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Chikungunya: India

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Chikungunya

India

India is a country found in South Asia with environments from mountain ranges to fields to tropical environments. The weather is warmer than the US and rains often, keeping the country humid. The population of India is large approaching 1.3 billion people (Matthews, 2001). These factors make India's correlation with vector transmitted diseases higher because more vectors can live in those habitats, and infect a greater population



Figure 1. Shows the distribution of Chikungunya in 2017. Retrieved from <https://www.cdc.gov/chikungunya/index.html>

Description of Chikungunya

Chikungunya is a communicable disease, or an infectious disease, transmissible by direct contact with an affected individual or the individual's discharges, or by indirect means. Chikungunya is transmitted to people through vectors, in this case by a mosquito (Natesan, 2018). The mosquito type that most commonly carries the virus is from the genus *Aedes aegypti* (Gokhale, Paingankar, Sudeep, & Parashar, 2013). Mosquitos, including the *Aedes aegypti*, have been reported to have greater prevalence in places such as Taiwan, Brazil and Indonesia. Those places have the environmental factors, similar to India's, that mosquitos need to live in. They include proper temperature heat, heavier precipitation and enhanced vegetation. (Kraemer et al., 2015). There have also been significant outbreaks reported during rainy

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seasons because mosquitos are most dense in that environment and would be more interactive with humans (Yactayo, Staples, Millot, Cibrelus, & Ramon-Pardo, 2016). India in particular has been hit hard by the chikungunya virus (Dutta, Khan, Hazarika, & Chetry, 2017). The northeast region of India holds an abundant amount of *Aedes* mosquitos and have some of the most outbreaks of mosquito transmitted diseases such as Chikungunya (Dutta et al., 2017). The populations most at risk for more serious problems include the elderly due to their weaker immune systems and therefore the virus will be more severe (Natesan, 2018). Children are another group that suffer greatly from this disease with 51% of infected children having a global neurodevelopmental delay, compared to only 15% developing the delay, when not infected (Yactayo et al., 2016).

Epidemiology of Chikungunya

Chikungunya has many symptoms that are similar to other diseases transferred from mosquitos as well, such as dengue fever. Signs and symptoms pertaining to Chikungunya include fever, aches, joint pains, chills, nausea and vomiting. A rash may occur, and in rare cases, bleeding and hemorrhaging, an escape of blood from a vessel, will be a result of the infection (Natesan, 2018). Since Chikungunya is very similar to other diseases in regards to the symptoms, additional testing is necessary to diagnose properly. Serological tests, taking a viral culture or molecular diagnostics testing are the tests commonly used in diagnosing this disease (Natesan, 2018). Chikungunya affects all age groups of both sexes equally with an attack rate of 40-85%. The elderly have a 10.6% higher change of mortality, however death is a rare occurrence with this disease if treated properly (Yactayo et al., 2016). Those affected with this disease may develop arthritis in the long term as a result

of this infection. Chikungunya has an attack rate of 37.5% in India which is higher than most countries, which follows closely behind Malaysia (attack rate = 55.6%) (Yactayo et al., 2016). The areas where mosquitos are most dense are where there are the most outbreaks of Chikungunya (Kraemer et al., 2015). Social determinants that affect the rate of having worse reactions to the disease come from access to health services and social status. Access to health services is hit because once infected it is important to be diagnosed, even though there is no antibiotic to treat this disease. Treatment includes lessening the symptoms that are occurring and getting plenty of rest. Social status is another determinant because the more supplies they can purchase to prevent bites from mosquitos is the best way to prevent Chikungunya from infecting them.

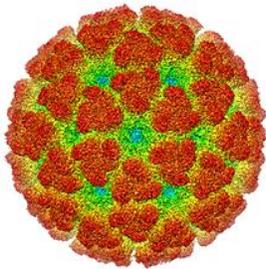


Figure 2. Chikungunya is a circular virus and classified as a category C priority pathogen in the United States. Retrieved from

<https://phys.org/news/2015-07-antibodies-chikungunya-virus.html>

Possible Solutions

Possible solutions to stop the spread of Chikungunya involve avoiding mosquitos that carry the virus. Although the *Aedes* mosquitos are the most common genus to carry the disease, getting rid of this genus would cause a shift in the environment that could be worse than treating Chikungunya. Avoiding the mosquito bites by wearing long sleeved clothing, utilizing bug spray, and using mosquito resistant nets can aide in reducing mosquito bites and therefore, the spread of Chikungunya (Natesan, 2018). In Panama, there was an outbreak from people who brought the disease into their country

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from vacation. The disease was spreading via roadways, so they attempted to stop the spread by fumigating the cars to prevent mosquito transport. Overall, it was successful because it reduced the contact between humans and mosquitos, that may be a carrier, in confined spaces such as a car (Sifferlin, 2015). A new way that the disease could be prevented from spreading is by being checked when arriving in a new country for potential infection, and then if diagnosed with the virus, will be put into quarantine until the virus has been cleared out. This option will help from the native mosquitos of the new land to become a carrier and pass onto more of the population of the new land.

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