

DENGUE VS CHIKUNGUNYA



Mention Aedes mosquito in Singapore some 5 years ago and immediately the dengue disease comes to mind. But since 2008, when the first case of locally transmitted chikungunya was reported, we now have two Aedes mosquito-borne scourge on our list.

2013 is most likely to be Singapore's record year for both dengue and chikungunya outbreaks. As at 6 July 2013 there have been 4 cases of locally contracted dengue-related deaths and more than 12,543 people infected with the fever. And the dengue season has at least 2 more months to run. The previous biggest dengue epidemics stood at 14,209 in 2005, with an alarming 25 deaths.

In the same period this year, a total of 378 chikungunya cases was diagnosed compared to only 60 cases between 2010 and 2012. No deaths were reported.

In this article we shall answer 10 questions surrounding these 2 diseases and what we can do to contain them.

1 Q: What are these diseases?

A: They are both viral infections transmitted from human to human by the Aedes mosquito. Dengue is caused by the flavivirus while chikungunya is by the alphavirus.

2 Q: Where did they originate?

A: It is believed that Dengue originated either from Africa or South-East Asia and Chikungunya was endemic in Africa and the Indian subcontinent. With increasing global travel we can expect sporadic outbreaks when and where conditions are favourable for the survival of the Aedes mosquito.

3 Q: How are these diseases transmitted?

A: The culprit is the adult female mosquito. It bites humans because it needs protein from the blood to develop fertile eggs. The human host has to be a carrier of the disease, which is spread to another when the mosquito bites. It is estimated that it can infect more than a dozen people in its lifetime.

Both the male and female mosquitoes feed on plant nectar and sap for their sugar-based energy. This explains why they prefer to rest under trees and scrubs.

Although both *Aedes aegypti* and the *Aedes albopictus* can spread both diseases, the former is more likely to spread dengue and the latter the chikungunya virus.

The *Aedes aegypti* is found mostly indoors which explains why water found in indoor flower pot plates is an ideal breeding source. It prefers to come in low and bite people on the ankles or calves. Compared to *Aedes albopictus* it is a more efficient vector because of its nervous habit of stabbing you several times during feeding, depositing the virus with each plunge of its proboscis. It is very sensitive to movements and if you so much as twitch it will simply fly off to feed on another

person. This behaviour explains a habit called the "Babu Bounce" in India, where secretaries jiggle their legs continually to ward off this little pest.

The normal feeding range is about 30 metres from the breeding source but Aedes mosquito has adapted to our urban environment. It can fly a distance of 700 metres and as high as 21 storeys aided by wind corridors and lifts, breeding in roof top water tanks.

4 Q: When are these vectors most active?

A: The female Aedes mosquito is a day-biter and is most active during 2 shifts, i.e. from 7 a.m. to 10 a.m. and again from 4 p.m. to 6 p.m. In between shifts it prefers to rest under trees and scrubs. But studies have shown that it can also bite under artificial lighting giving out UV light, e.g. fluorescence light.

5 Q: Which is more deadly, dengue or chikungunya?

A: Without any doubt, dengue. For a start there are more dengue cases compared to chikungunya. But more importantly there are cases of death caused by dengue, while none has been attributed to chikungunya.

6 Q: Can a person contract both dengue and chikungunya simultaneously?

A: Fortunately it is rare but yes, "den-chi" (a combination of dengue and chikungunya) can occur.

7 Q: What are the signs and symptoms for each?

A: The initial signs and symptoms are almost identical – high fever, headache, nausea, vomiting, muscle pain, joint pain, rashes and lethargy. It may take between 3 to 8 days before they appear.

These signs and symptoms are often mistaken for influenza, especially at the initial stage, which explains why the doctor will normally render symptomatic and supportive treatment and instructing the patient to return within a week, if the condition does not improve. It pays to heed this instruction and return to the same doctor.

Confirmation is by a blood test. If it shows a low level of platelets in the blood the patient is diagnosed with dengue.

Dengue can be complicated because there are potentially 3 stages: dengue fever (DF), dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS). The majority of victims recover from dengue fever within 2 weeks.

For those whose condition develops into dengue haemorrhagic fever it is a nightmare. As the name suggests, there is internal bleeding and the victim can suffer from bleeding gums and intestines, an enlargement of the liver and occasionally circulatory failure.