Chikungunya's Return: Kerala's Unfinished Battle

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ABSTRACT

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While the World Health Organization (WHO) issued a global alert regarding chikungunya in July 2025, the most direct recent warnings in Kerala were from the Kerala state health department. In April 2025, the state's health department issued a general alert in response to a medium-intensity chikungunya outbreak in the Reunion Islands, off the coast of Africa. Health officials cited a previous outbreak in Kerala in 2006–2007 that had been an extension of an outbreak in the Reunion Islands.

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*See End Note for complete author details

The WHO's recent warning about Chikungunya has brought back uncomfortable memories for those of us who witnessed Kerala's 2006 outbreak. As someone working in public health, I've been watching the developments in the Indian Ocean with growing concern. The parallels to what happened nearly two decades ago are striking, and somewhat troubling.

WHAT WE LEARNED FROM 2006

Kerala's Chikungunya outbreak in 2006 wasn't just a health crisis; it was a wake-up call. The virus spread like wildfire from coastal areas. Alappuzha and Pathanamthitta were hit particularly hard before the outbreak moved inland and eventually affected much of India. We saw over a million suspected cases nationally, with Kerala bearing a disproportionate burden.[1]

What made this outbreak so devastating wasn't just the immediate illness. Many patients developed chronic joint pain that persisted for months, sometimes years. I remember colleagues describing packed outpatient departments with patients unable to return to work, creating both a health and economic crisis.

The virus responsible belonged to the East-Central-South African strain, carried by our familiar foes: Aedes aegypti and Aedes albopictus mosquitoes. These vectors thrive in Kerala's climate, particularly during monsoon season when water accumulates everywhere, from coconut shells to construction sites.[4]

WHERE WE STAND TODAY

The 2017 ICMR serosurvey provides important insights into our current vulnerability. This large study, which tested over 12,000 people across India, found that roughly 18% of Indians carry antibodies against Chikungunya. However, the regional differences are stark. Southern states like Kerala showed much higher rates at around 43%, reflecting the impact of previous outbreaks.[5]

Here's what concerns me: the survey found that children and young adults have much lower immunity rates. This makes sense epidemiologically since those born after 2006 haven't been exposed to the virus. But it also means we have a growing population of susceptible individuals.

The survey also revealed something epidemiologists call "force of infection," essentially how rapidly the

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virus can spread through a population. The rates they calculated suggest that under the right conditions, transmission could accelerate quickly.

THE CURRENT THREAT

Recent outbreaks in Réunion Island are particularly worrying. Since August 2024, they've reported over 50,000 cases. Genetic analysis of the virus shows it carries mutations that make it more efficient at spreading through mosquito populations. These are the same adaptations that drove the global spread in 2005 and 2006.

What's happening there matters to us because of travel connections and similar ecological conditions. France has already seen imported cases, with some local transmission occurring. For Kerala, with Kochi serving as a major international gateway, the risk is real.

Current surveillance data from Kerala shows scattered cases this year. Around 150 to 200 suspected cases were reported between June and July, mainly in Thiruvananthapuram and Ernakulam districts. While these numbers seem modest, they represent only confirmed cases. Community transmission often goes undetected initially.

WHY KERALA REMAINS VULNERABLE

Several factors maintain Kerala's vulnerability to Chikungunya resurgence:

Climate and Geography: Our tropical climate, abundant rainfall, and water storage practices create ideal breeding conditions for Aedes mosquitoes. Climate change predictions suggest these conditions will intensify.

Population Immunity: While many older adults retain some protection from 2006, younger generations lack immunity. Urban areas showed higher past exposure rates in studies, but rural districts with extensive water storage during monsoons remain equally at risk.

Connectivity: Kerala's position as a travel hub, combined with high population density and mobility, facilitates rapid spread once introduced.

Vector Control Challenges: Maintaining year-round mosquito control across diverse urban and rural settings requires sustained effort and resources.

LEARNING FROM EXPERIENCE

The 2006 outbreak taught us valuable lessons about preparation and response. Early detection systems, rapid diagnostic capabilities, and community-level vector control proved crucial. However, maintaining these systems during inter-epidemic periods remains challenging.[4]

Public health infrastructure improvements since 2006 include better surveillance networks and diagnostic capabilities. The state's Integrated Disease Surveillance Programme has expanded, though resource constraints limit coverage.

Vector control strategies have evolved, but success depends heavily on community participation. Educational campaigns about eliminating breeding sites, using protective measures, and seeking early medical care remain essential.

MOVING FORWARD

Recent global developments demand renewed vigilance. Enhanced surveillance, particularly during monsoon months, could provide early warning of local transmission. Rapid diagnostic testing, while more available than in 2006, needs broader deployment.

Community engagement remains our strongest tool. Simple measures like eliminating stagnant water, using repellents, and wearing protective clothing can significantly reduce transmission risk. These interventions proved effective during previous outbreaks when consistently implemented.

While new vaccines show promise in clinical trials, they're not yet available for routine use. Prevention through vector control and personal protection remains our primary defense.

THE PATH AHEAD

Chikungunya's return to Kerala isn't inevitable, but neither can we ignore the warning signs. The combination of waning population immunity, favorable ecological conditions, and global circulation of adapted viral strains creates concerning parallels to 2006.

Our response must be proactive rather than reactive. This means strengthening surveillance systems, maintaining vector control programs year-round, and keeping communities informed and engaged. Most importantly, it requires sustained commitment from health authorities, even when case numbers are low.

The 2006 outbreak reminded us that emerging infectious diseases don't respect borders or seasons. As we face this renewed threat, our experience provides both sobering lessons and practical guidance. The question isn't whether Chikungunya will return to Kerala, but whether we'll be ready when it does.

END NOTE

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