



Letter to Editor

## A sudden rise in human metapneumovirus cases: Implication for diagnosis and treatment

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Dear Editor,

An increase in human metapneumovirus (HMPV) surge has now been seen nowhere. HMPV is an enveloped, negative-stranded respiratory pathogen belonging to the family *Pneumoviridae*.<sup>[1]</sup> HMPV has a genome size of approximately 13 Kb and consists of nine structural proteins.<sup>[2]</sup> HMPV was first discovered by the group of Van Den Hoogen *et al.* from the Netherlands during their long-term epidemiological study, where they examined samples of 28 children with respiratory tract illness.<sup>[3]</sup> HMPV causes both upper respiratory and lower respiratory tract infections (URTI and LRTI). HMPV primarily causes LRTI, that includes symptoms such as cough, dyspnea, wheezing, and fever, whereas URTI-associated symptoms are sore throat, cough, and runny nose.<sup>[4]</sup> Immunocompromised and elderly populations are known to be affected by HMPV; however, HMPV primarily affects children. HMPV spreads and causes infection in a similar way as the other paramyxoviruses such as parainfluenza and respiratory syncytial virus.<sup>[5]</sup>

The current situation of HMPV has attracted attention due to an increase in acute respiratory infections coming from the northern hemisphere. According to China's most recent report, seasonal influenza, rhinovirus, and HMPV cases have increased up to 29 December 2024 (<https://www.who.int/emergencies/disease-outbreak-news/item/2025-DON550>). According to electronic data from Truveta, there have been increasing cases of hospitalization in the United States by 58% from October 1 2019 to November 2024 whereas the highest number of cases of hospitalization were recorded for influenza (+271.7%), followed by Respiratory Syncytial Virus (RSV) (+217.4%) and +172.7% of HMPV (<https://www.truveta.com/blog/research/respiratory-virus-november-2024>).

HMPV has exhibited widespread prevalence on a global scale and consistently imposes a considerable medical burden upon local populations, primarily due to the absence of licensed vaccines or antiviral pharmacological agents for the treatment or prevention of HMPV infections.<sup>[6]</sup> The prompt identification of HMPV infections is critical in facilitating the development of effective strategies to combat the disease, including measures aimed at curtailing outbreaks and ensuring timely medical care for affected individuals. Consequently, a diverse array of molecular diagnostic techniques, aimed at detecting viral nucleic acids, has been developed for the molecular identification of HMPV, which predominantly encompasses the reverse transcription polymerase chain reaction (RT-PCR), real-time quantitative reverse transcription polymerase chain reaction (RT-qPCR), and reverse transcription loop-mediated isothermal amplification. Typically, genomic regions characterized by significant sequence

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homology to HMPV, specifically the F and N genes, are utilized as molecular markers in the formulation of RT-PCR methodologies, with these targeted regions also being applicable for genotypic analysis.<sup>[7]</sup> In general, RT-qPCR methodologies exhibit enhanced sensitivity and a reduced risk of contamination when contrasted with conventional RT-PCR techniques, thus establishing RT-qPCR as the gold standard in diagnostic practices.<sup>[8]</sup>

Ribavirin, categorized as an antiviral agent, has been employed in conjunction with intravenous immunoglobulin for the management of severe instances of HMPV pneumonia in immunocompromised individuals, demonstrating favorable outcomes in select cases.<sup>[9]</sup> Initiatives aimed at drug repurposing have also recognized numerous compounds exhibiting inhibitory properties against HMPV, including mycophenolic acid, which has demonstrated substantial potential owing to its capacity to obstruct viral replication at concentrations attainable in human subjects.<sup>[10]</sup>

Given the current situation, HMPV can be controlled and preventable as the recent COVID-19 pandemic has increased the degree of preparedness. The majority of the laboratories are now equipped with advanced diagnostic facilities that are capable of detecting various respiratory viruses. Moreover, hospitals are now accelerated with bed capacities and can accommodate a surge in patients during any future pandemics. Furthermore, the robust surveillance system has improved early detection, tracking, and outbreak management, indicating the capability to control the transmission of HMPV effectively.

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## REFERENCES

1. Amarasinghe GK, Aréchiga Ceballos NG, Banyard AC, Basler CF, Bavari S, Bennett AJ, *et al.* Taxonomy of the order *Mononegavirales*: Update 2018. *Arch Virol* 2018;163:2283-94.
2. Van Den Hoogen BG, Bestebroer TM, Osterhaus AD, Fouchier RA. Analysis of the genomic sequence of a human metapneumovirus. *Virology* 2002;295:119-32.
3. Van Den Hoogen BG, De Jong JC, Groen J, Kuiken T, De Groot R, Fouchier RA, *et al.* A newly discovered human *Pneumovirus* isolated from young children with respiratory tract disease. *Nat Med* 2001;7:719-24.
4. Uddin S, Thomas M. Human metapneumovirus; 2023. Available from: <https://www.ncbi.nlm.nih.gov/books/nbk560910> [Last accessed on 2025 Jan 10].
5. Simon A, Manoha C, Müller A, Schildgen O. Human metapneumovirus and its role in childhood respiratory infections. *Curr Pediatr Rep* 2014;2:156-65.
6. Ma S, Zhu F, Xu Y, Wen H, Rao M, Zhang P, *et al.* Development of a novel multi-epitope mRNA vaccine candidate to combat HMPV virus. *Hum Vaccin Immunother* 2024;19:2293300.
7. Wang C, Wei T, Ma F, Wang H, Guo J, Chen A, *et al.* Epidemiology and genotypic diversity of human metapneumovirus in paediatric patients with acute respiratory infection in Beijing, China. *Virol J* 2021;18:40.
8. Garbuglia AR, Lapa D, Paucillo S, Raoul H, Pannetier D. Nipah virus: An overview of the current status of diagnostics and their role in preparedness in endemic countries. *Viruses* 2023;15:2062.
9. Shachor-Meyouhas Y, Ben-Barak A, Kassis I. Treatment with oral ribavirin and IVIG of severe human metapneumovirus pneumonia (HMPV) in immune compromised child. *Pediatr Blood Cancer* 2011;57:350-1.
10. Van Den Bergh A, Guillon P, Von Itzstein M, Bailly B, Dirr L. Drug repurposing for therapeutic discovery against human metapneumovirus infection. *Antimicrob Agents Chemother* 2022;66:e0100822.

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