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HEALTH EMERGENCY AND DISASTER CONTINGENCY PLAN

(Plan for Health Sector Disaster Preparedness and Response in Bhutan)

First Edition
June, 2016

Emergency Medical Services Division
Department of Medical Services
Ministry of Health
Royal Government of Bhutan
Thimphu

HEALTH

EMERGENCY AND DISASTER

CONTINGENCY PLAN

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FOREWORD

The Ministry of Health is responsible of delivering medical services at all times, especially "during and after the occurrence of natural and man-made disasters and emergencies." To ensure this, it is critical that the ministry is prepared at all times to respond to such emergencies and disasters. This requires the Ministry of Health, the health facilities and all concerned stakeholders to work systematically and make certain that the health sector is prepared in terms of infrastructure, emergency plans and procedures, and that the health staff are trained and equipped to provide emergency medical response during an crisis.

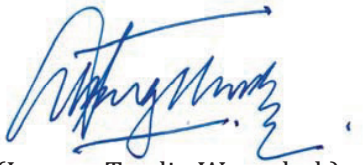
This Health Emergency and Disaster Contingency Plan is developed as per the mandates enshrined in the National Disaster Management Act, 2013. The main aim and objective of this plan is to enhance preparedness and response capacity for emergency and disaster in the health sector. The plan highlights some of the common hazards in Bhutan, based on which the plan was conceived and developed. This document covers various emergency preparedness subjects such as institutional mechanism, roles and responsibilities, communication and key actions crucial for emergency and disaster management.

The plan delineates health emergency preparedness and response action at different levels of health institutions, and responsibilities in terms of who, what resources and when. Coordination is a key to successful management of emergencies and disasters, which call for a coordinated response between curative and preventive health services, as well as food supply, water and sanitation. The Ministry of Health established the Emergency Medical Service Programme and later upgraded to Division level under the Department of Medical Services to act as the nodal body to direct, coordinate and manage medical responses during disasters and health emergencies.

We are hopeful that this plan will serve as a guiding document for

programs in the ministry, health sectors of the districts, hospitals, basic health units, and communities for disasters and emergencies. I would like to, personally, urge the ministry colleagues, districts and hospitals to take immediate steps to implement the preparedness measure outline in this plan as we are uncertain when an emergency may occur.

Moreover, since simulation exercise is the only way to keep ourselves prepared for emergency and disaster in the absence of responding to events, I would like to urge districts and hospitals to conduct simulation exercises at least two times in a year. The Ministry of Health looks forward to the continued cooperation and support from all the stakeholders in implementing the interventions under this plan.



(Lyonpo Tandin Wangchuk)
Health Minister

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The ministry also offers its sincere thanks to all the members of the high level committee, without whose comments and support, this document would not have been possible.

EXECUTIVE SUMMARY

The Ministry of Health through its Emergency Medical Service Division aims to develop safer communities that suffer fewer deaths, physical injuries and psycho-social trauma as a result of disasters and health emergencies. To achieve this, health system must be capable of providing a coordinated response during disasters/emergencies and deliver effective mitigation and preparedness programs before an impact. The health sector has a vested interest and a key role in this process since safer communities are healthier and the health of the population is an important contributing factor to individual and community safety.

The Health System can be put under considerable strain due to disaster and emergency situations that can result in high mortality and morbidity. The resulting health problems might be related to food and nutrition, water and sanitation, mental health, climatic exposure and shelter, communicable diseases, health infrastructure and population displacement.

Bhutan has confronted several disasters in the past. Whether it is man-made disasters or natural disasters, the Royal Government of Bhutan has taken measures to provide relief and response in a coordinated manner. Now that the world is facing new challenges due to the emergence of infectious diseases like avian influenza, SARS, MERS-CoV, and most recently the Zika virus, the re-emergence of previously easily contained diseases like Ebola and TB, and the health effects of chemical, radio nuclear and food safety events. Thus the health emergency contingency plan needs to be a comprehensive plan that will address all hazards.

It is the outcome of the concerted efforts of stakeholders from various international and national organizations drafted since 2011 with the funding and technical support from both RGoB and WHO. This is also part of the fulfillment of the mandates enshrined in the Disaster Management Act of Bhutan 2013.
This document has been developed adopting a community based approach through consultative process. It highlights some of the

common natural hazards and health emergencies in Bhutan, upon which the plan was conceived and developed. It contains fundamental public health preparedness and response activities and responsibilities in terms of what resources when, who, and from where.

This document will serve as the basis for preparedness and response activities for emergencies and disasters in the health sector and therefore will be reviewed and updated every 3 years or as and when required. This is done to make the emergency management more practical and efficient in the coming years.

ACRONYMS

AMP	Advance Medical Post
ARI	Acute Respiratory Infection
AIDS	Acquired Immunodeficiency Syndrome
BHU	Basic Health Unit
BMAT	Bhutan Medical Assistance Team
CBRP	Community Based Rehabilitation Program
CDD	Communicable Disease Division
CMO	Chief Medical Officer
DHMS	Department of Hydro Met Services
DHO	District Health Officer
DMS	Department of Medical Services
DoPH	Department of Public Health
DoMSHI	Department of Medical Supply and Health Infrastructure
DDM	Department of Disaster Management
DMAB	Disaster Management Act of Bhutan
DoTM	Department of Traditional Medical
EMSD	Emergency Medical Service Division
EMT	Emergency Medical Technician
ED/ER	Emergency Department/Room
HA	Health Assistant
HIMS	Health Information and Management System
HHC	Health Help Center
HEDCP	Health Emergency and Disaster Contingency Plan
HEMC	Health Emergency Management Committee
HEOC	Health Emergency Operating Center
ICU	Intensive Care Unit
IEC	Information Education Communication
IFRCRCS	International Federation of Red Cross and Red Crescent Societies
IMNCI	Integrated Management of Neonate and Childhood Illness
MCH	Maternal and Child Health
MCI	Mass Casualty Incidence
MCM	Mass Casualty Management
MEC	Medical Evacuation Center

MoH	Ministry of Health
NCDD	Non-Communicable Disease Division
NDMA	National Disaster Management Authority
NSB	National Statistical Bureau
OPD	Outpatient Department
PHED	Public Health Engineering Division
PPE	Personal Protective Equipment
RCDC	Royal Center for Disease Control
RH	Reproductive Health
RRT	Rapid Response Team
SOP	Standard Operating Procedure
TAC	Technical Advisory Committee for Emergencies and Disasters
KGUMSB	Khesar Gyalpo University of Medical Science of Bhutan
UNICEF	United Nations International Children's Emergency Fund
UNDP	United Nations Development Program
UNDRO	United Nations Disaster Relief Organization
VHW	Village Health Worker
WHO	World Health Organization
WFP	World Food Program

CHAPTER 1: INTRODUCTION

1.1 Background

Bhutan is a mountainous country covering an area of 38,394 square kilometers situated between China and India. The difficult geographical terrain and mountainous ridges poses challenges for the health facilities to provide service for the population in the far-flung settlements. The settlements are scattered across the mountains characterized by few households in some rural areas to over a thousand households in urban areas. The population of Bhutan in 2014 was 745,153 with over 70% of its population living in the rural areas.

The risk of disaster is high in Bhutan as it lies in greater Himalayan range, which is one of the most seismically active zones especially zone IV and V. The fragile eco-system, geographical conditions and climate change, have resulted many disasters in the past, such as:

a. Landslides closely linked with flooding situation.
b. Flooding due to Glacial Lake Outbursts/natural dam formation and dam outburst
c. Flash Flood
d. Earthquake
e. Fire in forest and human settlements.
f. Windstorms/snowstorms and hailstorms
g. Epidemic and Disease Outbreaks.

1.2 Disasters and Health Emergencies

Disasters happen when the forces of a hazard (an extreme event that disrupts the lives of people) exceed the ability of a community to cope on its own. Not all communities are at risk of every type of disaster, but every community is at risk of some particular disaster. The United Nations Disaster Relief Organization (UNDRO) defines a disaster as: “a serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using its own resources.”

As per the Disaster Management Act of Bhutan (DMAB) 2013 (Chapter

9, Section 92-96), disaster is classified into three types based on geographical impact, coordination and management capacity as indicated in *table* 1:

Table 1: Classification of Disasters

Criteria	Type I Disaster	Type II Disaster	Type III Disaster
Geographical Impact	Affects a single Thromde or Gewog or any part thereof;	Affects a Dzongkhag or more than one Dzongkhag;	Affects the nation as a whole or in part; Other special circumstances warrant such classification
Overall Coordination and Management	Managed with available resources and is within the coping capacity of the Gewog concerned (Thromde or Gewog Disaster Management Committee)	Managed with available resources and is within the coping capacity of the Dzongkhag concerned (Dzongkhag Disaster Management Committee)	Severity and magnitude is so great that it is beyond available resources and the coping capacity of the Dzongkhag concerned (National Disaster Management Authority)
Health Sector Coordination	Health Assistant or Thromde Health officer.	Chief Medical Officer and Dzongkhag Health Officer	Technical Advisory Committee for Emergencey and Disaster at national level

A health emergency can be any sudden public health situation endangering the life or health of a significant number of people and demanding immediate action. As per WHO, public health emergency is "an occurrence or imminent threat of an illness or health condition, caused by bio terrorism, epidemic or pandemic disease, or (a) novel and highly fatal infectious agent or biological toxin, that poses a substantial risk of a significant number of human facilities or incidents or permanent or long-term disability (WHO, 2001). The main Cut Off indicators for health emergencies defined by WHO are described below:

Table 2: Health emergency indicators

Status	Indicators	Cut off value
Health/Diseases	Daily crude mortality rate	>1/10,000pop
	Daily under 5 mortality rate	>2/10,000 children under 5
Nutrition	Nutrition Acute malnutrition in under 5	10% of under 5 years old
	Growth faltering rate in Under 5	30% of monitored children
	Low birth weight	(<2.5 kg) 7% of live birth

1.3 Legal Framework

The Fifty-Eight World Health Assembly urged WHO to increase its role in risk reduction and emergency preparedness in the health sector. Subsequently WHO recommended every countries to develop national health emergency preparedness and response policies after the completion of Global Assessment of National Health Sector Emergency Preparedness and Response in 2008.

At the national level, the DMAB 2013 (Chapter 6, section 67 & 76) mandates agencies notified by NDMA to prepare, implement, review and update emergency contingency plan. The Chapter 10, section 111 of the Act also mandates Health Ministry to manage emergency medical services during disaster.

Further the National Health Policy 2012 enshrined the mandates of all health facilities to institute appropriate system of care to deal with emergencies, disasters, epidemics and outbreaks. National emergency preparedness and response plans shall be maintained and appropriate resources provided at all levels to respond rapidly and effectively to all health related emergencies of national and international concerns. Accordingly, the Ministry of Health has developed the Health Emergency and Disaster Contingency Plan (HEDCP).

1.4 Definition of Contingency Plan

A contingency plan is a plan that enables an organization to respond well to an emergency and its potential humanitarian impact when disaster occurs. It contains operational procedures for response,

management of human and financial resources, coordination and communication procedures.

The HEDCP outlines the level of preparedness and the arrangements made and as well highlights process and system that needs to be in place in terms of Health Response in anticipation of a health emergency during disaster/crisis/disease outbreaks. This plan will serve as the guiding document for appropriate health and humanitarian interventions before, during and after health emergency or disasters.

1.5 Objectives of the Contingency Plan

The main objectives of the HEDCP are to ensure that the health sector's preparedness and response to emergencies is not only effective and timely but also coherent and well-coordinated. The processes and management structures outlined within this plan serve as the foundation for an all-hazards response framework, which will be supplement through a series of annexes providing guidance and information specific to a particular hazard or process. The specific objectives of the plan are as follows:

a. Increase organizational readiness in the preparation for and disaster.
b. Ensure timely and effective provision of health care services when health emergency and disaster occurs.
c. Institutionalize emergency management at all levels of health facilities.

1.6 Strategies

a. Conduct hazard mapping and vulnerability assessment
b. Delineate job responsibilities at different level of health institutions
c. Develop guidelines and SOPs for various levels
d. Establish resource mobilization mechanism (HR, medical supplies, equipment and funds)
e. Establish networking, information sharing and communication within and outside MoH
f. Establish effective early warning and surveillance system related to health emergency

g. Develop effective coordination mechanism at all levels of health facilities
h. Establish psychosocial support and rehabilitation process
i. Establish internal coordination mechanism for disease of national and international concern

CHAPTER 2: HAZARDS AND HEALTH IMPACT

2.1 Hazard Profiles

Bhutan is a mountainous country and highly prone to a range of hazards, including glacial lake outburst floods (GLOFs), flash floods, riverine floods, landslides, landslide dam outburst floods, cloudbursts, windstorms, and river erosion. It ranks fourth highest in South Asia in terms of relative exposure to flood risks, with 1.7 percent of the total population at risk. With climate change, the frequency and intensity of extreme events are expected to increase. The country is also located in the seismic zone V of high earthquake occurrence. It ranks fourth highest in the South Asia region in terms of relative exposure to flood risks, at 1.7 percent of the total population at risk.

Between 1994 and 2016, some 87,000 people were affected and over 380 deaths occurred due to natural disasters in Bhutan— mostly arising from the impacts of floods, windstorms, earthquakes, and GLOFs. Floods and storms account for about 95 percent of total deaths related to natural disasters; the remaining 5 percent resulting from earthquakes.

Table 3: Number of deaths and individuals affected by natural disasters 1994-2016

Table 3: Number of deaths and individuals affected by natural disasters 1994-2016

Number of deaths and individuals affected by natural disasters 1994-2011		
Disasters	**Deaths**	**Affected**
Flood	222	1600
Storm	29	65000
Earthquake	12	20028
Total	304	87369

Source: EM-DAT: The OFDA/CRED International Disaster database

a. Earthquakes

The risk of earthquakes is high in Bhutan as it lies in one of the most seismically active zones. The recent major earthquake (September,2011) measuring 6.8 in Richter scale claimed one life, injured14 people, damaged nearly 7,965 houses, 50 health facilities and other important offices and functionaries across 6 Dzongkhags.

b. Glacier lakes

Out of 2674 glacier lakes, 25 have been identified as potentially dangerous. These glacial lakeoutburst (GLOFs) pose serious risk to the human settlement in the reverine areas. The threat of GLOFs is increasing as temperature increases from global warming and cause rapid and unprecedented rate in the retreat of glaciers. The major GLOFs and flash floods that occurred along Punatshangchu in October 1994 caused 22 casualties.

c. Flash flood

In 2004, major flash floods occurred due to heavy precipitation affecting 6 eastern Dzongkhags. It claimed 9 lives and damaged 1,437 households. In May 2009 Cyclone Aila caused incessant rainfall throughout the country resulting in flash floods and 13 lives were lost that year.

d. Fire

Fire is another major hazard for Bhutan affecting both the human settlements and forest. It is mainlycaused by electric short-circuit, fuel woods used for cooking, heating, and negligence of people in particular by smokers, campers, trekker. The common use of woods as construction materials mainly in rural areas is also risk for fire.

In May 2014, forest fire in Bartsam and Bidung under Tashigang Dzongkhag razed down 22 houses, damaged 4 rural water supply schemes, 7 irrigation channels and 3844 fruits trees beside affecting other plants and animal species. Also, fire in Chamkhar (2010) razed down 58 structures and affected 64 families. 2 lives lost and 1 seriously injured.

e. Road Traffic Accidents

Road Traffic Accident is common occurrence in Bhutan due to winding roads, speeding, reckless driving and driving under intoxication are

some of the risk for accidents. In 2010, public transport accident at Lamperi claimed 9 lives and injured 26 people.

f. Disease Outbreaks

The disease outbreak affects large number of people demanding immediate health actions resulting in huge government losses in terms of drugs and equipment. This is further worsened by porous borders in the south, which gives way to unchecked movement of people between the borders. In 2012, the first Chikungunya fever was detected in Samtse Hospital and over the period of 33 weeks, 64 cases of chikungunya were detected in Samtse, Gomtu, Sipsu and Phuentsholing areas. Weak disease surveillance and porous border were attributed to various disease outbreak and importation of new infectious diseases.

g. Snowstorms, hailstorms, windstorms and draughts

Snowstorms, hailstorms, windstorms and droughts in Bhutan also cause loss of lives, animals, food crops and properties. The wind Storm of May 2014 in Samtse blew away roofs of many households and Samtse hospital.

h. Chemical, Biological, Radiological and Nuclear Weapons (CBRNs) Disaster

Disaster due to CBRN is one such high priority subject, as it can be a highly traumatic event. At times, it can result in irreparable damage to the environment; both biotic and abiotic, and also cause fatality to a large number of population. Biological hazards includes infectious, zoonosis and food events which constitute major risk to our populations.

i. Bomb Blast

In 2013, eight soldiers were killed instantly in the bomb explosion in Haa. About a dozen more soldiers were injured. Some of the seriously injured persons were flown to Thimphu in helicopters. The dead and injured were members of the bomb disposal squad of the Royal Bhutan Army.

2.2 Risk Analysis from hazards

A risk profile identifies and ranks risks according to seriousness of hazards. Risk analysis identify the locations that are particularly vulnerable, and their likelihood and impact. The following tables illustrate common public health risks caused by different hazards including epidemics:

Table 4: Risk analysis of disasters from Public Health Perspectives

Natural/ man-made Disasters	Specific Location	Likelihood	Impact	Public Health Risk
Earthquakes	Whole Country	Moderate	High	• Deaths and Injuries • Increased risk for vulnerable groups* • Displaced people • Unavailability of clean water and proper sanitation • Malnutrition • Disruption of essential services • Psycho-social problems/mental disturbances • Environmental and Public Health (PH) issues in shelters • Health infrastructure damage • Affected health workers and family • Disease outbreaks • Sexual violence and STIs
Landslides	Whole Country	Infrequent	Medium	• Deaths and Injuries • Increased risk for vulnerable groups • Malnutrition • Unavailability of clean water and proper sanitation • Disruption of essential services • Inaccessibility of PH facilities • Psycho-social problems /mental disturbances • Environmental and PH issues in shelters • Health infrastructure damage • Disease outbreaks • Displacement
Floods	Whole Country	Likely	Low/Medium	• Deaths and Injuries from drowning • Malnutrition • Unavailability of clean water and proper sanitation • Psycho-social problems /mental disturbances • Inaccessibility of public health facilities • Environmental PH issues in shelters • Health infrastructure damage • Disease outbreaks • Displacement
Fire	Whole Country	Moderate	Medium	• Deaths and Injuries • Disabilities • Psycho-social problems /mental disturbances
Road Traffic Accidents	Whole Country	Frequent	Medium	• Deaths and Injuries • Disabilities • Psycho-social problems /mental disturbances

Table 5: Risk Analysis of Communicable diseases:

Communicable Disease Risk	Specific Location/Setting	Likelihood	Impact	Public Health Risk
Seasonal influenza	Whole country, outbreaks in institutions and schools	Likely	Low/Medium	• Morbidity • Disability and Death • Socio economic impacts • Psycho-social problems /mental disturbances
Pandemic influenza	Whole country, outbreaks in institutions and schools	Infrequent	High/Medium	
Chikungunya	Southern region (with case movement to other areas)	Moderate	Low/Medium	
Dengue	Southern region (with case movement to other areas)	Likely	Medium	
Malaria	Southern region (with case movement to other areas)	Likely	Medium	
Meningitis	Whole country, Institutions and schools	Infrequent	High	
Increasing burden of HIV/AIDS	Whole country	Moderate	High	
Chicken pox	Whole country, outbreaks in institutions and schools	Moderate	Low	
Mumps	Whole country, outbreaks in institutions and schools	Likely	Low	
Measles	Whole country, outbreaks in institutions and schools	Moderate	Medium	
Cholera	Risk of imported cases	Infrequent	Medium	
Typhoid	Central area, not verified, lack of diagnostic capacity	Moderate	Medium	
Kala-azer/ Leishmaniosis	Cases in Eastern region but vector in whole country	Infrequent	Medium	
Hepatitis B	Whole country	Moderate	Medium/High	
MERS	Current risk of imported cases	Infrequent	High	
Rota viral diarrhoea	Whole country	Moderate	Medium	
MDR TB	Bhutan and SEA	Moderate	High	
Hepatitis C	Very few cases reported	Infrequent	High	
Ebola	Risk of imported cases during ongoing outbreaks	Infrequent	High	
Community acquired pneumonia	Whole country	Moderate	Medium/High	
Healthcare acquired infections	Whole country	Moderate	Medium/High	
AMR infections	Whole country	Moderate	High	
Hand, Foot and Mouth	Whole country, schools	Infrequent	Low	

Table 6: Risk Analysis of Zoonotic diseases:

Zoonotic Disease Risk	Specific Location/Setting	Likelihood	Impact	Public Health Risk
Rabies	Southern Region	Moderate- Likely in South	High	• Morbidity • Disability and Death • Socio economic impacts
Anthrax	Whole country, mainly in villages	Infrequent	Low/Medium	
Leptospirosis	Whole country	Infrequent	Low/Medium	
Scrub typhus	Whole country, seasonal March-October	Moderate	Medium	
CCHF- Crimean Congo Haemorrhagic Fever	Southern region, risk to whole country	Infrequent	High	
Echinococcosis / Hydatidosis	Whole country	Moderate	Medium	
Taeniasis	Whole country in meat handlers/ consumers/ Hunters	Likely	Medium	
Brucellosis	Whole Country	Infrequent	Low	
HPAI	Whole Country	Infrequent	High	
LPAI	Whole Country	Infrequent	High	
Swine Flu	Whole Country	Infrequent	Medium/High	
JE	Southern Region	Infrequent	Medium	
Bovine Tuberculosis	Whole country, no cases detected	Infrequent	Medium	
Q Fever	South East Asia, limited to animal handlers	Infrequent	Medium	
Toxoplasmosis	Whole country, pregnant women	Infrequent	Medium	

Table 7: Risk Analysis of food safety:

Food Safety Risk	Specific Location/Setting	Likelihood	Impact	Public Health Risk
Foodborne Illness	Whole country	Moderate	Medium	• Malnutrition • Severe diarrhoea or debilitating infections including meningitis • Acute poisoning or long-term diseases, such as cancer • long-lasting disability and death
Food adulteration	Whole country, particularly urban areas	Moderate	Medium	
Antibiotic/hormonal residue	Whole country	Moderate	Medium/High	
Aflatoxin poisoning	Whole country	Infrequent	High	
Pesticide/herbicide/or fertilizer contamination of food	Whole country	Likely (imported goods)	High	
Salmonellosis	Whole country	Moderate	Medium	
Staphylococcus. aureus	Whole country	Moderate	Medium	
Listeria monocytogens	Whole country	Infrequent	Medium	
Heavy metals	Whole country	Infrequent	High	
E. coli	Whole country	Moderate	Medium	
Contamination from unsafe handling of food	Whole country, institutions	Moderate	Medium/High	
Food Preservatives and additives (imported foods)	Whole country	Moderate (imported goods)	High	
C botulinum	Whole country	Infrequent	High	
Trichenella spiralis	Whole country	Moderate	Medium	
T solium & T saginata	Whole country	Moderate	Low/medium	
Alcohol	Whole country	Moderate/Likely	Medium/High	

Table 8: Risk Analysis of Chemical events:

Chemical Event Risk	Specific Location/Setting	Likelihood	Impact	Public Health Risk
Lead poisoning	Industrial areas, laboratories, imported products, foods	Infrequent	Medium	• Stress and anxiety • Deaths and illness • Societal and economic costs • Environmental damage
Mercury poisoning	Health facilities, Laboratories Black smith, Industrial areas	Infrequent	Medium	
Gas poisoning	Mining areas, industrial areas	Infrequent	Medium/High	
Chlorine poisoning	Swimming pools, water treatment	Infrequent	Low/Medium	
Acid burns	Laboratories and workshops, industrial areas	Moderate	Low/Medium	
Pesticide/herbicide/or fertilizer poisoning	Farmers and chemical industries	Moderate	Low/Medium	
Deliberate event	Whole country	Infrequent	High	
Industrial pollutants	Whole country	Moderate	Medium/High	
Foreign industrial accidents	Border areas	Moderate	Medium/High	
Asbestos	Whole country, Through the packing materials and used in houses,	Infrequent	Low/Medium	
Arsenic	Whole country/region patient exposure	Infrequent	Low/Medium	
Cadmium	Pasakha Ferro alloy factory in Bhutan-likely chance	Infrequent	Low/Medium	
Ethilium bromide	Laboratories	Infrequent	Low/Medium	

Table 9: Risk Analysis of Radiological events:

Radiological Event Risk	Specific Location/Setting	Likelihood (Infrequent, Moderate, Likely)	Impact (High, Medium, Low)	Public Health Risk
Radiation injuries	Hospitals, airports, recycled materials	Infrequent	High	• Lethal at high doses • Mutagenic • Carcinogens •
Bomb blast	Whole country (Foreign detonation, local effects)	Infrequent	High	
Diagnostic/Therapy radiation	Health facilities (accidental overdose)	Infrequent	High	
Radiation	Factories from Pasakha (Bhutan)	Infrequent	High	
Nuclear Power Plant Accident	Countries in Region, with local impact	Infrequent	High	

Courtesy of Table 5-9: CDD, DoPH, MoH

CHAPTER 3: PREPAREDNESS AND RESPONSES

3.1 Preparedness

Recent events have demonstrated that no one is exempted from a disaster situation and people everywhere need to be prepared. Therefore, preparedness encompasses all those measures taken before a disaster and emergency events which are aimed at minimizing loss of life, disruption of critical services and damage when the disaster occurs.

Preparedness increases the community's ability to respond effectively to hazard impacts and to recover quickly from the long-term effects. It involves planning, training and education, resource management, and exercising. It builds better coordination and cooperation between agencies within the community.

Thus, preparedness is a protective process which enables governments, communities and individuals to respond rapidly to disaster situation and cope with them effectively. Preparedness includes following activities which are being implemented and are going to be implemented:

3.1.1 Health Emergency Operation Centre (HEOC)

HEOC is a central command, control and communication facility for the effective administration of emergency response and disaster management in any emergency situation. It will be managed and operated by Emergency Medical Services Division under the directives of Health Emergency Management Committee (HEMC) during the times of emergencies and disasters. HEOC will host necessary resources and data for effective coordination and response during emergencies. (See Chapter 4 of this Plan, and "Guideline & SOP for HEOC" for more details.)

3.1.2 Seismic Vulnerability Assessment of Hospitals and Health facilities

The hospitals and other health facilities in Bhutan faces high earthquake hazard combined with a geographic isolation that will make post-earthquake relief and medical supplies difficult. Thus it is important to assess the structural and non-structural earthquake vulnerability

of all the hospitals and health facilities. The assessment is intended to provide an overview of the hospital's seismic vulnerabilities, and to recommend actions to improve the hospital's ability to deliver medical care following a major earthquake.

WHO's Regional Office for Southeast Asia (SEARO), MoH, DDM and GeoHazards International (GHI) agreed that the hospitals will have an essential role following a damaging earthquake and that an assessment of the hospital's current level of earthquake safety and preparedness was necessary. So GHI performed an initial seismic vulnerability assessment of JDWNRH from May to July in 2012. Subsequently GHI evaluated Trashiyangtse District Hospital and Trashigang District Hospital from August to December 2013.

EMSD has finalized and printed the "Guideline on Vulnerability Assessment of Health Facilities" and it will be used to conduct seismic vulnerability assessment of remaining hospitals and other facilities. It will be done as per the availability of budget and technical support. This activity shall be considered as one of the main priorities for EMSD.

3.1.3 Emergency Medical Supplies Buffer Stores

At the moment 30% buffer stock is kept for essential drugs, 10% for vital drugs and 10% for essential consumables at Medical Stores Distribution Division, Phuentsholing for the use during emergencies. Further Ministry has identified 3 medical buffer stores in Paro, Gelephu and Monger considering the feasibility of transportation and suitable location.

3.1.4 Field Hospitals

Ministry of Health will have field hospitals in three regional referral hospitals in Thimphu, Gelephu and Mongar. Field hospitals will be used to substitute or complement medical systems in the aftermath of sudden-impact events that produce disasters for three distinct purposes:

a. Provide early emergency medical care (including Advanced Trauma Life Support-ATLS). This period lasts only up to 48 hours following the onset of an event.

b. Provide follow-up care for trauma cases, emergencies, routine health care and routine emergencies (from day 3 to 15 days).
c. Act as a temporary facility to substitute damaged installations, pending final repair or reconstruction (usually from the second month to two years or more).

The following are some essential requirements to ensure that it benefits the affected population:

a. Be operational on site within 24 hours after the impact of disaster
b. Be entirely self-sufficient
c. Offer comparable or higher standards of medical care than were available in the affected country prior to the precipitating event
d. Be familiar with the health situation and culture of the affected country (medical aid to other countries)

3.1.5 Emergency Medical and Trauma Centers

Emergency Medical and Trauma Center is a specialized and organized health facility distinguished by the immediate availability of health personnel, equipment and capabilities on a 24x7 basis to care for critically injured patients and other medical emergencies. Ten district hospitals will be established at the strategic locations as the Emergency Medical and Trauma centers to adequately respond to the obstetrical and surgical emergencies and trauma related injuries. These trauma centers are/will be ranked from Level I (comprehensive service) to Level III (limited-care) depending on the availability of services and specialists in a trauma center. List of these facilities are given in table below:

Table 10: List of Emergency Medical and Trauma Centers

Sl. No.	Name of Center	Bed strength	Region	Catchment Dzongkhags
1	Dewathang hospital	40	Eastern	Samdrup Jongkhar, Pemagatshel and lower part of Trashigang
2	Trashigang hospital	40		Trashigang and Trashiyangtse
3	Riserboo hospital*	20		Southern Trashigang and Pemagatshel
4	Trongsa hospital	20	Central	Trongsa and Bumthang
5	Yebilaptsa hospital	40		Zhemgang Dzongkhag
6	Damphu hospital	40		Tsirang and Dagana
7	Wangdue hospital	40	Western	Wangdue Phodrang, Punakha & Gasa
8	Phuentsholing hospital	50		Chhukha
9	Samtse hospital	40		Samtse
10	Gedu hospital	20		Chhukha

For more details on Emergency Medical and Trauma Centers, refer *"Guideline for establishing Emergency Medical and Trauma Centers."*

3.1.6 Hazard Monitoring and Early Warning Systems

This refers to systems and mechanisms for monitoring and anticipating hazard events and communicating early warnings to ensure rapid response actions by response organizations and at-risk communities.

a. Royal Centre for Disease Control (RCDC)

It is a centre of excellence on health and disease prevention and control in the country, with the facility of bio-safety level-3 laboratory. The centre shall generate reliable scientific information on health and diseases to ensure well-informed policies and promote effective and sustainable public health interventions.

Surveillance and reporting mechanism have been developed in the form of National Early Warning, Alert & Response Surveillance (NEWARS) to be able to notify Public Health Events of International Concern as required by the IHR (2005).

b. Seismology Division

Seismology Division under Department of Geology and Mines, Ministry of Economic affairs is responsible for setting up the seismic monitoring network to improve understanding of earthquake

processes and impacts. Further the preparation of seismic hazard & risk maps will be also done by Seismology Division.

c. Department of Hydromet Services (DHMS)

The DHMS provide early warnings and alerts of extreme events including Glacier Lake outburst Floods (GLOF). In addition DHMS will provide forecasts and warnings of floods and related information within the country. Currently DHMS operates 25 hydrological stations, 15 Flood Warning Stations, 20 Agro-meteorological stations and 76 Climatology stations and a GLOF Early warning system in the Punakha-Wangdi valley.

3.1.7 Capacity building

Capacity building here refers to various training and public education measures that are designed to provide organizations, staffs, first responders, volunteers and at-risk community members with the knowledge and skills to prepare and respond effectively to disasters and health emergencies. Thus capacity building can be a key to minimizing the impact of disasters and to ensure a robust and resilient response system.

The capacity of the community to deal with the effects of the disasters and emergencies can be improved by training first responders or volunteers in first aid. First responders should be trained in providing pre-hospital care for anyone in a medical emergency. First responders shall include police, Desuups, fire fighters, EMTs, tourist guides, among others.

In health care facilities' setting, health workers including doctors and nurse shall be trained and updated on PALS, ATLS and ACLS. At Ministry level and Dzongkhag level, program personnel and district health officers should be trained in Emergency Management. In addition, integrating a Health Emergency Management course in any pre-service training for the new civil servants should be mandated in order to be more equipped with skills and knowledge during the times of emergencies.

3.1.8 Mock Drill Exercises and Simulations

Exercising is the culminating component of response preparedness. Exercising brings the skills, knowledge, functions and systems together and applies them against event scenarios. This provides the closest thing to an event to evaluate the state of response preparedness. (Refer Guideline for Conducting Emergency and Disaster Simulation and Drills for more details)

Exercises are generally classified as:

- Tabletop: discussions and problem solving in an open forum.
- Paper: event and response actions simulated using paper as the form to communicate and take action.
- Communications (electronic): event and response actions are simulated and all information flow is conducted using the communications systems which would normally be used to facilitate information flow.
- Practical or field exercise: events are physically simulated. Responses are carried out using the resources that would be employed during a "real" emergency or disaster.

3.1.9 Risk Reductions

Risk reduction is the concept and practice of reducing disaster risks through systematic efforts to analyze and reduce the causal factors of disasters. Reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness and early warning for adverse events are all examples of risk reduction of emergencies and disaster. Risk reduction aims to reduce the damage caused by natural hazards like earthquakes, floods, droughts and cyclones, through an ethic of prevention. Risk assessment on natural disasters, epidemics, chemical, biological and radiological will be carried out in collaboration with different relevant stakeholders.

3.1.10 Risk Communication

Risk communication plays a key role in responding to public health emergencies and disasters. The systems and processes within MoH and among relevant sector/stakeholders for an effective risk communication will be established. Different communication approaches will be identified to reach different target population

including vulnerable and at risk populations. Risk communication teams will coordinate and implement the activities in consultation and guidance of the associated response plan.

3.2 Responses

The health sector focus on following types of responses:

3.2.1 Rapid Health Assessment

When disasters occur, the health sector will carry out rapid field assessment within 24 hours of reported incidents. The rapid health assessment format and guideline will be distributed throughout the country by EMSD. It is expected to facilitate the rapid field assessment aftermath of any disasters.

3.2.2 Medical Surge Capacity

The ability to respond effectively to events like disasters and epidemics producing a massive influx of patients that disrupt daily operations requires surge capacity. Surge capacity is the ability to manage a sudden, unexpected increase in patient volume that would otherwise severely challenge or exceed the current capacity of the healthcare system" (Hick et al. 2004)

Key components of surge capacity include the four S's: 'staff,' 'stuff,' 'structure,' and 'systems.' Staff refers to health personnel, stuff consists of supplies and equipment, structure refers to facilities, and systems include integrated management policies and processes.

In order to deploy health personnel and mobilise supplies effectively and efficiently during the times of emergencies and disasters, MoH has identified and clustered 20 districts into 3 hubs (as shown in the figure no 1). The 3 hubs will function as follows:

a. Surge capacity to respond in 3 regions i.e. Western, Eastern and Central Region.
b. The National Referral Hospital and Regional Referral Hospitals will serve as the hubs for medical emergency response.
c. Health facilities in the Dzongkhags of respective region will form a cluster under each of the hub.

d. Hubs will have the team of trained health workers and field hospitals as well as stock pile of medical supplies. Health personnel can be deployed from the districts to the site of the disaster within each cluster.

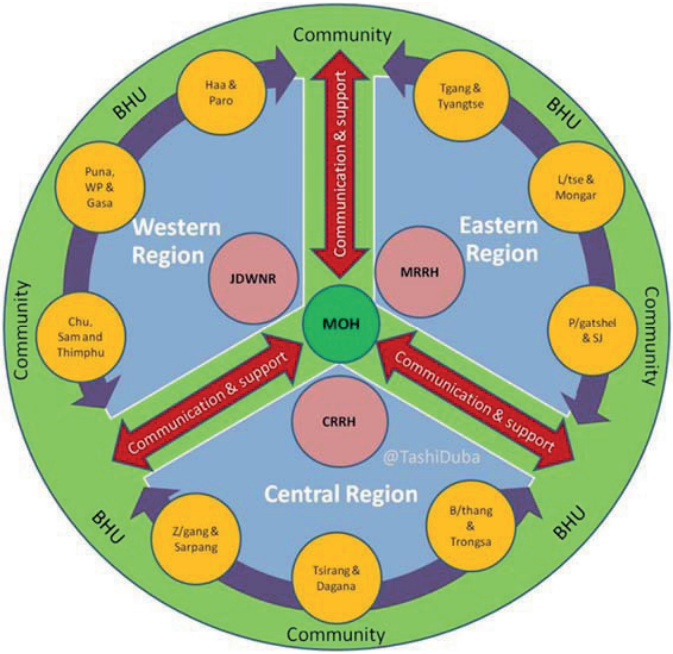


Figure 1 Mechanism of Medical Surge System

3.2.3 Mass Casualty Management

Mass casualties following disasters and major incidents are often characterized by a quantity, severity, and diversity of injuries and other patients that can rapidly overwhelm the ability of local medical resources to deliver comprehensive and definitive medical care. Casualties associated with natural disasters, particularly rapid-onset disasters, are overwhelmingly due to:

a. blunt trauma.
b. crush-related injuries.
c. drowning.
d. mental health issues.

Most people affected by natural disasters DO NOT DIE and many

deaths and long term consequences for casualties are preventable with timely and appropriate intervention. Therefore it is important to have an effective mass casualty incident management.

Mass Casualty Incident Management involves the following areas:

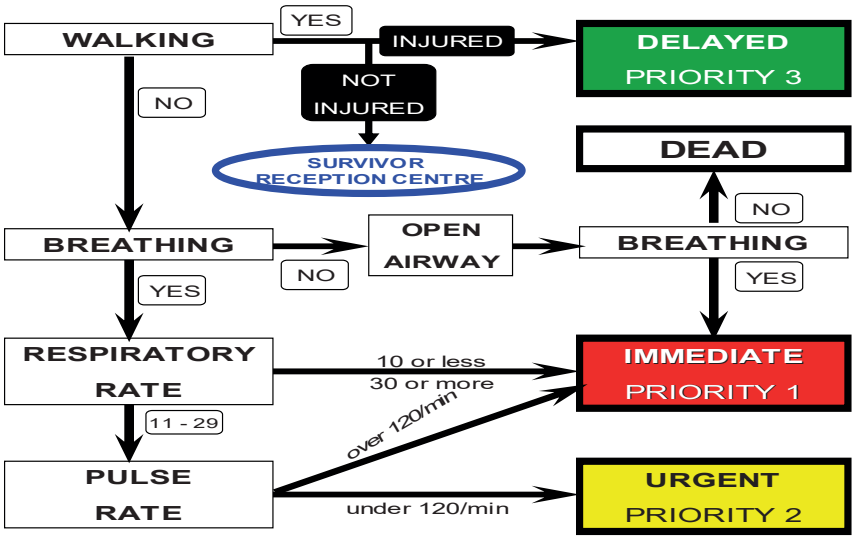
a. Establishment of field command post nearest to the emergency site from where all the involved agencies operates in close coordination.

b. Applying principles of medical and non-medical triage.

c. Establish Advance Medical Post (AMP) which includes:
   - Medical Evacuation Centre (MEC)
   - Dispatching of the patients
   - Network of receiving hospitals
   - Transportation of injured/ill patients
   - Medical life-saving procedures

d. Principles of color tagging

Figure 2: Triaging Procedures in Mass Casualty Management (MCM



Capillary refill test (CRT) is an alternative to pulse rate, but is unreliable in the cold or dark: when used, a CRT >2 secs indicates **PRIORITY 1**

Keep a record of the NUMBER and PRIORITY of casualties you triage
Pass this to the AMBULANCE COMMANDER on completion

Color Tag	On Scene		Hospital Care	
	Priority for evacuation	Medical needs	Priority	Conditions
Red	1st	Immediate care	1st	Life-threatening
Yellow	2nd	Need care, injuries not life threatening	2nd	Urgent
Green	3rd	Minor injuries	3rd	Delayed
Black	Not a priority	Dead	Last	Dead

Health Services in Mass Casualty Management includes following:

a. Casualty management (first aid, triage, transport, pre-hospital care, in-patient care, out-patient care).
b. Communicable disease control (surveillance, tracking, treatment, prophylaxis, isolation and quarantine).
c. Continuity of delivery of critical services.
d. Management of the dead.(in preservation and
e. Management of information (public information; support activities; health info system).
f. Mental health.
g. Environmental health.

Figure no 4 and 5 illustrate the mass casualty management system at District/Hopital and geog level respectively. Refer "SOP for Mass Casualty Incident Management" for more details on mass casualty management.

Figure 4: Mass Casualty management system at District/Hospital level

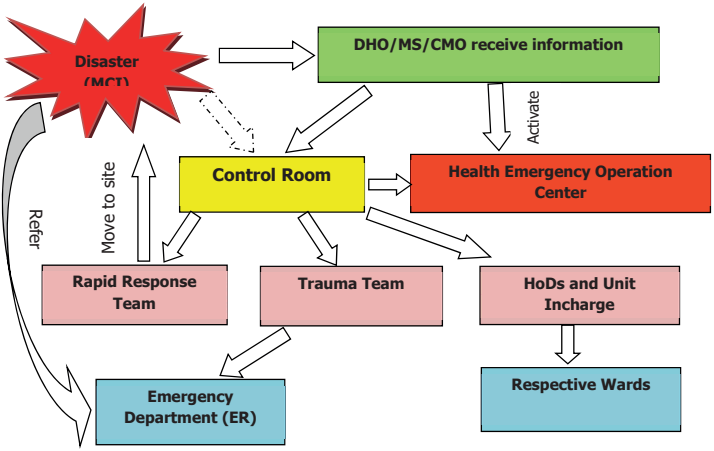
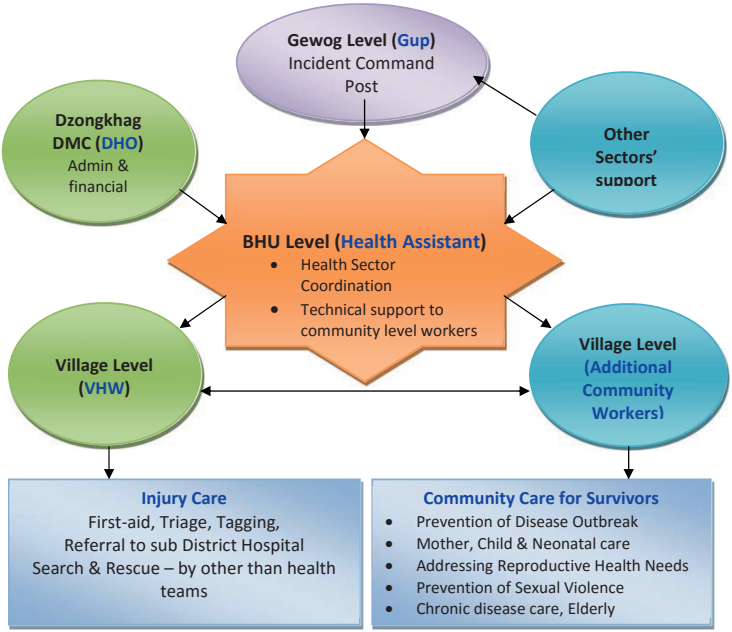


Figure 5: Incident Management System at Gewog level



3.2.4 Ambulance Services

The primary role of all ambulance services is to provide timely delivery of emergency medical services, thus improving accessibility of health care services. At the moment, country provides the ambulances services through 130 land ambulances and 2 helicopters around the country. Health Help Centre shall ensure the effective communication and dispatch of land ambulances through toll free number 112. (Refer "Ambulance Service Guideline" for more details on ambulance service). Further the helicopter services shall be availed for an evacuation of critically ill or injured patients as per the criteria set in the "Guideline on use of Helicopter for medical Emergencies."

3.2.5 Sphere Project in Heath Sector

The Sphere Project's Humanitarian Charter Minimum Standards in Disaster Response is an internationally recognised guideline that provide useful guidelines for provision of humanitarian assistance in health emergencies and disasters. The following box summarise the Sphere Project's key recommendations regarding the health sector's response in health emergencies and disasters:

Sphere Project regarding the Health Response

1. **Analysis**
   a) Initial assessment – The initial assessment determines as accurately as possible the health effects of a disaster, identifies the health needs and establishes priorities for health programming.
   b) Data collection – The health information system regularly collects relevant data on population, diseases, injuries, environmental conditions and health services in a standardised format in order to detect major health problems.
   c) Data review – The health information system data, and changes in the disaster affected population, are regularly reviewed and analysed for decision-making and appropriate response.
   d) Monitoring and evaluation – Data collected is used to evaluate the effectiveness of interventions in controlling diseases and in preserving health.
   e) Participation – The disaster-affected population has the opportunity to participate in the design and implementation of the assistance programme.

2. **Control of Communicable Diseases**
   a) Monitoring – The occurrence of communicable disease is monitored.
   b) Investigation and control – Diseases of epidemic potential are investigated and controlled according to internationally accepted norms and standards
   c) Measles Control – Measles vaccination campaigns should be assigned the highest priority at the earliest time in emergency situations

3. **Health Care Services**
   a) Appropriate medical care – Emergency health care for disaster-affected populations is based on an initial assessment and data from an ongoing health information system and serves to reduce excess mortality and morbidity through appropriate medical care.
   b) Reduction of morbidity and mortality – Health care in emergencies follows primary health care principles and targets health problems that cause excess morbidity and mortality.

4. **Human Resource Capacity and Training**
   a) Competence – Health interventions are implemented by staff who have appropriate qualifications and experience for the duties involved and who are adequately managed and supported.
   b) Support – Members of the disaster affected population receive support to enable them to adjust to their new environment and to make optimal use of the assistance provided to them
   c) Local capacity – Local capacity and skills are used and enhanced by emergency health interventions.

3.3 *Emergency Preparedness And Response Action Plan*

Table 11: Emergency Preparedness Action at Community Level

Activities	Detailed Intervention Areas	Resources Required	Action
		What	By Whom
Identify the disaster risk	▪ Training on identifying risk, community volunteers	Training protocol, Hazard map	Village volunteers/ Tshogpa/Mangmi /Gup/HA
Community Evacuation Plan	▪ Identification of safe location as well as shelter for vulnerable communities with adequate water, sanitation, waste disposal facilities and community volunteer	Emergency equipment, shovel, towels, tents and other tools	Village volunteers/ Tshogpa/ Mangmi/Gup
Security plan for vulnerable community	**Security and Evacuation Plan is to be developed by the village-chiefs (Gups) in consultation with Disaster Management Departmental officials. As such, this operation is beyond the competency of Ministry of Health**		
Building human resource capacity for communities	▪ Arrangement for providing training of communities health group, VHW in the areas of; - Search, - First aid services - Health promotion - Antenatal care, MCH reproductive health, against sexual violence, food & nutrition (minimum initial service package)	- Training & treatment protocols, guidelines, training materials. - Advocacy materials - Helmets/gloves/gumboots - /topes/torches - Human Resources - Drugs	EMSD, DoPH
Mobilization of necessary medical supplies and logistic support	▪ Prepare a national inventory of supplies required. ▪ Strengthening existing medical and other supply management system to meet regular emergencies	Guidelines/instructions and standard for Medical supply inventory, storage, and replenishment arrangements	DoMSHI, DMS
Strengthening of existing referral systems from community to dzongkhag/ regional / national hospitals.	▪ Establish an action plan to adopt emergency referral system in line with ambulance mobilization guidelines and use HHC as referral coordination centers including back-up support.	Guidelines/instructions and standard for streamlining referral system while addressing day-to-day illnesses, road-side/home accidents etc in terms of medical evacuation both by road and air.	EMSD/HHC, DMS

Establish line of communication with nearest BHUs and hospitals	▪ Link up with nearest BHUs and hospitals for back up services if emergencies and disaster is beyond the coping capacity of the community/BHU.	Support from DHO	
Assess BHU safety level	▪ Training on BHU vulnerability ▪ Carry out BHU vulnerability assessment ▪ Act on the findings of the assessment	Guidelines on vulnerability assessment	HA

Table 12: Emergency Response Action at Community level

Activities	Detailed Areas of Intervention	Resources What	Actions By whom
Immediate Notification (reporting)	▪ Provide first aid ▪ Report to the nearest health facilities ▪ Give an accurate on-scene report ▪ Initiate triage and report to dispatch ▪ Verify rumors	▪ Walkie-talkies ▪ Mobile phones ▪ Standard reporting format/situation reporting format	VHW/HA
Health need assessment	▪ Perform rapid health need assessment ▪ Assess the disaster magnitude, numbers affected, location and urgent requirement of the casualties	▪ Training on rapid health need assessment ▪ Standard reporting form	HA
Resources	▪ Mobilize additional human resources to: ▪ Provide first aid, transport, initiate traffic control and provide victim protection ▪ Mobilize additional first aid equipment and Coordinate transportation	▪ Need based additional human resources and fund ▪ Ambulance ▪ Color tags ▪ Stretcher, splints, first aid kits ▪ Ambulance mobilization guidelines	
First-aid at Site	▪ Provide first aid ▪ Stabilized the patient	▪ Stretchers ▪ Village volontiers	VHW/HA

	▪ Triaging and color tagging ▪ Sympathy & Reassurances. ▪ If cold, facilitate to give them blankets ▪ Priority treatment to children, women, elderly & handicapped. ▪ Listing of injured and dead if brought. ▪ Use taps, cones, flags to mark areas	▪ Color tag ▪ Standard First aid kits ▪ Other supplies as required ▪ Technical protocols for treatment at site. ▪ Supply of Training and advocacy materials. ▪ Standard first Aid Kits	
Triage	Sort victims according to their injuries and color tagged – can be treated at site, can wait for transportation, needs immediate referrals & transportation and Dead	▪ Color tags ▪ Training ▪ Technical protocols for Tagging at site, dzongkhag, regional and national hospitals. ▪ Supply of Training and advocacy materials ▪ Referral protocols	First responder/HA/RRT
Treatment at BHU	▪ Stabilize those who are injured/traumatized ▪ Once Triage is done, move patients to the proper treatment area ▪ Use taps, cones, flags, to mark areas ▪ Control access to areas	▪ Drugs. ▪ Medical equipment ▪ Referral protocols ▪ Management protocol ▪ Training and advocacy materials	HA
Transportation of casualties to designated hospitals	▪ Ambulances report to staging area ▪ Transportation Officer assigns patients to ambulances ▪ Broadcast the "All Immediate Transported" ▪ Hospitals to be notified. ▪ Advice on en-route care/capability of the hospital ▪ Activate disaster plan at hospital level ▪ Update control area/EMS dispatch as status changes	▪ Training. ▪ Ambulance ▪ Communication equipment ▪ Standard technical protocols for Tagging at site and in hospitals. ▪ Referral protocol ▪ Patient management protocol	HHC

	▪ After arriving hospital, perform re-triage and provide medical care as per need. At all stages of the hospital's response activities, patient management systems, and procedures should be documented		
Establish field hospital and command post	▪ Identify and area for establishment of command post ▪ Select an areas or zones to be used for first-level classification (triaging) and do tagging of the casualties prior to their transfer medical care center ▪ Assign crews specific tasks ▪ Initiate assessment and treatment	▪ SOP delineating function of dzongkhag and MoH emergency control rooms. ▪ Job action sheet	
Search & Rescue Search the victims who may be trapped under the ruins of buildings that have collapsed, buried under mud or landslides, cut off by floods or the blockage of communication routes	**Search and Rescue are specialized areas. Public Health personnel are not trained for search & rescue. As such, these operations are beyond the competency of Ministry of Health**		
Dealing with the dead	When the disaster results in a large number of deaths, the community should organize: ▪ Transport of the dead bodies, ▪ Place to put them before their cremation ▪ Certification/identification of dead in hospital	▪ Form for listing of deaths, injured and referral support and drugs for preserving dead bodies ▪ Technical protocol for management of dead bodies at site, dzongkhag, regional and national hospitals ▪ Facilitate arranging Forensic Specialist/Assistant Forensic Specialist/ MO to the affected sites ▪ Training and advocacy materials.	BHU/Hospital

Table 13: Emergency Preparedness Action for Displaced/Isolated Population

Activities	Detailed Intervention Areas	Resource Required What	Actions By Whom
Disease surveillance and early warning system	▪ Early warning system for disease outbreak ▪ System of outbreak investigation and rumor investigation ▪ Weekly/monthly epidemiological analysis ▪ Early warning for disease outbreak. ▪ Listing of notifiable diseases	▪ Technical protocols for early warning against potential disease outbreaks at site, dzongkhag, regional and national levels ▪ Disease management protocol ▪ Notifiable disease emergency reporting forms. ▪ Supply of training and advocacy materials. ▪ Stationery and forms	DoPH, RCDC
Disease prevention	▪ System of organizing active disease surveillance on a short notice. ▪ Mechanism to expand the routine immunization functions within a short period. ▪ Mechanism to quickly mobilize the emergency immunization in the community	▪ Technical protocols for undertaking preventive public health measures at Sites ▪ Investigation team ▪ Vaccine and immunization facilities ▪ Fund ▪ Spraying machine, insecticides, bed-nets, ▪ Training and advocacy materials.	DoPH, RCDC, VBCP, HPD
Disease Containment	▪ Mechanism to expand the medical treatment facilities on a short notice. ▪ Availability of functional patients' isolation facility on a short notice. ▪ Existing arrangements for expanding the medication facilities at the community level. ▪ Addressing day-to-day illnesses. ▪ Meeting the road-side/home accidents – First-aid and referral arrangements.	▪ Technical protocols for Disease containment in case of any outbreak at the affected site, dzongkhag, regional and national levels ▪ Facility provision for patient isolation, first aid equipment, format for medical supply inventory, space for medical	DMS, DoPH, RCDC

	▪ Medical supply inventory, storage, replenishment arrangements	supply storage, Prescriptions and other forms ▪ Training and advocacy materials.	
Health promotion	▪ Distribute advocacy materials to the affected sites. ▪ Carry out advocacy on health risk and health services	▪ Technical protocols for undertaking health promotion activities in the vulnerable/high-risk BHU, at site dzongkhag, regional and national levels. ▪ Training and advocacy materials	DoPH (HPD)

Table 14: Emergency Response Action for Displaced/Isolated Population

Activities	Detailed Intervention Areas	Resources Required What	Action By Whom
Disease outbreak response	▪ Sentinel site of early warning system of epidemic prone diseases, outbreak response (NEWARS) ▪ Diagnosis and treatment of communicable disease. ▪ Refer suspected TB cases	▪ Technical protocols for Early Warning against potential disease outbreaks at site dzongkhag, regional and national levels. ▪ Disease management protocol ▪ Training and advocacy materials. ▪ Vector control (IEC + impregnated bed nets + in/out door ▪ IEC on locally priority diseases (e.g. TB self-referral, malaria self-referral, others)	DoPH, RCDC
Child health:	▪ EPI: routine immunization against all national target diseases and adequate cold chain in place ▪ Under 5 clinic conducted by IMNCI-trained health staff	▪ Technical protocols for the identified "Child-health" activities at site, BHU, dzongkhag, regional and national levels. ▪ IMNCIIEC materials focus on child health plus active case findings ▪ Basic drugs	DoPH, ARI Program, VPDP Program

	▪ Home-based treatment of: fever/malaria, ARI/pneumonia, dehydration due to acute diarrhea ▪ Community mobilization for and support to mass vaccination campaigns and/or mass drug administration/treatments	▪ Transportation, ▪ Additional HR, vaccines, drugs ▪ Vaccines equipment ▪ Drugs/cold chain/stationeries ▪ Weighing scale/ tape/stationeries ▪ Referral support	
Nutrition	▪ Screening of malnutrition/severe malnutrition o Weight& age o MUAC ▪ Follow up of children enrolled in supplementary/therapeutic feeding (trace defaulters) ▪ Community therapeutic care of severe malnutrition ▪ Management of malnutrition (moderate and severe) ▪ Participate with the department; agencies involved with "Nutrition and Food Sector" activities.	▪ Technical protocols for the identified "Nutrition" activities at site, BHU, dzongkhag, regional and national levels. ▪ Training. ▪ Reporting format. ▪ MCH handbook. ▪ Weighing scale ▪ Register ▪ Referral support ▪ Supply of Training and advocacy materials	DoPH, Nutrition Program
STI & HIV/AIDS	▪ Community leaders advocacy on STI/ HIV ▪ IEC on prevention of STI/HIV infections and behavioral change communication ▪ Ensure access to free condoms ▪ Syndromic management of sexually transmitted infections ▪ Standard precautions: disposable needles & syringes, safety sharp disposal containers, Personal Protective Equipment (PPE), sterilizer ▪ Availability of free condoms ▪ VCT for HIV ▪ Antiretroviral treatment (ART	▪ Technical protocols for the identified "STI & HIV/AIDS" related activities at site, BHU, dzongkhag, regional and national levels ▪ STI & HIV/AIDS management protocol ▪ GMC/Scale/child handbook ▪ Fund ▪ IEC materials, fund, manpower ▪ Supply of condoms ▪ Drugs and other required supply ▪ Safety box, ▪ PPE, sterilizer, autoclave ▪ Condom, Box	DoPH, NACP Program

	▪ Participate with the department, agencies involved with "STI & HIV/AIDS" activities.	▪ Counseling skills & Knowledge ▪ Safe delivery kits/IEC material ▪ Drugs/contraceptive ▪ Drugs, IEC materials ▪ Resuscitation set, heating, O2, Emergency drugs/training ▪ Delivery set ▪ Drugs/Refresher course/staff/equipment/guidelines ▪ Training and advocacy materials.	
Maternal & newborn health	▪ Clean home delivery, including distribution of clean delivery kits to visibly pregnant women, IEC and behavioral change communication, knowledge of danger signs and where/when to go for help, support breast feeding ▪ Family planning ▪ Antenatal care: assess pregnancy, birth and plan respond to problems (observed and/or reported), advise/counsel on nutrition & breastfeeding, self-care and family planning, preventive treatment(s) as appropriate ▪ Skilled care during childbirth for clean and safe normal delivery ▪ Essential newborn care: basic newborn resuscitation + warmth (recommended method: Kangaroo Mother Care - KMC) + eye prophylaxis + clean cord care + early and exclusive breast feeding 24/24 & 7/7 ▪ Basic emergency obstetric care (BEmOC): prenatal antibiotics + oxytocic	▪ Technical protocols for the identified "Maternal & Newborn" activities at site, BHU, dzongkhag, regional and national levels. ▪ Training and advocacy materials. ▪ Safe delivery kits/IEC material ▪ Drugs/contraceptive ▪ Resuscitation set, heating, O2, Emergency drugs/training ▪ Delivery set ▪ Drugs/Refresher course/staff/equipment/guidelines ▪ Drugs/Refresher course/staff/equipment/guideline ▪ Referral support	DoPH, RH Program

	/ anti-convulsions drugs + manual removal of placenta + removal of retained products + assisted vaginal delivery 24/24 & 7/7 ▪ Post-partum care: examination of mother and newborn (up to 6 weeks), respond to observed signs, support breast feeding, promote family planning ▪ Comprehensive abortion care: Management of post abortion care, uterine evacuation using MVA or medical methods, antibiotic prophylaxis, treatment of abortion complications, counseling for abortion and post-abortion contraception ▪ Participate with the department/ agencies involved with "Maternal & Newborn" related activities. ▪ Develop Management protocol		
Sexual violence	▪ Clinical management of rape survivors (including psychological support) ▪ Emergency contraception ▪ Participate with Police and other departments, involved with "Sexual Violence related activities".	▪ Technical protocols for the identified "Sexual Violence" activities at site, BHU, dzongkhag, regional and national levels ▪ Management protocol for rape survivors ▪ Reporting and investigation team ▪ Referral support ▪ EC pills ▪ Supply of Training and advocacy materials.	DoPH (RH, Adolescent and Mental Health Program, HPD)
Physically handicapped, Psycho-social & mental health	▪ Promotion of self-care, provision of basic health care and psychosocial support, identification and referrals of severe cases for treatment, provision of needed follow-up to people discharged by facility-based	▪ Technical protocols for the identified "Physically handicapped, psycho-social & mental health" activities at site, BHU, dzongkhag, regional and national levels.	DoPH (Mental Health, CBRP)

	health and social services for people with chronic health conditions, disabilities and mental health problems ▪ Mental health care: support of acute distress and anxiety, front line management of severe and common mental disorders ▪ Participate with the department, agencies involved with "physically handicapped, Psychosocial & mental health" activities. • Develop Management protocol	▪ Training and advocacy materials. ▪ Drugs ▪ Diagnostic kits ▪ Referral support ▪ General Psychosocial Intervention ▪ Specific Psychosocial intervention ▪ Identification of mental problems and referral	
Non communicable diseases, injuries	▪ Injury care and mass casualty management ▪ Hypertension treatment ▪ Diabetes treatment ▪ Participate with the department, agencies involved with "Non-communicable diseases & Injuries related Sectors" activities. ▪ Develop management protocol	▪ Technical protocols for the identified "Non-communicable diseases &injuries related" activities at site, BHU, dzongkhag, regional and national levels ▪ Training and advocacy materials ▪ Drugs ▪ Ambulance ▪ Communication support ▪ Additional manpower support ▪ Drugs ▪ Basic equipment like BP instrument etc. ▪ Referral support	DoPH (NCD, CBR)
Environmental health (Water + sanitation + hygiene)	▪ Safe waste disposal ▪ Clean drinking water supply ▪ Proper sanitation ▪ IEC on hygiene promotion ▪ Community mobilization for cleanup campaigns and/or other sanitation activities ▪ Design standards for toilet construction and minimum numbers of toilets at sites)	▪ Technical protocols for the identified "Environmental heath (Water + Sanitation + Hygiene)" activities at site, BHU, dzongkhag, regional and national levels. ▪ Minimum water supply quantity and quality Standards ▪ Environmental health management protocol	Environmental Program, PHED

	▪ Participate with the department, agencies involved with "Environmental heath (Water + Sanitation + Hygiene)" related activities.	▪ Training and advocacy materials. ▪ Supply of Waste disposal pit/buckets (3 colors) • Manpower support • Broom/detergents/dust collector/sanitary gloves • IEC materials/water testing kits • Close Linkages with dzongkhag water, sanitation and hygiene team • Testing kits • WCT training • CDH • Field Latrine equipment Subsidized bins • Waste disposal pit/buckets (3 colors) • Manpower • Broom/detergents/dust collector/sanitary gloves • IEC materials/water testing kits Close Linkages with local water, sanitation and hygiene team	

Table 15: Emergency Preparedness Actions at Dzongkhag Level

Activities	Detailed Intervention Areas	Resources Required What	Actions By Whom
Hazard Mapping and Vulnerability Analysis	▪ Prepare dzongkhag -wise national health related emergency map – BHU wise – hazard zoning and epidemiological profile based on hazards	- Hazard assessment form - Technical capacity on hazard assessment - Map of health facilities	EMSD, DHO

	- Earthquake - Flood/GLOF - Landslides - Fire - Wind-Storm - Accident - A Based on disease epidemiology - Based on availability Health facilities		
Developing a dzongkhag Disaster Contingency Plan	▪ Develop hazard assessment form ▪ Develop Contingency planning process format	- Hazard Profile - Hazard assessment form - Form for contingency planning - Budget, equipment, drugs	EMSD, DHO
Establishment of Emergency Control Room in DHO office	▪ Lay down Emergency communication guidelines and procedure ▪ Develop reporting format	- Identify space for EC room - Computer with printer, fax - Reporting format - Lay down Emergency communication guidelines and procedure	EMSD, DHO
Health Sector Administrative and financial arrangement	• Decentralized administrative and financial authorities • Advance Financial need assessment for emergency preparedness and response o Executive order. o Responsibility identification. o Monitoring process. o Emergency funds for TA/DA	- Assess the budget requirement and provide fund. - Delegation of administrative and financial authorities to work in emergencies with minimum procedure under overall guidance and supervision of the designated officials - Budget provision for any unforeseen expenditure with decentralized financial authority	
Transport and patient referral	▪ Develop a SOP for ambulance and transport requirements. ▪ Tie-up with nearby Hospital for ambulance services as part of referral support	- Assess ambulance and other transport requirements o Establish linkages with ambulance project.	EMSD, HHC

	▪ Advance Emergency transport needs assessment to be deployed at the time of emergency	○ Driver deployment with transport, duty-roaster and relief driver. ○ Budget for fuel, over-time etc.	
Planning for Skill development	▪ Develop training modules ▪ Provide training of trainer ▪ Institutionalization of health sector emergency preparedness training in public health, Para-medical and medical curricula	- Budget - Training materials	DMS, EMSD, DHO
Developing training program for the community level health workers	▪ Prepare dzongkhag inventory of requirements – equipment, training materials, money along-with delegation of administrative and financial authorities. ▪ Time-frame for training to BHU and dzongkhag public health workers ▪ Training and advocacy materials. ▪ Facilitate and monitor simulation exercises	- Training modules - Training equipment - Money and advocacy materials	DMS/DoPH, DHO

Table 16: Emergency Response Action at Dzongkhag Level

Activities	Detailed Intervention Areas	Resources Required	Action
		What	By Whom
Emergency Related Reporting & Monitoring of emergency situation	▪ Develop Reporting form ▪ Standard guidelines on establishing command and control post ▪ Establishment of dzongkhag control & command system	Reporting forms Guidelines on establishing command post	EMSD, DHO

	▪ Constitute health sector coordination committee		
Assessment of the impact	▪ Develop and make available assessment form ▪ Dzongkhag health sector Assessment team	Assessment form	EMSD, DHO
Dzongkhag Health sector Coordination	▪ Constitution of Health Sector Emergency/disaster Coordination Committee ▪ Draw job action sheet for specific task	Guidelines, fund, SOP	EMSD, DHO
Administrative Support for field level activities • Emergency Planning for Medical Supply needs • Emergency Planning for Transportation facilities • Emergency planning for medical supply • Emergency Planning for human resources to mobilize at a short notice	▪ Carry out supply need assessment ▪ Carry out transport need assessment ▪ Medical Supply needs assessment ▪ Surge capacity assessment	• Guidelines on supply need assessment • Guidelines and SOPs on transport need assessment • Medical supply need assessment form • Guidelines and forms on manpower need assessment • Medicines, vehicles, HR, Fund	EMSD, DHO
Technical Support to BHU and Village level activities through Rapid Response Team	▪ Formation of rapid response team ▪ Provide First-aid & Treatment ▪ Provide Outpatient services ▪ Provide basic laboratory services ▪ Enhanced BHU and hospital admission capacity ▪ Strengthened referral capacity	▪ First aid kits & equipment ▪ Medical supplies, reagents/chemicals & equipment ▪ Drugs, beds, linens, other supplies ▪ Ambulances, handsets, mobile ▪ Referral procedures, means of communication and transportation	BHU, DHO

Table 17: Hospital Emergency Preparedness in Hospital

Activities	Detailed Intervention Areas	Resources Required What	Action By whom
Hospital vulnerability assessment	▪ Identification of the various types of vulnerabilities that must be considered in hospital settings ▪ **Structural** vulnerabilities ▪ **Non-structural** vulnerabilities ▪ **Functional** vulnerability; Administrative and organisational vulnerabilities	▪ Training ▪ Fund	Adm Officer/ DHO/Maintenance Unit
Medical Supplies	▪ Supplies inventory and Storage space	▪ Drugs and equipment	DHO, CMO
Human resources	▪ Linked up with nearby hospital for back up services	▪ Operational plan for back up services	Adm Officer/DHO
Internal Communication	▪ Set up hospital Communication system	▪ HR, Equipment's- Hotline, fax, tele, walkie-talkie and provision for free voucher	Adm Officer/CMO
Technical components	▪ Plan for staffs + stock, mobilization from the nearby Health center	▪ H. Resource ▪ Supplies.	Adm Officer/CMO
Maintenance procedures (back-up for water, power, etc.)	▪ Linked up existing staff, dept. of power, dzongkhag engineering and municipal	▪ Maintenance staff, electrician, plumbers, cleaner and supplies	Adm Officer/CMO/ Maintenance Unit
Emergency Response Plan	▪ Set up Emergency medical team – Rapid Response Team	▪ Human resource, supplies of medicine and equipment, transportation and communication	Adm Officer/CMO
SOPs	▪ Develop SOPs for emergency Operation	▪ Guidelines and training material, finance, human resource and logistic support	Adm Officer/CMO
Security	▪ Develop security plan	▪ Security personnel, budget and logistics	Adm Officer/CMO
External Vulnerabilities			
Access to road	▪ Linked up with DOR and police	▪ Human resource, transport and communication equipment	Adm Officer/CMO/DHO
Electrical and water supply & communication	▪ Linked up with Power, municipal and telecom	▪ Power, municipal and telecom	Adm Officer/CMO/DHO

Geographical location and building structure vulnerable to earthquake, floods, storm, landslide etc	▪ HIDP (Hospital Infrastructure Development Project), Planner	▪ HR and finance ▪ Training	Adm Officer/CMO/DHO
Functional Vulnerabilities	▪ Development of systems that can remain operational during a disaster or recover their functional capacity in a relatively short time	▪ Hospital rapid response team (HR, supplies, equipment) ▪ Training	Adm Officer/ CMO/DHO
Hospital Surge Capacity	▪ Listing of nearby hospitals, available bed capacity, Number of staff (total / doctors / nurses / allied medical / support / others), available Specialty, departments, Emergency department capacity	▪ Fund	Adm Officer/ CMO/DHO
Policies and procedures	▪ Written hospital-wide preparedness plan ▪ Training program for the staff on disaster preparedness ▪ Essential infrastructure needed for mitigation and response during a disaster ▪ Review and evaluation of the preparedness program	▪ Fund	Adm Officer/ CMO/DHO
Hospital Emergency Preparedness plan	▪ Constitute hospital Emergency committee ▪ Clearly describe role of each personnel and action cards	▪ Fund	Adm Officer/ CMO/DHO
Plan for mobilizing drugs and medical team from outside	▪ Establish understanding with other nearby hospital to mobilize drugs and medical team from their hospital	▪ Fund and transportation facilities	Adm Officer/ CMO/DHO/MOH
Exercise/mock drill	▪ Mock drill protocol and scenario checklist	▪ HR/technical expertise/ ▪ Financial support/equipment	Adm Officer/ CMO/DHO/MOH
Dealing with media	▪ Designate media focal person	▪ Timely and accurate information feeding	Adm Officer/ CMO/DHO

Table 18: Emergency Response in Hospital

Activities	Detailed Intervention Areas	Resources Required	Actions
		What	By whom
Hospital Emergency Control Room	▪ Establish and activate EOC in the hospital ▪ Activate Emergency Response Team–Emergency respond team report promptly to assess the disaster's magnitude and the number, location, and urgent requirements of casualties. M My Call E Exact Location T Type of Incident H Hazards A Access N Number of Casualty E Emergency Service	▪ Human resources ▪ Ambulances/ communication Equipment and others	Adm Officer/ CMO
Management Priorities: Hospital Command Post	Establish a command post to: - Coordinate emergency related activities inside the hospital - Monitor the utilization of available resources - Prevent role conflicts.	▪ Human resource ▪ Hospital emergency plan and communication equipment	Adm Officer/ CMO
Security and traffic - Safety & Security of Hospital to manage patients care without any hindrances also to prevent second disaster in hospital complex caused by intentional/unintentional motives.	▪ Make Contingency fund available ▪ Activate the linked established with police, Desuups and volunteers	▪ Human Resource (PRO, Security personnel, police, Desuups, volunteers), CCTV network ▪ Emergency alert alarm	Adm Officer/ CMO
Hospital communication center / EOC	▪ Establishing lines of communication with regional hospitals or satellite units to alert them of the need to activate and implement their respective emergency plans for mass care of the	Receptionist/Ward/Tel Operator/DHO	Adm Officer/CMO

	wounded and emergency call to essential hospital staffs		
Reception and registration of incoming casualties: • Name • Age • Address • Telephone number • Location etc	▪ Standard forms on patient registration	HR (receptionist, MRO) Computers, Registration form	Adm Officer/CMO
Public information	▪ Identify and establish Public information center	▪ PRO,Public address system/ Public information board	Adm Officer/CMO
Triage	▪ Activating selected an area or zone to be used for Hospital level classification (triage) and identification (tagging) of casualties prior to their removal to different wards or to other medical care center	▪ Human resources (EMT. Triage nurse etc.), Equipment ▪ Emergency drugs ▪ Triage areas – space cordoned of	Adm Officer/CMO
Decontamination area in case of chemical leakage	▪ Identify decontamination area	▪ Decontamination Equipment + space	Adm Officer/CMO
Resuscitation & Treatment Area	▪ Administering first aid to the wounded, including stabilization, hemorrhage control, clearing air passages, and, in some cases, blood-volume replacements. In administering first aid, the priorities assigned in the triage area must be observed	▪ Human resource (EMT, Nurses, doctors and other supporting staff) ▪ Emergency supplies ▪ Blood donors ▪ Emergency medical equipment's – list to be prepared	Adm Officer/CMO
Transportation arrangement of patients to different location in hospital-ICU, CCU, OT etc	▪ Activate internal plan on transportation arrangement to different units	▪ Human resources (EMTs, Supporting staffs etc) ▪ Stretcher/wheel chair ▪ Adequate ambulance well equipped with life support systems	Adm Officer/CMO
Radiology department and laboratories	▪ Keep stock of reagents, alternative power supply and functional X-ray and portable USG	▪ Equipment ▪ Reagents	Adm Officer/CMO

		▪ Backup power supply ▪ USG and X-ray machines	
Operation Rooms	▪ Form emergency operation team ▪ Equip facilities with necessary equipment	▪ Human Resources, ▪ Equipment	Adm Officer/CMO
Blood Bank	▪ Keep list of voluntary blood donor	▪ Blood bank ▪ Voluntary blood donors	Adm Officer/CMO
Forensic expertise and temporary morgue to accommodate large number of dead	▪ Identify enough space for dead bodies, forensic specialist	▪ Human resources and equipment ▪ Mortuary, temporary mortuaries ▪ Transport for dead bodies	Adm Officer/CMO
Evacuation plan to shift serious patients in case of structural/non-structural damage hospitals.	▪ Detailed evacuation plan, human resources, Supplies and transportation	Human resources (hospital team/local volunteers/arm forces)	Adm Officer/CMO
Documentation of minimum data sets	▪ Pre-hospital care report ▪ Patient refusal report ▪ Incident report	▪ Reporting forms	Adm Officer/CMO
Assessment of hospital damage	▪ Form hospital damage assessment team	▪ Assessment form	Adm Officer/CMO
Mass media management	▪ Develop Policy and guidelines on dealing with mass media	▪ Policy and guidelines on dealing with mass media	Adm Officer/CMO
Transport management	▪ Alternative transport arrangement	▪ Ambulances/Pool vehicle	Adm Officer/CMO
Environmental health management	▪ Guidelines on environmental health management	▪ HR (Environmental health officer, municipal personnel/finance/Equipment	Adm Officer/CMO
Mental health management	▪ Guidelines on dealing with psycho-social issues	▪ Psychiatric ward, psychologist	Adm Officer/CMO
Dead body management	▪ Guidelines on dead body management	▪ Morgue, preservatives (formaldehyde)	Adm Officer/CMO

Table 19: Emergency Preparedness Action at National Level

Activities	Detailed Intervention Areas	Resources Required What	Action By whom
Establish HEOC	▪ Identify the space ▪ Equipped the operating center with communication line, computer and printer ▪ Name and numbers of health sector coordinator at different level	▪ Computer, printers, Fax and communication facilities	EMSD
Emergency Preparedness and Response guidelines and SOPs	▪ Facilitate relevant program to come up with guidelines and SOPs ▪ Review and endorse guidelines and SOPs by TAC	▪ Technical expertise ▪ Guidance from TAC	All Programs
Technical Support to the Dzongkhag Hospitals	▪ Provide support in Hazard mapping, vulnerability and capacity assessment of Dzongkhag hospitals	▪ Technical expertise ▪ Guidance from TAC	EMSD
Need Assessment	▪ List down the public health risk of known hazard ▪ List the resources required for response	▪ Need assessment form	EMSD
National Inventory of supplies	▪ Prepare national inventory of supplies required	▪ Inventory form	MSQU and DoMSHI
Establish HEOC	▪ Identify the space, Set up communication channel, list of heath sector coordinator, TV, Space for press release	▪ Human resources, ▪ Equipment and ▪ SOP for operating HEOC	EMSD
Standard reporting	▪ Training on how to use reporting form	▪ Standard reporting form	
Coordination mechanism	▪ Identify roles at different level and fix responsibilities	▪ Developed contingency plan	
Advocacy and awareness	▪ Health promotion material on risk of different hazards ▪ Strategies on health promotion for displace population	▪ Pamphlets, posters	HPD
Establish Early warning system	▪ Provide weather, water, and climate data, forecasts and warnings ▪ Provide adequate, reliable and timely Glacier Lake Outburst Flood (GLOF) warnings to safeguard life and property downstream.	▪ GLOF Early Warning System	Department of Hydro-Met Services (DHMS)
Ensure stockpile of emergency supplies and equipment	▪ Conduct need assessment ▪ Establish mechanism for stockpiling emergency supplies and equipment	▪ Develop guidelines on mobilization and stockpiling of emergency supply and equipment	DoMSHI

Establish coordination with International organization	▪ Establish coordination mechanism with International organization ▪ Form health cluster	▪ TOR with international organization	EMSD/MOH
Transportation facilities	▪ Plan transportation facilities specially during the inaccessibility	▪ Ambulances, Helicopter during inaccessibility, truck for logistic supply	HHC/EMSD/MSD
Development of policy, plan guidelines and protocols	▪ Facilitate development of policy, plan guidelines, protocols by programs to support field level activities	Technical expertise to develop policy, plan guidelines, protocols by programs to support field level activities	EMSD
Dzongkhag Health Sector Emergency Contingency Plan	▪ Facilitate development of Dzongkhag Health Sector Emergency Contingency Plan	Fund Technical support	EMSD
Reporting mechanism and dissemination	▪ Lay down procedures for getting emergency related from community, dzongkhag, police, fire on daily basis	Fund for laying down procedures	EMSD
Skill development	▪ Develop training curriculum in UMSB ▪ Provide training to dzongkhag and BHU staffs	Funding	

Table 20: Emergency Response Action at National Level

Activities	Detailed Intervention Areas	Resources Required	Action
		What	By whom
Back up support	▪ Activate National RRT ▪ Activate supply chain mechanism ▪ Activate ambulance mobilization and back up mechanism	Human resources, Stock of logistics Ambulances pool	EMSD/HHC
HEOC	▪ Activation HEOC which include reporting and coordination mechanism ▪ Establish command center and identify Health Sector coordinator at different level	Telephone lines Fax Walkie-talkie Reporting form	EMSD
Ensure continuous and adequate supply of drugs, equipment and other logistics	▪ Activate the supply mechanism	Stock of drugs, equipment and other logistic required	MSQU/DoMSHI
Mobilize international support if required	▪ Activate MOU with international organization	TOR with international organization	EMSD

Chapter 4. Role and Responsibilities

4.1 Disaster Management Act 2013

As per the DMAB 2013, the health officials are represented in the following overall disaster management committees that make easy coordination among different sectors:

a. NDMA under the chairpersonship of the Honorable Prime Minister is being represented by the Secretary of Health who shall update and coordinate regarding health sector response in emergencies and disasters.

b. Dzongkhag Disaster Management Committee under the chairpersonship of the Dasho Dzongda is being represented by the DHO as co-opted member who will in turn update and coordinate health sector response in emergencies and disasters.

c. The Dzongkhag Disaster Management Committee may, if it considers necessary, constitute a sub-committee at the Dungkhag, Thromde or Gewog level where in health officials (Dungkhag Health Officer/Medical Officer/HA) will represent and coordinate healthsectorresponsein emergencies and disasters.

4.2 Health Emergency Management Committee

Health Emergency Management Committee (HEMC) shall be the highest decision making body in the Health Ministry in any disasters, emergencies and disease outbreaks.

Composition of HEMC

1. Honorable Secretary as the Ex-officio Charperson
2. Director General/Director, DMS as the Ex-officio member
3. Director General/Director, DoPH as the Ex-officio member
4. Director General/Director, DoTM as the Ex-officio member
5. Director General/Director, DoMSHI as the Ex-officio member
6. Director General/Director, DoS as the Ex-officio member
7. Chief Planning Officer, PPD as the Ex-officio member
8. Medical Superintendent, JDWNRH as the Ex-officio member
9. Chief Program Officer, EMSD as the Ex-officio Member Secretary

Responsibilities of HEMC

The HEMC shall:

a. Advise and update the NDMA on the emergencies situation

b. Direct relevant departments and Regional Hospitals within Health Ministry for responses in health emergencies.

c. Direct Health Ministry for resources mobilizations and allocations.

d. Coordinate with Department of Disaster Management to mobilize resources (technical & financial support) from national and international partners.

e. Approve and endorse Plan, policies, guidelines and SOPs on health emergencies as recommended by Technical Advisory Committee (TAC).

- Honorable Secretary will act as Incident Commander for any health emergencies.
- Director of DMS and Director of DoPH will serve as Operation Chief.
- Director of DoMSHI- Logistic Chief
- Director, DoS, MoH – Administration and Finance
- CPO, PPD, MoH – Public Information and Media

4.3 Technical Advisory Committee (TAC)

TAC will comprise of following technical personnel in providing technical assistance to HEOC:

Composition of TAC

1. Director General/Director, DMS as an Ex-officio Chairperson
2. Director General/Director, DoMSHI as an Ex-officio member
3. Chief Program Officer, CDD as an Ex-officio member
4. Chief Program Officer, NCD as an Ex-officio member
5. Head, RCDC, DoPH as an Ex-officio member
6. Chief Program Officer, Health Promotion Division as an Ex-officio member
7. Chief Program Officer, EMTD as an Ex-officio member
8. Chief Engineer, PHED, DoPH as an Ex-officio member
9. Head of Emergency Department, JDWNRH as an Ex-officio member

10. Chief Executive Officer, HHC, EMSD as an Ex-officio member
11. Program Officer, EMSD as an Ex-officio member secretary
12. Other member may be co-opted as per the need

Responsibilities of TAC

TAC shall:

a. Review and recommend health emergency and disaster policy, guidelines, plans, SOPs and job responsibilities.
b. Provide technical assistance to the HEOC on preparedness and response for emergency, disaster and disease outbreaks.
c. Provide ongoing scientific advice, direction, feedbacks and technical backstopping to the HEMC.
d. Standardize emergency equipment, medicines and first aid kit for hospitals, BHUs, ambulances and first responders.

4.4 Health Rapid Response Team (RRT) at National level

Composition of RRT:

For Disease Outbreak (Communicable disease outbreak &outbreak after Disaster	**For disaster**
1. Program Officer, EMSD	1. Program Officer, EMSD
2. Epidemiologist, MoH	2. Engineer, PHED
3. Head, RCDC	3.Engineer, HIDD
* Other member may be co-opted in accordance with nature of the disaster or situation (DoPH, DoMSHI, PHED, DHOs and other relevant stakeholders)	

Responsibilities of RRT

RRT shall:

a. Review available information about the events and affected areas.
b. Carry out rapid needs assessments in cooperation with local authority at the site.
c. Assess the immediate needs of the affected community using standard asessment tools.

d. Evaluate health information and assess potential public health risks for the population.
e. Gather and disseminate necessary public health in formation.
f. Provide technical backup in disaster-affected areas.

4.5 Health Rapid Response Team at Dzongkhag Level

1. Dzongkhag Health Officer
2. Medical Officer/Clinical Officer
3. Medical Laboratory Technologist/Technician
4. Other member may be co-opted as per the need

Responsibilities

a. Review available information about the events and affected areas.
b. Cooperate with local authority in carrying out rapid needs assessments in the health sector in order to coordinate the response.
c. Assess the immediate needs of the affected community using standard asessment tools.
d. Evaluate health information and assess potential public health risks for the population.
e. Advise the health sector in carrying out immediate interventions.
f. Gather and rapidly disseminate necessary public health in formation.
g. Provide technical backup in disaster-affected areas.

4.6 Emergency Medical Services Division (EMSD)

EMSD under DMS is the nodal division for coordinating, facilitating and supporting Dzongkhag to the Community in disaster management activities in all phases of disaster management cycle (before, during and after the disaster). EMSD shall:

a. Facilitate other allied programs to come up with guidelines and SOPSs for emergencies.
b. Build capacity of health workers on emergency and disaster management
c. Assist dzongkhag health sector to come up with emergency and disaster contingency plan

d. Provide emergency-related direction and advice to the affected sites.
e. Ensure provision of continuous curative services to both OPD and IPD before, during and aftermath of disaster.
f. Institute coordination mechanism and mobilize back-up services (human resources, medical supply financial and transportation) to the disaster areas.
g. Recommend priorities for allocation of resources.
h. Manage Health Emergency Operating Centre.
i. Provide national treatment & management Protocols as per the standard treatment guidelines and Emergency Medical and Trauma Care manuals.
j. Delegate authorization to mobilize manpower from the non-affected areas.
k. Provide skill & capacity development in collaboration with training institutes.
l. Received early warning system from RCDC, HydroMet De partment and dzongkhag and activate HEOC.
m. To conduct simulations and mock drills on different types of disasters and emergencies' contingency plans.

4.7 Health Help Center

HHC under EMSD shall have following responsibilities:

a. Mobilize ambulances to the disaster affected areas and arrange back up ambulance services from nearest unaffected areas.
b. Timely communication of emergencies and disasters to the nodal agencies.
c. Provide health advice and counseling through toll free number 112.
d. Ensure toll free number is functioning at all times.

4.8 Department of Medical Supply and Health Infrastructure

a. Develop guidelines for mobilization of Medical Supplies (drugs, equipment and transportation).
b. Ensure availability and timely supply of adequate medical supply
c. Develop standard for building disaster resilent infrastructure

4.9 Department of Public Health

Public Health emergencies especially those events caused by outbreaks of emerging diseases (SARS, H1N1, H5 N1, H7N9, MeRS-CoV, Ebola, Zika virus) pose serious threat to national and international health security. Effective preparedness can ensure rapid Public Health emergency response and minimize negative health, economic and social impacts of communicable diseases.

In the event of large-scale natural disasters like earthquake, there are probabilities of secondary disaster like disease epidemics. Therefore, Public Health should play lead role in disease prevention and containment through the following responsibilities:

Emergency Preparedness

a. Conduct communicable disease risk mapping to reduce the risk of diseases
b. Strengthen early detection of outbreaks of diseases and public health emergencies through event based and indicator surveillances.
c. Strengthen rapid response to diseases by developing SOPS and guidelines for surveillance, reporting and outbreak re sponse
d. Build capacity for disease outbreak response in coordination with EMSD, DMS.
e. Strengthen effective preparedness for responding to disease outbreaks by Mapping out resources for responding to emergencies.
f. Build sustainable partnerships within and outside the country.

Emergency Response

a. Coordinate with EMSD to assess the public health risk of the disaster affected area
b. Prevent communicable diseases & non-communicable conditions in the disaster-affected area.
c. Mobilize back up resources (financial, human, supplies & equipment).
d. Guide and coordinate among Public Health Programs in exe cuting the response actions.

4.10 Dzongkhag Health Sector

Preparedness phase

a. Develop Health Sector Dzongkhag Hazard Maps including hazard mapping in terms of geographical impact of past emergencies, disease epidemiology and mapping of health facilities.
b. Develop a Dzongkhag Disaster Contingency Plan.
c. Develop guidelines/instructions for field level support activities.
d. Establish Emergency Control Room in DHO's office.
e. Liaise with HHC for ambulance services.
f. Plan for surge capacity (manpower, resource, etc.).
g. Plan for financial and logistics mobilization.
h. Tie-up with nearby hospital for backup services.
i. Conduct advance emergency transport needs assessment.

Response Phase

a. Activate Dzongkhag health sector emergency contingency plan.
b. Coordinate with Dzongkhag Disaster Management Committee.
c. Emergency Related Reporting & Monitoring of emergency situation.
d. Assess impact of emergency by Dzongkhag HRRT.
e. Activate DHRRT to support BHU and community.
f. Report and monitor emergency situation
g. Technical Support to BHU and Village level activities through Rapid Response Team

4.11 Hospitals

Preparedness

a. Conduct hospital vulnerability assessment
b. Conduct capacity assessment
c. Maintain supply inventory and storage
d. Develop Hospital Emergency Contingency plan including security plan and SOP for emergency operation
e. Establish line of communication
f. Plan for staffs + stock, mobilization from the nearby Health center

g. Linked up existing staff, dept. of power, dzongkhag engineering and municipal
h. Set up Emergency Medical Team – Rapid Response Team
i. Review required logistics
j. Monitor ongoing emergency response operations
k. Exercise and mock drill

Response Phase

a. Activate hospital emergency contingency plan in emergencies and disasters
b. Monitor utilization of the available resources and prevent conflict of role

c. Activate the hospital control room

d. Activate selected area or zone to be used for Hospital level classification (triage) and identification (tagging) of casualties prior to their removal to different wards or to other medical care center
e. Administer medical care including stabilization, hemorrhage control, clearing air passages, and blood transfusion as per triaging system.

4.12 BHUs:

Preparedness Phase

a. Identify the disaster risk
b. Develop BHU Emergency Contingency plan including BHU safety level
c. Build human resource capacity for communities
d. Request for necessary medical supplies and logistic support
e. Strengthen the patient referral systems from community BHU to dzongkhag hospitals
f. Strengthen line of communication with nearest BHUS and hospitals

Response Phase

a. Immediate notification/ reporting of the event to concern DHO and hospitals
b. Health needs assessment

c. Select an area or zone to be used for first-level classification (triage) and identify (tagging) of casualties prior to their transfer to medical care centers
d. Provide first aid at sites
e. Transport disaster patients/causlaties to the nearest BHU and hospitals
f. Identify site for field hospital and establish Incident command post
g. Coordinate with Search & Rescue, security personnel and other sectors
h. Mobilize additional resources including community support if required
i. Verify rumor and report
j. Establish and conduct active disease surveillance and report the incident to DHO/MoH

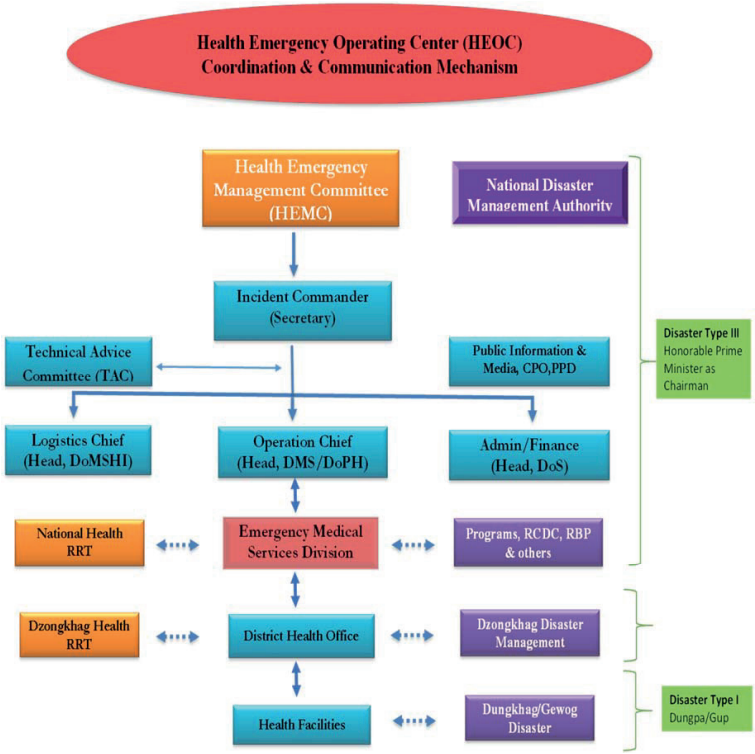
CHAPTER 5: COORDINATION, RESOURCE MOBILIZATION AND MONITORING

5.1 Coordination and Communication Mechanism

The response operation for disasters type II and III will be directed by NDMA. NDMA will have 24 hours National Emergency Operating Center (NEOC) based in Thimphu. In relation to epidemics, health sector will trace early warnings and take necessary actions through HEOC. HEOC is expected to work in close collaboration with NEOC. In the small-scale disasters or disaster type I, the local authorities will meet the basic needs.

The coordination and channel of communication between the agencies and among the health sector and other relevant partners are given in the figure below:

Figure 3: Coordination and Communication Mechanism



5.1.1 Health Emergency Operation Centre (HEOC)

a. HEOC is a central command, control and coordination center for the effective administration of emergency preparedness and disaster management in any emergency situation.

b. HEOC will be managed and operated by EMSD under the directives of Health Emergency Management Committee (HEMC) during the times of emergencies and disasters

c. HEMC shall be highest decision making body for the Health Sector. The Honorable Secretary being the Chairperson of the HEMC will take matter which requires higher intervention to the NDMA.

d. HEOC will host necessary resources and data for effective co ordination and response during emergencies. During the emergency, the centre will function 24/7 with trained and dedicated staff.

e. HEOC will be equipped with communication material such as telephone, mobile, internet, satellite phones, etc. In addition, it will consist of all information technology for communicating and coordinating with NEOC, Central Referral Hospitals, Regional hospitals, etc. so that HEOC can update data regularly and coordinate disaster response appropriately.

f. HEOC will also play a pivotal role in maintaining operational linkages between health sector preparedness and response mechanism and the existing and emerging institutions/ mechanisms of community, dzongkhag, regional and the central level disaster risk management initiatives.

5.1.2 Emergency Medical Service Division

a. At the national level, EMSD shall coordinate with HHC, Dzongkhag Health Sectors, Gewogs, DDM and establish mechanism for network with police, fire, Desuups, volunteers. Similarly, coordination mechanism shall be established at Dzongkhag level by DHO and Gewog level by HA.

b. Facilitate establishment of similar facilities at Dzongkhag levels in a phase manner to facilitate appropriate, adequate and timely health sector emergency/disaster response and relief operations.

c. Assist operation center at different levels for timely flow of information from the disaster-affected areas.
d. EMSD shall dispatch RRT from national level if the disaster is beyond the coping capacity of the Dzongkhag.
a. Dzongkhag shall dispatch rapid response team from Dzongkhag level if the disaster is beyond the coping capacity of the Drungkhag or Gewog concerned.

5.1.3 Media focal point

a. The Chief Planning Officer (CPO), PPD of the ministry shall be the media spokesperson for disaster and emergency at the national level. Media spokesperson shall appoint relevant person to talk on the technical aspect of the emergencies and disasters if required.
b. DHO shall act as media spokesperson for the Dzongkhag Health Sector.
c. EMSD shall provide information received through HEOC to CPO from time to time.

5.2 Financial and Resource Mobilization at National Level

a. NDMA and Ministry of Finance shall ensure adequate financial arrangement to response to health emergencies and disasters as empowered by the DMAB, 2013 (Chapter 8, Section 80-91).
b. Based on nature of disaster, relevant department (DoPH/ DMS) will prepare budgeted plan and EMSD will put it up to HEMC for fund mobilization from national or international level.
c. Further, MoH shall:

- Mobilize resources from nearby health facilities as per the approved mechanism and guidelines.
- Assist affected Dzongkhag for additional drugs and supplies.
- Establish mechanism on resource mobilization with national, international and non-governmental organization
- Secure SEARHEF (WHO) budget allocated for disaster and emergency.
- Any kind of materials (in-kind) and financial aid related to health will be taken over by the ministry through DDM with an information to the Government, GNHC, and MoF.

5.3 International Emergency Relief

Any foreign health relief assistance by international organisations or countries will be routed through MoH. International emergency relief should complement, not duplicate the measures taken health sector in the country.

Donors will be informed about what is needed. This is as critical as giving specifications for requirement. Guidelines will be circulated to all the potential suppliers of assistance, diplomatic and consular representatives abroad to prevent ineffective contributions and coordination.

5.4 National Assistance to Disaster Affected Countries Abroad

The ministry shall form a team known as Bhutan Medical Assistance Team (BMAT) to be dispatched to other countries in case of disasters as part of Bhutan's humanitarian initiatives and support. The criteria and terms of reference for selection of health professionals for the BMAT shall be developed accordingly.

5.5 Monitoring and Evaluation of the Plan

Contingency planning is preparation for various disaster/emergency scenarios. The plan document is the key result of the planning process and is living document whose activities should be implemented as a part of emergency preparedness.

Sl. No.	Activities	Indicators	Baseline	Target	Frequency	Year	Means of verification	Assumptions
1	Hospital contingency plan	Number of hospitals with contingency plan	0	27	Annually	2018	Obtain copy	Availabity of money,time and commitment
2	Simulation and mock drill	Number of hospital conducted simulation	11	27	Half yearly	2018	Obtain report	Availabity of money,time and commitment
3	Develop guidelines and SOPs	Number of guidelines and SOPs	3	All	Annually	2018	Obtain copy	Availabity of money,time and commitment
4	HR Capacity development	Number of health personnel trained on contingency, guidlines, SOPs and first aid	-	Relevant staff	Annually	continue	Obtain list	Availabity of money,time and commitment
5	New disaster resilent health infrastruture	Number of new disaster resilent health facilities	0	-	-			Availabity of money,time and commitment
6	Hazard mapping	% of Dzongkhag mapped	0	Dzongkhags	Annualy			Availabity of money,time and commitment
7	Hospital Vulnerability Assessment	% of hospital assessed	2	All Hospitals	Annually	2020	Obtain report	Availabity of money,time and commitment
8	Health facilities with early warning system	% of hospital with early warning system	0	Hospitals/Programs	Annually	2020	Physical inspection	Availabity of money and commitment

Table 21: Emergency/Disaster Incident Recording Format

Sl. No.	D/khag/ Gewog/ Village	Pop	Dresрcription of Events				Number of person affected								Hospital/ BHU		Status of essential drugs	Action Taken	Problem Encountered	Reccomendations
			Name	Nature	Time/ Date	Place	Natural/Man-made Disaster					Disease outbreaks			OPD	Admitted				
							Death	Injured	Treated at site	Referred	Missing	Death	Exposed	Cases						

Table 22: Contact numbers of District Health Officers

District health Officer (DHO) shall be responsible to establish Emergency Incident Command System in the districts and at the site during Epidemic and Disasters.			
Sl. No	**Dzongkhags**	**Name of the DHO**	**Contact Numbers**
1	Mongar	Deki Phuntsho	17673579
2	Lhuntse	Ugyen Dorji	17668719
3	Trashigang	Gang Dorji	17666924
4	Trashiyantse	Singye Dorji	17812353
5	Pemagatshel	Jigme Kelzang	17606306
6	Samdrup Jongkhar	Pema Tshewang	17812353
7	Sarpang	Tshering Penjor	17919779
8	Chukha	Gopal Hingmang	17605824
9	Tsirang	Tashi Dawa	17151676
10	Paro	Choki Wangmo	17608848
11	Thimphu	Gyembo Dorji	17600582
12	Bumthang	Kinga Gyeltshen	17686440
13	Trongsa	Dolley Tshering	17609954
14	Wangdiphodrang	Zangmo	77364050
15	Punakha	Dechenmo	17720031
16	Haa	Samten	77224495
17	Samtse	Thinlay Choden	17708958
18	Dagana	Dorji Wangchuk	17623121
19	Gasa	Tashi Norbu	17163783
20	Zhemgang	Karchung	17652070

**All DHO should update their latest workplace and contact number information annually*

Table 23: Incident Report Template *(Could be used by VHW or any first responder during response)*

Date: **Place of Occurrence:**

Name of the first Responder: **Designation:**

Sl. No.	Actions	
1	**Situation** What has occurred? How many Affected? How many died and injured?	
	What are the sources of the emergency?(contaminated water, rain, broken dam etc)	
2	**Response** What has been done? By whom?	
3	What are the gaps?	

Table 24: Situation Report Template *(to be filled by BHU level - HA/GNM)*

Date: **Place of Occurrence:**

Name of the Reporter: **Designation:**

Sl. No.	Actions	
1	**Highlights:** What are the main highlights? (# of people dead, missing, injured etc.)	
	Current Situation: Are there any updates on the situation?	
2	**Response:** What is the main response? Who is responding, and in what area? What are the resources on the ground?	
3	**Gaps:** What are the main gaps in response? What are the plans to fill the gaps?	
4	**Next Steps:** What are the next steps envisioned?	

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