

# 3 reasons why there is still no vaccine for dengue: NUS don

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There is still no vaccine or specific treatment to protect the general public from the threat of dengue and experts say there are several reasons for this.

Speaking at a webinar organised by the National University of Singapore's (NUS) Yong Loo Lin School of Medicine yesterday, Associate Professor Justin Chu, who is from the school's Department of Microbiology and Immunology, said there are three main reasons why it is difficult to develop an antiviral treatment for dengue.

First, the dengue virus comes in four serotypes and it is difficult to come up with an antiviral treatment which can target all four.

Second, as the people most susceptible to dengue are those from vulnerable groups – young chil-

dren, the elderly and the immunocompromised – scientists must take the time to ensure that any antiviral treatment that is developed is safe for them.

Third, as dengue is an acute viral infection, antiviral treatments must be given in the early stages of the infection in order to be effective – but patients often do not seek help until the third or fourth day of illness.

Meanwhile, challenges are also faced by those trying to develop a vaccine for dengue – a process that has been going on for decades, said Dr Ruklanthi de Alwis, senior research fellow at Duke-NUS Medical School's Programme of Emerging Infectious Diseases.

Dr de Alwis, who is also a senior research fellow at the Viral Research and Experimental Medicine Centre at SingHealth Duke-NUS, said one complication is posed by the human body's response to dengue.

There are many different types of antibodies, all of which wane at different rates, she said.

"Because of this complexity, we don't necessarily have official correlates of protection," she explained.

There is a further risk of a vaccine actually making the infection worse for some people. This was the case with Dengvaxia, a dengue vaccine that is used only for specific groups of individuals here.

Dr de Alwis noted that people who were jabbed with Dengvaxia but had never been infected before were found to be at an increased risk of infection than those who had never been infected and did not take the jab.

Another challenge, she added, is that animal models – laboratory animals used in the research of human disease and testing of vaccine efficacy – do not reflect the progression of dengue in humans very accurately.



Researchers face challenges in developing a treatment for dengue, but there are two promising vaccines being developed by a Japanese pharmaceutical firm, and by the US National Institute of Allergy and Infectious Diseases. ST PHOTO: DESMOND WEE

Still, there are two promising dengue vaccines that are currently being developed: TAK-003, by Japanese pharmaceutical company Takeda, and TV003/TV005

by the United States' National Institute of Allergy and Infectious Diseases, she said.

"We should be optimistic – there is good news in the future, but we

should be cautious about it because of lessons we've learnt from the past."

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