



Rethinking India's response to epidemics Lessons from COVID-19 & Nipah

Constructing resilient public health systems in the wake of health emergencies

Reactive Response

India observed its first cases of Nipah and COVID-19 (1, 2) outbreaks which revealed a few of the baselessness of India's poor early warning/pandemic preparedness systems. As of today, India has confirmed 45 million COVID-19 cases.

Frontline Burden,

Fighting outbreaks has needed boots on the ground, but personnel from multiple sectors have been key players. Nonetheless, outbreak prevention & control efforts remained challenged by poor emergency readiness across countries, lack of personnel and infrastructure.

Emerging Threats

As stated by World Health Organization, mortality from Nipah Infection could be 40% -75%. This figure reflects the increasing threats of zoonotic agents.

1. Background and context

The COVID-19 and several past outbreaks of Nipah virus, reveal alarming levels of shortfalls in epidemic preparedness in India (setting aside the analysis of early warning systems, response capability, surveillance and health care delivery framework). The count of COVID-infected people in India is more than 4.5 crores, while the WHO estimates that Nipah has a mortality rate ranging from 40%-75%.

In India, there are rising patterns of infectious disease evolution because of associated factors with urbanization, ecological transformations and human-animal interface. Hence, epidemic preparedness is an important component of public health policy in India and the world as embodied inSDG 3 and IHR (2005).

2. Objectives of the brief

This policy brief aims to:

- Identify gaps in India's epidemic preparedness and response framework.
- Assess strengths and weaknesses of surveillance, health-care delivery and outbreak response systems.
- Assess new and emerging threats from climate-coupled and zoonotic infections.
- Formulate recommendations to potentially improve India's epidemic preparedness and health system resilience

3. Data Sources and Methodology

This brief draws on:

- WHO reports and outbreak updates
- Ministry of Health and Family Welfare (MoHFW) reports
- Integrated Disease Surveillance Programme (IDSP) data
- Published studies on COVID-19, Nipah, and emerging infectious diseases
- National and global public health policy documents

Approach:

- Secondary literature and policy review
- Trend analysis of recent outbreak preparedness and response
- Comparative analysis of public health system gaps and emerging risks in India

4. Key Findings

4.1 Reactive Preparedness and Delayed Response

- The arrival and spread of COVID-19 exposed major deficiencies in the country's capacity to quickly identify and respond to an outbreak.
- Early in the pandemic, researchers identified gaps in community testing infrastructures, as well as a failure to coordinate surveillance efforts in rural areas, which significantly delayed initial outbreak detection and response in India during the first wave of COVID-19 in 2020.
- Public health actions were mostly reactive in nature rather than preventive.

4.2 Recurrent Nipah Outbreaks and Zoonotic Risks

- WHO estimates that virus causing 40-75% mortality rate. 3. Since September 2017, 18 cases of Nipah Virus in Kerala have been confirmed with 17 fatalities connected to these cases due to infection.

4.3 Gaps in Healthcare Infrastructure and Surveillance

- The World Health Organization (WHO) evaluated identified weaknesses in the surveillance, information sharing and infection control programs that were present during the time of an outbreak.
- Most of those living in rural areas of India lack access to laboratories, ICUs and emergency medical care systems.
- There is a lack of coordination among the disease surveillance systems which makes it difficult to manage outbreaks.

4.4 Frontline Workforce Under Operational Strain

- COVID-19 and Nipah Virus outbreaks had an impact on the ASHA workers, ANMs, and health workers who assisted in providing care for those who had contracted these viruses.
- The infection of patients through healthcare professionals is still one of the main issues faced by hospitals.

4.5 Need for Integrated Digital and One Health Systems

- The WHO and other international public health organizations stress the importance of integrated surveillance and One Health approach for preparedness against epidemics.
- The rising human-animal interface along with climate-sensitivity diseases is posing greater risks of future outbreaks in India

5. Policy Gaps

In March 2023, the Indian government had taken significant steps to improve its public healthcare system before the outbreak of COVID-19, through a number of initiatives such as the introduction of new vaccines, e-health services, disease surveillance systems, and enhanced capacity to respond in emergencies. However, India's many recent disease outbreaks (including Nipah) still demonstrate some of the shortcomings of India's preparedness system.

5.1 Surveillance vs Early Response Capacity.

Significant gaps in epidemic identification and response persist despite the growth of surveillance systems:

- Inadequate integration of human, animal, and environmental health systems.
- Delays in early detection and real-time reporting.
- Disjointed surveillance coordination between states.
- Delays in real-time reporting and early detection.
- State-to-state coordination of monitoring is fragmented.

5.2 Infrastructure Expansion vs Regional Inequalities.

The expansion of healthcare infrastructure is still uneven by region:

- Laboratories and intensive care units are still in short supply in rural areas.
- Most emergency preparedness systems are still located in urban areas.
- The ability to respond to outbreaks quickly is hampered by uneven infrastructure.

5.3 Frontline Workforce Burden and Preparedness Gaps.

Frontline healthcare workers continue to operate under significant constraints:

- High operational workload during health emergencies.
- Limited training in outbreak preparedness and infection control.
- Inadequate institutional and psychosocial support systems.

5.4 Financial and Governance Gaps.

Current preparedness systems continue to face funding and coordination challenges:

- Public health financing remains largely outbreak-driven and reactive.
- Weak coordination between central, state, and district-level institutions.
- Limited decentralised planning and emergency preparedness governance mechanisms.

5.5 Digital Health and Public-Private Partnership Gaps.

Rapid digital health expansion has not fully translated into integrated preparedness systems:

- Public health databases remain fragmented across departments.
- Limited interoperability and real-time data sharing systems.
- Weak public-private partnerships in surveillance.

6. Policy Recommendations

In order to enhance the epidemic preparedness system of India, there should be a multi-tier approach to strengthen the areas of surveillance integration, health care resilience, frontline preparedness, financing sustainability, and governance accountability.

A. Immediate and High-Impact Initial Actions (0-2 Years).

1. Increase Early Warning/Monitoring Systems and Outbreak Reporting:

- Real-time reporting of outbreaks and coordinated district-level surveillance should be improved.
- **Who:** Ministry of Health & Family Welfare, Integrated Disease Surveillance Programme, and State Health Departments.
- **Measure:** Time taken for outbreak notification and response time will be reduced by implementation of activities.

2. Frontline Workforce Readiness:

- Develop ongoing training programs for ASHA, ANM, and frontline health workers in terms of preparedness for an outbreak, infection prevention/control and reporting using electronic platforms.
- **Who:** Ministry of Health & Family Welfare and State Governments.
- **Measure:** Number of frontline healthcare workers trained in Congress/as a result of implementing activities.

3. Risk Communication and Public Awareness:

- Improve the communication infrastructure to provide accurate health information and develop/generate confidence in the public about the response to health crises.
- **Who:** Ministry of Health and Family Welfare and State Health Departments.
- **Measure:** Efforts and number of outreach campaigns that have been conducted due to the implementation of activities.

B. Actions Systematically addressing Medium-Term Issues (2 - 5 Years):

1. The adoption of Integrated One Health Surveillance Systems.

- Strengthen the coordination between Human, Animal, and Environmental Health systems to improve the preparedness against Zoonosis diseases.
- **Who:** MoHFW, Ministry of Agriculture, Environmental Agencies.
- **Indicator:** Establishment of Integrated One Health Coordination Platforms.

2. Strengthen the Integration of Digital Health Services:

- Create interoperable Public Health databases and AI enabled surveillance systems for Evidence Based Outbreak Forecasting and Response Planning.
- **Who:** National Digital Health Mission, State Governments.
- **Indicator:** Integration of interoperable Healthcare Database in Real-Time across States.

C. Long-Term Structural Strategy (5+ Years)

1. Move From Disaster Management To Disaster Preparedness:

- Develop a long-term strategy for epidemic preparedness through a commitment to epidemic surveillance and research, recognition of already existing community resilience systems.
- **Who:** Central Government (NITI), Public Health Programmes.
- **Indicators:** Funding and resilience frameworks for epidemic preparedness.

2. Strengthen Community-Based Resilience for Public Health Emergencies

- Foster decentralised public health governance and encourage community-based participation in the Planning and Implementation of Public Health Emergency Preparedness .
- **WHO:** Panchayat Raj Institutions.
- **Indicators:** Preparedness plans at the community level and conduct emergency response drills.

7. Way Forward and Conclusion

Preparation for epidemics in India calls for going beyond mere crisis-based approaches to building public health preparedness systems that focus on prevention. The following are some important measures that must be taken:

- Strengthening integrated surveillance and early warning systems.
- Increasing rural health care facilities and laboratory capacity.
- Enhancing preparedness and readiness among front-line personnel.
- Strengthening the coordination among One Health sectors.
- Increasing digital health and real-time data systems.

In addition to being necessary for outbreak response purposes, developing sustainable epidemic preparedness systems can contribute significantly to public health, health security, and development goals in India.

An enduring shift towards preparedness and decentralization in public health will be indispensable to India's security from epidemics and pandemics.

8. References

- *World Health Organization (WHO) Reports and Outbreak Updates.*
- *Ministry of Health and Family Welfare (MoHFW), Government of India.*
- *Integrated Disease Surveillance Programme (IDSP) Reports.*
- *Ayushman Bharat Programme Documents.*
- *Published studies on COVID-19, Nipah virus, and emerging infectious diseases.*
- *National and global public health policy documents.*

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