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## Review



### A brief overview of Chandipura virus

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	<b>Abstract</b>
Published on: 12 Mar 2025	<p>Chandipura Virus (CHPV), part of the Rhabdoviridae family, causes outbreaks primarily in rural India, affecting children with influenza-like symptoms and neurological issues. Transmitted by vectors like mosquitoes, ticks, and sand flies, CHPV has a negative-senseRNA genome encoding five proteins (N, P, M, G, L). The P protein is crucial for the virallife cycle, while the M protein is highly lethal. Currently, no specific treatment exists, but symptomatic management includes using mannitol to reduce brain edema. A Vero cell- based vaccine candidate has shown promise as a preventive measure. Effective control involves vector management, maintaining nutrition, hygiene, and increasing awareness inrural areas. Until an effective antiviral agent is developed, preventive measures such as public health education and vector containment remain critical in curbing CHPV outbreaks.</p>
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<p>Keywords: Chandipura Virus (CHPV), mannitol, Rhabdoviridae family etc.</p>	

## INTRODUCTIO

For years, virologists overlooked Chandipura virus (CHPV). Scientists at Pune's ViralResearch Center and National Institute of Virology (NIV) repeatedly isolated it from humans, hedgehogs sand flies, and Aedes aegypti mosquitoes. Antibodies detected inhumans and animals suggest CHPV's widespread presence across India (Jacob, 2004).

The Chandipura virus (CHPV) was first discovered in infant mice during specimen inoculation (Bhatt and Rodrigues, 1967). NIV scientists demonstrated CHPV causes fatalencephalitis in mice and infects chick embryos, confirming broad host susceptibility (Raoet al., 2004a; Pawar et al., 2005). These findings suggest CHPV's evolutionary adaptability across diverse invertebrate and vertebrate species. CHPV epidemics typically affect populations from around 15 years of age, yet acute brain disease outbreaks attributed to it remain rare. As a Vesiculovirus, CHPV offers insights into host-virus interactions. Continued research is essential to fully understand itsbiology and impact, given its prevalence across diverse species.



### Transmission

Under laboratory conditions, *Phlebotomus papatasi* efficiently transmits CHPV via growth, venereal, and transovarial routes. Experimental transmission by *P. argentines* has been demonstrated. Naturally, CHPV was isolated from sand flies in Maharashtra, India.

### Epidemiology

Chandipura virus (CHPV), a Rhabdoviridae family virus, causes acute encephalitis with high fatality rates, primarily affecting children in India. Transmitted by sandflies, it presents symptoms like fever, headache, vomiting, and convulsions, often leading to death within 48 hours. The 2024 Gujarat outbreak saw 14 confirmed cases among 70 tested. CHPV lacks human-to-human transmission but may involve animals as reservoirs, though this is unconfirmed. Diagnosis relies on PCR and antibody detection. Favipiravir and ribavirin show antiviral potential, but no treatments or commercial vaccines exist. Improved diagnostics, therapeutics, and vector control measures are critical to manage this poorly understood, highly virulent virus.

### Comprehensive Response to Chandipura Virus Outbreak

To combat the Chandipura virus outbreak, several public health measures are underway. The National Joint Outbreak Response Team (NJORT) is aiding Gujarat with epidemiological investigations and public health interventions. Vector control involves insecticidal spraying and fumigation to curb sandflies. Public awareness campaigns are educating communities and healthcare professionals about CHPV symptoms and prevention. Research by the Gujarat Biotechnology Research Centre (GBRC) aims to identify other encephalitis-causing viruses. The NCDC and NCVBDC have issued advisories for neighboring states. Gujarat has implemented vector control, medical sensitization, and case referrals, while Rajasthan issued precautions and alerts in border districts after a confirmed case.



## Prevention

Preventing Chandipura virus (CHPV) transmission requires vector control and protection against sandfly bites, particularly in areas with poor sanitation. Although no specific treatments or vaccines exist, early supportive care improves outcomes. Strengthening frontline healthcare knowledge of CHPV symptoms and referral protocols is essential for timely detection and care. Enhanced surveillance in high-risk areas, especially among children under 15 with fever and neurological symptoms, is critical. Diagnostic capacities for timely sample testing should be ensured. Community engagement and risk communication are vital for promoting vector control, awareness, and timely healthcare access. WHO advises no travel or trade restrictions at this time.

## Hygiene practices

Washing hands regularly with soap and water, especially after handling animals or being in potentially contaminated environments. Avoidance of wildlife: Minimizing contact with wild animals and their habitats, particularly in coastal areas where the virus is prevalent

## CONCLUSION

CHPV outbreaks, causing encephalitis-like symptoms and high fatality, remain a public health issue in India despite advancements in diagnostics, antivirals, and vaccine development. While potential vaccines and siRNA-based treatments show promise, licensed vaccines and clarity on natural and genetic factors driving outbreaks are needed. Collaborative efforts are essential to prevent recurrence and protect vulnerable populations.

## REFERENCES

1. Mishra AC. Chandipura encephalitis: a newly recognized disease of public health importance in India. In: Scheld WM, Hooper DC, Hughes JM, editors. *Emerging infections*. Washington DC: ASM Press; 2007. pp. 121–37.
2. Depaquit J, Grandadam M, Fouque F, Andry PE, Peyrefitte C. Arthropod-borne viruses transmitted by Phlebotomine sandflies in Europe: a review. *Euro Surveill*. 2010;15:1–8.
3. Menghani S, Chikhale R, Ravale A, Wadibhasme P, Khedekar P. Chandipura virus: An emerging tropical pathogen. *Acta Trop*. 2012;124:1–14. doi: 10.1016/j.actatropica.2012.06.001.
4. Rao BL, Basu A, Wairagkar NS, Gore MM, Arankalle VA, Thakare JP, et al. A large outbreak of acute encephalitis with high fatality rate in children in Andhra Pradesh, India, in 2003, associated with Chandipura virus. *Lancet*. 2004;364:869–74. doi: 10.1016/S0140-6736(04)16982-1.
5. Chadha MS, Arankalle VA, Jadi RS, Joshi MV, Thakare JP, Mahadev PV, et al. An outbreak of Chandipura virus encephalitis in the eastern districts of Gujarat state, India. *Am J Trop Med Hyg*. 2005;73:566–70.
6. Kumar K, Rajasekharan S, Gulati S, Rana J, Gabrani R, Jain CK, et al. Elucidating the interacting domains of chandipura virus nucleocapsid protein. *Adv Virol*. 2013;2013 doi: 10.1155/2013/594319. article ID 594319 (9 pages).
7. Ghosh S, Dutta K, Basu A. Chandipura virus induces neuronal death through Fas-mediated extrinsic apoptotic pathway. *J Virol*. 2013;87:12398–406. doi: 10.1128/JVI.01864-13.
8. Rao PN, Kumar PA, Rao TA, Prasad YA, Rao CJ, Rajyam PL, et al. Role of Chandipura virus in an “epidemic brain attack” in Andhra Pradesh, India. *J Pediatr Neurol*. 2004;2:131–43.
9. Tandale BV, Tikute SS, Arankalle VA, Sathe PS, Joshi MV, Ranadive SN, et al. Chandipura virus: a major cause of acute encephalitis in children in North Telangana, Andhra Pradesh, India. *J Med Virol*. 2008;80:118–24. doi: 10.1002/jmv.21041.
10. Gurav YK, Tandale BV, Jadi RS, Gunjekar RS, Tikute SS, Jamgaonkar AV, et al. Chandipura virus encephalitis outbreak among children in Nagpur division, Maharashtra, 2007. *Indian J Med Res*. 2010;132:395–9
11. Sudeep AB, Bondre VP, Gurav YK, Gokhale MD, Sapkal GN, Mavale MS, et al. Isolation of Chandipura virus (Vesiculovirus: Rhabdoviridae) from *Sergentomyia* species of sandflies from Nagpur, Maharashtra, India. *Indian J Med Res*. 2014;139:769–72.
12. Basak S, Mondal A, Polley S, Mukhopadhyay S, Chattopadhyay D. Reviewing Chandipura: A Vesiculovirus in human epidemics. *Biosci Rep*. 2007;27:275–98. doi: 10.1007/s10540-007-9054-z.
13. Mondal A, Bhattacharya R, Ganguly T, Mukhopadhyay S, Basu A, Basak S, et al. Elucidation of functional domains of Chandipura virus nucleocapsid protein involved in oligomerization and RNA binding: Implication in viral genome encapsidation. *Virology*. 2010;407:33–42. doi: 10.1016/j.virol.2010.07.032.
14. Bhatt PN, Rodrigues FM. Chandipura: A new arbovirus isolated in India from patients with febrile illness. *Indian J Med Res*. 1967;55:1295–305.

15. Rose JK, Whitt MA. Rhabdoviridae: The viruses and their replication. In: Knipe DM, Howley PM, editors. *Field's virology*. 4th ed. Philadelphia: Lippincott Williams & Wilkins; 2001. pp. 1221–44.
16. Dhanda V, Rodrigues FM, Ghosh SN. Isolation of Chandipura virus from Sandflies in Aurangabad. *Indian J Med Res*. 1970;58:179–80.
17. Rodrigues JJ, Singh PB, Dave DS, Prasan R, Ayachit V, Shaikh BH, et al. Isolation of Chandipura virus from the blood in acute encephalopathy syndrome. *Indian J Med Res*. 1983;77:303–7.
18. John TJ. Outbreak of killer brain disease in children: mystery or missed diagnosis? *Indian Pediatr*. 2003;40:863–9.
19. Ba Y, Trouillet J, Thonnon J, Fontenille D. Phlebotomus of Senegal: survey of the fauna in the region of Kedougou. Isolation of arbovirus. *Bull Soc Pathol Exot*. 1999;92:131–5
20. Fontinelle D, Traore-Lamizana M, Trouillet J, Leclerc A, Mondo M, Ba Y, et al. First isolations of arboviruses from Phlebotomine sandflies in West Africa. *Am J Trop Med Hyg*. 1994;50:570–4. doi: 10.4269/ajtmh.1994.50.570.