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# Disaster Management: An Overview

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Any occurrence that causes damage, ecological disruption, loss of human life or deterioration of health and health services on a scale sufficient to warrant an extraordinary response from outside the affected community or area is termed as disaster management. This review depicts the various measures undertaken by healthcare professionals to reduce the impact of such disasters. Also, the roles of dentists in helping in such an unforeseen event is discussed.

**KEYWORDS:** Disaster, Management, Dentists, Response.

## INTRODUCTION

A "disaster" can be defined as "any occurrence that causes damage, ecological disruption, loss of human life or deterioration of health and health services on a scale sufficient to warrant an extraordinary response from outside the affected community or area" (W.H.O).<sup>1</sup> In context to the same definition, a hazard can be defined as any phenomenon that has potential to cause disruption or damage to people and their environment (United Nations).<sup>2</sup> Examples are: Cyclones, Typhoons, Hurricanes, Tornadoes, storm, Superstorm, Hailstorm, Earthquake, Volcano eruption, Wild fire, etc.

### Examples of Disasters in India

- Deccan famine of 1632-33
- Calcutta cyclone 1737
- Bengal famine of 1770
- Coringa cyclone 1839
- The third plague pandemic 1850
- The great famine of 1876-1878
- Bengal famine of 1943
- Latur earthquake 1993
- Gujarat earthquake 2001
- Indian Ocean Tsunami 2001
- Cyclone nilam 2012
- Cyclone Ockhi 2017
- Uttarakand 2013
- Kerala Floods 2018
- Cyclone Gaja 2018

### Classification Of Disasters

They are classified into Natural disasters and

manmade disasters

### IMPACTS OF DISASTERS<sup>3</sup>

The various impacts of disasters include: 1) Physical (buildings, structures, physical property, industry, roads, bridges, etc.), 2) Environmental (water, land/soil, land-use, landscape, crops, lake/rivers / estuaries, aquaculture, forests, animals/livestock, wildlife, atmosphere, energy, etc.), 3. Social (life, health, employment, relations, security, peace, etc.) and 4) Economic (assets, deposits, reserves, income, commerce, production, guarantee/insurance, etc.)

**Need of Disaster management:** To plan and prepare allowing a better more efficient use of materials and resources in the need of such a calamity, for early warning, to foresee future disasters, taking prevention methods based on reliable sources of information.

### DISASTER MANAGEMENT<sup>4,5</sup>

The main of idea of disaster management is done through the main three points:

- 1) Disaster response
- 2) Disaster preparedness
- 3) Disaster mitigation

### D-I-S-A-S-T-E-R mnemonics

- D: Detect
- I: Incident command
- S: Safety and security
- A: Assess hazards
- S: Support
- T: Triage and Treatment

E: Evacuation

R: Recovery & Reallocation

### DISASTER IMPACT AND RESPONSE

The management of mass casualties can be further divided into Search, rescue and first-aid, field care, triage and stabilization of victims, hospital treatment and redistribution of patients to other hospitals if necessary, tagging and Identification of the dead, which are further explained in details below:

**1). Search, Rescue and First-Aid:** After a major disaster, the need for search, rescue and first aid is likely to be so great that organized relief services will be able to meet only a small fraction of the demand. Most immediate help comes from the uninjured survivors.

**2). Field Care:** Most injured persons converge spontaneously to health facilities, using whatever transport is available. Bed availability and surgical services should be maximized. Provisions should be made for food and shelter. A centre should be established to respond to enquiries from patient's relatives and friends.

Priority should be given to victim's identification and adequate mortuary space should be provided.

**3). Triage:** The term comes from the French word "trier" Meaning to separate, sort, sift or select. Triage consists of rapidly classifying the injured on the severity of their injuries and the likelihood of their survival with prompt medical intervention. A triage badge is selected by the triage nurse and is worn on each patient in order to identify seriousness of each case. Other duties of a triage nurse include greeting patients and their families in a warm and empathetic manner, Performing brief visual assessments and documenting the assessments, Triage patient's into priority groups using appropriate guidelines, Transporting patients to treatment areas when necessary and giving reports to emergency physician, who is treating the patient.

**4). Tagging:** All patients should be identified with tags stating their name, age, place of origin, triage category, diagnosis, and initial treatment.

**5). Identification of the dead:** Taking care of the dead is an essential part of the disaster management which includes removal of the dead from the disaster scene, shifting to the mortuary, identification, reception of bereaved relatives as proper respect for the dead is of great importance.<sup>5</sup>

### RELIEF PHASE

This phase begins when assistance from outside starts to reach the disaster area and the type and quantity of humanitarian relief supplies are usually determined by two main factors namely: The type of disaster and the type and quantity of supplies available locally

### VACCINATION<sup>6</sup>

Due to the possibility of unsupervised sterilization, a vaccination programme covers a large number of workers who could be better employed to do important relief work without the risk of falling ill themselves.

### REHABILITATION OF AN AREA AFFECTED BY DISASTER<sup>7</sup>

The final phase in a disaster should lead to restoration of the pre-disaster conditions, which becomes a very daunting task and starts from the very first moment of disaster. Too often, the measures decided in a hurry, which often tend to obstruct proper re-establishment of normal conditions of life.

#### 1) WATER SUPPLY

A survey of all public water supplies should be made including distribution system and water source. The main public safety aspect of water quality is microbial contamination and the first priority of ensuring water quality in emergency situations is chlorination which is the best way of disinfecting water.

#### 2) FOOD SUPPLY

Poor hygiene is the major cause of food-borne diseases in disaster situations and where feeding programmes are used (as in shelters or camps) kitchen sanitation is of utmost importance and hence, personal hygiene should be monitored in individuals involved in food preparation.

### 3) BASIC SANITATION AND PERSONAL HYGIENE

Many communicable diseases spread through faecal contamination of drinking water and food. Emergency latrines should be made available to the displaced, where toilet facilities have been destroyed. Washing, cleaning and bathing facilities should be provided to the displaced persons.

### 4) VECTOR CONTROL

Control programme for vector-borne diseases should intensified in the emergency and rehabilitation person especially in areas where such diseases are known to be endemic. Of special concern are dengue fever and malaria (mosquitoes), leptospirosis and rat bite fever (rats), typhus (lice, fleas), and plague (fleas). Flood water provides ample breeding opportunities for mosquitoes.

### THE PUBLIC HEALTH RESPONSE TO MAN-MADE DISASTER<sup>8</sup>

The public health response to man-made disaster is the primary prevention, i.e., of the occurrence of the disaster. Much can be done to prevent not only the consequences but also the occurrences of fires, explosions, crashes and sudden chemical and radiation exposures.

This includes tighter regulations of chemical plants and other hazardous facilities and insistence that the chemical plants be built away from dense populous areas.

Other measures include appropriate engineering and technological measures (like building codes, dam designs, and containment of toxic materials), early warning, if possible and protection against human errors.

### INTERNATIONAL AGENCIES PROVIDING HEALTH HUMANITARIAN ASSISTANCE<sup>9</sup>

- United Nations Office for the Coordination of Humanitarian Affairs (OCHA),
- World Health Organization (WHO),
- UNICEF,
- World Food Programme (WFP),
- Food and Agriculture Organization (FAO),

- Intergovernmental organizations are European Community Humanitarian Office (ECHO),
- Organization of American States (OAS),
- Centre of Coordination for Prevention Natural Disasters in Central America.

### Some Non-Governmental Organizations are

- CARE,
- International Committee of Red Cross,
- International Council of Voluntary Agencies (ICVA),
- International Federation of Red Cross and Red Crescent Societies (IFRC) etc.

### THE ROLE DENTISTS CAN PLAY IN MASS CASUALTY AND DISASTER EVENTS<sup>10</sup>

Professionals who plan and manage emergency responses must reach out to groups that have assets to contribute to the response effort but are not intrinsically tied to the medical response (eg, hospital personnel). Dentists and dental staff are examples of such groups.

They also routinely perform many tasks that emergency responders may be required to do, such as perform minor surgery, dispense drugs, give injections, and administer anaesthesia.

### HOW DENTISTS CAN HELP<sup>11</sup>

- Identification
- Surveillance
- Referral of patients
- Diagnosis and monitoring
- Triage
- Immunizations
- Medications
- Infection control
- Definitive treatment
- Quarantine

### Definitive treatment

- Treating oral, facial, and cranial injuries
- Providing cardiopulmonary resuscitation
- Obtaining medical histories
- Collecting blood and other samples
- Providing or assisting with anaesthesia
- Starting intravenous lines
- Suturing and performing appropriate surgery
- Assisting in patient stabilization

- Assisting in shock management

### Quarantine

During a pandemic or after a bioterrorism attack with communicable agent strict quarantine restrictions will be imposed to help and prevent the spread of infectious agent. The duration depends upon the incubation period of the agent and other factors.

### CONCLUSION

Natural hazards are a part of life. But hazards only become disasters when people's lives and livelihoods are swept away. Let us remind ourselves that we can and must reduce the impact of disasters by building sustainable communities that have long-term capacity to live with risk. We the dentist should work together to maximize the effectiveness of dentistry's contribution and prepare the dental community to be effective responders during disasters

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