

Government of Uttar Pradesh

State Disaster Management Working Action Plan For Animal Epidemics

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Chapter I: Introduction

Uttar Pradesh State Profile

Geography: Uttar Pradesh is bounded by Nepal on the North, Himachal Pradesh on the northwest, Haryana on the west, Rajasthan on the southwest, Madhya Pradesh on the south and south-west and Bihar on the east. Situated between 23° 52' N and 31° 28' N latitudes and 77° 3' and 84° 39'E longitudes, this is the fourth largest state in the country.

Uttar Pradesh can be divided into three distinct hypsographical regions:

1. The Himalayan region in the North
2. The Gangetic plain in the centre
3. The Vindya hills and plateau in the south

Demography: The state of Uttar Pradesh has an area of 240,928 sq. km. and a population of 166.20 million. There are 70 districts, 813 blocks and 107452 villages. The State has population density of 689 per sq. km. (as against the national average of 312). The decadal growth rate of the state is NA (against 21.54% for the country) and the population of the state continues to grow at a much faster rate than the national rate.

Uttar Pradesh is now divided into seventy-one districts under eighteen divisions. Districts are administered by District Magistrates, and divisions are administered by Divisional Commissioners. Lucknow, the capital of the state, constitutes the Lucknow district. Other districts are further divided into administrative units such as subdivisions and blocks, administered by SDO and BDO, respectively. The Panchayati Raj has a three-tier structure in the state. The atomic unit is called a Gram Panchayat, which is the Panchayat organization for a collection of villages. The block-level organizations are called Panchayat Samiti, and the district-level organizations are named Zilla Parishad.

Socio-Economic Profile: Uttar Pradesh (UP) is the second largest economy in India after Maharashtra, contributing 8.17% to India's total GDP. Gross State Domestic Product (GSDP) at current prices in 2004-2005 was US\$ 55 billion. UP had always been a predominantly an agrarian economy, agriculture being the highest contributor to the GSDP. But in recent years the contribution of the Tertiary sector to the GSDP has been increasing. In 2004-05, Tertiary sector's contribution was found to be the maximum (44%) and agriculture slid to the second place with 35% of the GSDP being contributed by it which includes agriculture, cultivation, fishery, mining activities, etc. Agriculture is a key contributor to the primary sector with 66% of the share. Between 1999 and 2008, the economy grew only 4.4% per year, one of the lowest rates in India. The state's debt was estimated at 67 per cent of GDP in 2005.

Vision

The national vision is to build a safer and disaster resilient India by developing a holistic, proactive, multi-disaster and technology driven strategy for Disaster Management. This will be achieved through a culture of prevention, mitigation and preparedness to reduce the impact of disasters on people. The entire process will centre stage the community and will be provided momentum and sustenance through the collective efforts of all government agencies supported by Non-Governmental Organisations (NGOs).

Purpose of the Plan

The purpose of the plan is to respond promptly in a coordinated manner in an animal epidemic situation, mitigate potential impact of epidemics in order to prevent loss of livestock and poultry animals in Uttar

Pradesh. The plan also aims at preventing transmission of diseases from animals to humans. This document deals with management of “Animal Epidemics” in the State of Uttar Pradesh. The themes underpinning the plan will be as follows.

- The vulnerability of different parts of the state to epidemics.
- The measures to be adopted for prevention and mitigation of epidemics.
- The manner in which mitigation measures shall be integrated with development plans and projects.
- The capacity building and preparedness measures to be taken.
- The roles and responsibilities of each department of the state government in relation to the measures specified above.
- The roles and responsibilities of different Departments of the state government in responding to any threatening disaster situation or disaster.
- The state plan will be reviewed and updated annually.

Key Objectives

The aim of the state plan is to ensure that various components of Disaster Management (DM) are addressed to facilitate planning, preparedness, operational, coordination and community participation. Flowing from the national vision and the aforementioned approach, the objectives guiding the plan formulation are:

- Promoting a culture of prevention and preparedness by ensuring that DM receives the highest priority at all levels.
- Ensuring that community is the most important stakeholder in the DM process.
- Encouraging mitigation measures based on state-of-the-art technology and environmental sustainability.
- Mainstreaming DM concerns into the developmental planning process.
- Developing contemporary forecasting and early warning systems backed by responsive and fail-safe communications and Information Technology (IT) support.
- Promoting a productive partnership with the media to create awareness and contributing towards capacity development.
- Ensuring efficient response to epidemic outbreak and relief with a caring approach towards the needs of the vulnerable sections of the society.
- Ensuring effective surveillance system that can continuously monitor the situation and forecast any imminent epidemic outbreak so that appropriate action can be taken immediately.
- Ensuring all possible preparedness actions are taken for control of epidemic situations.
- Undertaking reconstruction as an opportunity to build disaster resilient structures and habitat.
- Undertaking recovery to bring back the community to a better and safer level than the pre-disaster stage

Chapter II: Vulnerability Assessment and Risk Analysis

Recurring natural disasters in Uttar Pradesh over the years have been causing severe damage and adversely affecting human, plant and animal life, property and environment. Natural hazards that are of significance in Uttar Pradesh are Floods, Droughts, Fires and Earthquakes. Loss of life and property from these disasters, especially the former three, are in terms of hundreds of crores of rupees annually. Considerable efforts are made every year, both by the government and the public, to mitigate the losses encountered during a disaster. But recurring floods, droughts and fires have been pointers to the manifestation of increased vulnerabilities and inadequacy of the various sporadic mitigation measures attempted. The emerging context is an increase in frequency of disasters, their escalating cost, rising levels of vulnerability, narrowing differences between natural and manmade disasters amidst an increasingly fragile environment. This underscores the dire need for a holistic approach to dovetail mitigation efforts with development programmes in the State. Emergency preparedness is crucial for recovery from disasters with minimal loss of life and property.

Hazard Vulnerability in UP

- Approx. 27 lakh hectares affected annually due to Floods.
- Annual estimated loss due to floods is Rs. 432 crores.
- The recurrence period of highly deficient rainfall in East U.P. has been calculated to be 6 to 8 years whereas in West U.P. it is 10 years.
- In the recent years, the year 2002 and 2004 were severe in terms of drought, with loss to crop, livestock and property assessed at Rs.7540 crores and Rs. 7292 crores respectively.
- The Terai belt districts of UP and entire districts of Saharanpur, Muzaffarnagar, Bagpat, Bijnor, Meerut, Ghaziabad, Gautambuddh Nagar, JP Nagar, Rampur, Moradabad, Bulandshahr in western UP are in the Earthquake High Damage Risk Zone-IV.

The following are the Weak Zones In the State-may be termed as trigger points:

- Ridges: Delhi-Haridwar Ridge, Delhi-Muzaffarnagar Ridge, Faizabad Ridge
- Faults: Moradabad Fault, Bhairawan Fault, East-West Running Tear Fault

Floods

Of the various natural hazards, floods are the most commonly occurring in Uttar Pradesh, affecting almost every year some part of the state or the other. Important rivers, which create floods in the State, are the Ganga, the Yamuna, the Ramganga, the Gomti, the Sharda, the Ghaghra, the Rapti and the Gandak. The Ganga River basin of U.P. experiences normal rainfall in the region from 60 cm to 190 cm of which more than 80% occur during the southwest monsoon. The rainfall increases from west to east and from south to north. Similar is the pattern of floods, the problem increases from west to east and south to north. Out of the 240.93 lakh hectares geographical area of the State about 73.06-lakh hectares is flood prone. As per the Irrigation Department's estimate, only 58.72 lakh can actually be protected. Up to March 2004, only 16.01 lakh hectares has been protected. The eastern districts as well as those situated in the Terai region bordering Nepal are the most affected. Due to floods, an average of 26.89 lakh hectares is affected annually, and the estimated loss to crops, houses and livestock is to the tune of Rs.432 crore annually. Apart from these, loss of human life also occurs.

Drought

Drought is another major hazard affecting the State of Uttar Pradesh. The State produces about 21 percent of all food grains of the country, and hence is agriculturally an important State. The total sown

area is 25.30 million ha out of which, 17.69 million ha. is irrigated area.(66% is irrigated). Of the irrigated area, canals contribute about 25%, tube wells about 67% and ponds, lakes etc. the remaining. Thus one third of the irrigated area and the entire extent of rain fed area in the State is dependant on monsoon rains. The recharge of groundwater through rains accounts about 80 % of total recharge. The monsoon rain accounts 70-80% of the total rainfall in a year.

The State of U.P. has been divided into two meteorological sub-divisions, viz. U.P. East, and U.P. West. The recurrence period of highly deficient rainfall in East U.P. has been calculated to be 6 to 8 years whereas in West U.P. it is 10 years. The annual loss due to drought in the State varies depending on the severity of the drought. In the recent years, the year 2002 and 2004 were severe in terms of drought, with loss to crop, livestock and property assessed at Rs.7540 crores and Rs. 7292 crores respectively.

Fires

Annually, fires destroy thousands of houses especially in summer, in the rural areas of the State. Also fire accidents are a common occurrence in the urban areas. At the meeting of the State Level Standing Committee on Calamity Relief held on 25th August 2005, decision was taken to equip the State Fire Department with required Rescue Tenders and Advanced Rescue Tenders, which are in shortage right now. Funds to the tune of Rs. 12.19 crores have been made available from the Calamity Relief Fund for purchase of the same. Apart from this, the Fire Services Training Institute, Unnao, which is the Nodal Institute for the entire State, for training in Search & Rescue Operations, is being strengthened on war footing. The entire Fire Department including its field stations are being shortly connected by the 'Closed User Group' mobile phone network for their easy access by the civil administration in times of emergencies/accidents.

Animal Epidemics

Animal Husbandry is one of the major allied primary sectors in Uttar Pradesh. It accounts for about 15% of the total livestock population in India. It is mainly in the form of cattle, Sheep, Goat and Poultry. The following Table gives a profile of the livestock in UP as per Animal Census of 2003.

An epidemic refers to the outbreak and rapid spread of a disease in a community affecting a significant number of people or animals in a relatively short period of time. Many diseases that are generally considered animal diseases can be transmitted to humans. Diseases, which can cause epidemics in animals, can gain a foothold in a county in a number of ways. A disease may be something exotic brought in with animals imported, either legally or illegally, from some other part of the country or world. Other disease vectors include infected animals wandering across the border from neighbouring states. Avian diseases can be brought in by birds on their annual migration.

| Livestock Population In U.P. | | |
|------------------------------|-----------------|----------|
| S. No. | Item | Numbers |
| 1 | Desi Cattle | 16917203 |
| 2 | Cross-Breed Cow | 1633557 |
| 3 | Buffaloes | 22913700 |
| 4 | Goats | 12941013 |
| 5 | Pigs | 2283930 |
| 6 | Sheep | 1398801 |
| 7 | Poultry | 11718012 |

Mad Cow Disease: Contaminated garbage tossed overboard from a ship off the coast, then eaten by animals when it washes up on our shore has also been identified as a disease vector. In many cases animal epidemics are the result of either home grown diseases or factors that can be controlled through proper animal husbandry. An example of the latter is the spread of Bovine Spongiform Encephalopathy (BSE), also known as "Mad Cow Disease". BSE is a transmittable, slowly progressive and ultimately fatal neurological disorder of adult cattle. The discovery that it infected a proportion of the cattle in Great Britain led to the eventual destruction of a large portion of the British herds. In this case the transmission of BSE in Great Britain was due to a combination of

factors. The primary ones seem to have been the feeding of the remains of dead sheep and cows to livestock, and possibly through the injection of hormones taken from the pituitary glands of slaughtered cows to improve breeding.

As of June 2002, more than 100 people in Britain, France, Ireland and Hong Kong have died or are dying from the human form of Mad Cow disease believed to be caused by eating contaminated meat products. India is free from BSE.

Foot and Mouth Disease: Foot and Mouth Disease (FMD) is a highly contagious viral disease of cattle and swine, as well as sheep, goats, deer, and other cloven-hoofed ruminants. Although rarely transmissible to humans, FMD is devastating to livestock and has critical economic consequences with potentially severe losses in the production and marketing of meat and milk. The disease is difficult to control and has occurred in over 60 percent of the world. Foot and mouth disease is endemic in India since many centuries. It is present almost in all parts of the country and occurs round the year. Approximately 470 million domestic livestock are susceptible to FMD apart from the free-living and captive wild ungulates. Out of the possible seven, only four serotypes, e.g., 'O', 'A', 'C' and Asia 1 were ever recorded in India. Serotype 'C' too has not been recorded in the country since 1995. Vaccination against FMD is grossly inadequate in the country. The annual loss due to FMD in India is roughly estimated at US \$ 800 million.

In order to diagnose FMD, to identify the serotype involved and to understand the prevalence and distribution of the disease in our country, a small project was initiated by the Indian Council of Agricultural Research in as early as 1971. It had its Central Laboratory located at Mukteswar Campus of Indian Veterinary Research Institute (IVRI) and four Regional Centres in four corners of the country. With the launching of intensive cattle development programmes through cross-breeding of indigenous cattle with exotic breeds, the incidence of FMD too increased in India. Accordingly, the project activities also increased. It has now been upgraded to an independent Project Directorate on Foot and Mouth Disease under the overall control of Indian Council of Agricultural Research. It is currently located at Mukteswar hills of Northern Himalaya. It also coordinates the All India Epidemiological Research Programme of FMD through 8 Regional Cooperating Centres and 15 Network Units located across the length and breadth of the country. Funds are provided to the Centres and Units centrally from the Project Directorate. Both the Centres and Network Units carry out intensive surveillance for FMD within the area of their responsibility, record outbreaks of FMD, and collect both epidemiological data of the outbreak and specimen for laboratory confirmation of the outbreak. Nearly 2500 outbreaks of FMD were reported and investigated by the Regional Centres and Units in the year 2002-03. These Centres/Units also carry out laboratory diagnosis and sero-typing of suspected specimen from reported outbreaks by a sandwich ELISA.

In 1974, Indian Veterinary Research Institute started a small-automated vaccine production plant at Bangalore Campus of the Institute in Southern India with technical cooperation from Government of Denmark. Subsequently two more manufacturing plants have come up in both public and private sector, though the combined production capacity of all the three is much less than the amount required annually. There is also a small R&D programme on FMD vaccine at IVRI, which is exploring the possibilities of developing new generation marker vaccines against FMD. The Project Directorate on Foot and Mouth Disease has adequate capabilities of taking additional responsibilities for the entire South Asia in the capacity of a referral centre including supply of diagnostic reagents, training and research.

Classical Swine Fever: Classic Swine Fever is endemic in India. Most of the outbreaks are recorded in the North-Eastern States of the country, where there is a substantial pig population. Sporadic outbreaks of CSF are also reported from other parts of the country. There is no centrally organized controlled programme for CSF in India. Diagnosis of CSF is carried out on the basis of gross and histo-pathology, serology and more recently by applying RT-PCR, where facilities are available. IVRI has standardized

the technique of PCR for diagnosis of CSF from tissue specimen. The Institute also produces limited quantity of lapinized vaccine against CSF. A few of the State Biological Production Centres, particularly in the East and North-East of the Country, too produce this vaccine. Attempts are being made to develop a cell culture based vaccine for CSF.

Bird Flu: Avian influenza, sometimes avian flu, and commonly bird flu, refers to "influenza caused by viruses adapted to birds." Of the greatest concern is highly pathogenic avian influenza (HPAI). "Bird flu" is a phrase similar to "swine flu," "dog flu," "horse flu," or "human flu" in that it refers to an illness caused by any of many different strains of influenza viruses that have adapted to a specific host.

The highly pathogenic influenza A virus subtype H5N1 virus is an emerging avian influenza virus that has been causing global concern as a potential pandemic threat. It is often referred to simply as "bird flu" or "avian influenza" even though it is only one subtype of avian influenza causing virus.

H5N1 has killed millions of poultry in a growing number of countries throughout Asia, Europe and Africa. Health experts are concerned that the co-existence of human flu viruses and avian flu viruses (especially H5N1) will provide an opportunity for genetic material to be exchanged between species-specific viruses, possibly creating a new virulent influenza strain that is easily transmissible and lethal to humans.

Since the first H5N1 outbreak occurred in 1997, there have been an increasing number of HPAI H5N1 bird-to-human transmissions leading to clinically severe and fatal human infections. However, because there is a significant species barrier that exists between birds and humans, the virus does not easily cross over to humans, though some cases of infection are being researched to discern whether human-to-human transmission is occurring. More research is necessary to understand the pathogenesis and epidemiology of the H5N1 virus in humans. Exposure routes and other disease transmission characteristics such as genetic and immunological factors, that may increase the likelihood of infection, are not clearly understood.

Although millions of birds have become infected with the virus since its discovery, 262 humans have died from the H5N1 in twelve countries according to WHO data as of August 31, 2009. The avian flu claimed at least 200 humans in Indonesia, Vietnam, Laos, Romania, China, Turkey and Russia. Epidemiologists are afraid that the next time such a virus mutates, it could pass from human to human; however, the current A/H5N1 virus does not transmit easily from human to human. If this form of transmission occurs, another pandemic could result. Thus disease-control centers around the world are making avian flu a top priority. These organizations encourage poultry-related operations to develop a preemptive plan to prevent the spread of H5N1 and its potentially pandemic strains. The recommended plans center on providing protective clothing for workers and isolating flocks to prevent the spread of the virus.

Tens of millions of birds have died of H5N1 influenza and hundreds of millions of birds have been slaughtered and disposed of, to limit the spread of H5N1. Countries that have reported one or more major highly pathogenic H5N1 outbreaks in birds (causing at least thousands but in some cases millions of dead birds) are (in order of first outbreak occurrence): Korea, Vietnam, Japan, Thailand, Cambodia, Laos, Indonesia, China, Malaysia, Russia, Kazakhstan, Mongolia, Turkey, Romania, Croatia, Ukraine, Cyprus, Iraq, Nigeria, Egypt, India, France, Niger, Bosnia, Azerbaijan, Albania, Cameroon, Myanmar, Afghanistan, Israel, Pakistan, Jordan, Burkina Faso, Germany, Sudan, Ivory Coast, Djibouti, Hungary, United Kingdom, Kuwait, Bangladesh, Saudi Arabia, Ghana, Czech Republic, Togo, Nepal.

Highly pathogenic H5N1 has been found in birds in the wild in numerous other countries: Austria, Bulgaria, Denmark, Greece, Iran, Italy, Poland, Serbia and Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland. Surveillance of H5N1 in humans, poultry, wild birds, cats and other animals remains very weak in many parts of Asia and Africa. Much remains unknown about the exact extent of its spread.

H5N1 has low pathogenic varieties endemic in birds in North America. H5N1 has a highly pathogenic variety that is endemic in dozens of species of birds throughout south Asia and parts of Africa. So far, it is very difficult for humans to become infected with H5N1. The presence of highly pathogenic (deadly) H5N1 around the world in both birds in the wild (swans, magpies, ducks, geese, pigeons, eagles, etc.) and in chickens and turkeys on farms has been demonstrated in millions of cases with the virus isolate actually sequenced in hundreds of cases yielding definitive proof of the evolution of this strain of this subtype of the species Influenzavirus A (bird flu virus).

As of the July 25, 2008 FAO Avian Influenza Disease Emergency Situation Update, H5N1 pathogenicity is continuing to gradually rise in endemic areas but the avian influenza disease situation in farmed birds is being held in check by vaccination. Eleven outbreaks of H5N1 were reported worldwide in June 2008 in five countries (China, Egypt, Indonesia, Pakistan and Viet Nam) compared to 65 outbreaks in June 2006 and 55 in June 2007. The global HPAI situation can be said to have improved markedly in the first half of 2008 [but] cases of HPAI are still underestimated and underreported in many countries because of limitations in country disease surveillance systems".

Goat Plague: Peste des petits ruminants (PPR), also known as Goat Plague, is a highly contagious viral disease of sheep and goats. Heavy losses can be seen, especially in goats; all of the affected animals in some herds may die. At one time, peste des petits ruminants was thought to be restricted to West Africa, but it has since been recognized from the equator to the Sahara desert, as well as in Asia and the Middle East. Other nearby areas, such as southern Africa and central Asia, are threatened. Although increased recognition of PPR is one reason for the expanded geographic range, it is also possible that this virus is spreading. The host range of peste des petits ruminants in wild animals is still unknown, and it is possible that this disease could threaten the conservation of some wildlife species.

Severe outbreaks were reported in susceptible buffalo in 1995 and in captive gazelles in 2002. Nearly all of the affected animals died. Other species, such as deer and wild relatives of domesticated sheep and goats, may also be affected. In addition, PPR virus can infect some species asymptotically, which complicates surveillance for the closely related rinderpest virus.

PPR has been found in parts of sub-Saharan Africa for several decades and in the Middle East and southern Asia since 1993. It has been reported in Sudan, Kenya, Uganda, and Ethiopia. It was first reported in southern India in 1987. The Arabian Peninsula, the Middle East, and the rest of the Indian Subcontinent reported PPR incidents during 1993-1995. The disease has remained endemic in these areas. It has also occurred in Turkey (1996), Iraq (2000), Iran (1994), Bangladesh (1993 and 2000), and Nepal (1995).

In India, PPR was first confirmed in March 1987 in sheep suspected of having rinderpest. It is now believed that many outbreaks in India previously attributed to rinderpest were actually PPR. The virus was isolated four more times by 1992, and major epidemics occurred in the state of Andhra Pradesh in 1994-1995 and 1997-1998.

Impact of Disasters on Animal Health

| Impact of Disasters on Animal Health | |
|--------------------------------------|---|
| Disease | Examples |
| Protein energy malnutrition | Loss in economic value, decreased economic efficiency (fewer calves). In addition, cattle seek and eat carcasses to compensate for mineral imbalances. Botulism can result, killing the animal. |
| Respiratory diseases | Pasteurella, Mycoplasma pneumoniae |
| Gastro-intestinal parasites | Helminth, cestode and trematode infestations, protozoal diarrhoea |

| | |
|---|--|
| External parasites (vector-borne disease) | Tick and leech infestations |
| Blood-borne parasites | Babesiosis, leishmaniosis |
| Bacterial diseases | Dermatophilosis |
| Vector-borne diseases | Rift-valley fever, Venezulean equine encephalomyelitis, heartwater, babesiosis, anaplasmosis, theileriosis |

Animal epidemics may break out in the aftermath of a natural disaster. Disaster causes negative impact on the overall health of the community besides interfering in its sustainable development. Direct health implications of disaster are death and injury.

There may be a case of outbreak due to:

- Disruption/ damage to sanitation and sewage facilities create enabling environment favourable for occurrence of vector borne and water borne diseases,
- The affected animals living in temporary shelters/ resettlements have limited or no access to safe drinking water, food etc. In addition, prevailing unhygienic sanitary conditions also make it conducive for spread of food and water-borne diseases.
- Overcrowding or failure to isolate infected animals in temporary shelters results in spread of communicable diseases.
- Animals also suffer from stress due to disasters, which affects their health and productivity.

Among all the adverse health impacts, the impact of communicable diseases is often delayed for weeks or months after the acute event but water and food-borne disease transmission potential increases immediately and within a week after the disaster. Vector borne diseases may appear after four weeks or more, due to disruption of vector control efforts, washing away of residual insecticides, increased number of vector breeding sites and more man-vector contact. Nutritional problems appear after months.

Emphasis on post-disaster public health measures is necessitated by the following additional factors:

- Destruction of healthcare infrastructure.
- Interference in public health services specially for:
 - Safe drinking water
 - Sanitation measures
 - Immunization
 - Rodent / mosquito control
- Ecological changes and effects in vector populations
- Displacement to inhospitable areas due to disasters
- High population density due to displacement.

Transboundary Animal Diseases

Animal disease emergencies may occur when there are unexpected outbreaks of epidemic diseases or other animal health-related events, which have the potential to cause serious socio-economic consequences for a country. These emergencies are frequently caused by outbreaks of Trans-boundary Animal Diseases (TADs), which have a significant impact on economy, trade and/or food security for many countries. Such diseases can spread easily and reach epidemic proportions; control / management, including exclusion, requires cooperation among several countries.

The International Office of Epizootics (OIE) recognizes 15 List A diseases, most of which could also be regarded as being TADs and develop into epidemics. These are:

- Foot-and-mouth disease (FMD)
- Rinderpest
- Peste des petits ruminants (PPR)
- Contagious Bovine Pleuropneumonia (CBPP)
- Rift Valley fever (RVF)
- Lumpy skin disease
- Vesicular Stomatitis
- Swine vesicular disease
- Bluetongue
- Sheep and goat pox
- African horse-sickness
- African swine flu
- Hog cholera (classical swine fever)
- Fowl plague and
- Newcastle disease.

However, this list is not exclusive. Other viral, bacterial, rickettsial and mycoplasmal diseases may also be regarded as having the potential to cause animal disease emergencies under some circumstances. The occurrence of one of these diseases may have disastrous consequences for a country when they:

- Compromise food security through serious loss of animal protein and/or loss of draught animal power for cropping;
- Cause major production losses for livestock products such as meat, milk and other dairy products, wool and other fibres and skins and hides;
- Cause losses of valuable livestock of high genetic potential. They may also restrict opportunities for upgrading the production potential of local livestock industries by making it difficult to import exotic high-producing breeds that are extremely susceptible to TADs;
- Add significantly to the cost of livestock production since costly disease control measures need to be applied;
- Seriously disrupt or inhibit trade in livestock, germplasm and livestock products, either within a country or internationally. Their occurrence may thus cause major losses in national export income in significant livestock-producing countries;
- Inhibit sustained investment in livestock production, thus trapping livestock producers in uneconomic, peasant-type agriculture;
- Cause public health consequences where diseases can be transmitted to humans (i.e. zoonoses);
- Cause environmental consequences when wildlife populations die out; and
- Cause unnecessary pain and suffering to many animals.

| Consequences of Transboundary Animal Diseases | |
|--|---|
| Disease | Consequences |
| Rinderpest | Rinderpest is perhaps the most serious cattle plague. When this virus disease was first introduced to Africa in the late nineteenth century, it spread over almost the whole continent within ten years, killing an estimated 10 million cattle and untold numbers of wildlife-irrevocably changing livestock |

| Consequences of Transboundary Animal Diseases | |
|--|---|
| Disease | Consequences |
| | husbandry and wildlife ecology. In 1994, rinderpest spread to remote mountainous areas of northern Pakistan that had previously been free of the disease, killing an estimated 40,000 cattle and yaks. |
| Foot-and-mouth disease | Foot-and-mouth disease is a highly contagious virus disease of cloven-hoofed animals. A major epidemic of type O FMD in Taiwan Province of China in 1997 caused the death of some 184,000 pigs and a further 3.85 million pigs were slaughtered as part of the eradication campaign. The price of pigs dropped to a quarter of the price in force immediately before the outbreak. |
| Rift Valley fever | Rift Valley fever is a mosquito-borne viral zoonotic disease. The first recorded outbreak of RVF in Egypt in 1977 caused an estimated 200,000 human cases of the disease with some 600 deaths as well as large numbers of deaths and abortions in sheep and cattle and other livestock species. An outbreak of the disease in East Africa in 1997–98 not only caused livestock losses and human deaths but also seriously disrupted the valuable livestock export trade to the Near East. |
| Bovine spongiform encephalopathy | Bovine spongiform encephalopathy, a prion disease of cattle, was first recognized in the United Kingdom in 1986. Since then, more than 170,000 cattle have either died or been slaughtered. The discovery of a probable link between BSE and new variant Creutzfeld-Jakob disease of humans in 1996 led to major disruptions of world beef markets. |
| Contagious bovine pleuropneumonia | Contagious bovine pleuropneumonia is a serious mycoplasmal disease of cattle. There has been a catastrophic spread of CBPP over the last few years in Africa where it now affects some 27 countries and causes estimated losses of up to US\$2 billion annually. In 1995, the disease was reintroduced to Botswana for the first time in 46 years. As part of the eradication campaign, all cattle (approximately 320,000) in an area of northern Botswana had to be slaughtered at a direct cost of US\$100 million; indirect losses were over US\$400 million. |
| Hog cholera | Hog cholera (or classical swine fever) is a generalized virus disease affecting only pigs. A serious outbreak of the disease in the Netherlands in 1997-98 led to the death or slaughter of some 12 million pigs as part of the eradication campaign. The cost of this outbreak was estimated to be US\$2.5-3 billion, half of which was public money and the other half was more or less equally shared between farmers and other participants in the livestock production chain. The effects of the epidemic were so severe that the Government of the Netherlands approved a national pig-restructuring plan that foresaw a reduction in the national pig herd of about 25 percent within two years. |
| African swine fever | African swine fever is another generalized virus disease affecting pigs. In 1996 it occurred for the first time in Côte d'Ivoire, where it killed 25 percent of the pig population and, according to various estimates, cost the country between US\$13 million and 32 million in direct and indirect losses and eradication costs. There has since been a serious spread of the disease to Togo, Benin and Nigeria. |

| Consequences of Transboundary Animal Diseases | |
|--|---|
| Disease | Consequences |
| Virulent avian influenza | Virulent avian influenza is a lethal virus disease of poultry with some zoonotic potential. An economic analysis of outbreaks of VAI in Pennsylvania, United States in 1983–84 showed that the direct costs of eradication were US\$64 million, and the indirect costs to consumers were \$500 million through increased prices of products. On the other hand, it was estimated that VAI would have cost the United States poultry industry \$2 billion annually had it become endemic. The influenza virus causing an outbreak of VAI in Hong Kong in 1997 was found to be capable of transfer to humans and, as a consequence, a decision was taken to depopulate chickens there completely. |

Common Animal Epidemics in U.P

Common animal epidemics in U.P. are:

- Hemorrhaging Septicimia.
- Bird flu.
- Equine influenza.
- Foot and Mouth disease.
- PPR
- Glander Enfarcy.

Chapter III: Preventive / Mitigation Measures

Factors that have been described by different studies and research to stimulate the rise of epidemics include:

1. Alterations in agricultural practices and land use
2. Changes in society and human demographics
3. Poor animal health
4. Hospitals and medical procedures
5. Evolution of the pathogen (e.g., increased virulence, drug resistance)
6. Contamination of water supplies and food sources
7. International travel
8. Failure to take adequate precautions of public health programs
9. Globalization & International trade involving animals and animal products
10. Natural Disasters
11. Climate change
12. Reduced levels of biodiversity (e.g. through environmental destruction)
13. Bad urban/ rural planning

Epidemics mitigation/prevention will include the following activities:

- Disease Surveillance
- Vaccination
- Training for early recognition of epidemic diseases
- Awareness Education
- Capacity Building

A mitigation plan will help to ensure that the disaster management efforts are not affected due to non-availability of resources. The steps required for mitigation are as under:

- A mechanism for surveillance should be set up involving state, district and village level veterinary institutions for early detection of outbreaks. Chief veterinary officer at district level will report to control room in animal husbandry department at state level on a monthly basis.
- Nodal officers should be identified at state, district and village level for coordination of activities.
- Animal husbandry department should coordinate with revenue department for provision of temporary shelters for animals on identified shelter sites with provision for proper water and fodder for animals.
- Provision of vehicles should be made for immediate transportation of infected animals to veterinary hospitals.
- Each veterinary hospital should have a preparedness plan for handling the inflow of infected animals.
- Required medicines and equipment should be stocked.

- A sustained IEC campaign on animal health should be launched in vulnerable areas of the state.
- Provision of boats should be made for evacuation of infected animals from flood prone areas of the state.
- Rescue personnel should be trained on handling of animals.

Disease Surveillance

Disease surveillance should be an integral and key component of all government veterinary services. This is important for early warning of diseases, planning and monitoring of disease control programmes, provision of sound animal health advice to farmers, certification of export livestock and livestock products and international reporting and proof of freedom from diseases. Comprehensive system of disease surveillance shall include passive disease surveillance and active disease surveillance.

Passive disease surveillance

Passive disease surveillance is the routine gathering of information on disease incidents from sources such as requests for assistance from farmers, reports from field veterinary officers and livestock officers, submission of diagnostic specimens to laboratories and the results of laboratory investigations. Routine disease reports may also come from other sources such as abattoirs and livestock markets.

It is important that passive surveillance systems are strengthened and that the disease information they yield be effectively captured and analysed. However, it should be recognized that complete reliance on passive surveillance usually leads to significant underreporting of diseases. It is essential that passive surveillance be supplemented by a strong system of active disease surveillance, particularly for emergency animal diseases.

Active disease surveillance

Active disease surveillance requires purposeful and comprehensive searching for evidence of disease in animal populations or for verification that such populations are free of specific diseases. Active disease surveillance programmes may be of a catchall nature to detect any significant disease occurrences, targeted against specific high-threat diseases or designed to monitor the progress of individual disease control or eradication campaigns. The components of successful active disease surveillance programmes are:

- Close integration between the activities of field and laboratory veterinary services;
- Regular visits to farming communities for farmer interviews about diseases, provision of animal health advice, clinical examination of livestock and, when appropriate, postmortem examinations and collection of diagnostic specimens including serum samples. Emphasis should be given to critical areas identified by disease risk analyses and other epidemiological assessments;
- Participatory rural appraisal programmes for epidemiological evaluation of specific diseases;
- Utilization of disease information from all potential sources in the public and private sector, including veterinary inspections at abattoirs, private veterinary practitioners and veterinarians in commercial livestock industry positions;
- Gathering of ancillary information to support prioritization and decision-making on animal health programmes, e.g. livestock production and socio-economic data;

- Periodic targeted serological surveys in animal populations. These may be used either to detect the spread of infection or to prove freedom from infection. They are also occasionally used to monitor the effectiveness of vaccination campaigns. Serological surveys should be carefully designed to yield statistically valid information on the disease status of animal populations. There is often an inherent difficulty in interpreting the results of serological surveys where both vaccination and natural infection are occurring, but this may be overcome to some extent by selecting appropriate serological tests.

Epidemic livestock diseases are frequently spread by the movement of infected animals. In active disease surveillance of such diseases, emphasis must be given to situations where animals and people are on the move. This includes livestock markets, livestock trading routes, border areas and situations such as nomadism, transhumance and refugee movements from wars and civil strife.

Livestock markets and other congregations of animals are a very important potential source for the rapid spread of epidemic diseases. They should be a major focus for disease surveillance and should be carefully controlled during disease outbreaks

Wildlife disease surveillance must not be overlooked. Wildlife may provide a reservoir of infection for some diseases, but may also act as a sensitive indicator of diseases that are not clinically apparent in adjacent livestock populations. The latter has occurred recently with African Lineage 2 rinderpest virus in East Africa. Close cooperation is required between veterinary and wildlife authorities. As direct examination of wildlife by capture techniques or slaughter is expensive and often difficult to organize, where possible sera and other diagnostic specimens should be collected when such wildlife surveys are carried out.

Training for Early Recognition of Epidemic Diseases

In many developing countries, it is unlikely that many veterinarians or other animal health workers in either the public or private sector will have had first-hand experience with transboundary or other emergency animal diseases, as these diseases may never have occurred in the country or may have been exotic for a considerable period. This deficiency needs to be rectified by a systematic training programme for all those who, in their professional capacity, may be the first to come into contact with an incursion or outbreak of such a disease. Because a disease may strike in any part of the State and because of staff turnovers, training programmes should be both comprehensive and regular. This training must extend to staff in the remotest parts of the State.

Obviously, it will be neither practicable nor necessary to train personnel to a high level of expertise in these diseases. In most cases it is sufficient for trainees to be familiar with the basic clinical, pathological and epidemiological features of risk diseases and to know what to do if they suspect one of these diseases. Perhaps most important is to inculcate in people an awareness that if they are confronted by an unusual disease outbreak, either in the field or in the diagnostic laboratory, they should include exotic diseases in the range of their differential diagnostic possibilities and act accordingly. They should be trained in the steps they need to take to secure a confirmatory diagnosis, including collection and transport of diagnostic specimens, and in the immediate disease control actions that need to be instituted at a disease outbreak site. Training should also be intensified for diseases judged to be of very high and immediate threat.

A number of training possibilities may be selected as appropriate, including sending key field or laboratory staff to another country/state to gain first-hand experience when there is a major disease outbreak. While this is the best type of training, it is unpredictable and expensive. Nevertheless, this possibility should be explored when there is a disease emergency in a neighbouring country/state. Staff would be able to observe the disease and disease control procedures in a similar environment and they would also provide additional human resources for the recipient country/state responding to the emergency. Similar but simpler training workshops should be organized for auxiliary veterinary staff.

Field diagnostic manuals are most useful if they are prepared in a simple, practical and graphic format whereby they can always be carried in a vehicle and can be available for quick reference at the site of a disease outbreak. The manual should cover essential information on the aetiological agent, host species, epidemiology, clinical signs, gross pathology, differential diagnosis and collection of diagnostic specimens for each of the emergency diseases. Training in emergency disease recognition and management should also be an integral part of the curriculum of undergraduate veterinary students in universities.

Awareness Education

This is one of the most critical, but sometimes neglected, aspects of preparedness planning for emergency diseases. It is also important for fostering a sense of participation in and support for emergency disease control/eradication campaigns among livestock farmers and other key stakeholders. It also engenders a “bottom-up” approach to planning and implementation of disease control programmes to complement the more traditional “top-down” approach adopted by governments.

The communication strategies should aim to make stakeholders aware of the nature and potential consequences of important livestock diseases and of the benefits to be derived from their prevention and eradication. Furthermore, they should always have an element of rallying the community to the common cause of fighting a disease epidemic.

When possible, professional communicators and extension experts should be enlisted to help design and carry out awareness and publicity campaigns. Ideally, personal visits and discussions with farming communities and livestock traders, etc. are preferable, but newspapers, radio and television can reach a large target audience quickly. Radio programmes have proved to be a very effective method for spreading the message. These should be broadcast at times of the day when most farmers could be expected to be listening to the radio, which may be early in the morning or at night.

Livestock Farmers

Early warning of outbreaks of potentially serious livestock diseases is only likely to occur if farmers are prompt to seek help from their local government veterinary officer, private veterinary practitioner, livestock officer or animal health assistant when they experience an unusual disease in their animals. This is the vital first link in bringing an occurrence of such a disease to official attention. It is therefore worthwhile devoting considerable attention to farmer and other public awareness programmes in emergency disease preparedness planning.

An essential prerequisite for encouraging farmers to make rapid contact with their district veterinary office or equivalent for help when faced with a disease outbreak is that a high level of trust and confidence has been established between the farming community and local animal health officials. This is not something that happens overnight. Farmers are more likely to report unusual disease occurrences at an early stage if they perceive that there will be tangible benefits in doing so. The required level of trust and confidence needs to be built up over time by regular visits to farming communities, well-planned extension programmes and an established pattern of assistance and advice on more routine animal health matters. Local animal officials should be both accessible and easy to contact. Reports of unusual disease incidents should always be taken seriously and investigated promptly and thoroughly, even if on the surface they may appear to be false alarms.

Awareness campaigns on the more important emergency livestock diseases should become a routine element of extension programmes for farmers. They may be targeted particularly at diseases that have been identified as being of highest threat in risk analyses and at high-risk areas for entry and/or occurrence of these diseases. Farmer awareness campaigns should cover the following:

- Simple descriptions of the nature of the diseases, how they are spread, their potential consequences for the individual farmer and local communities and the importance of their prevention and early detection;
- Basic zoosanitary procedures that farmers should routinely adopt. These may include purchase, as far as is practicable, of animals with a known animal health status from areas known to be free of diseases, segregation of newly purchased animals (particularly those acquired from livestock markets) from other animals on the farm or in the village for the first two weeks or so, segregation of any sick animals and elementary hygiene practices;
- Key clinical signs which may alert a farmer to the possible occurrence of particular diseases. These should be explained in straightforward, non-technical terms. The “3 Ds” used in rinderpest awareness campaigns are an excellent example. These are discharges, diarrhoea and death; farmers in risk areas are advised that if they see any two of these in their cattle they should assume that there is rinderpest and act accordingly;
- Information on whom to contact and how to contact them if there is an unusual disease occurrence.

A series of audio-visual aids may be prepared or obtained from external sources to support extension programmes. These should be designed for specific audiences bearing in mind the level of sophistication appropriate for each group. They may include posters, leaflets and videos.

Livestock Traders

Livestock traders are another important target group for public awareness campaigns, but they are often overlooked. The movement of animals through livestock traders is often the key epidemiological factor in the spread of epidemic livestock diseases. The need to build up a climate of trust and confidence between animal health officials and livestock traders is just as important as that discussed for farmers. The general themes for emergency disease awareness should also be similar, although emphasis should be placed on the importance of sourcing animals from disease-free areas where possible, not buying any sick stock and following any rules about quarantine and vaccination, testing or identification of animals. The potential consequences of the occurrence of a disease for internal and international trade should be emphasized.

Public Awareness

Campaigns targeted at specific groups should be supplemented by more general public awareness programmes. These can be channelled through media outlets including newspapers, radio and television. Radio broadcasts can be an extremely powerful (and perhaps the only) means of reaching farming communities and nomadic groups in remote areas or areas that have been rendered relatively inaccessible for reasons such as civil strife.

Capacity Building

Veterinary Health Facilities

Hospitals and laboratory facilities for animal health should be organized in sufficient numbers and in strategic locations. Buildings, equipment, trained man power and vehicles should be planned and reviewed periodically.

Laboratory Diagnostic Capabilities: The rapid and accurate diagnosis of diseases can only be assured in fully equipped laboratories that have a range of standardized diagnostic reagents, experienced staff and a sufficient throughput of diagnostic specimens to maintain expertise. It should be

noted that development of diagnostic expertise for exotic disease using tests that require handling the live agent should only be attempted in microbiologically high-security laboratories.

Specialist Diagnostic Teams

It is recommended that specialist diagnostic teams be ready to be mobilized when there is a report from the field of a suspected emergency animal disease. These arrangements should be made well in advance of any emergency and the members should be available and equipped to travel to a disease outbreak site at short notice. In this case they must have at their disposal all the equipment needed for the preliminary investigation of a disease and for collection and transport of diagnostic specimens.

The composition of the diagnostic team will vary according to circumstances but may include:

- A veterinary pathologist from the central or regional veterinary diagnostic laboratory;
- A specialist epidemiologist, preferably with first-hand experience or training in the major transboundary animal disease;
- A veterinarian with extensive experience of endemic diseases in the target livestock species;
- Any specialist (e.g. entomologist) required for special examinations.

The specialist diagnostic team should be given a high level of training in at least the identified high-priority emergency diseases and in participatory techniques.

The team would travel to a disease outbreak site with local veterinary staff, as directed by the CVO. They would be expected to make clinical examinations, collect histories and make preliminary epidemiological investigations, particularly in respect to tracebacks (have any new animals joined the infected herds or flocks in recent weeks and where did they come from?) and traceforwards (have any animals left the infected herds or flocks in recent weeks and where did they go to?). They would also autopsy sick or very recently dead animals and collect a range of diagnostic specimens appropriate to the endemic and exotic diseases included in the differential diagnosis and transport these back to the laboratory.

The team should also be able to take any immediate disease control actions at the outbreak site and should have the necessary authority to do this.

The specialist diagnostic team would be expected to report their assessment of the disease outbreak immediately to the state veterinary officer and the CVO, specifying steps taken to secure a confirmatory diagnosis and advice given on further disease control strategies, including declaration of infected and surveillance zones.

Chapter IV: Mainstreaming DM Concerns into Developmental Plans

Is there a connection between development and disasters? Do developments lead to disaster? Or, do developmental activities help in managing disasters? How to 'integrate' Disaster Risk Reduction issues into development planning? These are the questions in the minds of those who are involved in the activities of disaster management since this topic started getting world attention.

Most countries agree that development and disaster management are linked. Development cannot be sustainable unless it incorporates elements of disaster risk reduction. Risk reduction measures should be incorporated into development initiatives to protect development gains. At times development initiatives help to reduce disaster risks. A few examples are given here to explain how disaster risk reduction can be integrated into development planning.

- Consider the construction of a road to connect an isolated settlement. The road helps to develop the area economically and also provides a safe evacuation route. However, it is seen that the development process often clashes with disaster risk reduction principles. Roads constructed in hilly areas of the country end up destabilizing the slopes leading to frequent and catastrophic landslides. Therefore, when implementing the road project, necessary measures should be taken to reduce the risk of landslides.
- When water supply and sanitation projects are implemented, they meet the basic needs of the target population. However, it may result in outbreak of water borne epidemic diseases due to water contamination; outbreak of epidemics due to unsanitary conditions, mosquito breeding, etc. therefore, whenever water supply and sanitation projects are planned, provision should be made for inspecting water treatment and supply systems periodically, properly maintain the system; avoid contamination of drinking water; take precautions to avoid breeding of mosquitoes; and educate people on use of safe water and hygiene.
- When hospitals are constructed in order to provide medical facility to the people, if sanitary condition is not properly addressed, it may lead to diseases or epidemics. Therefore, it is essential to ensure clean environmental sanitation and appropriate safe methods for disposal of hospital waste. Also, new hospital buildings should be constructed with disaster resisting features; and survey of existing health service buildings should be done and retrofitting work taken up if needed.

Mainstreaming Animal Epidemic Concerns in Rural Development Plans

- Rural development plans should consider the issue of animal epidemics and provide necessary measures in order to mitigate the same. The following aspects should be included in rural development plans:
 - Emergency animal shelters
 - Good sanitary conditions at the animal shelters
 - Animal hygiene and human hygiene
 - Quick drainage of water stagnant near animal shelters.
 - Preventing agricultural, human, and animal waste from contaminating drinking water sources for animals.
 - Periodic animal vaccination programmes
 - Awareness programmes for Livestock Farmers, Livestock Traders, and the Public.

Chapter V: Preparedness Measures for Animal Epidemics

Health effects of various hazards

While disease surveillance programme can help to identify animal epidemics, many natural disasters also increase the risk of epidemics. Therefore, it is necessary to take preparedness measures before natural hazards such as floods strike. The following Table shows that floods may also adversely impact health facilities and health services.

| Health effects | Earthquake | Floods | Landslides | Epidemics | Fires | Conflict situation |
|-------------------------------|---|-------------------------|----------------------------|-----------|-------------------------------|--|
| Deaths/ severe Injuries | Many | Few | Many | Many | Few | Many |
| Requiring extensive treatment | Many | Few | Few | Few | Many | Many |
| Increased risk of epidemics | Yes | Yes | Yes | - | - | Yes |
| Damage to water systems | Severe | Light | Severe (but localized) | None | None | Limited (depends on the factions fighting) |
| Damage to health facilities | Severe (structural and equipment) | Severe - equipment only | Severe (but localized) | None | Depends on location | Limited (Depends on the factions fighting) |
| Damage to health services | High | High | Low | Moderate | Moderate | High |
| Food shortage | Possible (due to distribution problems) | Common | Common (but localized) | None | Possible (if crops destroyed) | Common (in prolonged conflicts) |
| Major population movements | Common (generally limited) | Common | Common (generally limited) | Rare | Unlikely | Common (generally limited) |

The benefits of animal disease emergency preparedness planning

- An animal disease emergency can have serious socio-economic consequences, which, in extreme cases, may affect the whole national economy. If a new disease can be recognized quickly while it is still localized and prompt action taken to contain and then progressively eliminate it, the chances of eradication of the disease are markedly enhanced. Conversely, eradication may be extremely difficult, costly and even impossible if the disease is not recognized and appropriate control action taken before it becomes widespread or established in wildlife.
- The target should always be to eliminate progressively and finally eradicate an animal disease if epidemiological and other circumstances are favourable. The alternative approach of simply "living with the disease" through the institution of routine vaccination campaigns and/or other disease control measures will in the end prove far more costly and will be a permanent constraint to efficient livestock production systems.
- Contingency planning and other preparedness programmes for animal disease emergencies should be regarded as providing the key to mounting early effective action in the face of an

emergency. In fact these should be recognized as some of the more important core functions of animal health services.

Precautions to be taken to prevent epidemics amongst animals

Campaigns for giving awareness and educating the men, women and children in the following will be effective for reducing the outbreak of epidemics and its impact.

- Personal hygiene and sanitation including the importance of hand washing with soap after defecation and before preparing or eating food. Keeping animal sheds and barns clean.
- Home hygiene, to keep the space in and around the house clean. Regular washing of animals like cows and buffaloes with clean water.
- Safe disposal of household waste including solid waste like animal excreta.
- Safe disposal of hospital waste.
- Segregation of infected animals, safe disposal of industrial effluent.

Preparedness Measures in a Disaster Situation

- Infected animals should be evacuated to nearest hospital as early as possible. In case of floods animals should be quickly evacuated from affected area to prevent spread of diseases.
- In flood prone areas care should be taken to see that water sources for animals are not contaminated. Disinfectants should be stocked in advance for disinfection of water.
- Separate sheds should be erected at identified shelter sites to accommodate the animals.
- Provision for fodder and clean water should be made in the shelter for these animals.
- Initial assessment: should include rapid collection and analysis of data including mortality, morbidity, vaccine coverage, mapping of area.
- Source of infection should be isolated. In case the infection is spreading through water then alternate arrangements should be made.
- Infected animals should be separated from the other animals.
- Vaccination drives for animals should be taken up in the state from time to time.
- Animal health check up camps should be set up in villages to reduce probability of outbreaks.
- Stocks of medicines should be replenished and items like surgical packs should be kept in readiness.
- It should also be ensured that medicines and surgical packs are stocked in shelter buildings also.
- Vaccination against F.M.D, H.S., B.Q., P.P.R, Enterotoxaemia, Sheep pox, fowl pox and R.D. should be done.
- Mineral vitamins supplement and balanced feed to affected animals are to be arranged.
- Control rooms to be set up at district and state level
- Nodal officers should be identified at the state and district levels for collecting data and analysing relevant surveillance reports and ensuring appropriate follow up action.

Vaccination

The number of diseases that can be prevented by vaccines is growing. Advances in biomedical research, technology, and government support for more publicly funded immunization programs are helping to make this possible. Vaccines still provide the most effective, longest-lasting method of preventing infectious diseases in all age groups.

Vaccination is generally done for the following diseases:

- HS- Hemorrhaging Septicimia.
- Foot and Mouth disease.
- PPR for goats.
- Entero Toximia (ET) for goats.
- FP, RD (Ranikhet Disease) for hens.
- Fowl Pox (FP)
- Swine Fever (SF).

Chapter VI: Response for Animal Epidemics

Animal Husbandry Department

Director heads the Animal Husbandry department at the state level. There are 3 additional directors under him:

- Addl. Director (Planning)
- Addl. Director (Godhan)
- Addl. Director (BPI- biological production unit)

Each additional director has Jt. Directors under him. Dy. Directors are posted under Jt. Directors. Dy. director heads a circle. There are 18 divisions and 71 districts. Chief Veterinary Officers are heads in the district. There is one Chief Veterinary Officer per district. There are 11 Path. Labs in U. P. (disease diagnostic labs). These labs are under Dy. Director, disease control. Prior to flood season flood posts are established under Livestock Extension Officer. Routine works of the animal husbandry department are:

- Treatment of animals
- Vaccination
- Artificial insemination for breed improvement
- Bull distribution
- Castration
- Fodder development
- Awareness programmes on animal husbandry
- Sterility camps

Veterinary Infrastructure of Uttar Pradesh

The Department of Animal Husbandry functions in a 5-tier hierarchy:

- State Animal Health Centre
- District Veterinary Hospital
- Block Animal Health Centre
- Additional Block Animal Health Centre
- Animal Aid Centre

The total number of Veterinary facilities in Uttar Pradesh is 1910. A district-wise detail of these is given in the following Table:

| S. No | District | Number of Veterinary Facilities |
|-------|-----------|---------------------------------|
| 1 | Varanasi | 17 |
| 2 | Jaunpur | 35 |
| 3 | Ghazipur | 35 |
| 4 | Chandauli | 16 |

| S. No | District | Number of Veterinary Facilities |
|--------------|-------------------|--|
| 5 | Banda | 19 |
| 6 | Hamirpur | 18 |
| 7 | Mahoba | 9 |
| 8 | Chitrakoot | 11 |
| 9 | Jalaun | 20 |
| 10 | Jhansi | 21 |
| 11 | Lalitpur | 20 |
| 12 | Saharanpur | 30 |
| 13 | Mujjafarnagar | 52 |
| 14 | Agra | 29 |
| 15 | Mathura | 21 |
| 16 | Mainpuri | 21 |
| 17 | Firozabad | 26 |
| 18 | Kanpur (urban) | 32 |
| 19 | Kanpur (rural) | 23 |
| 20 | Farrukhabad | 15 |
| 21 | Kannauj | 13 |
| 22 | Etawah | 25 |
| 23 | Auraiya | 12 |
| 24 | Bareilly | 30 |
| 25 | Shahjahanpur | 28 |
| 26 | Pilibhit | 16 |
| 27 | Budaun | 35 |
| 28 | Gonda | 37 |
| 29 | Shravasti | 13 |
| 30 | Balrampur | 16 |
| 31 | Bahraich | 36 |
| 32 | Meerut | 30 |
| 33 | Bagpat | 17 |
| 34 | Bulandshahar | 38 |
| 35 | Gautam Buddhnagar | 18 |
| 36 | Ghaziabad | 32 |
| 37 | Hardoi | 37 |
| 38 | Lucknow | 28 |
| 39 | Rae Bareilly | 38 |
| 40 | Unnao | 46 |
| 41 | Lakhimpur Kheri | 40 |

| S. No | District | Number of Veterinary Facilities |
|--------------|-------------------|---------------------------------|
| 42 | Sitapur | 41 |
| 43 | Faizabad | 26 |
| 44 | Sultanpur | 48 |
| 45 | Ambedkar nagar | 15 |
| 46 | Barabanki | 37 |
| 47 | Allahabad | 43 |
| 48 | Fatehpur | 34 |
| 49 | Pratapgarh | 51 |
| 50 | Kaushambi | 15 |
| 51 | Siddharth nagar | 24 |
| 52 | Basti | 27 |
| 53 | Sant Kabir nagar | 17 |
| 54 | Mirzapur | 23 |
| 55 | Sant Ravidas nagr | 9 |
| 56 | Sonebhadra | 18 |
| 57 | Aligarh | 40 |
| 58 | Mahamaya nagar | 11 |
| 59 | Etah | 15 |
| 60 | Kanshiram nagar | 9 |
| 61 | JP nagar | 12 |
| 62 | Rampur | 17 |
| 63 | Bijnore | 35 |
| 64 | Moradabad | 28 |
| 65 | Deoria | 25 |
| 66 | Gorakhpur | 50 |
| 67 | Kushinagar | 26 |
| 68 | Maharaj ganj | 31 |
| 69 | Azamgarh | 50 |
| 70 | Mau | 28 |
| 71 | Balia | 50 |
| TOTAL | | 1910 |

Response System for Animal Epidemics

The response system for animal epidemics in Uttar Pradesh functions as follows:

- There is a Control Room at state level headed by the Director, Animal Husbandry. It is the responsibility of the Director to issue alert in case of an epidemic on information from the District level.
- The state control room in the animal husbandry department is under a deputy director.

- At district level, the Chief Veterinary Officer (CVMO) is responsible for tackling emergencies.
- District Control Room (DCR) is looked after by CVMO. Rapid Response Teams are also assembled within the department as and when required.
- At Block level, there is Block Animal Health Centre and Additional Block Animal Health Centre headed by Block Livestock Development Officer who is in-charge of carrying out response and relief functions in case of an outbreak and has to report to the district and state control room.
- Vaccination is the main preparedness measure taken. Animals also get stress due to disasters. When there is a possibility of disaster, animals are immediately vaccinated.
- During disasters animals are evacuated to relief camps and arrangement for food and water is made at the relief camps. In hazardous areas work is done on priority.
- The District Administration gives space for relief camp. Though human beings are provided shelters in the relief camps, animals are kept in the open space, exposed to wind and rain.
- The animal husbandry department gives services related to animals.
- Information of disaster is given by revenue department or district administration.
- During disasters animal husbandry department takes care of life saving work of sick and wounded animals and feeding of animals.
- Rescue of animals during disasters is handled by PAC.
- After disaster monitoring for diseases is done.
- In case of infections, infected animals are segregated. They are kept in a location away from the wind direction. They are not allowed to share food and water with other animals.
- Rapid response teams are assembled when information of disaster/ disease outbreak is received. The team generally consists of:
 - Chief Veterinary Officer
 - Doctors
 - Veterinary Officer (lab)
- As the department does not have any vehicles in the field, hired vehicles are used for transporting animals.
- For burying dead animals generally a 4 ft. deep pit is dug. For cows and buffaloes 6 ft. x 10ft. ditch is required. For other animals pits are dug as per size. Big animals are moved using JCB. Gram Pradhan gives space for burying of animals.
- In disaster times supply of animal feed is a problem. District Administration or Chief Veterinary Officer can direct the concerned persons to stock fodder.
- For better animal care during disasters, improved awareness is needed.
- Village disaster management teams (DMT) are needed.
- Task Forces trained in animal rescue are needed.

Control and Elimination of Animal Epidemic Diseases

A number of basic approaches may be used to control and eliminate epidemic livestock diseases. They are usually used in combination. The weighting that is given to the different approaches will be determined by the nature of the disease in question, the epidemiological circumstances and their

acceptability and cost. The approaches to be used are summarized below.

Denial of access of the disease agent to susceptible host animals

This may be achieved by:

- Applying good hygiene and sanitary practices when handling livestock. This includes disinfection of all personnel and equipment. In this context, veterinary services should note that there have been several well-documented cases of highly contagious diseases such as FMD being spread from farm to farm by veterinarians on their rounds.
- Removing potentially contaminated materials from the environment, by disinfection, destruction and/or safe disposal. This includes cleaning and disinfection of premises that have housed infected animals, destruction of contaminated feedstuffs and other materials and burial or burning of the carcasses of infected animals.
- Preventing the feeding of contaminated materials to livestock. Many diseases can be transmitted in this way. The classical example in recent years has been bovine spongiform encephalopathy (BSE). However, entry into the food chain is an important method of perpetuation and spread of other important animal pathogens, particularly by swill feeding. These include FMD, African swine fever, hog cholera (classical swine fever) and swine vesicular disease. These diseases have spread not only from farm to farm but also from continent to continent. Controls on swill feeding by either enforcing strict bans on swill feeding of animal tissues to animals or allowing only the feeding of heat-treated swill to animals should be an integral part of the prevention and eradication of a number of epidemic livestock diseases including those mentioned above.

Avoiding contact between infected and susceptible animals

This is one of the most important approaches and may be achieved by:

- Quarantining of infected or potentially infected farms or areas. A ban or appropriate animal health restrictions are placed on the movement of susceptible species animals into or out of the quarantined area until infection is considered to have been removed. Restrictions may also be placed on the movement of people, potentially contaminated animal products and other materials.
- Imposing livestock movement controls. These are usually imposed over a wider area around the immediate quarantined or infected area, as part of a zoning policy (for example, within surveillance or control zones). With such controls the movement of susceptible species is only permitted under strict, designated conditions when it is deemed safe. This may include the transport of livestock direct to abattoirs for immediate slaughter for those diseases that are not transmitted by meat or other animal products. There may also be bans or restrictions placed upon congregations of susceptible animals such as at livestock markets or race meetings.
- In some cases, through erecting large-scale fencing or other physical barriers. However, potential adverse effects, such as disruption of wildlife habitats and of traditional movements of people and their animals, should first be evaluated.

Removing infected and potentially infected animals

This is often referred to as an eradication policy. Susceptible species on infected farms or in designated infected areas are immediately slaughtered on site and their carcasses disposed of safely, usually by burial or burning. It is often combined with cleaning and disinfection procedures for the infected premises. Because of the rapid spread of epidemic diseases, all susceptible animals are slaughtered,

whether obviously infected or not. For some infectious disease control programmes such as brucellosis and tuberculosis, it is possible only to slaughter animals that have been tested positive, but this is not appropriate for rapidly contagious epidemic diseases.

A component of an eradication policy may also be selective reduction of susceptible wild and/or feral animal populations in infected areas, but before embarking on such a programme a careful evaluation should be made.

Reducing the number of susceptible animals

This is an important approach used in many countries. In emergency disease control it is usually achieved by vaccination of susceptible animals. Vaccination may be done selectively (for example as “ring vaccination” around infected areas) or as “blanket” vaccination programmes in susceptible animal populations. Depending on the nature of the disease and of available vaccines, it may be possible to eliminate infection completely. More usually vaccination is used to reduce the level of infection in animal populations to an acceptably low level where other disease elimination policies are more feasible. In fact, in some cases routine vaccination may mask underlying infection in animal populations.

Reducing access of vectors to susceptible animals

This may be appropriate for insect-borne diseases and, in some cases, may be achieved by reducing vector numbers in an area by treatment and/or elimination of potential breeding sites. Large-scale insecticide spraying is generally too costly, ineffective in the long term, and/or environmentally unacceptable. Other approaches might be to treat susceptible animals with long acting insecticides during critical periods or remove animals from high-activity insect vector areas either continuously or during times of the day or year when insect vectors are most active.

Strategies for Controlling Animal Epidemics

Containment first

Containment of an outbreak of an epidemic disease is the first priority. Stabilizing the situation is the prelude to eradication.

In order to contain the outbreak, one must be able to determine where the disease is - which farms or areas are infected and which are free. This means that all the active disease surveillance procedures should be put immediately into effect. There needs to be an intensive search for new foci of infection for the disease, with priority given to:

- Following up any reports or rumours of the disease;
- Regular (preferably daily) disease surveillance visits to farms or farming communities close to known foci of infection - in designated surveillance zones;
- Following up epidemiological tracebacks. These are new animals that have been brought on to the infected farm in the period immediately before the disease was first noticed and that may have been the source of infection. Their origin must be identified, together with any other locations that they may have infected during transit, and investigated for the disease;
- Following up epidemiological traceforwards. These are animals that have left known infected farms during the critical period when they may have been in contact with infected animals. These animals may be spreading the disease to new areas so that the farms to which they have gone must be identified and investigated;
- Surveillance of any animals that have congregated with known infected animals over critical periods for transfer of infection, e.g. at common watering points or pastures and markets;

- Any high risk areas for spread or occurrence of the disease that have been identified by epidemiological analysis. An example may be Rift Valley fever - those areas that have similar climatic features and build-up of mosquito vector populations to places where an outbreak of RVF is occurring.

As can be appreciated, the task of following up tracebacks and traceforwards and other epidemiological leads becomes very complicated if, for example, suspect animals have been through livestock markets. This points to the need to have in place livestock identification mechanisms or at least effective “paper trails” (e.g. movement permits) for animals that have been sold or moved. As new foci of infection are identified, starting from where the disease was first detected, appropriate disease control actions must be put into place immediately and strictly enforced to prevent further spread of the disease from these foci. In most cases this will involve quarantining the infected farm or area and placing bans or restrictions on the movement of susceptible species animals and dangerous animal products or other materials in surrounding zones. The disease control/eradication strategies selected for the particular disease (e.g. eradication or ring vaccination) are then carried out.

Zoning

The proclamation of geographic areas in which specific disease control strategies are to be carried out is known as “zoning”. Zoning almost always takes place in the form of concentric “circles” around known or suspected foci of infection, with the most intensive disease control activities in the inner zones. The actual size and shape of the zones may be determined by administrative boundaries or geographic barriers or be driven by epidemiological or resource imperatives. The nature of the disease control zones and the activities carried out in each zone are dependent on the particular disease control/eradication strategy selected. For disease control zones to have the desired effect, they must be made well known to the local farmers.

Finally, disease-free zones or regions may be declared. In these, the emphasis of surveillance shifts from detecting infection to proving freedom from infection. More emphasis should thus be given to such techniques as serosurveillance. In the early stages of a disease eradication campaign, while the extent of the disease is still being assessed, it could be expected that the disease control zones are comparatively large and the disease-free zones comparatively small. As the disease control campaign progresses, it is to be hoped that the situation would reverse with the ultimate aim of the whole state / country being declared disease free. Zoning is now recognized as an important principle in the definition of the animal health status of countries by OIE.

Stamping out by slaughter of affected herds or flocks

This is usually the most efficient method for the rapid elimination of an introduced exotic or other emergency disease. It is also often the most cost-effective. Not only is the disease eradication campaign shorter and achieved for a lower overall cost, but also there is a much shorter waiting period before the state/country can be recognized as being free of the disease.

Several social, economic and other factors need to be carefully evaluated before eradication is selected as the desired strategy for any specific disease contingency plan. These factors include:

- Whether or not slaughter of infected animals is likely to gain general community acceptance on religious, ethnic, animal welfare and other social and economic grounds;
- Any comparative advantages and disadvantages and likely success of implementation of other strategies. In this context, vaccination should not be available for some epidemic livestock diseases so that eradication is the only viable option. African swine fever is a typical example. At the other end of the spectrum, eradication is unlikely to have much beneficial effect. This particularly applies to insect-borne diseases such as Rift Valley fever and bluetongue;

- Whether or not the human resources, equipment and other physical resources are available to carry out all the activities needed for the implementation of a disease eradication campaign properly. While eradication is likely to be less costly and more efficient overall, it may be quite resource-intensive in the short term;
- Whether adequate provisions and mechanisms are available for the fair and quick compensation of owners for any livestock or property destroyed in the campaign.

Trigger Mechanism

Trigger mechanism is a concept that has been developed in order to ensure the smooth flow of response activities after disaster. The trigger mechanism is in essence, the Standard Operating Procedure (SOP) in which the implementation of efforts on ground is well laid down. The different levels of disaster have been defined as follows.

| Level | Description | Remarks |
|-------|----------------|---|
| L0 | Normal times | <p>Non-disaster time. The following activities are undertaken:</p> <ul style="list-style-type: none"> • Close monitoring • Documentation • Preparatory activities • Training of search and rescue teams • Rehearsals • Evaluation • Inventory updating for response activities |
| L1 | District Level | <ul style="list-style-type: none"> • Situation managed by District resources • State and Centre to watch the situation • State and Centre to provide assistance if asked for |
| L2 | State Level | <ul style="list-style-type: none"> • Situation beyond the district capacity • State intervention is needed for management • Centre to watch and provide assistance if asked for |
| L3 | National Level | <ul style="list-style-type: none"> • Large scale disaster, impact in a number of districts / states • Central assistance and support needed by state and districts for managing the situation |

The State Emergency Operation Centre

The State Emergency operation Centre (SEOC) will be hub of all the activities related with disaster response in the state. The primary function of the SEOC is to implement the State Disaster Management Plan which includes coordination, data collection, operation management, record keeping, public information and resource management.

For the effective management of resources, disaster supplies and other response activities, focal points or centres will have to be established. These points will have to be well networked starting from the State to the District and finally leading to the disaster site.

Emergency Operations Centres at the State (SEOC) and the District (DEOC) and Incident Command Post (ICP) at the disaster site are the designated focal points that will coordinate overall activities and the flow of relief supplies from the State.

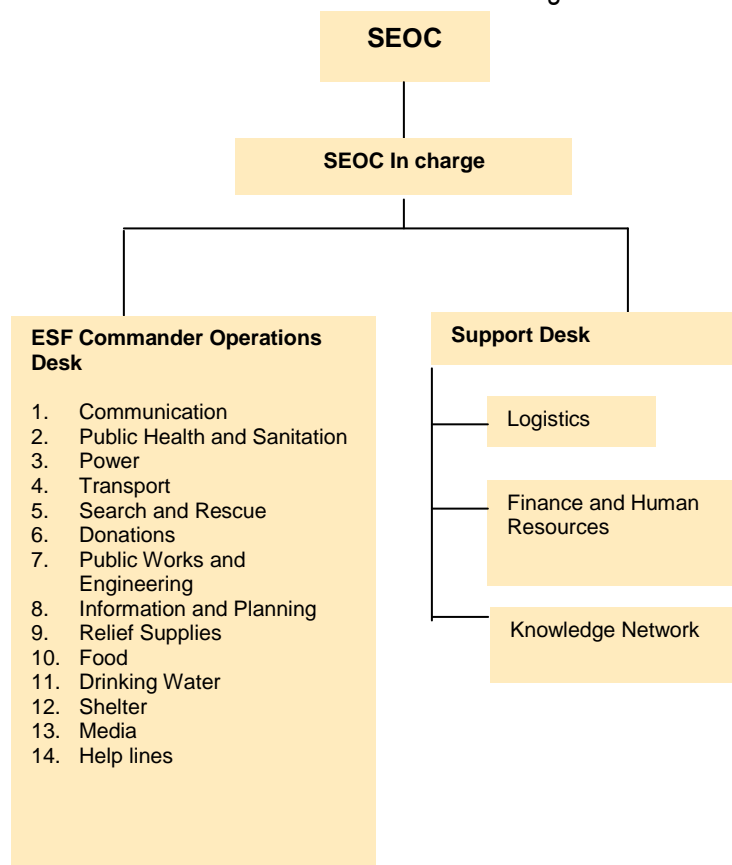
The State Emergency Operations Centre (SEOC) will be maintained and run round the clock which will expand to undertake and coordinate activities during a disaster. Once a warning or a First Information Report is received, the SEOC will become fully operational.

During a disaster situation, the SEOC will be under direct command of the Chief Secretary or the designated person by him as the Chief of Operations.

During non disaster times, the State Emergency Operations Centre stays operational through-out the year in preparedness mode, working during day time in order to take care of the extended preparedness activities of data management, staff awareness and training, which is essential for the smooth functioning of the SEOC during crisis situations and handling of emergency Toll Free Contact Lines. During an emergency, the SEOC will get upgraded and will have all emergency stakeholders manning it round the clock.

The aim of the EOC will be to provide centralized direction and control of all the following functions

- Emergency operations
- Communications and warning, which includes handling of 24 hrs emergency toll free numbers.
- Centralised state level disaster resource database
- Requesting additional resources during the disaster phase from neighbouring districts of the affected area
- Coordinating overseas support and aid.
- Issuing emergency information and instructions specific to departments, consolidation, analysis, and dissemination of Damage Assessment data and preparation of consolidated reports.



Organizational Setup of SEOC

The EOC will comprise the following:

SEOC In-charge

- During non-disaster times, the SEOC will work under the supervision of the relief commissioner.
- In a disaster situation, the SEOC will come under direct control of the Chief Secretary or the person designated by him as the Chief of Operations. He is the primary role player in the EOC, and is responsible for the overall coordination and decision-making. He will also report the status of the SEOC operations and the disaster situation to the Chief Secretary.

Operations Section

The Operations Section will ensure smooth and planned functioning of the SEOC. It will fulfil the following functions:

- Handle requests for emergency personnel, equipment and other resources
- Designate responsibilities and duties for management of the SEOC
- Manage storage, handling and set-up of incoming equipment and personnel
- Ensure medical care, feeding and housing for SEOC personnel
- Maintain documentation of resource inventories, allocation and availability.
- Manage finances for SEOC operations

Representatives in SEOC

Representatives of State Departments of the following departments will be present at the SEOC to take part in the operations and facilitate quick coordination between the SEOC command and their parent departments towards ensuring quick information availability and decision-making:

- Department of Public Works
- Department of Irrigation
- Department of Energy
- Department of Home
- Department of Revenue
- Department of Health
- Department of Animal Husbandry
- Department of Agriculture
- Department of Industries

Emergency Support Functions (ESF) have been established, to support the SEOC functions. Each ESF is headed by a lead department for coordinating the delivery of goods and services to the disaster area, and it's supported by various departments and agencies.

During a disaster, the ESFs will be an integral part to carry out response activities.

After a major disaster or emergency requiring State response, primary agencies, when directed by the EOC will take actions to identify requirements and mobilize and deploy resources to the affected area and assist the State in its response actions under fourteen ESFs

Location of SEOC

The SEOC is established in the Department of Revenue. The layout of the SEOC is given below.

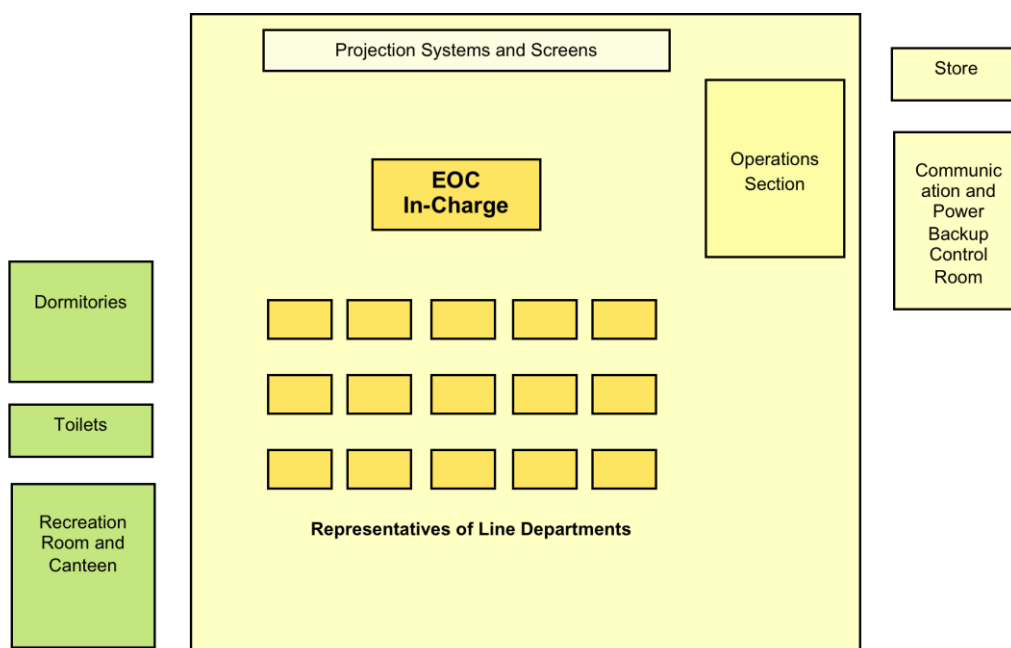
- The Chief of Operations will initiate the activation of emergency services of the SEOC.
- Activation of the SEOC should immediately follow the declaration of a State Level Emergency.
- The Individuals staffing the SEOC are responsible for establishing communications with their respective departments through radio and telephone etc.
- The SEOC Chief or designee will determine what staff he/she deems necessary to effectively operate the SEOC apart from the prescribed staff.
- The designated officers of the Police will provide security at the SEOC.

Back-up SEOC

It is recommended that an alternate SEOC must also be established. It is suggested to setup the backup SEOC within the secretariat building, as most of the departmental heads sits there.

SEOC Layout

A conceptual layout of SEOC is given below.



Equipment Requirements

The SEOC will need to operate round the clock, and may itself be subjected to adverse conditions due to the impact of disaster. It needs to be equipped with the following hardware and software for its efficient functioning:

- Resource Inventories and databank of maps and plans at block, district and state level on a GIS platform for quick retrieval and analysis.
- State-of-art communication equipment for staying linked with the Chief Secretary's office, headquarters of line departments, district collectors, field teams, media, and national and international support agencies.

- A mobile command vehicle with communication equipment.
- Workstations and communication lines for all representatives of the line ministries.
- Radios and television sets tuned to different news channels and coverage.
- Video conferencing facility.
- Projection equipment and screens.
- Emergency power backup.
- Stock of drinking water, food, medicines, bedding and essential items required for personnel manning the SEOC for long time durations.

Resource Inventories

Resource inventories are useful in quick retrieval of vital information regarding availability and sources of rescue and relief material and personnel during times of emergency. Resource inventories are essential elements of EOC operations. Such inventories will be prepared and maintained through regular updating at the State and District levels. Inventories will include the following basic elements, and other locally relevant information:

- Contact details of all personnel and organisations concerned with emergency management
- List, with specifications and availability procedures, of all equipment that may be useful for responding to an emergency. This will include communication equipment, transport vehicles, earth moving equipment, cranes, and tools etc. that are available with agencies within the jurisdiction.
- List, with specifications and rate schedules, of relief material that can be sourced from local aid agencies and markets. This will include dry rations, tents and bedding, clothing, utensils, first-aid items and other basic necessity items

India Disaster Resource Network (IDRN)

India Disaster Resource Network (IDRN), a web based information system, is a platform for managing the inventory of equipments, skilled human resources and crucial supplies for emergency response. The primary focus is to enable the decision makers to find answers on availability of equipments and human resources required to combat any emergency situation. This database will also enable them to assess the level of preparedness for specific vulnerabilities.

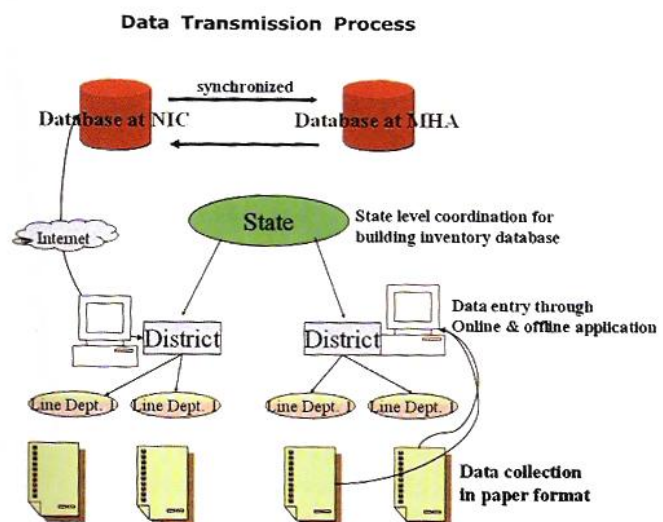
IDRN was initiated by the Ministry of Home Affairs in collaboration with UNDP to systematically build up the IDRN inventory as an organised information system for specialist equipment and expertise for disaster response, so that disaster managers can identify the location of the resources and be able to access it for disaster response with the minimum loss of time. Authorised government officials can access the resource inventory to get a list of resources available

Incident Command System

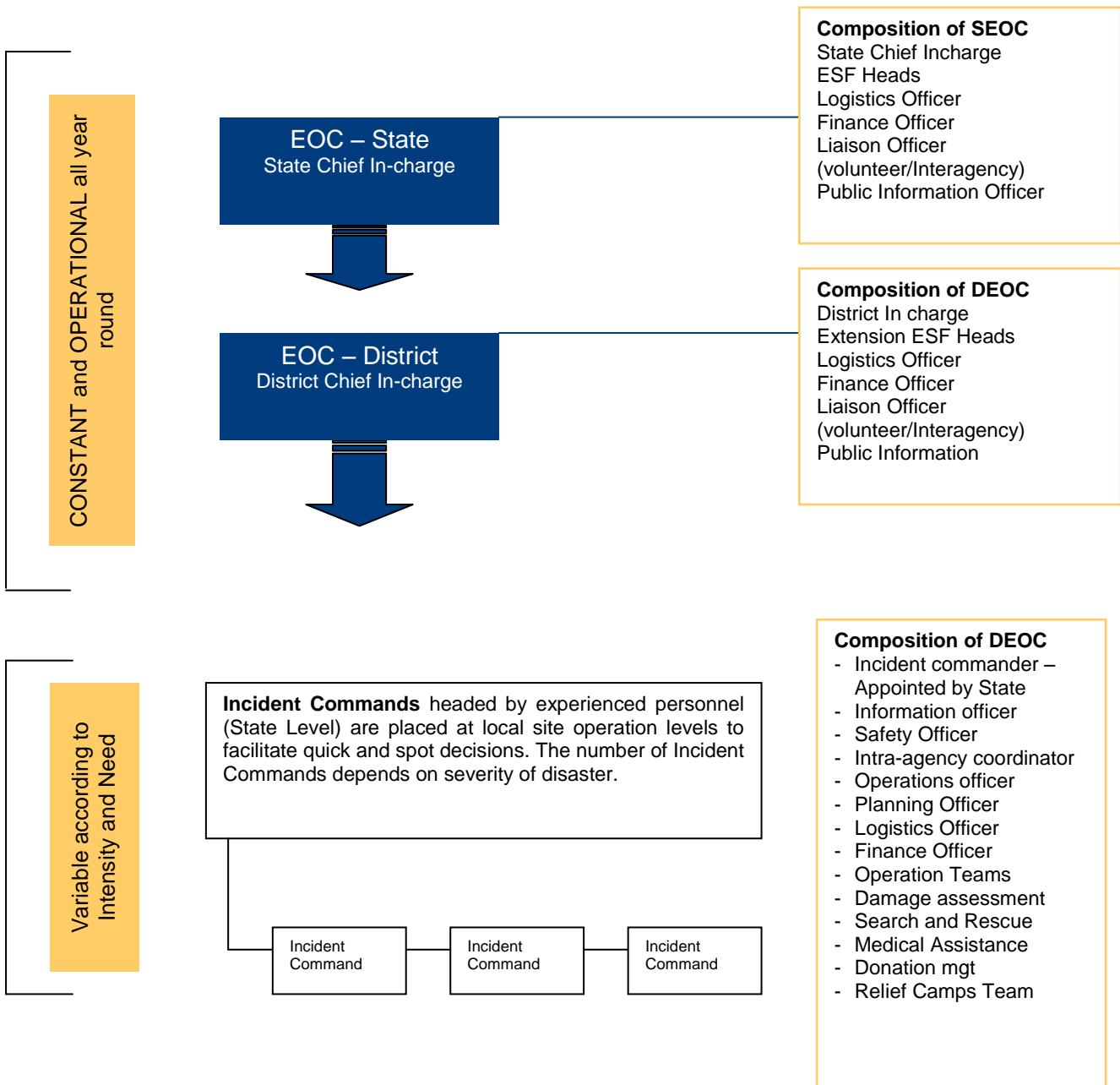
The SEOC will therefore need to field its own field teams and through them establish an Incident Command System. The system will comprise:

- Field command
- Field information collection
- Inter agency coordination at field level
- Management of field operations, planning, logistics, finance and administration

Rapid Assessment Teams and Quick Response Teams described below will be fielded by the SEC through the SEOC as part of the Incident Command System.



**OVERALL COMMAND
Flow Chart (EOC and ICS)**



Institutional arrangement of the Sate EOC

Activities of the SEOC

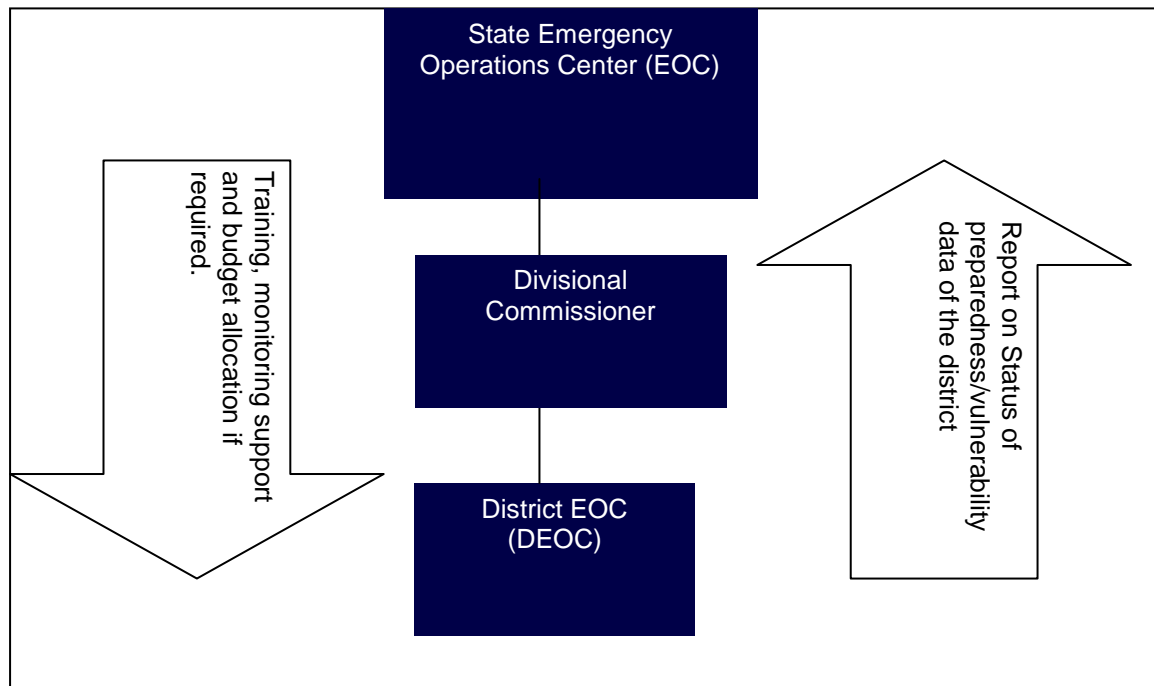
The responsibilities of SEOC at the state level shall be to provide centralized direction and control of the following activities:

Non-disaster time

During non-disaster times, the activities of the EOC will be under the supervision of the relief commissioner. Following are the activities during non-disaster times.

- Ensure that all districts prepare and regularly update the District Disaster Management Plans.
- Encourage districts to prepare area-specific plans for areas prone to specific disasters.
- Monitor training imparted to state level officials, private sector and NGOs in coordination with the HIDM.
- Keep record of the State and district disaster management plans.
- Disseminate information about the State DMP to other departments.
- Ensure that the warning and communication systems and instruments in the SEOC are in working conditions round the clock.
- Keep and update state level disaster resource inventory
- Establish functional facility of Toll free emergency numbers.

Flow of Information between SEOC and DEOC during normal conditions



Activation Procedure of the EOC

Once the Sub-Divisional officer/SDM deems a disaster to be beyond the management capacity of local authorities, the District Disaster Management Authority (DDMA) will declare it as a District Level Disaster and activate the DEOC. Once the DDMA deems a disaster magnitude to be beyond its management capability, it will forward the report to the SEOC for deliberation at the SDMA and subsequent appropriate State intervention. On verification of the magnitude of the disaster, and the scale of response required, the State Emergency Operations Centre will get activated and after declaring a State Disaster, will take control.

- **Step 1:** The State EOC is activated on orders from the SDMA. On receipt of a disaster warning or a FIR, the Chief Minister, after verification that the situation merits declaration of a State Disaster, will convene a meeting of the State Disaster Management Authority. Based on the ratification of the Authority, the Chief Minister, will declare a State Disaster.
- **Step 2:** SEOC is upgraded to emergency mode. The SEOC, till then operating in the preparedness mode, will be upgraded to the emergency mode. Concerned line departments will be informed to post their representatives at the SEOC on a round the clock basis with immediate effect. SEOC will be activated and all community preparedness measures will be put into operation and the ESF to be on full alert and activate their SOPs. The activation of the SEOC should be followed after the DDMA declares a major disaster.
- **Step 3:** Field Assessment Reports. The Chief Secretary/Relief Commissioner will assume the role of the Chief of Operations for Disaster Management. The Chief of Operations of the EOC will coordinate for setting up the ESFs and are asked to prepare and send the Field Assessment Report to the SEOC. The Chief of Operations of the SEOC will spell out the priorities coordinate services of the ESFs, including national and aid agencies.

Quick response teams of specialized personnel will have to be sent for effective management of disaster. Depending on the magnitude of the disaster, two different types of teams will be fielded by the SEOC: (i) Rapid Assessment Teams; (ii) Quick Response Teams

Rapid Assessment Teams

The Rapid Assessment Teams will be multi-disciplinary teams comprising four or five members. They will mainly comprise senior level specialized officers from the field of health-veterinary sciences, engineering, search and rescue, communication and one who have knowledge of disaster affected area, physical characteristic of the region, language etc. These officials should share a common interest and commitment. There should be a clear allocation of responsibilities among team members. To make a first / preliminary assessment of damage, the assessment report will contain the following basic elements or activities:

- Animal health and material damage
- Resource availability and local response capacity
- Options for relief assistance and recovery
- Needs for national / international assistance

Quick Response Teams / Rapid Response Teams

Deployment of search and rescue teams can help in reducing the numbers of deaths. A quick response to urgent needs must never be delayed for the reason that a comprehensive assessment has yet to be completed. Deployment of a rapid response team will help to reduce mortality of animals. Rescue

operations should be launched for animals trapped in debris or in vulnerable areas. First aid should be administered to injured animals. The department should be equipped with suitable vehicles for timely deployment of rapid response teams.

Chapter VII: Partnership with Other Stakeholders

Though the onus of disaster management rests with the government, the knowledge and expertise of other stakeholders should be mobilised for effective implementation of disaster management initiatives.

Role of Academic and Scientific Institutions

Academic institutions, and scientific and technical organisations can support the government by researching on various topics of risk reduction. The institutions can be involved to support the government in every phase of disaster management, from early warning to recovery. They can also be used for training and capacity building activities.

A suggested list of institutions may include the following.

- Agriculture, Medical and Veterinary Research Institutes
- Central and State Universities (government & private)
- Concerned Departments of Government

Role of Communities

Communities can play a vital role in disaster response as well as risk reduction. It has been felt that a top-down approach to disaster management fails to concentrate on the specific local needs of vulnerable communities, as it does not take into account the potential of local resources and capacities. Though the approach of motivating individuals to understand disaster risks and taking action against the same has always existed, but streamlining it in the form of CBDM process has been very recent. The evolution of community-based processes can be traced back to the Great Hanshin Awaji Earthquake of 1995. In the wake of this tragedy, Hyogo Framework for Action was adopted in 2005. It promotes CBDM as one of the key lessons learnt from past disasters. Since then, the vitality of the community in the disaster management processes has been realized at various national and international forums.

As the community is the first respondent in any emergency situation, there is a need for building up the capacity of communities. By enhancing their skills and traditional coping mechanism the losses from disasters can be minimized. It is therefore necessary to raise their awareness on various hazards faced, and to encourage the community to assume a sense of responsibility to protect itself and to support public and institutional efforts geared towards disaster preparedness, management and mitigation. The aim should be to help the community to take a lead in the disaster management process.

The planning and coordination of the disaster management process can be more effective if there is active involvement of the Government agencies as well as the local NGOs. The district administration, in particular, plays a vital role as it acts as a critical link between communities and the State. With the adoption of the National Disaster Management Act, 2005 the Indian Government has displayed its commitment towards inducing disaster risk reduction into its policies and planning. The policies and programmes intended to develop mechanism for an integrated approach towards disaster management activities are implemented at the micro level through the District Disaster Management Authority. The DDMA is the core body responsible for strengthening the capacities of grass root level officials, community and other stakeholders.

It is important to impart training to the community and other stakeholders on the prevention, mitigation and response processes. These trainings are imparted through district government authorities involving local NGOs in the process. For sustaining the efforts, there is also a need of institutionalizing the process by empowering Panchayati Raj Institutions to take measures for prevention, mitigation and

response to the disasters. These efforts are sustained through continuous monitoring and evaluation on the part of the officials as well as the community.

Community should be involved in all phases of disaster management – risk reduction, preparedness, response, and rehabilitation activities. The following groups should be involved for effective disaster management.

- PRIs
- NGOs
- Community volunteers
- Livestock Farmers associations
- Livestock Traders associations

The State Disaster Management Authority should:

- Prepare an inventory of all research, academic institutions, NGOs, and other stakeholders in the State involved in DM.
- Facilitate their membership within the technical committee(s)
- Establish Partnerships with line departments and external stakeholders
- Coordinate periodic meetings
- Encourage and support NGOs for community mobilization.

Chapter VIII: Financial Arrangements

Funding for Disaster Relief

In India the policy arrangements for meeting expenditure on relief and rehabilitation is based on the recommendations of successive Finance Commissions. This arrangement is reviewed and revised after every five years based on the past experiences. The two main windows available for meeting the immediate relief expenditures are Calamity Relief Fund (CRF) and the National Calamity Contingency Fund (NCCF). In India the responsibility of providing immediate relief in a post disaster situation rests with the State Government concerned while Government of India supplements the efforts by providing requisite logistic and financial support to meet the situation effectively.

The funding arrangements available to provide assistance immediately after a disaster are in the form of subsidy and not for compensation of loss. The main objective of providing relief assistance is to support the affected person to meet up his immediate basic needs and regain back his livelihood. Although the current focus of the national government is on pre disaster preparedness and risk reduction planning which will help in minimizing the expenditure towards post disaster relief and rehabilitation in long run, the major challenge in present context is constitution dedicated funds for disaster mitigation and risk reduction. There has been an increasing emphasis on integration of disaster risk reduction elements into the ongoing development programmes and efforts are underway to develop suitable mechanisms for it.

Calamity Relief Fund (CRF)

Calamity Relief Fund (CRF) has been constituted for each State with an allocated amount, based on the recommendations of the Twelfth Finance Commission. The CRF is contributed by the Government of India and the State Government in the ratio of 3:1. The Central share is released in two instalments – first in the month of June and second in the month of December. The State level committee headed by the Chief Secretary is fully authorised to decide on all matters relating to the financing of the relief expenditure from the CRF, in accordance with the items and norms approved by Government of India. The first charge of relief expenditure is on the CRF. The CRF should be used for meeting the expenditure for providing immediate relief to the victims of cyclone, drought, earthquake, fire, flood and hailstorm.

National Calamity Contingency Fund (NCCF)

In the event of a calamity of a severe nature, in which the requirement of funds for relief operation is beyond the funds available in the State's CRF account, additional Central assistance is provided from National Calamity Contingency Fund (NCCF), after following the laid down procedure. As per this procedure, the State Government is required to submit a memorandum indicating the sector-wise damage and requirement of funds in the event of a calamity of a severe nature. On receipt of memorandum from the State an Inter-Ministerial Central Team is constituted and deputed for an on the spot assessment of damage and requirement of funds for relief operations, as per the extant items and norms of CRF and NCCF. The report of the Central Team is considered by the Inter-Ministerial Group (IMG) headed by the Home Secretary. Thereafter, the High Level Committee comprising of the Agriculture Minister, the Home Minister, the Finance Minister and the Deputy Chairman Planning Commission considers the request of the State Government based on the report of the Central team, recommendations of the IMG thereon, extant norms of assistance and approves the quantum of assistance from NCCF, subject to the adjustment of 75% of the balance available in the State's CRF for the instant calamity.

Community Disaster Resilience Fund (CDRF)

A community disaster fund that brings local priorities and capacities of disaster prone communities to DRR programming was one of the key recommendations that emerged from the workshop 'From National Frameworks to Local Action' organized by ProVention Consortium, GROOTS International and Huairou Commission at the First Global Platform on Disaster Risk Reduction in Geneva in June 2007. The initiative was formally announced by the National Disaster Management Authority of India with ProVention at the Plenary Session at the Second Asian Ministerial Conference on Disaster Risk Reduction held on November 7-8, 2007 in Delhi.

A Community Disaster Resilience Fund (CDRF) is being operated on pilot basis in 88 villages in 8 states by the National Alliance for Disaster Risk Reduction (NADRR). Other institutional partners include ProVention Consortium, GROOTS International, and National Disaster Management Authority of India (NDMA).

The Community Disaster Resilience Fund will allow communities to direct the use of the funds towards community led DRR initiatives that address their self-identified risks. The main purpose of the CDRF is to demonstrate community led initiatives in DRR; initiatives that are designed by communities and which enable them to increase their awareness of their vulnerabilities and to address these vulnerabilities through collective risk mapping, identification of priorities, planning, implementation, monitoring and evaluation. Objectives of the fund are (i) To develop community level capacities to identify and reduce risks through linkage with development programs; (ii) To enhance understanding of impact of community resources, resilience initiatives by doing action research, monitoring and impact studies; and (iii) To upstream lessons and leverage resources and partnerships for community led disaster resilience priorities.

Activities that have been started include baseline mapping, identification of vulnerabilities and local resources, training of trainers, capacity building for women's groups on DRR issues, formation of CDRF committee, transfer funds to CBOs and later to community groups etc. The fund will be used for various DRR measures such as addressing water and sanitation issues in flood prone area, developing eco shield and protect the environment and community from frequent floods, promoting SHG products through federation and proper marketing and sustainable livelihood income for flood affected community, promoting emergency fund to sustain the flood response, protecting environment, reducing soil erosion and addressing drinking water issues, dairy development through women's cooperatives, growing sevan grass to address drought issues etc.

The CDRF is a pilot initiative of an NGO network. Presence of such funding mechanism at district level and at community level will benefit all communities for capacity building for disaster risk reduction.

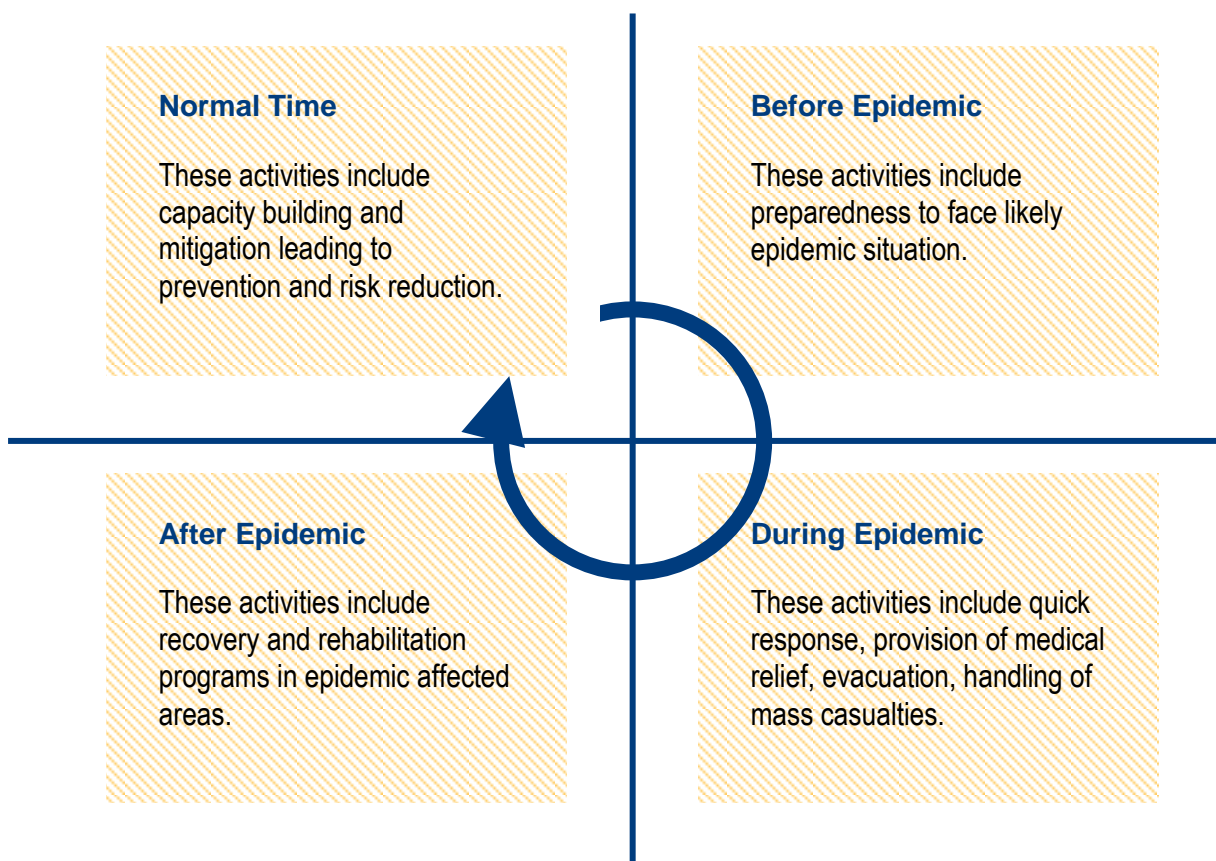
Funding for Disaster Mitigation & Preparedness

Disaster mitigation and preparedness activities in respect of animal epidemics will include the following activities as already discussed: Surveillance; Vaccination; Public education on hygiene and sanitation; improving animal health facility. The animal husbandry department should include the budget needed for implementing the above activities in the annual plan.

Chapter IX: Action Plan for Animal Epidemics

Disaster Management Cycle

For efficient execution of the State Disaster Management Plan, the Plan has been organized as per these four stages of the Disaster Cycle: Before, During, After, and Normal Time. In 'Before Epidemic' stage, preparedness activities to face an epidemic situation are undertaken. Activities during an epidemic include quick response, handling of mass casualties, providing medical relief to victims, and evacuation when needed. After an epidemic, recovery of the victims in the affected areas needs to be monitored. In normal times, capacity building and mitigation activities should be taken to reduce the risk of epidemics in the future.



It is seen that the common animal epidemics prevailing in Uttar Pradesh include Hemorrhaging Septicimia, Bird flu, Equine influenza, Foot and Mouth disease, PPR, and Glander Enfarcy. Though animal Health facilities are available in each district of the state, it is necessary to periodically review and update them.

Mitigation Action Plan

Disaster mitigation refers to the activities that need to be undertaken in order to avoid a future disaster or to reduce the negative impact of a future disaster. In this case, the government should plan for the following:

Veterinary Hospital and Laboratory Buildings

- Identify the epidemic prone areas and assess the medical response capability in the area and assess the requirement and feasibility
- Set up new veterinary hospitals or upgrade existing ones as needed
- Set up new laboratories or upgrade existing ones
- Review the need for vehicles for transportation of animals
- Conduct surveys for the structural safety of animal health facilities in the earthquake prone areas. Identify vulnerable buildings and making them safe by retrofitting.
- Similarly identify animal health facilities in the flood prone areas. Take up necessary mitigation measures like relocation, or strengthening etc.
- Survey the animal health facilities for their non-structural safety. Take up necessary non-structural mitigation measures.

Animal Husbandry Department shall review the above requirements on a yearly basis and complete the following Table as a part of the planning process:

| Name of the District | Facility to build/ repair/ retrofit/ upgrade/ non-structural mitigation work | Location | Size and requirements | Cost estimates | Reason for demand |
|----------------------|--|----------|-----------------------|----------------|-------------------|
| | | | | | |
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Equipment & Vehicles

- Identify the requirements of equipment including vehicle for effective medical response and take stock of the existing equipment, vehicle etc., and arrive at the gap.
- Plan necessary strategy for closing the gap by purchase, hire, or even requisitioning them from private sources.

Animal Husbandry Department shall review the above requirements on a yearly basis and complete the following Table as a part of the planning process:

| Equipment required | Purpose | Where is it to be given | Cost | To be procured | To be hired | To be requisitioned from private |
|--------------------|---------|-------------------------|------|----------------|-------------|----------------------------------|
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Manpower

- Plan the personnel requirement including doctors, specialists, and support medical staff for effective management of animal epidemic situation.
- Assess the existing manpower and identify the gap.
- Work out the method of closing the gap by recruiting, hiring or taking private sector help including volunteers.

Animal Husbandry Department shall review the above requirements on a yearly basis and complete the following Table as a part of the planning process:

| Type of personnel required | Number | To be recruited | To be made available from private | Volunteers | Estimated expenditure |
|----------------------------|--------|-----------------|-----------------------------------|------------|-----------------------|
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Manuals & Guidelines

- Plan who will prepare manuals and guidelines and when.

Animal Husbandry Department shall review the above requirements on a yearly basis and complete the following Table as a part of the planning process:

| Type of manual required | For whom | How many to be printed | How to distribute | Estimated cost | Remarks |
|-------------------------|----------|------------------------|-------------------|----------------|---------|
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Awareness Materials

- Plan awareness activities such as preparation of awareness creation materials, do's and don'ts in the form of pamphlets, booklets, audio-visual material, etc., for various types of animal health related disasters targeting various groups of people such as women, community, children, farmers, traders, etc.

Animal Husbandry Department shall review the above requirements on a yearly basis and complete the following Table as a part of the planning process:

| | Target population | | | | | |
|------------------|-------------------|-------------------|----------------|----------------------|-------|----------|
| | Farmer Community | Livestock Traders | General public | Government employees | Women | Children |
| Type of material | | | | | | |
| Pamphlets | | | | | | |
| Booklets | | | | | | |
| Video | | | | | | |
| Audio | | | | | | |
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Capacity Building

- Develop disaster management plan for all veterinary hospitals. Provide training to staff on veterinary hospital disaster management plan.
- Assess the existing capability of the officers, doctors and staff; identify the gaps for effective response and plan out the training programmes.
- Identify the agency that can give training for doctors, nurses, and other health workers. Plan for preparation of training materials and actual conduct of training.
- Plan training and capacity building programmes.
- Plan to conduct mock evacuation drills in hospitals.

Animal Husbandry Department shall review the above requirements on a yearly basis and complete the following Table as a part of the planning process:

| Category which needs training | Type of training | Estimated cost | Remarks |
|-------------------------------|------------------|----------------|---------|
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Budget

- Once all the above mitigation measures are identified the estimated budget for each activity should be done and finally the total budget for the entire mitigation phase should be arrived at. The sources of funding should also be worked out.
- Some of the activities can be taken up in the regular budget of the ministry and the additional requirement should be calculated and it should be taken up with the government for additional grant for mitigation activities.

| Type of activity undertaken in mitigation | Estimated cost | Source | Additional funding requirement |
|---|----------------|--------|--------------------------------|
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Preparedness Action Plan

Preparedness activities will comprise all activities that should be done in preparation to meet the response and immediate relief requirements in the event of a disaster. The Animal Husbandry Department will be required to quickly respond to outbreak of an animal epidemic in the aftermath of any disaster or due to introduction of any exotic animal disease that is identified by disease surveillance programme. In this stage, the government should plan the following activities before an epidemics outbreak. The following preparedness actions should be taken before an expected epidemic season.

State Level Action

- Appoint one officer as "Nodal Officer - Veterinary Services" at the State Level.
- Call for reports from district animal health officials on preventive actions planned in the districts.
- Identify gaps in district resources and list the supports needed for the districts.
- Issue instructions to district animal health officials to be observed for effectively managing the epidemic situation and ensure compliance.
- Supply the necessary stock of medicines and other medical supplies to district health facilities.
- Mobilize additional vehicles and place them in remote areas from where animals may have to be quickly transported to hospitals.
- Instruct all staff not to avail leave during the emergency period.

District Level Action

- The District Animal Husbandry Officer will act as "Officer-in-Charge - Veterinary Services" at the District Level.

- Critically analyse the available medical resources within the district and share them with the neighbouring districts. This is aimed at the networking of facilities between districts including veterinary hospital facilities, vehicles, special medical equipment, trained manpower like quick reaction medical teams (QRMT), etc.
- Within the affected district all available personnel will be made available to the District Disaster Manager (District Magistrate). If more personnel are required, then out-of-station officers or those on leave may be recalled.
- All personnel required for Disaster Management should work under the overall supervision and guidance of District Disaster Manager (District Magistrate).
- Establish radio communications with
 - Emergency Operations Centre
 - Divisional Commissioner
 - District Control Room and
 - Veterinary aid Centres and Hospitals (including private practitioners) within the division.
- Review and update precautionary measures and procedures and review with staff the precautions that have been taken to protect equipments and the post-disaster procedures to be followed.
- Fill department vehicles with fuel and park them in a protected area.
- Stock emergency medical equipments, which may be required after a disaster.
- Determine what injuries illnesses may be expected, and what drugs and other medical items will be required, in addition to requirements of setting up cattle camps, and accordingly ensure that extra supplies of medical items and materials can be obtained quickly.
- Provide information to all staff of veterinary hospitals and centres about the disasters, likely damages and effects, and information about ways to protect life, equipment and property.
- Surgical packs should be assembled and sterilised.
- Enough stock of surgical packs should be sterilised to last for four to five days.
- The sterilised surgical packs must be stored in protective cabinets to ensure that they do not get wet. Covering the stock with polythene is recommended as an added safety measure.
- All valuable equipments and instruments should be packed in protective coverings and stored in the most damage-proof room.
- All electrical equipments should be unplugged when disaster warning is received.
- Check the emergency electrical generator, to ensure that it is operational, and that a buffer stock of fuel exists. If an emergency generator is not available at the hospital, arrange for one on loan. Arrange for emergency supplies of anaesthetic drugs.
- Check stocks of equipments and drugs, which are likely to be most needed after the disaster.
- Request central warehouses for immediate dispatch of the needed drugs to the hospital on an emergency priority basis.
- Fill hospital water storage tanks and encourage water savings. If no storage tanks exist, water for drinking should be drawn in clean containers and protected.
- Prepare an area of the hospital for receiving large number of livestock.
- Develop emergency admission procedures (with adequate record keeping).

- Cattle camps and hospital administrators should
 - Establish work schedules to ensure that adequate staff are available
 - Set up teams of veterinary doctors, and assistants for visiting disaster sites.

Hospital Level Action

- Provide information to all hospital staff about the disasters, likely damages and effects, and information about ways to protect equipment and property.
- Make space in the hospital for accommodating new animals (sick or injured) expected due to epidemics or disaster. Get support of private hospitals.
- The safest rooms are likely to be:
 - On ground floor
 - Rooms in the centre of the building away from windows
 - Rooms with concrete ceilings.
- Surgical packs should be assembled and sterilized.
- A large enough number should be sterilized to last four to five days.
- The sterilized surgical packs must be stored in protective cabinets to ensure that they do not get wet. Covering the stock with polythene is recommended as an added safety measure.
- All valuable instruments should be packed in protective coverings and stored in rooms considered to be the most damage-proof.
- Protect all immovable equipment by covering them with tarpaulins or polythene.
- All electrical equipments should be unplugged when disaster warning is received
- Check the emergency electrical generator to ensure that it is operational and that a buffer stock of fuel exists. If an emergency generator is not available at the hospital, arrange for one on loan.
- All fracture equipment should be readied.
- If surgery is to be performed following the disaster, arrange for emergency supplies of anaesthetic injections
- Check stocks of equipments and drugs, which are likely to be most needed after the disaster.
- Assess the level of medical supplies in stock, including
- Request central warehouse for immediate despatch of supplies likely to be needed to hospitals on an emergency priority basis.
- Fill hospital water storage tanks and encourage water savings. If no storage tanks exist, water for drinking should be drawn in clean containers and protected.
- Water purification tables should be stocked
- Prepare an area of the hospital for receiving large number of animal casualties
- Hospital administrators should
 - Establish work schedules to ensure that adequate staff are available for in-patient needs
 - Organise in-house emergency medical teams to ensure that adequate staff are available at all times to handle emergency casualties.
 - Set up emergency quick response teams for visiting disaster sites.

- The equipment available should be checked once in a year and the competent authority should issue certificate of fitness.
- If equipments are found dysfunctional then repairs should be made and kept ready.

| Type of equipment | Location | Checking and certifying authority | Time of testing | Requirement of repair | Estimated cost | Source of funds |
|-------------------|----------|-----------------------------------|-----------------|-----------------------|----------------|-----------------|
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Response Action Plan During Disaster

- Organise transfer of seriously injured livestock from villages to veterinary aid centres wherever possible.
- The provision of medical services should be coordinated by the District Animal Husbandry Officer with District Control Room, SOCs and cattle camps.
- Establish cattle camps and additional veterinary aid centres at disaster sites and designate an Officer-in-Charge for the camp.
- Estimate the requirement of water, fodder and animal feed, for cattle camps and organise the same.
- Ensure that adequate sanitary conditions are maintained through cleaning in order to avoid outbreak of any epidemic.
- Carryout culling of birds if necessitated.
- An injury and disease monitoring system should be developed, to ensure that a full picture of risks is maintained.
- Plan for emergency accommodations for veterinary staff from outside the area.
- Information formats and monitoring checklists as given in Annexure should be used for programme monitoring and development and for reporting to Emergency Operations Centre. This is in addition to existing reporting system in the department.
- Establishment of a Public Information Centre with a means of communication, to assist in providing an organized source of information. The hospital is responsible for keeping the community informed of its potential and limitations, in disaster situations.
- The local police and rescue groups should be aware of the resources of each veterinary aid centres and hospital.

Response Action Plan for Disease Eradication

In an eradication campaign, activities carried out in designated disease control zones are described below.

Actions at Infected Premises

It is here that the disease has actually been detected and includes all areas where there are susceptible animals that could have become infected through contact with the diseased animals. The premises may be a single farm, household or herd/flock, but could also be an entire village, settlement, common grazing land or even livestock sale yards. Activities to be undertaken are listed below.

- The infected premises are immediately quarantined with a complete ban on the movement in or out of susceptible species animals, animal products and potentially contaminated materials. Where necessary, this may be supported by disinfection/ decontamination of persons, vehicles, equipment and other materials leaving the premises.
- All susceptible species animals are immediately slaughtered, whether they are obviously infected or not. The animals should be slaughtered by methods that take account of animal welfare concerns and the safety of operatives. Rifles, captive-bolt guns or lethal injections (e.g. barbiturates) are most commonly used. For poultry, gaseous mixtures are often the preferred method. A mixture of at least 70 percent carbon dioxide in air in a sealed container is the most efficient, although carbon monoxide from vehicle exhaust pipes may also be used (provided adequate safety precautions are taken). Neck dislocation, either by hand or by mechanical devices may also be used for birds.
- Carcasses of all animals that have either been slaughtered or have died naturally of the disease are disposed of safely so that they no longer constitute a risk for further spread of the pathogen to other susceptible animals either by direct or indirect means, e.g. by carrion eaters or scavengers or by contamination of food or water. This is most usually achieved by deep burial (depending on such factors as the nature of the terrain, closeness of water-tables to the surface and availability of earth-moving equipment) or by burning (depending on such factors as availability of suitable fuels and the danger of starting grass or bush fires). If *in situ* disposal is not practical it may be possible to transport carcasses to a common disposal point in sealed vehicles. This should be done within the infected area. Rendering of carcasses may also be satisfactory provided destruction of the pathogen can be guaranteed. Incineration is generally too expensive, except in special circumstances, e.g. for BSE. It may also be necessary to dispose safely of potentially contaminated animal products held on infected premises, e.g. meat, hides, wool, dairy products or eggs, depending on whether such products constitute a risk for transmission of infection.
- Premises must be decontaminated. The environs of the infected premises, particularly where animals have congregated, must be thoroughly cleaned and disinfected. This includes animal houses, sheds, pens, yards, water troughs, etc. Potentially contaminated materials such as manure, bedding, straw and feedstuffs should be removed and disposed of as for carcasses. Appropriate disinfectants must be selected for each disease. These may consist of soaps and detergents, oxidizing agents, alkalis, acids and/or aldehydes. Insecticides should also be used to prevent the transfer of contamination by flies.
- After slaughter, disposal and decontamination procedures are completed, and the infected premises are left destocked for a period that is determined by the estimated survival time of the pathogen in the particular environment. As a general rule, this is shorter in hot climates than in cold or temperate climates. However, a minimum for any disease is 21 days.
- Partial or complete restocking of susceptible animals in the infected premises is then allowed. However, these animals are kept under close surveillance and, provided there is no evidence of infection for a period equivalent to, say, two incubation periods for the disease, the premises may be released completely from quarantine.

Actions at Dangerous Contact Premises

These are premises where overt disease has not yet appeared, but for which epidemiological investigations indicate that there is a high likelihood that infection has been introduced. This circumstance might occur with an immediate neighbour to infected premises that have introduced animals from infected premises during the critical period for transfer of infection. A worst-case scenario of a highly contagious disease being detected in a livestock market may lead to many dangerous contact premises.

These premises are put under the same tight quarantine as infected premises and are subject to intense surveillance (at least daily). Provided there is no evidence of infection, they may be released from quarantine after a period equivalent to at least two quarantine periods for the disease.

In certain circumstances a decision may be taken to slaughter animals from dangerous contact premises.

Actions at Infected zone

This is the area immediately surrounding infected premises. While its size and shape are influenced by topographical features, physical barriers, administrative borders and epidemiological considerations, OIE recommends that it should be at least a 10-km radius around a disease centre in areas with intense livestock raising and 50 km in areas where extensive livestock raising is practised. Activities to be undertaken are listed below.

- Strict controls should be maintained on the movement of susceptible species animals and potentially contaminated animal products into or out of the infected zone. These should preferably be banned or only allowed in circumstances where there is no risk of further transmission of infection. An example might be the direct transport of apparently healthy animals to an abattoir for immediate slaughter, in the case of disease agents that are not transmitted by meat (e.g. CBPP and rinderpest). Local salvage could be considered for such diseases if warranted by circumstances.
- Intensive surveillance is undertaken, ideally involving daily clinical inspection of susceptible species animals on all farms or other livestock premises in the zone. Inspection teams should wear protective clothing and practise good personal disinfection when leaving the premises. If wildlife or feral animals are likely to be involved, arrangements should be made with wildlife authorities for disease surveillance to be undertaken. In the case of avian diseases, arrangements may be made for a daily dead bird pick-up service (in sealed plastic garbage bags or the equivalent) from poultry farms, with these being taken back to the laboratory for autopsy and diagnostic tests. Surveillance should also be extended to include commercial and hobby aviaries.
- Closure of livestock markets and other congregations of susceptible species (e.g. race meetings and livestock). A decision on whether or not to close risk enterprises, such as abattoirs and dairy factories located in the infected zone, should be made after careful consideration of epidemiological and other factors, i.e. whether they constitute a significant threat for further spread of the disease. However, in some cases, there could be advantages in keeping the enterprise open, as this tends to keep animals within the zone and retain the economic viability of the affected community. Strict zoosanitary codes of practice should be enforced in this case.
- Publicity campaigns should be carried out to inform people of the nature of the disease and of the restrictions in place.

The infected zone should be left in place for as long as can be reasonably expected, on the basis of

epidemiological evaluations, that infection may still be present. However, there is a risk in maintaining restrictions for too long as resentment may build up in the community, with a resulting reluctance to maintain the livestock movement bans and other restrictions.

Actions at Surveillance or Control Zone

This zone is much larger and surrounds one or more infected zones. It may cover a whole province or administrative region (or clan or tribal area). Activities undertaken are described below.

- There is enhanced active disease surveillance in the control zone. Herds and flocks should be inspected at about weekly intervals and this inspection should be supplemented by serological surveys.
- Livestock movements into or out of the control zone are allowed, but livestock movements out of the control zone should be subject to permits after clinical examination of the animals.
- Risk enterprises are allowed to operate but are subject to strictly enforced zoosanitary codes of practice.
- Livestock markets and other congregations of animals should be suspended if they are considered to constitute a considerable threat for the further spread of the disease. If they are allowed to continue they should be subject to surveillance and rigidly enforced codes of practice.
- Publicity campaigns should be carried out.

Vaccination

Well-planned, comprehensive vaccination programmes, supplemented by other disease control measures, can go a long way towards eliminating many epidemic livestock diseases. This may be the strategy of choice in areas where large-scale eradication is unacceptable for one reason or another. Vaccination programmes may be used as a tool for the elimination of epidemic livestock diseases in different ways, as described below.

Ring Vaccination

Ring vaccination is the rapid creation of an immune belt around an infected area and may be carried out to contain a rapidly spreading epidemic disease outbreak or in situations where the effectiveness of other methods to prevent the spread of the disease in and around infected zones, e.g. quarantine and livestock movement controls, cannot be guaranteed, or where these areas may be relatively inaccessible.

A decision to implement ring vaccination needs to be made quickly or else the size and number of infected areas may make this unmanageable. The width of the immune belt should be determined by epidemiological factors and resource availability considerations but, as a general guide, should be of the order of 20 to 50 km. Speed is of the essence and vaccination in the target ring should ideally be completed within a week or so. It is preferable to select a narrower ring for which human resources, vaccines and other resources are available for comprehensive vaccination within this time frame rather than to select a larger ring where gaps may be left in the immune belt for longer periods. The vaccination ring would then be extended later as necessary. Having selected the target area for the ring, vaccination should commence at the outer circumference and move centripetally towards the infected herds or flocks. Separate vaccination teams should be used for herds/flocks in which there is a high suspicion of infection.

Ring vaccination should be supplemented by other disease control measures including disease surveillance, livestock movement controls and, where possible, quarantine of infected premises. The

movement of susceptible species animals into or out of the combined infected/ring vaccination zones should not be permitted. Livestock markets and other congregations should also be suspended in this area.

Intensive disease surveillance should be carried out within and around the infected/ring vaccination, with the greatest concentration of effort being in the area immediately surrounding the vaccine ring.

A decision could be taken to extend the vaccination ring inwards or, if necessary, to have a second outer vaccination ring.

Blanket Vaccination

This involves the comprehensive vaccination of all susceptible species animals over a larger area. It may be the preferred option when the disease outbreak has become well established and there are multiple foci of infection, or when other disease control methods are impractical for one reason or another. The vaccination area should cover known and suspected infected areas together with those areas considered to be at high risk for spread of the disease.

The latter may include known livestock movement routes. It may be necessary to carry out several rounds of vaccination over a few years in the target area, until the clinical disease apparently disappears, or the incidence is at least reduced to a level where other disease control measures can be followed.

The vaccination campaign should be supplemented by heightened disease surveillance activities both inside and outside the vaccination area(s), together with publicity programmes. The movement of animals from vaccinated areas to disease-free areas should be regulated in such a way as to minimize the possibility of spread of infection.

Whichever vaccination programme is selected, the following guidelines should be followed:

- The purposes of the vaccination programme should be carefully defined and the programme targeted to meet the desired objectives.
- Having selected the target animal population and area, the vaccination should be carried out as comprehensively as possible, with the target as close to 100 percent vaccination cover as practicable.
- Different vaccination teams should be used for herds/flocks that are known or thought to be infected and those that are thought to be free. This is to minimize the possibility of spread of the disease.
- For the same reason, groups of animals from different herds should not be congregated together for vaccination.
- Vaccinated animals should be permanently identified as such, even if this involves something as simple as ear notching.

Mixed Strategies

Although the previous two strategies have been presented as alternatives, they are not mutually exclusive. It is quite sound to combine elements of both to suit different epidemiological or resource availability circumstances or to suit different phases of an eradication campaign.

For example, it may be decided to slaughter infected herds or flocks and then to use ring vaccination in a control zone around them, or targeted vaccination in other strategically important areas. One disadvantage is that it will complicate the interpretation of disease surveillance, particularly that of serological surveys. However, a combination of eradication and vaccination may well be selected in a

number of areas where there may be some doubt about the ability to maintain strict quarantine or animal movement controls or where there are inadequate resources for comprehensive disease surveillance. Vaccination may also be used to dampen down the rate of spread of an epidemic disease to the point where “stamping out” can be applied.

Chapter X: Review and Updating of Plans

Dissemination of the State Disaster Management Plan

The responsibility for dissemination of the plan will be with the SEC.

The SEC should also involve state-level NGOs in preparing suitable public awareness material to be distributed to the public.

The State Disaster Management Plan must be disseminated at three levels:

- National disaster Management Authority (NDMA), multilateral agencies (aid agencies), state line departments and defence services;
- To the district authorities, government departments, NGOs and other agencies and institutions within the state; and
- Through mass media to the general public.

The content of the plan should be explained through well-designed and focused awareness programmes. The awareness programmes should be prepared in the local language to ensure widespread dissemination.

Media should be extensively used for public awareness programs. These will include:

- Newspapers, TV
- Local cable networks
- Radio
- Publicity material

Schools, colleges and other public institutions should be specifically targeted.

Plan Evaluation

The purpose of evaluation of the state plan is to determine:

- The adequacy of resources
- Coordination between various agencies
- Community participation
- Partnership with NGOs

The plan will be updated when shortcomings are observed in:

- Organizational structures
- Available technology
- Response mechanism following reports on drills or exercises

A post-disaster evaluation should be done after the withdrawal of relief and rehabilitation activities in order to assess:

- The nature of state intervention and support,
- Suitability of the organization structure,

- Institutional arrangements,
- Adequacy of Operating Procedures,
- Monitoring mechanisms,
- Information tools,
- Equipment,
- Communication system, etc.

The impact studies on the above operations for long-term preventive and mitigation efforts are to be undertaken.

Evaluation exercises may be undertaken to understand the perceptions about disaster response in terms of

- Adequacy of training,
- Alert and warning systems,
- Control room functions,
- Communication plans,
- Security,
- Containment
- Recovery procedures,
- Monitoring

The evaluation will be done by UPAAM under the aegis of SEC.

Plan Update

The state disaster management plan is a “living document” and the SEC will update it every year taking into consideration:

- The resource requirements,
- Updates on human resources
- Technology to be used
- Coordination issues

The following guidelines would be adhered to while updating the State Disaster Management Plan:

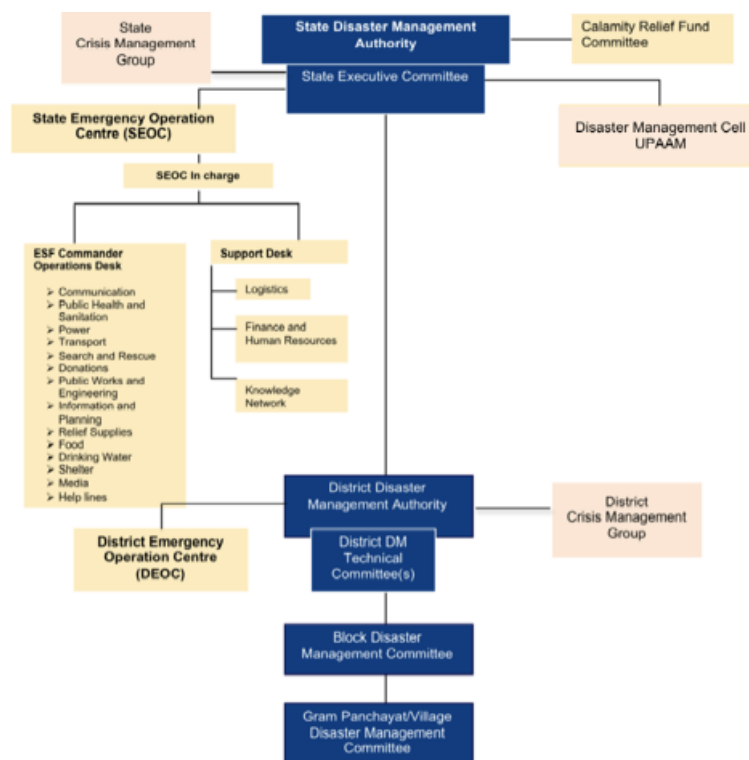
- A system would be in place to update the plan on an annual basis to ensure that the items requiring updating are considered and are current. This will involve:
 - Submission of annually updated disaster management plans by all the DDMA's to SEC.
 - Copies of the received updated plans from the districts to be given to the Technical committees, which will be formed as sub-committees of the SEC and HIDM for review and suggestions.
 - Final annual meeting to be organized by the SEC, which will be participated by SEC members, Technical Committee members, HIDM and all chairpersons of the district DDMA's.

- The updated plan will be placed before SDMA for approval.
- When an amendment is made to a plan, the amendment date would be noted on the updated page of the plan.
- Copies of the amendments made and approved by the SDMA needs to be circulated to all the concerned government departments and agencies.
- All the disaster management liaison officials in every agency would be designated to ensure that all plan-holders are notified of changes as soon as possible.

Chapter XI: Coordination and Implementation

Institutional Arrangement

The Uttar Pradesh State Disaster Management Act has been passed by the State Assembly in August 2005. Further, the State is also following the Disaster Management Act as enacted by the Govt. of India to provide effective management of disasters.



State Disaster Management Authority

The U.P State Disaster Management Authority (D.M.A) or Rajya Stariya Apda Prabandhan Samiti was formed in 2005 under the U.P Disaster management Act, 2005. The members of D.M.A are:

1. The Chief Minister of Uttar Pradesh: Chairperson.
2. Minister for Revenue Department: Member
3. Minister for Agriculture Department: Member
4. Minister for Irrigation Department: Member
5. Chief Secretary, Uttar Pradesh: Member
6. The Agriculture Production Commissioner: Member
7. Principal Secretary, Revenue: Member
8. Principal Secretary, Home: Member
9. Principal Secretary, Finance: Member

The State Disaster Management Authority (SDMA) has the following responsibilities.

- i. Lay down the State disaster management policy
- ii. Approve State Plan in accordance with the guidelines laid down by the National Authority.
- iii. Approve the disaster management plans prepared by the Government of the State
- iv. Lay down guidelines to be followed by the departments of the State Government for the purpose of integration of measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance therefore;
- v. Coordinate the implementation of State Plan
- vi. Recommend provision of funds for mitigation and preparedness measures
- vii. Review the development plans of different departments of the State and ensure that prevention and mitigation measures are integrated therein;
- viii. Review the measures being taken for mitigation, capacity building and preparedness by the departments of the Government of the State and issue such guidelines as may be necessary

The State Executive Committee, (SEC)

The State Executive Committee under the chairperson of Chief Secretary has been constituted by the Government of Uttar Pradesh with the following composition.

1. The Chief Secretary, Uttar Pradesh: Chairman
2. The Agriculture Production Commissioner: Member
3. The Principal Secretary, Home: Member
4. The Principal Secretary, Finance: Member
5. The Relief Commissioner and Secretary: Member/Convener

The responsibilities of the State Executive Committee are as follows:

- i) Coordinate and monitor the implementation of the National Policy, the National Plan and State plan.
- ii) Examine the vulnerability of different parts of the State to different forms of disasters and specify measures to be taken for their prevention or mitigation.
- iii) Lay down guidelines for preparation of disaster management plans by the department of the Government of the State and District Authorities.
- iv) Monitor the implementation of disaster management plans prepared by the departments of the Government of the State and District Authorities.
- v) Monitor the implementation of the guidelines laid down by the State Authority for integrating of measures for prevention of disasters and mitigation by the departments in their development plans and projects.
- vi) Evaluate preparedness at all government or non-governmental levels to responds to any threatening disaster situation or disaster and give directions, where necessary, for enhancing such preparedness.
- vii) Coordinate response in the event of any threatening disaster situation or disaster;
- viii) Give directions to any Department of the government of the state or any other authority or body in the State regarding actions to be taken in response to any threatening disaster situation;
- ix) Promote general education, awareness and community training in regard to the forms of disasters to which different parts of the State are vulnerable and the measures that may be taken by such community to prevent the disaster, mitigate and respond to such disaster;
- x) Advise assist and coordinate the activities of the Departments of the Government of the State, District Authorities statutory bodies and other governmental and non governmental organizations engaged in disaster management.;
- xi) Provide necessary technical assistance or give advice to District Authorities an local authorities for carrying out their functions effectively;
- xii) Advise the State Government regarding all financial matters in relation to disaster management.

Technical Committee(s)

The SEC has constituted various Technical Committees comprising disaster management experts, professionals and NGO field practitioners. They will be responsible for ensuring community participation in the disaster management activities. They will also advise the SEC on implementation of activities at State level. The Technical Committees are coordinated by Uttar Pradesh Academy of Administration and Management (UPAAM).

The State Emergency Operations Centre

The State Emergency operation Centre (SEOC) will be hub of all the activities related with disaster response in the state. The primary function of the SEOC is to implement the State Disaster Management Plan which includes coordination, data collection, operation management, record keeping, public information and resource management.

For the effective management of resources, disaster supplies and other response activities, focal points or centres will have to be established. These points will have to be well networked starting from the State to the District and finally leading to the disaster site.

Emergency Operations Centres at the State (SEOC) and the District (DEOC) and Incident Command Post (ICP) at the disaster site are the designated focal points that will coordinate overall activities and the flow of relief supplies from the State.

The State Emergency Operations Centre (SEOC) will be maintained and run round the clock which will expand to undertake and coordinate activities during a disaster. Once a warning or a First Information Report is received, the SEOC will become fully operational.

During a disaster situation, the SEOC will be under direct command of the Chief Secretary or the designated person by him as the Chief of Operations.

During non disaster times, the State Emergency Operations Centre stays operational through-out the year in preparedness mode, working during day time in order to take care of the extended preparedness activities of data management, staff awareness and training, which is essential for the smooth functioning of the SEOC during crisis situations and handling of emergency Toll Free Contact Lines. During an emergency, the SEOC will get upgraded and will have all emergency stakeholders manning it round the clock.

The aim of the EOC will be to provide centralized direction and control of all the following functions

- Emergency operations
- Communications and warning, which includes handling of 24 hrs emergency toll free numbers.
- Centralised state level disaster resource database
- Requesting additional resources during the disaster phase from neighbouring districts of the affected area
- Coordinating overseas support and aid.
- Issuing emergency information and instructions specific to departments, consolidation, analysis, and dissemination of Damage Assessment data and preparation of consolidated reports.

Crisis Management Group (CMG)

Crisis Management Groups at the State Level as well as at the District level have been formed with the following composition and roles.

Crisis Management Group at State Level: Composition

- (1) Chief Secretary, Uttar Pradesh: Chairperson
- (2) Principal Secretary, Home: Coordinator (Defence related emergencies)
- (3) Principal Secretary, Revenue & Natural Disaster: Coordinator (Natural Disasters)
- (4) Director General Police, U.P: Member
- (5) Additional Director General Police (Information): Member
- (6) Joint Director (I.P) Lucknow: Member
- (7) Relief Commissioner: Member
- (8) Any other member can be co-opted to the Group depending upon the nature of the disaster
- (9) Any alternative officer can also be nominated as a member of the Group by a member in case of his/her absence

Crisis Management Group at State Level: Functions

- This group has to remain informed of all developments in case of any disaster/emergencies.
- The group has to send alerts to all districts and related persons of any activities/developments that have any impacts on the security or on normal functioning in any way.
- The group also has to provide advice and guidelines to other adjoining areas to avoid any negative impacts on them.
- This group has to co-ordinate with the central and other state governments. The group can ask for required assistance by coordinating with Central Para military forces, other Police forces, Intelligence and Security agencies.
- The Group has to report to the Crisis Management Group at Centre informing about its progress and developments.

Crisis Management Group at District Level: Composition

- (1) District Magistrate: Chairperson
- (2) Superintendent of Police / Inspector General Police: Member
- (3) Local Representative of Intelligence Bureau: Member
- (4) Additional District Magistrate (Finance & Revenue): Co-ordinator
- (5) Any other member can be co-opted to the Group depending upon the nature of the disaster
- (6) Task Force Commander of NSG is also to be co-opted in case NSG's support is taken

Crisis Management Group at District Level: Functions

- District Crisis Management Group is responsible for managing the situation in case of any Emergency/Crisis.
- The group will arrange for required assistance from all concerned agencies in case of any emergency.

- If some specialist team has been engaged for assistance by District/State Crisis Management Group, then the group has to consider the advice of the team. But the final decision rests with the District/State Crisis Management Group.

Crisis Management Group at Departments

Each Department shall have a Crisis Management Group headed by the Secretary of the Department for managing emergencies relevant to the subject dealt with by the department, and report to the State Crisis Management Group.

Uttar Pradesh Academy of Administration and Management

The Uttar Pradesh Academy of Administration & Management (UPAAM) has been established in 2003 to provide training to State Level/ National Level Civil Service Officers, consultancy, research capability and management training expertise for the PSU's departments of the State Govt. and the Private Sector. This academy came into existence by merging Institute of Management Development U.P. & Administration Training Institute. A Disaster Management Cell has been created in the UPAAM. The objectives of the DMC are to:

- Impart training in the field of disaster prevention, mitigation, preparedness, response, relief and rehabilitation to the various stakeholders.
- Undertake research, studies, documentation and development of database etc. in disaster management related aspects.
- Actively liaise with the State Department of Disaster Management or Relief/Revenue/Home department or any other department of the State Government, which has been entrusted with the nodal responsibility for disaster management in the State.

The Disaster Management Cell has developed the following manuals:

- State Disaster Management Manual – General
- State Disaster Management Manual – Flood
- State Disaster Management Manual – Drought
- State Disaster Management Manual – Epidemics
- State Disaster Management Manual – Earthquake
- State Disaster Management Manual – Man-made

The salient features of these manuals are that they not only specify the vulnerable areas of the State of UP but also stress on the various needs and checklists for stakeholders in preparing the community to meet an event of a disaster, so that its adverse effects are minimized.

District Disaster Management Authority

The District Disaster Management Authority (DDMA) will act as the district planning; coordinating and monitoring body in accordance with the guidelines laid down by the State Authority. In the Govt. of India – UNDP Disaster Risk Management Project, 13 districts of U.P. were covered. The State Government has decided to extend the DRM activities to all 71 districts.

While District Disaster Management Authority is yet to be functional, District Disaster Management Committees (DDMC) are in place. DDMC is headed by the District Magistrate, and other members are the concerned department heads or the nodal persons.

DDMA for every district in the State of Uttar Pradesh shall also be constituted, consisting of the following members:

1. District Magistrate: Chairperson
2. Superintendent of Police: Member
3. Chief Medical Officer: Member
4. Superintending Engineer (PWD): Member
5. Superintending Engineer (Irrigation): Member
6. Chief Development Officer (RD): Member
7. Chairperson of the Zila Parishad: Member

District Disaster Management Advisory Committee(s)

District level Disaster Management Advisory Committee(s) will be appointed by the District Disaster Management Authority to take advice on various subject specific fields within the overall context of disaster management. The committee will comprise disaster management experts, which may from government departments, research institutes or NGO's.

District Emergency Operation Centre

The District Emergency Operation Centre (DEOC) will be hub of all the activities related with disaster response in the District.

Block Disaster Management Committee

Subject to the directions of the District Authority, the block disaster management committee will be responsible for the development and implementation of block level disaster management plans.

Gram Panchayat / Village Disaster Management Committee

Subject to the directions of the District Authority, the Gram Panchayat Disaster Management committees will be responsible for the development and implementation of GP level disaster management plans.

Responsible Agencies

The primary agency and supporting agencies responsible for management of animal epidemics are:

Primary Agency

- Department of Animal Husbandry

Supporting Agencies

- Department of Health & Family Welfare
- Home Department: Police
- Home Department: Fire Service
- Energy Department
- Rural Engineering Services (RES)
- Public Works Department
- Department of Urban Development
- Local Self Governments
- Jal Nigam
- Jal Sansthan
- NGOs