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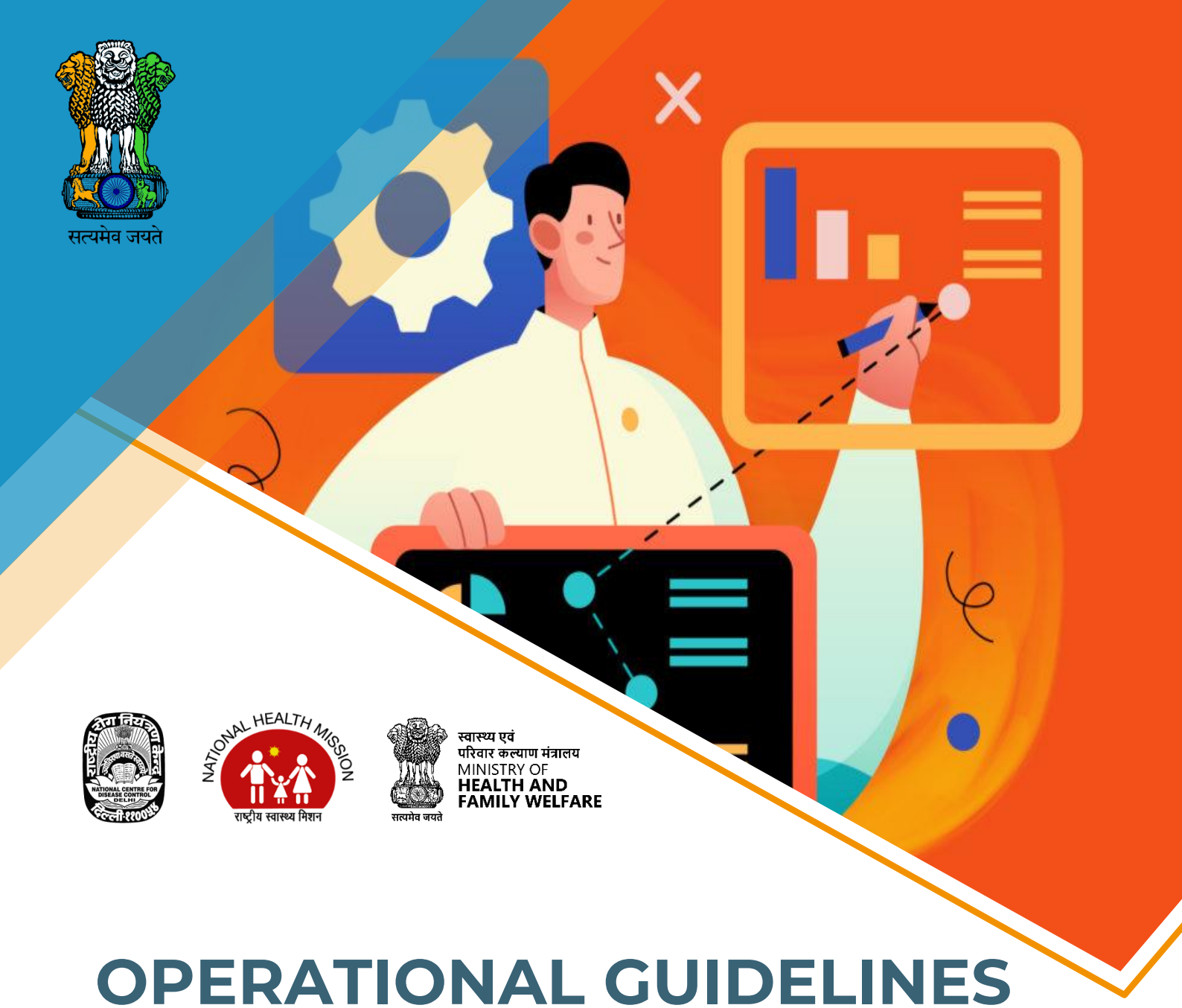

राष्ट्रीय स्वास्थ्य मिशन

स्वास्थ्य एवं परिवार कल्याण मंत्रालय
MINISTRY OF HEALTH AND FAMILY WELFARE
सत्यमेव जयते

OPERATIONAL GUIDELINES FOR SENTINEL SURVEILLANCE SITES ON ZOONOSES (SSSZ)

NATIONAL ONE HEALTH PROGRAMME FOR PREVENTION AND CONTROL OF ZOONOSES
DIVISION OF ZOONOTIC DISEASES PROGRAMMES

NATIONAL CENTER FOR DISEASE CONTROL
DIRECTORATE GENERAL OF HEALTH SERVICES
MINISTRY OF HEALTH AND FAMILY WELFARE
GOVERNMENT OF INDIA

CONTENTS

Operational Guidelines for Sentinel Surveillance Sites on zoonoses (SSSZ)

ABBREVIATIONS

AFI – Acute Febrile Illness

AIIMS – All India Institute of Medical Sciences

ARI – Acute Respiratory Illness

CCHF – Crimean Congo Hemorrhagic Fever

CHC – Community Health Centres

CRF – Case Report Form

CSF – Cerebro Spinal Fluid

CSU – Central Support Unit

DBT – Department of Bio-Technology

DEO – Data Entry Officer

DGHS –Directorate General of Health Services

DPHL – District Public Health Laboratories

DSO – District Surveillance Officer

DZDP –Division of Zoonotic Disease Programme

ELISA – Enzyme Linked Immuno- Sorbent Assay

FUO – Fever of Unknown Origin

GHSA – Global Health Security Agenda

GIA – Grant in Aid

ICAR – Indian Council of Agricultural Research

ICMR – Indian Council of Medical Research

ICU – Intensive Care Unit

IDSP – Integrated Disease Surveillance Programme

IEC – Information Education and Communication

IHIP – Integrated Health Information Platform

IHR – International Health Regulations

ILI – Influenza-like Illness

IPD – In-Patient Department

JE – Japanese Encephalitis

KFD – Kyasanur Forest Disease

KPIs- Key Performance Indicators

MAT – Microscopic Agglutination Test

MoEF-CC – Ministry of Environment, Forest and Climate Change

MoHFW - Ministry of Health & Family Welfare

NAAT – Nucleic Acid Amplification Test

NCDC – National Centre for Disease Control

NCVBDC – National Centre for Vector Borne Disease Control

NGO – Non-Governmental Organization

NHM – National Health Mission

NOHP-PCZ - National One Health Programme for Prevention and Control of Zoonoses

NOHPPZ- National One Health Programme for Prevention of Zoonoses

NPMU - National Programme Management Unit

OPD – Out Patient Department

PHC – Primary Health Centres

PMSKY – Prime Minister Rashtriya Suraksha Kisan Yojna

PUO – Pyrexia of Unknown Origin

RC – Regional Coordinator

RT-PCR – Reverse Transcriptase Polymerase Chain Reaction

SARI – Severe Acute Respiratory Infections

SFC – Standing Finance Committee

SOPs – Standard Operating Procedures

SSO - State Surveillance Officer

SSS – Sentinel Surveillance Sites

SSSZ – Sentinel Surveillance Sites on Zoonoses

UN – United Nations

UNDP – United Nations Development Programme

UNICEF – United Nations Children Fund

USAID – United States Agency for International Development

WHO – World Health Organization

WOAH – World Organization for Animal Health

ZD – Zoonotic Diseases

ABOUT THE DOCUMENT

The term “Zoonoses” is derived from the Greek word “Zoon”, which means animal, and “nosos”, which means illness. According to the World Health Organization (WHO), any disease or infection that is naturally transmissible from vertebrate animals to humans or from humans to animals is classified as zoonoses. Among human pathogens, about 61% are zoonotic in nature. The zoonotic pathogens include a wide variety of viral, bacterial, fungal, protozoal, and parasitic species and are often difficult to diagnose. The limited knowledge and skills to identify zoonotic diseases, coupled with limited diagnostic facilities have resulted in neglect of the infections caused by zoonotic pathogens. The endemic and emerging zoonoses need to be urgently responded to, not only through systematic multi-sectoral collaboration between human health, animal health, and environment sectors by the “One Health” approach which recognizes the interconnectedness, but also through more resilient public health machinery at all levels.

WHO defines public health surveillance as a continuous, systematic collection, analysis and interpretation of health-related data. The collected disease surveillance data serves as an early warning system for impending outbreaks that could become public health emergencies; enables monitoring and evaluation of the impact of an intervention, helps track progress towards specified goals; and monitors and clarifies the epidemiology of health problems, guiding priority-setting and planning and evaluation public health policy and strategies.

The National Centre for Disease Control (NCDC), and the Ministry of Health & Family Welfare (MoHFW) are coordinating the implementation of the National One Health Programme for Prevention and Control of Zoonoses (NOHP-PCZ); in which one of the key components is 'Strengthening the surveillance and diagnostic capacity of zoonoses' at national, state and district levels, which will be achieved by establishing a network of Sentinel Surveillance Sites on Zoonoses (SSSZ).

The 'Operational Guidelines for Sentinel Surveillance Sites on Zoonoses' is a technical guidance document of its operational plan. The document is intended to be used by the programme managers, nodal officers & other clinicians at sentinel sites, laboratory professionals, and other concerned stakeholders participating in the surveillance activity.

The document is a brief overview of the National One Health Programme for Prevention and Control of Zoonoses and its various components and describes the detailed operational plan of SSSZ with the roles and responsibilities of concerned stakeholders of zoonoses.

CHAPTER 1: BACKGROUND

Emerging and endemic zoonotic diseases pose a threat not only to the health of animals and humans but also to global health security. An estimated 60% of known infectious diseases and up to 75% of new or emerging infectious diseases are zoonotic in origin. Globally, infectious diseases account for 15.8% of all deaths and 43.7% of deaths in low-resource countries. It is estimated that zoonotic diseases are responsible for 2.5 billion cases of human illnesses and 2.7 million human deaths, yearly worldwide. Emerging zoonoses are responsible for some of the most notorious and devastating epidemics, however, endemic zoonoses may pose a more insidious and chronic threat to both human and animal health.

In the year 2014, the Ebola epidemic was responsible for 11,316 deaths and $2.2 billion in economic losses globally whereas each year Rabies accounts for ≈ 59,000 human deaths and roughly $8.6 billion in economic losses worldwide. The global impacts of emerging and endemic zoonoses on both human and animal population necessitate response through a systematic, multi-sectoral collaboration between the human, animal, and environmental sectors through the One Health approach.

Early detection of zoonotic pathogens through enhanced laboratory capacities and surveillance at the animal – human interface is a crucial step toward the control and prevention of zoonoses. This is also a core capacity for implementation of the WHO International Health Regulations, 2005 (IHR, 2005) and the Global Health Security Agenda (GHSA; https://www.ghsagenda.org/. To obtain Global Health Security, it is necessary to rapidly detect, respond and control public health emergencies at their source, including those caused by outbreaks of zoonotic diseases.

There is a long list of diseases including bacterial, viral, parasitic, and fungal zoonoses, however, to optimize and get the maximum out of the limited resources, continuous capacity-building efforts should be focused initially on a few prioritized diseases of Public Health Importance including but not limited to increase surveillance, guide research, and improve preparedness and response protocols, further advancing global health security and the international health regulations.

1.1 The Burden of Zoonoses in India:

The classical well-known infectious diseases like Rabies and Plague are zoonotic and have not been eradicated despite major efforts. Some of the zoonotic diseases like Plague have re-emerged with three reported outbreaks in the last ten years. Japanese encephalitis and Leptospirosis outbreaks have been reported year after year in our country. India is experiencing rapid urbanization, industrialization, increasing incomes and changing food preferences (raising demands for animal source proteins) leading to

a larger section of the society being in close contact with livestock, and hence making the population extremely susceptible to endemic, emerging, and new zoonotic diseases. The zoonotic diseases of major public health importance in India are Leptospirosis, Lyme disease, Plague, Rabies, Anthrax, Scrub Typhus, Brucellosis, Kyasanur Forest Disease (KFD), Spotted Fever caused by Rickettsia and parasitic diseases like Cysticercosis, Hydatid disease, Trypanosomiasis, and Toxoplasmosis.

The emerging zoonoses such as Crimean Congo Hemorrhagic fever (CCHF), Nipah virus infection, Zika virus infection, West Nile virus infection, Avian Influenza & H1N1 Influenza have further stirred the public health machinery. The Covid-19 pandemic which resulted in millions of deaths has proven to be a global disaster. In addition to the existing zoonoses, the country faces a potential threat of exotic zoonotic infections viz Yellow Fever, Chandipura Virus (CHPV), Hantavirus infection, Rift Valley fever, Ebola & Marburg disease; the vector, susceptible host, and conducive environment for these diseases being prevalent in our country.

The IDSP data reveals the country-wide distribution of zoonotic diseases (21 out of 36 states) and their frequent outbreaks being reported from time to time. Due to the limited diagnostic capacity and lack of awareness and hence, reporting, the exact burden of the zoonoses is still unknown. Hence, to strengthen the surveillance of zoonoses and to gather information on the spatiotemporal pattern of zoonoses, the National One Health Programme for Prevention and Control of Zoonoses has envisaged establishing a network of sentinel surveillance sites on zoonoses in the selected institutes across the country. It is envisaged that the Grant in Aid (GIA) provided to these institutes will be utilized to develop state-of-the-art diagnostic facilities for priority zoonoses.

The priority zoonotic diseases identified (as given below) from “National Multi-sectoral One-Health Workshop for Prevention of Zoonotic Diseases in India” – 10th to 12th Feb 2020 will be targeted by these sentinel sites.

Apart from undertaking laboratory tests, these sentinel sites will organize periodic sensitization training for physicians and other health professionals on diagnosis, prevention and control of zoonoses.

1.2 National One Health Programme for Prevention and Control of Zoonoses

The National One Health Programme for Prevention and Control of Zoonoses is the new name of the existing Central Sector Scheme of "Ministry of Health and Family Welfare approved in the 12th Five-year Plan as 'Strengthening Inter-Sectoral Coordination for Prevention and Control of Zoonotic Diseases'. The SFC approval for the scheme was

obtained on 26th June 2013. The nodal agency for the implementation of the programme is NCDC, DGHS, MoHFW, Govt. of India.

The initiation of the programme aimed to enhance intersectoral coordination between the medical, veterinary, and wildlife sectors, to address zoonoses through joint capacity-building initiatives. This involved strengthening the laboratory and surveillance efforts, promoting data sharing, conducting joint outbreak investigations, and implementing various information, education, and communication (IEC) activities. Initially, the programme was put into operation by making use of available resources within the State, and collaborative capacity-building endeavors were carried out with the veterinary sector.

Over the years, the programme has made significant achievements in sensitization of stakeholders and bringing together multidisciplinary experts on a common platform to build a consensus to have a structured 'One Health' approach to respond to the zoonotic threats in the country. Till date, 14 Regional coordinators (i.e., medical/veterinary institutes) have been strengthened to catalyze the coordination between medical and veterinary sectors. At the state /district, various activities such as training, laboratory strengthening, data sharing, and IEC activities are being undertaken through the above regional coordinators.

Building on the knowledge gained, the programme gradually expanded its scope to adopt a more pragmatic approach in institutionalizing One Health and responding to zoonotic diseases. The programme is further intended to enhance and strengthen the country's capacity to mitigate the morbidity and mortality caused by prevailing endemic viral, bacterial, and parasitic zoonoses, and to reinforce the International Health Regulations (IHR) core capacities for zoonotic threats with pandemic potential. The program's vision, mission, goals, and objectives have been expanded as follows:

1. **Vision** - To Institutionalize structural mechanisms for the 'One Health' approach in the country at each level i.e., National, State, District, Block, and village level

2. **Mission** - To bring all stakeholders from policymakers to front-line workers on One Health Platform with a shared vision and common goals

3. **Goal** - To protect communities and minimize socio-economic losses due to emerging and re-emerging zoonotic threats.

4**. Objective** - To operationalize 'One Health' m mechanisms for prevention and control of zoonoses through strengthening inter-sectoral coordination among all stakeholders at the national, state, and district levels and extending up to the grassroots level.

Components of the Programme:

- Component A: Institutionalize One Health at the National, State, and District level and extend it up to the grassroots
- Component B: Integrated capacity-building Programmes on zoonoses through a multidisciplinary network of regional coordinators of One Health Institutes and partner organizations
- Component C: Integrated Surveillance Programme on zoonoses
- Component D: Integrated community outreach programme for prevention and control of zoonoses with One Health approach at the grass root level
- Component E: Advocacy and Risk Communication
- Component F: Operational Research

1.3 Prioritization of Zoonotic Diseases of Public Health Importance in India

As a first step towards a multidisciplinary 'One Health' approach for the prevention and control of zoonoses, a National Multi-sectoral One-Health Workshop for Prevention of Zoonotic Diseases in India was organized by the programme division in 2020. During the workshop, a priority list of zoonotic diseases with significant public health implications was generated using an Analytical Hierarchy and Decision tree modeling approach. The workshop was attended by key stakeholders from different sectors, including public health, veterinary, wildlife, agriculture, environment, education, and academia.

The process of prioritizing zoonotic diseases was carried out through the following seven steps (Figure 1):

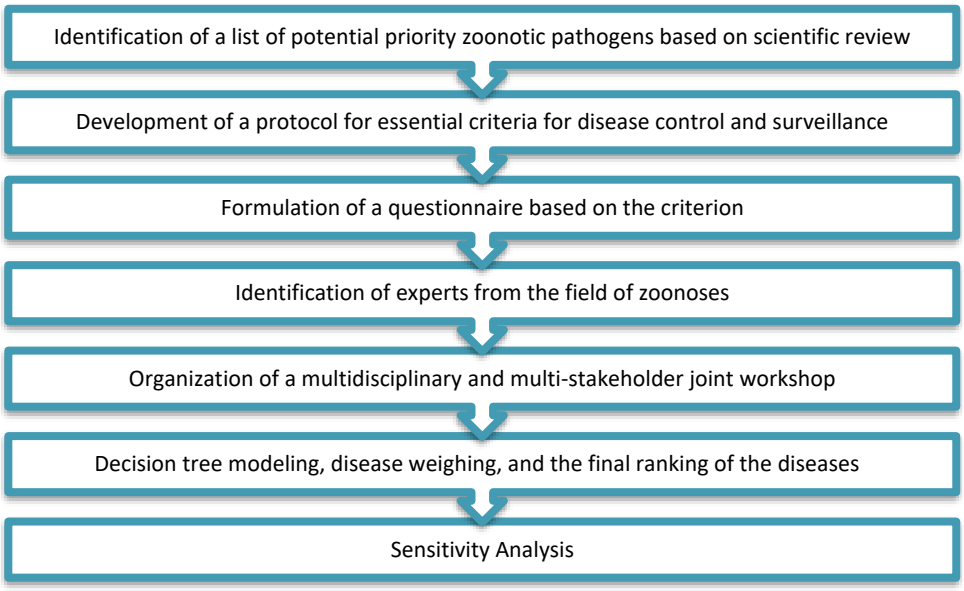

Figure 1: The process of prioritizing zoonotic diseases for the sentinel surveillance sites

A total of 12 zoonotic diseases listed below were identified (and newly added) for prioritizing interventions aimed at safeguarding public health.

1. Leptospirosis
2. Brucellosis
3. Scrub typhus/Rikettsiosis
4. Cutaneous Anthrax
5. Crimean Congo Hemorrhagic Fever
6. Cysticercosis
7. Lyme Disease
8. KFD Virus
9. Toxoplasmosis
10. West Nile Virus
11. Hanta Virus
12. Chandipura Virus

The process of prioritizing diseases provided a scientific and evidence-based justification for allocating resources towards addressing the priority zoonoses. It highlighted the need to develop a sustainable and cohesive roadmap for future "One Health" activities, including capacity building of laboratories, strengthening surveillance systems, preparedness for outbreak response, and establishing mechanisms for information sharing among the various sectors and stakeholders involved.

CHAPTER 2: INTRODUCTION TO SENTINEL SURVEILLANCE SITES (SSS) ON ZOONOSES

Sentinel surveillance is defined as “monitoring of the incidence or prevalence of specific diseases or conditions through a voluntary network of doctors, laboratories, and public health departments with a view to assess the stability or changes in the health status of a population”. Additionally, it involves the study of disease rates in a particular cohort, such as a geographic region or subgroup, to estimate trends in a larger population.

A sentinel surveillance system is often used to obtain data about a particular disease that is difficult to be obtained through a routine passive system. Data collected through a systematic sentinel system can be used to demonstrate disease trends, identify outbreaks and monitor disease burden.

2.1 The Rationale for establishing a Sentinel Surveillance System for Zoonoses

Zoonotic diseases are frequently misdiagnosed or undiagnosed due to their subtle clinical presentation, which may be non-specific or insufficient to accurately characterize the disease. Additionally, clinicians may not exhibit a high degree of suspicion for zoonotic diseases because their symptoms can overlap with those of other common illnesses, and diagnostic facilities may be limited. All of these factors contribute to the underreporting of zoonotic diseases in our country at present.

As part of NOHPPZ, a network of regional coordinators of One Health has already been established to coordinate and implement the programme in the respective states. To further strengthen disease reporting and surveillance for zoonotic diseases, it is envisaged to establish a network of Sentinel Surveillance Sites throughout the country. These sites will provide systematic assessments of the disease endemicity levels, spatial and temporal trends in zoonotic diseases, detection of incursion of a new disease in a region, as well as enable the study of risk factors associated with these illnesses that could be addressed through public health interventions.

The priority zoonotic diseases identified from National Multi-sectoral One-Health Workshop for Prevention of Zoonotic Diseases as given above in India are targeted under the sentinel sites. In addition, other targeted zoonoses may be included as proposed by the SSS or diseases identified by regional prioritization workshops.

These Sentinel Surveillance Sites will aid in the following:

1. Systematic assessments of spatial and temporal trends of zoonotic diseases.

2. Capacity building of physicians and health care workers for early diagnosis of zoonoses.
3. Strengthening diagnosis and reporting of zoonotic diseases under IDSP/IHIP.
4. Providing a better understanding of the disease ecology in the selected regions.
5. To facilitate the formulation of State level Action Plan for zoonotic disease prevention and management.

Over a period of five years, a network of 80 to 100 sentinel sites on zoonoses will be established under NOHP-PCZ.

2.2 Potential Sentinel Surveillance Sites for zoonoses

The selection of Sentinel Sites is a collaborative process involving consultation with IDSP/IHIP and nomination by State Health Departments. Technical evaluations are conducted using a checklist to determine the feasibility of participation. The goal is to ensure that all selected sites generate quality data, and the network will be gradually expanded over time to achieve optimal geographical representation of the zoonotic disease burden in the country. The potentials sentinel surveillance sites include various categories of health facilities. A few of them are as deported in the figure (Figure 2) below:

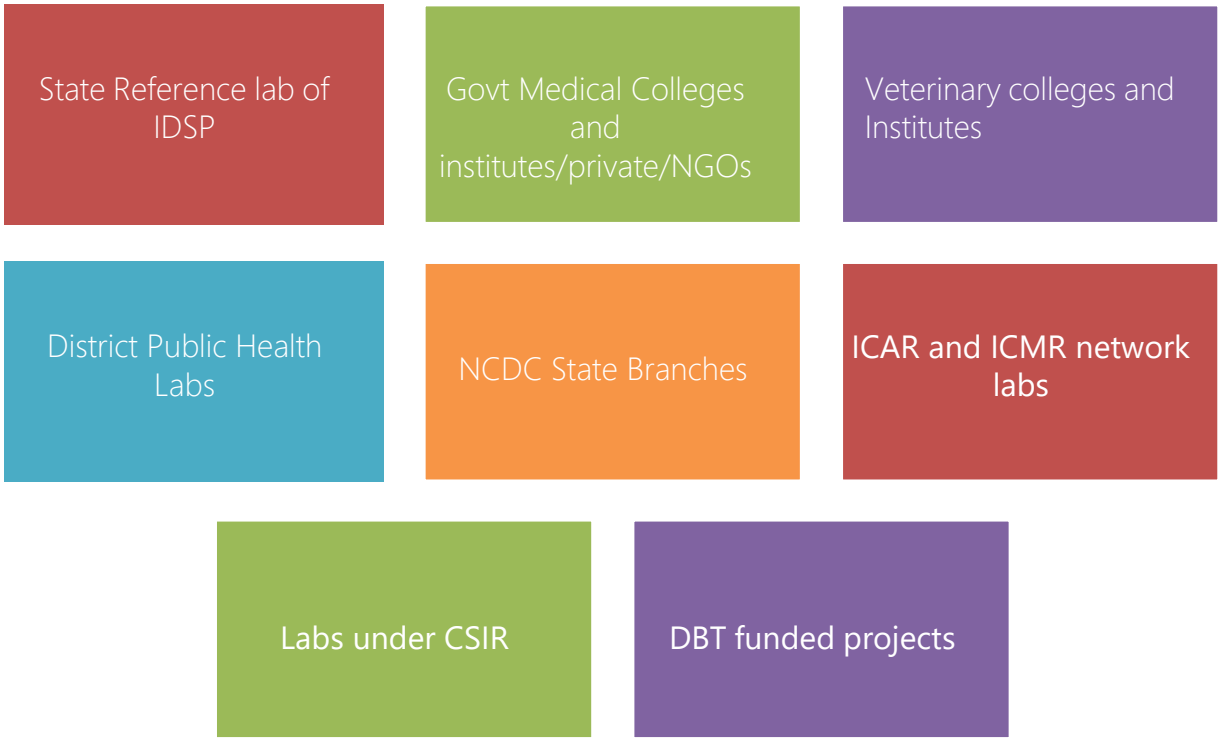

Figure 2: Potential Sentinel Surveillance sites

2.3 Primary Objectives of SSS

1. Build the institutional capacity and strengthen the surveillance system for zoonotic diseases.
2. To understand the epidemiological risk factors associated with occurrence of zoonotic diseases.
3. Strengthen laboratory surveillance of zoonotic diseases to improve comprehension of the burden of priority zoonotic diseases.

2.4 Secondary Objectives of SSS

1. To strengthen the network of institutes/stakeholders working for zoonosis in India.
2. To assess the burden of priority zoonotic infections in the jurisdiction of SSS.

The aim is to establish a National One Health mechanism by fostering intersectoral coordination among the human health, animal health, wildlife, agriculture, environment, and climate change sectors. This will enable effective surveillance and control of outbreaks of zoonotic diseases, thereby promoting public health.

CHAPTER 3: INSTITUTIONAL MECHANISM FOR OPERATIONALIZATION OF SSSZ

The programme's institutional mechanism involves the inclusion of key stakeholders from various ministries and departments, including veterinary and wildlife, at all levels from national to village. The Sentinel Surveillance Sites activities will be coordinated by the National Programme Management Unit of NOHP-PCZ at the national level. The Regional Coordinators for One Health under the program, which includes tertiary level health, veterinary, and wildlife institutes, as well as selected AIIMS, will be linked appropriately to provide technical support and quality assurance activities. The National Programme Management Unit (NPMU) will monitor overall physical and financial progress (Figure 3).

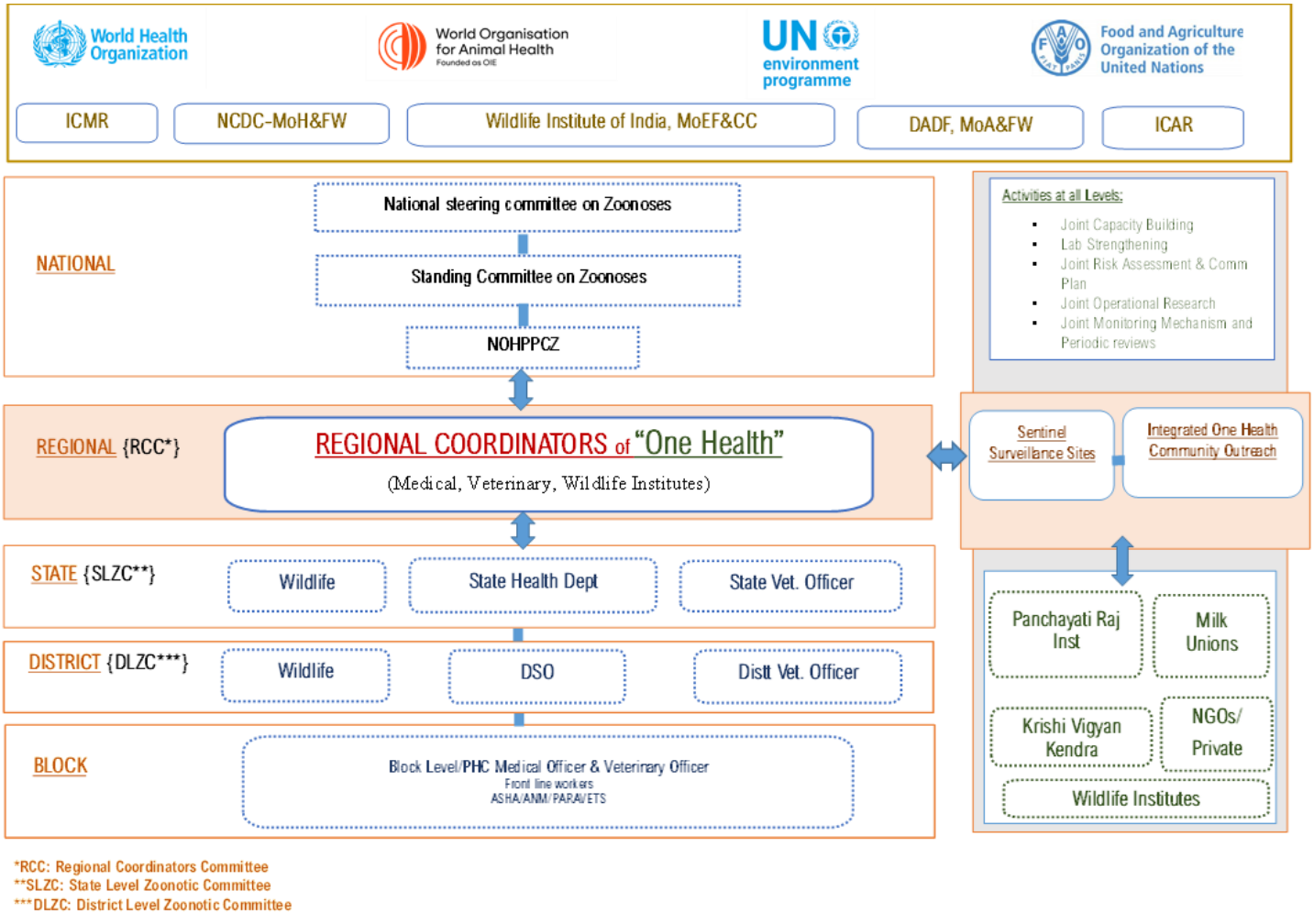

Figure 3 Institutional mechanism for Operationalization of SSSZ.

Integrated Community Outreach Programme for Prevention and Control of Zoonosis

Integrated Community Outreach activities will be conducted to increase awareness of zoonotic diseases among target populations such as farmers, animal handlers, and forest workers (Figure 4). The outreach programme will also focus on capacity building of front-line workers and healthcare professionals at PHC, CHC, and block and district levels for early detection of zoonotic diseases. The implementation of the component will involve the participation of Panchayati Raj Institutions, Rashtriya Suraksha Kisan Yojna (at the village level), and local NGOs, among others. The identified community outreach sites will be linked to respective sentinel surveillance sites under the programme.

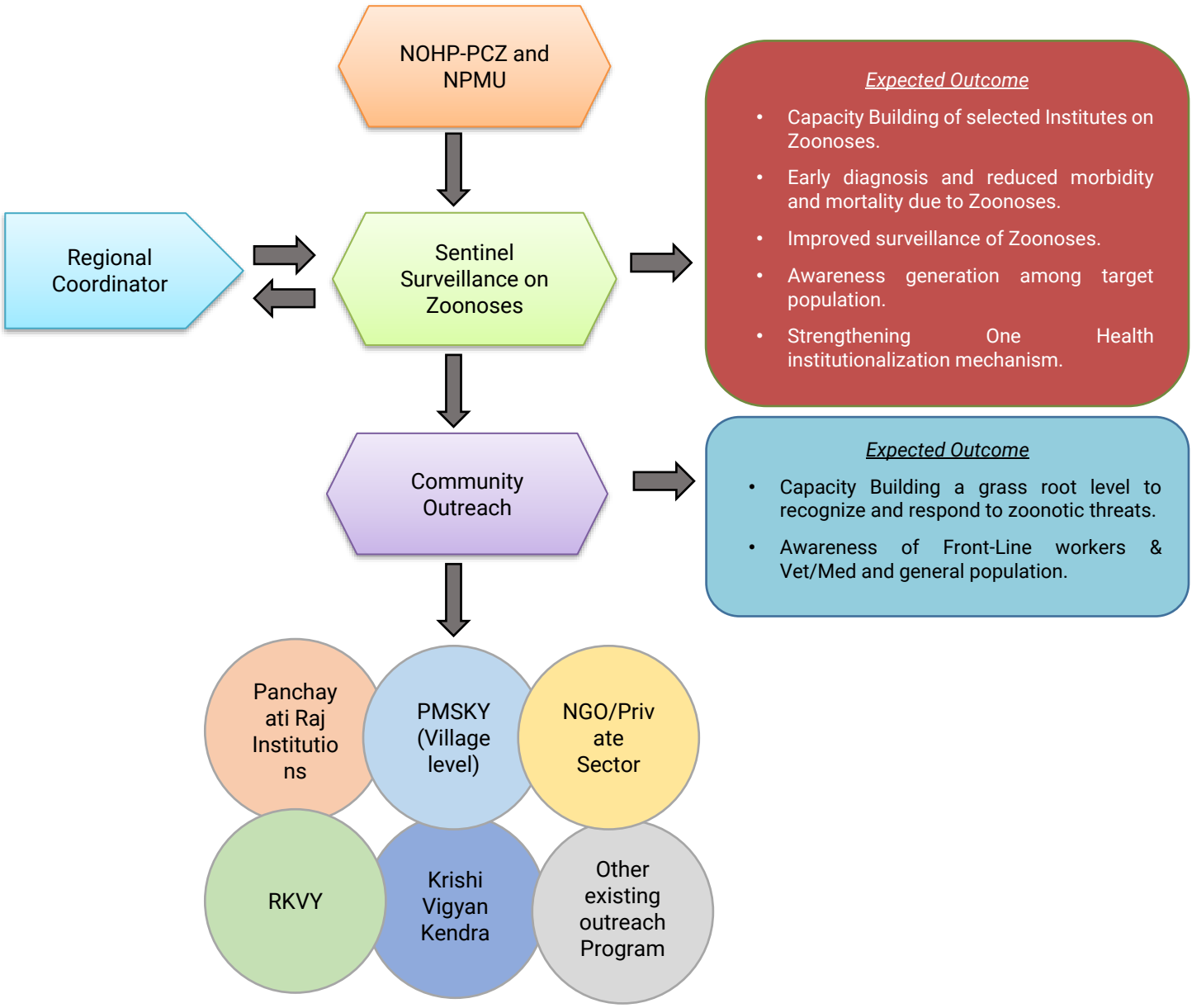

Figure 4 Integration with Community Outreach Sites

3.1 Operational Plan of SSSZ

The sentinel site initiative may involve a hospital-based, community-based, or combination approach. Its prospective design will focus on describing the actual burden of the selected zoonotic disease/s.

The proposed sentinel site will be connected/linked to the NPMU at NCDC, and will also be linked with the Regional Coordinator for One Health. Each sentinel site will collaborate with the relevant district surveillance system, which includes both animal and human health sectors.

The objective of each sentinel site is to develop and implement a surveillance that accurately reflects the burden of zoonotic diseases in the area catered by the institute. The institute will nominate/assign a nodal officer from the microbiology, internal medicine, pediatrics, or community health department, to oversee all activities of the Sentinel Site Surveillance for Zoonotic Diseases (SSSZ).

3.2 Recruitment of Sentinel Surveillance Sites

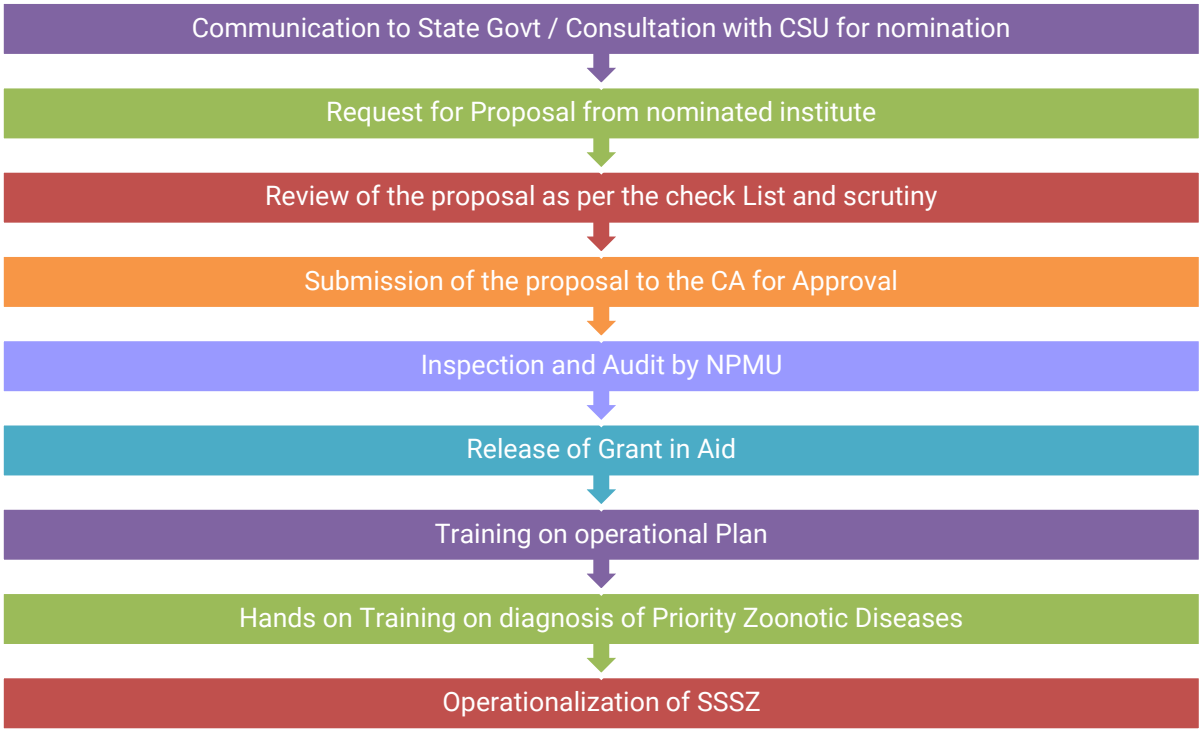

Figure 5 Recruitment process of Sentinel Surveillance Sites

3.3 Infrastructure and human resources

To carry out sentinel site activities, the current laboratory infrastructure will be utilized. However, participating institutes must adhere to established standards for microbiological testing. Partial logistic and manpower support is being provided under the Programme through Grant-In-Aid. Dedicated contractual manpower in the form of Laboratory Technician and Data Entry Operator will be supporting the SSSZ.

3.4 Capacity Building

All nodal officers and laboratory professionals involved in the various process of SSS will receive appropriate training on both technical aspects, such as case definitions and laboratory diagnosis, and administrative aspects, including financial management and recording and reporting mechanisms. All training will be organized by NPMU -NOHP-PCZ and periodic training will be undertaken through Regional Coordinators and Partner institutes as and when required.

3.5 Case Identifications and enrollments

All cases that meet the operational definition outlined in Annexure 1 and Annexure 2 will be included for clinical examination and risk assessment for zoonoses, and they will undergo appropriate laboratory testing. However, the case definition for the priority zoonoses diagnosed in the sentinel sites during outbreak may be given by the concerned agencies/department on a case-to-case basis.

Case ascertainment will be conducted every working day in the Emergency, OPD and IPD departments of Medicine and Pediatric departments of sentinel sites by the treating physicians.

Every morning, the laboratory technician will liaise with designated clinicians from the Medicine and Pediatric departments to identify potentially eligible patients who were admitted during the previous night at the sentinel site. During the day, the laboratory technician will continue to work with clinicians in both departments to identify any additional potential eligible patients.

Once a potentially eligible patient is identified, their medical chart will be marked for sentinel surveillance inclusion, and the laboratory technician will collaborate with the designated clinicians to ensure that each eligible patient is properly enrolled.

Standard recommended procedures for routine clinically indicated testing will be followed at the health facility. The laboratory technician will conduct serologic tests for priority zoonoses, as directed by the clinician, for all eligible patients.

- Each Sentinel Sites will develop the schedule for testing of samples for specific Zoonotic diseases as per case load
- Protocol will be shared with the programme division and nearby health facilities to avoid the wastage of kits and consumables

3.6 Patients Eligibility

It is proposed to enroll the consecutive patients >1 year age presenting to the selected sentinel sites and meet the case definition.

3.6.1 Operational case definitions

1. Any patient aged ≥ 1 year with history of fever ≥ 38 °C for more than or equal to 5 days

And

Clinically suspected case of priority zoonotic diseases (Refer list at Annexure 1) meeting the clinical case definition.

Or

2. Clinically suspected to be a case of priority zoonotic diseases (Refer list at Annexure 1) meeting the clinical case definition

Or

3. Follow up cases of known zoonotic diseases

   The cases will be evaluated on a daily basis by the treating physicians in the emergency, Medicine, and Pediatric departments at the sentinel sites.

3.6.2 Exclusion criteria

1. Patient < 1year of age

2. Patient who refused to provide consent/assent.

3.7 Targeted Sample Size

The surveillance site will commence operations in the fiscal year 2023-24. Each sentinel site is required to enroll a minimum of 600 to 800 cases of Acute Febrile Illness (AFI) per year (considering 15% prevalence of common zoonoses at 20% precision level).

3.7.1 Data Collection and Data Entry

The questionnaire in the case report form (Annexure 5) should be administered to all recruited patients to capture information on probable risk factors for zoonoses which will include socio demographic details, occupational exposure (if any), history of present and past illness, family history and any significant past or medical history etc. Patients will undergo a through clinical checkup, as many of the zoonoses are due to occupational exposure, due emphasis will be given for occupational risk assessment, e.g.

In case of a livestock farmer associated details such as years in livestock farming, number, and species of the animal present at the farm shall be noted. The comprehensive demographic, clinical, and epidemiological information obtained from patients will aid in identifying high-risk groups for zoonoses.

3.7.2 Sample Collection

To ensure adequate investigation and diagnosis, appropriate clinical samples such as blood, urine, and cerebrospinal fluid will be collected. Laboratory investigations will be undertaken for all enrolled cases. However, if resources are limited, a random sample may be selected for processing, and the remaining samples will be stored for future testing.

3.8 Laboratory Testing

The surveillance of zoonotic diseases causing acute febrile illness will be conducted in most of the sentinel sites through laboratory testing using serology (single and/or paired) or RT-PCR (Institutions are encouraged to identify zoonotic diseases that are locally prevalent and may include them in their proposal). The targeted zoonotic diseases for surveillance of acute febrile illness sites will be as given above.

Priority zoonoses will primarily be tested through serological tests. In case of availability, molecular tests like RT-PCR will also be performed at the facility, or the samples will be referred to the State/Regional/National Referral laboratory. Biochemical and pathological investigations will be conducted following the diagnostic protocols for each disease, as per the physician's discretion at the sentinel site. A subset of samples that test negative for usual pathogens will be sent to the referral lab for further investigation. The table 1 lists the pathogens that may be examined at the sentinel site. Similarly, table 2 lists the zoonoses that can be diagnosed at the referral laboratory. The identified referral laboratories, such as District Public Health Laboratory (IDSP) or Integrated Public Health Laboratory (NHM), and Viral Research and Diagnosis Laboratory (ICMR), will be linked to the SSSZ wherever appropriate.

Table 1. Description of specimens collected, and tests performed at the sentinel site

S. No.	Disease	Specimen	Tests (Proposed for Sentinel sites)
1	**Cutaneous Anthrax**	Lesion swab	Gram Staining
2	**Brucellosis**	Serum	Standard Agglutination Test IgM ELISA, IgG ELISA

3	**CCHF**	Serum	IgM ELISA, IgG ELISA
4	**Cysticercosis**	Serum	IgG ELISA
5	**Leptospirosis**	Serum	IgM ELISA, Ig G ELISA, Rapid Diagnostic tests (Lepto Dipstick, DriDOT, Lepto-LAT)
6	**Lyme Disease**	Serum	IgM ELISA, IgG ELISA
		CSF	IgM ELISA
7	**Scrub Typhus/ Rickettsiosis**	Serum	Weil Felix Test IgM ELISA, IgG ELISA
8	**Toxoplasmosis**	Serum	IgM ELISA, IgG (Avidity) ELISA,

Table 2. Description of specimens collected, and tests performed at the Referral Laboratory

S. No.	Disease	Tests (Proposed for Referral laboratories *)
1	**Cutaneous Anthrax**	Culture and NAAT
2	**Brucellosis**	Culture and NAAT
3	**CCHF**	NAAT
4	**Cysticercosis**	Immunoblot
5	**KFD**	NAAT
6	**Leptospirosis**	MAT and NAAT
7	**Lyme Disease**	Immunoblot and NAAT
8	**Scrub Typhus/ Rickettsiosis**	IFAT and NAAT
9	**Toxoplasmosis**	NAAT
10	**WEST NILE**	IgM ELISA
11	**Hanta Virus Disease**	IgM or IgG ELISA
12	**Chandipura virus (CHPV)**	NAAT

Note: * Based on the requirement and prior consultation, optimum sample will be suggested for testing by the referral lab on case-to-case basis.

3.8 Establishment of a network of AIIMS as Regional Coordinators/Centre of Excellence for One Health under NOHPPCZ

The All-India Institutes of Medical Sciences (AIIMS) is a group of autonomous central government public medical universities of higher education under the jurisdiction of Ministry of Health and Family Welfare, Government of India (MoHFW, GoI). These institutes have been declared as institutes of National importance by GoI. AIIMS has comprehensive facilities for medical teaching, research and patient-care.

To operationalize "One Health" mechanisms for prevention and control of zoonoses in the country, utilizing existing capacities of each sector at the National, State, and District level is required. It is envisaged to collaborate with AIIMS institutes for undertaking One Health activities for prevention and control of zoonotic diseases in the domain of these institutes. Further, as AIIMS institutes have vast regional presence, so collaborating with AIIMS will strengthen programme implementation and provide the programme management division with the technical expertise to move forward with the One Health agenda.

To support the current network of Regional Coordinators (RC's) under NOHPPCZ, it is envisaged that various AIIMS will be identified as RC's/Centre of Excellence for One Health. AIIMS institutes can play a key role in the following activities under NOHPPCZ:

- Undertake joint capacity building trainings of Medical, Veterinary and Forest/Wildlife officials on all the technical aspects of diagnosis, treatment, prevention and control of zoonotic diseases.
- Providing referral diagnostic facilities for zoonotic diseases to the states.
- Catalyzing coordination between various stakeholders of One Health at State and District level.
- To undertake joint outbreak investigations of zoonotic disease outbreaks with the State Health, Animal Husbandry and Forest departments.
- To function as sentinel surveillance site for zoonotic diseases.
- To undertake community outreach component of the NOHPPCZ through Department of Community Medicine at AIIMS in collaboration with Department of Animal Husbandry and Dairying, Panchayati Raj Institutions, Rashtriya Krishi Vikas Yojana, ICAR's Krishi Vigyan Kendra's and other existing outreach programmes in the government and private sectors.
- Conducting operational research on zoonotic diseases.
- To provide technical assistance to States in programme implementation.
- The identified AIIMS will be strengthened by providing recurring and non-recurring Grant in Aid under the programme. The Terms of Reference, monitoring and performance parameters will be same as for the RC's under NOHP-PCZ. The head of institute will nominate a Nodal Officer, preferably Head of

Medicine/Pediatrics/Community Medicine/Microbiology/Biotechnology for regular coordination with NCDC for programme implementation.

CHAPTER 4: DATA ENTRY AND DATABASE CONSTRUCTION

All data will be collected on digital platform/database of IDSP/IHIP as special surveillance module. Appropriate IT support and logistics is provided under the programme. All the data/ information captured will be monitored on periodically and on real time basis. The data and information sharing between referral center and NPMU NOHP-PCZ of NCDC will be as per SOPs. Appropriate feedback mechanism will be established at NPMU NOHP-PCZ. All the sentinel sites will be required to make necessary arrangements for data backup.

Table 3. Specification for the entry of cases in to the SSSZ

Sr No	Format Name	Data and Frequency	Time Period
1	P form of IDSP	All parameters as Pform. (On case enrollment)	Real time
2	L form of IDSP	All parameters of Lform. when the lab testis requested as well as when the lab result is available	Real time
3	Case Reporting Form (CRF)	Clinical- epidemiological parameters (On case enrollment)	Real time
4	Quarterly Report	Consolidated reportabout number of cases enrolled/positive or - negative/referred/ Logistics etc. –	By 5th day of 1st month of each quarter
5	Annual Report	Detailed annual technical report (Physical and Financial progress report) -	Annually

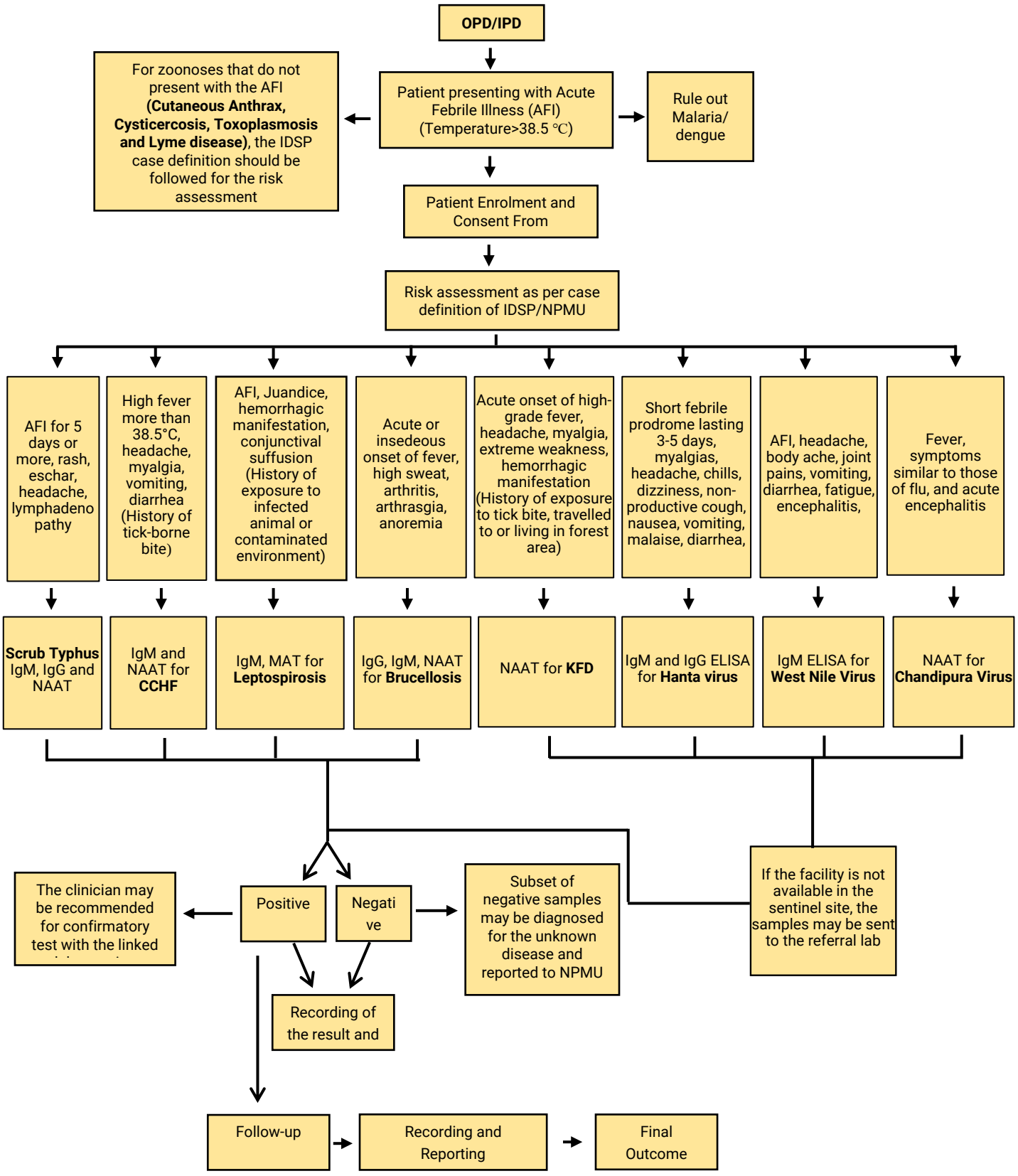

Figure 6 Zoonoses Diagnoses Algorithm for the Sentinel Surveillance Site

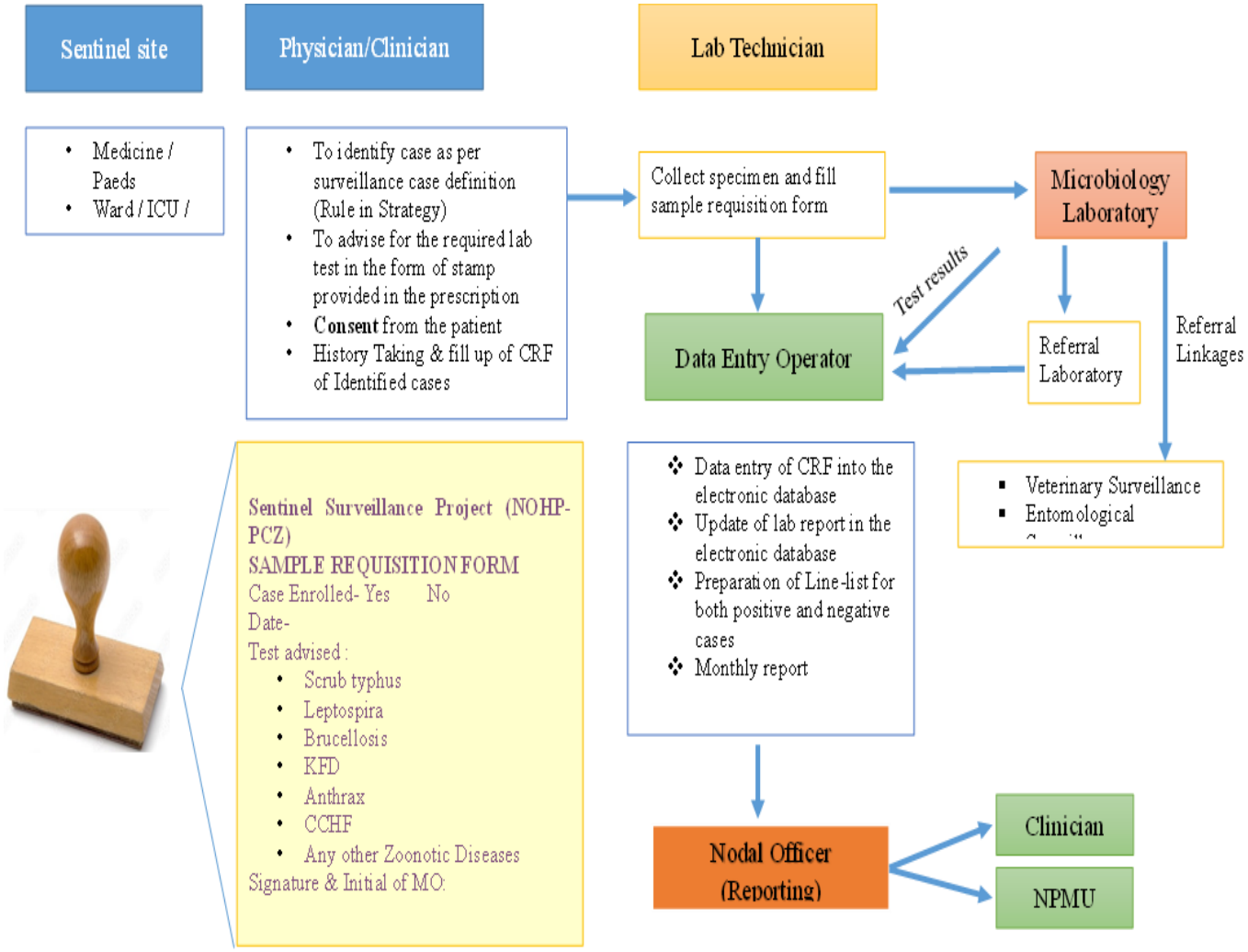

Figure 7 Operational flow of Sentinel Surveillance Site

4.1 Ethical Considerations and Informed Consent

4.1.1 Consent for Participation:

Written informed consent/assent will be obtained from every eligible subject or their responsible family member or guardian. The site-based coordinator/technician or physician will provide information about the procedures and obtain written consent for enrolling in the Sentinel surveillance. As a part of their informed consent, patients and/or parents/guardians will be informed that:

1. Participation in the Sentinel surveillance is entirely voluntarily and patients are free to refuse to participate or to withdraw from participation at any time.
2. They/their child/ward will receive standard-of-care treatment even if they decide not to participate in the Sentinel surveillance or to withdraw their participation.
3. Participation will involve drawing 5 ml blood Another blood draw will be conducted at enrolment for blood culture. Based on the symptom's other specimens like CSF, urine, stool etc. will be collected. The testing of theses specimens may or may not be part of their routine care and will be performed at no cost to the patient. Specimens will be store and will be sent to the sentinel lab/referral lab.
4. If a lumbar puncture is considered necessary by the treating clinician as part of the patient's clinical management, patients with neurologic symptoms/AES will have a CSF specimen collected.
5. There are potential risks of blood collection and CSF collection during lumbar puncture as part of the regular clinical management.
6. Enrolled patients who exhibit symptoms of diarrhea will be required to provide a stool specimen. The collection of the specimen may cause minor discomfort at the time of collection.

CHAPTER 5: ROLES AND RESPONSIBILITIES

Role of Professionals identified in Sentinel Surveillance Sites:

5.1 Role of Nodal Officer of the Sentinel Surveillance Site

The Nodal Officer of Sentinel Surveillance Site is responsible for the overall management and operationalization of the sentinel surveillance site.

1. To coordinate with Institute/Hospital's Microbiology, Internal Medicine, Microbiology, Community Medicine and Pediatrics department for uninterrupted flow of samples of suspected patients fulfilling the criteria of sentinel surveillance for zoonotic diseases.
2. To train and assist the treating physicians on identifying eligible cases and type of sample to be collected for inclusion in the Sentinel surveillance.
3. To identify high risk groups based on the laboratory diagnostic reports and demographic, clinical and epidemiological questionnaire for a more targeted sentinel surveillance.
4. To facilitate procurement of equipment and consumables as approved by the NPMU, NCDC for smooth functioning of the sentinel site.
5. on their day to day working for effective laboratory diagnosis and timely dissemination of data to concerned stakeholders after verification.
6. To ensure updating of laboratory confirmed cases of zoonotic diseases on IDSP/IHIP portal in L form on real time basis and to/in designated portal or format provided by the NPMU, NCDC.
7. To conduct the gap analysis and identify the zoonotic diseases for which diagnostic capacity needs to be established at the sentinel surveillance site, based on regional needs.
8. To select the diagnostic test to be performed and diagnostic kit to be used in the laboratory at the sentinel surveillance site for testing of zoonotic diseases in collaboration with the RC.
9. To perform spatial & temporal analysis of the positive cases to analyses the trend in positive cases for zoonotic diseases based on laboratory testing in collaboration with State Surveillance Officer (SSO) and alert the concerned authorities on observing any upward trend.
10. To coordinate with the assigned Regional Coordinator (RC) on any technical aspect of laboratory testing or community outreach.
11. To participate in the State and District Level Zoonotic Committee Meetings and present the laboratory data of the sentinel surveillance site to all the

stakeholders/participants to discuss the control measures based on the disease trend.

12. To access the epidemiological risk factors associated with disease occurrence, severity of illness and outcomes in patients and disseminate the findings to concerned the State authorities.
13. To conduct joint outbreak investigation of zoonotic diseases in collaboration with SSO and assigned RC.
14. To regularly coordinate with Community Outreach Sites for targeted IEC creation and dissemination and to review activities done by Community Outreach Sites under NOHPPCZ and provide recommendations on the same.
15. To conduct regular hands-on training of doctors and laboratory technicians on all technical aspects of laboratory testing (sample collection, lab diagnosis, lab biosafety).
16. To assist the RC and other regulatory bodies in regular External Quality Assessment of the sentinel surveillance laboratory as per operational guidelines of the sentinel surveillance site.
17. To conduct targeted Community Awareness activities of high-risk population for zoonotic diseases based on the laboratory data and patient's demographic questionnaire.
18. To communicate with periphery district health departments and private hospitals for ensuring regular flow of suspected samples.
19. To regularly send Monthly, Quarterly and Annual reports, Utilization Certificate and other technical documents required by the NPMU, NCDC.
20. To maintain record of the entire laboratory testing, SOP's and reporting, details of equipment and consumables purchased, training and community outreach activities conducted by the sentinel surveillance site.

5.2 Role of Department of Community Medicine

1. To organize joint trainings/workshops of Medical, Veterinary and Forest/Wildlife officials of the state and other at-risk groups i.e., paravets, farmers, animal handlers on prevention and control of zoonoses in the region.
2. To undertake Community outreach and IEC activities in both urban and rural healthcare facilities of the districts.
3. To train interns and resident officers of the sentinel surveillance site on prevention and control of zoonoses.
4. Proper case identification and enrollment of eligible cases in the sentinel surveillance in collaboration with other clinical departments of the site.

5.3 Role of Medicine, Pediatrics and other Clinical Departments

1. Case ascertainment by treating physicians in the clinical and emergency departments at Sentinel sites as per operational definition.
2. Identification of suspected cases of zoonotic diseases and to ensure proper enrollment of the same in the sentinel surveillance.
3. To act as trainers in trainings/workshops organized under the programme.
4. Proper case management of the zoonotic cases.
5. Communication and counseling of patients for appropriate laboratory investigation

5.4 Role of Department of Microbiology/Viral Research Diagnostic Laboratory

To provide diagnostic services for the cases enrolled under the programme for zoonotic diseases as per suspected case definitions by utilizing GIA and contractual manpower provided under the programme.

5.5 Role of Laboratory Technicians

1. Identification of eligible patients -Each morning the laboratory technician will communicate with designated clinicians in medicine and pediatric clinical services to identify potentially eligible patients admitted during the previous night at the district hospital. Throughout the day, the laboratory technician will check with clinicians in the adult and pediatric units to identify any additional potential eligible patients.
2. History taking of eligible patients - the patient's chart will be flagged for inclusion, and the laboratory technician will work with the designated clinicians to ensure proper enrolment of each eligible patient. Routine clinically indicated testing will be conducted according to the standard recommended procedures in practice at the health facility.
3. Ensure case enrollment- laboratory technician will work with the designated clinicians to ensure proper enrolment of each eligible patient.
4. Specimen collection and lab diagnosis- Appropriate Clinical samples as per protocol and the defined algorithm will be collected and tested as per the standard recommended procedures in practice at the health facility by the laboratory technician.
5. Preparation of technical specification for equipment, consumables etc.
6. Preparation of progress reports, UC, SOE of the sentinel surveillance site
7. Any other work assigned by the Nodal Officer regarding the sentinel surveillance site.

5.6 Role of Data Entry Operator

1. Data entry in an electronic database that is preloaded on a designated laptop computer. Demographic, clinical and laboratory data captured by the SSSZ will be analyzed in terms of frequencies and proportions.
2. Provide assistance for data collection, compilation, reporting and analysis and other local action pertaining to the sentinel surveillance site.
3. Preparation of Monthly, Annual and interim reports of the sentinel site as advised by the Nodal Officer.
4. Assisting the organization of training Programmes and Community out reach Programmes by the sentinel site.
5. Assisting in the preparation of UC and SOE of the sentinel site as requested by the NPMU.
6. Assisting in the organization of meetings, preparation of PPTs and preparation of Meeting minutes.
7. Preparation of templates, postures etc. of the sentinel site.
8. Maintaining of the files (administrative, financial and technical) and other documents related to the sentinel surveillance site.
9. Preparation of the TA/DA, honorarium and bills of the sentinel surveillance site.
10. Assisting in the preparation of technical specifications of the equipments, consumables etc. for the sentinel surveillance site.
11. Maintenance of stock register for equipments and consumables purchased under SSSZ.
12. Maintenance of log books for the equipments and consumables purchased under SSSZ.
13. Maintenance of the patient's enrollment register, CRF etc. of the sentinel surveillance site.

Any other work assigned by the Nodal Officer regarding the sentinel surveillance site

CHAPTER 6: FINANCIAL CONSIDERATIONS

Funds will be provided as GIA to the selected sentinel site directly from NPMU after signing a MoU between NCDC and the head of selected site. Periodic audits and a quality check will be ascertained as per standard Terms of References.

Table 4 Budget breakup for Sentinel Surveillance Sites

S. No.	Items	Unit Cost per Sentinel Site (Approx. Rs. In Lacs)
A.	**Non-recurring**	
i.	Equipment's / ELISA Reader/ others	5.0
ii.	Computer with Printer & UPS	1.5
B..	**Recurring**	
i.	Manpower support (One Lab technician @ Rs 30,000 per month and One data entry operator @ Rs. 20,000 per month for each site as per institutional policy and requirements)	6.0
ii.	Consumables – kits and reagents	6.0
iii.	Trainings*	1.5
iv.	Miscellaneous / Other Administrative funds#	1.5
v.	**Total**	**21.5**

*Each sentinel site is expected to conduct two trainings per Financial Year (Hands-on laboratory training on diagnosis of zoonotic diseases / sensitization workshop on case management, diagnosis, prevention and control of zoonotic diseases).

#The Miscellaneous/Other Administrative funds head can be used for Travel and TA/DA of sentinel site's officers for attending training/meeting, sample transport, printing of IEC material and Case Report Formats etc.

CHAPTER 7: VETERINARY AND ENTOMOLOGICAL SURVEILLANCE

7.1 Veterinary aspects in Sentinel Surveillance Sites

Animal health surveillance efforts and human health surveillance efforts are entirely separate activities as on date due to sector specific priorities and limited information flow between both the sectors. Therefore, it is envisaged that 10% of all the sentinel surveillance sites under NOHPPCZ will be veterinary institutes. These institutes can be Animal Health Regional Coordinators under the programme, Veterinary colleges, DAHD and ICAR laboratories, etc. The human health the sentinel sites will be linked appropriately with veterinary sentinel sites and veterinary surveillance sites for appropriate surveillance activity in the livestock/companion animals/wild animal species to understand transmission pattern of zoonoses. The Rationale and Objectives are similar for both the Human and Animal Health SSS.

7.2 Diseases to be targeted at Veterinary SSS

The diseases to be targeted at these sites are the same priority zoonoses identified for human health sentinel surveillance described as under in Table 5. In addition to these, zoonotic diseases prevalent in the region or diseases identified from regional zoonotic disease prioritization can also be included. The samples can be sent from Veterinary SSS to referral laboratories for confirmation or further investigation. The proposed tests for referral laboratories are provided in Table 6.

Table 5: Description of specimens collected and possible testing performed at the sentinel site

Sr. No	Zoonotic Disease	Animal species affected	Laboratory samples to be collected	Proposed Diagnostic Test (for Veterinary SSS)
1	Brucellosis	*Brucella. abortus* (Cattle, Buffalo, Sheep, Goat, Horse, Camel, Feral animals (Reindeer, Murine or cricetine rodents)) *B. melitensis* (Sheep, Goat, Cattle, Dog) *B. suis* (Swine, Feral animals, Cattle, Dog, Horse)	Serum sample	• RBPT • STAT • Spot Agglutination Test/Card Test • ELISA
			Milk sample	Abortus Bang Ring Test

		B. canis (Dogs) *B. ovis* (Sheep) *B. maris* (Dolphins and a variety of marine mammals)		
2	Anthrax	Cattle, Sheep, Goats, Buffalo, Pigs, Equines, Dogs, Camels and many wild animals	Tissue/Hide sample	Ascoli's Precipitation Test
			Blood sample	M'Fadyean Reaction
3	Japanese Encephalitis	Horses, donkeys, pigs, herons, egrets, wild mammals	Serum sample	ELISA
			Blood, CSF	NAAT
4	Leptospirosis	Cattle, Buffalo, Sheep, Goat, Pig, Horse, Rodents (rats, field mice, gerbils, voles, beavers, coypu, bats, rabbits, hares, squirrels), Carnivores (dogs, cats, jackals, foxes, mongoose, skunks, civets, raccoon), Wild species (elephant, deer, monkey, etc.), Hedgehogs, Shrews and Frogs and Wading birds	Serum sample	ELISA
			Biopsy of affected tissue	Silver staining
5	Rabies	Dog, cat, cattle, goat, sheep, pig, fox, wolf, jackal, skunk, mongoose, rat, squirrels, vampire bat, equids	Saliva, serum, spinal fluid, and skin biopsies of hair follicles at the nape of the neck from live animal and brain impression smear, brain tissue sample (brain stem and cerebellum) at autopsy	• Staining by Seller's stain • ELISA • NAAT
6	Tuberculosis	Cattle, Buffalo, Sheep, Goat, Dog, Cat, Horse, Pig, Deer, Monkey, Chimpanzees,		• Tuberculin Skin Test • Comparative Cervical Tuberculin Test

		Bison, Elephant, Marsupials, Mink, Moles, Badgers, Opossums, Cockattoo, Ferret, Shrews, Llamas, Fox, Hares, Birds, Parrot, Poultry etc.		
			Milk sample	Acid fast staining
7	Cysticercosis	Pigs, Sheep, Dogs, Cats, Deer, Camels, Non-human primates, marine mammal, Bears	Stool sample	Detection of proglottids or eggs by faecal floatation
8	Toxoplasmosis	Cats, Wild felines (Mountain lion, leopard cat, bob cat), Sheep, Goat, Pigs and a range of Birds, Rodents, Domestic and wild mammals	Serum sample	• ELISA
			Stool sample	• Detection of oocysts
9	West Nile Virus	Horses, and several species of birds, ticks, mammals, reptiles, amphibians	Serum, Cerebrospinal fluid	• NAAT • ELISA

Table 6: Description of specimens collected, and possible testing performed at the referral Laboratory

Sr. No	Zoonotic Disease	Laboratory samples to be collected	Proposed Diagnostic test (for referral centre)
1	Brucellosis	Serum sample, Vaginal mucus, Semen, Uterine Discharge, Aborted foetus	• CFT • Bacterial culture
2	Anthrax	Blood sample	• Bacterial culture • Indirect Haemagglutination Antibody Test (IHA) • FAT • NAAT • Guinea pig/Mice inoculation
3	Japanese Encephalitis	Brain tissue sample/ cerebrospinal fluid/spinal cord (autopsy), thoracic fluid (aborted fetus)	• NAAT • FAT

		Serum	• Haemagglutination inhibition test • Virus neutralization test • ELISA
4	Leptospirosis	Blood, Urine sample	• Bacterial culture • MAT • FAT
5	Rabies	Saliva, serum, spinal fluid, and skin biopsies of hair follicles at the nape of the neck from live animal and brain impression smear, brain tissue sample (brain stem and cerebellum) at autopsy	• Reverse transcription-PCR (RT-PCR) • Fluorescent antibody test • Immunoperoxidase test
6	Tuberculosis	Necropsy tissue Samples (Lungs, Lymph nodes), Serum sample	• NAAT • Bacterial culture • Gamma Interferon Release Assay
7	Cysticercosis	• Detection of cysticerci on Necropsy • Radiography for cysticerci detection	
8	Toxoplasmosis	Serum	• Indirect fluorescent Antibody Assay • Indirect Haemagglutination
		Affected tissue necropsy	• Visualization of tachyzoites on impression smears
9	West Nile Virus	Serum, Cerebrospinal fluid, Brain tissue sample (Autopsy)	• ELISA • Plaque reduction neutralization assay • NAAT • Virus Neutralization Test

7.3 Operational Plan of Veterinary SSS

The veterinary sentinel surveillance sites will include both veterinary hospitals and veterinary laboratories. The potential veterinary SSS can be National Referral Laboratories and Veterinary Colleges under Indian Council of Agricultural Research (ICAR) or Regional and State Disease Diagnostic laboratories under Department of Animal Husbandry and dairying (DAHD).

Similarly, as human health SSS, the appointed nodal officer will be responsible for overall implementation of the SSS activities. The nodal officer will be appointed by the institute preferably from Veterinary public health/Medicine/Pathology/Microbiology department. Data generated at these sites can be from both passive and active surveillance.

7.3.1 Passive surveillance: The suspected cases in both IPD and OPD of veterinary SSS will be tested for zoonotic diseases based on clinical examination by the veterinary physician. This can be particularly implemented in veterinary colleges. The nodal officer will coordinate with Medicine/Surgery/Gynecology department to identify the suspected cases of zoonotic diseases for enrollment in the programme. The laboratory facility for testing of these suspected samples can be strengthened in Pathology/Microbiology/Veterinary Public Health department.

7.3.2 Active surveillance: As a majority of farm animals are placed in rural areas with limited diagnostic facilities and transportation constraints, the programme aims to support this section with active surveillance. In this, the identified veterinary SSS will coordinate with District and State Animal Husbandry authorities to maintain continuous flow of suspected samples of zoonotic diseases to the sites. Remuneration for sample transport can be provided under miscellaneous head of the GIA. In case of any outbreak, contractual manpower can be utilized for sampling of the affected area.

In the human resources, one laboratory technician and one data entry operator are provided under the programme on contractual engagement to the veterinary SSS. The qualifications can be modified as per institutional policy.

7.3.3 Case identification and enrollment:

All the eligible cases suspected for zoonotic diseases would be enrolled for detailed clinical examination and laboratory testing. For identification of the cases, disease cards of priority zoonoses in the latest issue of WOAH Terrestrial Manual are to be referred to.

7.3.1.1 Patient's eligibility:

Any animal, of any species, domesticated/stray/wild clinically suspected to be a case of priority zoonotic disease (Table 5)

OR

Follow up cases of known zoonotic diseases

OR

Sample received from State/District Animal Husbandry authorities for referral diagnosis of zoonotic diseases

OR

Necropsy samples suspected of zoonotic disease based on post mortem.

The Informed Consent Form needs to be taken before sample collection from the animal owner (Annexure 8).

7.3.4 Sample collection and laboratory diagnosis:

Appropriate clinical samples will be collected in accordance with table 5 and 6 and based on the discretion of the treating veterinarian for necessary investigation and diagnosis. Additional samples may be collected for sending samples to referral laboratories for further investigation. Quality assurance of laboratory diagnosis at veterinary SSS will be done by referral laboratories identified by the Programme Division, NCDC.

7.3.5 Data Entry and sharing:

The demographic, clinical and laboratory details are to be captured in the Animal Disease Reporting Format provided in Annexure 8. All the data captured will be monitored on periodically or on real time basis by the SSS. Spatio-temporal data analysis of laboratory confirmed cases of zoonotic diseases at SSS to be done by the Veterinary Public Health and Epidemiology department. All the laboratory case data, line listing and data analysis to be shared with Programme Division, NCDC in the monthly report format. The report of spatio-temporal data analysis of laboratory confirmed cases at SSS to be shared with State and District Animal Husbandry and Health department regularly with appropriate advisories. To support data entry and sharing, a contractual data entry operator is provided at each SSS.

7.4 Entomological Surveillance

As it is understood that transmission of zoonotic diseases, Scrub Typhus, KFD, CCHF, JE, Zika virus, Plague West Line virus, Yellow fever, and Kala-azar etc. are transmitted through Arthropods vectors like Mites, Ticks, Fleas, Mosquitoes, and sandflies. Entomological surveillance for vector is important in determining the distribution, population density, larval habitats, and susceptibility to insecticides in order to prioritize vector control in terms of time and space.

Therefore, as and when required, the entomological surveillance of Vector-borne zoonotic diseases will be conducted in collaboration with available

entomologists posted at State and District IDSP/ National Center for Vector-Borne Disease Control (NCVBDC)/ NCDC Branches /Partner Institutes and or Senior Regional Director at State Regional Office etc.

Table 7: Role and Responsibility for Entomological surveillance

S.No.	Various Cadre of Entomologists	Vector Surveillance	Identification of Vector-Species	Calculation of Indices	Vector Control	Susceptibility test	Monitoring and Supervision of scheduled entomological surveillance
1	State Entomologist from NCVBDC	Collection of Mites, Ticks, Mosquitoes and sandflies	Mites, Ticks, Mosquitoes and Sandflies as per the standard key.	The standard formula will be arrived from the density of vectors; infectivity rate, Mean intensity rate etc.	Implementation of source reduction; chemical and biological control through Integrated Vector Management	Susceptibility tests for mosquitoes and other vectors as per the WHO guidelines periodically to ensure the efficacy of insecticides and give recommendations for procuring right insecticides to the program Managers. For Mites and Ticks, there is an urgency to establish susceptibility tests with the coordination	Since some standard indices have been established associated with vectors, the indices are used to evaluate the control programs. It is so important to forecast the outbreak.
2	State IDSP Entomologist						
3	Filaria Consultants at Regional Office						
4	Regional Entomologists						
5	Zonal Entomologists						
6	District Vector-Borne Disease Control Officer (DVBDCO)						
7	District IDSP						

	Entomologist					veterinarians is suggested.	
8	District Entomologist						
9	District Vector-Borne Disease Control Consultant (DVBDC)						
10	Partner NGOs Entomologists						

CHAPTER 8: MONITORING AND EVALUATION

Monitoring of sentinel sites will be done by the NPMU of NOHP-PCZ and Regional Coordinators

- Strengthening Surveillance on Zoonotic Diseases
- Strengthening of Laboratory Diagnosis
- Quality Assurance of Samples
- Generating community awareness on Zoonoses

The Key performance indicator for Sentinel Surveillance sites and NPMU has been framed. These KPIs will access the progress of both over the years.

Activity	Indicator	Means of Verification	Baseline data (Starting of the Sentinel surveillance site)	Year1	Year2	Year3
Training	1. Number of trainings conducted by SSS (Minimum of 2)	Yearly report				
	2. Percentage/Number of doctors andtechnicians trained in field of zoonoticdiseases surveillance (On lab diagnosis, management, sample collection etc.)	Monthly report				
Strengthening Surveillance on Zoonotic Diseases	1. No. of patients diagnosed for any ZD's in a particular period (Month/year)/ Total no. of patients attended OPD clinic in a particularperiod (Month/year)	Monthly register- OPD & Pediatric dept.				
	2. Total No. of pts. found Positive for ZD's in IPD in particular duration (Month/year) /Total no. of suspected patients for ZD's in IPD in particular duration (Month/year)	IPD Monthly register				
	3. No. of positive patients' line list shared at IHIP portal for ZD/Total no. of sample tested for ZDs	IHIP Portal				

	4. No. of line list (positive and negative) shared with NOHP-PCZ/Total no. of sample tested for ZD	Monthly report				
Strengthening of Laboratory Diagnosis	1. Total Number of Sample positive /tested for suspectedZoonotic diseases- • Anthrax • Brucellosis • Leptospirosis • Rabies • CCHF • Scrub typhus • Q fever • Toxoplasmosis • Trypanosomiasis • Lyme disease or any other	Laboratory report				
Quality Assurance	1. No. of negative sample for ZD tested atS to be sent to Ref. center/Total no. of sample tested for ZD* (Target- 5%) 2. No. of Positive samples for ZD tested at SSS to be sent to Ref. Centre/Total no. of sample tested forZD* (Target- 10%) 3. *To be sent to identified Institutes e.g.,Centre for Arboviral and Zoonotic Diseases Regional Coordinators for quality Assurance	Report from RC/				

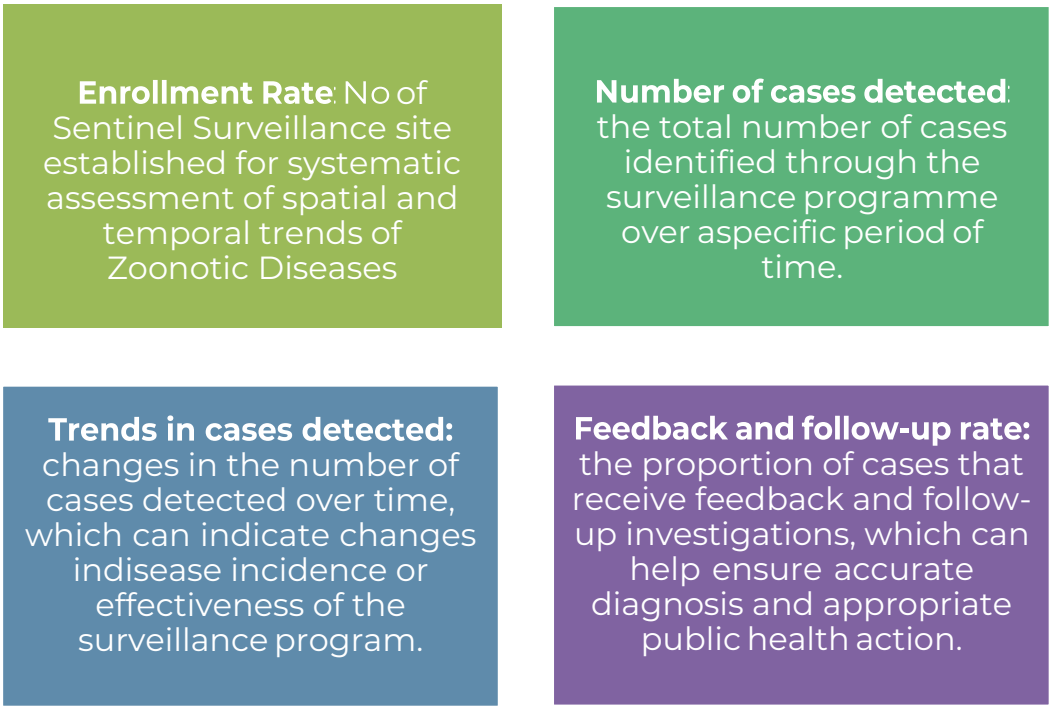

Figure 7: Key performance Indicators for Sentinel Surveillance Sites

ANNEXURES

ANNEXURE 1

Clinically suspected case definitions of priority zoonotic diseases

1. Suspected Scrub Typhus Case - Acute undifferentiated febrile illness of 5 days or more (in which common etiologies such as dengue, malaria, and typhoid have been ruled out). With or without eschar should be suspected as a case of Rickettsia infection. (If eschar is present, fever of less than 5 days duration should be considered as scrub typhus.)

Other presenting features may be headache and rash, lymphadenopathy, multi-organ involvement like liver, lung or kidney and encephalopathy in complicated cases.

AND/OR

Titers of 1:80* or above in OXK antigens by Weil Felix test may be an initial indication. A paired serology is advisable (* States can define their significant titers)

2. Suspected KFD Case - A patient presenting with acute onset of high-grade fever with:

Rule out common aetiologias of acute febrile illness prevalent in the area (Dengue/DHF, typhoid, malaria etc.,). Headache/ Myalgia/ Prostration/ Extreme weakness/ Nausea/ Vomiting/ Diarrhea/ Occasionally neurological/ hemorrhagic manifestations

AND/ OR

History of exposure to tick bite, Travel and/ or living in and around forest area where laboratory confirmed KFD cases have been reported previously or an area where recent monkey deaths have been reported.

3. Suspected CCHF Case- A patient with abrupt onset of high fever >38.5°C and one of the following symptoms:

severe headache, myalgia, nausea, vomiting, and/or diarrhea

AND/OR

History of insect (tick) bite within 14 days prior to the onset of symptoms.

OR

History of contact with tissues, blood, or other biological fluids from a possibly infected animal (e.g., abattoir workers, livestock owners, veterinarians) within 14 days prior to the onset of symptoms.

OR

History of exposure to a suspect, probable, or laboratory-confirmed CCHF case, within 14 days prior to the onset of symptoms (contacts of the patient including health care workers)

4. Suspected Leptospirosis Case- A person having acute febrile illness with

headache, myalgia and prostration associated with a history of exposure to infected animals or an environment contaminated with animal urine with one or more of the following

Calf muscle tenderness Conjunctival suffusions

Anuria or oliguria and/or proteinuria Jaundice

Hemorrhagic manifestations Meningeal irritation

Nausea, Vomiting, Abdominal pain, Diarrhea

OR

5. Suspected Anthrax Case- A case that is compatible with the clinical description*

AND

Has an epidemiological link to confirmed or suspected animal cases (bleeding from natural orifices or bloated carcasses) OR exposure to contaminated animal products.

with or without Gram positive spore forming bacilli (1.5 to 3-4 μ m in size), arranged end

to end in chains (bamboo stick appearance).

*Clinical description:

Cutaneous anthrax (most common after direct exposure): Skin lesion begins as a painless, pruritic papule on exposed parts (hands, feet, and neck) which develops into a vesicle (usually 1-3 cm in diameter) and then a painless ulcer with a characteristic black necrotic (dying) area in the center surrounded by erythema and edema. Systemic symptoms are mild and may include malaise and low-grade fever. There may be

regional lymphadenitis and lymphadenopathy. Occasionally a more severe form of cutaneous anthrax may occur with extensive local oedema, induration, and toxemia.

Gastrointestinal anthrax: There are two clinical forms of intestinal anthrax - Symptoms include nausea, vomiting, fever, abdominal pain, hematemesis, bloody diarrhea, and massive ascites. Unless treatment starts early, toxemia and shock develop resulting in death.

Oropharyngeal anthrax – clinical features are sore throat, dysphagia, fever, lymphadenopathy in the neck and toxemia.

Pulmonary anthrax (inhalation): brief prodrome resembling acute viral respiratory illness, followed by rapid onset of hypoxia, dyspnea, and high temperature, with X-ray evidence of mediastinal widening.

6. Suspected Brucellosis Case- An illness characterized by acute or insidious onset of feverwith any of the following:

Night sweats, arthralgia, headache, fatigue, anorexia, myalgia, weight loss, arthritis/spondylitis, meningitis, or focal organ involvement (endocarditis, orchitis/epididymitis, hepatomegaly, splenomegaly)

AND

- Important risk factors to be kept in mind are
- Slaughterhouse workers
- Meat-packing plant employees
- Veterinarians
- Milkers and dairy farm workers
- Ingesting undercooked meat
- Consumption of unpasteurized/raw dairy products.
- Assisted animals giving birth

7. Suspected Human Rabies Case- A suspected human case plus history of exposure to a (suspect ¥ /€ probable) rabid animal

Exposure is usually defined as a bite or scratch from a rabies-susceptible animal (usually dogs). It could also be lick exposure to open wound, abrasion, mucous membranes of the patient.

¥ A suspect rabid animal is a rabies-susceptible animal (usually dogs) which presents with any of the following signs at time of exposure or within 10 days following exposure: unprovoked aggression (biting people or animals or inanimate objects), hypersalivation,

paralysis, lethargy, abnormal vocalization, or diurnal activity of nocturnal species. Whenever the history of mentioned signs cannot be elicited, the history of exposure to rabies-susceptible animals would be considered adequate.

€ A probable rabid animal is a suspect rabid animal (as defined above) with additional history of a bite by another suspect / probable rabid animal and/or is a suspect rabid animal that is killed, died, or disappeared within 4-5 days of observing illness signs. Patients will not be excluded if they have fever, rash, headache, myalgia, sore throat, cough, conjunctival suffusion, gastrointestinal symptoms, and jaundice

8. Suspected Plague Case- A suspect case with compatible clinical Presentation* and consistent epidemiological features such as exposure to infected animals or humans and/or evidence of flea bites and/or residence in or travel to a known endemic focus within the previous 10 days.

And/or

Any of the following tests are positive

1. Microscopy – Material from bubo, blood, sputum contains gram negative coccobacilli in Gram's staining and bipolar after Wayson or Giemsa staining
2. F1 antigen detection in bubo aspirate, blood, or sputum
3. A single anti F1 serology without evidence of previous Y. pestis infection or vaccination.

*Compatible clinical Presentation

Disease characterized by rapid onset of fever, chills headache, severe malaise, prostration with

Bubonic plague: Most common form with extreme painful swelling of lymph nodes at groin, axilla, and neck (Buboes).

Pneumonic plague: Cough with blood-stained sputum, chest pain, difficulty in breathing.

Septicemic plague: Toxic changes in the patient.

For the suspected clinical case definitions of the remaining priority diseases, the reference case definitions available can be used as per clinician's discretion.

ANNEXURE 2

Potential definitions that can be used for case ascertainment

Condition	Description	Source
AFI (Acute Febrile Illness)	Acute febrile illness was defined as a patient with fever of 38°C or higher at presentation to ED or history of fever that persisted for 2–7 days withno localizing source	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3592528/
SARI (Severe Acute Respiratory Infections)	Severe acute respiratory infections (SARI): An acute respiratory infection with a history of fever or measured fever of ≥ 38° C and cough with onset within the last 7 days and requires overnighthospitalization.	As per WHO case definition (Referred and Systematic collected samples)
ILI (Influenza Like Illness)	Influenza like Illness (ILI): Acute onset within the last10 days following respiratory symptoms, measured fever of ≥ 38° C and cough.	As per WHO case definition (Referred andSystematic collected samples)
ARI (Acute Respiratory Illness)	Acute respiratory illness (ARI): Sudden onset of respiratory infection symptoms (cough, sore throat shortness of breath,coryza)	As per WHO case definition (Referred andSystematic collected samples)
FUO (Fever of Unknown Origin)	Fever of unknown origin (FUO) in adults is defined asa temperature higher than 38.3 °C (100.9 F) that lasts formore than three weeks with no obvious source despite appropriate investigation. The four categories of potential etiology of FUO are classic,nosocomial, immune deficient, and human immunodeficiency virus related.	https://www.aafp.org/afp/2003/1201/p2223.html
Classical PUO (Pyrexia of Unknown Origin)	Having a temperature of >38.3 ˚C on several occasions as documented by a health care practitioner for more than 3 weeks duration and in whom there was a failure to establish a diagnosis with appropriate investigations after 3 outpatient visits or 3 days as an inpatient.	As defined by Durack and Street

ANNEXURE 3

Letter to States for Nomination of Sentinel Surveillance Sites

प्रो.(डॉ.) सुनील कुमार
एम.बी.बी.एस. एवं एम.एस. (एम्स)
PROF. (Dr.) SUNIL KUMAR
MBBS & MS (AIIMS)
स्वास्थ्य सेवा महानिदेशक
DIRECTOR GENERAL OF HEALTH SERVICES

भारत सरकार
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
स्वास्थ्य सेवा महानिदेशालय
Government of India
Ministry of Health & Family Welfare
Directorate General of Health Services

D.O. ISCP/57/123/12/2021/DZDP/NCDC
Dated the 21st January, 2022

Dear All,

As you are aware that 75% of emerging and re-emerging diseases are zoonotic in nature. The ongoing pandemic of COVID19 has highlighted the importance of prevention & control of zoonotic diseases.

In this context, it is informed that National Centre for Disease Control, Ministry of Health & Family Welfare is coordinating the implementation of National One Health Programme for Prevention of Zoonosis (NOHPPZ); under this one of the key component is "Strengthening the surveillance capacity on Zoonoses at National, State and District Level. In this regard, the Regional coordinators have already been strengthened which includes Medical/Veterinary Institutes to establish "One Health" mechanism across the country.

Accordingly, it is planned to establish a network of Sentinel Surveillance Sites for systematic assessments of spatial and temporal trends of Zoonotic diseases. The priority zoonotic disease includes e.g. Scrub Typhus and Rickettsial infections, Leptospirosis, KFD, CCHF, Brucellosis and Anthrax etc. These sentinel sites will be supported and monitored by Nodal centers i.e. NCDC and Regional Coordinators. ToR for sentinel site is placed at Annexure-I.

Sentinel sites are expected to strengthen the surveillance (active/passive) on zoonotic diseases and reflect true burden of zoonotic diseases in respective community. It will also enhance laboratory capacity of respective institute.

In view of the above, you are requested to identify suitable medical colleges (at least 3 colleges) in your state and share the list as per attached format (Annexure-II) and the list may be shared on iscp.ncdc@gmail.com.

Yours Sincerely,

(Sunil Kumar)

Encl.: As above

To
DHS (All States)

Copy to:-
1. State surveillance officer (All States)
2. State Nodal officer (All States)
3. Regional coordinators under NOHPPZ

Room No. 446-A, Nirman Bhawan, New Delhi-110108
Tel.: 011-23061063, 23061438 Fax: 011-23061924 Email: dghs@nic.in

ANNEXURE 4

List of Sentinel Surveillance Sites Proposals Received for the Financial Year 22-23

S. No	State Name	Name of Medical College
1	Manipur	RIMS (Regional Institute of MedicalSciences
2	Manipur	JNIMS (JawaharlalNehru Institute ofMedical Sciences)
3	Haryana	Post Graduate institute of MedicalSciences, Rohtak
4	Haryana	Kalpana ChawlaGovt. Medical College, Karnal
5	Haryana	Lala Lajpat Rai University of veterinary and animal Sciences, Hisar
6	Assam	Guwahati Medical College & Hospital(GMCH), Guwahati,Assam
7	Assam	Assam Medical College & Hospital (AMCH0, Dibrugarh,Assam
8	Assam	Silchar Medical College & Hospital(SMCH) Silchar, Assam
9	MadhyaPradesh	Gandhi MedicalCollege, Bhopal
10	MadhyaPradesh	Netaji Subhash Chandara Bose Medical College,Jabalpur
11	MadhyaPradesh	Mahatma Gandhi Memorial MedicalCollege, Indore
12	West Bengal	IPGME & R andSSKM Hospital
13	West Bengal	North Bengal Medical College
14	West Bengal	Diamond Harbor Govt. Medical College
15	Punjab	Govt. Medical College, Amritsar
16	Punjab	Govt Medical College, Patiala
17	Punjab	GGS Medical Collegeand Hospital, Faridkot
18	Punjab	All India Institute ofMedical Sciences, Bathinda
19	Uttar Pradesh	LLR Medical College, Meerut
20	Uttar Pradesh	KGMU, Lucknow
21	Kerala	Government medical college, Thiruvananthapuramm
22	Kerala	Govt. Medical College Kozhikode
23	Kerala	Govt.TD Medical College, Alappuzha
24	Chhattisgarhh	Pt Jawahar Lal Nehru MemorialMedical College, Raipur
25	Chhattisgarhh	Late Bali Ram Kashyap Memorial Government MedicalCollege
26	Chhattisgarhh	Government medical college,Raigarh
27	Chhattisgarhh	RSDKS GovernmentMedical College, Abmikapur
28	Meghalaya	Directorate ofveterinary department

29	Dadar & Nagar Haveli	NAMO Medical Education & Research institute, Silvassa
30	Andhra Pradesh	All India Institute of Medical Science (AIIMS), Mangalagiri,Guntur
31	Andhra Pradesh	Andhra MedicalCollege, Visakhapatnam
32	Andhra Pradesh	Kurnool MedicalCollege, Kurnool
33	Gujrat	BJ medical College,Ahmedabad
34	Gujrat	Goverment MedicalCollege, Surat
35	Gujrat	PDU Medical Collage, Rajkot
36	Jammu	GMC, Jammu
37	Jammu	GMC, Kathua
38	Jammu	GMC, Doda
39	Tamil Nadu	Madras MedicalCollege
40	Tamil Nadu	Madurai MedicalCollege
41	Tamil Nadu	Government Coimbatore medicalCollege
42	Mizoram	Zoram MedicalCollege
43	Goa	Goa Medical College
44	Tripura	Agartala Government MedicalCollege (ADMC), Tripura
45	Rajasthan	New MedicalCollege, Kota
46	Rajasthan	SP, Medical college,Bikaner
47	Rajasthan	DPHL, Sawaimadhopur
48	Rajasthan	DPHL, jhunjhunu
49	Puducherry	Indira Gandhi Medical College & Research Institute,Puducherry
50	Puducherry	JIPMER
51	Puducherry	Mahatma Gandhi Memorial Medical College and Research Institute
52	Sikkim	STNM, Tertiary levelState Hospital
53	Sikkim	Sikkim Manipal Institute of MedicalSciences, Gangtok (PRIVATE)
54	Jharkhand	RIMS, Ranchi

ANNEXURE 5

Template for Proposal for Institutes for undertaking "Sentinel Surveillance for zoonotic diseases" under NOHPPCZ

1. General Information:

1.1. Name of the Institute/Hospital/Medical College:

1.2. Name of the District and State:

1.3. Complete Address of the Institute/Hospital/Medical College:

1.4. Email & Ph. No:

1.5. Name of the Nodal Officer:

1.6. Professional Qualification of the Nodal Officer:

1.7. Designation:

1.8. Department/Division:

1.9. Background of the Nodal Officer (100 words):

1.10. Email & Ph. No:

2. About Institute/Hospital/Medical College

2.1. Background of the Institute:

2.2. Organizational structure of the Institute (Govt./ Non-Govt./ Autonomous / Semi- Govt./ Charitable/ Private etc.):

2.3. Diagnostic facilities for zoonotic diseases (Medical/Veterinary):

2.4. Capacity building activity for Medical/Veterinary professionals:

2.5. No. of Beds dedicated for infectious diseases:

2.6. Manpower/Professionals working in the field of Zoonotic Disease/One Health/AFI Surveillance in your Institute?

S. No	Designation	Number of the post	Qualification	Process involved

2.6. Facilities available at the Institute/organization with respect to diagnosis, management and prevention and control of zoonotic diseases:

2.6.1. Diagnosis of Zoonosis:

Name of the zoonoses disease diagnosed	**Method of diagnosis (NAAT/Serological/ Others)**	**Name of the consumable used/available**	**Number of samples received (Yearly)**	**Number of tests (technique wise) conducted (Yearly)**	**Number of positives (Yearly)**

2.6.2. Equipment available in the Laboratory:

S. No	**Name of the Equipment and Number available**	**Year of purchase**	**Accessories available**	**Usage of the equipment/ Disease Diagnosed**	**Total no. of days equipment is utilized**	**Total no. of Working days**	**Percentage of utilization**

Note: Percentage of Utilization = Total no. of days equipment utilized/Total no. of working days.

2.8. Details on current ongoing project related to Zoonoses:

2.9. Any projects are going on in the following identified areas of work for prevention and control of zoonotic diseases? If yes, please provide brief explanation-

3. Surveillance activity of zoonotic diseases in the following areas: -

3.1. Risk mapping:

3.2. Epidemiology:

3.3. Data management:

3.4. Information Education Communication (IEC) activity:

4. Identified areas to strengthen the Organization for conducting activities for Sentinel surveillance for zoonotic Diseases under NOHP-PCZ for prevention control of Zoonotic Diseases with proper Justification:

5. Strategic intervention to be undertaken by institute for Sentinel surveillance for zoonoticDiseases activity:

6. Proposal Plan:

6.1. Proposed outlay (year wise):

6.2. Total proposed outlay (component wise):

Proposed Activities	**Budget Head**	**Amount (In Rs.)**	**Justification**
Manpower	Professional Services		
Office Expenses	Office Expenses		
Meetings, Training Research, Travel ,	Surveillance, Monitoring and OtherAdministrative expenses		
Information Education and Communication (IEC)	Advertisements & Publicity		
Any other activity	Contingency Expenditure (Not exceeding 10% of the total cost)		
Total			

6.3. Propose Physical/Financial wise progress:

Activities	**Year 1**		**Year 2 & so on**		**Total**	
	Physical	Financial	Physical	Financial	Physical	Financial
1,2,3 & so on						

6.4. Proposed plan of action with timelines: (GANTT CHART)

6.5. Proposed Output and Outcome indicators:

6.6. Funding agency details:

6.7. Whether Institute/Organization is receiving funds from other central sector schemes under Ministry of Health and Family Welfare? If yes, please provide details:

6.8. Funds flow mechanism to the institute under centrals sector scheme:

6.9. Indicate final Outcomes for the Project in the form of measurable indicators which can be used for impact assessment/evaluation after the project is complete. Baseline data or survey against which such outcomes would be benchmarked should also be mentioned:

7. Approval & Clearances:

7.1. Requirement of mandatory approvals/ clearances of various local, state and national bodies and their availability may be indicated in a tabular form.

Sl. No.	Approvals/ Clearances	Agency Concerned	Availability (Y/N)

7.2. Is ethical clearance required: Yes/No

7.3. Is institution is having institutional ethics committee: Yes/No

Name & Signature of the Nodal Officer **Stamp**

Name & Signature of the Head of the Division/Department **Stamp**

Name & Signature of the Head of the Institute **Stamp**

(Digital signature is not allowed)

Date of Submission:

Place:

Note:

1. For all equipment's approved in the NOHP-PCZ, the Nodal Officer is required to give a certificate to the effect that equipment's is/are not available/accessible for the project work.
2. Equipments should be selected from the list of equipments given in the Operational Guidelines.
3. The Laboratories should procure only the diagnostic kits recommend by the Programme division.

ANNEXURE 6

Case Report Form

National One Health Programme for Prevention and Control of Zoonoses
Case Report Form (CRF) for Sentinel Surveillance Sites on Zoonoses (DRAFT)

1. P form (IDSP) **Date of Enrollment_____**

1. Name of the Institute:					
1.1. Contact Number:	India +91				
1.2. Name:	1.3. First Name	1.4. Middle Name	1.5. Last Name	1.6. Date of Birth	1.7. Age
1.8. Gender	1.9. ID Type	1.10. Identification Number		1.11. Citizenship	
1.12. Present Address	1.13. State	1.14. District	1.15. taluka	1.16. Village	
1.17. House No.	1.18. Street Name	1.19. Landmark		1.20. PIN Code	
Permanent address same as present address:	□				
2. Clinical Details:					
2.1. Provisional Diagnosis	2.2. Date of onset	2.3. OPD/IPD			
Do you want to advise Laboratory Tests?					
3. Laboratory Details:					
3.1. Test Suspected For	3.3. Type of Sample	3.5. Test Requested	3.7. Sample collection date (If Collected)		
3.8. Laboratory details					
◯ Internal	**3.9. Specimen Id**		Laboratory Result:		
◯ External	Name of Institute				

2. Sentinel Surveillance sites (reporting form) under NOHP-PCZ

A. Clinical History		
Provisional Diagnosis: _____		
1.	Date of Admission	
2.	Date of Onset of Fever (DOF)	
3.	Type of fever	Intermittent/Remittent/Continuous
4.	What was the duration of fever as on today (the date of recruitment)?	___days
B. History of Present Illness (Tick all applicable)		
5.	Nausea/Vomiting/Jaundice/General weakness/Loss of appetite/Loss of weight/Abdominal Pain/3 or more loose/liquid stools/day/ Myalgia/Chills/Rigor/ sweating during night/ running nose (Coryza)/ Cough/ Sore throat/ Breathlessness/ Chest Pain/ Headache/ Photophobia/ pain behind your eye ball/ Red eye/ Burning micturition/ Neck Stiffness/ Altered Sensorium/ Joint Pain (Small Joints/Large joints/Both)	
5a	Duration of symptoms:	
6	History of seizure	Yes/No
7	History of any skin manifestation – a rash within few days before/after onset of fever?	Yes/No If yes, site and type____
8	Hemorrhagic manifestations:	Yes/No
	Petechiae/ Purpura/ Ecchymosis/Epitaxies/ Gum bleeding/ Hematemesis/ Malena	
9	History of domestic/foreign travel in the last one month?	Yes/No
9a	If yes, specify (location)	
10	History of contact with anyone having/had similar illness in the month before you got sick?	Yes/No
11	Have you received any vaccinations/ immunizations in the past 1 year	If yes, Specify____
C. History of Past Illness (Tick all applicable)		

12	Hypertension/ Diabetes/ Asthma/wheezing/ Liver Cirrhosis/ Chronic Renal failure/ Myocardial Infarction (heart attack)/ Stroke/ Cancer/ Recent transfusion of blood & blood products/ Others (Any other major illness diagnosed recently,please mention) _____	
12a	Details and duration of treatment:	
D. Examination findings		
13. General Examination: Gait/Pallor/ Conjunctiva/Sclera/Cornea/ Gums/Teeth/ Lymph Nodes/other		
	CNS:	P/A:
	RS:	CVS:

E. Epidemiologic data		
14a	Do you have any animal in your premises?	Yes/No
	If yes, Sheep/ goat/ Camel/ Cattle/ Buffalo/ Pig/ Cat/ Dog/ Chicken/Duck/Other Animals_____	
14b	History of animal parturition(delivery)/ animal abortion (last trimester) take place at your home/workplace during last 1 – 2 months?	Yes/No
14c	If yes, specify Sheep/ goat/ Camel/ Cattle/ Buffalo/ Pig/ Cat/ Dog/ Other Animals_____	
14d	H/O of consumption of raw/unpasteurized milk and its products?	Yes/No
15	History of any contact with sick/dead animal or bird in your household / neighborhood in the last 1 month?	Yes/No
15a	If yes, specify Sheep/ goat/ Camel/ Cattle/ Buffalo/ Pig/ Cat/ Dog/ Monkey/Chicken/Duck/Other_____	
16	Did you consume meat of the suspected infected dead animal/bird?	Yes/No
17	History of participating in slaughter or butchering livestock or wild animals during last oneor two months	Yes/No
18	History of any contact with raw meat/ animal blood in the last 4 months?	Yes/No
18a	If yes, Describe nature of contact	
19	Did you work or till on agricultural land/ farm in the past 4weeks?	Yes/No
20	History of (In past 4 weeks): Work in paddy fields/Fishing/Water (irrigation) canal nearby your house or farmland/contact with stagnant water	
21	Do you live in close proximity (within 5 minutes walking distance) to the forest?	Yes/No
22	History of going to forest in the past 4 weeks?	Yes/No
22a	If yes, for what purposes you enter the forest? **(Tick all applicable):** Firewood collection/ Dry leaf collection/ Grass collection/ Wood cutting/ logging/ Honey collection/ Algae collection/ Cattle grazing/ Work on agricultural land inside forest/ Fishing/ Hunting/ Forest department work/ Leisure activities/ Others	
23	Do you see ticks in and around your household within 4 weeks before the onset of fever?	Yes/No
24	Do you see ticks on your body or H/O tick bites, within 4 weeks before the onset of fever?	Yes/No
24a	If yes, how do you remove them?	
25	Type of Housing	Kutcha/Mixed/Pacca
26	What is the Source of drinking water in your home? **(Tick all applicable)** Dug well/ Hand pump/ Tube well/ Public well/ Public water tap/ Panchayath/ Municipality water supply/ Tanker water supply/ River, Pond Stream/ Others:	
27	Do you store water in home?	Yes/No
27a	If yes, where? (specify)	
28	Do you use a sanitary latrine at your home?	Yes/No
29	Where do you take bath? (Tick all applicable)	River/Pond/ Stream/ Home/ Other place- Specify

F. Any additional/significant findings of investigation done, please annex as attachment.

G. Any significant findings during follow-up and final outcome of the patient?

H. Date of Discharge:

I. Is there anything that you wish to tell me which you think I have not asked you? If yes describe_____

ANNEXURE 7

Participant information sheet and consent for Name of the Nodal Officer

This Informed Consent Form has two parts:

- Part I- Information Sheet (to share information about the Sentinel surveillance with you)
- Part II- Certificate of Consent (for signatures if you agree to take part)

Part-I Purpose:

This Sentinel surveillance's goal is to identify the typical zoonotic disease causes in patients who are admitted to this hospital with fevers. For several of these disorders, new laboratory tests are now today accessible. We want to understand more about the illnesses that are causing your fever by carefully gathering information about you and your condition, testing you for these illnesses, and maybe learning more effective strategies to treat and prevent these infections. Your parents have approved your participation if you are a minor and they are aware of the Sentinel surveillance.

Explanation of Procedures What we would like to do

You have been admitted to this hospital, you have had a fever from this illness, and your doctor believes you have an infection, thus you are being invited to take part in this Sentinel surveillance. If you agree to participate, you will be asked questions about your current and prior medical conditions, general questions about your health, habits and family. These questions will take about 15 minutes to answer. As a volunteer, you do not have to answer any question that you are not comfortable with.

At the time of clinic visit or hospitalization, 2 to 5 ml of blood will be taken from your arm. This blood will be used for routine tests that your doctor is ordered and also be used for tests to diagnose the cause of your infection.

We will also take a throat swab, urine and stool sample, or spinal fluid as per the doctor's plan. The samples that are taken, in addition to routine tests, will be tested for various infections that may have caused your illness and that made you sick.

Risks and Benefits

There are no risks involved and you will not receive any incentive for this participation.

Confidentiality

If you do agree to take part, all your responses will be kept confidential. All records and data collected will be labeled with ID/code and not with your name. At any stage of the Sentinel surveillance, you are free to withdraw or request

that your data to be removed from the Sentinel surveillance. Individual identity will not be revealed anywhere and results will be presented for the aggregate data.

Withdrawal without Prejudice

Your participation is entirely voluntary. You shall have the freedom to withdraw from the Sentinel surveillance at any stage without prejudice. It will not affect the quality of the treatment you receive from the Institutions.

Whom to contact

Contact details of Nodal officer of the Sentinel surveillance site

PART II: CERTIFICATE OF CONSENT

CONSENT FORM

I agree to take part in the Sentinel surveillance of zoonotic diseases. The purpose of the Sentinel surveillance has been explained to me by the Nodal Officer to my satisfaction and I have read & understood the information sheet. I understand that any information I provide is confidential and no information that could lead to the identification of any individual will be disclosed in any reports under the Sentinel surveillance, or to any other party. No identifiable personal data will be published.

Name of the participant:

Signature of participant:

Date:

Printed Name of Parent/Responsible Adult **Relationship to Patient**

_____ _____

Signature/Thumbprint of Parent/Responsible Adult **Date: DD/MM/YY)**

ANNEXURE 8

Animal Disease Case Report Form

ANIMAL DISEASE CASE REPORT FORM

Date of Report ___ /___ /___

CASE INVESTIGATION FORM

1. GENERAL INFORMATION

OWNER/INFORMER DETAILS

Owner/Informer First Name*:_____Middle Name:_____ Last Name:_____

ID Type *:□ Aadhaar □ Voter ID □ PAN □ Passport □ Driving License □ Other

Identification Number*:_____ Citizenship*:_____

Owner/Informer Address: State*:_____District*:_____ Taluka*:_____Village*: ____ House No: _____Street Name: _____Landmark: _____PIN Code: _____

Home Phone: _____ Alternate Phone: _____

Latitude:_____ Longitude:_____

Adress/Location of the farm or place where the animal is housed *(No need to fill, if the address is same as owner/informer address)*:

State*:_____District*:_____ Taluka*:_____Village*: ____ House No: _____Street Name: _____Landmark: _____PIN Code: _____ Latitude:_____ Longitude:_____

ANIMAL DETAILS

Patient Name: _____

Date of Birth*(compulsory for owned dog):__ /__/__ Age: ____ Gender*: □ Male □ Female

Type of Animal*:□ Owned □ Stray □ Wild

Species*: □ Bovine □ Equine □ Canine □ Feline □ Caprine □ Ovine □ Swine □ Others_____

Breed*: _____

Unique Animal Id (16 digit number):_____

Neutered: □ Y □ N □ Unknown

Disposition*: □__Alive □Dead (Date of death___ /___ /___)

2. CLINICAL DETAILS

Provisional Diagnosis*:_____ Date of onset*:__ /__ /__

Date of reporting to the veterinarian:__ /__ /__

OPD/IPD no. :_____

3. LABORATORY DETAILS

Disease Suspected For*:_____ Type of Sample collected*:_____

Test Requested*:_____ Sample Collection date*: __ /__ /__

Spicemen Id*:_____ Lab result *:_____

4. ADDITIONAL CLINICAL DETAILS

Case History

Duration of illness: _____
First sign observed: _____
Previous treatment: _____
Any past history of illness: _____
Necropsy findings (if applicable): _____

OBSERVATION ON CLINICAL EXAMINATION (IF AVAILABLE)

General appearance & behaviour: _____
Temperature:_____
Pulse rate: _____
Respiration rate: _____
Mucous membrane colour: _____
Blood exam:_____
Urine exam: _____
Faeces exam:_____
Milk exam:_____
Skin exam:_____
Any other observation:_____

5. QUESTIONS TO BE ASKED FROM THE ANIMAL OWNER

Type of Feed given:
Quality of feed:_____ Quantity of feed:_____
Changes made in the feed/fodder (if any):_____

Breeding/Reproductive Status:
Parity:_____ Pregnancy Status:_____
Status of Lactation:_____

Farm management:
Herd strength:_____ (number of animals in the farm)
Rearing system: □Open Grazing/Free Range □Stall fed/confinement □ Migratory/Nomadic
Whether Farm is having only one species of animal or multiple species: _____
Contact with Sick Animal: □ Yes, □ No
Is there any recent introduction of new animal to the herd: _____
Status of Vaccination: _____
Status of deworming: _____

6. IN CASE OF OUTBREAK

Avg. Course of disease:_____ Morbidity Rate: _____
Case fatality rate:_____
Tentative Diagnosis:_____
Whether any illness is observed in animal care takers who were in contact with sick animals (In case of zoonotic disease):_____
Any other Information:_____

Sections 1 to 3 are mandatory, rest are optional.

Participant information sheet and consent form for Veterinary Sentinel Surveillance Sites

Name of the Nodal Officer of the Project:

This Informed Consent Form has two parts:

- Part I- Information Sheet (to share information about the project with you)
- Part II- Certificate of Consent (for signatures if you agree to take part)

Part-1

Purpose:

This project's goal is to identify the typical zoonotic disease causes in animals who are admitted to this hospital/clinic. For several of these diseases, new laboratory tests are now today accessible. We want to understand more about the illnesses by carefully gathering information about your animal and its condition, by testing animals for these illnesses, and maybe learning more effective strategies to treat and prevent these infections. You as owner/caretaker of the animal has approved your participation and is aware of the project.

Explanation of Procedures what we would like to do

Your animal is undertaking treatment at this hospital, it has some form of illness, and your veterinarian believes it is a zoonotic infection that can also be transmitted to you; thus, you are being invited to take part in this project. If you agree to participate, you will be asked questions about your animal's current and prior medical conditions, general questions about its health and habits. These questions will take about 5-10 minutes to answer. As a volunteer, you do not have to answer any question that you are not comfortable with.

At the time of clinic visit or hospitalization, 2 to 5 ml of blood will be taken from your animal. This blood will be used for routine tests that your veterinarian has ordered and also be used for tests to diagnose the cause of your animal's infection.

Any other sample like milk, stool, spinal fluid, urine, etc,. can also be ordered as per the treating veterinarian's discretion. The samples that are taken, in addition to routine tests, will be tested for various infections that may have caused your animal's illness.

Risks and Benefits

There are no risks involved and you will not receive any incentive for this participation.

Confidentiality

If you do agree to take part, all your responses will be kept confidential. All records and data collected will be labeled with ID/code and not with your or your animal's name. At any stage of the project, you are free to withdraw or request that your data to be removed from the project. Individual identity will not be revealed anywhere and results will be presented for the aggregate data.

Withdrawal without Prejudice

Your participation is entirely voluntary. You shall have the freedom to withdraw from the project at any stage without prejudice. It will not affect the quality of the treatment your animal receives from the institution.

Whom to contact

Contact details of Nodal officer of the Institute/project

PART II: CERTIFICATE OF CONSENT

CONSENT FORM

I agree to take part in the above project. The purpose of the project has been explained to me by the Nodal Officer to my satisfaction and I have read & understood the information sheet. I understand that any information I provide is confidential and no information will be disclosed in any reports under the project, or to any other party. No identifiable personal data will be published.

Name of Patient's Owner/Caretaker:

_____

Signature/Thumbprint of Patient's Owner/Caretaker

Date: DD/MM/YYY

National One Health Programme for Prevention and Control of Zoonoses
Division of Zoonotic Diseases Programmes
National Centre for Disease Control
Directorate General of Health Services
Ministry of Health and Family Welfare
Government of India