



Dengue

[Source: DTE](#)

Why in news?

Recently, Dengue cases have surged significantly in some states like **Uttar Pradesh, West Bengal, and Tamil Nadu.**

What is Dengue?

▪ About:

- Dengue is a self-limiting febrile illness with symptoms ranging from asymptomatic to severe.
- Dengue is a mosquito-borne tropical disease caused by the dengue virus (Genus Flavivirus), transmitted by several species of female mosquito within the genus Aedes, principally **Aedes aegypti**.
 - This mosquito also transmits [chikungunya](#) and [Zika infection](#).

▪ Serotypes of Dengue:

- There are 4 distinct, but closely related, serotypes (separate groups within a species of microorganisms that all share a similar characteristic) of the virus that cause dengue (DEN-1, DEN-2, DEN-3 and DEN-4).

▪ Symptoms:

- Sudden high fever, severe headaches, pain behind the eyes, severe bone, joint, and muscle pain, etc.

▪ Dengue Vaccine:

- The dengue vaccine CYD-TDV or Dengvaxia was approved by the US Food & Drug Administration in 2019, the first dengue vaccine to get the regulatory nod in the US.
 - **Dengvaxia** is basically **a live, attenuated dengue virus** which has to be administered in people of ages 9 to 16 who have laboratory-confirmed previous dengue infection and who live in endemic areas.
- Researchers at [India's National Centre for Biological Sciences](#), in collaboration with nine other institutions in India, Africa, and the US, have developed India's **first and only DNA vaccine** candidate for dengue fever.
 - In preliminary trials on mice, the candidate generated a robust immune response and improved survival rates after exposure to the disease.

▪ Controlling Dengue Using Bacteria:

- Researchers from the World Mosquito Program have **used mosquitoes infected with Wolbachia bacteria to successfully control dengue, leading to a 77% reduction in incidence in Indonesia.**

What is DNA Vaccine?

- A DNA vaccine is a type of vaccine that uses a small piece of DNA that codes for a specific antigen (a molecule that triggers an immune response) from a pathogen, such as a virus or bacterium, to stimulate an immune response.
- The DNA is injected directly into the body's cells, where it instructs the cells to produce the antigen.

- The immune system then recognizes the antigen as foreign and mounts an immune response against it, which helps to develop immunity to the pathogen.
- DNA vaccines are third-generation vaccines.
- The ZyCoV-D is the world's first and India's indigenously developed DNA based vaccine for **Covid-19**.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q.1 Consider the following statements: (2017)

1. In tropical regions, Zika virus disease is transmitted by the same mosquito that transmits dengue.
2. Sexual transmission of Zika virus disease is possible.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: (c)

Q.2 'Wolbachia method' is sometimes talked about with reference to which one of the following? (2023)

- (a) Controlling the viral diseases spread by mosquitoes
- (b) Converting crop residues into packing material
- (c) Producing biodegradable plastics
- (d) Producing biochar from thermo-chemical conversion of biomass

Ans: (a)