Bangladesh Journal of Medicine (BJM)
ISSN : 1023 - 1986
eISSN : 2408 - 8366

EDITORIAL

CHIKUNGUNYA RESURGENCE AFTER 8 YEARS IN BANGLADESH: NEW DIMENSION AND NEW THREAT OF RECENT OUTBREAK

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Chikungunya is caused by an *alphavirus* belonging to the *Togaviridae* family.[1] It is transmitted by Aedes mosquitoes. The name is derived from a South Tanzanian language meaning "that which bends," describing the contorted posture of a chikungunya patient with joint pain.[2]

The first case of chikungunya was identified in Tanzania in 1952. In Africa, the virus is maintained in a sylvatic cycle between non-human primates (bats or monkeys) and Aedes mosquitoes. However, during epidemics the virus can be transmitted to humans without the need for an animal reservoir. The virus caused sporadic outbreaks in several parts of Africa. The first reported outbreak in Asia was in the Philippines in 1954. During the 1970s, localized outbreaks occurred in Thailand, Vietnam, Cambodia, Laos, Burma, Sri Lanka, Pakistan, and India. After 2000, major outbreaks were seen in several parts of the world. Epidemics were described in the Democratic Republic of Congo, Indonesia, the Comoros Islands, and Reunion. The virus reemerged in India in 2005-2006 after a hiatus of 32 years, affecting around 1.3 million people in over 13 districts.[3] Since August 2024, chikungunya virus transmission has been widespread, with over 47,500 cases being reported and 12 deaths as of May 2025 in Reunion, France.[4] The most recent outbreak was observed in Foshan City of Guangdong Province in China, with over 7000 new cases being detected in the past month.[5]

The first cases of chikungunya in Bangladesh were detected in 2008 in Rajshahi and Chapai Nawabganj. Subsequently, another minor outbreak occurred in 2011 at Dohar, Dhaka. In 2017, the largest outbreak of Chikungunya occurred in Bangladesh, resulting in 13,176 clinically confirmed cases in over 17 districts. Since the last outbreak, chikungunya infection has been relatively absent, with few sporadic cases being reported. Few cases were detected in late 2024.[6] A recent report by the Institute of Epidemiology, Disease Control and Research (IEDCR) confirmed 337 cases of chikungunya between January and May 2025, out of which 153 cases were PCR positive. This report admitted that the burden of the disease has been underestimated and warned that a large-scale outbreak may be imminent.[7]

Analysis of 2,467 multiplex PCR samples over two months from one laboratory revealed 1,456 (59.0%) chikungunya positives, while only 149 of 1,420 (10.5%) serology tests (IgM/IgG) were positive. The high PCR positivity highlights that clinicians are largely accurate in suspecting chikungunya early and selecting the appropriate diagnostic modality. In contrast, the low yield of serology reflects frequent false negatives arising from premature testing. This emphasizes the critical need for greater awareness of diagnostic timing, with serology performed only after at least seven days of illness to ensure reliability. However, in reality hospital admission is less than 5% of the total affected population in the country. Due to very low mortality and high morbidity, patients are not even admitting to the hospital until the pain is severe or there is a complication. Almost 90% of the patients are being treated at home, and this is not being documented in the national health registry. The Directorate General Health Services (DGHS) has a dengue dashboard but

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Date of submission: 23.08.2025 *Date of acceptance: 25.08.2025*
DOI: https://doi.org/10.3329/bjm.v36i3.84069

Citation: Islam QT, Mahiyuddin N. Chikungunya Resurgence after 8 Years in Bangladesh: New Dimension and New Threat of Recent Outbreak. *Bangladesh J Medicine 2025; 36(3): 80-82.*

does not show any updates regarding chikungunya. There is no active surveillance of chikungunya in Bangladesh in recent years. This is of great concern, as the enormous burden of this disease on society is high. The impact and burden of chikungunya is much deeper and higher than expected and previous outbreaks. The disability of people is not being considered by the DALY score, which is a measure of healthy life lost in a population.

Clinical presentation of chikungunya can be divided into 3 stages—acute phase (< 3 weeks), sub-acute phase (3 weeks to 3 months), and chronic phase (> 3 months).[8] Symptoms of chikungunya infection are fever, rash, headache, myalgia, arthralgia, and back pain.[9] However, most of these features overlap with another common endemic infection in Bangladesh, known as dengue fever. Therefore, it is imperative for a clinician to be able to differentiate between these two infectious diseases. Arthralgia and arthritis are more commonly seen in chikungunya. In contrast, myalgia, hemorrhagic manifestations, and shock are frequently seen in dengue infection.[10]

Accurate diagnosis of arboviral infections remains a major challenge in Bangladesh. Multiplex PCR within the first week of illness offers definitive detection of chikungunya, dengue, or Zika, yet its high cost and limited availability to tertiary centers render it inaccessible for most patients. The more affordable ELISA, detecting chikungunya antibodies, is useful only after seven days of symptom onset and is confounded by cross-reactivity with dengue, often leading to false positives. Dengue can be differentiated by NS1 antigen testing in the early febrile phase—the first 3-5 days of symptom onset[11]—but no comparable antigen assay exists for chikungunya in Bangladesh. Clinically, features such as leucopenia, rising hematocrit, and thrombocytopenia are characteristic of dengue[10], while a biochemical profile showing AST levels greater than ALT provides an additional clue.[12] These diagnostic gaps highlight the urgent need for affordable, widely accessible, and disease-specific testing strategies to support timely surveillance and patient care.

During the current outbreak, patients with chikungunya have presented with some atypical features like a brownie nose, pneumonitis, and coinfection with human coronavirus NL63. Other uncommon features or complications seen are myocarditis, Guillain-Barré syndrome, meningo-encephalitis, acute hepatitis, kidney failure, and hemorrhage.[13]

The treatment is usually supportive. Rest, hydration, paracetamol, and, if needed, weak opioids can be used in the acute phase of the disease. If nonsteroidal anti-inflammatory drugs (NSAIDs) cannot control pain, then steroids may be prescribed in the subacute phase. During the chronic phase of the condition, disease-modifying antirheumatic drugs (DMARDs) may be needed.[8]

Live attenuated virus vaccine, IXCHIQ, and recombinant virus vaccine, VIMKUNYA, are available abroad. They are indicated for use when a person is travelling to a chikungunya-endemic or high-risk area. The live attenuated vaccine is contraindicated in pregnancy and older people (age >65 years).[14]

Halting chikungunya outbreaks requires a coordinated response from government, communities, and individuals to curb the spread of Aedes mosquitoes. At the household level, simple measures such as eliminating stagnant water, covering storage containers, and maintaining a clean environment are essential first steps. Larvicides and insecticides remain important tools for reducing adult mosquito density, while personal protection through repellents, mosquito nets, screened windows and doors, and full-cover clothing can limit exposure. Beyond these conventional strategies, innovative approaches—including the release of larvivorous fish like *Gambusia*, the introduction of *Toxorhynchitessplendens* mosquitoes that prey on larvae, and the deployment of *Wolbachia* bacteria to reduce viral transmission capacity—offer promising adjuncts. [15] Yet, without sustained political commitment, proper surveillance, and accountability, these measures risk remaining fragmented and reactive, allowing outbreaks to recur with devastating regularity.

Despite alarming positivity rates—71% in Chattogram and over 82% in Dhaka's fever cases during June—chikungunya remained excluded from routine disease reporting platforms, unlike dengue and COVID-19. [16]The Institute of Epidemiology, Disease Control and Research (IEDCR) reported rising case counts up to May 2025 but flagged the absence of a formal nationwide surveillance mechanism, limited diagnostic capacity, and the likelihood of significant underreporting.[17,18] Chikungunya virus infection, though rarely fatal, invariably leaves patients with prolonged arthralgia and disability, resulting in a substantial public health burden. Despite this, surveillance and reporting systems in Bangladesh remain inadequate, with little prioritization by the Directorate General of Health Services (DGHS), the Institute of Epidemiology, Disease Control and

Research (IEDCR), or even broader agencies like the CDC. Strengthening surveillance is crucial not only to quantify the true disease burden but also to guide timely outbreak response, allocate resources effectively, and implement preventive strategies. Without systematic monitoring, chikungunya continues to be underestimated, leaving patients to suffer silently and the health system unprepared for future epidemics.

Keywords: Chikungunya Resurgence, New Dimension, New Threat, Recent Outbreak

Acknowledgement:
Mr. Asadur Rahman, Laboratory Manager, Popular Diagnostic Centre Limited, Dhaka, Bangladesh

Abbreviations: ALT: Alanine aminotransferase, AST: Aspartate aminotransferase, ELISA: Enzyme-Linked Immunosorbent Assay, PCR: Polymerase Chain Reaction

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