# Chapter 26: Natural and Man-Made Disasters

**Lecture Outlines**

**I. Disaster Definitions**

**A. Disaster:** Any event that causes a level of destruction, death, or injury that affects the abilities of the community to respond to the incident using available resources.

**B. Mass casualty:** An event in which 100 or more individuals are involved.

**C. Multiple casualty:** An event in which more than 2 and less than 100 individuals are involved.

1. Direct victim: An individual who is immediately impacted by the event.

2. Indirect victim: A family member or friend of the victim or a first responder.

3. Displaced person or refugee: Special categories of direct victims. Displaced persons are those that have to evacuate their home, school, or business as a result of a disaster; refugees are a group of people who have fled their country or home as a result of famine, drought, natural disaster, war or civil unrest.

**II. Types of Disasters**

Disasters are identified as a natural disaster, a man-made disaster, or a combination of both.

**A. Natural disasters include:**

1. Avalanches.

2. Blizzards.

3. Communicable disease epidemics.

4. Droughts/wild fires.

5. Earthquakes.

6. Floods/mudslides.

7. Hailstorms.

8. Heat wave.

9. Hurricanes.

10. Tornados/cyclones.

11. Volcanic eruptions.

**B. Man-made disasters include:**

1. Terrorism.

2. Civil unrest (riots).

3. Explosions/bombings.

4. Fires.

5. Structural collapse (bridges).

6. Toxic/hazard spills.

7. Mass transit accidents.

8. Pollution.

9. Wars.

**III. Characteristics of Disasters**

Several characteristics have been used to describe disasters. These are frequency, predictability, preventability, imminence, scope and number of casualties, and intensity.

**A. Frequency**

Frequency refers to how often a disaster occurs. For example, terrorist activities are occurring almost on a daily basis in parts of the world; whereas, certain natural disasters such as hurricanes are typically seasonal events.

**B. Predictability**

Predictability relates to the ability to tell when and if a disaster event will occur. Some natural disasters can be predicted by weather forecasters, who can identify conditions that are likely to produce certain events.

**C. Preventability**

Preventability refers to actions taken to avoid a disaster. Some disasters, such as floods, can be controlled or prevented though construction of dams, or levees or deepening bayous.

1. Primary prevention occurs in the nondisaster and predisaster stages and is aimed at preventing the occurrence of a disaster or limiting consequences when the event itself cannot be prevented. Preventive actions during the nondisaster stage include:

a. Assessing communities to determine potential disaster hazards.

b. Developing disaster plans at local, state and federal levels.

c. Conducting drills to test the plan.

d. Training of volunteers and health care providers and providing educational programs.

2. Secondary prevention strategies are implemented once the disaster occurs and include such activities as search, rescue, and triage of victims, and assessment of the destruction and devastation of the area involved.

3. Tertiary prevention focuses on recovery of the community to restore the community to its previous level of functioning and its residents to their maximum functioning.

**D. Imminence**

Imminence is the speed of onset of an impending disaster, and relates to the extent of forewarning possible and the anticipated duration of the incident.

1. Weather forecasters can predict the arrival and location of some events such as hurricanes.

2. Some disastrous incidents (e.g., wildfires, explosions, and terrorist attacks) have no warning time, but occur spontaneously.

3. Bioterrorism attacks are generally silent, and the first awareness may be days or even weeks after exposure.

**E. Scope and Number of Casualties**

The scope of a disaster indicates the range of its effect. The scope is described in terms of the geographical area involved and in terms of the number of individuals affected, injured, or dead.

**F. Intensity**

Intensity is the characteristic describing the level of destruction and devastation of the disaster event.

**IV. Disaster Management**

Disaster management requires an interdisciplinary, collaborative team effort, and involves a network of agencies and individuals to develop a disaster plan that covers the multiple elements necessary for an effective plan.

**A. Local, State, and Federal Governmental Responsibilities**

Emergencies and disaster incidents are handled at the lowest possible organizational and jurisdictional level.

1. Local Level

a. Local officials and agencies are responsible for preparing their citizens for all kinds of emergencies and disasters, and for testing disaster plans with mock drills. The Office of Emergency Management involves representatives from all official and unofficial agencies in developing the community disaster plan, developing scenarios to test the plan through drills, and determining when an incident occurs to assess the scope, intensity, and number of casualties in order to initiate the proper response.

b. Police, fire, public health, public works, and medical emergency services are the first responders responsible for incident management at the local level.

c. They manage events during an incident by carrying out evacuation, search and rescue, and maintaining public health and public works responsibilities.

d. Local communities should have contingency operations plans multiple disaster situations and for various aspects of the plan.

e. For biological or chemical terrorist incidents, nurses and doctors in health care facilities may be the first to suspect that a biological or chemical agent has been released into the community.

f. For those events that are not within the abilities of the local community or in the event of a terrorist type incident, higher level agencies and resources must be requested and will become involved.

2. State Level

a. When a disaster overwhelms the local community’s resources, then the State Department or Office of Emergency Management is called for assistance.

b. In some cases, the National Guard may be called in to aid the community.

c. When the event’s scope is so great that local and state resources are not adequate to meet the needs, the State calls on the Federal Government.

3. Federal Level

a. The policy of the federal government is to have a comprehensive and effective program in place to ensure continuity of essential federal functions across a wide array of incidents.

b. The President may declare the incident a “national disaster.” Once the president declares a national disaster, federal aid is made available. At that point, the National Response Plan, the core operational plan for domestic incident management, would be initiated.

4. U. S. Department of Homeland Security

a. The U.S. Department of Homeland Security (DHS) was established in 2003 to focus on protecting the American people and their homeland.

b. The DHS has three primary missions. These are: (1) prevent terrorist attacks within the United States; (2) reduce America’s vulnerability to terrorism; and (3) minimize the damage from potential attacks and natural disasters.

c. The DHS established its Homeland Security Advisory System for terrorist threats for the mass transit sector. The Color-Coded Threat Level System communicates a level of threat for terrorist attacks so that protective measures can be implemented to reduce the likelihood or impact of an attack.

d. Regarding terrorist attacks, general guidelines from FEMA are: be aware of your surroundings; move or leave if you feel uncomfortable; take precautions when traveling; do not accept packages from strangers; report unusual behavior; learn where emergency exits are located in buildings; plan how to get out of buildings in the event of an emergency; be prepared to do without services you normally depend on (i.e., electricity, telephone, natural gas, gasoline pumps, cash ATMS, and Internet transactions); and ensure the following items are available: a portable, battery operated radio with extra batteries, several flashlights with extra batteries, a first aid kit and manual, hard hats and dust masks, and florescent tape to rope off dangerous areas.

5. The National Response Plan (NRP)

a. The National Response Plan (NRP) is a comprehensive, all-hazards approach to managing domestic incidents. The plan integrates practices and procedures from homeland security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and the private sector into a unified structure.

b. The NRP addresses prevention, preparedness, response, and recovery activities.

6. The Federal Emergency Management Agency (FEMA)

a. FEMA’s mission is to lead the efforts to prepare the nation for all hazards and to manage the federal response and recovery efforts following a national incident.

b. FEMA also initiates proactive mitigation activities, trains first responders, and manages the National Flood Insurance Program and the U.S. Fire Administration.

7. Department of Health and Human Services

After the rescue of survivors has been accomplished, the Department of Health and Human Services, Centers for Disease Control and Prevention steps in to ensure that clean drinking water, food, shelter, and medical care are available for those affected.

**B. Public Health Systems**

1. The public health system is a broad term used to describe all of the government and nongovernment organizations and agencies that contribute to the improvement of the health of populations. Public Health agencies are the primary agencies for the health and medical response to disaster incidents and therefore, are a part of the initial response activities.

2. Public health officials then have the responsibility of detecting outbreaks, determining the cause of illness, identifying the risk factors for the population, implementing interventions to control the outbreak, and informing the public of the health risks and preventive measures that need to be taken.

**C. American Red Cross**

1. The American Red Cross (ARC), though chartered by Congress to provide disaster relief, is not a government agency. The ARC is primarily a volunteer organization.

2. The ARC works in partnership with FEMA, the Department of Homeland Security, the Centers for Disease Control and Prevention and other federal agencies to provide and manage needed services.

3. The American Red Cross places great emphasis on preparedness and participates with communities in developing and testing their disaster plan, maintaining and training personnel for disaster response, and responding during an actual emergency or disaster.

**V. Disaster Management Stages**

**A. Prevention Stage**

1. The first stage in disaster management occurs before a disaster is imminent. During this stage potential disaster risks should be identified and risk maps created. The population demographics and vulnerabilities, as well as the community’s capabilities, should be analyzed.

2. Primary prevention measures that should be instituted must include education regarding what actions to take to prepare for disasters at the individual, family, and community level.

3. Based on the assessment of potential risks, the community develops a plan for meeting the potential disasters identified.

**B. Preparedness/Plan Stage**

1. Individual and family preparedness includes training in first aid, assembling a disaster emergency kit, establishing a predetermined meeting place away from home, and making a family communication plan.

2. Although there will be some variation based on a community’s needs, all community disaster plans should address the following elements: authority, communication, control, logistical coordination of personnel, supplies and equipment, evacuation, rescue, and care of the dead. The plan should indicate who has the power to declare there is a disaster and has the power to initiate the disaster plan.

3. Plans should be tested for effectiveness by having different disaster scenario drills. This will allow for identification of problems with the plan will be identified and solutions for those problems can be found.

**C. Response Stage**

1. This stage begins immediately after the disaster incident occurs when community preparedness plans that have been developed are initiated.

2. The plan may call for people to shelter in place, to evacuate, or for search and rescue to begin. If the only response needed is shelter in place, then people need to know what to do if they are at home, at work, at school, or in their vehicles.

3. The classic four phases of a community’s reaction to a disaster include: heroic phase, honeymoon phase, disillusionment phase and reconstruction phase.

a. Heroic Phase: During the heroic phase, nearly everyone feels the need to rush to help people survive the disaster. Medical personnel may work hours without sleep, under very dangerous and life-threatening conditions, in order to take care of their patients.

b. Honeymoon Phase: Individuals who have survived the disaster gather together with others who have simultaneously experienced the same event. Bonds are formed between victims, between health care workers, and between victims and health care workers who have shared experiences.

c. Disillusionment Phase: When time has elapsed and a delay in receiving help or failure to receive the promised aid has not occurred, feelings of despair occur. Depression may set in.

d. Reconstruction Phase: Once the community has restored some of the buildings, businesses, homes and services, and some sense of normalcy is occurring, feelings of despair will subside. Counseling support for victims and helpers may need to be initiated to help people to recover.

e. Post-traumatic Stress Disorder: Posttraumatic stress disorder is a psychiatric disorder that can occur following an individual’s experiencing or witnessing a life-threatening event, such as a disaster. People who suffer from PTSD often relive the experience through nightmares and flashbacks. This sometimes occurs 1 to 3 months post event. The reactions mentioned usually resolve in 1 to 3 months after the disaster event, but in some cases may lead to PTSD.

**D. Recovery Stage**

1. The recovery stage begins when the danger from the disaster has passed and all local, state, and federal agencies are present in the area to help victims rebuild their lives and help the community restore public services.

2. Clean up of the damage and repair of homes and businesses begin.

3. Evaluation and revision of the disaster plans based on lessons learned from the experience are made.

4. Understanding the financial impact on the community and agencies involved is essential in developing future public health policy.