

Chikungunya Virus: A Threat to Public Health

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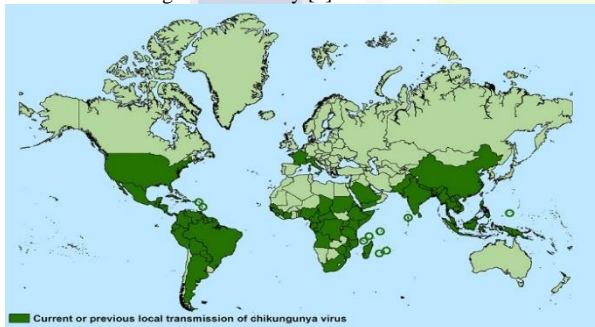
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ABSTRACT

Chikungunya is viral disease found across the world. It is spread by mosquitoes. Multiple mosquito repellants can be used to prevent the chikungunya virus but still no treatment has been discovered. We need to develop diagnostic facilities to stop the infections like chikungunya.

The term Chikungunya is derived from Makonde language word “kungunyala” (Makonde language is spoken in parts of Tanzania and Mozambique, Africa), which means “to become distorted” [1]. It refers to the patients of Chikungunya who have curved postures because of strong joint pains [2]. Chikungunya Infection is generally known as Chikungunya Fever which is caused by a Chikungunya Virus belonging to the family *Togaviridae* (Genus: *Alpha Virus*). It is primarily an arbovirus (virus carried by an arthropod) that is spread by mosquitoes (Powers and Logue 2007). Due to similar symptoms and transmission methods, it was for a long time thought to be a member of the dengue virus family [3].



In Tanzania, this virus was discovered for the first time in 1952 [4]. The first outbreak of the virus was reported in the Philippines in 1954 in Asia. Then, sporadic cases began to show up throughout Africa and Asia during the following years [5]. In Kenya, this virus emerged again in 2004, and it quickly spread to other African and Indian Ocean nations [6]. As a result, there have been millions of cases of illness, and all continents with the exception of Antarctica have recorded occurrences of Chikungunya. The 97 outbreak reports from 45



Chikungunya fever symptoms. A and B: Rash characterized by raised, spotted lesions, C: Joint pain with the presence of swelling

countries that make up the epidemiology of chikungunya from 1999 to 2022 indicate the disease's status as a growing global public health issue [6]. Chikungunya fever is considered a critical public health issue due to its high level of morbidity, which can possibly progress to a chronic form [7]. Due to the loss of productivity, it does not only have negative impacts on public health but also on the economy. It is now considered a real threat to areas colonized by *Aedes* spp. of mosquitoes [8].

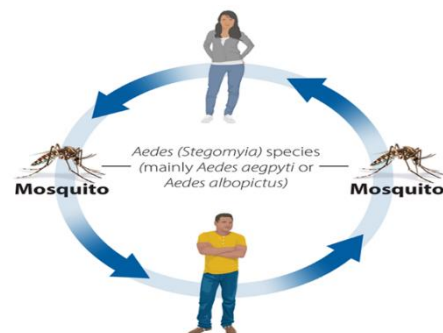
The chikungunya virus spreads from person to person by the bite of an infected mosquito, typically an *Aedes* spp. [9]. During outbreak, the chikungunya virus primarily infects humans. Human is considered the primary host [10]. When a mosquito takes a blood meal from someone who already has the virus, the mosquito becomes infected. During a blood transfusion, this virus can potentially transfer from one

person to another. When taking blood from an infected patient, laboratory staff members' blood can become contaminated [11].

Although rare, in-utero transmission typically occurs in the second trimester. Transmission during delivery can occur when the mother has the virus in her blood around the time of delivery. This virus does not spread from mother to infant during breastfeeding. Therefore, moms should be encouraged to breastfeed even if they have the chikungunya virus or live in a territory where the illness is currently being present. When the patient is viremic during the first week of illness, the risk of major transmission via a biting mosquito or by blood is highest. By avoiding mosquito bites, we can prevent getting chikungunya infection [12].

Chikungunya infection has three stages: acute (1–21 days), post-acute (22–90 days), and chronic (>90 days). Post-acute and chronic stages, however, are not always present in patients [13]. Although the disease has a low mortality rate, it has a significant morbidity rate that raises the possibility of chronic impairment and its associated economic and psychosocial effects [14]. Chikungunya fever is mainly acute and is characterized by rash and severe, debilitating pain in joints. Joint pain can last for years and is typically bilateral, symmetrical, and frequent in the joints of the hands, wrists, ankles, and feet [15]. The symptoms usually appear within 3 to 7 days after the mosquito bite. The severity of chikungunya symptoms, which are at their peak during the first few days of infection, is strongly correlated with the degree of viremia in the blood [16]. Other acute symptoms include headache, backache, weariness, nausea, joint swelling, and conjunctivitis. A small, localized rash could be present, or it could be widespread and cover

Urban Chikungunya Virus Transmission Cycle



more than 90% of the skin [17]. The chance of developing a more serious illness is higher among newborns who were infected around the time of birth, older persons (>65), and those who have medical disorders including high blood pressure, diabetes, or heart disease. The majority of patients recover within a week. Chikungunya is rarely fatal [18].

For the time being, there are no licensed therapeutic medicines or vaccines for infection control. The easiest approach to avoid getting Chikungunya is to take precautions against mosquito bites (Powers 2018). Use insect repellents such as 2-undecanoate, Oil of Lemon Eucalyptus (OLE), Para-menthane-diol (PMD), and DEET [19]. Try to wear in long pants and long-sleeved shirts. By placing screens on windows and doors and preventing mosquitoes from laying their eggs in or near water, you can try to manage mosquitoes both indoors and outside. To avoid mosquito bites, properly use mosquito nets [19].

There is currently no definitive treatment for Chikungunya fever [20]. Patients receive symptomatic care to reduce their discomfort, avoid dehydration, and prevent organ damage and fever. If you have been diagnosed with the Chikungunya virus, rest, drinks, and over-the-counter painkillers may help you feel better [21]. To relieve pain and fever, take medications such as paracetamol. Aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) shouldn't be taken until laboratory testing has ruled out dengue [22]. Take precautions to avoid mosquito bites if you have chikungunya to avoid the disease's early stages. The chikungunya virus can be discovered in the blood during the first week of infection [23].

An unstable healthcare system and the spread of several viruses in Pakistan are concerning circumstances. To stop any more epidemics, it is essential to build diagnostic facilities, step up vector control and surveillance efforts, and implement awareness-raising campaigns. A successful and cost-effective vaccination as well as treatment recommendations are required to control the Chikungunya virus [24].

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