



Perspective

HMPV Outbreaks in Asia and Strategies to Strengthen Health Security

Gaurav Chanderprakash Mittal¹ , Vijay Kumar Chattu^{2*} , Anil Babu Payedimarri³, Rahul Clare⁴, Prakash Narayanan⁵

¹Center for Evidence-Based Diplomacy, Global Health Research and Innovations Canada Inc. (GHRIC), Toronto, ON Canada

²Department of Public Health, Health Administration and Health Sciences, Tennessee State University, Avon Williams Campus, Nashville, TN 37203, USA

³Division of Public Health, Department of Translational Medicine, University of Eastern Piedmont, 28100, Novara, Italy

⁴Center for Digital Health, Prasanna School of Public Health, Manipal Academy of Higher Education, Manipal, Karnataka, India

⁵Prasanna School of Public Health, Manipal Academy of Higher Education, Manipal, Karnataka, India

***Corresponding Author:** Vijay Kumar Chattu, Email: vchattu@instate.edu

Received: August 16, 2025, Revised: September 23, 2025, Accepted: October 10, 2025, ePublished: December 28, 2025

Introduction

As of January 2025, Human Metapneumovirus (HMPV) has emerged as a resurgent virus in South and Southeast Asia, with a growing trend in cases throughout the region. In China, HMPV was the cause of more than 6% of respiratory illness-related hospitalizations in late 2024, raising critical public health issues among its neighbors.¹ Malaysia also saw a 45% year-on-year rise in HMPV cases, marking a steady trend towards becoming a regional health concern.² Meanwhile, there were reported cases in India during early 2025 and surmised cases of cross-border transmission.³

South and Southeast Asia is already burdened by increased HMPV activity together with densely populated areas, sparse healthcare infrastructure in some locations, and overlap with other respiratory infections during the season that includes influenza and RSV, as this further places a heavy burden on healthcare systems and underlines the urgency of coordinated regional action.⁴ Besides the past epidemics such as Ebola, Zika and the recent COVID-19 pandemic has highlighted how the infections can cross borders in this globalized world threatening health security. The present situation is an important clarion call for South and Southeast Asia to embrace health diplomacy and follow shared strategies to mitigate the effects of HMPV and other similar respiratory threats.

Lessons from Past Epidemics and Pandemics: Strengthening Regional Resilience

The persistent threat of HMPV in South and Southeast Asia calls for all the lessons and experiences of previous epidemics and pandemics to set up more resolute regional health systems. The recent Ebola outbreak, SARS, and

most recently COVID-19 have exposed deficiencies in systems preparedness, response capacity, and service delivery gaps that are pertinent to addressing HMPV.

Building resilient healthcare systems is one of the biggest lessons from the COVID-19 pandemic. In South Asia, countries, including India, faced catastrophic shortages of hospital beds, oxygen, and critical medicines, which resulted in unnecessary loss of life during the pandemic. In response, India and its neighboring countries have expanded the health infrastructure greatly. Decentralized oxygen generation plants were established in hospitals to prepare for the next respiratory crisis.⁵ Similarly, measures must be taken for HMPV surges, especially during the peak seasons. Investments in infrastructure, including pediatric respiratory care units and diagnostics, are particularly essential since children under five years and the elderly are most affected by this virus.

The other important lessons learned are timely surveillance and real-time data sharing. The Ebola crisis in West Africa has shown how delayed recognition of outbreaks and the failure to share critical data, along with other major factors, have resulted in the uncontrolled spread of the disease.⁶ Similarly, in COVID-19, efforts such as GISAID- a genomic data-sharing platform, have allowed countries to track the mutation of the virus and respond appropriately. South and Southeast Asia could use similar regional data-sharing platforms to monitor respiratory viruses such as HMPV. The collaboration between national health ministries and the WHO would be essential in ensuring accurate real-time data collection, which would help in targeted public health measures.

Community engagement also became a hallmark of effective epidemic responses. In the Ebola outbreak, local communities played a crucial role in controlling the virus



© 2025 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

through public education campaigns and grassroots participation in contact tracing. For HMPV, community engagement to promote preventive measures such as hygiene practices and early care-seeking behaviors can significantly reduce disease burden. Another lesson from COVID-19 is combating misinformation, which has been well-proven to derail vaccine uptake and adherence to guidelines put in place by public health.⁷

These lessons (Table 1) will be an important guide to managing the region's HMPV and other emerging health threats. Building healthier healthcare systems, prioritizing timely surveillance, and fostering trust through community engagement all contribute to enhanced resilience in the face of current and future respiratory crises.

International Cooperation and Health Diplomacy: A Regional Imperative

Multilateral initiatives such as the Association of Southeast Asian Nations (ASEAN) Health Sector and the South Asian Association for Regional Cooperation (SAARC) may be crucial in developing region-specific protocols for surveillance, outbreak management, and vaccine distribution of HMPV. The ASEAN organization effectively coordinated responses towards diseases such as dengue and avian influenza, revealing common expertise and collective action.⁸ Besides, using such platforms for HMPV would provide equal diagnostic and public health resources among countries in the region, especially those with limited income.

Health diplomacy is also a key tool for securing commitments from global institutions. Partnerships with entities like the World Bank and the Coalition for Epidemic Preparedness Innovations (CEPI) can help secure funding for research on HMPV and vaccine development. The region's reliance on such partnerships during the COVID-19 era set precedence in the form of coordinated action toward emerging health challenges. However, trust-building and open communication among nations are critical in fostering effective cooperation.

International cooperation in addressing HMPV has to address the problem of misinformation and disinformation. In the COVID-19 pandemic, misinformation and anxiety over immunization obstructions created obstacles for health operations. A

harmonious approach to communication that WHO and regional partnerships can drive forward ensures the timely release of accurate information to build public confidence in health measures.

Timely Surveillance and Reporting: A Cornerstone of Preparedness

Accurate and timely surveillance forms the backbone of managing outbreaks such as Human Metapneumovirus. In South and Southeast Asia, many countries face limited healthcare infrastructure; thus, effective surveillance and reporting systems play a crucial role in controlling the spread of the virus and minimizing its impact.

Among the important lessons gleaned from the recent pandemic is the importance of integrating surveillance systems into current healthcare structures. For instance, the GISRS has proven pivotal in the surveillance of trends in influenza. According to the WHO, such a model of the HMPV could easily give real-time information on the spread of HMPV throughout the region.⁹ Leveraging such systems will ensure rapid identification of outbreaks, the forecasting of peaks at the start of seasons, and targeted interventions.

It will be the country-level health ministries that are required to take a proactive role in reporting cases of HMPV to international organizations such as WHO. Late reporting, as happened during previous outbreaks, hampers the international efforts to respond to the outbreak and worsens the local crisis. Digital tools and artificial intelligence (AI) could make surveillance much easier and enable health authorities to track cases better and accurately predict outbreaks. For example, India's Integrated Health Information Platform (IHIP) provides a model for real-time disease reporting that could be scaled across South and Southeast Asian countries.¹⁰

In addition, collaboration between health ministries and non-governmental organizations can increase the coverage and credibility of surveillance programs. Community-based reporting mechanisms used during the Zika virus outbreak in Southeast Asia can serve as an early warning system for localized HMPV. Countries must be transparent to succeed. Timelines of political and economic considerations for withholding information on outbreaks breed non-cooperation and distrust in global responses. It is time to establish transparent and

Table 1. Key Lessons from Past Epidemics and Their Application to HMPV

Lesson	Examples from Past Epidemics	Application to HMPV
Building Resilient Healthcare Systems	During COVID-19, India's decentralized oxygen generation plants addressed critical shortages.	Expand pediatric respiratory units and scalable treatment facilities for HMPV surges.
Timely Surveillance and Data Sharing	GISAID platform enabled global tracking of COVID-19 mutations.	Develop a similar platform for real-time HMPV data sharing in South and Southeast Asia.
Community Engagement	Ebola outbreaks were managed through public education and community involvement.	Conduct grassroots campaigns to promote early care-seeking and hygiene practices for respiratory viruses.
Transparency and Trust-Building	The SARS outbreak highlighted the consequences of delayed reporting, leading to improved transparency measures globally.	To build global trust, the accurate and timely reporting of HMPV cases to WHO and regional bodies must be ensured.

standardized reporting to the WHO and other multilateral health bodies that enhance global response capabilities and regional preparedness against HMPV and similar threats.

Conclusion

The rise of HMPV in South and Southeast Asia underscores the need for a unified, proactive approach to health security. Experience from past epidemics provide clear strategies for addressing HMPV through strengthened resilient healthcare systems, timely surveillance, and international cooperation. By applying these insights and fostering collaboration for strengthening health security, the region can build resilience against HMPV and future respiratory challenges, ensuring better health outcomes for all.

Acknowledgements

The researchers thank “Global Health Research and Innovations Canada Inc. (GHRIC)” for providing administrative and coordination support for this project.

Authors' Contribution

Conceptualization: Gaurav Chanderprakash Mittal, Vijay Kumar Chattu.

Investigation: Vijay Kumar Chattu, Gaurav Chanderprakash Mittal.

Methodology: Vijay Kumar Chattu, Gaurav Chanderprakash Mittal.

Project administration: Vijay Kumar Chattu.

Resources: Vijay Kumar Chattu.

Supervision: Vijay Kumar Chattu.

Writing-original draft: Gaurav Chanderprakash Mittal, Vijay Kumar Chattu.

Writing-review & editing: Vijay Kumar Chattu, Anil Babu Payedimari, Rahul Clare, Prakash Narayanan.

Competing Interests

The authors declare no competing interests in this work.

Ethical Approval

Not applicable.

Funding

This research received no external funding.

References

1. Willmoth H. HMPV: China's New Virus Outbreak Explained [Internet]. Newsweek; 2025. Available from: <https://www.newsweek.com/human-metapneumovirus-hmpv-china-outbreak-explainer-2009126>. Accessed January 7, 2025.
2. The Economic Times. HMPV Cases Surge in Malaysia Following China Outbreak; Government Issues Advisory [Internet]. Available from: <https://economictimes.indiatimes.com/news/international/global-trends/hmpv-cases-now-rising-in-malaysia-after-china-govt-issues-advisory/articleshow/116968693.cms>. Accessed January 7, 2025.
3. Times of India. HMPV in India, New Cases Identified: All About Symptoms, Treatment and How to Remain Safe [Internet]. Available from: <https://timesofindia.indiatimes.com/life-style/health-fitness/health-news/hmpv-in-india-first-case-detected-in-8-month-old-baby/articleshow/116981878.cms>. Accessed January 7, 2025.
4. Waghmode R, Jadhav S, Nema V. The burden of respiratory viruses and their prevalence in different geographical regions of India: 1970-2020. Front Microbiol. 2021;12:723850. doi: [10.3389/fmicb.2021.723850](https://doi.org/10.3389/fmicb.2021.723850).
5. India Science, Technology and Innovation Portal. Capacity Enhancement of Medical Oxygen [Internet]. Available from: <https://www.indiascienceandtechnology.gov.in/listingpage/capacity-enhancement-medical-oxygen>. Accessed January 7, 2025.
6. World Health Organization (WHO). Factors That Contributed to Undetected Spread [Internet]. Available from: <https://www.who.int/news-room/spotlight/one-year-into-the-ebola-epidemic/factors-that-contributed-to-undetected-spread-of-the-ebola-virus-and-impeded-rapid-containment>. Accessed January 7, 2025.
7. World Health Organization (WHO). Fighting Misinformation in the Time of COVID-19, One Click at a Time [Internet]. Available from: <https://www.who.int/news-room/feature-stories/detail/fighting-misinformation-in-the-time-of-covid-19-one-click-at-a-time>. Accessed January 7, 2025.
8. ASEAN Main Portal. Health [Internet]. Available from: <https://asean.org/our-communities/asean-socio-cultural-community/health/>. Accessed January 7, 2025.
9. World Health Organization (WHO). Global Influenza Surveillance and Response System (GISRS) [Internet]. Available from: <https://www.who.int/initiatives/global-influenza-surveillance-and-response-system>. Accessed January 7, 2025.
10. Integrated Health Information Platform (IHIP). IHIP-Integrated Health Information Platform [Internet]. Available from: <https://ihip.mohfw.gov.in/idsp/#/home>. Accessed January 7, 2025.