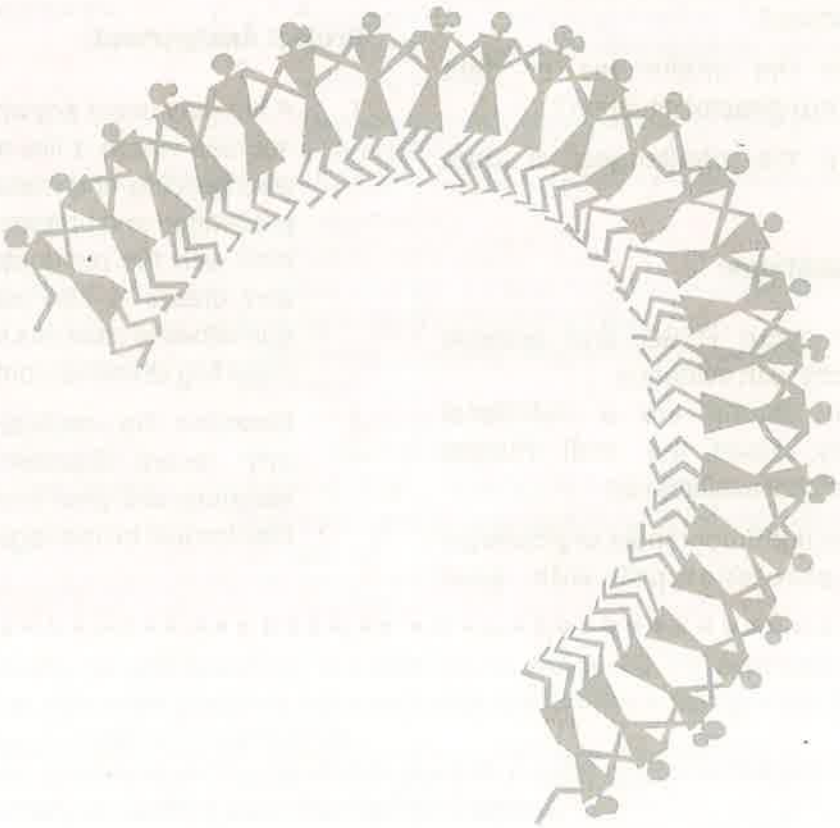
1. Read up about PTSD and propose interventions with evidence.
2. Starvation deaths are a nutritional emergency. Read the draft Hunger Watch Protocol available on

   http://www.righttofoodindia.org/data/guidelines_starvation.pdf with your facilitators, and describe how you would go about investigating the deaths from malnutrition of 10 children in a village. Describe the impact on the health of the affected community with evidence.
2. List the groups you would consider vulnerable in a disaster situation.

Project Assignment:

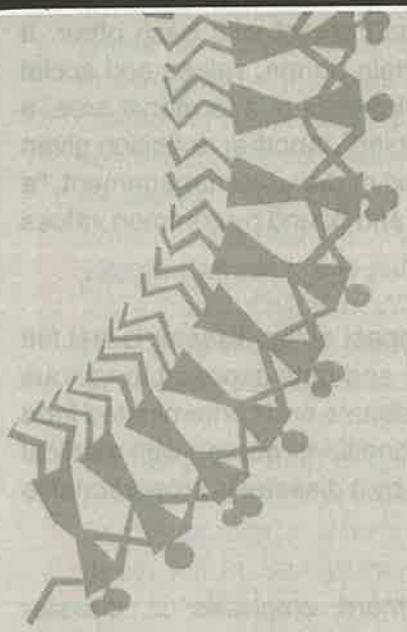
1. A fire may occur anywhere. Work out the sources where a fire might start in your own building and make a plan including prevention and preparedness. Share this plan with the residents of your building and create a two page document of guidelines in case of a fire in your building including all critical contact information.
2. Describe the medical management of any recent disaster from available literature and give three suggestions on how it could be managed better

NOTES



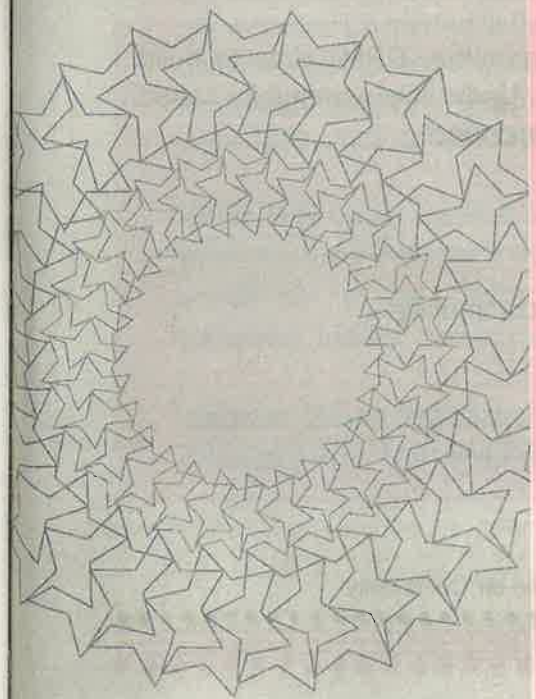
Lesson FOUR

Role of Community in Management of Disasters[1]



In this lesson we shall discuss:

- What a community-based disaster preparedness is
- Community based efforts to manage disaster with a focus on vulnerable population
- Components and plan for community-based disaster preparedness



[1] All case studies are taken from Good Practices in Community Based Disaster Risk Management, GOI –UNDP Disaster Risk Management Programme (2002-2009). GoI UNDP (2004), Disaster Risk Management Programme, *Local Level Risk Management, India's Experience,* New Delhi has been referred to for this lesson.

THE DEFINITION OF COMMUNITY[1]

The WHO Expert Committee defines community as a social group determined by geographical boundaries, and/or common values and interest. Its members know and interact with each other. It functions within a particular social structure and exhibits and creates certain norms, values and social institutions. From the point of view of disaster preparedness it contains elements of a territorial area, a complex of organizations within an area and essentially a "sense of belonging". Another definition given by the World Health Organization seems particularly relevant in the context of disaster management, "a group in face-to-face contact having a harmony of interest and aspirations and bound by common values and interest".

At times of disasters the community that first gets affected is where the impact of the disaster is first felt and where response is most direct. The community becomes vulnerable and gets exposed to various disaster conditions. Communicable diseases, unhygienic conditions, inadequate and contaminated food and water owing to disasters affect the health of the community. Health conditions worsen with medical and health services getting affected. The health of the community affected by a disaster is proportional to the magnitude and various dimension of the disaster.

Community Based Disaster Preparedness (CBDP): More and more emphasis in disaster management nowadays is on community management of disasters. There is a reasonable fear that the top down approach might not lead to effective reduction of the problems brought by disasters. There is a need to address the needs of the people affected by disasters at the local level and it is felt that the community can initiate and assess needs and resources to be better planned to face disasters. Community involvement in preparedness, it is felt, increases the likelihood of effective action.

The Government of India UNDP Disaster Risk Management Programme (DRM) aims to build capacities at all levels to institutionalize the DRM systems in India. Under this community based disaster preparedness is being popularized. Preparation of the CBDP includes:

- Formation of Village Disaster Management Committee
- Review and analysis of past disasters
- Preparation of seasonality disaster calendar by the community
- Mapping risks, vulnerability and capacities of the village by the community
- Constitution of Disaster Management Teams
- Identification of hazard specific mitigation activities; and
- Constitution of Community Contingency Fund (CCF)

[2] Refer to Unit 1 of MHMI-012 Block 1 Community Participation for Health for discussion on 'Community'

Preparedness pays...

In Tamil Nadu, the GOI-UNDP Programme is being implemented in 13 districts: (64 blocks, 2463 gram panchayats, 3397 villages, and in 17 Urban Local Bodies). Village disaster management teams were constituted to undertake search and rescue, and to administer first aid. In order to get more clarity on the roles and responsibilities of the teams, mock drills were also conducted. The creation of regional Early Warning Systems, and Risk and Vulnerability Assessments can be very cost effective to focus on local level and support communities to take simple disaster preparedness measures. Forging basic communication chains can help spread warnings effectively and save lives. *In Samiyarpettai, a quiet village by the sea in Tamil Nadu, the GOI-UNDP's efforts to make the villagers aware of the risks posed by natural phenomena such as cyclones were first seen as no more than a diversion. When the Anna school of Management first reached out to the villagers and attempted to involve them in learning survival strategies to deal with incidents such as cyclones, the women were conspicuous by their absence.*

For two years later, when the Tsunami struck, the villagers of Samiyarpettai knew exactly what to do to face the calamity. They were aware of how to reach safer, higher ground, to make use of empty barrels as rafts, and were trained in first aid techniques that saved lives, and minimized injuries. The death toll in Samiyarpettai was 22, much lower than in neighboring areas. And the villagers themselves acknowledged, "Many more of us would have been killed if we had not been trained."

Another initiative that has the potential to make a big difference to the outcome when accidents and other natural hazard or human-induced disasters occur is *the awareness and training level of the police and doctors.* The Police are often the first to arrive at the scene of an accident whether it is a traffic accident, or the scene of a crime, or any other natural or man-made disaster. However, they are often not trained to deal with the victims. Doctors believe that it should be mandatory for police personnel to be trained in first aid so that they can provide speedy relief to the victims till the time a doctor arrives or they are taken to a hospital. Doctors from the state government were called upon to train police personnel and this exercise was sponsored by Medisphere Marketing Private Limited. In June 2006, doctors trained police personnel in 12 districts of Uttar Pradesh.

While this initiative was seen to be successful in terms of resource mobilization, forging partnerships between different departments involved with DRM activities, a greater emphasis on the quality of the Programme, and less on meeting targets would, it was believed, lead to better outcomes.

Source: Good Practices in Community Based Disaster Risk Management, GOI -UNDP Disaster Risk Management Programme (2002-2009), pp 17

Vulnerability: Vulnerability is the condition determined by physical, social, economic and environmental factors of processes which increases the susceptibility of a community to the impact of hazards[3]

As in most cases it is the already marginalized and disadvantaged groups or communities that will have the least resources and capacities to recover from the impact of disasters. The critical causes can be listed as under:

- Material and economic vulnerability : lack of access to resources
- Social vulnerability : Disintegration of social patterns
- Ecological vulnerability: Degradation of the environment and inability to protect it
- Organizational vulnerability: Lack of strong (national and local) institutional structures)
- Educational vulnerability: Lack of access to information and knowledge
- Attitudinal and motivational vulnerability: Lack of awareness not just of local communities but also on the part of institutions. For instance, institutions seem visible only at the time of a disaster; they are being seen appealing for relief funds.
- Political vulnerability: Limited access to political power and representation
- Cultural vulnerability: Certain beliefs and customs
- Physical vulnerability: Weak individuals/ structures/ (Example, household in certain areas vulnerable to the vagaries of nature.

This is to say that the scale of damage to a community not only depends on the community's physical exposure to the disaster situation but also the pre-existing socio-political and economic situation.

Community efforts at managing disaster need to therefore take account of and place special efforts to plan for the vulnerable community. Community Health Management is the sum of steps taken to meet the health needs of the community, taking into account the needs of the people especially the vulnerable, and the resources available. Community Health Management must therefore effectively utilize all the locally available resources; involve people in the community and co-ordinate with local agencies. Management of the ways in which disasters disrupt the community is important. As we know, disasters disrupt the community in the following ways:

- Disruption of the physical system (example, water, air, soil, housing, wastes, etc)
- Disruption of the biological system (example, plant and animal life)
- Disruption of social set up (example, income/livelihood)

[3] Living with Risk, UNISDR 2002

This calls for strengthening the capacities in the areas of assessment, monitoring, early warning and preparedness systems, identifying and working with those who need assistance, accurate and effective communications strategies and also developing systems for cooperation and collaboration among response groups in the recovery process and effective leadership in the implementation of preparedness and response programmes. A community-based approach to disaster thus means not only responding to disaster situation but also reducing the effect of such situation by preparedness. Thus, Community Based Disaster Preparedness (CBDP) has to incorporate the following:

- Hazard Mapping and Zoning
- Involving Panchayati Raj Institutions
- Formulating Community Preparedness and Contingency Plans
- Forming Disaster Task Forces at the village and block Levels
- Capacity building of the members of the task force
- Arranging mock drills at the village and block levels
- Networking with NGOs and CBOs

Hazard Mapping is the process of establishing geographically where and to what extent particular phenomena are likely to pose a threat to people, property, infrastructure and economic activities. It represents the results of hazard assessment on a map showing the frequency and probability of occurrence of various magnitudes and duration.

Mason's Training, Bihar

In Bihar, eight (8) districts fall under earthquake zone V and are covered by the Orissa Development Technocrats Forum which is involved in training trainers to train masons to build earthquake-safe houses. After receiving training for 6 days, masons build a Technology Demonstration Unit in each of the 201 blocks which will then be used as a control room-cum-information centre. The training for these master trainers is provided by resource persons from ODTF team. Masons and artisans are now part of self help groups and masons' cooperatives in each block. Control Rooms have also been set up in Blocks which will help in the dissemination of safe building techniques.

Source: Good Practices in Community Based Disaster Risk Management, GOI -UNDP Disaster Risk Management Programme (2002-2009), pp 15

The critical elements in promoting community based disaster management are:

- Help communities work alongside local government;
- Introduce methods of communication and;
- Create structures for coordination.

Components of CBDP

a. Disaster Management Committee: Village Disaster Management Committee (VDMC) is formed in each village and it is responsible for initiating disaster preparedness activities. It consists of local elected representatives, grass root level government functionaries, local Non-Government Organisations (NGOs)/Community Based Organizations (CBOs), members of youth groups such as the National Service Scheme (NSS) and Nehru Yuva Kendra Sangatan (NYKS), women groups, youth club members, grass root level government functionaries, etc. The size of VDMC is based on the population and need of the villagers. The head of the VDMC takes a lead in mobilizing the community for the preparation of the CBDP plans.

b. Review & Analysis of Past Disasters: It refers to prioritizing disasters based on its frequency and analysis of the estimated losses. This can be carried out by taking the help of elderly people of the village. The villagers analyze the losses that they had incurred during various disasters and learn the best practices carried out. This is an important activity as it forms the basis for preparedness and mitigation plans.

c. Seasonality Calendar of Disasters: While analyzing the past experiences pertaining to various natural disasters, communities develop the seasonality calendar based on the occurrence of disaster events. In the calendar below prepared by the community show the month of occurrence of the disaster and month for preparedness and mock drill.

Seasonality disaster calendar

	Hazards	Jan.	Feb	March	April	May	June	July	August	Sept.	Oct	Nov	Dec
1	Flood							✓	✓	✓			
2	Cyclone				✓	✓					✓	✓	
3	House hold fire			✓	✓	✓	✓						
4	Drought								✓	✓			
5	Forest fire				✓	✓							
	✓	Occurrence month											
	©	Preparedness & mock drill month											

(PS- © i.e. Preparedness & mock drill months are not marked)

Source: GOI-UNDP (2002-2007), Disaster Risk Management Programme, *A Compendium On Disaster Risk Management India's Perspective: A Primer For Legislators,* New Delhi, pp 44

d. Mapping Exercises: One of the most important activities of the CBDP is the mapping of risk, vulnerabilities and capacities of the Village by the community itself because it is considered to be a very simple and cost effective tool to collect ground level data. This is done through Participatory Rural Appraisal (PRA) exercise. Before the mapping exercise starts, the community members first discuss among themselves, about the experience of previous disasters they have faced or the disasters they may face in future. It aims to provide a pictorial base to the planning process especially for the semi-literate populace and ensures maximum community involvement across gender, caste and other divides. It has also been found to be very effective in raising awareness among the community and thereby enhancing participation of the community in problem identification. The maps generate awareness among the community about the avenues for smooth evacuation during any imminent disaster. The strategy adopted is to use locally available resources rather than depending on the external agencies for help and support. The villagers/ community members are encouraged to draw the maps on the ground using locally available materials such as stone, sand and various colour powders for different items and indicators.

e. Disaster Management Team

Village level Disaster Management Teams (DMT)/ Task Forces are formed to outline coordinated response during crisis situations. DMTs have sectoral focus such as early warning, shelter management, evacuation and rescue, medical and first aid, water and sanitation, carcass disposal, counselling, damage assessment and relief and coordination. Based on a needs assessment of the teams, specialized training could be provided to the members. DMT members would be linked to the existing service providers for continuous training and discharging of their responsibilities effectively.

f. Mock Drill: Mock drill is an integral part of the village CBDP plan, as it is a preparedness drill to keep the community alert. Keeping this in view, mock drills are organized in all villages to activate the DMTs and modification of the DM plan based on the gaps identified during such exercises. Basically this is a simulation exercise, which if practised several times, would help in improving the cohesiveness of the community during an emergency.

g. Identification of Hazard Specific Mitigation Activities

While developing the CBDP, the villagers would develop a mitigation plan for each hazard for long term planning. These could be coastal belt plantation, cyclone shelters in cyclone prone areas, improved drainage system in low lying areas, raising the platform of the community hall or school building etc. All mitigation plans would be forwarded to higher authorities for financial provision. It helps the community to minimize the loss, and prevents the impact of various natural disasters. All community mitigation plans are consolidated at Gram Panchayat (GP) level and become the part

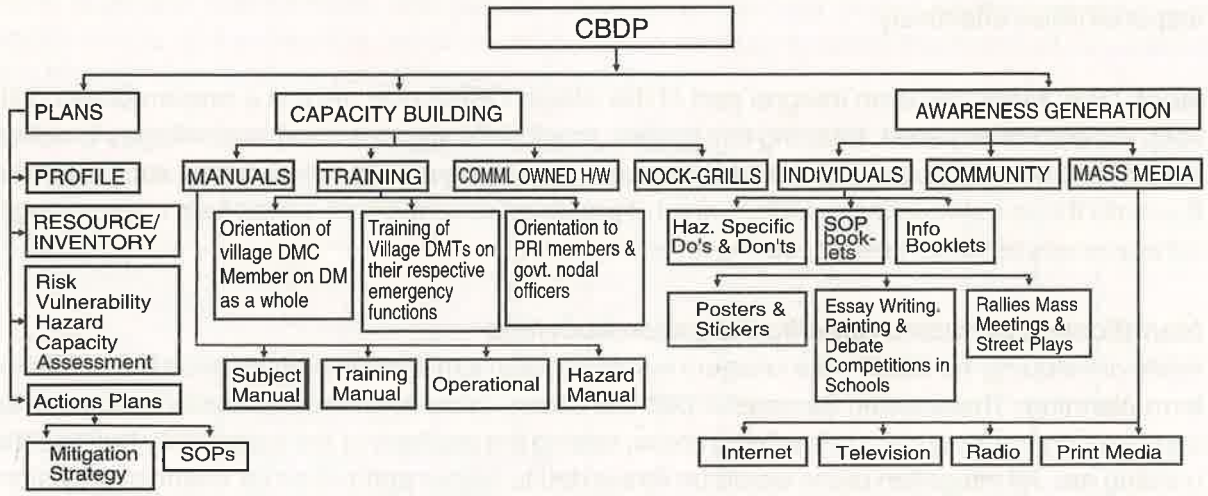
of the respective GP developmental plan. The mitigation plans would eventually be funded under the on-going development programmes in the district, for which the District Magistrate/Collector is the nodal officer. Disaster management committee at the district levels and the State Steering Committee (a mechanism established at the State headquarters level) play a major role in ensuring this.

h. Community Contingency Fund (CCF):

Availability of resources for various activities to be carried at different phases of the cycle is very crucial. To meet this contingency, each household in the village would be motivated to contribute resources which could be in the form of funds and/or food grains, which becomes the grain bank for the village. A very nominal amount based on the affording capacity of the inhabitants (households) is collected and kept as the Community Contingency Fund or village emergency fund. In the annual meeting they decide how to use this fund as per the need and developmental plan of the village.

Source: Local Level Risk Management, Indian Experience, Government of India, Ministry of Home Affairs, National Disaster Management Division

The chart below outlines some of the essential tools at various stages that would ensure sustainability of community based disaster management.



Source: GoI UNDP (2004), Disaster Risk Management Programme, *Local Level Risk Management, India's Experience, New Delhi,* pp 20

COMMUNITY BASED DISASTER PREPAREDNESS PLAN

The plan is actually a combination of various activities at the different phases: pre disaster, disaster and the post disaster. Those activities are to be identified which can be reflected in the preparedness plan.

a) Pre Disaster Phase:

The pre disaster phase involves activities mostly geared towards dissemination of information, creating awareness and orienting the community towards the nature and effects of the disasters towards which they are vulnerable. The assessment of risks and vulnerabilities includes the physical structures as well With the involvement of the community a resource mapping (schools, primary health centres, cyclone shelters, communication facilities, roads and other infrastructure and skilled individuals etc) of the community is essential. After orienting the community preparedness plan needs to be formulated at the community level that takes into cognizance the community needs, measures to be taken by the community before, during and after the disaster; resources available and allocation of responsibilities. The role of the community should be specified.

b) Disaster Phase:

The activities during the disaster phase are mostly centred on Organizing Search, Rescue and Evacuation activities. This includes identifying disaster victims, bringing them to safer locations, provision of first aid, distribution of relief, adhering to evacuation plan etc. Provision of shelter needs to be planned for both people as well as livestock (arrangement for water supply, sanitation, kitchen, fodder for animals, medical services and first aid etc). With the community immediate activities of clearing of debris from collapsed buildings, bridges, trees, other structures and re- establishing of transport and communication services will help in return to normalcy. Other activities that need to be planned immediately are - moving of injured to the nearby health centres and hospitals; disposing of dead humans in order to contain spread of diseases. With the community identification of dead bodies, compliance with police formalities, mobilizing resources for disposal of bodies in accordance with religious and cultural practices are activities that are crucial during the disaster phase.

Disposal of dead animals also becomes important as it has its effect on health and environment. The immediate assessment of damages on occurrence of disaster facilitates quick emergency relief. This is to be done with reference to the number of households, population, livestock, area affected etc.

c) Post Disaster Phase:

The activities post disaster is centred on social and medical rehabilitation as well as damage

assessment. A detailed damage assessment covering varied number of human lives, identification of live victims as well as the dead, livestock, infrastructure, damage to crops and the estimated value needs to be undertaken.

A comprehensive economic rehabilitation plan needs to be drawn. The plan should be inclusive of restoration of agricultural activity through necessary inputs, rehabilitation of artisan, marginal, small scale and business people. Those pursuing other occupations, replacement of cattle and agricultural and other equipments, boats, fishing nets etc. also should be covered under the plan. Social rehabilitation needs to be ensured through strengthening of existing health centres, schools, *anganwadis*, community centres, vocational training centres, psychological counselling to the affected to enable them get back to their normal routine.

An appropriate monitoring and evaluation mechanism should be in-built in the community-based preparedness programme. This is needed to facilitate proper utilization and implementation of resources.

The above list of activities is essential to assess the damages arising out of disasters, determine the extent and type of assistance.

State Disaster Plan of Maharashtra

Community Participation can be ensured by

- Identifying opinions, positioning leaders and voicing administration's confidence in their capabilities to undertake the tasks
- Consultation and dialogues to encourage the community and its leaders to come forward.
- Having regular feedback meetings and an open book approach to demonstrate transparency
- Involving community in decision making at local levels
- Community participation in health management world help in :
    - Maintaining security and law and order
    - Emergency evacuations
    - Containing panic behaviour, and maintaining orderly movement towards shelters
    - Encouraging self help and contributing labour
    - Maintaining standards in sanitation and waste disposal

A community-based disaster preparedness plan is a comprehensive action plan which specifies the demographic profile, resources available with the community, measures to be taken before, during and after the occurrence of disaster. It is said to contain an inventory of several types of resources available at the community level, roles and responsibilities of different administrative agencies, Panchayati Raj Institutions, NGOs, CBOs and community.

Community-based disaster preparedness plan, broadly indicate the following aspects- Village profile; Profile/information about the community; Disaster profile; Inventory of resources of the community; Emergency communication procedures and Specific roles and responsibilities (of different agencies and functionaries)

The community-based disaster preparedness plan, therefore, is an important tool to bring about coordination of the various efforts of various agencies that includes government, private sector, international, agencies, NGOs, CBOs and community. Community action on disaster occupies an important and a growing space in Disaster Management. District Health Action Plan provides the space for communities to be involved in the planning process which will be discussed in detail in the last unit.

WOMEN IN DISASTERS

Natural disasters do not affect people in the same manner. In the community different people are affected differently. A vulnerability approach to disasters would suggest that inequalities exists not in exposure and sensitivity to risk but also in access to resources, capabilities, and opportunities. Vulnerability disadvantages certain groups of people; among the groups women are more vulnerable to the impact of natural disasters. Women also are differently affected. "The higher women's status, the smaller is the differential negative effect of natural disasters on female relative to male life expectancy. What this means is that where the socioeconomic status of women is high, men and women will die in roughly equal numbers during and after natural disasters, whereas when the socioeconomic status of women is low, more women than men die (or women die at a younger age)". (Neumayer a & Plüümper, 2008)

Looking at the issue from a conceptual perspective[4], it is useful to differentiate between three main causes for gender differences in vulnerability in disasters:

First, biological and physiological attributes of women may at times disadvantage her in their immediate response to the disaster. Decreased mobility during pregnancy could be an example for this. However facts such as these should be separated from uncritical opinions of health scholars which attributes her

[4] Please refer to PHRN Book 6: Mainstreaming Women's Health concerns to see the relationship between Morbidity, Mortality and Gender

mortality due to "to factors such as physical size, strength, and endurance" (Bern et al. 1993, 75) which has more to do with learned skills, accepted and expected roles. Indeed the way to understand this is to recognise that biological differences too are not independent of gender.

Second, social norms and role behaviour which is not related to her sex but gender may lead to a consequent behaviour that increases her vulnerability in the disaster situation. Women are taught to nurture and in any situation concerning health of the family, she is the primary caregiver. Such a role acts as a detriment to her self-rescue efforts in all types of disasters. Factors such as dress codes, restrictions, division of labour can hinder her chances of surviving certain disasters. Gender affects both men and women and increases their vulnerability to certain disasters.

And third, disasters lead to shortage of basic resources as well as create a situation of chaos. The consequent competition between individuals for scarce resources becomes fierce. In such a situation existing forms of gender discrimination not only become aggravated but also new forms of discrimination can emerge. While it is stated above that gender affects both men and women and role behaviour can impact them differently increasing the vulnerability of both depending on the type of disaster it is an accepted fact that gender does play a potent role in the aftermath of disaster, for example - in the distribution of both within the family, rescue operations, relief policies. "Many disaster researchers have noted that in most countries relief efforts are almost exclusively managed and controlled by men, systematically excluding women, their needs, competences, and experiences from contributing to these efforts"(Neumayer a & Plüümper, 2008).

The UNDP/ UNDRO (1992) *An Overview of Disaster Management* had laid out a framework from which a disaster management framework could be developed. Based on the framework developed by Mary Myers[5] some questions can be raised which would be important in a gender strategy to disaster preparedness:

1. Vulnerability Assessment: The first question one can ask oneself is whether the risk mapping involves disaggregation of the vulnerable population by sex and an analysis of the findings

2. Planning: Are women involved in the formulation of a national, regional, state, district disaster plan. Who plans for a disaster?

3. Institutional Framework: What is the level of convergence at the ministry level? Is the Ministry of Women and Child Development part of the coordination plan?

[5] Myers, Mary (1994), "'Women and Children First': Introducing a Gender Strategy into Disaster Preparedness" *Focus on Gender, Vol. 2, No. 1, Women and Emergencies (Feb., 1994), pp. 14-16,* Taylor & Francis, Ltd.

4. Information Systems: In the data collection which is a part of your information system to predict forthcoming disasters are there any indicators based on women's needs?

5. Resources: Does your medical supplies include supplies for pregnant and expecting mothers? Is it prepared for obstetric/ gynaecological emergencies?

6. Warning System: Are you using the appropriate media to reach to all sections of the population?
7. Response mechanisms: What are the mechanisms in place to ensure inclusion of women's needs in disaster relief? Is your relief plan going to look at women as primary caregivers?

8. Public Training and Education: Are women's workload and domestic schedules taken into account while developing training schemes?

9. Drills: Are women/ children and elderly a part of evacuation rehearsals and preparedness drills

Review Questions:

1. Why is it critical to have a community based disaster management plan?
2. What types of vulnerabilities exist in the community? Illustrate with examples
3. How do disasters disrupt community? Illustrate with examples
4. What are the elements of a CBDM plan?

Application Questions:

1. Imagine that you live in a flood prone district. Use the framework given in the lesson to write a CBDM Plan.

Project Assignment:

1. Visit a school / cinema hall in your locality and evaluate its preparedness for a fire. (make sure you look at infrastructure as well as human capacities). Make recommendations for the same and give them to the district magistrate / management.
2. Interview five lay (non medical) people and find out how they would respond to a road traffic accident involving a public bus in which 30 persons are lying on the road in various states of injury. Some are unconscious and some are mildly hurt. Some can walk and some cannot. Compare your findings with the recommendations for first responder primary trauma care (material to be made available by your facilitators / study centres).

Lesson FIVE

Role of Government and Non Government Organisations in Management of Disasters[1]

In this lesson we shall discuss:

- The Ministries responsible for various categories of disasters
- The role of Central and State government in the management of disasters
- What the administration can do at the district and local level
- The role of non government agencies and civil body organizations in management of disasters

[1] This lesson has been developed from materials of the GoI - Disaster Management in India, Disaster Management In India, A Status Report and also borrows heavily from IGNOU (2009), Disaster Response: MPA-005, for the course PGDDM (Post Graduate Diploma in disaster management)

Disaster management should occupy an important place in the policy framework of a disaster prone country like India. The underlying idea for the thrust also lies in the fact reiterated time and again that it is the poor and already vulnerable who are rendered more vulnerable due to disasters. The government's approach to disaster emanates from this idea.[2]

The Tenth Five Year Plan document has a detailed chapter on Disaster Management (in The Eleventh Five Year Plan document it is part of Chapter 9: Environment and Climate Change). The two Five Year plans stress the fact that development cannot be sustainable without mitigation being built into the developmental process. It was the Tenth Five Year Plan document that for the first time recognised Disaster Management as a development issue. Each state is supposed to prepare a plan scheme for disaster mitigation in accordance with the approach outlined in the plan. Thus, mitigation is being institutionalized into developmental planning. Undertaking risk and hazard assessments allows for pre-planning of response and likely effects of a disaster.

Tenth Five Year Plan Strategy And Approach

9.3.3. The Tenth Five Year Plan (2002-07), prepared in the backdrop of the Orissa super cyclone, Gujarat earthquake, and end of the International Decade of Natural Disaster Reduction, recognized disaster management as a development issue for the first time. The Plan devoted a separate chapter to disaster management and made a number of important prescriptions to mainstream disaster risk reduction into the process of development.

9.3.4 The Tenth Plan prescriptions on disaster management can broadly be divided into three categories:

(I) Policy guidelines at the macro level that would inform and guide the preparation and implementation of development plans across sectors;

(ii) Operational guidelines for integrating disaster management practices into development plans and programmes, and

(iii) Specific developmental schemes for prevention and mitigation of disasters.

Source: Chapter 9: Environment and Climate Change, 11th Five Year Plans

[2]Refer to lesson 1: Understanding Disasters, for Existing Framework of the Ministry of Home Affairs, National Disaster Management Division

Under India's federal system, states are responsible for disaster response and the Central government supplements the efforts of the state through the provision of material and financial assistance. India's system of governance provides for specific roles for the Central and the State government. However, disaster management does not find mention in the list of subjects (Seventh Schedule of the Indian Constitution) for the Centre, State government or for both. Thus, until the drafting of the Disaster Management Bill introduced in the winter session of the Parliament in 2005 there was no clearly defined way of dealing with disasters.

The Government of India enacted the Disaster Management Act, 2005 which lays down the institutional mechanism for the effective management of disasters. The Act provides for the establishment of the National Disaster Management Authority, State Disaster Management Authority, and District Authority, with its members and chairpersons and states its power and functions. It also gives minimum standards of relief and provides for waiving of loan repayments in disasters of severe magnitude. It also provides for setting up of various national and state institutes for the management of disasters.

As noted in other units the vulnerable are rendered more vulnerable in situations of disasters. Keeping this in mind the Act also prohibits discrimination while providing compensation and relief to the victims of disaster. The Act states that "there shall be no discrimination on the ground of sex, caste, community, descent or religion" (CHAPTER XI, page 62).

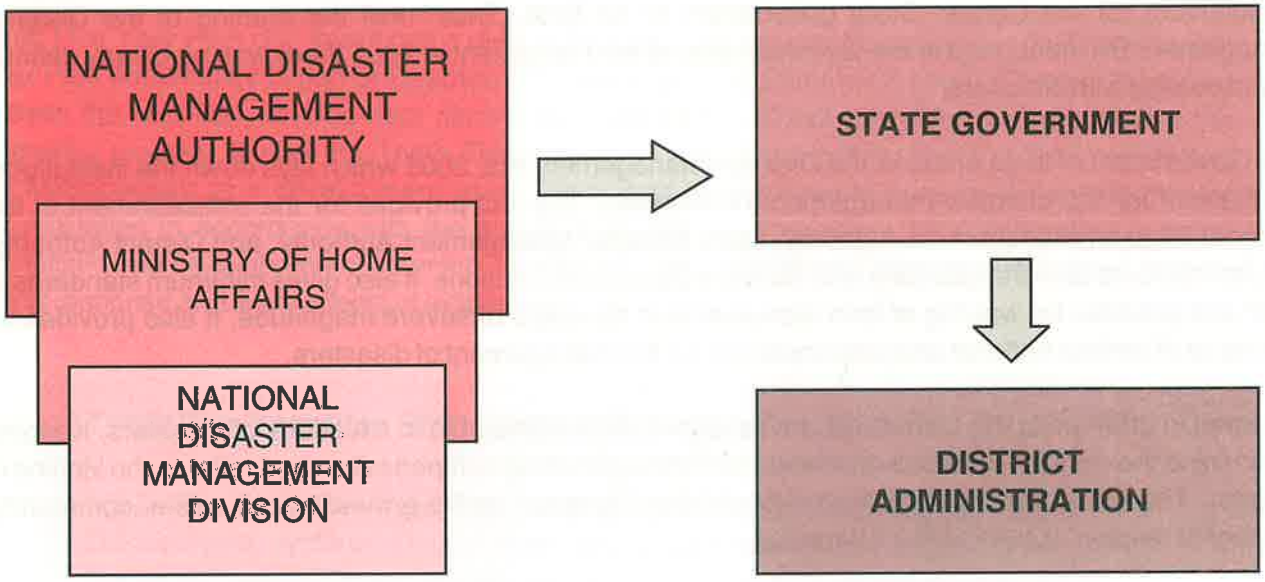
The recently constituted National Disaster Management Authority (NDMA) has the Prime Minister as the chair. The other members consist of one Deputy Chairperson and six members.

The NDMA is responsible for laying down the policies and plans for disaster management. The responsibility of this authority is as follows:

- Approves the National Disaster Management Plan.
- Lay down guidelines to be followed by Ministries/ Departments of Central government and state authority in drawing up the state plan
- Coordinate the enforcement and implementation of the policies and plans for disaster management
- Arrange and oversee the provision of funds for mitigation measures, preparedness and response
- May also frame guidelines for minimum standards of relief to be provided to persons affected by disasters

The Authority may also take such measures for prevention of disasters, mitigation, preparedness and capacity building for dealing with a threatening disaster situation.

At the Central level The National Disaster Management Division (NDMD) in the division of Ministry of Home Affairs deals with the subject of National Disaster Management. The administrative framework is illustrated by the figure below:



Source:NDMD (Ministry of Home Affairs

Disaster response is planned and organized in three phases: Pre-disaster, during disaster/ disaster impact and post disaster recovery.

The National Centre for Disaster Management (NCDM) established by the Government of India now upgraded and designated as the National Institute of Disaster Management. The institute developed as a Regional Centre of Excellence in Asia will develop training modules at different levels, undertake training of trainers and organize training programmes for planners, administrators and command functionaries. Other functions assigned include development of exhaustive national level information based on disaster management policies, prevention mechanisms, mitigation measures and providing consultancy to various States in strengthening disaster management systems and capacities as well as preparation of disaster management plans and strategies for hazard mitigation and disaster response. It has been decided to incorporate elements of disaster management in the training curricula of Civil Services.[3] (GOI)

The High Power Committee (HPC) on Disaster Management was constituted in 1999. The committee submitted its Report in October 2001.It took an overview of all recent natural and manmade disasters and

[3]For three All India Services (IAS, IPS and Indian Forest Service), training curricula have already been drawn up and integrated into the training curricula of these All India Services with effect from 2004-2005.

identified common response and preparedness mechanisms on the basis of a series of consultations with a number of government, non-government, national and international agencies and media organisations. "An important recommendation of the Committee was that at least 10 per cent of plan funds at the national, state and district levels be earmarked and apportioned for schemes which specifically address areas such as prevention, reduction, preparedness and mitigation of disasters." (GOI)

(Refer to Lesson 1: Understanding disaster, Figure on Institutional Framework under National Disaster Management in India)

The nodal ministries responsible for specific disasters are given below. There are few additional types of disasters/ crises and the corresponding ministries as compared to the one given in Unit 1.

Types of Disasters	**Nodal Ministry**
Natural Disaster Management (excluding drought)	Ministry of Home Affairs
Drought Relief	Ministry of Agriculture
Air Accidents	Ministry of Civil Aviation
Railway Accidents	Ministry of Railways
Chemical Disasters	Ministry of Environment & Forest
Biological Disasters	Ministry of Health
Nuclear Disaster (inside or outside the country which poses health or other hazards to people in India)	Department of Atomic Energy
Civil Strife	Ministry of Home Affairs
Major breakdown of any of the essential services posing widespread and protected problem	Concerned Ministries

Ministries and various Departments of Government of India, and respective State Governments/UT Administrations have been advised to develop their respective roadmaps taking the national roadmap as a broad guideline. The National Emergency Management Authority is proposed to be constituted with representatives of Ministries/Departments of Health, Water Resources, Environment & Forest, Agriculture, Railways, Atomic Energy, Defence, DRDO, External Affairs, Space, Information and Broadcasting, Chemicals, Science & Technology, Telecommunication, Urban Employment and Poverty

For other Civil Services at the national and state levels, training modules are being developed to be included from the next year.

alleviation, Rural Development and Indian Meteorological Department as members. The Authority will be headed by an officer of the rank of Secretary/Special Secretary to the Government in the Ministry of Home Affairs. In the event of a disaster it is the responsibility of the authority to:

- Provide necessary support and assistance to State Governments by way of resource data, macro-management of emergency response, specialised emergency response teams, sharing of disaster related data base etc.
- Coordinate/mandate Government's policies for disaster reduction/mitigation
- Ensure adequate preparedness at all levels in order to meet disasters
- Coordinate response to a disaster when it strikes
- Assist the State Governments in coordination post disaster relief
- Coordinate resources of all Central Government Departments/agencies involved[4].

One of the features of the draft national policy on disaster management states that "Institutional structures /appropriate chain of command will be built up and appropriate training imparted to disaster managers at various levels to ensure coordinated and quick response at all levels; and development of inter-State arrangements for sharing of resources during emergencies". (Source: GOI, 2004). The policy is to cover all spheres of central government activity and take precedence over all sectoral policies. The broad objectives of the policy will be to minimise loss of lives and assets, be it private, community or social. It also notes that the state governments are primarily responsible for disaster management inclusive of preparedness.

Given below is a table from the National Disaster Management Framework:

HUMAN RESOURCE DEVELOPMENT & CAPACITY BUILDING

Training for services /cadres/ agencies involved in mitigation, preparedness or response.	(i) Training needs analysis/ Human Resource Development Plan (ii)Drawing up of capsule courses for Ministry of Home Affairs State Governments 58 training. (iii) Training of trainers. iv) National Institute for Disaster Management to be strengthened. (iv)Setting up/ strengthening training institutions in state faculties of Disaster Management in Administrative Training Institutes	Ministry of Home Affairs State Governments

[4]GOI, 2004

Training of IAS/IPS, State Administrative Service Officers/State Police.	(i) Training curriculum for IAS/IPS and State Administrative Service Officers /State Police Officers to include capsules in disaster management. (ii)Training of Block/Village level staff (iii) Training of PRIs.	Administrative Training Institutes /State Institutes of Rural Development and District Institutes of Education and Training to be used.
Engineers/Architects	Curriculum for undergraduate engineering and B.Arch courses to be amended to include mitigation technologies in general and elements of earthquake engineering in particular	State Governments All India Council for Technical Education Indian Institute of Technologies Professional bodies
Health Professionals	Include crisis prevention, response and recovery and trauma management in the MBBS curriculum.	Ministry of Health and Family Welfare Medical Council of India
Youth organization	NCC, NSS, Scouts & Guides to include disaster response, search and rescue in their orientation/training programmes.	Ministry of Youth and Sports Ministry of Defence
Masons	Mason training for safe construction	Ministry of Rural Development/Department of Urban Development/ State Governments
School curriculum	To include disaster awareness.	Central and State Boards of Education
National mass media campaign for awareness generation	Design and develop a communication strategy for awareness campaign Use audio, visual and print medium to implement awareness campaign Development of resource materials on mitigation, preparedness and response	Ministry of Home Affairs /State Governments Ministry of Home Affairs /State Governments Ministry of Home Affairs
Non-government community-based organizations involved	(i) Facilitate network of non-govt community based organizations at	Ministry of Home Affairs /National Institute for Disaster Management

in awareness generation and community participation in disaster preparedness and mitigation planning	national/State/district levels (ii) Co-opted into the planning process and response mechanisms at all levels	Ministry of Home Affairs /National Institute for Disaster Management
Corporate sectors involved in awareness generation and disaster preparedness and mitigation planning	Sensitisation, training and co-opting corporate sector and their nodal bodies in planning process and response mechanisms	Ministry of Home Affairs/ Federation of Indian Industries
Inter-state arrangements for sharing of resources during emergencies and lessons learnt	(i) Arrangements for inter-State sharing of resources to be incorporated in State Disaster Management Plans (ii) Inter-state exposure visits to be facilitated for learning from the experiences of other States	Ministry of Home Affairs/ State Governments

Source: Disaster Management in India, Government of India, Ministry of Home Affairs

Training is indeed an important part of the 'Preparedness and Response' to Disasters. There is no doubt that trained personnel respond much better to different disasters. There is a need to develop Disaster Management not just as a specialized discipline but also mainstream it in school education and universities along with (and most importantly) those in government administrative cadres and services who will be involved with disaster management.

Role of NGOs[5]:

Contemporary disaster management initiatives are characterized by a diverse range of partners including local villagers, national, provincial and local government agencies, scientists and researchers, NGOs, and the international donor community. The importance of a community based approach has been affirmed through documentation and researches. The way one look at NGO here is with the idea that the organization is either community based or works closely with the community. The definition of NGOs that we used here is NGOs as self-governing private, voluntary, not-for-profit or non-profit organizations that exist to improve the quality of life for disadvantaged people.[6] Thus, NGOs occupy a place of prominence in

[6] Refer to the "The Code of Conduct for the International Red Cross and Red Crescent Movement and Non- Governmental Organisations (NGOs) in Disaster Relief" given in Annexure __

[7] Vakil 1997; Mencher 1999

establishing link between the government and the community. There is an understanding that NGOs being based in the community can contribute in establishing closer and informal links with the community and provide motivated personnel, mobilizing financial and other resources in situations of disaster.

It is the responsibility of the government, its policies and institutional frameworks to manage disasters. However, small scale activities and community based initiatives are also possible. The new approaches of the Disaster Management Framework that list out community participation promote the idea of building a community equipped to resist or respond to the situation. Some Initiatives

Some of the initiatives that include the Disaster Risk Management Programme has been taken up with assistance from UNDP, USAID and European Union in 169 most hazard prone districts in 17 States including all the 8 North Eastern State.

Under this programme training is being imparted to elected representatives (PRIs). Training is being imparted to engineers and architect as well. It has been stated that under this programme Disaster Management Plans have been prepared for about 3500 villages. (It is however left to be seen if the plans have been prepared with the participation of the trained representatives in consultation with the community members). "Disaster Management Committees consisting of elected representatives, civil society members, Civil Defence volunteers and Government functionaries have been constituted at all levels including village/urban local body/ward levels. Disaster Management Teams have been constituted in villages and are being imparted training in basic functions of first aid, rescue, evacuation and related issues. The Disaster Management Teams at the village level will consist of members of voluntary organisations like Nehru Yuvak Kendra and other non-governmental organisations as well as able bodied volunteers from the village. The thrust of the programme is to build up capabilities of the community since the community is invariably the first responder. During the last 15 months, it has been experienced that the capacity building of the community has been very helpful even in normal situations when isolated instances of drowning, burns etc. take place".

NGOs and other community based organization can play a huge role in identifying the vulnerable and ensuring their access to aids such as food and other rations. Identifying the right NGO is also imperative as most government programmes for disaster management includes or is routed through NGOs.

A workshop organised jointly by the Centre for Research on the Epidemiology of Disasters (CRED), Catholic University of Luvain, Brussels, Belgium, andTata Institute of Social Sciences, Bombay funded by the European Community Humanitarian Office (ECHO), European Union, Brussels suggested a comprehensive disaster management plan and operational policy should be developed at national, state and district levels, addressing both natural and man-made disasters.

The plan should

- Include structures defining the chains of authority and reporting mechanisms, as well as mechanisms for accountability of grievances.
- Spell out the exact relationships and responsibilities between governmental bodies, NGOs, community organisations, as well as donor agencies and the media

The plan emphasised the co-ordination of NGOs at local levels, and of donor agencies, through a formal pre-existing committee, referred as the Joint Committee for Emergency Co-ordination (JCEC).

The co-ordination functions of the JCEC, or its operational cell, should address the following specific areas:

(1) Co-ordination of volunteers and spectators at the site of the disaster;

(2) Setting up and coordinating standard registration systems between implementing agencies;

(3) Co-ordinating available public-sector expertise with NGO expertise to improve field efficiency and minimize duplication of efforts;

(4) Co-ordinating incoming relief supplies and their distribution;

(5) Providing regular situation briefings and facilitating information exchange, drawing on its asset as a multiparty committee.

(6) Controlling and managing the visits of VIPs to the site, in order to reduce hindrances to the relief process;

(7) A mechanism to register NGOs according to their area of specialty and expertise, based on both their own mandates and proven track-record. This would assist in putting forward an effective programme in a crisis situation, using the most appropriate agencies for the most appropriate tasks;

(8) An information system for hazard prone areas that provides reliable data on additional risks such as dams, toxic industries, nuclear installations, should be developed. A special risk mapping for areas prone to floods, cyclones, droughts and earthquakes should be undertaken urgently. This should also include the establishment of emergency profiles listing human and structural resources in risk areas;

(9) The coordination between the government and NGOs would be greatly enhanced if government policy is announced in a phased manner.

Source: Parasuraman, S (1995) "Relief Assistance and Rehabilitation Lessons in Disaster Management", Economic and Political Weekly, Vol. 30, No. 27 (Jul. 8, 1995), p. 1654

Review Questions:

1. What are the main provisions of the Disaster Management Act, 2005? How does this Act help the cause of disaster management?

2. What are the institutional arrangements for disaster management at centre, state and district?

3. What are the salient features of the initiatives taken in the 169 most hazard prone districts?

Application Questions:

1. What are the advantages of Government – NGO collaboration in disaster management? Discuss advantages for government, the NGO and the people. What are the potential problems?

Project Assignment:

1. Do a web search for an NGO that was involved with the Tsunami relief effort and examine its report in detail (you may also gather additional information by meeting with the organization or writing to them). Identify the role of the government as described by the NGO report and analyse it from the point of view of the discussion in your application question.

NOTES

Lesson SIX

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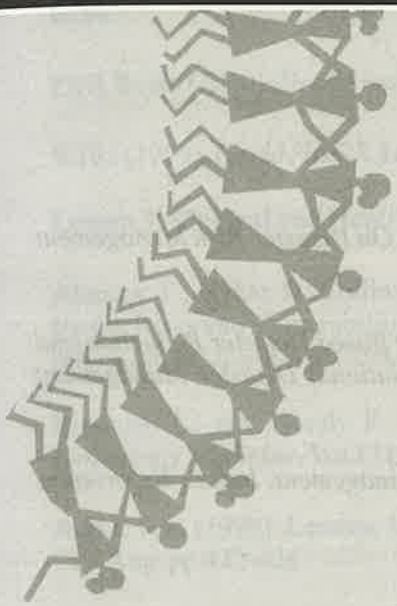

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