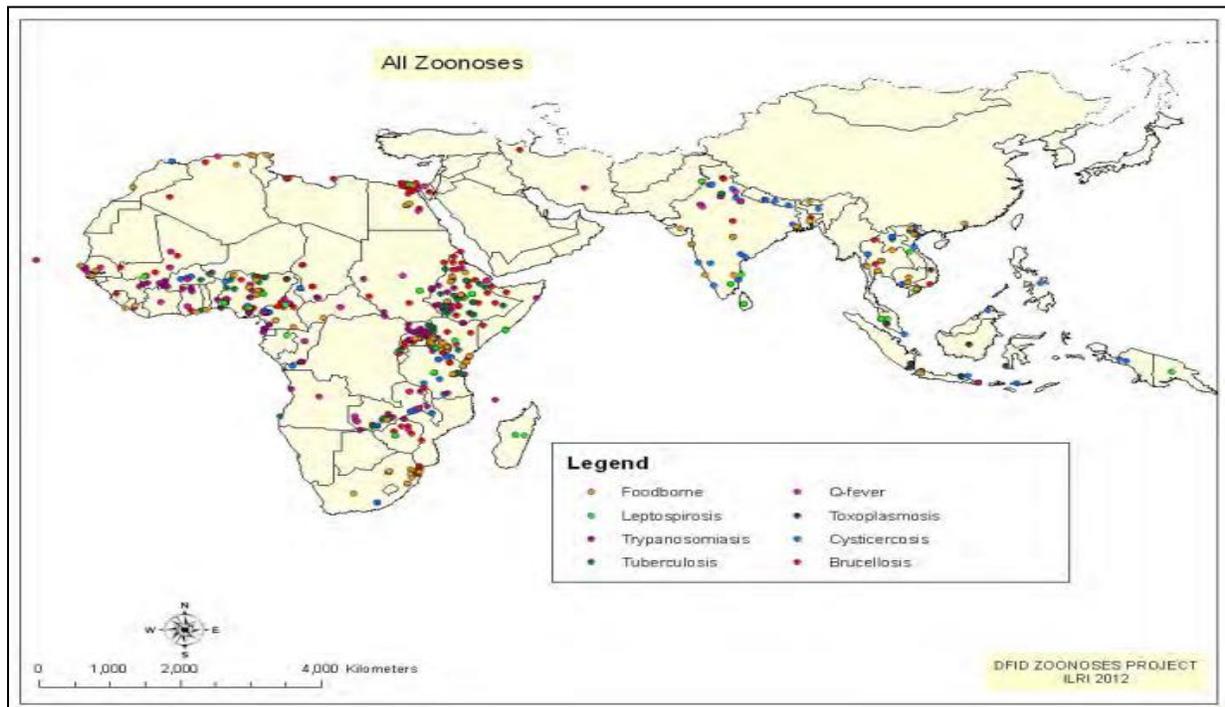


“One Health action” plan for Climate Sensitive Zoonotic Diseases

Introduction -

Burden of Zoonotic Diseases: Global

Zoonoses are the disease and infection that are transmitted between animals and humans. Emerging zoonotic diseases are increasingly recognized as a serious challenge with potentially serious human health and economic impacts. Globally one billion cases are reported with are of Zoonotic origin, out of which millions of people die every year(WHO, 2015). Almost 60% of all human infections and 75% of newly emerging infectious diseases are of zoonotic origin(WHO, 2020). Of every ten infectious diseases that are identified in humans, six are “zoonotic” diseases – diseases originating in animal populations. In total, they profoundly affect human wellbeing, occupations, animals and environments. It is estimated that the effect of zoonotic illness in low and middle developing countries, 20% of human mortality and morbidity was because of zoonoses or

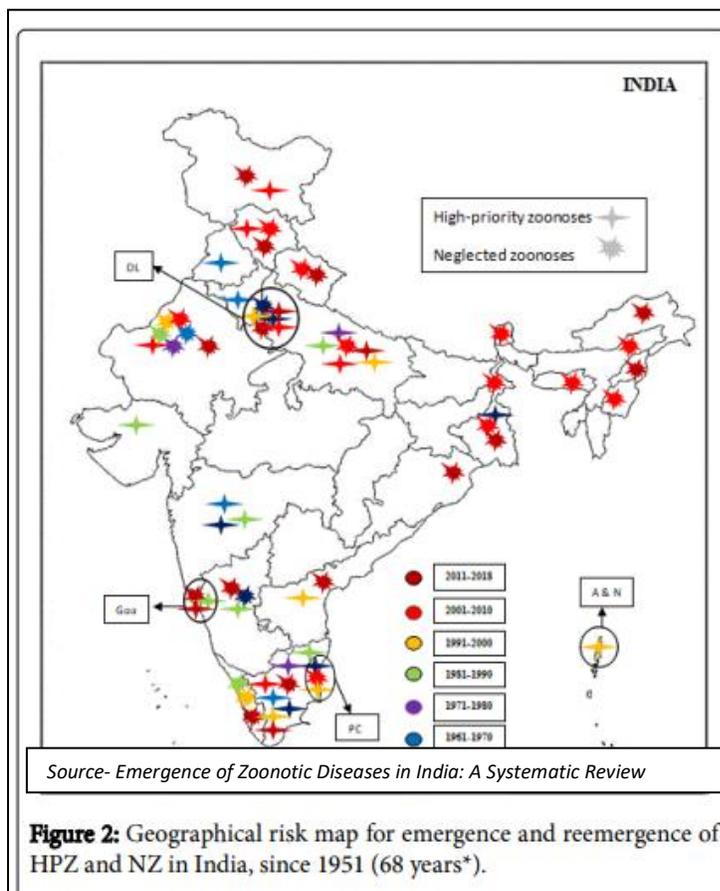


illnesses as of late hopped species from animals to individuals(Department for International Development, UK, 2012). The emerging zoonoses are a growing public health threat in the last two decades; emerging zoonotic diseases have been reported from 18 out of 22 countries in the region, often, with explosive outbreaks and high fatalities. Examples include Rift Valley fever, SARS, pandemic

influenza H1N1 2009, Yellow fever, Avian Influenza (H5N1) and (H7N9), West Nile virus and the Middle East respiratory syndrome coronavirus (MERS-CoV) reported in the recent past(WHO, 2015).

In India-

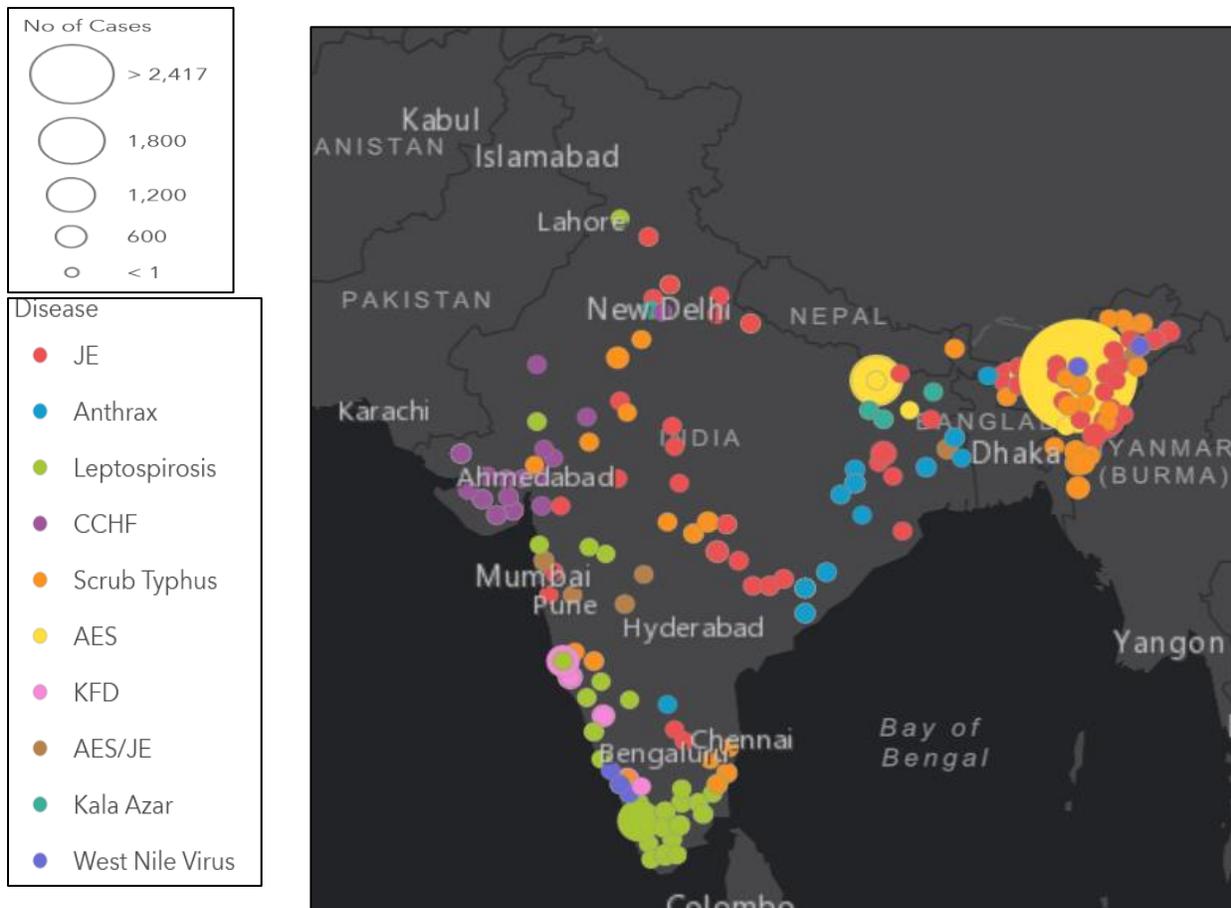
Zoonotic Disease are major public health issue in several countries of the world and India is among the top geographical hotspots for such diseases. With ever-increasing human intrusion into natural ecosystems, the growing demand for animal-based food products, international trade, international travel, and other factors, human exposure to zoonotic diseases has never been higher. Increasing numbers and severity of infectious disease outbreaks over the last two decades, such as NIPAH, ZIKA, KFD, Highly Pathogenic Avian Influenza in India and disease like Ebola globally had profound impacts on human health, caused severe burdens on human livelihoods and economies, and posed global security threats(C Dhiman and Tiwari, 2018).



In India, major public health zoonotic disease are Rabies, Brucellosis, Toxoplasmosis, Cysticercosis, Echinococcosis, JE, Plague, Leptospirosis, Scrub typhus and KFD. New emerging disease of public health importance is Avian Influenza, Nipah, Trypanosomiasis, CCHF and H1N1. Since the country has vector, susceptible host and conducive environment it also faces potential threat from Yellow fever, SARS, Hanta virus, Rift valley fever, Ebola and Marburg.

As per IDSP Information, Zoonotic Disease like Brucellosis have been emerged from Assam, Kerala and Rajasthan; Japanese Encephalitis from

Tamil Nadu to Uttar Pradesh; Leptospirosis from Maharashtra to Punjab; Melioidosis from Assam, Karnataka, whereas neglected ZD like Cutaneous Leishmaniasis had been emerged from Delhi to Rajasthan to Jammu and Kashmir; Kyasanur Forest Disease from Karnataka to Kerala, Tamil Nadu and Goa; NipahVirus from West Bengal to Kerala; Scrub typhus from Arunachal Pradesh to Tamil Nadu. Extension of these ZD to non-endemic areas has increased the complexity of their forecast.



Climate Change and Zoonotic Diseases

Climate change is the most serious challenge facing human and animal populations, as it affects population dynamics of wild animals, reproductive success and population densities of some species. Moreover, climate variability may also expand the current limits of agricultural activities, increasing the chance of contact between species that have not normally interacted in that area. Livestock excrete many micro-organisms which have zoonotic potential. These pathogens can be transmitted by water and food and the risk of transmission to humans is increased if food crops are watered with contaminated water. Densely crowded urban environments, especially those without adequate sanitation, are of great public health concern because they are sources of disease epidemics. These climate changes have tremendous effect on prevalence of zoonotic diseases. The changes in climate may increase the insect vectors, prolong transmission cycles or increase the importation of vectors or animal reservoirs. It may also have an adverse effect on biodiversity, distribution of animals and microflora which may lead to emergence of zoonotic disease outbreaks.

Leptospirosis is an emerging outbreak-prone disease which is associated with flooding. Major Environmental factors shown to affect the epidemiology of leptospirosis include heavy rainfall and flooding, high temperatures, exposure to animals, poor sanitation, and poor waste disposal.

Climate change might affect other diseases endemic to India, such as **chikungunya and dengue**, parasitic diseases such as leishmaniasis, lymphatic filariasis and onchocerciasis, and tickborne diseases. Some of this disease may exhibit changes in transmission intensity or shifts in their geographical ranges due to the impact of climate on the relevant vector populations.

For Tick-borne diseases, temperature accelerates the development cycle, egg production, population density, and distribution of ticks. For example, the distribution of the bacterial spirochete *Borrelia burgdorferi*, the causative agent of **Lyme borreliosis**, may extend into the Himalayan region as climate change causes a shift to milder temperatures. The disease is transmitted to humans during blood feeding by hard ticks of the genus *Ixodes*, and in a survey carried out in northeast India, 65 out of 500 people (13%) were positive for *B. burgdorferi*-specific immunoglobulin G. Seropositivity to *B. burgdorferi* suggests infection by the organism and the presence of Lyme disease in these areas.

Kyasanur Forest Disease The status of the forest ecosystem of the world is threatened by conversion of agricultural development, timber extraction, road development, etc. This brings drastic changes in infectious diseases in the local population, especially one like KFD where the virus exists naturally in the wild ecosystem and circulates among wild animals and tick vectors. Many researchers have documented deforestation as a major reason for the spread of Kyasanur Forest disease. Environmental degradation may have a substantial effect on wildlife and increases the probability of tick transmission leading to the KFD spread.

Scrub typhus has been endemic in India for several decades. In recent years, it has been increasingly reported and has become a significant health concern. The incidence of scrub typhus, a vector-borne disease, is influenced by the density of rats and changes in climate. The projections on climate change indicate an increase in average temperature of between 2.5°C and 5°C, and an overall increase in the intensity of rainfall of between 1 mm and 4 mm/day, except for small areas in north-west India. It is thought that such changes in the climate may affect several characteristics of vector-borne disease, namely: – their survival and reproduction rates – the intensity and temporal pattern of vector activity – the rates of development, survival and reproduction of pathogens within vectors.

Mosquito-borne diseases e.g Japanese encephalitis in the last decade, there has been a major upsurge of Japanese encephalitis in many states. It is currently endemic in 135 districts in 15 states and union territories of India. It is very likely that climate change will further extend the range of the mosquitoes to temperate zones such as Himachal Pradesh and other northern states.

Other mosquito-borne diseases that have been reported in India include zoonotic simian malaria (which emerged in the union territory of the Andaman and Nicobar islands) and **West Nile fever**, which has spread into new regions as the virus has been introduced into competent vector habitats, possibly as a consequence of climate changes

Bacterial Infection e.g Anthrax is survive in the environment for decades, owing to their resistance to extremes of pH and temperature, desiccation and some chemical agents. Certain environmental conditions appear to produce ‘anthrax belts’, in which the soil becomes heavily contaminated with anthrax spores. These prerequisites include soil rich in organic matter (with pH > 6.0) and weather changes which include abundant rainfall followed by prolonged, significantly dry conditions.

The evolution of emerging zoonotic diseases had led a demand for interdisciplinary communication between health professionals, veterinarians, environmental scientists, ecologists, geographers and economists seeking to understand climate change will be key to protecting people in India and worldwide against these threats

Rationale - “One health action “for climate sensitive zoonotic disease is required to combat zoonotic diseases as changes in climatic condition leads to rise in zoonotic disease. Heavy rains, High Temperature, Natural disasters- floods, Cyclones leads to rise in zoonotic diseases due to increased contact of humans with wild and domestic mammalian reservoir or Changes in behavior, reservoir density of infected animals. For example. Diseases such as anthrax increase in warm weather while leopotospirosis increases in rainy season etc. Hence every state needs to identify zoonotic diseases prevalent in the state and related climatic condition which can affects the incidence of this diseases subsequently develop specific “ One Health “action plan for addressing them.

Developing health adaptation plan for climate change and zoonosis : It is essential that health sector needs to come forward for addressing the issue of climate change and related impact on zoonotic diseases. Health department at all levels (National, State and District level) need to prepare the health adaptation plan for climate sensitive zoonotic diseases .The broad objectives of developing the action plan are as under

Objectives -

- Strengthen capacity of healthcare system to address the climate sensitive zoonotic diseases prevalent in the respective region.
- Asses the vulnerability of health system for zoonotic diseases and improve preparedness and response mechanisms
- Create awareness regarding impacts of climate change on zoonotic diseases among community and high risk population
- Develop partnerships and create synchrony/ synergy with other stakeholders for joint response .

Health department has to carry out **the vulnerability assessment** using data compiled under diseases surveillance system i.e IDSP, HMIS, NADRS and NVBDCP. Based on the parameters from surveillance system , nodal officer need to asses ,recent trend for Enzootic diseases ,Emerging and re-emerging diseases, any shift in Months/ season of transmission, new foci- geographical area, human population at risk, animals’ population, change in density of vector, reservoir etc

After **identification of high risk areas/population** prevalent in the particular region , health department o may undertake joint exercise with other relevant department for mapping of stakeholder’s (i. e Veterinary department , , Meteorological department, dept. Of agriculture, Urban planning dept./Panchayat raj dept., Department of Environment & forest department etc. Health department may convene the meeting of zoonosis committee involving above **stakeholders** and undertake the activates as e.g •Defining roles and responsibilities actions required for risk reduction and Operational mechanism.

Based on vulnerability assessment health department may find out areas of need urgent attention and prioritize the issues. Based on prioritization each stakeholder may be communicated to address the issue.

For developing insights on the field level issue pilot areas i.e district, blocks, villages may be identified and risk of climatic condition with relevant zoonosis may be communicated to respective field unit.

Thereafter, detailed action plan with checklist containing components such as Logistics required at health care facilities, training components for health personnel, IEC activities, Data recording and maintenance, Surveillance (real-time, sentinel) information sharing plan concerned departments and stakeholders may be outlined. Emergency response Plan in case of any disaster or an outbreak also need to be chalked with stakeholders. (details list at Annexure-1)

For institutionalization of ONE health mechanisms health department need to regularly interact with veterinary department for Prevention and control of diseases in animals, Strengthening of Surveillance for diseases among animal reservoir, improving the laboratory capacity in animal disease labs. Health department need to develop for Sharing of relevant data on cases & deaths among animals, Vaccination of animals. Strategic plan should be undertaken with vet department in cases of zoonotic diseases Rabies for population control of stray animals. Joint IEC activities should be undertaken in the community for Safe handling and check-on activities for prevention of infection through 'food' of animal origin

With the help of Meteorological dept. Health department may develop Early Warning System for forecasting of climate sensitive zoonotic diseases and Integrate Meteorological/climate /geo- spatial data with data of diseases in human, animals

Community awareness and community ownership is essential for successful implementation of health adoption plan hence community level intervention for IEC activities need to be undertaken. It included awareness on maintain personal hygiene, consumption safe water and food, proper disposal of sewage to avoid contamination, barriers for human dwellings to keep stray animals away by fencing the residential areas near forests areas, self protection measures like protective clothing etc while handling carcasses or during occupational exposure

Medium and long measures in the form of research for Climate threshold –determining diseases pathogen, vector or reservoir, Intervention measures such as source reduction, filling and drainage operations, planned water management, and proper disposal of refuse and other excreta may be undertaken with relevant stakeholders.

Details of List of activities to be undertaken at various under health adaptation plan for climate sensitive zoonosis is placed at annexure-1

List of activities to be undertaken at various under health adaptation plan for climate sensitive zoonosis

State level - Specific Activities to be undertaken with Roles and responsibilities				
	Specific Activities to be undertaken		Roles and responsibilities	
C	For routine surveillances and control	Level	Responsible stakeholder/ Division	Frequency
C.1	Regular meeting of stakeholders (DHS, State veterinary department ,State agriculture and forest Department, representative of medical & veterinary institutes, district representative) as a part of state level zoonosis committee or any other committee.	State	SSO-IDSP , DHS (member secretary of state zoonosis committee)(Principal Chief Conservators of Forests (PCCF)),representative of meterological dept. representative of agriculture dpet, representative of drinking water & sanitation dept.	Twice a year
C.2	Joint surveillance and action: 1.Sharing of Diseases wise data on Zoonotic diseases. 2. Identification of priority zoonosis in the state based on the endemicity of zoonotic diseases. 3. Information sharing with stakeholders on zoonotic diseases and initiate measures to integrate the information for early action. 4. Identifying the emerging zoonosis as a future public health threats in the state.	State	DHS, State veterinary department ,State agriculture and forest Department, representative of medical & veterinary institutes ,representative of meterological dept. representative of agriculture dpet, representative of drinking water & sanitation dept.	Real Time (online/ offline platform)
C.4	Periodic analysis of data on zoonotic diseases data & recommendation to responsible stakeholders for action	State	SSO- IDSP, State vet officer	Every week
C.5	Identification of early warning signals & information to responsible counterparts	State	SSO- IDSP, State vet officer, wild life& forest representatives (Principal Chief Conservators of Forests (PCCF)),	Real Time
C.6	Monitoring and Review: Review of activities under Intersectoral coordination programme	State	State level zoonosis committee comprising of SSO- IDSP, State vet officer, wild life& forest representatives (Principal Chief Conservators of Forests (PCCF)),	Every year
C.7	Forecasting requirement of infrastructure, logistics, manpower etc. for control of zoonotic diseases and taking appropriate measures to earmark the funds to address the issues.	State	DHS, Director state animal husbandry, state level wild life representatives ADG forest at state level, state level zoonosis committee	Every year
C.8	Communication: 1.Identification of Nodal Officer responsible in medical, veterinary and wildlife sectors for communication under intersectoral coordination programme and circulation of information on activities conducted in a year under ISC with all stakeholders. 2. Communication on zoonotic outbreaks with community.	State	DHS, Director state animal husbandry, state level wild life representatives ADG forest at state level, environment ministry of state	Every year (month : January)

C.9	Capacity Building : Accessing the training needs and Organising a joint training workshop for master trainers at state level for capacity building of medical, veterinary and wildlife professionals for prevention and control of zoonotic Diseases.	State	DHS, Director state animal husbandry, state level wild life representatives(Principal Chief Conservators of Forests (PCCF)), ADG forest at state level, environment ministry of state	Every year
C.10	Laboratories support: 1. Mapping of Laboratories expert working in the field of zoonosis understate health department, state animal husbandry department, ICAR and forest department and sharing of information on integrated platform. 2. Mapping of laboratory experts working in the field of zoonosis understate health department, state animal husbandry department, ICAR and forest departmentand sharing of information on integrated platform. 3. Forecasting the requirement of laboratories (infrastructure , kits , re-agents, etc.) and taking problem specific measures to address the issues.	State	DHS, Director state animal husbandry, state level wild life representatives,ICMR institutes in the state, ICAR institutes in the state, state veterinary lab. In the state, wild life sector lab. In the state,	Every year
C.11	Environmental aspects of Zoonosis: Identifying the issues pertaining to climate change and its impact on emerging and re- emerging zoonosis and taking measures to address the issues through consultation with relevant stakeholders.	State	DHS, Director state animal husbandry, state level wild life representatives(Principal Chief Conservators of Forests (PCCF)),Environmental ministry in the state representative of meterological dept. representative of agriculture dpet, representative of drinking water & sanitation dept.	Every year
C.12	Operational research: Identifying the areas in the field of zoonosis requiring research and consultation with relevant stakeholders for undertaking joint research and circulation of final report with relevant stakeholders for improving the control measures for zoonosis	State	State level zoonosis committee, DHS, Director state animal husbandry, state level wild life representatives(Principal Chief Conservators of Forests (PCCF)),	Every year
D. In Emergency and Outbreaks:				
D.1	Identification of trigger points: Based on the endemicity of zoonotic diseases in geographical areas trigger points are identified for all zoonotic diseases i.e. increase reports of zoonotic disease above particular threshold. Information on specific trigger points for all zoonotic diseases to be circulated to all relevant stakeholders.	State	SSO IDSP, , state veterinary officer, state level zoonosis committee, Principal Chief Conservators of Forests (PCCF)	Every year/ Real time
D.2	Circulation of Information on Outbreak: As soon as outbreak is suspected under existing surveillance system (IDSP, NADRS, NADRES, etc.) or media reports, other informal channels and if confirmed, information to be circulated to relevant	State	SSO IDSP, , state veterinary officer, state level wild life representative (Principal Chief Conservators of Forests (PCCF)), nodal officer of	Real Time

	stakeholders.		NADRS, NADRES	
D.3	<p>Initiation of outbreak control measures:</p> <p>1. As soon as information is received responsible officer in the relevant ministry to constitute joint team of experts (Medical, Veterinary, Wildlife, etc.) including state representatives for investigating outbreak.</p> <p>2. Directions to be issued to respective states/ districts under relevant ministries for coordination with counterparts for containment measures of outbreak.</p> <p>3. Provision of requisite logistic (Drugs, Diagnostics, PPE, etc.) to respective state / District authorities under relevant ministries.</p>	State	DHS, Director state animal husbandry, state level wild life representatives(Principal Conservators of Forests (PCCF)),Environmental ministry in the state	Real Time
D.4	<p>Sample collection during outbreak.</p> <p>1. Need of sample collection decided by expert microbiologist / FSSAI representative/ wild life sector microbiologist .</p> <p>2. Sample collection Procedure to followed as per requirement of respective zoonotic diseases detected</p>	State	State level medical institute, state level veterinary labs, ICAR, IVRI, WLI, FSSAI Representative, Microbiologist form central govt. medical/ vet. Institutions	Real Time (as soon as outbreak detected)
D.5	<p>Joint monitoring of outbreak:</p> <p>1. Joint meetings of ministries/ stakeholders to be conducted for review of containment measures and relevant issues are addressed through consultation.</p> <p>2. Reports on containment measures shared with relevant stakeholders</p>	State	State level zoonosis committee, DHS, Director state animal husbandry, state level wild life representatives,Environmental ministry in the state	Real time Weekly during Outbreak.
D.6	<p>Assessment of Outbreak impact measures on community, livestock, wildlife:</p> <p>1. After the outbreak relevant ministries to assess the impact of outbreak in terms of socio-economic loss.</p> <p>2. Circulation of information on impact to the relevant stakeholders.</p> <p>3. Identifying the gap areas in coordination between the medical veterinary and wildlife officials</p>	State	State level zoonosis committee, DHS, Director state animal husbandry, state level wild life representatives,Environmental ministry in the state	After every major outbreak in the state.
E. SOP's at District level				
E	For routine surveillances and control	Level	Responsible stakeholder/ Division	Frequency
E.1	Regular meeting of stakeholders (DHO/CMHO, District veterinary department , District agriculture and forest Department, representative of medical & veterinary institutes, as a part of District level zoonosis committee or any other surveillance committee.	District	DSO-IDSP , CMHO/DHO (member secre representative of meterological dept. representative of agriculture dpet, representative of drinking water & sanitation dept.tary of district zoonosis committee)	Twice a year
E.2	<p>Joint surveillance and action:</p> <p>1.Sharing of Diseases wise data on Zoonotic diseases.</p> <p>2. Identification of priority zoonosis in the district based on the endemicity of zoonotic diseases.</p> <p>3. Information sharing with stakeholders in the district on zoonotic diseases and initiate measures to integrate the information for early</p>	District	CMHO/DHO, district veterinary department , district agriculture and forest Department, representative of medical & veterinary institutes, representative of meterological dept. representative of agriculture dpet,	Real Time (online/offline platform)

	action.		representative of drinking water & sanitation dept.	
E.3	Periodic analysis of data on zoonotic diseases data & recommendation to responsible stakeholders for action	District	DSO- IDSP, district vet officer	Every week
E.4	Identification of early warning signals & information to responsible counterparts	District	DSO- IDSP, district vet officer, wild life& forest representatives	Real Time
E.5	Monitoring and Review: Review of activities under Intersectoral coordination programme	District	district level zoonosis committee comprising of DSO- IDSP, district vet officer, wild life& forest representatives	Every year
E.6	Forecasting requirement of infrastructure, logistics, manpower etc. for control of zoonotic diseases and taking appropriate measures to earmark the funds to address the issues.	District	CMHO/DHO, Director district animal husbandry, district level wild life representatives ADG forest at district level, district level zoonosis committee	Every year
E.7	Communication: 1. Identification of Nodal Officer responsible in medical, veterinary and wildlife sectors for communication under intersectoral coordination programme and circulation of information on activities conducted in a year under ISC with all stakeholders. 2. Communication on zoonotic outbreaks with community.	District	CMHO/DHO, Director district animal husbandry, district level wild life representatives ADG forest at district level, environment ministry of district	Every year (month : January)
E.8	Capacity Building : Assessing the training needs and Organising a joint training workshop for master trainers at district level for capacity building of medical, veterinary and wildlife professionals for prevention and control of zoonotic Diseases.	District	CMHO/DHO, Director district animal husbandry, district level wild life representatives, ADG forest at district level, environment ministry of district	Every year
E.9	Laboratories support: 1. Mapping of Laboratories expert working in the field of zoonosis in the district under state health department, state animal husbandry department, ICAR and forest department and sharing of information on integrated platform. 2. Mapping of laboratory experts working in the field of zoonosis under state health department, state animal husbandry department, ICAR and forest department and sharing of information on integrated platform. 3. Forecasting the requirement of laboratories (infrastructure , kits, re-agents, etc.) and taking problem specific measures to address the issues.	District	CMHO/DHO, Director district animal husbandry, district level wild life representatives, ICMR institutes in the district, ICAR institutes in the district, district veterinary lab. In the district, wild life sector lab. In the district,	Every year
E.10	Environmental aspects of Zoonosis: Identifying the issues pertaining to climate change and its impact on emerging and re- emerging zoonosis and taking measures to address the issues through consultation with relevant stakeholders.	District	CMHO/DHO, Director district animal husbandry, district level wild life representatives, Environmental dept in the district , representative of meterological dept. representative of agriculture dpet, representative of drinking water & sanitation dept.	Every year
E.11	Operational research: Identifying the areas in the field of zoonosis requiring research and	District	district level zoonosis committee, CMHO/DHO, Director district animal	Every year

	consultation with relevant stakeholders for undertaking joint research and circulation of final report with relevant stakeholders for improving the control measures for zoonosis		husbandry, district level wild life representatives	
E. In Emergency and Outbreaks:				
E.12	Identification of trigger points: Based on the endemicity of zoonotic diseases in geographical areas trigger points are identified for all zoonotic diseases i.e. increase reports of zoonotic disease above particular threshold. Information on specific trigger points for all zoonotic diseases to be circulated to all relevant stakeholders.	District	DSO-IDSP, , district veterinary officer, district level zoonosis committee	Every year/ Real time
E.13	Circulation of Information on Outbreak: As soon as outbreak is suspected under existing surveillance system (IDSP, NADRS, NADRES, etc.) or media reports, other informal channels and if confirmed, information to be circulated to relevant stakeholders.	District	DSO-IDSP, , district veterinary officer, district level wild life representative, nodal officer of NADRS, NADRES	Real Time
E.14	Initiation of outbreak control measures: 1. As soon as information is received responsible officer in the relevant department to constitute joint team of experts (Medical, Veterinary, Wildlife, etc.) including district representatives for investigating outbreak. 2. Directions to be issued to respective blocks under relevant departments for coordination with counterparts for containment measures of outbreak. 3. Provision of requisite logistic (Drugs, Diagnostics, PPE, etc.) to respective district / District authorities under relevant ministries.	District	CMHO/DHO, Director district animal husbandry, district level wild life representatives, Environmental ministry in the district	Real Time
E.15	Sample collection during outbreak. 3. Need of sample collection decided by expert microbiologist / FSSAI representative/ wild life sector microbiologist . 4. Sample collection Procedure to followed as per requirement of respective zoonotic diseases detected	District	district level medical institute, district level veterinary labs, ICAR, IVRI, WLI, FSSAI Representative, Microbiologist form state govt. medical/ vet. Institutions	Real Time (as soon as outbreak detected)
E.16	Joint monitoring of outbreak: 1. Joint meetings of stakeholders to be conducted for review of containment measures and relevant issues are addressed through consultation. 2. Reports on containment measures shared with relevant stakeholders	District	district level zoonosis committee, CMHO/DHO, Director district animal husbandry, district level wild life representatives, Environmental dept in the district	Real time Weekly during Outbreak.
E.17	Assessment of Outbreak impact measures on community, livestock, wildlife: 1. After the outbreak relevant ministries to assess the impact of outbreak in terms of socio-economic loss. 2. Circulation of information on impact to the relevant stakeholders. 3. Identifying the gap areas in coordination between the medical veterinary and wildlife officials	District	district level zoonosis committee, DHS, Director district animal husbandry, district level wild life representatives, Environmental dept in the district	After every major outbreak in the district.
F. Drafts SOP's at Block level				

F	For routine surveillances and control	Level	Responsible stakeholder/ Division	Frequency
F.1	Regular meeting of stakeholders Medical officer in charge, block level veterinary department, block agriculture and forest Department, representative of medical & veterinary institutes, block representative.	Block	Medical officer in charge, (member secretary of block zoonosis committee)	Twice a year
F.2	Joint surveillance and action: 1.Sharing of Diseases wise data on Zoonotic diseases. 2. Information sharing with stakeholders in the block on zoonotic diseases and initiate measures to integrate the information for early action.	Block	block veterinary department , block agriculture and forest Department, representative of medical & veterinary institutes	Real Time (online/offline platform)
F.3	Periodic analysis of data on zoonotic diseases data & recommendation to responsible stakeholders for action	Block	Medical officer in charge, block vet officer	Every week
F.4	Identification of early warning signals & information to responsible counterparts	Block	Medical officer in charge, block vet officer, wild life& forest representatives	Real Time
F.5	Monitoring and Review: Review of activities under Intersectoral coordination programme	Block	block level zoonosis committee comprising of Medical officer in charge,block vet officer, wild life& forest representatives	Every year
F.6	Forecasting requirement of infrastructure, logistics, manpower etc. for control of zoonotic diseases and taking appropriate measures to earmark the funds to address the issues.	Block	Medical officer in charge, block vet officer, wild life& forest representatives	Every year
F.7	Communication: 1. Identification of Nodal Officer responsible in medical, veterinary and wildlife sectors for communication under intersectoral coordination programme and circulation of information on activities conducted in a year under ISC with all stakeholders. 2. Communication on zoonotic outbreaks with community.	Block	Medical officer in charge, block vet officer, wild life& forest representatives	Every year (month : January)
F.8	Capacity Building : Accessing the training needs and Organising a joint training workshop for master trainers at block level for capacity building of medical, veterinary and wildlife professionals for prevention and control of zoonotic Diseases.	Block	Medical officer in charge, block vet officer, wild life& forest representatives	Every year
F.9	Laboratories support: Sample to be send to labs at the district level (Medical veterinary wild life) for confirmation of diagnosis	Block	Medical officer in charge, block vet officer, wild life& forest representatives	Every year
F. In Emergency and Outbreaks:				
F.10	Identification of trigger points: Based on the endemicity of zoonotic diseases in geographical areas trigger points are identified for all zoonotic diseases i.e. increase reports of zoonotic disease above particular threshold. Information on specific trigger points for all zoonotic diseases to be circulated to all relevant stakeholders.	Block	Medical officer in charge, block veterinary officer, block level zoonosis committee	Every year/ Real time

F.11	<p>Circulation of Information on Outbreak: As soon as outbreak is suspected under existing surveillance system (IDSP, NADRS, NADRES, etc.) or media reports, other informal channels and if confirmed, information to be circulated to relevant stakeholders.</p>	Block	Medical officer in charge, block veterinary officer, block level wild life representative	Real Time
F.12	<p>Initiation of outbreak control measures: 1. Directing the health workers, para – vets to visit the site of outbreaks and guide them for necessary measure. 2. confirming the outbreaks by visiting the site of outbreaks and initiate the containment measure. 3. Provision of requisite logistic (Drugs, Diagnostics, PPE, etc.) to respective block authorities under relevant ministries.</p>	Block	Block animal husbandry, block level wild life representatives, Environmental dept in the block	Real Time
F.15	<p>Sample collection during outbreak. 1. Need of sample collection decided by expert Sample collection Procedure to be followed as per requirement of respective zoonotic diseases detected</p>	Block	block level medical institute, district level veterinary labs	Real Time (as soon as outbreak detected)
F.16	<p>Joint monitoring of outbreak: 1. Joint meetings of stakeholders to be conducted for review of containment measures and relevant issues are addressed through consultation. 2. Reports on containment measures shared with relevant stakeholders</p>	Block	block level medical institute, district level veterinary labs, level wild life representatives, Environmental dept in the block	Real time Weekly during Outbreak.