

# National Conclave on “Augmented Zoonotic Diseases Surveillance at Human Wildlife Interface”

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## Background

The National Conclave on “Augmented Zoonotic Diseases Surveillance at Human-Wildlife Interface” commenced on October 17, 2023, at the Nalanda Hall, Dr Ambedkar International Centre, New Delhi. The event was facilitated by the Centre for One Health, National Centre for Diseases Control, under the Chairmanship of Shri. Sudhansh Pant, Secretary, MoHFW, Government of India. The objective of the national conclave was to understand the outbreaks of zoonotic disease events, strengthening of wildlife pathogen surveillance for early detection of emerging zoonotic disease events, address human-wildlife conflict and inter-sectoral collaborations.

present:

- The Inter-Ministerial One Health Support Statement on NAPSE
- Technical Guidance on Zoonotic Diseases Prevention, Preparedness, and Response
- Comprehensive guide on Medically Important Snakes in India.

The session concluded with a vote of thanks by **Dr. Ajit Shewale**, Deputy Director, COH, NCDC, expressing gratitude to all participants and stakeholders for their contributions and commitment to the cause.

The conclave witnessed participation from over 160



Following the welcome address, a symbolic lamp lighting ceremony took place, graced by all dignitaries present. **Ms. Payden**, Deputy WR to India, **Dr. Ashok Kumar**, Addl. DG-ICAR, **Prof.(Dr.) Atul Goel**, DGHS, MoHFW GoI, **Shri Abhijit Mitra**, Commissioner Animal Husbandry, and **Mrs R. Jaya**, Additional Secretary, MoTA delivered impactful addresses, highlighting the significance of the initiatives being undertaken. During the Inaugural event a rabies helpline number 120-602-5400 and following technical documents were launched by all dignitaries’

distinguished guests from 28 states/UTs. The participants convened at the Conclave signed the “Pledge Wall”, accompanied by a message advocating for the unification of efforts and affirming their commitment to work cohesively for One Health. The objectives of the conclave were primarily met, and the outcomes were achieved. Much was learned from the deliberations and the discussions on implementation and collaboration issues and how to proceed.

## Recommendations

As a next step, overcoming the challenges will be crucial in safeguarding the health and well-being of humans, animals, and the environment in India. By consolidating efforts, expanding knowledge, integrating data, embracing technology, prioritizing collaboration among sectors, and engaging communities, the spread of infectious and emerging threats of zoonotic diseases can be mitigated. However, addressing the challenges and implementing the recommendations will require collective action and commitment from all sectors involved. The National Conclave is an essential step towards achieving this shared vision and assuring the well-being of humans, animals, and the environment.

The following recommendation has been given in both session

1. **Dr. Gyanendra Gongal**, Senior Public Health Officer (Food safety, Zoonoses and One Health) WHO SEARO gave comprehensive presentation on zoonotic diseases, covering their types, and providing insights into the global and Indian scenarios.
2. **Dr Ritu Chauhan**, NPO, IHR, WHO India Office presented a comprehensive overview of the COVID-19 pandemic. She elucidated the primary drivers of biodiversity loss and introduced initiatives aimed at fortifying health emergency preparedness and response. Stressing the
3. **Dr. Lesa Thompson**, Regional Project Officer, WOA then discussed factors contributing to spillovers events, emphasizing the importance of understanding and managing the associated risks. She highlighted the crucial role of wildlife disease surveillance, the need for wildlife disease reporting requirements, and the significance of risk analysis in evaluating disease risks. During the Q&A session, stakeholders sought suggestions for establishing a Human-Wildlife interface. Dr Thompson stressed the importance of input from stakeholders, the prioritization of zoonotic diseases, and the need for strategies related to dog birth control.
4. **Dr. Vineeta Shrivastava**, Health Advisor Ministry of Tribal Affairs, GoI provided a behavioral perspective, underscoring the necessity for tribal affairs to be actively involved. She highlighted the challenges faced by rural areas, including financial burdens, poor awareness, language differences, and a lack of health facilities. Dr Vineeta proposed strategies to mitigate the risk of emergency zoonoses, including recognizing community perceptions, mapping stakeholders, conducting training programmes, fostering shared learning, and collaborating with community partners to instill a sense of ownership. To address existing gaps, Dr Vineeta recommended advocacy for



imperative for collaborative efforts in the realm of One Health, she articulated the need for multisectoral involvement in risk assessment. She underscored the inadequacy of single surveillance systems and proposed Quadripartite approach for One Health framework. Dr Chauhan emphasized the importance of a strengthened global architecture



prioritizing zoonoses, mapping health facilities, estimating the burden of zoonoses, and effective communication through mass media. The importance of convergence was emphasized. Some initiatives of the Ministry of Tribal Affairs (MoTA) were presented, including dedicated health cells, the development of the Swasthya portal, massive



awareness campaigns, tribal Tuberculosis initiatives, the launch of tribal health collaboration and the early childhood development initiatives etc.

5. **Dr. HV Girisha**, Additional Director at the Wildlife Crime Control Bureau (MoEFCC), then presented a global perspective on wildlife trade, animal movement and its associated risks of zoonotic diseases. He defined wildlife broadly to include animals, aquatic life, and land vegetation, describing it as a transnational organized activity. The global magnitude of wildlife trade was outlined, with an overview of species listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Spillover risk factors linked to wildlife trade, such as hunting, transport, and unhygienic practices, were discussed, along with challenges like the lack of SOPs for human, veterinary and wildlife for handling of seized animals and medical research, etc. Institutional arrangements to prevent spillover were presented, encompassing risk understanding, assessment, and reduction strategies to enhance ecosystem, human, and animal health.

The pivotal takeaways highlighted the critical need for collaboration, a clear institutional framework, financial support, and a culture of trust to address the complex challenges posed by health emergencies and wildlife trade.

- The post lunch technical session, chaired by **Dr Anil Kumar**, Principal Advisor, NCDC MoHFW, GOI, commenced with a focus on biodiversity hotspots by **Dr. J. Soundrapandi**, Project Officer- UNDP, National Biodiversity Authority. The discussion highlighted the National Mission on Biodiversity and Human well-being, emphasizing habitat destruction and wildlife trade as significant drivers of zoonotic diseases.
- During the Q & A session, the absence of quantitative indicators for tracking species progress or extinction was addressed. The challenge lies in the lack of a surveillance system to assess population or species status. Population variability assessment, a tool to gauge the extinction of fauna and flora, was mentioned.

6. **Dr. Sanket**, Joint Director, IDSP provided an update on zoonotic outbreaks, detailing two surveillance systems: event-based surveillance and routine/indicator-based surveillance. He highlighted the Integrated Disease Surveillance Programme (IDSP) objectives, incorporating early signals, rapid response teams, and a decrease in mortality and morbidity. Challenges in the Nipah outbreak in Kerala, particularly

the inability to identify the index case, were discussed. During the Q&A session, the integration of health and zoo surveillance systems and the regular sharing of information were addressed. The need for a technical person to share user credentials for seamless integration was emphasized. The technical team session focused on the ongoing establishment of the National Referral for Wildlife and solicited ideas and suggestions from experts to enhance effectiveness

### **Panel Discussion 1: Understanding Prevailing gaps to detect and Address the zoonoses emergence at Human-Wildlife interface**

During the panel discussion, the eminent panelist engaged in a thoughtful discourse on the crucial topic of “Understanding prevailing gaps to detect and address the zoonoses emergence at Human- Wildlife interface”. **Dr. Simmi Tiwari**, the Joint Director and Head of the Centre for One Health at NCDC, expertly moderated the session. The panel included **Dr. Gyanendra Gongal** from WHO SEARO, **Dr. Ritu Chauhan** from the WHO India Office, **Shri Sunil Sharma**, Joint Director (WL) at MoEFCC, **Dr Manoj Kumar**, Senior Scientist at NIHSAD, Bhopal, **Dr Abhijit Pawde**, Senior Scientist at IVRI, Izzatnagar, Bareilly, **Dr. Ranjana Devi**, Professor and Head, Regional Institute of Medical Science, Imphal, Manipur.

This panel discussion unfolded with valuable insights and recommendations from distinguished experts:

#### **Q) Which are the countries who have any such surveillance mechanism in existence?**

**Dr. Gyanendra Gongal**, WHO SEARO, advocated the need for indicator based and event-based surveillance in every country to achieve the goal of surveillance. He emphasized that sustained community driven surveillance should be in place; Anganwadi, self-help groups, and other community-centric channels should be used, as they are the main contact point to community; stressing the necessity for funding and resources to establish surveillance.

#### **Q) What are gaps and challenges WHO and Quadripartite identified globally in this area? What is the way forward for member countries as per JPA-One Health?**

**Dr. Ritu Chauhan**, NPO, WHO India, highlighted the significance of conducting gap analysis, stimulation exercise; joint external evaluation for comprehensive action plans in National Health Security and foster coordination. She emphasized the need to advocate One Health at all levels and importance of involving local community champions and media; setting up laboratories; bridging workshops; risk assessment; coordination and communication is the key.

**Q) What is the current scenario of wildlife disease surveillance in India both in free ranging and captive animals? What gaps do you realize in the present scenario? What are the challenges and way forward to surmount these?**

**Shri Sunil Sharma**, Joint Director (WL), MoEFCC stated that there is an established disease monitoring system for captive animals (Zoo) however no such system is available for free ranging animals currently. The existing surveillance system for wildlife disease is event based. He proposed measures such as capacity building for the veterinarian, sponsoring advance course for wildlife management; training of forest officials; vaccination of animals within 5 km of protected areas; technical partnership with veterinary, wildlife and health departments.

**Q) What is your understanding regarding prevailing gaps in laboratory diagnostics for zoonotic pathogens (both endemic and emerging, and novel pathogens) in your sector (Human, Veterinary, and Wildlife): wider country perspective**

**Dr. Manoj Kumar**, Senior Scientist, NIHSAD stated that NIHSAD mainly deals with diagnosis of Avian Influenza and CCHF Genomic detection.

**Dr. Abhijit Pawde**, Senior Scientist, IVRI, Izzatnagar, Bareilly stressed the need for a comprehensive data base.

**Dr. Mala Chhabra**, Sr. Consultant, Dr. RML Hospital and ABVIMS urged the use of GIS/remote sensing for hotspot identification and the need for joint training for clinicians and community. She emphasized that for diagnosis of zoonotic disease clinical suspicion is very important and there is an urgent need of own validated diagnostic kits. A major challenge towards the diagnosis of zoonotic disease is slow preparedness of the laboratories and hence the laboratories should be strengthened.

**Dr. Ranjana Devi**, Professor and Head, Regional Institute of Medical Science, Imphal, Manipur recommended that since there is no gap in the existing laboratory facilities infrastructure following COVID-19 pandemic, there is a need for a protocol for everyone to follow. She informed that it is mandatory that every medical college should have BSL2 and hence our country has a well-equipped laboratory infrastructure for human disease diagnosis.

The meeting concluded with **Dr Ajit Shewale**, Deputy Director, COH, NCDC facilitated the panelists with memento, and **Dr Simmi Tiwari**, Joint Director and Head Centre for One Health, NCDC expressing

gratitude in her vote of thanks, highlighting the collective commitment to addressing the gaps and challenges in zoonotic diseases and management.

### **Addressing Emerging Zoonoses Risk at Human Animal Interface- Status of Ongoing Effort**

On the second day of the conference, October 18, 2023, the technical session was chaired by **Dr Sunil Gupta**, Principal Consultant at the National Centre for Disease Control (NCDC), with **Dr. Runa Gokhale**, Associate Director for Science and programmes, CDC, India and **Dr C. Sreekumar**, Professor & Head of Madras Veterinary College, serving as co-chairs. The day commenced with a recap of the discussion and key insights from the previous day, ensuring that participants were aligned with the outcomes and conclusion drawn.

**Dr Pragya Yadav**, Scientist “F” NIV Pune provided a comprehensive update on ICMR’s surveillance of emerging zoonotic diseases of wildlife origin, emphasizing the lab aspects. She covered key topics as the overview of zoonotic diseases, the history of pandemics, and the impact of urbanization on infectious diseases. Dr Yadav highlighted the importance of anticipating, preventing, preparing, detecting, and responding to outbreak. She pointed out the challenges faced, including the shortage of medical workforce and diagnostic labs. She recommended to strengthen the existing infrastructure, capacity building, and coordination, early detection of biothreats through surveillance, data should be at one place, developing strategies to prevent and detect biothreats, training of biosafety workers, pro-active surveillance for wildlife, mapping of animals, do molecular testing. The Q&A session addressed safety measures for research personnel in forest, which included risk assessment before field work, use of antibiotics and rabies vaccine.

**Dr. Lallianpuri Kawlni**, Scientist “D” Wildlife Institute of India presented on Wildlife health management and disease surveillance in relation to zoonotic diseases – Ongoing projects, and discussed about field training courses, endangered species recovery programme.

**Dr. Mayank Dwivedi**, PHS and Lab Advisor, CDC India representative presented laboratory aspects for detecting emerging zoonotic pathogens of epidemic potential, testing for pathogens in wild animal. He discussed about need of diagnostic facility, resilient and integrated human disease surveillance and lab network, community engagement along with technology. He emphasized on the need of tiered system of laboratory network. **Shri Rajesh S**, IFS, CCF, Arunachal Pradesh addressed emerging zoonoses risk at Human Animal Interface status of ongoing efforts, and the challenges

and status of ongoing efforts from a wildlife and forest management perspective, unregulated wildlife trade, and importance of community engagements. His presentation also covered the remarkable contributions of wildlife surveillance in zoonoses control.

#### **Technical Session 4: Global Initiatives for detection of emerging diseases and cross species spill over events**

- The session was chaired by **Dr. Bharthi Malhotra**, Senior Professor, Microbiology, SMS Medical College Principal Consultant at the National Centre for Disease Control (NCDC), with **Dr. Meghna Desai**, Director, CDC, India and **Dr. C. Sreekumar**, Professor & Head of Madras Veterinary College, serving as co-chairs.
- **Dr. Nitish C Debnath**, PREZODE Steering Committee Member presented on PREZODE initiative
- Strategies and Lessons Learnt
- **Dr. Shiyong Wang**, Senior Health Specialist, World Bank Experience from the spillover of Congo Crimean Hemorrhagic Fever (CCHF) in Mongolia and Avian Influenza in Vietnam
- **Dr. Abhijit Pawde**, Sr. Scientist, IVRI presented the existing facilities and network for diagnosis and surveillance of zoonotic pathogens at IVRI.
- **Dr. Manoj Kumar**, Sr Scientist NIHSAD Bhopal presented Existing facilities and network for diagnosis and surveillance of zoonotic pathogens at NIHSAD. He stated that the mandates of NIHSAD includes basic and strategic research on exotic, emerging and re-emerging animal diseases and the bio-risk management and capacity building in the areas of biosafety, biosecurity and biocontainment for handling high risk pathogens. He briefed about the diagnostic facilities available at NIHSAD and the network of regional disease diagnostic laboratories and the animal quarantine centres present across the country.

#### **Panel Discussion 2: Leveraging Sectoral Expertise for Optimally Utilizing Existing Resources for establishing augmented zoonotic disease surveillance at the Human-Wildlife Interface**

During the panel discussion, the focus centered on the critical topic of “Leveraging Sectoral Expertise for Optimally Utilizing Existing Resources for establishing augmented zoonotic disease Surveillance at the Human-Wildlife Interface.” Dr. Mala Chhabra, Senior Consultant at Dr RML Hospital and ABVIMS, New Delhi, expertly moderated the discussion.

The panelists were:

1. **Dr. Atul Anand**, Consultant, One Health, UNDP
2. **Dr. Manoj Kumar**, Senior Scientist, ICAR-NIHSAD, Bhopal

3. **Dr Monil Singhai**, Joint Director CAZD, NCDC

4. **Dr. Mayank Dwivedi**, PHS and Lab Advisor, CDC Atlanta USA.

5. **Dr. Devi Shankar Suman**, Scientist, Estuarine Biology Regional Centre, ZSI

6. **Shri Rajesh S**, IFS, CCF, Arunachal Pradesh.

This panel discussion unfolded with valuable insights and recommendations from distinguished experts:

#### **Q) What role does animal husbandry departments envisage in establishing augmented zoonotic disease surveillance?**

**Dr Atul Anand**, Consultant, One Health, UNDP provided a comprehensive overview of the veterinarian infrastructure across India, and stated that there are RDDLS (Regional disease diagnostic Laboratories) across India and nearly 220 labs are connected with these RDDLS. National Animal disease control programme regularly reports the vaccination of foot and mouth disease and Brucellosis across PAN India on INAF portal. National Digital Lifestock Mission (NDLM) running in 5 states encompasses various programmes, including data production, artificial insemination, animal registration, vaccination. Hence a tiered infrastructure is available in some form in animal husbandry department and limited passive surveillance of zoonotic disease is already in place which can be utilized for generating early warning signal. With proper coordination, collaboration and data sharing it may be possible to generate an early warning signal in terms of zoonotic disease outbreak.

#### **Q) What role does Ministry of Environment and Forest envisage in establishing zoonotic disease surveillance system at human-wildlife interface?**

**Shri Rajesh S**, IFS, CCF, Arunachal Pradesh recommended that there is a need to collaborate with the Wildlife preservation, GoI to make suitable changes in the management plans for wildlife sanctuaries and Zoo authorities of India so as to put in the protocols to monitor the symptoms/signs of zoonosis, how can they recognize a zoonotic disease and what steps may be taken. This may be followed by Integration of surveillance, Capacity building and skill development for wildlife management, community engagement, and leveraging the integration of diseases, cross cutting agriculture. The application of various technologies, akin to those used in managing COVID-19 was advocated, with a call for clinicians to train, and sensitize higher officers. There is a vaccination strategy already in place for life stocks in the fringe area and that may be expanded with, which spillover of zoonotic disease may be restricted to certain extent.



**Q) How to source and integrate ecological parameters into surveillance of emerging zoonotic diseases?**

**Dr. Devi Shankar Suman**, Scientist, Estuarine Biology Regional Centre, ZSI recommendations:

Vectors act as the bridge between the wildlife and the Humans. There is a need to have a map of the micro biome of prevailing vectors in the country. Since the vectors differs in their ecology, habitat, disease transmission capacity and feeding habits etc., a surveillance should be set up on vectors before disease spreads.

**Q) What role can ICAR-NIHSAD play in setting up Augmented Zoonotic Disease Surveillance?**

**Dr. Manoj Kumar**, Senior Scientist, ICAR-NIHSAD, Bhopal highlighted ongoing collaborations/expansions like Influenza disease, and recommended similar action may be taken for other diseases also, harmonization of diagnostics/infrastructure of animal and human health.

**Q) What assistance ICMR, NCDC & CDC can provide in strengthening lab and surveillance capacity for AZDS?**

**Dr. Mayank Dwivedi**, PHS and Lab Advisor, CDC Atlanta USA recommended to support, strengthen labs and epidemiological capacities, develop SOPs, etc., advancing of biosafety, enhancing genomic surveillance, and establishing case definitions.



**Dr. Monil Singhai**, Joint Director CAZD, NCDC recommended there is a need to augment surveillance, enhance existing infrastructure, and map capacities to identify main centres. The Q&A session touched on community based early warning signals, a decentralized approach, active participation of Panchayati Raj Institutions (PRIs), and considerations for a One Health laboratory. The importance of inclusivity, sensitization of institutes, avoiding resource duplication, ensuring proper SOPs, and creating a One Health repository for research were discussed to address contamination issues and promote collaborative efforts in the field.

**Panel discussion 3: Surveillance strategies for zoonotic spillover detection at human-wildlife interface**

The panel discussion addressed the critical topic of “Surveillance strategies for zoonotic spillover detection at human-wildlife interface”.

**Dr. Tenzin Dikid**, Joint Director and Head CME VM and PBA, NCDC, capably moderated the session.

**Q) What preparedness do you envisage for natural and man-made biological disasters in the country? What are the initiatives taken by the disaster management cell ?**

**Dr. Pradeep Khasnobis**, DDG at Disaster Management Cell, MoHFW, GoI, highlighted the importance of prioritizing diseases, establishing a unified data platform for One Health, ensuring data integration and interoperability, conducting gap analysis, and implementing joint risk assessments.

**Q) What are the appropriate strategies do you envisage to identify the target/at-risk human population, livestock and wildlife host? & What should be Information management System and Data Sharing Strategy surveillance at Human -Wild Life Interface?**

**Dr. Sanket Kulkarni**, Joint Director at IDSP, NCDC, emphasized the utilization of existing infrastructure, including IDSP, district Public Health labs, Rapid Response Teams at district and state levels, NARDE, NADRS, and the NARDL Mission in five states. He stated that Health IDSP is working with animal husbandry team for developing an AI based tool for early generation of reporting, to know the hotspot areas with respect to zoonotic disease. He proposed the integration of health personnel into joint forest committees to facilitate the sharing of critical data.

**Q) What are the appropriate strategies do you envisage to identify the target/at-risk human population, livestock and wildlife host?**

**Dr. Vrinda Menon**, Associate Professor at the College of Veterinary & Animal Science in Thissur, emphasized the importance of educating school children, addressing zoonoses in pets, strengthening laboratories in state and central universities, considering food safety, and conducting soil and water testing.

**Dr. Devi Shankar Suman**, Scientist E, Estuarine Biology Regional Centre, ZSI, called for a focus on peripheral and fringe areas for wildlife. These recommendations collectively underscored the significance of collaborative efforts, capacity building, and the strategic utilization of existing resources for effective surveillance and response in the realm of zoonotic diseases.

**Q) What should be the Criteria for prioritization of pathogens for surveillance system at human-wildlife interface?**

**Dr. A. M. Pawde**, Principal Scientist at the Centre for Wildlife, ICAR-IVRI, underscored the necessity for capacity building, the development of databases, and the establishment of a surveillance system. Dr. Meera Dhuria, Joint Director and Head of the Division of Public Health Preparedness and NCD at NCDC, recommended the formation of multisectoral rapid response teams, the incorporation of biosafety modules, and active community engagement.

**Q) What should be the criteria for advanced diagnostics for Zoonoses (including novel pathogen diagnostics)?**

**Dr. Mala Chhabra**, Senior Consultant Microbiology at Dr. RML Hospital and ABVIMS, New Delhi, suggested leveraging existing resources, regional prioritization of diseases, a syndromic approach for diagnosis of diseases and initiating surveillance with a tiered system (certain rapid diagnostic tests should be done at PHC level moving forward to the secondary level and in case of such syndromes which cannot be diagnosed at lower levels, tertiary levels may be approached). She emphasized the need to expand the mandates of existing diagnostic facilities, strengthen diagnostics, and ensure quality assurance at the field level.

The key highlights of the panel discussion were:

1. Augment human surveillance on basis of priority list for known zoonotic diseases, with special focus on states with high biodiversity/ hotspots. Use stepwise approach for lab data capture.
2. For unknown spillovers, strengthen syndromic surveillance through sentinel populations (animal handlers, lab workers, forest fringe populations in biodiversity zones). Subject a fraction of samples to NGS metagenomics for pathogen discovery.
3. Enable the IHIP platform for plugins for surveillance data inputs from sentinel sites for wildlife/ animal husbandry/entomological zones, to receive data on forward and backward zoonosis as well as to capture conditions (through entomological surveillance) for epizoonosis.
4. Work through inter-sectoral committees such as joint forest committee. Periodic behaviour surveys or joint outbreak investigations in high risk groups to understand exposures
5. Capacity building need to be addressed in developing and strengthening animal side surveillance
6. Policy requirement should cover following: one data platform, one health cell, ongoing disease prioritization exercise.