

New super-resistant mosquito poses ‘unprecedented’ threat to curb dengue

A new super-resistant mosquito which poses an “unprecedentedly serious threat” to efforts to curb dengue has been uncovered in southeast Asia.



Extreme magnification on the head of an *Aedes aegypti* mosquito, fixed specimen, known vector of zika virus, chikungunya, yellow fever and dengue. - Joao Paulo Burini/Moment RF© Joao Paulo Burini/Moment RF

Scientists tracking the emergence of insecticide-evading mutations in the dengue-spreading *Aedes aegypti* mosquito have found the “most resistant strain ever identified”, according to research published in [Science Advances journal](#).

The strain – known as FTWC and so far found in Cambodia and Vietnam – is “very worrying” because it could render the pyrethroid insecticides used to kill mosquitoes increasingly ineffective.

“I believe FTWC is the most resistant strain ever identified,” said Dr Shinji Kasai, director of the department of Medical Entomology at the National Institute of Infectious Diseases in Japan, and a co-author of the study.

He added that the research, which builds on [existing reports of resistance](#), demonstrates the limitations of mosquito control strategies which rely on spraying insecticides in outbreak-prone areas.

“If people keep using pyrethroids in [Cambodia, Vietnam] and neighbouring countries, these mutations will be selected and control of dengue mosquitoes will become much more difficult,” Dr Kasai told the Telegraph.

There are also fears that limited surveillance has hidden the scale of the spread across the region.



A man paid by the city corporation sprays the streets of Uttara with insecticide - Adrienne Surprenant/Collectif© Provided by The Telegraph.

If the mutation has already reached other parts of Asia, it could pose “an unprecedentedly serious threat to the control of dengue fever as well as other Aedes-borne infectious diseases”, such as Zika and yellow virus, the researchers said.

Very worrying

“This [finding] is not surprising, but of course is very worrying,” added Dr Neelika Malavige, head of the dengue programme at the Drugs for Neglected Diseases initiative, who was not involved in the research.

“Mosquitoes will adapt [and] what we have done wrong is relying on vector control methods. It is not working. We need funding for drug development, proper diagnostics and to identify prognostic markers that would indicate who will develop severe disease,” she said.

Dengue has been a growing health threat for decades, **driven by climate change and rapid urbanisation**. In the 1970s, the flu-like virus – colloquially known as break bone fever because of the severe pain it causes – was endemic in just nine countries. It has now taken hold in more than 100, affecting as many as 400 million people a year.

‘Mosquitoes will keep evolving’

While the vast majority of cases are relatively mild, roughly 500,000 people are hospitalised and complications can result in septic shock and internal bleeding. Experts estimate 20,000 people die from the disease annually, mainly children.

Control method

Historically, spraying has been a major control method, but other options are emerging. In one particularly promising initiative, mosquitoes are infected with a bacteria called Wolbachia, which competes with dengue and makes it harder for the virus to replicate and cause infections.

Last month, a dengue vaccine developed by Takeda Pharmaceuticals was also given the green light for use in Europe, **following approval in Indonesia last summer**.

“Mosquitoes will keep evolving, and we need to prepare for that,” said Dr Kasai. He called for more widespread rotation of the insecticides used, the wider rollout of Wolbachia, and better monitoring of “resistance genes in Asia [to] prepare for the invasion”.

The latest research follows a [surge in cases in 2022](#), following two years when [Covid restrictions curbed transmission](#). There are some fears that this trend could continue in 2023.

Bangladesh has already reported [207 dengue hospitalisations](#) in January – the highest monthly toll since 2014, less than a week into 2023 – while cases in Malaysia were [three times higher](#) in the last week of December than the same period in 2021 and show few signs of dropping. -

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