# National Disaster Health Preparedness and Response Guideline

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# ACRONYMS

ASD: - Acute Stress Disorder

BPR:-Business Process Reengineering

CISD: - Critical Incident Stress Debriefing

CBRN:-Chemical Biological Radiological and Nuclear

DMSL: - Disaster Medical Supply List

DRM:-Disaster Response Management

DVI:-Disaster Victim Identification

EOC: - Emergency Operations Centre

EPHI:-Ethiopia Public Health Institution

ERPA:-Ethiopia Radiation Protection Authority

GDP: - Gross Domestic Product

HFA:-Hyogo Framework for Action

ICS:-Incident Command System

IMS: - Incident Management System

MAC: - Multi Agency Coordination

MIMMS: - Major Incident Medical Management and Support

MOH: - Minister of Health

NCTSN: - National Child Traumatic Stress Network

PFA: - Psychological First Aid

PPE: - Personal Protective Equipment

PTSD: - Post Traumatic Stress Disorder

RMRTs: - Rapid Medical Response Teams

RRC:-Relief and Rehabilitation Commission

SCBA: - Self-Contained Breathing Apparatus

TECP: - Totally Encapsulating Chemical-Protective

UN-ISDR:-United Nation International Strategies for Disaster Risk Reduction

VIPs:-Very Important Persons

# DEFINITIONS

**Hazard:** A more formal definition of a 'hazard' is potentially damaging physical event or action that may harm people, their economic assets, infrastructure and environment.

**Disaster**: A serious disruption of a household, community, ecosystem or society that results in human, material, economic or environmental losses which exceeds the ability of those affected to manage, using their own resources.

**Vulnerability**: The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

**Capacity:** The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals.

**Coping capacity**: The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters.

**Disaster health**: is the study and collaborative application of various health disciplines to the *prevention* of, *preparedness* for, *response* to and *recovery* from the health problems arising from a disaster.

**Disaster Risk**: It refers to the potential (not actual and realized) disaster losses, in lives, livelihoods, which could occur in a particular community or society over some specified future time period.

**Risk**: The probability that a community's structure or geographic area is to be damaged or disrupted by the impact of a particular hazard, on account of their nature, construction, and proximity to a hazardous area.

**Prevention:** Measures designed to provide permanent protection … or reduce the intensity of a hazardous event so it does not become a disaster.

**Mitigation:** Measures taken well in advance of a hazard alert to minimize vulnerability of communities/households to a known/expected threat.

**Preparedness:** Advance measures taken to predict, respond to and manage a hazard event… measures that prepare people to react appropriately before, during and after it.

**Relief/response:** Measures taken to alleviate immediate hardship and meet basic needs for shelter, water, sanitation, health care as well as search, rescue and protection of those affected

**Recovery (Reconstruction & Rehabilitation:** Process undertaken by a disaster-affected community to fully restores itself to its pre-disaster level of functioning …AND which enables it to become even more disaster-resistant.

**Disaster Risk Management:** Collective actions and efforts of concerned institutions, policies, programs, and other measures designed to prevent, mitigate, prepare for, and respond to a disaster and to provide recovery and rehabilitation support.

**Disaster Management**:  efforts that focuses on the management of crises.

**Threat:** The intent and capacity to cause loss of life or create adverse consequences to

human welfare (including property and the supply of essential services and commodities),

the environment or security.

**Emergency Operations Centre (EOC)** is a central command and control facility responsible for carrying out the principles of emergency preparedness and emergency management, or disaster management functions at a strategic level in an emergency situation, and ensuring the continuity of operation of a company, subdivision or other organization.

**Incident Command System (ICS)** is a systematic tool used for the command, control, and coordination of emergency response.

**Sector:**

Horizontal coordination

Vertical coordination

# BACKGROUND

Disaster is a serious disruption to community life which threatens or causes death or injury in that community and/or damage to property which is beyond the day-to-day capacity of the prescribed statutory authorities and which requires special mobilization and organization of resources other than those normally available to those authorities.

Hazards are routinely divided into natural or human-made. Earthquakes, landslides, volcanic eruptions, floods, hurricanes, tornadoes, blizzards, tsunamis, and cyclones are some of natural disaster causes. Examples of Human-instigated disaster include: war and deliberate attacks, stampedes, fires, transport accidents, industrial accidents, oil spills and nuclear explosions/radiation.

The growing incidence of disasters is highly correlated to the increasing vulnerability of households and communities in developing countries, as previous socioeconomic vulnerabilities may exacerbate the impact of a disaster, making more difficult the process of recovery. These risks are the product of a combination of both hazard/s and vulnerability. Hazards that strike in areas with low vulnerability will never become disasters, as is the case in uninhabited regions.

Developing countries suffer the greatest costs when a disaster hits – more than 95 percent of all deaths caused by hazards occur in developing countries, and losses due to natural hazards are 20 times greater (as a percentage of GDP) in developing countries than in industrialized countries.

Millions of Ethiopians have been affected by drought and flood in the last decade. The number of people who suffered from drought peaked at 14 million in 2003 and, in the period between 2000 and 2007, was never below 1.5 million persons. The floods of 2006 were the most disastrous affecting about 1.7 million persons.

Despite the fact that Ethiopia has been registering a double digit economic growth for the past ten years, urban disasters, like fire and other incidents , are rising because of fast growing

urbanization. In addition, new hazards are also emerging in relation to the development to new infrastructures such as roads and irrigation canals that can adversely affect local populations. Also, signs of earthquakes and volcanoes have been observed in the country, especially in the rift valleys. Even though not frequently, conflicts triggered by different factors also need attention. Unlike in the past, besides drought, risk of other disasters like flood, landslides, human epidemics, livestock disease outbreak, crop pests and forest and bush fires as well frequency, scale, and intensity of such disasters have been increasing due to different factors including climate change. This above situation, in general, depicts that the country is vulnerable to multiple hazards and associated disasters.

This wide range of hazards is associated with the country's diverse geo-climatic and socio-economic conditions. National Policy and Strategy on Disaster Risk Management of FDRE in 2013 expressed that the vulnerability of the country is aggravated by poor agricultural and livestock practices, a fragile and degraded natural environment, extensive poverty, limited transport and communication infrastructure, uneven settlement patterns, inefficient markets, variable and changing climatic conditions, high population growth and size, lack of good governance, competition over scarce resources and border issues.

Climate change is predicted to further increase exposure to climate-related and hydrological hazards and the overall economic importance of agriculture, its prominent role in the livelihood of poor households and the scarce diffusion of irrigation and water-shed management practices make Ethiopia particularly vulnerable to these.

The first formal governmental disaster management institution in Ethiopia was the Relief and Rehabilitation Commission (RRC), established in the wake of the 1973/74 famine with a mandate of relief supplies to drought victims. Since 2003, key line departments such as the Ministries of Health, Agriculture and Rural Development, and Water Resources became more involved in disaster management through the establishment of emergency sectoral task forces.

Starting from 2005 the Government of Ethiopia is highly committed to the international disaster risk management initiatives such as Hyogo Framework for Action (HFA) and started to implement it then after.The country has introduced a wide range of reform initiatives aimed at

bringing effectiveness and efficiency in execution of various works using the Business Process Reengineering (BPR) as a tool in 2007. In line with this, the Federal Ministry of Health and its Agencies identified Emergency Management as one of the core processes. It is the process of anticipating, preventing, preparing for, detecting, responding to, controlling, and recovering from the consequences of different natural and manmade emergencies in order that health and economic impacts are minimized. For this to happen vulnerability assessment and risk mapping have been done regularly, the logistics and funds are administered and allocated by government and multi-sectoral involvement.. Disaster response drills are exercised as well as trained and capable professionals are being trained started to begin produced to assist in the management and delivery of support services in disaster events. Given this, it is essential to make every effort to minimize the impact of all aspects of disasters when they strike with a cooperative and collaborative approach to emergencies of national significance. Therefore this document is developed to be a guide for a multi-disciplinary approach with a wide range of skill sets required for comprehensive management of disasters from a health perspective.

This document outlines the national DRM policy and procedure for managing major incidences that may threat the health condition of the country. However, to have a coordinated preparedness and response plan to each sector, the guiding principle is important to point out all stakeholders' responsibility to conduct their risk assessments and develop a preparedness and response plan for the respective hazards. Therefore, this guideline aim is to provide advice, procedure and suggestions to help disaster management sectors to produce disaster preparedness and response plan.

## *AIM*

National Disaster Health Preparedness and Response guideline outlines the coordination and arrangements for the preparedness and provision of responses in the health related disaster.

## SCOPE

National Disaster Health Preparedness and Response guideline is necessary at national and regional levels to ensure effective coordination and response to disasters. To do so, this guideline establishes the basic procedures of risk assessment, emergency preparedness and provision of

response for the victims. Disaster Health Preparedness and Response Guideline applies for all sectors taking parts in health emergency management. Therefore, all stakeholders mentioned in this document are encouraged to supplement and apply this guideline to suits their own needs to manage sector specific hazards. Based on this guideline, all sectors are expected to develop and maintain their own disaster response plan as well as contact lists of sectors in cases of wide ranges of emergency. The Ministry of Health in consultation with each sector office, ensures that the guideline is updated and amended based on its importance.

## GUIDELINE PRINCIPLES

Disaster Preparedness and Response Guideline follows some basic principles:

It identifies the role and responsibilities of Ministry to accomplish those responsibilities and established accountabilities when disaster occurs.

The guideline outlines a risk analysis procedure, disaster response coordination and arrangements

Guideline allow for efficient, effective and equitable use of resources to appropriately meet humanitarian needs

It is dynamic and up-dated on a regular basis to incorporate any change or lesson learnt in the planning process

Disaster Preparedness and Response Guideline is a comprehensive document that considers all hazards particularly health related hazards and threats

It is ensures that there is a multi-sectoral collaboration and partnership to respond the disaster

The guideline includes decision makers throughout the document process to ensure both understanding and approve the document.

The guideline has to complement the existing agreement between vertical and horizontal collaboration.

# DISASTER HEALTH PREPAREDNESS

Preparedness is defined as "the range of deliberate, critical tasks and activities necessary to build, sustain, and improve the operational capability to prevent, protect against, respond to, and recover from incidents". Preparedness activities and tasks are those things that should be done prior to the occurrence of emergency. Development of plans, procedures, protocols, and systems; establishment of mutual aid agreements; provision of training; and the conduct of exercises are among other preparedness tasks.

The aim of preparedness is to strengthen capacity in recognizing and responding to Public Health emergencies through conducting regular risk identification and analysis, establishing partnership and collaboration, enhancing community participation and implementing community-based interventions and strategic communication during the pre-emergency phase and ensuring their monitoring and evaluation.

Preparedness involves a range of players and partners engaging in initiatives that promote health prevention and control diseases and conditions and protect people from the consequences of health emergencies due to man-made and natural causes. Therefore, preparedness is a responsibility shared by all levels of government, private sector, not- sector, institutes, and professionals associations. Each regions and city administration should prepare their own health disaster preparedness plan and act based on it during emergency conditions. The way forward to implement sound preparedness measures is to accomplish first and foremost a big educational drive needed to install the distinctive concepts of hazards, vulnerability, risks and the value of managing emergencies.

Risk Assessment and Identification as Disaster Preparedness
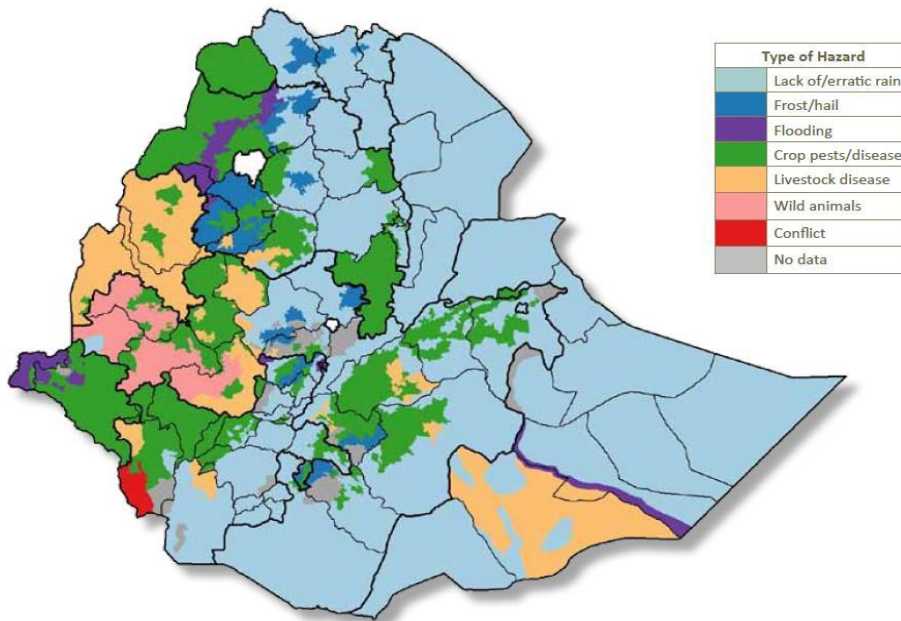


The Most Important Hazard (as perceived by rural households)

According to United Nation International Strategies for Disaster Risk Reduction/ UN-ISDR/, it can be defined as Risk assessment is a process to determine the nature and extent of such risk, by analysing hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend. A comprehensive risk assessment not only evaluates the magnitude and likelihood of potential losses but also provides full understanding of the causes and impact of those losses.

## METHODOLOGY

Ethiopia has great spatial disparities in terms of occurrence and effect of disasters – not all zones of the country suffer from the same type of hazards. Therefore, it is necessary to obtain information on risk assessment and analysis at woreda, zonal, regional and sector level including health facilities and to prepare a disaster response plan for it.

The Disaster Health Preparedness and Response plan will cover any hazard, caused by natural, technological factors or human-actions. Apart from the list shown in the table, there is always potential for new and unexpected hazards. This list may give the impression that hazards are independent of one another, but in fact they are often related.

Major Public Health Risks Identified in the Ethiopian Health System (from EPHI risk assessment doc.)

Epidemics of communicable disease

Drought conditions with malnutrition

Food contamination

Flood

Pandemic Influenza

Diseases that affect people during conflicts and in displaced populations

Accidents including chemical spills

Earthquake, volcanic eruptions, forest fires

The first step of risk research focuses on gathering information about the hazards, vulnerabilities and capacities that could affect emergency operations. Disaster risk assessment process is to provide objective and transparent information for making decisions on countermeasures to reduce disaster risk. Risk assessments follow the following steps.

# HAZARD MAP

The hazard maps show the localizations with higher probability of affectation, and allow the reader to observe the location of the most serious risks. A hazard map enables to observe the most difficult risk facing and where, it will help to estímate where likely response should be ready for likely disasters. Maps developed and organized into a format that should be easily understood by the sectoral offices. At the end of the guideline, there is a model of templates that shall be followed during this disaster response planning process.

# HAZARD IDENTIFICATION

Hazard identification refers to the process of identification and analyzing the main characteristics of the hazards. The hazard assessment will determine the most important hazards which occur in the population, identifying the sectors affected by that hazard, the period of occurrence, the frequency of the impact, the effects of the disasters, the root causes of disasters and the Early Warning Indicators to monitor them. This section should provide with good knowledge of the main characteristics of the nature of the hazards (areas affected, time frequency, duration, population affected, effects, root causes and Early Warning Indicators) which will allow preparation of an appropriate response to avoid loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

# TREND ANALYSIS

The most important trends identified in the different population. Normally they are long term trends and large scale as demographic trends, resource trends, economic trends, agricultural trends, trends related with climate change, etc. Many natural hazards are worsened by these trends. This analysis will describe the list of gradual of changes observed and

threatening the livelihoods and health condition of the community and according to that, it will analyse the community affected by those changes, the analytical description of the trend, the impact of that trend on human and non-human elements, the coping mechanisms used by the community to face those changes and finally which hazards are affected by those trends.

## VULNERABILITY ASSESSMENT

It is the process of estimating the susceptibility of elements at risk to various hazards and of analysing the causes behind their vulnerability. There are many aspects of vulnerability (physical, social, economic, and environmental factors) and the vulnerability varies significantly within a community and over time. As it was mentioned, the vulnerability also depends on the elements and its exposure, hence due to that, the Vulnerability Assessment will analyse the levels of vulnerability of the different sectors /elements (Water, Health, Education, Infrastructure, Crop, Livestock, and the human elements (men, women, children, elder, disabled, HIV/AIDS) to a specific hazard and describes the specific reasons of vulnerability of those elements. This information will serve the sectorial planners to identify which interventions can reduce the vulnerability of the different elements of the community and in which they needed to dedicate special attention due to high vulnerability.

## CAPACITY ASSESSMENT

Capacity assessment is a term for the process by which the capacity of a group is reviewed against desired goals, and the capacity gaps are identified for further action (UN-ISDR definition). In our case, the desired goals would be to face hazards and extreme events. However, it should not be forgotten the long term, where climate conditions/variability/uncertainty which may appear gradual, have a final devastating impact. That is why the capacity should not consider only to manage the risk associated with hazards but also to build adaptation to longer-term trends and stresses. Due to that, it will be analyzed as the 'Adaptive Capacity'.

Hence, efforts should aim to develop coping capacities of the individuals, communities and organizations to develop resiliency from any type of hazard and taking into account the longer trends produced by climate change. People's capacity is divided into their ability to cope using

short-term unsustainable strategies, and to adapt, using methods that keep pace with the changing nature of hazards and threats.

Assets: Availability of key assets that allow the system to respond to evolving circumstances. Assets include both tangible capitals (natural, physical and financial), as well as intangible ones (human and social). Examples: Natural (Pasture water, land for grass/agriculture, forest resources, access to water resources etc.), Physical (Water Points, Schools, Health centres, veterinary centres, roads, irrigation canals, sand dams, boreholes…), Financial (Micro credits, village savings and credit associations , household savings, access to financial loans, livestock and household wealth …), Social (Family, clan…) and Human (Heath & Education services, indigenous knowledge, conflict management…)

## CONTINGENCY PRIORITIZATION

Initially, it would be necessary to select a limited number of contingencies and scenarios to plan for. It is because contingency planning can be an intensive process, where the planners have time and resource constraints.

### *METHODOLOGY*

These guidelines recommend ranking the risks by taking into account two dimensions, namely, impact and likelihood. All the necessary information could be extracted from the sources used in the Risk Analysis The Risk Analysis describes all the major hazards. Now, the level of the risk of every hazard should be measured. Two variables indicate the seriousness of a given risk:

a. Likelihood: probability that the hazard occurs

b. Impact: magnitude effects of the hazard on different segments of the population, assets and livelihoods

These two factors are ranked from 1 to 3 depending on the level. The multiplication of both gives a score that reflects the seriousness of the hazard. The below summary provides guidance on how to assess impact and likelihood and how to rate the seriousness.

**LOW:**

The effect of the impact (losses, population and territory affected) by the event is minor and the administration needs few resources to respond.

Frequency: The event has a remote chance of arising and or has occurred very infrequently

**MEDIUM**:

The effect of the impact (losses, population and territory affected) of the event is significant and all the administration resources are required to respond.

Frequency: The event has a medium probability of arising or has occurred a few times in the past

**HIGH:**

The effect of the impact (losses, population and territory affected) by the event is high and all the administration needs external assistance to be able to cope with the emergency

Frequency: The event has a high chance of arising or has occurred several times in the past (e.g. A drought which occurs almost every year)

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*SCENARIO BUILDING*

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Scenarios help in envisioning the potential effects of selected contingencies( Hazards). A scenario describes the probable impact/s and negative consequences of a incident, including the number of people from different population groups that can be affected and the range of negative effects. Identification of various consequences gives insight into the possible material and non-material losses that the territory could face. It is necessary to stress that losses can be direct or indirect. It is not easy to quantify the impacts, especially when some effects

of disasters are evident only in the long term. By knowing the losses, it is possible to have a clear idea of the extent of the likely impact and to establish the planning assumptions for every scenario, therefore, to estimate the likely needs and the response capacity.

The previously explained that how to prioritize contingencies. Based on those contingencies the scenarios should be built. At sectoral level, the Risk analysis will provide some information required for scenario building. However, the sectoral experts shall prepare information about the emergency historical record of the sector , in order to , develop the scenario with figures of previous experiences.

The sectors needs to consider the most likely scenario and the worst scenario of every hazard , to build upon the specific response plan and the resources needed.

Once the risks have been analysed, contingencies prioritized and the scenarios developed, plans can be defined according to the results of those stages. During this step, the main part of the Disaster Health Preparedness and Response Planning will be developed by each health sector level. The Public Health Emergency Preparedness Capabilities plan includes:

Putting in place the necessary logistics and funding,

Building the essential systems specific to protection, prevention and response;

Equipping Public Health personnel and respondents with the necessary knowledge and tools,

Educating the Public on related measures to be taken to prevent and control the event

# DISASTER HEALTH RESPONSE

**Health Emergency Response Arrangements**

Key points:

Co-operation and collaboration between the Ethiopian Government and the regional and neighbouring countries' governments are key to health emergency response arrangements. Health protection in Ethiopia is part of National Security.

Functional plans support the National Health Emergency Response arrangements

Regional and territory governments can request assistance from the Ethiopian government through appropriate mechanisms.

The primary responsibility for managing the response to emergencies in Ethiopia lies with federal and regional governments. There should be a co-operative and collaborative approach to emergencies of national significance. To facilitate the full implementation of this reoriented approach and direction with participation of all concerned bodies and support of legal framework, the National Disaster Risk Management and Strategy policy has been formulated by amending the National Policy on Disaster Prevention and Management, which has been under implementation since 1993. The policy includes general directions and major implementation strategies.

At all levels of the health system there should be a comprehensive approach that allows rational and strategic emergency management through prevention, preparedness, response and recovery. While functional plans should support the response and recovery components, all levels of the health system must strive continually to prevent hazards and to prepare for their impacts.

Each region should have legislation to manage health emergencies, including Public Health acts and Emergency Management acts. Regions may also request assistance from the federal government.

The plans that form part of the national disaster response framework maybe activate during domestic or international events:

Impact, or threaten to impact, two or more of the states and territories

Have the potential to overwhelm or exhaust a state or territory's health resources

Are of a scale or complexity that warrants a nationally coordinated response

## EMERGENCY MANAGEMENT

Disaster health is concerned with all health aspects of a disaster. Therefore, approaches to emergency management include the comprehensive approach, the all hazards approach, the all agencies approach and the prepared community. Given the increasing threat to potential disasters, MOH have recognised that a national, coordinated and cooperative effort is required to enhance our capacity to withstand and recover from emergencies and disasters. In 2013, the National Policy and Strategy on Disaster Risk Management was launched which recognises that a national, coordinated and cooperative effort is needed to enhance capacity to withstand and recover from emergencies and disasters.

Managing disasters is largely the responsibility of regional governments; Woreda governments also playing a significant role. If a disaster is beyond the capacity of a local government to deal with effectively, regional governments should have arrangements to share resources. Resources can be shared between regions and as well as partner organizations. During major disasters or adverse events, a regional government may seek federal assistance.

## EMERGENCY MANAGEMENT CONCEPTS

**There are four main concepts in emergency management**:

Comprehensive approach, Prevention, Preparedness, Response, Recovery, All hazards approach, all agencies approach and the prepared community.

**Disaster response**: Command, Control and Coordination

During multi-agency response operations it is important to have structures in place to help administer disaster health arrangements. These structures are established through legislation and are incorporated in emergency plans:

**Command:** the direction of members and resources of an organisation in performing that organisation's role. Command operates vertically within an organisation

**Control**: The overall direction of emergency management activities in an emergency response situation. Control operates horizontally across organisations.

**Coordination**: the bringing together of organisations and elements to ensure an effective response. It is generally concerned with the acquisition and application of resources.

## EMERGENCY OPERATION CENTRE

As a primary point of contact, the Emergency Operation Centre at the Federal Ministry of Health allows jurisdictions at all levels of the health care system to benefit from a one window approach to reporting emergency incidents as well as responding to the incidents. The EOC operates 24/7, to facilitate response to reports of human made and natural disasters that occur throughout a region and or the nation; including but not limited to motor vehicle incidents, fire fighting (urban and bush fire), dangerous goods spills, search and rescue operations, flooding, earthquakes, and body recoveries. MOH, EOC liaises with representatives from numerous federal, provincial, municipal and private sector agencies, the Public, media, as well as national and international counterparts in response to these calls. The EOC at Regional and Woreda levels liaise on a daily basis with MOH, EOC and MAC with regard to incidents and general information "traffic" related to emergency management.

**Coordination**

National Level

Ministry of Health EOC

Media and Information/Liaison

Incident Command System (ICS)

Planning Section

Civil Society Section

Logistics Section

Resource Mobilization Section

Finance and Adminstration Section

Personnel

Equipment

Supplies

Regional Level

Regional Health EOC

Regional ICS

Planning

Logistics

Resources

Finance and Administration
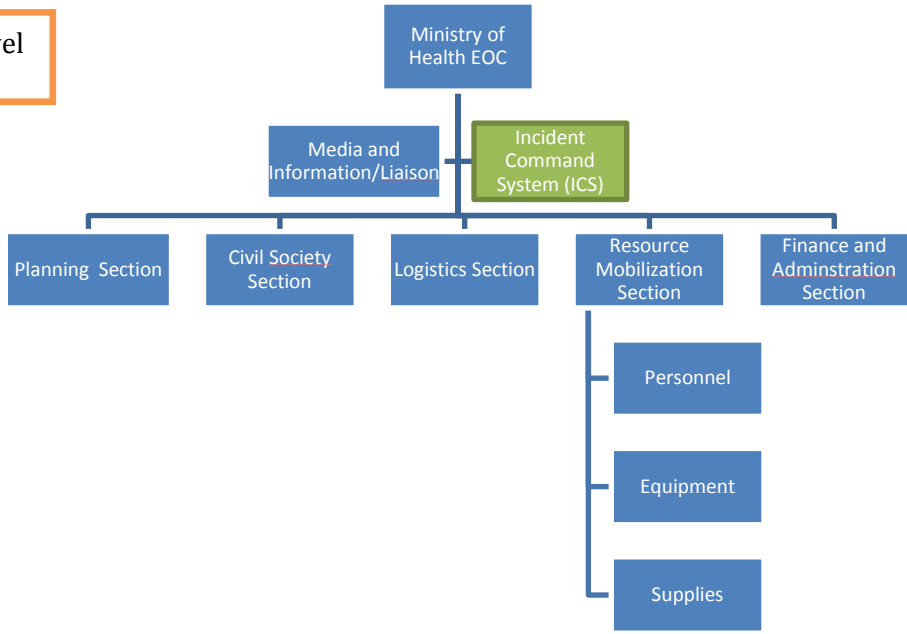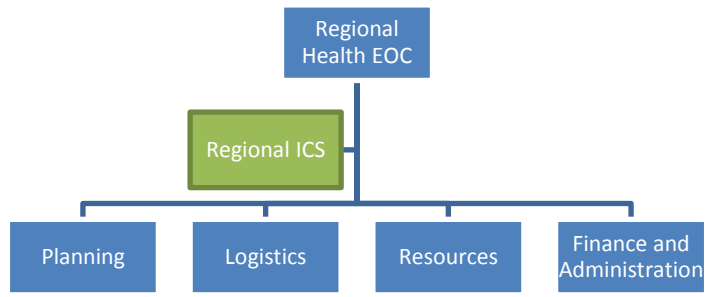
Figure  1

# TRIAGE

*GUIDING PRINCIPLES:*

Disaster triage categorises patient management in order of priority.

Here are a number of triage protocols available with slight variations in patient categorisation.

MOH has prepared triage method and system that all institutions are expected to adopt.

Both over triage and under triage can cause problems affecting the critical mortality rate.

The word triage comes from the French word 'Trier', meaning to sort. The process of 'sorting' large numbers of casualties has its roots in military operations but has now been adapted to many settings in health care. Triage in the context of day-to-day delivery of healthcare services where resources are abundant is very different to the triage necessary at a time of a disaster when the number of casualties may overwhelm the health system.

*TRIAGE PROTOCOLS*

A triage tool has been developed to help first responders categorise patients into those that will need immediate attention and those that can wait. Our protocol at a pre-hospital care includes an initial 'primary triage' that very quickly categorises patients. This is Simple Triage and Rapid Treatment (START), triage filter and the Care flight algorithm. There then follows a slightly more detailed assessment as part of the 'secondary triage'. Jump START and the paediatric triage tape have been specifically designed for use with children and healthcare workers who respond to disasters should be trained in paediatric triage.

In all cases triage is a dynamic process as any patient's condition may change rapidly. It is important to continually reassess patients and re-categorise them as appropriate.

*TRIAGE CATEGORIES*

Regardless of the tool used, patients are invariably allocated to a particular triage category. While there is some variation across the protocols, the following categories are most commonly used.

**Table 1** Triage categories

| Time needed to act | Level | Categories | Conditions |
|---|---|---|---|
| Immediate | Level 1 | Red | Life-threatening injuries requiring immediate care |
| Urgent | Level 2 | Yellow | Significant injury but condition stable |
| Delayed | Level 3 | Green | Treatment can be delayed |
| Dead/Expectant | Level 4 | Black/ Blue | Black: No breathing after airway manoeuvres Blue: Injuries are so severe that the patient will not survive |

It is important to note that the expectant category is very rarely used. The decision to use this category should only be made by a senior emergency practitioner.

Other agencies can use the term triage in respective of their system. detail the triage filter methods. It should be noted that triage is used to prioritise casualties for evacuation from the site of immediate danger, while the aim of the triage sort is to prioritise casualties for treatment and transportation. These triage protocols are very different to systems that would ordinarily be used in hospital emergency departments and appropriate training is necessary for those healthcare workers who are not familiar with pre-hospital triage.

Figure 2      Triage filter

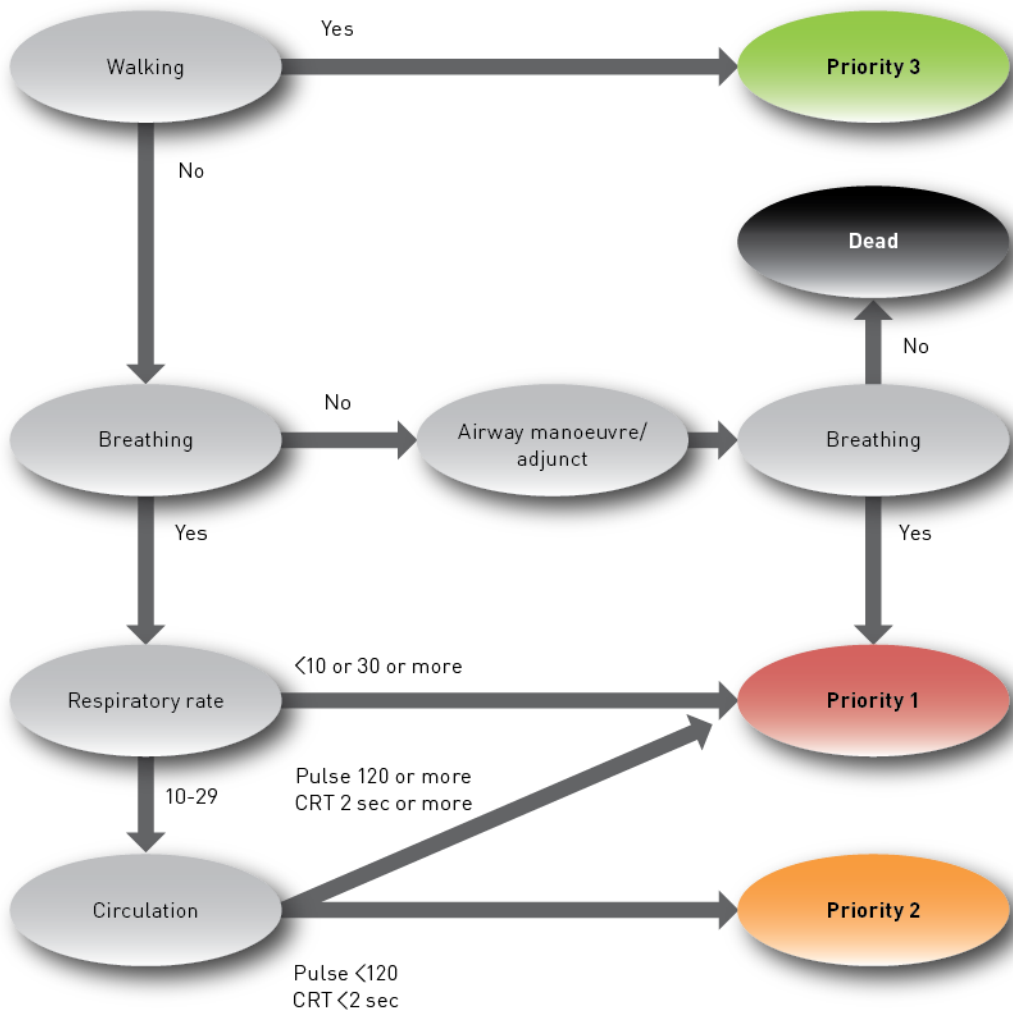CRITICAL MORTALITY

Both under triage (the failure to recognise important injuries) and over triage (overestimating the degree of injury) can be problematic. While under triage may cause harm by missing some patients with significant injury, over triage can place additional strains on already stretched resources. It has been recognised that most deaths following a disaster come from those patients who

are most critically injured. Therefore, it is strongly recommended for triage to be performed by skilled professional.

# TRANSPORT

**Key points:**

Transport should deliver the right patient, to the right place, at the right time, by the right means, as safely as possible

Distribute patients as widely as possible to prevent single institutions from becoming overwhelmed while others are underutilised

Where possible, patients should be transported by those services that usually do so

All forms of patient transport need to be regulated as to where and when patients are carried.

## TRANSPORT CONSIDERATIONS

Prompt transportation of all patients is an essential part of the health response to disasters. The type of disaster, its location and the available resources will all affect the transport process. Usual medical transport services may themselves be affected by the disaster, which will impact on their normal maximum capacity to distribute patients.

Patients are initially moved to clearing areas and treatment posts based on triage categorisation. Once further triage and basic management has occurred patients can then be transported to definitive treatment locations such as regional or major teaching hospitals.

The main reasons for patient transport are to remove them from danger and environmental exposure, and to allow definitive diagnosis and treatment. While it may be possible to discharge some uninjured patients directly from the disaster site, care must be taken as it is easy to miss injuries in these less optimal conditions. Records must be kept if any discharges occur so that these patients can be followed-up, both medically and by the police if required. Likewise care must be taken with the rapid dispatch of those patients with minimal injuries so as not to flood local facilities with low-priority cases. Many of these patients will self-present, having travelled by private car, and local hospitals may quickly become overwhelmed.

Priority for ambulance transport is usually based on triage category, with those patients with serious but treatable injuries being transported first. The appropriate medical officer and ambulance commander or transport officer make these decisions jointly.

Effective patient distribution includes: Transferring patients to appropriate treatment facilities, Distributing patients evenly between facilities when possible, preventing one facility from becoming overwhelmed, decreasing the number of times a patient is handled between time of injury and place of definitive care, preventing unnecessary transfer of patients between hospitals, preventing unnecessary delay in ambulance turnaround time.

To achieve the best outcomes, lesser priority patients can be transported to appropriate institutions further away so the impact on local hospitals is minimised. However all transport must be appropriate for the clinical condition of the patients. Members of the medical and ambulance teams onsite should make decisions about patient destination in consultation with the proposed receiving hospitals. This would be coordinated through a central control centre, if one has been activated, to ensure a unified response.

The ambulance service should usually be in overall control of the total medical transport effort. This would include the coordination of any seconded forms of transport. Where possible, patients should be transported by those services that would normally do so to ensure optimal patient care and to maintain the overall control and coordination of transportation.

Documentation should accompany all patients to assist the receiving institution. This information should include: triage category; how the injury occurred; clinical assessment; treatment given; and personal details. This information is usually available on the triage tag.

Emergency Medical Service Coordinators should arrive at the scene and work collaboratively with Incident Commander to provide directions for transportation and disposition of patients to hospitals.

## MODES OF TRANSPORT

An important geographical consideration for Ethiopian disasters is the potential need to transport patients over large distances. This might affect which mode of transport is chosen. General considerations in choosing the mode of transport include:

The ability of the vehicle to traverse the necessary terrain

It being be equipped with at least basic resuscitation equipment including oxygen, suction and airway aids

Adequate lighting and temperature control

Suitable stretchers and restraint systems

Reasonable comfort for passengers and attendants

An appropriate means of communication.

At times the incident commander may need to improvise the methods to be used for transportation. For example, buses can be used to move large numbers of patients with very minor injuries. It is not usually appropriate to take untrained staff out of hospital, instead designated trained retrieval teams should be used whenever possible.

It is important to take appropriate precautions in situations that may involve infectious diseases or hazardous materials. Expert advice may be required on the type of protection and decontamination that is necessary.

## ROAD AMBULANCES

Road ambulances are the most appropriate method of transportation in most instances for patients with serious injuries. The incident Commander may in collaboration with Emergency Medical Service Coordinators, facilitate road ambulances. The ambulance service is experienced at providing the appropriate equipment and level of care. Coordination of road ambulance vehicles is important. Designated marshalling, parking and loading areas are necessary at any disaster site to ensure the smooth flow of ambulances. Whatever methods of transportation are considered, almost all seriously injured patients will require road transportation at some point.

## ROTARY-WING AIRCRAFT

Helicopters have a role in some difficult terrains and can potentially provide rapid transport over intermediate distances. They can only carry a small number of patients and have problems associated with noisy, confined working areas. If helicopters are to be used then there should be designated, controlled landing points at the disaster site. Currently, this service may be provided by the Ethiopian Defence Forces.

## FIXED-WING AIRCRAFT

Fixed-wing aircraft form part of the initial response in very remote regions, however they are more likely to be used for secondary transportation between hospitals. Because landing areas of a suitable length are required, patients often need to be transported over some distance for loading and unloading from the aircraft. (This will usually require the use of road ambulances.) Their main advantage is that of speed and range, making them best suited to the transportation of patients over large distances. When possible, personnel with aviation medicine expertise should be consulted before transportation. The clinical effects of flight, including those related to changes in barometric pressure, need to be considered. In Ethiopia availability of existing dedicated fixed-wing patient transport assets and the Aero medical transport system is very limited. This service will be coordinated by the Incident Commander and respective agencies.

## *MILITARY TRANSPORT*

On request from the EOC, the Ethiopian Defence Force may be able to help transport patients during an emergency.

## CIVILIAN VEHICLES

In some situations it may be appropriate to use civilian vehicles to improve transportation capacity or when other appropriate modes of transport are unavailable. Buses, for example, can be used to assist in the rapid transportation of large numbers of patients with minimal injuries. It is important to send appropriate medical escorts whenever civilian transportation methods are being employed.

# HOSPITAL DISASTER RESPONSES

**Key points:**

Hospitals must plan for both internal and external disasters

Effective planning is essential for an optimal response by hospitals to disasters

An incident command system will integrate activities and resources to guide healthcare facilities' response to disasters

All hospitals should have an emergency coordinator to oversee hospital disaster response, training and implementation.

When there is a significant health impact from a disaster, hospitals may face demands that place enormous strains on their capacity. It is therefore essential that all hospitals have plans in place to cope with an unexpected influx of patients.

The Ethiopian Hospital Reform Implementation Guideline points those facilities to plan for both internal and external emergencies. It uses the all hazards, all agencies, and comprehensive approaches and stresses the importance of careful planning. For an internal emergency the colour code 'yellow' should be used. This would include any event, either internal or external, that adversely affects the delivery of services. External emergencies, code colour 'brown', are declared when the resources of the facility are required in response to an emergency that has occurred outside the facility. This response may include receiving patients directly from the disaster, receiving patients from other facilities or sending medical teams into the field. Hospitals that may be required to send teams to a disaster should be identified by the Ministry of Health, Medical Service Directorate.

An external emergency should be declared in the following situations: On request of the relevant Regional health offices, when a large number of patients present to the facility unannounced, on receipt of information from a credible source.

```
                    ┌──────────────────┐
                    │    Incident      │
                    │   Commander      │
                    └──────────────────┘
```
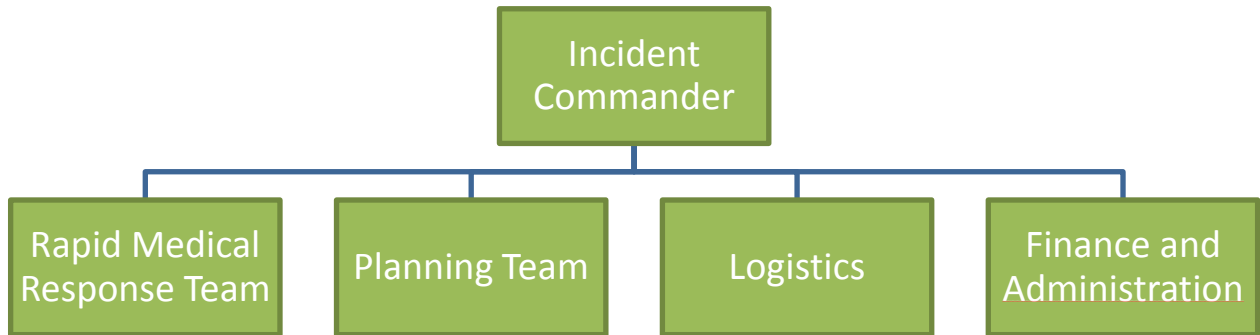
Figure 3.

The Incident Command System (ICS) will integrate personnel, policies, procedures, facilities and equipment into a common organisational structure for responding effectively to all hazards. The key components of the ICS are:

**Incident Commander** – has the responsibility of overseeing overall activities

**Operations** – directs resources, communicates with Multi Agency Committee.

**Planning** – develops action plans and evaluates information

**Logistics** – provides resources and personnel

**Finance/administration** – monitors costs

The Incident Management System (IMS) is based on three key principles: management by objective, functional management, and span of control. The functional structure is summarised in Figure 3.

IMS can also be applied to the out-of-hospital response and is designed so that different agencies can work together effectively through the established command structures. While IMS is designed to integrate activities and resources in response to any hazard, it is necessary in some situations for facilities to develop specific plans for particular hazards.

All jurisdictions may not adopt similar IMS. But it should be noted that during emergency responses, all jurisdictions align their response activities with the national IMS. The national IMS system has a three-level approach that considers the strategic, tactical and operational aspects of a disaster.
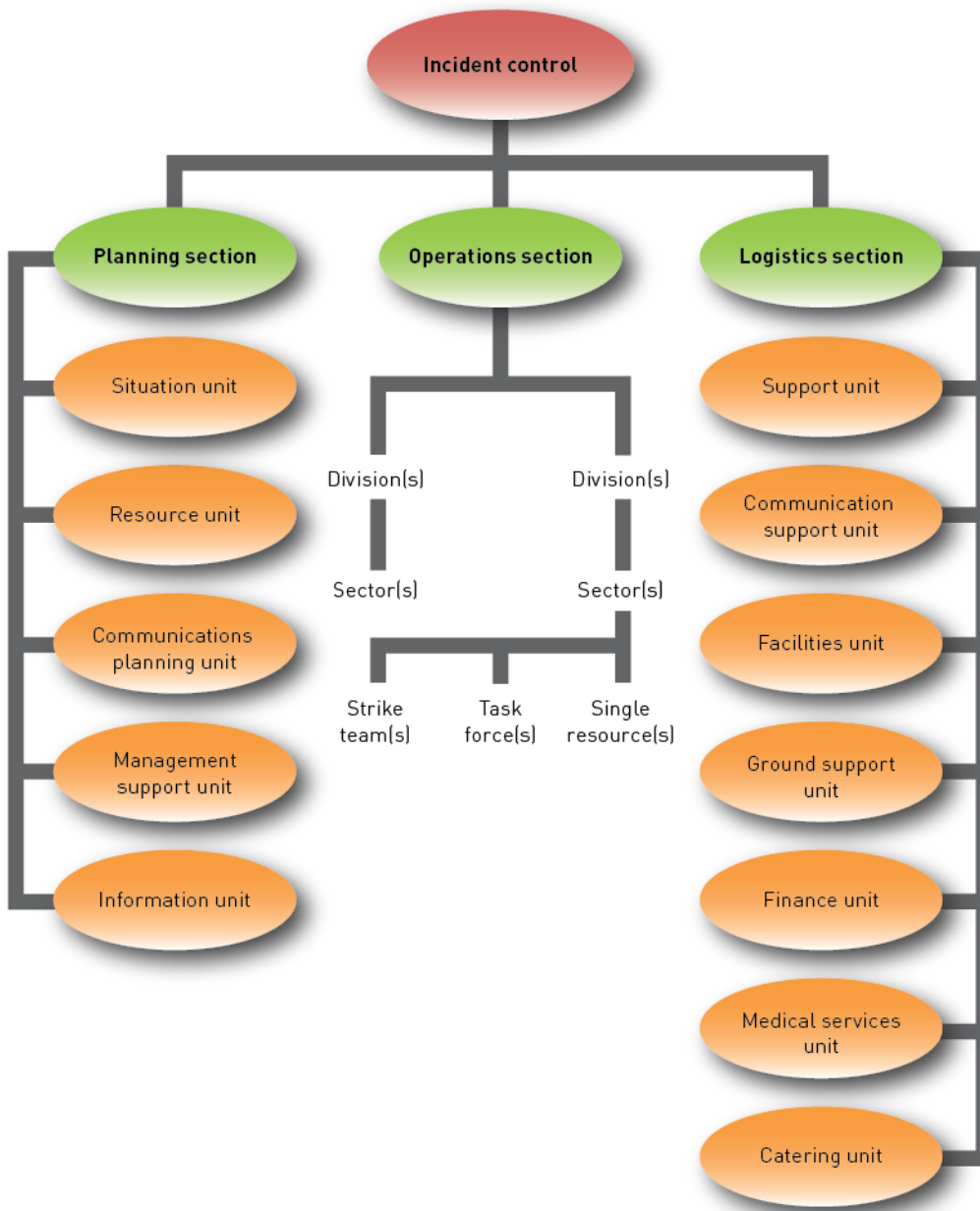
Figure:- 4 . The structure of incident control

**Key points:**

Ethiopian Rapid Medical Response Teams provide medical assistance for disasters both domestically and overseas (When the nation is capable of providing such assistance)

The Rapid Medical Response Teams should integrate into the local community to provide appropriate services following a disaster

The Disaster Medical Supply List aims to itemise appropriate equipment for the Rapid Medical Response Team deployment

The Rapid Medical Response Team should be flexible, work well with other government and non-government organisations and plan for a smooth transition on withdrawal.

In a disaster, Rapid Medical Response teams are termed RMRTs. They comprise of medical professionals and allied staff and include doctors, nurses, paramedics, allied health and non-medical members such as logisticians. At short notice they can be deployed to the site of a disaster to provide a range of medical supports. These teams are formed by each jurisdiction and are able to be deployed both domestically and internationally to provide medical assistance at a time of disaster and are expected to be self-sufficient for up to three days. To achieve this the team must bring its own shelters, power, food, water, medical supplies and communications equipment. RMRTs are a jurisdictional asset and as such have a primary responsibility for responding to disasters within their own state or territory.

The Ethiopian Ministry of Health (Medical Service Directorate), under the national health emergency response arrangements, has the role of authorising the deployment of RMRTs internationally, following a request from the Prime Minister. International deployment will only occur at the request of the affected country's government. Recently, team of medical professionals have been sent to three East African countries affected by the Ebola epidemic. Teams from two or more jurisdictions may be combined when being deployed internationally.

The RMRTs provide medical support to the local population by integrating with and engaging with local structures. It is important that the local community can sustain the necessary services when the RMRTs withdraw. RMRTs members should have numerous skills and should be able to work in a variety of settings – such as emergency department nurses who can help in theatre or paramedics with a nursing background. All members of the RMRT will have undergone appropriate training such as the Major Incident Medical Management and Support (MIMMS) course as well as other specific RMR training. As well as this more general training, team members will also usually receive mission-specific training, administrative preparation for all team members (including reserve members), and should be equipped with a clear understanding of the command and control environment in which they will be functioning.

**Depending on the emergency scenario the RMRT mission objectives may be**:

Casualty clearing, Emergency responder support, Medical staging, Field surgical intervention, humanitarian care, Post-disaster Public Health interventions and Primary care.

The successful deployment of an RMRT depends on the team members' ability to work together and be flexible in their roles. Potential RMRT staff faces rigorous selection criteria before being accepted. This might include physical and psychological fitness, the ability to work within a team, appropriate skill sets, and the ability to multi-task.

## DISASTER MEDICAL SUPPLY LIST

To support RMRTs there should be a recommended list of medical supplies necessary for a RMRTs deployment. Known as the Disaster Medical Supply List (DMSL) this list includes medications, surgical equipment, medical equipment, dressings, Public Health supplies and other relevant materials. It is intended primarily as a list of equipment for the domestic deployment of RMRTs but can be adapted to an international setting. The DMSL is constantly reassessed and is under review to ensure better application to the humanitarian needs seen in many international deployments. It is currently split into functional modules which are intended to be packed separately for ease of use. These modules include acute care, intensive care unit, emergency department, paediatrics, surgery, ward, public health and humanitarian care, among others. To

enable them to be self-sustaining, RMRTs will also require logistical equipment such as tents, fuel, food and generators in addition to the equipment listed in the DMSL.

# PUBLIC HEALTH EMERGENCY RESPONSE

**Key points:**

Many Public Health strategies are employed to prevent the spread of communicable diseases following a disaster

Water, food and shelter are essential requirements in the aftermath of disaster

Pandemic planning is an important Public Health measure to help minimise the impact of newly emerging infections.

Almost all disasters will have some impact on Public Health. This may range from maintaining basic environmental health standards to a disaster that is primarily of Public Health concern.

Common areas requiring public health or environmental health consideration include:

The Public Health Emergency Response section of the guideline focuses on topics such as rapid assessment of outbreaks, outbreak investigations, implementing control and prevention measures, and monitoring of the interventions.

The benefits of a rapid and effective response are numerous. Rapid response limits the number of cases and geographical spread, shortens the duration of the outbreak and reduces fatalities. These benefits not only help save resources that would be necessary to tackle Public Health emergencies, but also reduce the associated morbidity and mortality. It is therefore important to strengthen epidemic response, particularly at woreda and community levels. Attention needs to be focused on response strategies and continuous monitoring and evaluation of these activities.

Upon receipt of an alert, rumour, or detection of a deviation the disease or condition from the expected trend while performing weekly surveillance data analysis, communicate the respective level

immediately for verification. For some communicable diseases, a single suspect case is the trigger for taking action, reporting the case to a higher level, and conducting an investigation. For other diseases, the trigger is when a case threshold is reached.

Some outbreaks or Public Health emergencies occur suddenly while others occur gradually

giving you time to think. The size of the Public Health emergency can be smaller or large. Principal activities that are required during each phase of a public health emergency response are indicated below.

Table 2-Activities that need to be carried out at all administrative levels

| Phase | Activities |
|---|---|
| Phase I<br>Sudden onset crisis:<br>First 24-72 hours | Activation of the function of Emergency Operation Center (EOC) at Federal level |
| | Activation of the contingency plan and/or EPRP |
| | Preliminary enquiries and consolidation of information |
| | PHEM TF meetings – Federal/Regional |
| Slow onset:<br>First 1-2 weeks | Preliminary working scenarios (anticipated health needs and risks) |
| | Inventory of " Who-Where-When-What' (the 4Ws) and gap analysis |
| | Preparation and dissemination of PHEMTTF minutes and reports |
| | Conduct of regular task force meeting, planning |
| | Collection ofbaseline information |
| | Planning the initial rapid assessment |
| | Intensify the surveillance system |

| Phase | Activities |
|---|---|
| Phase II<br><br>Sudden onset crisis:<br><br>First 4-10 days<br><br><br>Slow onset:<br><br>First month | Health Resource Availability and Mapping System (HeRAMS)<br>Conduct the initial rapid assessment<br>Intensify the surveillance system<br>Establish disease surveillance at the temporary site (if there is any)<br>Review and distribution of standards and protocols<br>Regular health coordination meeting – Federal/Regional/….<br>Update working scenarios, resource inventory and gap analysis<br>Review/update health sector plan<br>Review/update the sectoral humanitarian requirement<br>Preparation and distribution of regular bulletin /feedback |
| Phase III<br><br>Sudden onset crisis:<br><br>4-6 weeks (disaster)<br><br>to up to 3 months (conflict)<br><br><br>Slow onset:<br><br>2-3 months | Operating based on the HeRAMS information<br>Fully operational Early Warning and Response System (EWARS) and regular exchange of surveillance data and response operations<br>Continuation of regular meeting<br>Finalization of the response strategy<br>Planning scenarios (identified health problems and risks)<br>Communicate objectives, strategies and action plan with all concerned<br>Implementation of response strategies and monitoring<br>Preparation/update of multi-sectoral response appeal<br>Resource mobilization<br>Frequent updating of resource inventory and gap analysis<br>Establishment of technical working groups as /when needed<br>Organization and conduct of integrated training as/when needed<br>Coordination of logistic support<br>Monitoring implementation of PHE response strategies and the plan and task force activities |
| Phase IV<br><br>Continuing humanitarian response and progressive recovery | Continuation of regular coordination meeting (e.g. bi weekly)<br>Periodic updating of planning scenario and HeRAMS<br>Establishment and /or suspension of technical working groups<br>Maintenance of enhanced surveillance<br>Real time or interim/mid-term evaluation of the sector response status<br>Comprehensive assessment as needed<br>Updating of strategic plan with increasing focus on recovery<br>Contingency planning for possible changes in the situation |
| Phase out | Phase out plan for emergency programs as recovery activities increase<br>Final evaluation and lessons learned exercise |

## ACTIVATION OF EOC

The EOC is the physical location at which the coordination of information and resources to support incident management (on-scene operations) activities normally takes place.

EOC shall be activated: when more than one jurisdiction becomes involved in the response, when a unified command or Area Command is established, when the Incident Commander indicated that the incident could expand rapidly or involve cascading events, If similar incidents in the past required EOC activation, when the regional president or Jurisdiction Leader directs that the EOC should be activated, when an emergency is imminent such as slow river flooding, predictions of hazardous weather, elevated threat levels, As required by jurisdiction policy ,when threshold events described in the Emergency Operation Plan occurs,

The EOC remains activated to facilitate recovery needs long after the Incident Command complete its on-scene mission. To deactivate EOC communicate with the Incident commander or unified command.

The EOC be activated when: There is need of additional resources, the epidemic/emergency is stabilized and the response objectives are met.

Table: 2. The Phases in the Health Response to a Pandemic

| | |
|---|---|
| **ALERT** | Being alert to the risk of a pandemic and preparing for it |
| **DELAY** | Once a pandemic virus emerges overseas, |
| **CONTAIN** | Once a pandemic virus arrives in Etiopia limit its spread |
| **SUSTAIN** | Sustain the response while a vaccine is developed |
| **CONTROL** | Control the spread with a vaccine |
| **RECOVER** | Once the pandemic is under control, return to normal and remain vigilant |

**Key points:**

Supporting resilience through the comprehensive approach helps to reduce the psychological impact of disasters

Critical incident stress debriefing is inappropriate following a disaster

Acute stress disorder, post traumatic stress disorder, depression, traumatic bereavement and anxiety are all potential mental health consequences of disasters

There is a normal psychological response to disasters

Mental health triage is an important component of early management

Psychological First Aid is the most appropriate initial management tool in the immediate aftermath of a disaster

Safe strategies can help optimise emergency responder mental health**.**

The destruction caused by disasters can have a dramatic effect on the mental health of all those involved. Both the community affected by the disaster and those involved in the response may experience a degree of trauma that can have a profound psychological impact. The majority of the population is resilient but a small proportion may develop mental health problems depending on the nature of the disaster and their exposure to stressors. The risk of mental health problems is heightened in the case of terrorism, where fear and dread play a key role. By recognising and supporting community resilience at all stages of the comprehensive approach (PPRR) it is possible to make plans to minimise the mental health impact of a disaster.

Some of the most commonly researched mental health and psychosocial consequences of disasters are trauma syndromes such as Acute Stress Disorder (ASD) and Post Traumatic Stress Disorder (PTSD). These conditions are associated with heightened distress and ongoing arousal

associated with memories or reminders of the events. Other common mental health conditions that may result from or be enhanced by disasters include major depression, anxiety conditions and traumatic bereavement.

There is also some evidence to suggest that an increase in alcohol or drug use may result. Furthermore, stressor effects may impact on health behaviours with evidence showing increased physiological consequences such as myocardial infarctions after some disasters.

**Some normal responses from people affected by a disaster might include**:

Seeking help or offering help to others (coming together), talking about experiences and trying to stay safe Seeking information about loved ones.

It is necessary to determine when more assistance is required and how to offer that assistance. Pre-event risk factors or within-event stressors may suggest those who are at high risk of psychological complications. A simple ABC triage process can be used to help identify those who require further assistance:

**A**rousal – calm, relaxed, breathing or emergency care and sedation

**B**ehaviours – monitor, calm, contain for safety, mental health assessment

**C**ognitions – advice, reality/protection; monitor for organic impairment.

When arousal cannot be managed, behaviour places the individual or others at risk, or cognitive impairment impacts on function – the triage tool would suggest that further assessment and management would be required.

Management strategies in the immediate aftermath of a disaster have traditionally included prescriptive strategies such as Critical Incident Stress Debriefing (CISD). There is now much evidence to suggest CISD is not beneficial and some evidence to suggest it may even be detrimental. It is now considered appropriate to adopt a three-level approach to psychological support following a disaster:

**LEVEL 1**
Psychological First Aid (PFA)
(immediate aftermath)

**LEVEL 2**
Skills for Psychological Recovery (SPR)
(weeks to months)

**LEVEL 3**
Specialised mental health interventions
(from about four weeks onwards or as appropriate)

Other resources are available that describe LEVEL 2 and LEVEL 3 in some detail.

## PSYCHOLOGICAL FIRST AID

Psychological First Aid (PFA) is a common sense approach that draws on human compassion and kindness. It is about practical strategies for survival and provides a calm, caring and supportive environment to promote psychological recovery. PFA is consistent with research evidence on risk and resilience. It is applicable and practical in field settings, is appropriate for all ages, and is culturally sensitive and flexible. It can also be delivered by any appropriately trained disaster responders and does not necessarily require mental health personnel to be involved. It has been recognised internationally as the appropriate strategy for mass violence.

Some of the psychological principles that apply to mental health responses generally, and to PFA specifically, include:

1.      Promoting a sense of safety

2.      Promoting calm

3.      Promoting the sense of self and collective/community efficacy

4.      Promoting connectedness

5.      Promoting hope

In describing key action principles for PFA, the World Health Organization has identified the following acronym as a guide:

**A**ssess – for urgent physical needs and for persons with serious reactions

**B**e – attentive, respectful and aware

**C**omfort – through your presence and good communication, helping people to cope

**D**o – address practical needs, help problem solve and link people with loved ones

**E**nd – your assistance and for yourself. Refer when necessary.

While PFA is appropriate for all ages and is flexible enough for all cultures, it is important to take into account cultural sensitivities. In some settings it may be appropriate to comfort someone by touching their hand. For some cultures this may be offensive. It may also be necessary that PFA is provided by women for women in certain situations. Clear and simple principles of PFA for children have been developed by the National Child Traumatic Stress Network (NCTSN) in the United States and include the concepts of listen, protect and connect.

## EMERGENCY RESPONDERS

It is always important to consider the mental health of emergency responders. Many of the stressful components in responding to a disaster may potentially have adverse psychological consequences for those involved in the response and recovery phases. A number of strategies are available to prepare for this role. Facilitating a good knowledge base about disasters and generally improving responder preparedness will help to eliminate some of the uncertainties associated with disaster response. Overall stress management, including decreased exposure to secondary stressors at work and teaching physical stress management techniques such as breathing exercises, is also beneficial. Psychological approaches, such as positive thinking, and family and social supports are also key in avoiding some of the negative mental health impacts of disasters for responders. Individual responders, and entire teams, can adopt SAFE strategies to maintain optimal psychological wellbeing:

**Survival strengths**

Strong commitment to self-survival through resilience strategies and coping styles

**A**rousal/hype

Manage hype and use the energy constructively

**F**ear, excitement,

Dampen the dread and use this energy to drive response anger, dread

**E**xperience

Use previous experiences to assist in achieving successful outcomes

# CBRN, DECONTAMINATION AND PPE

**Key points:**

CBRN agents can be widely distributed and cause many different, and severe, health concerns

On-scene decontamination is preferred but healthcare facilities must have decontamination plans in place. Removing clothing is the most effective initial step in decontamination. The choice of PPE to be used depends on the contamination agent.

In all cases universal precautions should be used.

**The medical response to CBRN incidents consists of:**

Prevention and protection, detection and identification, decontamination, triage, treatment and evacuation.

## CHEMICAL

A vast number of chemical substances can cause harm, ranging from everyday chemicals used in homes and by industry to chemical agents specifically designed for warfare. Both the physical state and route of absorption will impact on the degree to which a chemical agent may have an effect. Substances in gaseous form will disperse over a larger area and therefore affect many more people. Absorption can be through inhalation, dermal contact or ingestion.

**The main groups of chemical agents are:**

Nerve agents – Examples

Vesicants (blistering agents) – Examples

Cyanides – Examples

Pulmonary/choking agents – Examples

Evacuation is the best pre-hospital care following the release of hazardous chemicals.

## *Biological*

As classified by the EPHI:

Initial detection of a biological attack may come from  health care workers identifying a clinical picture and requesting the relevant investigations. The key elements of management in a biological incident are quarantine, broad spectrum antibiotics, supportive care and good communication.

## RADIOLOGICAL AND NUCLEAR

Ethiopia for the past three decades has been using various types of radiation emitting devices and radioactive sources.  The practices in Ethiopia cover the following main areas: medicine, industry and research and teaching. Use of nuclear techniques in agriculture and hydrology is rather insignificant.  At present there are about 800 authorized facilities in Ethiopia that use radiation emitting devices and/or radioactive sources.  Major practices in Ethiopia are Co-60 Tse-Tse fly sterilization Irradiator, Cs-137 Secondary Standard Dosimetry Laboratory (SSDL) Irradiator, Co-60 radiotherapy sources, C0-60 agricultural research irradiator and RA/Be, Am/Be used for Neutron activation in Addis Ababa University for research purpose.  In all radiological emergencies, the ERPA will perform radiological monitoring and analyses and will serve as the co-ordinator for any governmental radiological monitoring and assessment assistance.  The ERPA maintains radiological resources, which are available for emergency deployment and which can be used to assistance in decontamination and waste collection, treatment and conditioning

On-scene decontamination of patients, usually performed by the fire service, is preferred but not always possible. An all hazards management plan for receiving and dealing with contaminated patients arriving at healthcare facilities should be in place, including pre-arranged decontamination areas. Overflow capacity should also be considered and security needs taken into account.

*Chemical agents* can spread rapidly and cause much damage, external evidence of contamination is likely, and people will probably present en masse. *Biological* agents may go undetected and patients may present later. Basic decontamination is all that is required (strip and shower) and simple infection control may be suitable. People are more likely to present as individuals or in small groups.

**Victims of *radiological* exposure can be divided into two groups:**

**Exposed but not contaminated** – thus not requiring decontamination but may need significant medical management.

**Those that have direct radiological contamination** – these patients would likely be easy to recognise because as well as the radioisotope contamination, it is likely they will have been exposed to a radiological dispersal device and therefore have evidence of blast injury.

**Key factors that affect contamination are:**

Contact time

Concentration

Temperature (higher temps worse)

Physical state (gases, vapours, low viscosity liquids are likely to be more permeable).

**There are five stages to decontamination:**

**Crowd control** – patients should be moved through a corridor.

**Triage** – identify contaminant, degree of contamination and degree of patient distress. Toxidromes can be used to help determine the type of contaminant. Smell, sight and information from victims can help indicate contamination. Emergency resuscitation can be performed in the decontamination area, but, remember all equipment is then contaminated.

**Remove clothes** – this will remove 70 to 85 per cent of the contaminant. Keep clothes as they may be required by law enforcement personnel.

**Cleaning body** – the best method is with lots of tepid water (and perhaps mild soap). People should be encouraged to self-decontaminate. There are some substances available for use with specific decontaminants, but if unknown water is best. Some contaminants react with water and care should be taken if these may be present.

**Management of contaminated materials and equipment** – including runoff.

Special consideration must be given to children as they are at higher risk of hypothermia. If possible gender mixing should be avoided during decontamination due to potential cultural sensitivities. Because decontamination is very rarely undertaken it is important to perform routine exercises to test plans and procedures.

## PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) refers to any items used to reduce the risks present when working with hazards. In general PPE should:

Be well maintained and easily accessible; be appropriate for the type of work and give, appropriate protection for the risk. Give adequate protection to the user, not create additional health or safety risks, be compatible with other PPE being used, fit properly, not interfere with any medical conditions of the user, Be easy to use, be comfortable and comply with relevant Ethiopian Standards.

In some situations the degree of PPE required will impair performance and place increased physiological stress on working conditions, for example due to increased heat.

When unknown contaminants are present, no single combination of PPE can protect healthcare workers from all hazards. First responders to incidents that involve HAZMATs should use level-

A PPE in the 'hot zone'. This includes a Self-Contained Breathing Apparatus (SCBA) and a Totally Encapsulating Chemical-Protective suit (TECP). However it is very rare that medical personnel would be required to enter the 'hot zone'. Once patients arrive at treatment facilities, healthcare workers handling those patients should consider the following PPE:

For known **chemical** agents, patients exposed to a gas pose no additional contamination threat and no extra PPE is required. For patients exposed to a volatile liquid, then level-C PPE (non-encapsulated chemical-resistant clothing, gloves and boots) with a powered air purifying respirator (PAPR) and chemical cartridge should be employed.

For known **biological** agents level-D protection is usually adequate as absorption through the skin is unlikely (except in the case of mycotoxins). This would include a surgical gown, mask and latex gloves. If there is a risk that agents may be aerosolised then a PAPR with a high-efficiency particulate air filter capable of blocking particles 0.3 to 15 μm should be used.

For known **radiological** agents no additional PPE is required if the patient has been exposed but not contaminated. For contaminated patients level-D PPE is sufficient until decontamination is complete. Lead aprons are cumbersome and do not protect against gamma or neutron radiation and therefore their use is questionable. Radiological dosimeters should be worn.

For unknown agents some organisations recommend that hospital staff should use level-B PPE (non-encapsulated chemical-resistant garments, gloves and boots) with a supplied air respirator while others consider level-C with PAPR to be sufficient. Individuals should follow their local hospital guidelines.

In all cases it is important that personnel likely to be using PPE receive adequate training in its use. High-level PPE is often scarce and training is rarely conducted. At all times universal medical precautions against blood and body fluids should be maintained.

**Key points:**

Careful planning is essential for safe and healthy mass gatherings

Drugs and alcohol have a significant health impact on gatherings that involve young people

Definitions of mass gatherings should recognise the difficulties associated with emergency service access.

Careful planning is essential for all mass gatherings and should begin sometime before the event. Some of the main components that require consideration when planning health care for mass gatherings include: The weather, duration of the event, Indoor verses outdoor, seated or mobile crowd, fenced venue, mood of the crowd, type of event, crowd density and geography, age of crowd, History of the event, Security and Health support arrangements.

The interaction of these factors (and others, including drug and alcohol use) has an impact on the expected number of patients that may require treatment. There are three domains that interact to determine the health impacts of a mass gathering: biomedical, environmental and psychosocial.

Often mass gatherings are defined by the number of people attending (i.e. >1000 people or <25,000 people) although this can be a little simplistic. Some feel that a better definition would reflect the difficulty of emergency service access. This helps to recognise some of complexities of non-traditional gatherings.

**The main goals of mass-gathering medical care are**:

Rapid access to injured patients and their effective triage, stabilisation and transportation and on-site care for minor illness.

Research is in its early stages and is mainly descriptive of single events, but sharing of information (such as transport to hospital rate and patient presentation rate) would help develop further research. Recent evidence highlights a number of issues:

That respiratory illness, minor injuries, heat-related injury and minor problems make up 80 per cent of presentations, when young people are involved, drugs and alcohol is a problem.

Myocardial infarctions are relatively rare but early resuscitation and defibrillation is important because it significantly improves outcomes

There are models to help predict the number of patients but there is still a lot of variability and little to assist in predicting the severity of cases that present.

Other considerations for mass gatherings include public health concerns, the management of VIPs, the cultural significance of an event and the potential for a mass casualty incident. There has been relatively little written on the specific management of mass casualty incidents at mass gatherings. It is essential that risk management strategies are employed to prevent this outcome. Medical Risk Classification and Public Health Event Risk Classification tools are available to assist in this process.

# LEGAL ISSUES, DOCUMENTATION AND OCCUPATIONAL HEALTH

**Key points:**

Declaring a state of emergency will often provide jurisdictions with additional legal powers

Accurate documentation is essential to ensure continuity of patient care

Good documentation can help to prepare for future disasters

Awareness of appropriate occupational health and safety issues will prevent injury to health care workers.

## LEGAL ASPECTS OF DISASTER HEALTH

A proclamation to provide for the definition of powers and duties of the executive organs of the Federal Democratic Republic of Ethiopia.

Proclamation No. 691/2010.Article 29(6)
The Ministry of Health shall have the powers and duties to:

Take preventive measures in the events of emergency situations that threaten public health, and coordinate measures to be taken by other bodies.

## DOCUMENTATION

While documentation might play an important role in the medico-legal aspects of disaster health, it is also important to ensure continuity of patient care and to help with future planning and research.

The first step in the documentation process is through triage tags. Proper tags must be used throughout Ethiopia to record a number of clinical aspects of a patient's condition. It is also essential to track the movement of patients, first at the disaster site and then at the treating facility.

Ambulance services will use a range of documentation processes including casualty movement logs, communications logs, patient care records and situation reports.

Healthcare facilities might be overwhelmed during a disaster but it is still important to keep records. Hospitals should prepare disaster documentation to assist with the rapid registration and processing of patients as well as fast and easy record keeping.

## OCCUPATIONAL HEALTH AND SAFETY

All healthcare workers involved in a disaster response should, where possible, be trained to practice safely in a variety of environments. This would include knowledge of safe lifting practices, patient handling and the use of all relevant Personal Protective Equipment (PPE). The following general protective equipment may be necessary: Overalls, Reflective vests, Appropriate, footwear, latex gloves, leather gloves, helmets, eye wear, ear plugs.

All items of PPE should meet the appropriate Standards Set by MOH and Ministry of Labour and Social Affairs.

Sharps disposal containers should be available and all personnel involved in the disaster response should be aware of universal precautions against blood and body fluids.

It is preferred that healthcare workers only be engaged in tasks in areas that have been cleared of hazards. Familiarity with all equipment and machinery is essential to ensure safe working practices. With the diversity of climate in Ethiopia, responders should also be aware of environmental conditions and have the appropriate protection for extremes of both heat and cold. Despite the often overwhelming nature of disasters it is important that healthcare workers only work for appropriate periods of time and take regular breaks to avoid fatigue.

# MANAGEMENT OF THE DECEASED

**Key points:**

Management of the deceased is the responsibility of the coronial service

Mass fatalities do not pose a significant public health risk

Standard universal precautions should be taken when handling dead bodies

Disasters should be treated as a crime scene and bodies should only be moved under the direction of the relevant authority.

Management of the deceased following a disaster is the responsibility of the coronial service in each state and territory. This may include the police, forensic scientists and medical experts. It is important, however, that all those involved in the health response to a disaster are aware of some basic principles when dealing with the dead.

It is a common misconception that large numbers of fatalities following a disaster pose a significant public health threat. There is little evidence that water or insect-borne diseases will be transferred from the deceased to the living. For those handling the deceased there is a risk of

infection from chronic diseases such as hepatitis B, hepatitis C, HIV and tuberculosis. This risk is minimised when universal precautions for blood and body fluids are taken. The following recommendations have been made for those dealing with the deceased to prevent the potential spread of infection: Universal precautions for blood and body fluids, disposal of used gloves, avoid cross-contamination of personal items, wash hands after handling bodies and before eating, disinfection of vehicles and equipment, use of body bags, especially for badly damaged bodies, Hepatitis B vaccination.

## DISASTER VICTIM IDENTIFICATION (DVI)

DVI plays an important role in the response to disasters. It entails a collaborative response by the police and forensic scientists, including medical experts. Dental examination, medical examination, DNA examination and fingerprint examination are all key components of the DVI process. Psychosocial and mental health supports are also vital components of the process and help families deal with their traumatic loss. When conducted appropriately this support can lessen the risk of adverse mental health issues.

Any disaster that involves fatalities will be treated as a crime scene. As such the area should be secured. Accurate documentation and clear labelling of the deceased is important both legally and for the benefit of grieving family members. Bodies should only be moved at the direction of the coroner's representative and all efforts should be made to prevent further deterioration of the remains. It is only acceptable to move a body without the coroner's direction when this will prevent further morbidity or mortality to other affected persons or when there is an immediate risk of destruction to the body. If a body must be moved, care should be taken to avoid contamination and destruction of evidence. It is important to keep all personal belongings with the remains at all times.

When bodies are moved they should be taken to an onsite body-holding area that takes into account security, size, access and screening from the public. Ventilation, power, refrigeration, lighting, suitable flooring and occupational health and safety issues should all be considered.

Mass destruction or disposal of remains is only appropriate when civil infrastructure has been disrupted to such an extent that this is the only viable option. Cremation is rarely recommended when there are large numbers of casualties as a high temperature is required for an extended period of time and it makes further identification impossible. If mass burial is considered, then new burial areas should be sited at least 250 m away from drinking water sources, and with at least 0.7 m of distance above the saturated zone.

The psychological impact of dealing with death and human remains should never be underestimated. Exposure to mass death and mutilated bodies can increase the risk of adverse mental health outcomes. contains more information on this subject. It is also important to respect the cultural and religious needs of those affected by disaster and the impact this may have on dealing with the deceased.

## RECOVERY

**Key points:**

The recovery process is a key element of the comprehensive approach

Health service involvement is essential to the recovery process which should focus on applying the National Recovery Principles

The health of those affected by and responding to the disaster is an ongoing component of the post-disaster activities

Post-disaster activities should aim to enhance resilience, manage health and other consequences, decrease vulnerability and inform preparedness for future disasters.

# MEDIA AND PUBLIC RELATIONS

Communicating with media through established partnership should be made. But a precaution has to be made during dissemination of information. Information must be provided through the designated Public Relation personnel. Medias can also serve to provide numerous benefits for the dissemination of proper information. Disclosure of information consists of the following

Brief information regarding the incident

Potential health threats to the Public

Precautions to follow

Precaution instructions

## COMMUNICATION

Communication Structure during Disaster incidents
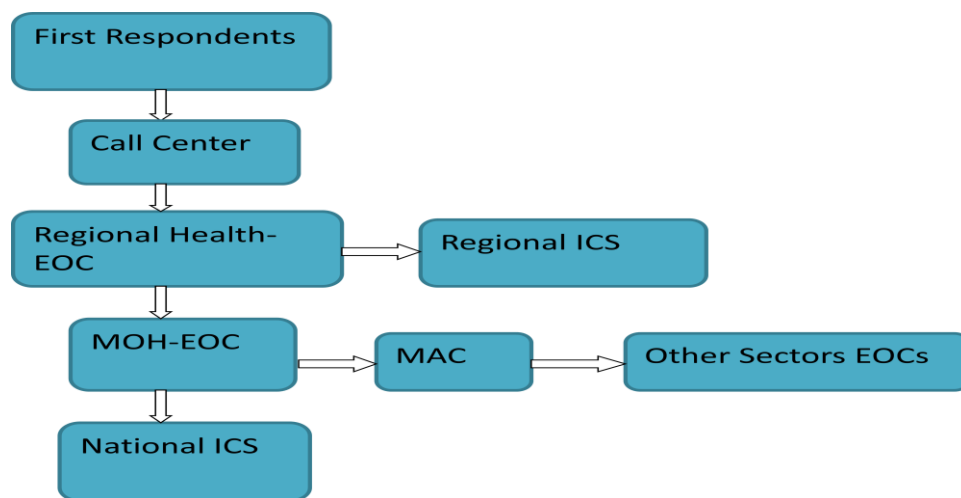


Figure5.

Chain of Command - Normal Operations

Chain of Command - Emergency Operations

Emergency Communication Systems

Means of Notification

Notification for Small Area-Specific Incidents

# ASSISTANCE DURING HEALTH RELATED DISASTER

At each level starting from woreda level to national, there will be a health related preparedness and response plan supported with appropriate trained manpower, logistics by the respective bodies. The need for assistance might arise at each preparedness and response level.

Sources will be :

**Domestic**

**International**

## DOMESTIC HEALTH DISASTER ASSISTANCE

The concept of the prepared community should apply the comprehensive, all hazards and all agencies approaches at the local level, typically at the local government level, and relies on the principles of a regulated response. This process identifies that the initial responsibility for responding to an emergency rests at the local level. When an emergency requires resources beyond the capability of the local community, support needs can be escalated to districts, jurisdictions and ultimately to a national level.

Assistance enquire might raise during prevention, preparedness, response and recovery period

All possible agencies, individuals and community societies have to be identified and communicated with for their assistance.

Legislation, local government direction, inter-agency agreement or the planning committee, determines the roles and responsibilities of the organizations involved for assistance.

Governments, healthcare services, healthcare workers and the community should all be coordinated in their assistance contribution.

Communication and consultation are fundamental to the risk management assistance process and should take place with internal and external stakeholders during all stages of the process.

State and territory governments have to have arrangements with each other to share resources when necessary.

During major disasters or adverse events, a state or territory government may seek federal assistance.

Local Disaster Prevention and Preparedness Committee should officially declare the need for domestic assistant

## INTERNATIONAL HEALTH DISASTER ASSISTANCE

Criteria to declare international disaster assistance officially

Imminent threat for the public health and safety- disease break or major incident that requires experts and resources beyond the national preparedness and response capacity

Impacts to essential government service and function- infrastructures are affected

When local and state resources are overwhelmed

Who will declare the international appeal officially?

 Prime Minister/ president or officially delegated body

An effective system shall be established for resource mobilization, management and utilization.

According to the country resource mobilization guideline resource should be utilized properly.

Based on the country's relevant law and Directive and working relationship, cooperation and agreement shall be established with regional, sub regional and global organizations and states that support a disaster response effort.

N.B:- according to this, at each level a disaster response committee should be established.

# FINANCIAL ARRANGEMENTS

Emergency preparedness consists of the activities that take place before an incident that increase an organization's or a community's readiness to respond. The degree of readiness reflects the acknowledgement that something can happen, the assignment of a responsibility to respond and a commitment to put the plans, resources and infrastructure in place to ensure the response capability. Preparedness will focus on two aspects of emergency response. The most common, Emergency Response Plan, deals with meeting the special demands created by an impact on the community. Financial arrangement continuity planning aims to ensure services are maintained when the organization is impacted, even if the effects are limited to internal disruptions.

Preparedness also extends to pre-planning activities aimed at post-event recovery.

The health sector's resources will be amongst the most important and most demanded during a response. By helping the community become better prepared the health sector will increase its effectiveness. Furthermore, many of the health sector's existing clients, such as home care patients or residents in long term care facilities, will be more vulnerable to the effects of a disaster. The health sector has a responsibility to prepare to meet these needs. A comprehensive preparedness program can fulfill this responsibility.

Currently Ethiopia does not have a system of financial reimbursement from jurisdictions for assistance provided under disaster response plan, therefore creating a system and coordinating stockholders to allocate budget for disaster response plan is critical.

Responsibility for activating and coordinating financial relief and recovery measures from a government as whole perspective. Direct support for this role is provided by Emergency Management team that will be establishing by government.

The intent of financial arrangement is to assist the relief and recovery of communities whose social, financial and economic well-being has been severely affected by a disaster event.

The government disaster relief and recovery arrangements exist to provide financial support to Ethiopian communities affected by disaster events. The arrangements are designed to provide a 'safety net' to those in immediate needs or are unable to affect their own recovery.

The arrangements are not compensation based and are not intended to replace or act as a disincentive for self-help, insurance and/or disaster mitigation strategies.

The intent of the government is to assist the recovery of communities whose social, financial and economic well-being has been severely affected by an eligible disaster event.

**Information regarding the resources in the community may include:**

Health facilities (public and private), health services (public and private), transportation, accommodation, catering (providing food and services), communication (mass media and personal communications), emergency services (police & fire), utilities, trades and professions.

Disaster Prevention and Food Security

Ethiopian Electric Power Corporation

Water and Sewerage Authority

Fire and Emergency Prevention and Control Authority

Hospitals

Ethiopian Red Cross Society

Police

Ethiopian Telecommunication Corporation

Media

Road Authority

**Other stockholders:**

 Churches and community groups

Private ambulance service

NGO's

# MONITORING, EVALUATING AND UPDATING

A carefully prepared and documented disaster response Plan is essential to preserve the thinking and decisions taken during the process of disaster response planning, especially to set a standard process to follow over time.

A key output from the Disaster Response Planning will be a series of follow-up meeting on preparedness actions that can be undertaken in anticipation of potential crises to prepare an emergency response when is activated by the Early Warning information. Those actions have recorded as part of the Disaster Response Plan (in the sector) and their implementation should be monitored by the respective responsible of the sectors .

**Exercising the plan**

Evaluating the effectiveness of the Disaster Response Plan could be made before facing a real situation in order to determine whether the goals, objectives, decisions, actions and timing outlined in the plan led to a successful response.

One way to exercise the plan can be through simple simulation exercises (tabletop / drill exercises) which are valuable in familiarizing those who will be involved in emergency response with the coordination and response mechanism envisaged in the plan. They also help to test planning assumptions and response systems. Simulations may be used as a part of the regular schedule for review and updating of the Disaster Response plan.

## EVALUATING AND UPDATING

The plans need to be changed on a regular basis to reflect changing circumstances Disaster Response plans should remain living document.

The Disaster Response Plan should be updated in the following cases:

a) A major incident has occurred and the Disaster Response Plan has been activated, so a series of lessons learned can be collected thanks to the experience. Some changes and improvement will be needed in the Disaster Response Plan to reflect lessons learned.

b) Every employer of the sector should be aware of the disaster response planning, however, sometimes staff turnover in the offices is high so new updating and validation of the disaster response Planning must be done if there were many variations. Also if there would be many changes in operational resources (organizational structures, management processes, facilities, equipment…) or in stakeholders, a review should be considered.

c) Due to development interventions some aspects of the risk analysis can change. It will affect the risk analysis, contingency prioritization and scenario building, so in this case a new updating of the disaster response planning should be done.

e) Although any of these cases would have occurred, the disaster response Plan should be reviewed and updated with in a time frequency as agreed by sectors.

*Hazard Assessment*

*Description of major disasters: frequency, root causes and effects*

| Hazards (*in their order of importance*) | Potential areas Affected(*by that hazard*) | Period of occurrence | Frequency | Impacts/Effects of the disaster | Root cause of disasters | Early Warning Indicators |
|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

*Description of major disasters: frequency, root causes and effects*
**Source: WDRP [**affected kebele (from hazard _ disaster characteristics by Kebele); period of occurrence (hazard _ month of occurrence of frequent disaster); frequency (hazard _ frequency of disaster occurrence); impact and root causes (hazard _ disaster characteristics and Hazard _ losses suffered by households or from Biological, hydro-meteorological, and socio-economic hazards)**] and Workshop**


**TREND ANALYSIS**

| List of gradual changes observed and threatening the livelihoods of the community | Area affected (Affected by that change) | Analytical description of the trend | Impact of the trend on human and non-human elements | Coping mechanisms | Hazard affected (Affected positively or negatively by that change) |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

## VULNERABILITY ASSESSMENT

| Hazard: | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Vulnerable Elements** | | **Levels of Vulnerability** | | | | **Reasons of vulnerability** | |
| | | **Very high** | **High** | **Medium** | **Low** | **Specific for the elements** | **General** |
| **Human Elements** | **Men** | | | | | | |
| | **Women** | | | | | | |
| | **Children** | | | | | | |
| | **Elderly** | | | | | | |
| | **HIV/AIDS** | | | | | | |
| | **Disable** | | | | | | |
| **Non-Human Elements** | **Water** | | | | | | |
| | **Health** | | | | | | |
| | **Education** | | | | | | |
| | **Infrastructure** | | | | | | |
| | **Natural Resources** | | | | | | |

**IDENTIFICATION AND PRIORITIZATION TEMPLATE**

| STRATEGY IDENTIFICATION AND PRIORITIZATION | | | SECTORIAL AREA: | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hazard | Strategy/ways to achieve measures | where they will be implemented | Possible trends related (for adaptation) (see Trend Analysis) | Selection Scores for the strategy | | | | Total score | Prioritization (YES/NO) |
| | | | | Urgency | Importance | Feasibility | Lack of negative impacts (good adaptation) | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**CAPACITY ASSESSMENT**

| Hazard: | | | |
|---|---|---|---|
| **Capacities** | | **Existing capacities**<br>(, to cope with or adapt to the hazard/trend) | **Capacity gap** |
| **ASSETS** | **HUMAN CAPITAL** | | |
| | **SOCIAL CAPITAL** | | |
| | **PHYSICAL CAPITAL** | | |
| | **FINANCIAL CAPITAL** | | |
| | **NATURAL CAPITAL** | | |

**SCENARIO FORMAT**

| Potential hazard: | | | | | |
|---|---|---|---|---|---|
| **Field** | **Description** | | | | |
| | **Most likely Scenario** | | | **Worst Scenario** | |
| **Description of Disaster** | | | | | |
| **Area  affected:** | | | | | |
| **Estimated date & duration:** | | | | | |
| **People** | | | | | |
| **Affected {***Estimated range of people affected due to the likely disaster}* | | | | | |
| **Displaced***{Estimated range of people displaced due to the likely disaster}* | | | | | |
| **Died***{Estimated range of people displaced due to the likely disaster}* | | | | | |
| **Gender proportion affected***{Proportion or number of males/women affected}* | | | | | |
| **Description of gender issues***{Which are the main gender issues for this likely disaster]* | | | | | |
| **Vulnerable people***{Describe the amount of people from vulnerable groups (disable, HIV/AIDS... that could be affected)}* | | | | | |
| **Human health** | | | | | |
| **Description of health effects** | | | | | |
| **Human disease outbreak** {Specify up the likely human disease outbreak related to the disaster, use every space for each one in case of necessary} | {Human dis1__} | {Human dis2__} | {Human dis3__} | {Human dis1__} | {Human dis2__} | {Human dis3__} |
| **No. People sick (morbidity)** {Estimated range of number of people sick for the respective  disease} | | | | | |
| **No. People died (mortality)** {Estimated range of number of people died for the respective  disease} | | | | | |
| **Nutrition** | | | | | |
| **Description of Malnutrition effects** | | | | | |
| **MAM (Moderate Acute Malnutrition)** | [Children between 6-59 months} | {Pregnant and lactating women} | {Expected MAM %} | [Children between 6-59 months} | {Pregnant and lactating women} | {Expected MAM %} |
| **SAM (Severe Acute Malnutrition)** | [Children between 6-59 months} | {Pregnant and lactating women} | {Expected SAM %} | [Children between 6-59 months} | {Pregnant and lactating women} | {Expected SAM %} |
| **Total expected cases**{Estimated range of number of expected cases with MAM and SAM} | | | | | |
| **WASH** | | | | | |

| | | |
|---|---|---|
| **Description Water problems** | | |
| **No. of water facilities damaged**{Estimated range of number of water facilities damaged related to the disaster} | | |
| **People in need of water assistance**{Estimated range of number of people in need of water assistance related to the disaster} | | |
| **Description Sanitation Effects** | | |
| **Description of Hygiene affects** | | |
| **Education** | | |
| **Description Education Problems** | | |
| **No. of school affected (drop-outs)**{Estimated range of schools affected with drop-outs related to the disaster} | | |
| **Number of students to be affected**{Estimated range of students related to the disaster} | | |
| **Infrastructure** | | |
| **Description of infrastructure damaged**{Estimated range of houses damaged  or destroyed,  bridges damaged, Km. of road damaged or other type of infrastructure} | | |
| **Others humanitarian consequences** | | |
| **Other humanitarian consequences** {They can be direct or indirect} | | |
| **Early Warning Indicators &Triggers** | | |
| **Early Warning Indicators (**signal to follow up the situation) | | |
| **Triggers (**points when emergency interventions should start) | | |

## Contingency    prioritization

| | RISK RANKING | | | |
|---|---|---|---|---|
| **IMPACT** | **High (3)** | | | |
| | **Medium (2)** | | | |
| | **Low (1)** | | | |
| | | **Low (1)** | **Medium (2)** | **High (3)** |
| | | **LIKELIHOOD** | | |