ASEAN BIODIASPORA VIRTUAL CENTER | DISEASE ALERT

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First alert: 07 August 2024

Second alert: 02 September 2024 | *Chandipura vesiculorus* (CHVP) in India

SUB-LOCATIONS AFFECTED

The states of Gujarat (Sabarkantha), State of Rajasthan

Figure 1. Photo of Phlebotomine sand fly (Diptera: Psychodidae), main vector of Chandipura virus transmission. Source: ECDC, https://www.ecdc.europa.eu/en/disease-vectors/facts/phlebotomine-sand-flies

Event Description

In a recent study on the historic outbreak of the Chandipura virus (CHPV) in India, the Gujarat Biotechnology Research Centre (GBRC) achieved a significant milestone by completing the country's first-ever whole genome sequencing of CHPV. This breakthrough has enabled researchers to compare the virus's genetic material with earlier strains, leading to the identification of mutations that may account for the observed trends in the outbreak. Notably, this outbreak is the largest reported in the past two decades.

Epidemiological Information

- Between early June and August 15, 2024, the Ministry of Health and Family Welfare of the Government of India reported 245 cases of acute encephalitis syndrome (AES), resulting in 82 deaths, reflecting a case fatality rate of 33%. A total of 43 districts across India are currently experiencing AES cases, with incidents occurring sporadically, as seen in previous outbreaks.
- AES is a broad clinical classification that encompasses all acute brain diseases without a specific laboratory-confirmed cause, including encephalitis, encephalopathy, and meningitis, which can stem from viral, bacterial, fungal, or inflammatory sources. The use of AES as a diagnosis indicates that the exact cause of the condition remains unidentified.
- Out of the 245 AES cases reported, Chandipura virus (CHPV) has been confirmed in 64 cases through immunoglobulin M enzyme-linked immunosorbent assay (IgM ELISA) or reverse transcription polymerase chain reaction (RT-PCR). Of these confirmed CHPV cases, 61 were reported in Gujarat State and three in Rajasthan State. Since July 19, 2024, a declining trend in daily new AES cases has been observed.
- Determining the current mortality rate for the CHPV outbreak is challenging due to uncertainties in distinguishing deaths linked to AES from those confirmed to be caused by CHPV. However, health officials have suggested that the mortality rate for CHPV is approximately 46%, which is lower than the 56-76% mortality rate reported in Andhra Pradesh in 2003 and lower than the 50% rate observed at the beginning of the current outbreak in July.

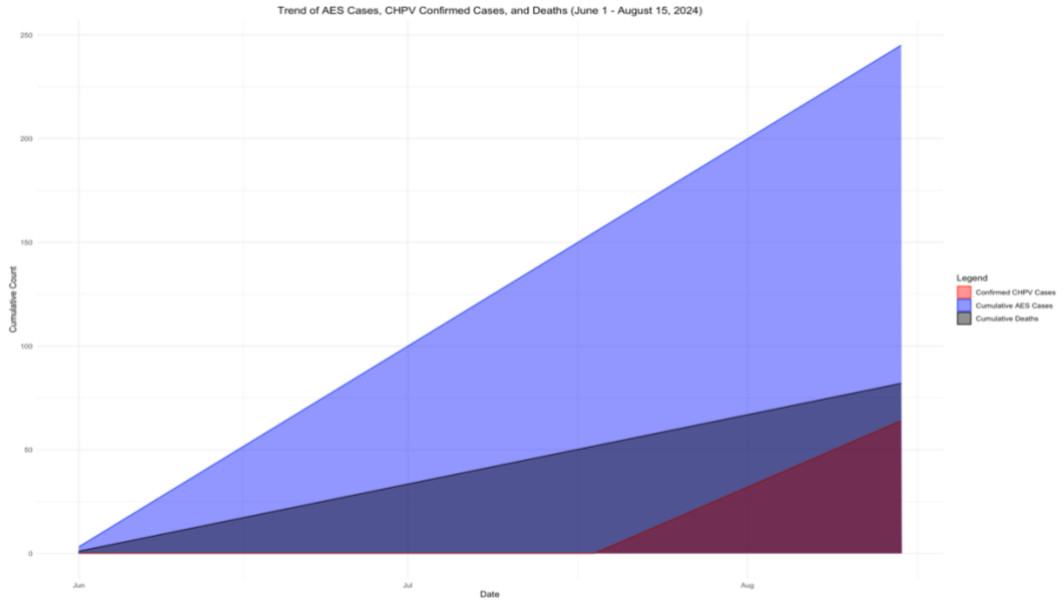

Figure 22. Cumulative cases of Chandipura virus disease in Gujarat, India (1 June – 15 August, 2024). Source: Bluedot Platform

- Although CHPV has not been detected in other countries, a study suggests that the virus may also be present in other parts of Asia and Africa, regions where sandfly vectors are abundant. However, there is currently no evidence of the virus being detected among travelers from India to other countries.

Clinical Diagnosis

CHPV can be identified using cerebrospinal fluid (CSF) and sera through molecular and serologic techniques. Molecular diagnosis employs RT-PCR to detect the virus, while serologic diagnosis uses IgM capture ELISA for anti-CHPV IgM antibodies. The plaque reduction neutralization test (PRNT) is the gold standard for detecting neutralizing antibodies but is time-consuming. A faster alternative is micro-neutralization ELISA (MN ELISA), which detects neutralizing antibodies with shorter turnaround times.

Mutations Findings:

- There is limited information about the mutations found, however, a local media report indicates that experts involved in the project stated that across 293 samples analyzed, 24 missense variants have been identified.
- Of all tested samples, 256 (87%) matched the earlier genetic material from previous outbreaks.
- Missense mutation: A genetic mutation that can alter the function of the protein which could explain the current trends, however, there is still limited information.

Response Measures:

The Ministry of Health and Family Welfare has implemented several key measures in response to the disease outbreak:

- **Deployment of the National Joint Outbreak Response Team (NJORT)**: A specialized team has been sent to support the Gujarat state government in enforcing public health protocols and conducting in-depth epidemiological investigations.
- **Vector control initiatives**: Comprehensive insecticidal spraying and fumigation operations are being carried out to manage the vectors, such as sandflies, that are responsible for transmitting the virus.
- **Health education and awareness campaigns**: Efforts are underway to disseminate crucial information to the public and healthcare providers about the virus, its symptoms, and preventive measures.
- **Research and ongoing monitoring**: The Gujarat Biotechnology Research Centre (GBRC) is actively engaged in research to identify other viruses contributing to encephalitis and is closely monitoring the evolving situation.
- **Advisories and inter-state coordination**: The National Centre for Disease Control (NCDC) and the National Centre for Vector Borne Diseases Control (NCVBDC) have issued joint advisories to guide neighboring states that are reporting cases of acute encephalitis syndrome (AES).

State authorities have also undertaken significant public health responses:

- **Gujarat**: The state has implemented various public health measures, including insecticidal spraying for vector control, community engagement initiatives, training of medical personnel, and timely referral of cases to designated health facilities.
- **Rajasthan**: Following the positive CHPV case in a three-year-old boy in Dungarpur district, the health department has issued detailed advisories to healthcare professionals on necessary precautions. An alert has also been issued in districts bordering Gujarat, including Udaipur, Dungarpur, Banswara, Sirohi, and Jalore.

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