



Leptospirosis and Dengue Outbreaks

Why in News?

Leptospirosis is a potentially **fatal bacterial disease** that has become more **prevalent during the monsoon months**, posing a significant occupational hazard for those working in agricultural settings or in sanitary services that bring them into contact with contaminated water.

- Furthermore, public health experts are sounding the alarm about a **potential severe dengue outbreak** and emphasizing the need for enhanced clinical and virological surveillance. Changes in **circulating dengue virus (DENV) serotypes** could lead to more severe and life-threatening conditions.
 - Thiruvananthapuram district, Kerala reported that 70% of dengue case samples in 2022 were DENV3, with some cases of DENV4.

What is Leptospirosis?

- **About:**
 - Leptospirosis is caused by the **bacterium Leptospira interrogans**, which is primarily found in the **urine of infected animals**.
 - **Wild and domestic animals**, including rodents, cattle, pigs, and dogs, serve as carriers of the disease.
- **Symptoms:**
 - Leptospirosis can manifest with a range of symptoms, from a **mild flu-like illness to life-threatening conditions**.
 - Common symptoms include **sudden fever, chills, and headache**, or sometimes **no symptoms at all**.
 - Severe cases can lead to **organ dysfunction, affecting the liver, kidneys, lungs, and the brain**.
- **Transmission:**
 - The transmission cycle begins with infected animals **shedding leptospira in their urine**.
 - Individuals who **come into direct contact with infected animal urine or indirectly through contaminated soil and water** are at risk.
 - People with **cuts or abrasions on their skin** have a higher likelihood of contracting leptospirosis.
- **Prevention:**
 - **Preventing animal infection, Hygienic animal-keeping conditions**, proper waste management, and improved sanitation facilities are essential to reduce the spread of leptospirosis and minimize economic losses for farmers.
 - Adopting a '**One Health**' approach, which considers the **interconnectedness of human, animal, plant, and environmental health**, is crucial in leptospirosis control.
- **Misconceptions About Leptospirosis:**
 - One common misconception is associating **leptospirosis solely with rats**, which is not accurate as it can be transmitted by multiple animal reservoir hosts.

What is Dengue?

- **About:**

- Dengue is a **mosquito-borne tropical disease** caused by the dengue virus (**Genus Flavivirus**), transmitted by several species of 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:**
 - 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**.
 - 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** that has to be administered in people of ages **9 to 16** who have laboratory-confirmed previous dengue infection and who live in endemic areas.
- **Challenges in Vaccine Development:**
 - Developing an effective dengue vaccine is challenging due to the **four closely related virus serotypes**, each **interacting differently with antibodies**. An ideal vaccine should **target all serotypes** while **avoiding antibody-dependent enhancement (ADE)**, where antibodies can aid the virus, causing severe disease.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Which of the following diseases can be transmitted from one person to another through tattooing? (2013)

1. Chikungunya
2. Hepatitis B
3. HIV-AIDS

Select the correct answer using the codes given below:

- (a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans: (b)

Source: TH