

Block

3

EMERGENCY RESPONSE

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Managing Relief **5**

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Disaster Health Care Management **13**

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Role of Various Agencies: Incident Command System **30**

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BLOCK INTRODUCTION

In previous block you learned about Mitigation and Preparedness in Disaster Management. In the present block you will study about “Emergency Response”. There are three Units in this block.

The **first Unit** on ‘Managing Relief’ deals with the process and practice of managing relief commodities and services. This Unit outlines the structure for relief management by international agencies and explains the components of relief operation.

In the **second unit** on ‘Disaster Health Care Management’ you will learn about the overall disaster health care management in India. You will be able to distinguish between public health and mass casualty components of disaster health care management. You will also study about the institutional mechanism followed in India to deal with health disasters and health effects of other disasters.

The **third unit** of this block discusses the ‘Role of Various Agencies: Incident Command System’. This unit explains the concept, brief history and basic features of Incident Command System (ICS). You will also get a detailed explanation of the functions and organizational framework of the Incident Command System.

After going through this block you will have a comprehensive understanding of Emergency Response in Disaster Management.

UNIT 1 MANAGING RELIEF

Structure

- 1.0 Learning Outcome
- 1.1 Introduction
- 1.2 Major Considerations for Relief Management
- 1.3 Some Lessons Learned
- 1.4 Coordination of Relief Activities
- 1.5 Conclusion
- 1.6 Key Words
- 1.7 Further Readings and References
- 1.8 Activities

1.0 LEARNING OUTCOME

After studying this Unit, you should be able to:

- understand the process and practice of Managing Relief Commodities and Services;
- discuss the way relief is managed in India along with various tools available for the purpose;
- outline the structure for relief management by international agencies;
- explain the essential components of any relief operations; and
- emphasize the value of coordination in relief management.

1.1 INTRODUCTION

In the response phase, “relief” refers to the first stage response to any calamity including: setting up of control rooms, putting the contingency plan in action, issuance of warning, evacuation and moving people to safer areas, rendering medical aid to the needy and simultaneously rendering relief to the homeless, providing for food, drinking water, clothing, temporary shelter, sanitary facilities to the needy, and restoration of communication, as well as disbursement of assistance in cash and kind.

Immediate availability of relief commodities and supplies thus becomes an important factor in making the response effective. Following any disaster there is usually an urgent need to provide food, first aid and basic medical assistance and supplies, drinking water, clothing, shelter materials. The “relief operations” therefore comprise two main actions:

(a) procuring various commodities from the government stores, emergency stockpiles, commercial suppliers and international assistance sources (whenever deemed appropriate) and (b) organizing the distribution of these commodities according to the best possible orders of priority. As is evident, the management of relief commodities, supplies and services always poses a challenge for disaster managers. In this unit, we will be discussing process and practice of Managing relief commodities and services, how relief is managed in India, essential components of relief operation and emphasise the value of coordination in relief management.

1.2 MAJOR CONSIDERATIONS FOR RELIEF MANAGEMENT

Essential Components of Relief Management

In order to ensure that relief commodities and services are made available to the real needy ones at the place and time required, it is essential to follow certain operational guidelines as follows:

- Designate a person (or a group of persons) within the supply section as the focal point(s) for the given disaster.
- Establish a mini emergency supply team for targeted action-oriented implementation, as a means of minimizing disruption of on-going supply functions while meeting emergency needs.
- Coordinate through concerned departments/ministries with other partners and counterparts to streamline supply procurement and avoid duplication.
- Provide suggestions on potential supply sources, as may be helpful to partners.
- Work with the Emergency Task Force (this could be operating under a different nomenclature) to finalize and establish correct products, specifications, quantities, qualities, destinations, distribution and storage systems.
- Assess sources, prices and availability to determine local or offshore options.
- Initiate the procurement process, keeping a provision for flexibility in decision-making and operation processes to meet emergency requirements.
- Establish an active communication mechanism that provides up-to-date about all supply activities, ensuring that all key players have access to the latest information.
- For items not available locally, coordinate emergency offshore procurement, including charter flight, port clearance, delivery and redistribution.
- Monitor the procurement, supply and distribution processes.

As a number of stakeholders participate in the process of providing relief it becomes obvious that specific roles and responsibilities need to be assigned to such actors for:

- Assisting the government other national and international agencies in the distribution of relief items;
- Ensuring that interventions are not duplicated and the most vulnerable are reached with relief and rehabilitation measures;
- Ensuring that the people in need receive their entitlements and compensation as appropriate.

Relief Management in India

Disaster management being a State subject in India, at the State level, the State Relief Commissioner or Secretary, directs and controls the relief operations through District Collectors or Deputy Commissioners, who are the king-pins of all relief operations, coordination, direction and control at the District level.

A) Relief Codes and Manuals

The State Governments have formulated their Relief Manuals (or Codes) and the Districts have their Contingency Plans, which are updated from time to time based

on the experience. Routinely, NGOs and community are invited before the monsoon to share the contingency plan. In case of a disaster, the State Government invites NGOs and other relief organizations to join in the efforts in reaching out to the victims.

Majority of the existing State Relief Manuals carry a “scarcity” focus while addressing Relief. However, given the changing' nature of disaster response coupled with the experience gained from recent disasters in the country, now an effort is under way by the Central Government to re-orient the existing State Relief Manuals and Codes with a “mitigation, prevention and preparedness” focus. Let us look at the existing Gujarat Relief Manual-1982. With variations in details, a typical State Relief Manual in the county usually contains following (or similar) provisions for management of relief:

- The system of Intelligence defining Authorities and Officials
- Programs and Estimates for Various Relief Works
- Reserves of Establishment and Tools
- Preliminary Preparation and Test
- Declaration of Scarcity and Commencement of Relief
- Powers and Duties of Supervising Officers including Police Officers, Medical and Public Health Officers
- The Organization of Village Inspection and Relief
- Organization of Relief Works
- Wages and Allowance on Relief Works
- Gratuitous Relief
- Rains Policy and Closure of Relief, Closure of Scarcity
- Provisions for Cattle and Fodder, Drinking Water
- Procedures for Maintenance of Accounts
- Involvement of Voluntary Agencies
- Tagavi Loans and Subsidies
- Relief for Other Calamities

B) Calamity Relief Fund (CRF)

As outlined above the basic responsibility for undertaking rescue, relief and rehabilitation measures in the event of natural disasters is that of the concerned State Government. The role of the Central Government is supportive, in terms of supplementing physical and financial resources and complementary measures in sectors like warning, transport and inter-State movement of food grains etc. The policy and arrangements for meeting relief expenditure are, by and large, based on the recommendations of the successive Finance Commissions. Earlier, margin money was allocated to each State for meeting the immediate needs of expenditure on relief measures. The quantum of margin money was calculated by averaging the non-plan expenditure (excluding advance plan assistance and expenditure of a plan nature) on relief measures.

The margin money so provided for each of the States was duly taken into account while working out the forecast of expenditure for each of the States, on the basis of which the Finance Commission finalized its recommendations for the devolution of resources for the period covered by them.

As against an annual CRF of Rs. 804 Crore provided by the Ninth Finance Commission, the Tenth Finance Commission provided Rs. 6304.2 Crore for the period 1995-2000 of which 75 per cent i.e., Rs. 4728.19 Crore is the State's share whereas the Central share came to Rs. 1578.08 Crore. The share of the Calamity Relief Fund (CRF) is released in four equal installments at the beginning of each quarter.

C) National Fund for Calamity Relief (NFCR)

For dealing with calamities of "rare severity" requiring Central intervention, the Tenth Finance Commission suggested creation of National Fund for Calamity Relief. The fund was to be managed by a National Calamity Relief Fund Committee (NCRFC). In the absence of a clear definition of the term "rare severity", the functioning of the NCRFC has been haunted by a number of problems due to States asking for Central assistance for all types of calamities.

The arrangements for funding relief in India are further described in detail in Unit 1.

D) Provisions under the National Disaster Response Plan

The National Disaster Response Plan prepared by the High Powered Committee in September 2001 has cast the overall responsibility for the provision of relief supplies on the Ministry of Planning and Programme Implementation as the primary agency. This Emergency Support Function (No. 9) lists the following responsibilities for the Primary Agency:

- Coordinate activities involved with the emergency provisions;
- Temporary shelter;
- Emergency mass feeding;
- Bulk distribution;
- To provide logistical and resource support to local entities;
- Operate a Disaster Welfare Information (DWI) System to collect, receive, and report the status of victims, assist family reunification and coordinate bulk distribution of emergency relief supplies; and
- In some instances, services also may be provided to disaster workers.

Relief Management - The International Perspective

For coordinating the humanitarian assistance provided and the relief efforts of the international agencies and the United Nations agencies, the UN General Assembly has created the Office of the Emergency Relief Coordinator (ERC). The ERC reports to the UN Secretary-General and is assisted and represented by the in-country heads of the UN agencies called the UN Resident Coordinators (UNRCs). The ERC is the focal point in the UN System for disaster relief coordination, who is empowered by the UN General Assembly Resolution 2816 of 14 December 1971:

- To mobilize, direct and coordinate the relief activities of various organizations of the UN system in response to a request for disaster assistance from the stricken State;
- To coordinate the UN assistance with assistance given by inter-governmental and non-governmental organizations, in particular by the International Red Cross;
- To receive, on behalf of the UN Secretary-General contributions offered to him for disaster relief assistance to be carried out by the UN, its agencies and programs for particular emergency situations;

- To assist the Government of the stricken country to assess its relief and other needs and to evaluate the priority of those needs, to disseminate that information to prospective donors and others concerned, and to serve as a clearing-house for assistance extended or planned by all sources of external aid; and
- To phase out relief operations under his aegis as the stricken country moves into the stage of rehabilitation and reconstruction, but to continue to interest himself, within the framework of his responsibilities for relief, in the activities of the UN agencies concerned with rehabilitation and reconstruction.

1.3 SOME LESSONS LEARNED

The disaster managers regard each disaster as both a threat as well as an opportunity. While responding to emergencies many lessons are learned by those involved in dealing with a particular disaster. The learning from such lessons is used for corrective action so that similar mistakes are not repeated in future. During an emergency, the urgency of addressing immediate needs coupled with the challenges of procuring essential supplies and distributing the same to the needy often pose great difficulty. While on the one hand, the absence of planned and organized actions leaves chaos prevalent over the situation, on the other hand, experience has proven that organized actions, partnerships with stakeholders and information sharing do yield good results. To understand this dynamics in little detail, let us look at two cases: Mozambique %Floods-2000 and Orissa Super Cyclone-1999.

Mozambique Flood-February 2000

Mozambique is classified by the UN Human Development Report as one of the ten poorest countries in the world. Characteristics of its human vulnerability profile include widespread poverty and low per capita income, high infant, child and maternal mortality, low literacy, increasing rates of HTV infection and limited access to health, education, safe water and sanitation. A series of environmental risks and hazards also make up its physical vulnerability profile, these include a history of seasonal floods, cyclones and droughts Colonial records and oral testimonies refer to a series of disasters affecting the region dating back to the 15th century. Environmental degradation, poor river system management and protection as well as the complexities of a volatile global weather system continue to pose a threat to Mozambique and the region.

Heavy rains from “Cyclone Connie” hit southern Mozambique during 4-7 February 2000 causing flooding, isolating Maputo City and damaging thousands of houses in Maputo and Gaza provinces. The rains filled dams and rivers in southern Africa causing large-scale flooding of the Limpopo, Incomati and Umbeluzi rivers. “Cyclone Eline” hit the central Mozambique on 22 February, flooding the Save river and ultimately causing massive flooding along the Limpopo river valley. The rains continued throughout much of March 2000.

The crisis resulted in the displacement of 250,000 people, with 950,000 in need of humanitarian assistance of which 190,000 were children under the age of five. Hundreds of children were separated from their families. In one of the most dramatic and well-covered air rescue missions in media history, 14,800 people were rescued by helicopter.

A number of UN agencies along with other international humanitarian agencies provided assistance to Mozambique in response to the February-2000 floods. The relief operations provided a number of lessons for the overall relief management. Various donors had contributed 218 small boats for rescue and relief distributions. These were used effectively and Mozambican Naval personnel assisted in their

operations. However, there was no coordination of boat assets by the local authority (called INGC - Instituto Nacional de Gestao de Calamidades). The whereabouts and deployment of all boats was not known. Also, some donors did not inform the INGC of materials and equipment being sent into the country. The INGC was unable to establish an orderly system for receiving, storing and distributing these assets.

Orissa Super Cyclone-October 1999

The devastating super cyclone of 29th October 1999 that struck Orissa left the State in a virtual paralytic condition with its communications system and infrastructure totally wrecked. It severely affected more than 13 million people in 97 Blocks, 28 Urban Local Bodies and in 12 Districts including the State Capital Bhubaneswar and the old city of Cuttack. Overnight, the State seemed to have slipped into a stone-age apocalypse. The agriculturally rich and prosperous districts of Khurda, Puri, Cuttack, Jagatsinghpur, Kendrapara were devastated due to the storm while districts like Jajpur, Bhadrak, Keonjhar, Balasore and Mayurbhanj were severely affected by unprecedented flood.

The knock-down effect of the breakdown of lifeline infrastructure had been most severe, completely halting rescue and relief operations (for the first few days and to the most affected areas), in spite of a significant presence of the armed forces, air dropping of supplies and support of rapid response teams, provided by Government of Andhra Pradesh. The Army and Air Force were called in on 29th October, but they were not able to undertake operations till the 31st October, 1999 due to bad weather conditions. Flash floods from 31st October onwards hampered the rescue operation by the Army. The Indian Navy reopened the navigation channel in Paradip Port on 1st November 1999. This facilitated the movement of ships with relief material into the Port. The Government of Andhra Pradesh dispatched 100 engineers and a number of Rapid Response Teams to clear road blocks and assist the Government of Orissa in emergency rescue and relief operations.

Once the State moved out from rescue and relief phase to reconstruction and rehabilitation and further sustainable development phase, gradually the Community Based Disaster Preparedness concept evolved from the need for bringing people together to face natural disasters like the Super Cyclone of 1999. The devastation caused by the Super Cyclone re-initiated thinking at different levels and questioned people's ability to face disasters boldly and in an organized manner. It also forced a critical analysis of the decision-making processes on appropriate actions during a crisis and the need for incorporating these into development activities so as to achieve the twin objective of restoration and reconstruction as well as building up the capacity to face future calamities.

To find answers to this and many other questions regarding people's strengths and weaknesses, the Orissa State Disaster Management Authority (OSDMA) and the United Nations system in India brought all NGOs, donors and government agencies to a common platform and a training "manual" specific to Orissa context, known as the Community Contingency Plan (CCP) for Floods and Cyclones" was prepared.

The CCP casts various responsibilities (before, during and post disaster) on community groups created by community members themselves. Amongst these is the Relief Group. Members of the Relief Group collect, distribute relief materials such as food supply, utensils, clothes, kerosene, diesel etc. and coordinate all the relief requirements of the other action groups. Both men and women members have to be capable of interacting with the local authorities to ensure that adequate supplies reach the village in times. They also keep track of all government provisions related to gratuitous relief, relief works to prevent starvation, deterioration, migration, health and sanitation measures for both people and livestock so that people do not lose out on their entitlements.

1.4 COORDINATION OF RELIEF ACTIVITIES

Coordination of various relief activities (planning and procurement of supplies, following inventories, organizing and ensuring the distribution according to priorities and needs and continually sharing information) during and after any disaster/emergency is an important though difficult and one of the challenging tasks. An emergency situation is characterized by overwhelming needs, competing priorities, destroyed or damaged communication and transportation infrastructure, a rapid influx of providers of humanitarian assistance coupled with an outburst of mutual aid from local citizens, and highly stressed local governmental and non-governmental institutions. Given this view of the emergency conditions an image of chaos quickly springs to mind.

While coordination may not be easily defined, its absence is characterized by gaps in service to affected population; duplication of efforts; inappropriate assistance; inefficient use of resources; bottlenecks, impediments and slow reaction to changing conditions; and frustration of relief providers, officials and survivors - in general, an unsatisfactory response to the emergency.

Coordination is a result of intentional actions to harmonize individual responses to maximize impact and achieve synergy - a situation where the overall effect is greater than the sum of the parts. Coordination begins with the initiation of working relationships and regular sharing of information. As coordination increases there is a resulting change in the way relief providers (whether governmental or non-governmental) implement their programs of assistance. Since relief providers cooperate, individuals and organizations adapt and adjust their efforts based on changing needs and each other's strengths and weaknesses.

The recent experience from Gujarat Earthquake-January 2001 serves as the best illustration emphasizing the value and need for coordination. It could be recalled that along with the relief supplies sent by various State Governments, many voluntary agencies, business houses, inspired groups of individuals rushed loads of relief supplies (drinking water bottles, clothing, temporary shelter materials, food grains etc.) to Bhuj. As the consignee remained to be defined clearly, and as the stressed local administration was struggling for receiving, storing and distributing tasks, many of the relief providers soon began camping outside Bhuj town and started distributing the supplies to anyone who takes it -including the passersby. Also, many items were sent (like medicines) without even checking the local need for it.

Further, two and half years after the earthquake (June 2003), it is observed that the Indira Gandhi International Airports Authority is concerned over disposing off the consignments containing relief materials (old clothes, blankets etc.) sent by donors for the earthquake affected people in Gujarat. Neither the inland agencies who called for these materials from overseas never turned up to claim these nor did the senders clearly define the recipients. Whatever could be the reason, it is clear that the wastage of resources could have been avoided with some efforts.

1.5 CONCLUSION

This Unit describes what relief management in general is about and how relief is managed in India and outside. The key components of a typical relief operation are outlined. An in-depth understanding of the in-country procedures is facilitated by describing existing mandatory provisions and the changes under way. Also explained is the international framework in which the United Nations agencies and other bi-lateral and multi-lateral agencies operate. The two case studies (Mozambique Floods and Orissa Super Cyclone) highlight important lessons learned

while addressing “relief” in two major disasters. The Unit concludes by outlining the value and significance of “coordination” for the management of relief commodities and services.

1.6 KEY WORDS

- Coordination** : The challenging task of working together with all involved while providing a degree of direction and control. Buying in the support of all stakeholders and maintaining respect for all partners’ individual portfolios are the two challenging tasks involved. Regular information sharing increases the opportunities for effective coordination.
- Humanitarian Assistance** : Assistance provided free of cost in order to reduce sufferings caused by emergency/disaster
- Rapid Response Team** : Teams deployed to perform specific tasks in response to a given disaster/emergency. Could comprise members from the government or non-government agencies.
- Relief Commodities** : Items meant for the use of and by the affected population. These include: food grains, temporary shelter material, medical supplies, first-aid kits, household effects, clothing, drinking water, boats and life-jackets etc.
- Relief Operations** : The term referring to the process of procuring and distributing supplies.

1.7 FURTHER READINGS AND REFERENCES

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1.8 ACTIVITIES

- 1) What do you understand by the term Relief Management?
- 2) Briefly explain the international framework available for relief management.
- 3) Why is coordination of relief activities considered to be a challenging task?

UNIT 2 DISASTER HEALTH CARE MANAGEMENT

Structure

- 2.0 Objectives
- 2.1 Introduction
- 2.2 Health Services in Disasters
- 2.3 Public Health Issues
- 2.4 Mass Casualty Incidents
- 2.5 Psycho-social and Mental Health Issues
- 2.6 Institutional Mechanism for Disaster Health Care Management
- 2.7 National Guidelines on Medical Preparedness and Mass Casualty Management
- 2.8 Hospital Disaster Management Plan (HDMP)
- 2.9 Let Us Sum Up
- 2.10 Key Words
- 2.11 Further Readings and References

2.0 OBJECTIVES

An overview of disaster health care management in India is the focus of this unit. The thrust is on making the learner understand the disaster specific health effects of various disasters, different aspects and the institutional mechanism available in India to provide quick and effective services to the affected population. At the end of this unit you should be able to:

- give a bird's eye view of overall disaster health care management in India;
- distinguish between disaster specific health effects, and between the direct and indirect effects of disasters on health;
- differentiate between public health and mass casualty components of disaster health care management;
- explain the importance of disaster psycho-social and mental health care for the health service professionals.
- state the institutional mechanism followed in India to deal with health disasters and health effects of other disasters; and
- mention few important guidelines as provided in national guidelines on medical preparedness and mass casualty management.

2.1 INTRODUCTION

India is vulnerable to disasters caused by natural hazards on account of its unique geo-climatic conditions and by man-made disasters on account of its socio-political and cultural conditions. Floods, droughts, cyclones, earthquakes and landslides have been recurrent phenomena. About 60% of the landmass is prone to earthquakes of various intensities; over 40 million hectares is prone to floods; about 8% of the total area is prone to cyclones and 68% of the area is susceptible to drought. We

are also highly susceptible to man-made disasters because of lack of enforcement of various legal provisions like fire safety and traffic regulations etc. as these are not being followed by the community. We have in the decade 1991 - 2000 lost 43,440 lives and 300 million people affected due to disasters. We had super cyclone in Orissa in October, 1999, Bhuj earthquake in January 2001 and Tsunami in December 2004. The Bhuj earthquake had 13,800 deaths and 1,67,000 injuries, while other two disasters also had about 10,000 deaths in each case. Earthquake in Jammu and Kashmir in 2005 also resulted in huge number of death and disability.

The list of man-made disasters includes rail, road and air accidents; bomb blasts; fire incidents; terrorism; communal riots; industrial disasters; etc. The worst man-made disaster of India has been methyl isocyanides (MIC) Gas Leak in Bhopal. Accidental trauma is one of the leading causes of mortality and morbidity in India. Every 12 minutes one Indian dies on the road and 10 times that number are injured. Among them 30% are disabled for life either partially or totally. World Health Organization (WHO) has projected that by the year 2020, Road traffic accidents in India would be a major killer accounting to 5,46,000 deaths and 1,53,14,000 disability. A series of bomb blasts in last few years adds to India's agony of disaster management.

India has witnessed a number of horrifying natural as well as man-made disasters in last two decades. Each one of them resulted in enormous destruction, death, disability, diseases, panic, and fear among the population at risk. However, health problems arising out of the disasters may vary in types and degrees depending upon particular type of a disaster, which would be discussed in detail in next few pages.

2.2 HEALTH SERVICES IN DISASTERS

Health is one of the key objectives and a significant yardstick of success of effective disaster management during this stage. Health care is a critical determinant for survival in the initial stages of a disaster. Disasters almost always have significant impacts on the entire health sector. When it comes to disaster mitigation, preparedness and response, hospitals and health care professionals require special attention due to the vital functions they perform, their high level of occupancy and role they play during a disaster situation. The health impacts could be direct or indirect in terms of public health issues or mass casualty management, which would be explained in next few pages. The impacts could be direct on the health sector infrastructure such destruction or damage to the hospital building, loss of or injury to the health personnel, destruction or damage to the other infrastructure within the hospital building, pressure on the existing resource while dealing with a large number of sudden influx of patients etc. During a disaster, when the urgent survival needs including urgent medical care are met and mortality rates have been declined by immediate mass causality management, a more comprehensive range of services are needed to be provided. Throughout all phases of a disaster, a systematic approach is needed to be developed to design, implement, monitor and evaluate these comprehensive services, which should ensure that most health needs are met with appropriate coverage, optimized access, and quality services.

2.3 PUBLIC HEALTH ISSUES

For one reason or the other, disasters have been contributing to the outbreak of some specific epidemic diseases as the disease transmission risk factors increase when a disaster hits a particular geographic area. Lack of clean water and the suspension of public health programmes, all help illnesses, such as cholera or dengue or malaria to multiply after natural disasters. Often these illnesses can be

more deadly than the original disaster. Rapid changes in the human environment and health may occur also as a result of natural disasters or acts of war or of other man-made circumstances including major industrial accident. However, health problems arising out of the disasters may vary in types and degrees depending upon particular type of a disaster.

Types of disasters & proneness to different epidemics

The increased man-vector contact in precarious shelters and temporary camps and the disruption of control activities may be more important causes for epidemics after disasters caused by natural hazards, in particular. More importantly, disasters caused by natural hazards (hurricanes, floods, earthquakes, cyclones and volcanic eruptions) can contribute to the transmission of some diseases provided the causative agent is already in the environment. Although major health epidemics are rare in the aftermath of these disasters, but some disasters are so great that large numbers of the population are displaced, creating perfect conditions for the spread of disease.

While earthquakes, avalanches, and landslides may result in enteric epidemics due to improper water supply and sanitation; volcanic eruption can lead to respiratory epidemic; and unprecedented amounts of rain leading to disastrous flooding flood and flash floods, and cyclone can result in pneumonia as well as other waterborne/communicable diseases. In the period immediately following a hurricane, the risk of acquiring malaria, dengue or encephalitis may decrease as a result of the destruction of breeding places of the local vectors. Similarly, industrial accidents can cause respiratory problems. Viral agents during the time of nuclear, biological and chemical warfare can cause diseases like, anthrax, vibrio cholera, and plague requiring immediate treatment.

However, it is important to remember that epidemics do not spontaneously occur after a natural disaster. The more likely cause of disease is the lack of potable water and adequate sanitation. In country like India where cholera is prevalent, general assumption is that disease will spread after any disaster affecting water supply, food quality and sanitation. However, the health problems in natural as well as man-made disasters could be due to either or any combination of factors enumerated below:

- Directly due to impact of disasters like drowning during floods, multiple injuries during earthquakes, thermal blast and radiation effects during and after nuclear disaster and large number of injuries after civil unrest.
- Due to non or inadequate availability of immediate medical care.
- Due to delay in evacuation and transportation to advanced medical centers.
- Due to mass shelter, water shortage and contamination, unhygienic living conditions leading to outbreaks of communicable diseases and resulting in epidemics, another health disaster.

The main causes of disease

Population movement, poor sanitation, water contamination and the interruption of public health programmes are the main reasons for the spread of disease after natural and humanitarian disasters. Often displaced populations are forced to gather in confined spaces, further enabling the spread of epidemics, such as cholera, malaria and dengue fever. In Central America, which was hit by Hurricane Mitch in 1998, cholera was already epidemic. Another problem is the number of injured people who need to be treated. According to the World Health Organization, the presence of dead bodies is not a major factor in the spread of communicable diseases.

Cholera

The spread of cholera is one of the main dangers following a natural disaster. Cholera is an acute infection of the gut, which causes chronic diarrhoea and vomiting. This can lead to severe dehydration and, in some extreme cases, death. However, most people who are infected by the bug do not become ill and 90% of those who do are only mildly or moderately ill. Cholera is spread by contaminated water and food. Sudden outbreaks, such as those, which follow a disaster, are usually caused by a contaminated water supply. The bug is most deadly when it arrives unexpectedly - as in times of disaster - because there are often no facilities for treatment or because people cannot get treatment in time. In communities, which are unprepared for a cholera outbreak, up to 50% of people who become seriously ill may die. Cholera can be effectively treated with oral rehydration salts and antibiotics. Containing a cholera outbreak involves ensuring there are proper sanitation methods for disposing of sewage, an adequate drinking water supply and good food hygiene. Food should be cooked thoroughly and should not be contaminated by contact with raw foods, flies or dirty surfaces. The only cholera vaccine that is widely available is less than 50% effective and only lasts up to six months. There are two other vaccines that protect against one strain of cholera for a short period.

Flood

Flooding is the most common type of natural disaster worldwide, accounting for an estimated 40% of all natural disasters. In ***riverine flooding***, water levels can rise to flood stage gradually or very rapidly (i.e., flash flood) from snow melt or heavy or repeated rains. During the 1993 mid-western flood disaster, both ***gradual*** and ***flash flooding*** occurred.

Flash flooding is the leading cause of weather-related mortality in the United States (accounting for approximately 200 deaths per year). However, the public health impact of floods also includes damage or destruction to homes and displacement of the occupants that may, in turn, facilitate the spread of some infectious diseases because of crowded living conditions and compromised personal hygiene (i.e., hand washing). Stress-related mental health or substance-abuse problems may be associated with flood disasters. As the findings in this report indicate, medical and public health services may be interrupted in affected communities. Finally, the occurrence of injuries may increase during the clean-up phase of a disaster.

The multiple environmental consequences of flooding can directly affect the public's health. For example, water sources can become contaminated with faecal material or toxic chemicals, water or sewer systems can be disrupted, dangerous substances can be released (e.g., propane from damaged storage tanks), and solid-waste collection and disposal can be disrupted. In addition, flooding can result in vector-associated problems, including increases in mosquito populations that, under certain circumstances, increase the risk for some mosquito-borne infectious diseases (e.g., viral encephalitis).

Floods and other natural disasters often are followed by rumors of epidemics (e.g., typhoid, cholera, or rabies) or unusual conditions such as increased snake or dog bites. Such unsubstantiated reports can gain public credibility when printed in newspapers or reported on television or radio as facts. The potential for such rumors underscores the need for valid and systematically collected data and the importance of basic public health surveillance in such settings. Elements to be considered in such surveillance efforts are described in the CDC publication ***Beyond the Flood: A Prevention Guide for Personal Health and Safety***, which emphasizes the importance of 1) purification of drinking and cooking water; 2) disinfection of wells; 3) food safety (i.e., handling of food that may have come in contact with

flood water or of refrigerated food after the interruption of electrical power); 4) sanitation and personal hygiene; 5) injury-prevention measures to be taken during the return to and cleaning up of flooded homes; 6) communicable diseases and vaccinations; 7) mosquito control; and 8) other hazards such as animals, chemicals, and swift-flowing water. Copies of the guide are available from state health departments.

Disasters can contribute to the transmission of some diseases triggering an epidemic in three ways:

- By increasing transmission of local pathogens
- By changing the susceptibility of the population
- By introducing a new pathogen into the environment

The epidemiologic factors that determines the potential of communicable disease transmission is influenced by six types of adverse changes during disasters:

- Changes in pre-existence levels of disease
- Ecological changes as a result of disaster
- Population displacement
- Changes in population density
- Disruption of public utilities
- Interruption of basic public health services

Case study of epidemic followed by natural disasters

Orissa Super Cyclone: The cyclone has claimed many thousands of lives, leaving millions without food or shelter, electricity or water, wrecking the road and rail networks because of embankments giving way, and destroying half of the standing rice paddy crop, the staple food grain. Epidemics stalk millions of cyclone survivors in the eastern Indian state of Orissa, weakened by six days of starvation. Representatives of major Non-Government Organisations (NGOs) which are now coordinating relief efforts said epidemic prevention was as much a priority as the air-dropping of food packets. The cases of cholera and other water-borne diseases were piling up at the hospitals which were crippled by lack of electricity and supplies. A massive sanitation and disinfection drive has been mounted in the district of Cuttack involving the use of bleaching powder and the cremation of carcasses and dead bodies. While no estimate is available on the number of people who perished in the inundation of the coastal areas by a massive six-meter-high tidal wave, Kanchan said the reports showed that in the district of Kendrapara alone, 15,000 people may have died.

During the Orissa super-cyclone in October 1999, WHO provided technical assistance to devise an emergency surveillance system in the 12 cyclone-affected districts to get an early warning of impending disease outbreaks. Training of staff was undertaken and formats for disease surveillance provided for use at district and PHC levels. This helped in averting potential epidemics of fatal diseases. Recognizing this, the disease surveillance programme was extended to the rest of Orissa. Similarly, following the earthquake in Gujarat (India) in January 2001, which destroyed the health infrastructure in many areas, WHO played the lead role in supporting the Government of India and the state government in establishing disease surveillance systems in the affected areas, including development of an early warning system and capacity for rapid response to epidemics. WHO immediately redeployed its medical officers working on the polio and TB programmes in India to support the emergency work. Resources were also provided

for the establishment of an Epidemiological Cell under the district authorities. The rapid surveillance teams worked under WHO guidance and many potential epidemics were averted.

Surat Plague (pneumonic)

The epidemic of plague in Mumbai in September 1896 was so contagious that it turned into a pandemic and continued for two decades in India. It took a toll of eight million people in the country. 1,83,000 persons died in Mumbai city alone and 1,786 in Surat district. Three-fourths of those died were migrants and as many as 80% of death cases and serologically positive cases had a working class background. The latest large, but not major outbreak occurred in September 20, 1994 in Surat, India. Though more than 3000 cases were reported, official figure of deaths was few hundreds.

Its first task in an emergency is to conduct a rapid health assessment in the affected areas within 48 hours of a disaster. Epidemiological Surveillance and disaster illness surveillance and reporting are a must. It is then likely to set up an early epidemic warning system, measures to control communicable diseases, a programme for repairing key hospitals and primary care agencies which may have been hit by the disaster, water and sanitation measures and programmes for ensuring necessary medical supplies are available. Mass immunization and vaccination programmes should be started as soon as possible e.g. to control malaria, measles, mumps, etc. Promotion of greater and more effective community participation in all services related to health.

Prevention of Epidemics

Recent advances in geographical information and mapping technologies have created new opportunities for public health administrators to enhance planning, analysis, monitoring and management of health systems. Health mapping has evolved from Dr. John Snow's cholera Map India 2001 Conference, New Delhi, February 2001 death mapping in mid-nineteenth century to the latest Internet-based mapping where data have been shared across the Internet. Since much of the data used and generated by health and social service agencies has a spatial dimension, geographic information system (GIS) is particularly useful to health professionals and administrators in planning and day-to-day management (Colledge et al., 1996). A typical GIS comprises an organized collection of computer hardware, software, geographic data and personnel, designed to efficiently capture, store, update, analyse and display all forms of geographically referenced information. Each piece of information is related in the system through specific geographical coordinates (e.g. latitude and longitude) to a geographical entity (e.g. health centre, school, dam, drainage, village or state).

The information can be displayed in the form of maps, graphs, charts and tables. GIS provides excellent means for visualizing and analyzing epidemiological data, revealing trends, dependencies and inter-relationships. It can acquire, store, manage, and geographically integrate large amounts of information from different sources, programmes and sectors. GIS serves as a common platform for convergence of multi-disease surveillance activities. Standardized geo-referencing of epidemiological data facilitates structured approaches to data management. Once the basic structure is ready, it is easy to convert it to surveillance system for any other disease. Public health resources, specific diseases and other health events can be mapped in relation to their surrounding environment and existing health and social infrastructures. Such information when mapped together creates a powerful tool for monitoring and management of epidemics. GIS helps generate thematic maps that depict the intensity of a disease or vector. It can create buffer zones around selected features and then combine this information with disease incidence data to determine how many cases fall within the buffer. It can also map

the impact zone of vector breeding site, where control activity needs to be strengthened. GIS can identify catchments areas of health centres and also locate suitable site for a new health facility. It can overlay different pieces of information and carry out specific calculations. GIS allows interactive queries of information contained within the map, table or graph. It permits a dynamic link between databases and maps so that data updates are automatically reflected on the maps. Dynamic maps published on the Internet assist patients in locating the most convenient health services easily. GIS can process aerial/satellite images to allow information like temperature, soil types and land use to be easily integrated, and spatial correlations between potential risk factors and the occurrence of diseases to be determined.

Despite tremendous potential of GIS, the health sector in India has not fully explored it. Majority of the health departments and research organizations in India do not have the hardware, software or trained staff that would enable them to apply GIS technology. However, the interest in GIS has increased during the late 1990s. Many health organizations, such as Malaria Research Centre, DANLEP and Vector Control Research Centre, are exploring its potential utility in medical research and disease control. In this paper, we highlight the role of GIS in monitoring and management of epidemics.

Check Your Progress I

Note: Use the space provided for your answer.

1) What are the main causes of epidemics after natural disasters?

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2) How does GIS help in preventing epidemics?

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2.4 MASS CASUALTY INCIDENTS

Any event resulting in a number of victims large enough to disrupt the normal course of emergency and health care services is called a mass casualty incident. These events present unprecedented challenges as they significantly impact the health care system and other resources. All disasters have an inherent potential to convert into a mass casualty event with increased number of morbidity and mortality. Dimensions of disaster have increased manifold in the light of significant human-made disasters such as terrorists' attacks, bomb blasts, major fire incidents, etc. Mass casualty potential of other emergencies such as chemical/industrial, biological, radiological and nuclear incidents may be enormous in terms of casualties. Medical

management in such situations needs certain specialized facilities like, protection, detection, decontamination, antidote administration and decorporation along with usual care required for other injuries.

Trauma during a mass casualty incident includes bone injuries, head injuries and crush syndrome. Burn injuries due to mass casualty incidents are now a days increasing due to fire incidents, terrorist strikes and accident related disasters. Drowning in flood affected areas and stampede in mass gatherings could also create a situation of mass casualty.

Different Approaches to MCIs

1) *Basic Approach*

A “scoop and run” method is used most commonly to deal with accident victims. This approach does not require specific technical ability from the rescuers. While this method can be justified for the management of a small number of victims in certain circumstances, this method would not be applicable for overwhelming number of victims due to any macro level natural or man-made disasters.

2) *Classical Care Approach:*

In this approach, the first responders are trained to provide victims with basic triage and field care before evacuation to the nearest available receiving health care facility. If the basic coordination between two independently working bodies (first responders and the receiving hospitals) are not prior established and networked, in mass casualty incidents at macro level, this approach can result an extremely chaotic situation to paralyze the total function of the hospital.

3) *Mass Casualty Management Approach:*

This is the most sophisticated approach with pre-established procedures for resource mobilization, field management and hospital reception. It is based on specific training of various levels of responders and emphasizes on links between field and hospital facilities through a common post. It acknowledges the need of a multi-sectoral response for triage, field stabilization and evacuation to adapted health care facilities. The development of this approach is based on the availability of existing human and material resources. However, this largely depends upon a country’s contextual situations of limited or optimum availability of resources. In limited resource conditions, depending on space and care facilities available in a particular health care set up, transport of victims should be staggered wisely.

Actually in a mass casualty incident a small number of victims will need immediate treatment in a hospital, however, to reduce the mortality and morbidity the role of specifically skilled field level teams is very important. The success of a quick and effective mass casualty management depends largely on:

- i) ***Good triage capacity of the specifically trained field level teams;***
- ii) ***Good radio-communication between field and hospital staff, and;***
- iii) ***Good overall coordinated preparedness of the health sector along with other supporting sectors.***

Thus, the concept of triage plays a significant role in the success of the management of victims of a MCI.

Triage

Triage classically means classification or prioritization of victims on the basis of injury profile/condition of the victims to provide immediate or delayed care or to refer to a nearby health care facility/hospital. This triage is based on urgency (victim's condition), likelihood of survival and advance health care facilities available. The objectives of triage are to quickly identify the victims needing immediate stabilization (filed medical care) and to identify victims needing immediate life saving surgery.

The filed triage process could be done at three levels:

i) ***On-site triage***

ii) ***Medical triage***

iii) ***Evacuation triage***

i) ***On-site triage*** is done at the disaster site and the victims categorization is done “where they are lying” ideally by using some colour code tags to reduce the incorrect classification. This is done primarily by the first responders, disaster response forces, emergency medical technicians and search and rescue workers. These trained personnel categorize victims into “acute” (red and yellow tags) and “not acute” (green and black tags). Generally, the acute victims are tied up with a red floating ribbon and the not acute victims with green ribbon to make it easier for the stretcher bearer to shift to victims to their designated places. This helps in reducing the on-site triage time to assess, categorize, mark and transport the victims to the nearest point/location where advance medical care facilities are available.

ii) ***Medical triage*** is primarily done by a team of experienced medical personnel at the point/location where advance medical care facilities are available. The objective of medical triage is to determine the type and level of medical care needed by the victims. The triage team is consisted of an anesthesiologist, emergency physician, surgeons, a gynecologist and obstetrician, and if possible a pediatrician. Accordingly, red (victims needing immediate stabilization care such as victims having respiratory distress, major internal or external bleeding, shock, head injury), yellow (victims requiring close monitoring and can be somewhat delayed such as victims with risk of shock-heart attack or major abdominal trauma, compound fractures, severe burns), green (victims requiring delayed or no treatment such as victims with minor fractures, wounds, burns), and black (for deceased) colour categories can be assigned to the victims. However, depending on the resources available and magnitude of the MCI, the triage can be done. For example, a victim with 50-60% burn injuries can be tagged with red band if the incident is small and resources are available in the health care facilities, and the same victim can wait for an hour (yellow tag) in a major MCI if the victim has no respiratory distress

iii) ***Evacuation triage*** is primarily done to again prioritize victims needing transfer by equipped ambulance with medical escort to other tertiary care level hospital with very advanced level of health care facilities available. Here the classification of victims is also done following the colour codes, but the criteria chosen may differ from the medical triage. For example, the victims needing life saving surgery, function saving surgery and ICU facilities such as ventilator, advance monitoring of cardio-vascular functions are tagged with red bands, while the victims needing major surgeries but not really life threatening could be tagged with yellow bands. The objective is to evacuate the victims from the advance health facilities, where the medical triage is done to transfer them with BLS ambulances to the tertiary care hospitals.

However, every hospital needs to mention the triage area, acute treatment and not acute treatment area with the list of triage team and minimum required equipments in its hospital disaster management/mass casualty management plan. To follow the triage protocol at three levels of triage, hospital networking and inventory assessment in hospitals also play crucial role for the activation and implementation of hospital plan.

Check Your Progress II

Note: Use the space provided for your answer.

1) Why is triage done in case of mass casualty incidents?

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2) What is the difference between three types of triage?

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3) Write three criteria for successful mass casualty management.

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2.5 PSYCHO-SOCIAL AND MENTAL HEALTH ISSUES

Disaster-affected people experience various psychological reactions. These reactions immediately follow the event while socio-economic impacts like lack of employment; homelessness, environmental destruction and disorganization emerge as a consequence following the devastation caused by the disaster.

After a disaster, the emotional reactions among members of a community may vary from the other and this also usually undergoes change over time depending upon the coping capacity and socio-economic condition of that community. Therefore, post-disaster psychological interventions should be flexible and based on an ongoing assessment of needs. The emotional reactions should be understood based on the manifestation of various stress reactions, level of effort put by the people for their own reconstruction, the pattern and amount of disability created

due to these psychological stress etc. Some factors that could influence the reactions among people are nature and severity of the disaster, amount of exposure to the disaster, availability of adequate social support, age, gender, status of the person (single, widowed, married), separation/displacement from locality, separation from family/primary support group, personal losses of the survivor (loss of kith and kin, property, source of livelihood, personal injury).

This part would be discussed more deliberatively in some other unit, which focuses entirely on disaster psycho-social support and mental health care.

Check Your Progress III

Note: Use the space provided for your answer.

- 1) What are the factors that could influence the emotional reactions of the disaster affected people?

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2.6 INSTITUTIONAL MECHANISM FOR DISASTER HEALTH CARE MANAGEMENT

Health is a state subject in India and the states have a three-tier system of service and health facility provision to the citizens, which consists of primary health care facilities at village level, district level hospitals and tertiary care hospitals at state level. National Health Policy and programmes are also implemented by states. Thus, the health care service organizations extend from national to village level.

At the national level, the Ministry of Health and Family Welfare (MoH&FW) has been assigned the legislative capacity for a number of health care subjects spanned from medical to dental, nursing, pharmacy, mental health, standardization of drugs, Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), and epidemic prevention and control. It has two departments, health and family welfare and AYUSH. The Emergency Medical Response (EMR) division of the technical wing of the Directorate General of Health Services (DGHS) is the focal point for implementing the Emergency Support Function (ESF) plan that includes identification of nodal officers for coordination, crisis management committee and quick response teams at head quarter and field level, resource inventory, etc. the decision making body is the Crisis Management Group under the Secretary, Health and Family Welfare, which is advised by the Technical Advisor Committee under DGHS.

Medical and paramedical personnel in (i) tertiary care institutes runs by MoH&FW and (ii) available with central government health scheme could become useful for medical team deployment and mobilization in case of mass casualty incidents. Similarly for public health personnel can be deputed from the National Institute of Communicable Diseases (NICD), All India Institute of Hygiene and public Health (AIHPH) and other ICMR institutes. For investigating outbreaks, NICD is the nodal agency, which provides teaching/training, research and laboratory support.

However, health is a state subject under the present constitutional provisions. The administrative responsibility of medical preparedness and mass casualty management primarily remains with the state health departments. State health department is structured a s three-tier system, comprising of PHCs and CHCs at block levels, district hospitals at district level and tertiary care hospitals/medical institutions at state headquarters/major cities. With wide variation with multiplicity of agencies/departments that run these systems in different states, these institutions are normally overwhelmed with the routine load and their surge capacity is limited. Therefore, capacity development of these institutions at all three levels for catering to mass casualty incidents is a great challenge, hence, needs urgent attention from all role players, both Government and Private working in the health sector development planning.

Check Your Progress IV

Note: Use the space provided for your answer.

- 1) What is the three-tier system of providing health care services to citizens of India?

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- 2) What is the role of the Ministry of Health & Family Welfare in disasters?

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2.7 NATIONAL GUIDELINES ON MEDICAL PREPAREDNESS AND MASS CASUALTY MANAGEMENT

There has been a paradigm shift in the Government's focus from a reactive centric approach to a proactive approach including planning, preparedness and mitigation. It has been accepted that morbidity, mortality and mental health effects of disasters can be reduced and mitigated through proper measures. Therefore, keeping the gravity of the health risks posed by disasters, medical preparedness needs to encompass all the issues related to health and related effects as a consequences of disasters and their aftermath. In addition to trauma and suffering, these may also result in a long-term deleterious impact on the mental health status of the affected community.

These guidelines have been developed by the National Disaster Management Authority, Government of India. Under Section-6 of the Disaster Management Act, 2005 of Government of India, the National Disaster Management Authority (NDMA) is Inter alia mandated to issue guidelines for preparing action plans for

holistic and coordinated management of all disasters. The guidelines on medical preparedness and mass casualty management focus on all aspects of medical preparedness and mass casualty management with emphasis on mitigation, preparedness, relief and response. These guidelines have documented important preparatory measures which, though already existing, require definite upgradation both qualitatively and quantitatively. Latest best practices and concepts in the medical and scientific field have also been included, which may be adopted, based upon the area and need assessment analyses. These guidelines also provide important baseline information to various planners and implementers regarding different specialized facilities and methodologies required for effective implementation of health impacts of chemical, biological, radiological and nuclear disasters.

The effective implementation of these guidelines can be achieved with the collective action of all stakeholders, particularly State Governments (Especially Department of Health & Family Welfare & District Administration) and their Disaster Management Authorities.

Check Your Progress V

Note: Use the space provided for your answer.

1) What is the mandate of NDMA?

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2) How do you think that these national guidelines on medical preparedness and mass causality management would help in better health care service provisions during a disaster?

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2.8 HOSPITAL DISASTER MANAGEMENT PLAN (HDMP)

A Hospital Disaster Management Plan is a simple, comprehensive and well defined hospital disaster/emergency/crisis management activities framework prepared by a particular hospital to handle disasters/emergencies to minimize the loss of human beings and limbs, to prevent deterioration of injuries and sufferings of the survivors and to function as a life line service centre during the disasters. It considers the management protocol for both internal and external disasters, which may affect the functioning of the hospital.

The type of disaster/emergency/crisis situations hospitals may have to face are mainly:

Emergency Response

- 1) Mass Casualty incidents due to natural or man-made causes;
- 2) Public Health Emergencies: Such emergencies may primarily be out break of infectious diseases or an after effect of natural disaster with its after effects on the Public health; and
- 3) Crisis situation related to Nuclear, Biological, Chemical and Radiological attacks.

The prime objective of Hospital Disaster Management Plan is to ensure mitigation and preparedness measures that have to be taken up by hospitals (irrespective of bed strength, locality, human and material resources) ***for prompt and well coordinated effective response framework for either internal or external disasters faced by the hospitals.***

Therefore each hospital in Delhi and NCR Region must follow the HDMP template, however may modify the plan keeping its own organizational structure, human and material resources and equipments in view. However, this is mandatory for each hospital to have:

- i) A written plan clearly mentioning the step by step approach to be followed by the hospital in case of disaster/emergency/crisis situations.
- ii) A written plan regarding hospital safety mitigation measures, such as structural and non-structural mitigation measures that can be done to ensure safe hospital.
- iii) A written plan for people/teams/committees responsible for management of disasters, their roles, functions and chain of command.
- iv) A written plan for communication channels and methods of dissemination of information to the hospital staff and to the public.
- v) A written framework for plan activation protocol for different disasters/emergency situations
- vi) A written plan for hospital's protocol for capacity building (training and retraining) of hospital staff in various aspects of disaster health care management

The above mentioned features highlight the composition of a hospital disaster management plan. This is also important to note that the plan prepared by the hospital needs to be tested at regular intervals through Mock Drills (Table Top and Field Level) and the schedule for the same is to made explicit in the document. The document must be made available to all sections of the hospital staff working in outpatient, clinical, support services, and to the regulatory authorities.

Check Your Progress VI

Note: Use the space provided for your answer.

- 1) What are the key objectives of a Hospital Disaster Management Plan?

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2) Do you think this plan would be different from one hospital to another?

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2.9 LET US SUM UP

India is vulnerable to disasters caused by natural hazards on account of its unique geo-climatic conditions and by man-made disasters on account of its socio-political and cultural conditions. Health care is a critical determinant for survival in the initial stages of a disaster. The health impacts could be direct or indirect in terms of public health issues or mass casualty management. The impacts could be direct on the health sector infrastructure such destruction or damage to the hospital building, loss of or injury to the health personnel, destruction or damage to the other infrastructure within the hospital building, pressure on the existing resource while dealing with a large number of sudden influx of patients etc.

More importantly, disasters caused by natural hazards (hurricanes, floods, earthquakes, cyclones and volcanic eruptions) can contribute to the transmission of some diseases provided the causative agent is already in the environment. Although major health epidemics are rare in the aftermath of these disasters, but some disasters are so great that large numbers of the population are displaced, creating perfect conditions for the spread of disease. However, it is important to remember that epidemics do not spontaneously occur after a natural disaster. The more likely cause of disease is the lack of potable water and adequate sanitation. GIS-GPS could play a very important role in preventing epidemic.

Dimensions of disaster in terms of medical management of mass casualty incidents have increased manifold in the light of significant human-made disasters such as terrorists' attacks, bomb blasts, major fire incidents, etc. and mass casualty potential of other emergencies such as chemical/industrial, biological, radiological and nuclear incidents may be enormous in terms of casualties.

Disaster-affected people experience various psychological reactions. These reactions immediately follow the event while socio-economic impacts like lack of employment; homelessness, environmental destruction and disorganization emerge as a consequence following the devastation caused by the disaster.

Health is a state subject in India and the states have a three-tier system of service and health facility provision to the citizens, which consists of primary health care facilities at village level, district level hospitals and tertiary care hospitals at state level. National Health Policy and programmes are also implemented by states. Thus, the health care service organizations extend from national to village level. At the national level, the Ministry of Health & Family Welfare (MoH&FW) has been assigned the legislative capacity for a number of health care subjects spanned from medical to dental, nursing, pharmacy, mental health, standardization of drugs, Ayurveda, Yoga & Naturopathy, Unani, Siddha & Homoeopathy (AYUSH), and epidemic prevention and control. It has two departments, Health & Family Welfare and AYUSH. The Emergency Medical Response (EMR) division of the technical wing of the Directorate General of Health Services (DGHS) is the focal point for implementing the Emergency Support Function (ESF) plan that includes identification of nodal officers for coordination, Crisis Management Committee

and quick response teams at head quarter and field level, resource inventory, etc. The decision making body is the Crisis Management Group under the Secretary, Health & Family Welfare, which is advised by the Technical Advisor Committee under DGHS.

The National Guidelines on Medical Preparedness & Mass Casualty Management have been developed by the National Disaster Management Authority, Government of India. The guidelines on medical preparedness and mass casualty management focus on all aspects of medical preparedness and mass casualty management with emphasis on mitigation, preparedness, relief and response. These guidelines have documented important preparatory measures which, though already existing, require definite up gradation both qualitatively and quantitatively. As a critical part of these guidelines, every hospital irrespective of its locality, ownership, and bed strength has to have a hospital/health centre disaster management plan.

A Hospital Disaster Management Plan is a simple, comprehensive and well defined hospital disaster/emergency/crisis management activities framework prepared by a particular hospital to handle disasters/emergencies to minimize the loss of human beings and limbs, to prevent deterioration of injuries and sufferings of the survivors and to function as a life line service centre during the disasters. It considers the management protocol for both internal and external disasters, which may affect the functioning of the hospital.

During a disasters, when the urgent survival needs including urgent medical care are met and mortality rates have been declined by immediate mass causality management, a more comprehensive range of services are needed to be provided. Recent advances in geographical information and mapping technologies have created new opportunities for public health administrators to enhance planning, analysis, monitoring and management of health systems. Throughout all phases of a disaster, a systematic approach is needed to be developed to design, implement, monitor and evaluate these comprehensive services, which should ensure that most health needs are met with appropriate coverage, optimized access, and quality services.

2.10 KEY WORDS

Evacuation triage

: It is primarily done to again prioritize victims needing transfer by equipped ambulance with medical escort to other tertiary care level hospital with very advance level of health care facilities available. The classification of victims at each stage is also done following the colour codes, but the criteria chosen may differ from one type of triage to another.

Geographic Information Systems (GIS): GIS helps generating thematic maps that depict the intensity of a disease or vector. It can also map the impact zone of vector breeding site, where control activity needs to be strengthened.

Medical triage

: It is primarily done by a team of experienced medical personnel at the point/location where advance medical care facilities are available to

determine the type and level of medical care needed by the victims.

On-site triage

- : It is done at the disaster site and the victims' categorization is done by using some colour code tags to reduce the incorrect classification. This is done primarily by the first responders, disaster response forces, emergency medical technicians and search and rescue workers.

PTSD

- : Post-traumatic stress disorder is a delayed psychological consequence of exposure to overwhelming disaster event. PTSD is a serious mental health condition associated with significant problems and disabilities in the areas of psychological, biological, volitional, social, vocational, academic, and interpersonal functioning.

Triage

- : Triage classically means classification or prioritization of victims on the basis of injury profile/condition of the victims to provide immediate or delayed care or to refer to a nearby health care facility/hospital.

2.11 FURTHER READINGS & REFERENCES

Ministry of Health & Family Welfare - www.mohfw.nic.in

National Institute of Communicable Diseases- www.nicd.org

National Institute of Occupational Health- www.icmr.nic.in/pinstitute/nioh.htm

J. Boer & M. Dubouloz- A Handbook of Disaster Medicine

PAHO Guidelines

World Health Organisation Publications

UNIT 3 ROLE OF VARIOUS AGENCIES: INCIDENT COMMAND SYSTEM

Structure

- 3.0 Objectives
- 3.1 Introduction
- 3.2 What is Incident Command System (ICS)?
- 3.3 Brief History of ICS
- 3.4 Primary Functions in Incident Command System
- 3.5 Organizational Structure of Incident Command System
- 3.6 Basic Features of ICS
- 3.7 How does ICS work?
- 3.8 Let Us Sum Up
- 3.9 Further Readings and References

3.0 OBJECTIVES

After studying this Unit, you should be able to:

- know what is Incident Command System (ICS) and why it is useful;
- know the brief history of Incident Command System;
- describe difference between command and General staff;
- understand what are the primary Incident Command System functions;
- know the Incident Command System organizational framework;
- know some of the basic features of Incident Command System; and
- understand how ICS works.

3.1 INTRODUCTION

Emergency responses are non-routine; response activities required at the time of any kind of emergency caused either by natural or human made hazards. The importance of emergency response can be understood from the fact that the first few hours or the initial few days are the most crucial period during any disaster either for saving lives or for providing essential relief to the affected population. However during this time, response activities have to be coordinated as a number of agencies must work together in an organized and effective manner. For example, response to disaster such as Cyclone, Flood, Earthquake etc. require involvement of a number of agencies such as government departments i.e. health, communication, revenue, public works, home, finance, police, rural development, roads, agriculture, animal husbandry etc. The Defense Forces such as Army, Air Force, Navy, Non-Government Organizations (NGO), Community-based Organizations, Volunteers, Civil Defense etc. Achieving coordination among such diverse agencies at the time of emergency create unique challenges such as supervision, resource management, communication problem, line of authority etc. Often because of these

challenges the response process suffers leading to poor management. For example, during Gujarat Earthquake 2001, the first forty eight hours which is vital for rescuing survivors, the response was chaotic. Similarly during Orissa Super Cyclone 1999 and Tsunami 2004 there was lot of confusion during this initial period.

In India, acknowledging the specialized nature of emergency response and the need for a coordinated mechanism during such time, the High Powered Committee (HPC) constituted by Government of India in 1999 gave a lot of importance to developing and institutionalizing suitable emergency response system at various levels for timely and effective disaster response. The HPC report after reviewing various response mechanism adopted around the world identified Incident Command System (ICS) as one of the best practices for emergency response and recommended for its adaptation in India. This chapter gives a preliminary overview of Incident Command System.

3.2 WHAT IS INCIDENT COMMAND SYSTEM (ICS)?

The Incident Command System or ICS broadly refers to a management system to be used for incidents of various kinds and sizes such as earthquakes, flood, cyclone, landslides etc. or emergencies caused by train or road accidents, epidemics etc or even any planned events such as festivals, games. The system provides scope to organize various functions, tasks and staffs within the overall response process while emphasizing greater coordination and communication among different organizations involved. ICS as a system is highly flexible and adaptable to suit any scale of natural as well as human made emergency/incidents. The flexibility is reflected from the fact that ICS can be used for routine emergencies such as road or train accidents, festivals etc. to large scale, complex, multi-jurisdictional disaster such as 2004 Tsunami. The ICS as a management system draws its strength from this applicability to wide range of incidents/emergencies of varying scale.

Why ICS is Useful

The usefulness of ICS comes mainly from the nature of emergency response functions which are both specialized and varied and the necessity of their coordination for overall effectiveness. Unless these emergency functions are not integrated in a single framework, there is always the risk of duplication and poor resource management. One of the main intention of using ICS is to transform the confusion of the early stage of an emergency situation into a well managed response process by answering vital questions such as who is in charge, whom to contact, what do I do etc. The ICS by providing such a framework that integrates various management concepts such as command structure with clear line of authority, organizational flexibility for different scale of emergencies, standard terminology for better communication, resource management procedures etc. tries to organize response functions in a coherent and systematic manner.

3.3 BRIEF HISTORY OF ICS

Incident Command System was developed in early 1970's in the United States in response to a series of wild land fires in southern California. At that time several agencies involved in managing such fires reported some recurring problem such as too many people reporting to one supervisor, different response organizational structures depending on parent department, lack of reliable information, different terminology and incompatible communication, unclear specified objectives and lack of clear line of authority, lack of capability of the responding organizations to expand and contract as and when required by the situation etc. As a response to

these problems, several agencies collaborated to form the Fire Fighting Resource of California Organized for Potential Emergencies (FIREScope) and this inter agency effort resulted in the development of ICS model of management. Although originally developed in response to wild land fires, this was soon realized that ICS principles are equally applicable for other hazards. For example in case of most disasters, incidents are multi-jurisdictional, involves high public and media visibility with considerable personal risk to responding personnel. Taking these aspects into consideration, ICS model has gone through transition and evolved to an all hazard/incidents type during last four decades. The ICS model has also found acceptance in several other countries including Australia, Canada and New Zealand, Sri Lanka, Thailand etc.

ICS in India

Based on the recommendation of High Powered Committee (HPC) report, Government of India has decided for adapting of ICS to suit Indian system of administration and institutionalizing it gradually for professionalizing disaster response. Accordingly the National Institute of Disaster Management, New Delhi, Lal Bahadur Shastri National Academy of Administration, Mussoorie and Six Regional Centers have been designated for adapting, training and institutionalizing ICS in India. It is important to note here that the approach in India has been not to replace the Indian system of emergency management which has come through a long period of evolution keeping in consideration local condition. But the idea is to strengthen this system with ICS by suitable modification wherever there are gaps. The ICS adaptation process is underway since 2003 and during this time large number of personnel from various Central government departments, State Government, NGO, National Disaster Response Force, Civil Defense etc. have been trained on ICS. Some of these trained personnel have also tried to apply ICS during actual emergencies such as Flood, Tsunami, Festivals etc. in different parts of the country. To take this process further, there have been pilotings of ICS model in some of the most vulnerable districts of three states; Gujarat, Assam and Andhra Pradesh. In these pilot districts, District incident management teams have been formed, trained in adapted ICS model and to be deployed during any emergency. These experiments are to be tried out at state and national level in due course. Similarly for providing policy support, National Disaster Management Authority has recommended implementation of ICS model response in many of its hazard guidelines.

3.4 PRIMARY FUNCTIONS IN INCIDENT COMMAND SYSTEM

Command Staff and General Staff

Command Staff: The command staff in ICS consists of Incident Commander who has the overall responsibility for managing an incident and three other positions namely Information Officer, Safety Officer and Liaison Officer. The Information Officer is responsible for developing and releasing information to the news media, incident personnel or any other appropriate agencies and organization. The Liaison officer is generally appointed in incident involving several agencies or which are multi- jurisdictional in nature and the primary responsibility of Liaison officer is to bring coordination with various agencies which are either directly assisting or cooperating agencies i.e. providing non-critical resources to incident management. The Safety officer's function is to develop and recommend measures for assuring personnel safety of incident personnel (responders). The Safety officer if needed can exercise the authority to directly stop unsafe operation if the conditions are life threatening for the responders.

General Staff: The ICS General staff consists of the following positions and those working under these sections:

- A) Operation Section Chief
- B) Planning Section Chief
- C) Logistics Section Chief
- D) Finance and Administration Section Chief

The principal ICS functions

Command: The Incident Commander (IC) has overall responsibility for all functions and this person may elect to perform all functions or delegate some of them to other positions. Thus while other position in any ICS team may or may not be filled depending on incident size and need, there will always be an IC. If need be, a Deputy Incident Commander is also appointed who may be from the same agency as that of IC or from assisting agencies with same level of competence so that he or she can take over the role of IC if such a situation arises.

The major duties and responsibilities of Incident Commander include; determine incident objectives and priorities, establish Incident Command Post, establish Incident Command Organization, ensure planning meeting, approve incident action plan, coordinate activities of command and general staff, keep informed responsible official about incident status, authorize release of information to the media and ensure that adequate safety measures are in place.

Operations: The Operation Section is responsible for managing and directing all tactical action to meet incident objectives. The Operation section consists of the following components; ground or surface based tactical resources, aviation resources e.g. helicopter, fixed wing aircrafts etc. and staging areas. The resources which under the ground or surface based can be organized under three ways; single resources, strike teams and task forces, depending on the application area and tactical requirements. Many incidents require deployment of aviation resources and in such case ICS recommends establishment of a separate branch in the Operation Section for aviation resources. The concept of staging areas in ICS refers to a temporary location for placing resources which are available for incident assignment. The location should be sufficiently close to the incident site of deployment so that resources placed there can be at the site of assignment/operation within three to five minutes. Several staging areas can be set up within an incident and the main purpose is to ensure planned operational time is not lost on account of resource readiness and deployment.

Planning: The Planning section is responsible for the collection, evaluation and display of incident information, maintaining status of resources, preparing incident action plan and incident related documentation. There are four units in the planning section that can be activated as and when required. These units are:

- **Resource Unit:** This unit is responsible for maintaining the status of all resources (primary and support) at an incident. It achieves this through overseeing the check-in processes of all resources, maintaining a master list of all resources e.g. key supervisory personnel, crucial resources etc. and developing a status keeping system to display status of resources, their assignment position etc.
- **Situation Unit:** The situation unit is responsible for collection, processing and organizing of all situation related information. They also prepare future projection and likely scenario for the planning purpose. The unit can engage three other positions namely field observer, display processor i.e. for information display and weather observer.

- **Documentation Unit:** This unit is responsible for the maintainances of accurate and up to date incident files. Such documentation is necessary either for incident management, legal, analytical or historical purpose.
- **Demobilization Unit:** The demobilization unit is responsible for developing a demobilization plan. In large or complex incident such a plan is essential for efficient use of resources.

Technical specialists: Certain incidents may require use of technical specialists who have specialized knowledge and expertise such as meteorologists, hydrologists, GIS specialists etc. Such technical specialists generally work in the Planning Section, often associated with situation unit or any other units as required for example, if such a specialist's expertise is primarily with resource inventory then the specialists can be associated with resource unit or if the incident is handling hazardous material, a special unit for such specialists may be created in the planning section.

Logistics: The Logistics section provides support for services and support to incident management. The primary functions of Logistics section is to provide support for incident facilities e.g. base, camp etc., transportation, communication, food services, ground transportation, medical services and ordering resources. In large incidents requiring huge quantity of resources or in a fully expanded logistics section, the following six units may be established.

- **Supply Unit:** This unit is responsible for ordering, receiving, processing and storing all incident related resources from outside. This unit is different from resource unit in the planning section on the ground that resource unit do not order any resource, which in itself is a specialized task e.g. identification of sources, quality check, transportation etc. The resource unit on the other hand oversees arrival of resources and prepares their status summary etc. for planning section whereas the supply unit in Logistics section takes the responsibility of ordering, receiving, processing resources. The Supply Unit can engage Ordering Manager and Receiving/Distribution Manager for this function.
- **Facilities Unit:** This unit is responsible for establishing, maintainances and demobilization of all incident related facilities except staging areas. These facilities include Incident Command Post from where the command staff function, Incident Base and Camp where there will be provision for rest, food, water, sanitation, medical facilities etc or any other such facilities for incident personnel. The basic difference between a Base and Camp is that Base is a much better arrangement compared to camp and in an incident there can be several camps depending on the incident area. The unit also ensures security for various facilities in an incident.
- **Ground Support Unit:** The Ground support unit is responsible for the maintainances, service and fuelling of all mobile equipments and vehicles with the exception of aviation resources. The aviation resources come under air operation branch in the Operation Section. The Ground support unit also has the responsibility for ground transportation of personnel, supplies, equipments and for developing an incident traffic plan.
- **Communication Unit:** The Unit is responsible for developing the plan for incident communication equipment and facilities, installation and testing of communication equipments, supervision of communication centre and distribution and maintainances of communication equipments.
- **Food Unit:** The unit is in charge of providing food needs for the entire incident including all remote location; camps, staging areas etc.

- **Medical Unit:** The medical unit is responsible for providing medical services for all incident assigned personnel. The unit is to develop an incident medical plan identifying various medical service centers, ambulances, procedures.

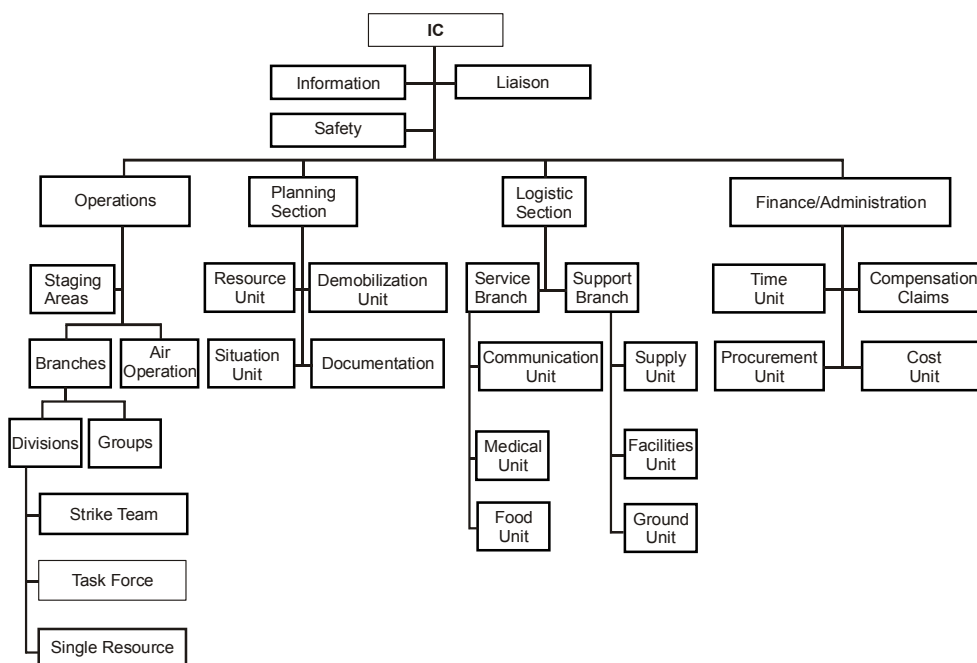
This needs to be noted here that the food and medical unit in the Logistics section are primarily meant for incident personnel and not for incident affected public which is to be taken care by the operation section.

Finance and Administration: This section is responsible for tracking incident related costs, personnel and equipment records, procurement contracts etc. Not all incidents will require separate Finance and Administration section or a fully expanded Finance/Administration section but depending on the incident needs such as size of the incident, agencies involved, type of resources etc. The various units of the section can be activated or deactivated. There are four units in the Finance/Administration section:

- **Time Unit:** The unit is responsible for ensuring accurate recording of personnel time and compliance with specific agencies time- recording policies
- **Procurement Unit:** All financial matters related to vendor contracts, leases and financial agreements. The unit is also responsible for maintaining equipment time records.
- **Compensation/Claim Unit:** The Unit oversees all formalities for completion of all forms for incident personnel and local agencies. The claim unit is responsible for investigating all claims involved with the incident.
- **Cost unit:** The primary function of this unit is to provide all incident cost analysis. It ensures that proper identification of all equipment and personnel requiring payments, records all cost data, analyze and prepare estimate of cost and maintain record of incident cost.

3.5 ORGANIZATIONAL STRUCTURE OF INCIDENT COMMAND SYSTEM

**INCIDENT MANAGEMENT SYSTEM
ORGANISATIONAL CHART**



Check Your Progress I

Note: Use the space provided for your answer.

1) What is ICS and why do we need it?

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2) Who are the Command and General staff in ICS?

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3) What are the primary ICS functions?

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3.6 BASIC FEATURES OF ICS

ICS: The following are some of the important feature of ICS which make it an effective management tool for emergency management.

Management by Objective

The management by objective principle in ICS is covered in following four steps.

- a) **Understand department or government policy:** This can include any major policy decision of specific agency or of national, state Government e.g. environmental restriction, public safety etc.
- b) **Establishing of Incident Objectives:** These are statements of intent which guide overall incident management. Essentially this is answering the question, what do we want to achieve? For some incidents, the time to achieve can be crucial though not in all type of incidents. Often incidents are planned and managed in a specific time frame (operational period) and in such cases, incident objectives can change depending on the conditions and progress. One of the most important aspect of incident objectives is, they should be measurable.
- c) **Select appropriate strategy:** Strategy describes the general method or methods that should be used either singly or in combination to achieve the incident objectives. To illustrate this for an incident, an objective such as; reduce the reservoir level to 35 ft, several strategies can be employed.

- Strategy 1: Reduce/divert inflow
- Strategy 2: Open spillways
- Strategy 3: Use Pumps

Each of these strategies will have advantages or disadvantages depending on the context and sometime all three of these above can also be used.

- d) **Execute tactical operation:** The tactical operation must be appropriate to the selected strategy and is normally based on the planning. The primary responsibility for executing tactical operation is with the Incident Commander or the Operation Section Chief if that position has been established. Normally tactics are established for an operational period. To give an example, a tactic for the strategy 3 (above) can be used of truck mounted heavy duty pump from the east side and using portable six small pumps from the north side of the reservoir.
- e) **Monitor performance:** Performance monitoring will determine if the tactics and resources assigned for the various strategies are valid and adequate. For example, in the above example it may be necessary to increase the pumping capacity for which new higher capacity pumps may be required. It could also be possible that due to clogging, use of pumps as a strategy may have to be abandoned and a new strategy is to be selected.

Organizational Flexibility

The ICS organization at any time should follow the principle that, ***“positions are to be filled up based on what is required to meet the planned incident objectives”***. The size of the current organization and that of the next operational period is determined through incident action planning process. A number of organizational elements may be activated in various sections depending on the needs and elements activated which are no longer needed can be deactivated. In essence, the organizational structure of ICS can easily expand to accommodate thousands of personnel and shrink to few people, all depending on needs for the incident management.

Establishment and Transfer of Command

ICS is an On-scene management system which means the command post is established close to the actual scene of incident. The establishment of command is generally by the highest ranking official at the scene that has jurisdiction for the incident.

The transfer of command for the incident can take place for various reasons such as; a more qualified person assuming command, change in incident situation where a jurisdictional or agency change is legally required or make more management sense etc. Sometime if the incident management continues for a long period e.g. months together, transfer of command becomes essential.

Span of Control

This refers to number of individuals, that one supervisor can effectively manage. In ICS, span of control of any supervisor falls within 3 to 7 i.e. if a supervisor has fewer than 3 persons reporting or more than 7 then some adjustments should be considered. The rule of thumb for span of control is 1:5 i.e. one supervisor can effectively supervise five sub-ordinates. This is also important to note that, the above criteria for span of control is for direct supervision and in a large incident, there can be hundreds of personnel working under one incident commander without violating span of control ratio.

Unity and Chain of Command

In ICS, the unity of command means that every individual has a designated supervisor and chain of command means that there is an orderly line of authority within the ranks of the organization. As stated earlier, depending on the needs of the incident management, the organization can grow to a large entity and within such an expanded organization chain of command is achieved through several layers such as section, branch, division/groups, units, resources.

Common (standardized) Terminologies

In ICS, common terminologies are applied to;

- **Organizational elements:** To maintain consistency and to avoid confusion in multi agency incident management, various position title are standardized such as Head of a Section as Section Chief, Head of Branch is Branch Director, Head of Division as Division Supervisor, Head of Unit is Unit Leader etc. Each of these position titles entails specific skill, experience and authority in the management process.
- **Resources:** Both personnel and material are considered as resources in ICS. Many kinds of resources are required and are generally engaged during any incident management and often during such times deployment and ordering of right resources become crucial. ICS classifies resources as kind and types according to their capabilities such as kind and type of boats, vehicles, ambulances, personnel, search and rescue team etc.
- **Facilities:** Various facilities are established during incident management such as Incident Command Post, Incident Base, Camp, Staging Areas, Heli-base etc. and these names are standardized so that all personnel do not have any problem in identifying and communicating about such facilities.

Personnel Accountability

In order to ensure personnel accountability several procedures are laid out in ICS. These are;

- **Check In:** which is mandatory for all resources (personnel and material) arriving at the incident
- **Unity of Command:** This ensures that each has only one immediate supervisor
- **Division/Group Assignment Lists:** Identifies resources with active assignment in the operation section
- **Unit Log:** A record of personnel assigned and major events in all ICS organizational elements

Integrated Communication

ICS ensures that there is integrated communication in the entire incident management. A communication plan is developed which looks at issue of communication hardware system, planning of communication frequencies, resources and procedures for communication. In essence, ICS advocates free flow of information exchange among all personnel but the reporting, command and direction follows as per the organizational hierarchy.

Resource Management

The resources assigned to any incident management are grouped as per the following system:

- **Single Resource:** This refers to both personnel and their required equipment, for example a boat and the boat man.
- **Task Forces:** This is a combination of single resources within span of control guidelines. They are formed, either pre-determined or assembled at an incident from available single resources to perform a specific tactical need. For example, a search and rescue team with doctor and ambulances etc.
- **Strike Team:** A strike team is a combination of the designated number of same type and kind of resources with a leader. The two formations i.e. strike teams and task force is necessitated mainly because of the type of tactical operation to be performed. An example of strike team can be group of electrical technicians deployed to restore power supply in a specific area.

Unified Command

Unified command is an ICS management process which allows all agencies which have jurisdictional or functional responsibility for the incident to jointly develop a common set of incident objectives and strategies. In order to ensure that such agencies do not lose authority, responsibility and accountability, unified command allows for joint working under a single coordinated action plan. Under unified command, there can be more than one incident commander but one operation section chief and one incident command post. Examples of potential cases where unified command concept can be applied in India are incident in which different agencies have to work together such as Armed forces, Civilian administration or an incident involving two different states/districts.

Incident Action Plan (IAP)

In ICS, Incident Action Plan plays a very important function. It was realized early in the development of ICS that the critical factor of adequate planning was overlooked in operation resulting in poor use of resources, inappropriate strategies and tactics and ineffectiveness.

The main purpose of Incident Action Plan is to provide all incident supervisory personnel with appropriate direction for future action. The plan can be oral or written but for incidents which are growing or involve different agencies or more than one operational period, written action plan are recommended. In the preliminary stage of any incident, an incident briefing form is used which summarizes the nature of incident and action taken. However as incidents grow in complexity written action plan become necessary. The written action plan provides a clear statement of objective and actions. The plan is also a basis for measuring work effectiveness, progress and cost in addition to fixing accountability for various actions. Normally incident action plan is prepared for a operational period so that with the changing status of the incident and its management needs, a corrected action plan can be made. Several ICS forms giving details such as Statement of Objectives, Organizational chart, Tactics and assignment, supporting details such as medical plan, traffic plan etc. are included in an incident action plan.

Operational Period

Action plan in ICS are generally prepared for an operational period. Operational period duration can be of various lengths depending on several factors such as available time to achieve incident objectives, nature of the incident e.g. fast unfolding or static conditions, availability of new resources, environmental conditions e.g. day time or night, safety consideration. Typically operational period length can range from few hours to maximum a day.

Check Your Progress II

Note: Use the space provided for your answer.

1) What is the difference between Strike Team and Task force?

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2) What is span of control in ICS?

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3) What is unified command?

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4) What is an Incident action plan and why do we need it?

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3.7 HOW DOES ICS WORK ?

Any incident, be it a natural disaster or any other emergencies is first to be notified that ICS will be used and an Incident Command/Management Team is to be made in charge for its management. Depending on the size and nature of the incident, the Incident Commander will appoint other ICS team position. The six sequential steps involved in planning process are:

- **Understand the Situation:** Some of the key questions in this will be, what has happened, what progress has been made, what is the incident growth potential, what actions have been taken, how effective have been the current plan, what is the present and future resource capability etc. A full understanding of the incident is essential especially the special characteristics of such incidents.

- **Establish Incident Objectives and Strategies:** The three main characteristics of good objectives are that they should be attainable, measurable and flexible. The strategy should address various considerations such as practical, suitable, within acceptable safety limits, consistent with sound environmental practices and should meet political consideration. There should always be alternative strategies to meet incident objective assuming the risk of failure for any specific strategy. In small incident, the IC may determine the objectives and strategies but in large incident the general staff also contribute to objectives and strategies development.
- **Determine Tactical Direction and Make Resource Management:** The next step in this process is to determine tactical direction based on selected strategy and assign appropriate resources. The tactical direction is planned for an operational period which will have clear, realistic and measurable objectives that can be accomplished within that operational period. If required resources are not available, then necessary adjustments have to be made in the operational period objectives or in some cases a reassessment of strategies taking into account resource availability. At the same time, personnel and logistical support factor must also be considered before finalizing the tactical direction and strategies.
- **Prepare the Incident Action Plan:** The planning meeting (and if required a pre-planning meeting to resolve contentious issues) is conducted with participation of key members of ICS team such as Incident Commander, Planning Section Chief, Operation Section Chief, Logistics Section Chief, Finance/Administration Section Chief, Resource Unit Leader, Safety Officer and Agency Representative etc. or any other member as necessary to finalize the incident action plan.
- **Implement the Plan:** Once the incident action plan is prepared and approved by the Incident Commander, there is a general briefing for all the assigned incident personnel and also specific briefing for selected section. The copy of the plan is circulated to concerned staff and according to the plan, action is initiated
- **Evaluation of the Plan:** To ensure that the plan is effective, three steps are taken. Firstly before approving and releasing the plan Incident Commander can circulate the plan to general staff e.g. various section chiefs to review and assess if the plan reflects the current situation. Secondly during the operational period the Incident commander or operation section chief and planning section chief regularly monitor the progress against agreed objective to detect deficiencies and if required take corrective measures and thirdly the operation section chief can make expedient changes to tactical operation in the action plan if necessary to achieve incident objectives. While a particular operational period is in progress, planning for the next operational period starts.

3.8 LET US SUM UP

The Incident Command System (ICS) is an on scene management tool which is used for emergency response management. The ICS was originally developed in the United States of America but is now adapted in many other countries including India. The strength of this system lies in its flexibility for application in various size and type of incidents such as flood, earthquake, cyclone, landslides etc., train and rail accidents etc., epidemics, planned events such as festival games. ICS overall organizes various emergency response functions, into an integrated framework so that there can be coordination among these numerous response activities.

Principally ICS has a command staff consisting of the Incident commander who has overall responsibility for managing the incident and Safety Officer, Liaison officer and Information Officer. Under the Incident Commander there are general staff organized in four sections which are operation, planning, logistics, finance and administration section. While the operation section is primarily involved with the actual response on the scene, the other three sections provide direct assistance so that the incident is management effectively. The planning section primarily provides assistance in situation analysis, resource planning, documentation and demobilization. The logistics section contributes in providing assistance in communication, food, medical services for incident personnel, ground support, resource ordering and establishing facilities. The finance and administration section is responsible for cost analysis, record of personnel time and equipment assignment, claims and compensation related to incident management.

The ICS management basically operates with some unique features such as management by objective, common terminologies, integrated communication, transfer of command, span of control, operational period, incident action plan, single point information release etc. These features are to ensure that incident where there are presences of different agencies, large quantity of resources; personnel and material and involve many jurisdictions do not create confusion normally seen at such times. The ICS cycle begins with incident notification and follows basic steps such as establishing of incident objectives, selecting of appropriate strategy, development of incident action plan, performing of tactical operation and monitoring for assessing progress towards achieving the incident objectives. The ICS organization recommends that achieving of incident objectives alone will guide the number of position in the structure which is to be activated or deactivated.

3.9 FURTHER READINGS AND REFERENCES

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