

# Burden of dengue, chikungunya in India far worse than understood

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New Johns Hopkins Bloomberg School of Public Health research finds new evidence that an extremely high number of people in southern India are exposed to two mosquito-borne viruses—dengue and chikungunya.

These findings, the researchers say, reinforce the need for officials to be on the lookout for these diseases and to find ways to control its spread not only in India but also around the world.

The researchers, reporting July 16 in *PLOS Neglected Tropical Diseases*, tested blood samples from 1,010 people across 50 locations in Chennai, a city with over 6 million people in South India, and found that nearly all of them had been exposed to [dengue](#) and 44 percent had been exposed to chikungunya. Surprisingly, almost none of the people who had been exposed to dengue reported having been infected by it, either because they weren't properly diagnosed with the disease or because they didn't show symptoms.

Even though dengue has been known to be present in India since the 1940s, it is only in the past few years that there is growing recognition of the magnitude of the problem. "Our results show that the extent of the problem has been vastly underestimated," says the study's leader Isabel Rodriguez-Barraquer, MD, PhD, a research associate in the Department of Epidemiology at the Bloomberg School. "People are just not aware of the disease. We asked participants if they had ever been ill with dengue and only one percent of them said yes, when in fact 93 percent had been infected by it."

Researchers estimated that on average, 23 percent of those who have not yet been infected become infected by dengue every year, corresponding to roughly 228,000 infections per year in Chennai alone. "This rate of infection is extremely high, almost three times higher than in areas of Brazil and Thailand where transmission was thought to be high," says Rodríguez-Barraquer. They also found that the rate of infection in Chennai was similar in poor communities as in more affluent neighborhoods.

The research is believed to be the first to systematically measure dengue and chikungunya infection rates in India. "If you don't understand the extent of the problem, you can't address it," she says.

Chikungunya, transmitted by the same type of mosquito, is marked by fever and joint pain and other symptoms may include headache, muscle pain, joint swelling or rash. Outbreaks have occurred in Africa, Asia, Europe and the Indian and Pacific oceans. In late 2013, the [virus](#) was found for the first time in the Americas on islands in the Caribbean, and it has continued to spread in 2014 and 2015. There is a risk that the virus will be imported to new areas by infected travelers. There is no vaccine to prevent or medicine to treat [chikungunya virus](#) infection.

Dengue virus is the most rapidly spreading virus transmitted by mosquitoes and is a major source of illness in the tropics and subtropics, infecting as many as 400 million people annually. There are not yet any vaccines to prevent infection with [dengue virus](#). The only available control measures are those that reduce the number of mosquitoes and preventing mosquito bites. When infected, early recognition and prompt supportive treatment can substantially lower the risk of medical complications and death.

"Often, it is not the first but the second time someone is infected with dengue virus that can be deadly," Rodríguez-Barraquer says.

Although dengue rarely occurs in the continental United States, it is endemic in Puerto Rico and in many popular tourist destinations in Latin America, Southeast Asia and the Pacific islands. Cases have been reported in Florida, where there are known colonies of *Aedes aegypti*, a dengue-carrying mosquito. There is also a risk that the virus will be imported to new areas by infected travelers.

To control the spread of the dengue and chikungunya, some nations have actively worked to spray for virus-carrying mosquitoes and have done [public health campaigns](#) to explain the threat of the diseases, including encouraging people to cover water containers that can be mosquito breeding grounds.

**More information:** "The hidden burden of dengue and chikungunya in Chennai, India" *PLOS Neglected Tropical Diseases*, 2015.

Provided by Johns Hopkins University Bloomberg School of Public Health

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