# "India's encephalitis response suffers from slow diagnosis and weak rehabilitation pathways"

15 March 2026 | Views

Encephalitis, a serious inflammation of the brain, often goes unrecognised in its early stages. To improve awareness, Encephalitis International has launched the "Brain in FLAMES" campaign, highlighting six key warning signs of the condition through the acronym FLAMES—Flu-like symptoms, Loss of consciousness, Acute headache, Memory problems, Emotional or behavioural changes, and Seizures. The initiative is part of efforts around World Encephalitis Day, observed every year on February 22. In an interview with BioSpectrum India Dr Netravathi M, Professor of Neurology, In charge Neuroimmunology & Neuroinfections Subspecialty, National Institute of Mental Health & Neurosciences (NIMHANS), Bangalore discusses how India can strengthen early detection, use schools and digital platforms for awareness, and integrate encephalitis prevention into broader public-health strategies and more.
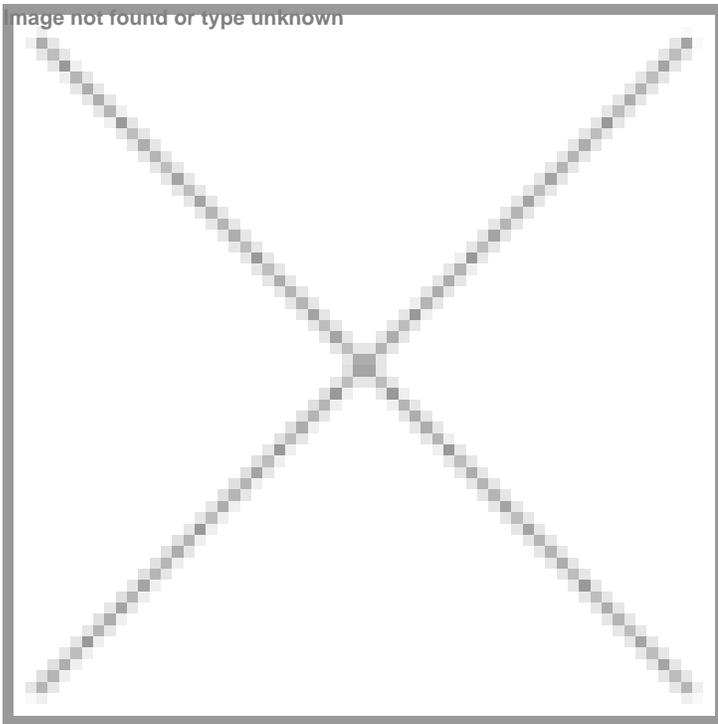
Should the FLAMES warning signs be made mandatory knowledge for frontline health workers?

India would benefit from making the FLAMES warning signs mandatory knowledge for frontline health workers, because FLAMES captures the core early symptoms of encephalitis and directly addresses the country's biggest gap: delayed recognition.

FLAMES (Flu?like symptoms, Loss of consciousness, Acute headache, Memory problems, Emotional/behavioural changes, Seizures) is a simple, high?recall tool designed to help non?specialists recognise encephalitis early. Encephalitis

International notes that these symptoms are the most common across both infectious and autoimmune encephalitis, and that 77 per cent of people have never heard of encephalitis, underscoring the need for structured awareness tools for both the public and health workers.

How can India use schools and digital media to prevent delays in recognising symptoms?

Schools reach children, teachers, and families—groups that are disproportionately affected during AES/encephalitis outbreaks. Global awareness data show that 77–80 per cent of people do not know what encephalitis is, and early symptoms are often mistaken for common viral illnesses. This gap is highlighted in the *Encephalitis International Global Impact Report*, which stresses that lack of symptom recognition is a major driver of preventable deaths and disability.

Leveraging schools provides India with a powerful platform to strengthen encephalitis awareness and early response by integrating simple recognition tools such as FLAMES, training teachers to identify red-flag symptoms and initiate early referrals, and using school assemblies, posters and parent–teacher meetings to reinforce community awareness—particularly in rural and high-burden districts where AES outbreaks recur annually.

WHO's technical guidance on encephalitis also emphasises community-level education and early recognition as essential components of national encephalitis strategies.

India has one of the world's largest mobile-internet user bases, making digital media a powerful channel for rapid dissemination of symptom-recognition messages. The same global report notes that encephalitis campaigns increasingly rely on social media, short videos, and digital storytelling to close awareness gaps.

Digital strategies can play a critical role in reducing diagnostic delays by circulating short multilingual videos on tools like FLAMES through WhatsApp, YouTube and Instagram, running government-led IEC campaigns during monsoon and outbreak seasons, sending push notifications via state health apps such as Karnataka's digital health platforms, and collaborating with local influencers and community health channels to amplify timely awareness.

These approaches directly address the documented problem that delayed recognition remains a major cause of mortality, even as clinical care and vaccination coverage improve. Schools provide structured, repeated exposure to life-saving information. Digital media provides speed, scale, and reach. Together, they can transform early recognition—India's most persistent weakness in encephalitis control.

Can encephalitis prevention be better integrated into India's broader vector-borne disease strategy?

India can and should integrate encephalitis prevention more tightly into its broader vector?borne disease (VBD) strategy, and current national policy documents already provide the foundation for doing so. Encephalitis in India—especially JE and many causes of AES—is deeply linked to vector ecology, environmental conditions, and zoonotic reservoirs, placing it squarely within the mandate of the National Center for Vector Borne Diseases Control (NCVBDC). The Government of India already manages JE/AES under the national VBD programme, alongside malaria, dengue, chikungunya, filariasis, and kala?azar. The government report confirms that JE/AES prevention is implemented through the National Vector Borne Disease Control Programme, which includes vector surveillance, vaccination, IEC/BCC, and outbreak response.

The Operational Guidelines for JE/AES issued by MoHFW outline entomological surveillance, vector control, and intersectoral coordination as core components of AES control—showing that encephalitis is already structurally linked to the VBD framework. However, the broader VBD strategy (e.g., Integrated Vector Management manuals, entomological surveillance compendia) does not yet fully integrate non?JE causes of encephalitis, despite the rise of scrub typhus, dengue, chikungunya, and other pathogens in AES cohorts.

One year after the WHO Technical Brief, what concrete change should India prioritise now?

India's most important next step—one year after the WHO Encephalitis: Global Threats, Trends and Public Health Implications Technical Brief—is to modernise its encephalitis surveillance system so that it can reliably identify causes beyond JE. This priority aligns directly with the WHO brief, which emphasises strengthening diagnostics, surveillance, data systems, and interdisciplinary care pathways as core global actions for countries facing high encephalitis burden.

Can public-private partnerships accelerate faster diagnosis and rehabilitation support?

The evidence shows that India's encephalitis response suffers from slow diagnosis and weak rehabilitation pathways. Public - Private Partnership (PPPs) can bridge both gaps by leveraging private?sector diagnostic speed and rehabilitation expertise, while strengthening public?sector surveillance and continuity of care.

Factors Contributing to Delayed Diagnosis &Treatment

- **Public and patient-level barriers** — limited symptom awareness, cultural and socioeconomic constraints that delay help-seeking, fear and stigma surrounding disease, and out-of-pocket expenses that discourage early consultation.
- **Primary-care limitations** — brief consultation times that lead to missed early warning signs, insufficient training to recognize subtle or early neurological manifestations, and a tendency to treat symptoms rather than investigate underlying causes.
- **Fragmented referral pathways** — inefficient or unclear routes to specialist care that prolong the time to definitive evaluation.
- **Gaps in screening and early detection** — inconsistent, poorly implemented, or absent population-level screening programs.
- **Restricted access to diagnostics** — limited availability of imaging, biomarkers, and genetic testing, particularly in resource-constrained settings.
- **Variability in diagnostic interpretation** — inconsistent quality in reporting, resulting in repeat testing or missed abnormalities.
- **System-level fragmentation** — weak coordination across primary, secondary, and tertiary care, causing patients to be lost within the system.
- **Absence of standardized early-detection pathways** — lack of uniform protocols that guide timely evaluation.
- **Data deficiencies** — absence of integrated registries or mechanisms to track diagnostic delays.
- **Inequitable distribution of services** — rural and low-income populations face disproportionate barriers to timely diagnosis.
- **Limited data systems for monitoring delays and outcomes** — inadequate infrastructure to identify bottlenecks and drive quality improvement.

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