

By DATUK DR ZULKIFLI ISMAIL

EVERY year, 390 million dengue infections are recorded, of which 96 million manifest clinically.

More than 70% of the global disease burden is in Asia, specifically, the Western Pacific Region (according to World Health Organization classification). Malaysia ranks first in this region in terms of the number of reported dengue cases.

Dengue is transmitted by the bite of a female *Aedes aegypti* mosquito infected with any one of four versions of the dengue virus.

Various control methods have been used over the years to help curb the spike in dengue cases nationwide, as underlined through the nation's Strategic Plan for the Control and Prevention of Dengue.

These include larviciding, fogging, enforcement of law, as well as public education and awareness campaigns.

Despite all this, dengue cases continue to rise. This has prompted the exploration of new and innovative control methods and technologies, some of which include:

● **Genetically modified sterile mosquitoes** – The male *Aedes aegypti* (OX513A) mosquito strain developed by the Institute for Medical Research (IMR), Malaysia and Oxitec has a self-limiting genetic element.

When female *Aedes aegypti* mate with the OX513A male mosquitoes, any offspring will die, hence, preventing the emergence of the next generation of adult mosquitoes. The released sterile male itself will also die.

The first open release trial was conducted at an uninhabited area in Bentong, Pahang, in 2010, but nationwide implementation is still pending. This has apparently been deemed too expensive for nationwide implementation.

● **Mosquito repellent paint** – Kansai Coatings Malaysia launched a mosquito-repelling paint in 2014, said to be the first in Asean. The water-based paint uses synthetic insecticides to repel mosquitoes.

More recently, IMR announced that it too had developed an anti-mosquito wall paint.

The paint, mixed with the insecticide deltamethrin, would not only repel, but also kill mosquitoes that come into contact with walls coated with it.

IMR is currently looking for interested manufacturers to help produce it.

● **Mosquito repellent app** – KIL-DENGUE is an app that was introduced last July by the

It's all out war

What's new in our war against dengue?

company New Wave Communications, which developed it with IMR.

The app uses specific sound waves to repel the *Aedes* mosquito and tests have demonstrated the app to be up to 75% effective. The app is available at Google Play or the Apple App Store for about RM10.

The technology using sound waves to deter mosquitoes is not new and the science behind it is anything but comprehensive.

However, many consumers worldwide who use sound wave repellent technology say they work just fine.

● **Mosquito traps** – One of the latest industrial inventions in mosquito traps involve the use of human-mimicking attractants such as odour, light, carbon dioxide, heat, and even, sound.

Made for both large-scale and household use, these devices lure, trap and kill mosquitoes with varying degree of effectiveness.

In exploring different dengue-vector control options in high-risk residential areas, local authorities in Penang, Selangor and Putrajaya have embarked on a pilot project to test the effectiveness, impact and viability of this new technology.

● **Dengue vaccine** – Sanofi Pasteur completed their final landmark phase III efficacy study of its dengue vaccine candidate successfully. Results showed a 95% efficacy against dengue haemorrhagic fever, 80.3% reduction in the risk of hospitalisation and an overall significant reduction of 60.8% of dengue disease cases in children and adolescents nine to 16 years old after a three-dose vaccination schedule given six months apart.

The vaccine may be available in Malaysia sometime this year.

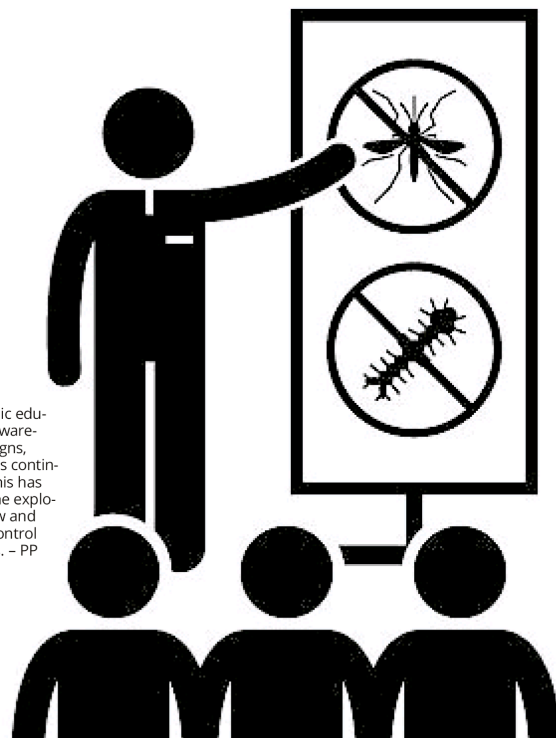
Though these new methods are promising, we shouldn't abandon our self-reliant actions against dengue. Continue doing your part to help keep your family and the community safe by:

● Ensuring that there are no mosquito breeding grounds in your area – discard unwanted containers that can hold water; ensure that water tanks and containers are covered with lids; ensure that flowerpot

plates and water catchment containers are drained at least once a week; and ensure that roof gutters are constantly flowing.

● Taking steps to protect your family from bites – install window mesh/screen; apply mosquito-repellent cream when going out; wear brightly-coloured clothing with long sleeves and pants while outdoors; use mosquito coils, spray and electric mosquito repellent when necessary; and avoid outdoor activities when mosquitoes are most active (5.30-8.30am and 5.30-8.00pm)

Despite public education and awareness campaigns, dengue cases continue to rise. This has prompted the exploration of new and innovative control technologies. – PP



First in Asia

Dengue vaccine approved in the Philippines.

SANOFI Pasteur, the vaccines division of Sanofi, announced recently that the Philippines has granted marketing approval to the first vaccine to be licensed for the prevention of dengue in Asia.

The Philippines' Food and Drug Administration approved the trivalent dengue vaccine for the prevention of disease caused by all four dengue types in individuals from nine to 45 years of age living in endemic areas.

"Approval of the first dengue vaccine in Asia, which bears 70% of global disease burden, is a major milestone in dengue prevention and public health," notes Olivier Charmeil, president and CEO of Sanofi Pasteur. "Approval of this dengue vaccine in the Philippines, following closely the first approval in Mexico, is further evidence of Sanofi Pasteur's long-standing commitment to introduce this innovative new vaccine in countries where dengue is a major public health threat."

Dengue fever burden in Asia continues to be the highest globally, with an estimated 67

attacks populations of Asia in the form of unpredictable outbreaks capable of paralysing healthcare systems and negatively impacting social and economic activity.

Asian endemic countries spend an estimated US\$6.5bil (RM28.6bil) annually in both direct medical and indirect costs due to dengue.

"Prevention of dengue is an urgent and growing medical priority in the Philippines," said Dr May Book Montellano, president of the Philippine Foundation for Vaccination. "Vaccination is widely accepted as one of the most cost-effective ways to reduce the spread of infectious diseases like dengue. The approval of the world's first dengue vaccine in the Philippines, will be a critical addition to the ongoing public education and vector control efforts currently directed towards dengue prevention in our country."

Dengue is a major public health priority in tropical and subtropical countries in Asia and Latin America. Sanofi Pasteur is introducing its dengue vaccine first in these

ally and help to achieve the World Health Organization's (WHO) goal to reduce dengue mortality by 50% and morbidity by 25% by 2020 in endemic countries.

It enrolled over 40,000 participants in extensive safety and clinical efficacy studies conducted mainly in endemic countries and built a dedicated vaccine production facility in France to secure an adequate quality and quantity of the vaccine to meet endemic country demand upon introduction.

According to the WHO, in the last 50 years, dengue has spread from being present in a handful of countries to being endemic in 128 countries, where about four billion people live, and dengue incidence has likewise increased 30-fold in this time period.

Although dengue affects people from all ages and socio-economic backgrounds, the greatest number of dengue cases worldwide occurs in the highly mobile and social segment of endemic populations that include pre-adolescents to adult aged nine years and above.

Datuk Dr Zulkifli Ismail is a consultant paediatrician & paediatric cardiologist. This article is courtesy of Malaysian Paediatric Association's Positive Parenting programme in collaboration with expert partners. This article is also supported by an educational grant from Sanofi-Aventis Malaysia. For further information, visit www.mypositiveparenting.org. The information provided is for educational and communication purposes only and it should not be construed as personal medical advice. Information published in this article is not intended to replace, supplant or augment a consultation with a health professional regarding the reader's own medical care. The Star disclaims all responsibility for any losses, damage to property or personal injury suffered directly or indirectly from reliance on such information.

million people being sickened by the virus annually. As an urban disease, dengue

countries where the vaccine has the greatest potential to reduce dengue burden glob-

Manufacturing of the vaccine has already started in France.

eight out of 10 hospitalisations and up to 93% of severe dengue cases.