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Letter to the Editor

Rising incidence of chikungunya in Pakistan: surveillance gaps, diagnostic limitations, and the need for integrated vector control

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Extract

Chikungunya virus disease (CHIKVD) is a re-evolving public health threat worldwide, including in Pakistan, since 2024 new cases of infection have been reported in the country, with spikes in infection observed in Karachi. Technically limited as well as decentralized diagnostic capacity and clinical overlap of infection with dengue contribute to underdiagnosis and delayed treatment among patients. The reappearance of the infection highlights structural gaps in the surveillance integration, laboratory infrastructure, and vector control strategies of Pakistan. Strengthening provincial diagnostic facilities, enhancing routine arboviral surveillance, integrating CHIKVD into national vector-borne disease programs, and promoting coordinated community-based mosquito control are essential for preventing endemic diseases nationwide. Without timely and effective system-level interventions, CHIKVD may accelerate from sporadic outbreaks to sustained urban transmission, posing recurrent strain on Pakistan's healthcare system.

Keywords

Chikungunya virus; Arboviral diseases; Aedes mosquitoes; Vector-borne diseases; Urban health; Surveillance systems; Molecular diagnostics

Dear Editor,

Chikungunya virus disease (CHIKVD) is a rising threat, making it increasingly important for public health to strengthen surveillance, diagnostic capacity, prevention, and control measures in Pakistan. Although dengue has historically been the main national public health concern, the recent upsurge in CHIKV has necessitated an immediate and coordinated response, as 30,000 cases were reported in a previous outbreak [1]. Furthermore, mutations of the virus, including E1-A226V and E2 L210Q, have resulted in rapid adaptability to CHIKVD and are a serious threat to 110 countries around the world, including Pakistan, with 5706 cases in the year 2024 [2]. The World Health Organization (WHO) has also issued warnings of outbreaks across Asia, the Americas, and Africa [3].

CHIKV was first detected in humans in 1952 through serological evidence [4,5]. In Pakistan, a massive outbreak of the infection between December 2016 and May 2017 accounted for more than 2,500 laboratory-confirmed cases across Sindh and Khyber Pakhtunkhwa (KP) provinces [6]. Furthermore, since May 2024, the infection has resurged in Karachi and surrounding districts of the city, with 500 to 700 suspected cases reported every day from major government hospitals, and 172 PCR-confirmed cases were observed between May and September 2024 [7,8]. Pakistan is among Asian countries with

increased cases of chikungunya in the year 2025 according to the European Centre for Disease Prevention and Control [9].

Several local factors have contributed to the spread of CHIKV, such as the infection of Aedes aegypti and Aedes albopictus mosquitoes, especially in coastal and urban areas such as Karachi, providing optimal conditions for transmission [10]. Unplanned urbanization, poor drainage systems, and inadequate waste management have increased the number of mosquito breeding grounds. The transmission of the infection usually spikes after the monsoon season, when vector populations rise under optimal conditions for breeding and growth, increasing the burden on the healthcare system [11].

Another important challenge faced in the management of the infection is the limited diagnostic infrastructure for CHIKV in Pakistan. The National Institute of Health (NIH) in Islamabad serves as the central reference center for all sporadic diseases. However, most provincial and district laboratories lack PCR testing facilities, causing delays in diagnosis and incomplete surveillance of the infection in the respective areas [9]. In the year 2017, in Rawalpindi, only 28 positive CHIKV cases were identified from 129 collected samples because of insufficient testing capacity. Although the introduction of multiplex real-time PCR assays (Trioplex) has increased testing ability, still access remains limited to tertiary centers [12]. As a result, clinicians often rely on presumptive diagnoses, increasing the risk of misreporting and delayed interventions [6].

CHIKV infection leads to considerable morbidity, with symptoms such as fever, rash, and prolonged joint pain that can persist for months, reducing individual productivity and causing economic strain [5]. Moreover, coinfections with dengue and other arboviruses are becoming more common, complicating clinical management and placing further stress on the healthcare system—especially during the monsoon season [13].

To address this escalating healthcare crisis, important measures are urgently recommended, including building regional CHIKV diagnosis capabilities in all provincial laboratories to ensure timely case detection; implementing routine arboviral surveillance and mosquito density mapping at the community level; strengthening Aedes mosquito control through sanitation, source reduction, and targeted insecticide use; launching public awareness initiatives promoting personal protection and mosquito control practices; training healthcare workers in differentiating and managing CHIKV and dengue cases; integrating CHIKV monitoring into the National Vector-Borne Disease Control Programme for better coordination; and initiating genomic surveillance to track circulating CHIKV strains [14].

In principle, the current chikungunya situation in Pakistan has emerged as a serious public health emergency that may transcend a national epidemic if not taken care of properly by the authorities. Improvements in laboratory diagnostic services, enhanced surveillance, effective vector control measures, and community and clinical awareness are necessary steps to curtail the spread and reduce the burden of disease. Prompt attention is urged to this healthcare situation for timely action by policymakers, clinicians, and public health authorities.

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