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## **Dengue - A Globally Treacherous Disease**

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**Abstract:**

*Dengue fever is a painful, debilitating mosquito-borne disease caused by flavivirus. Most cases occur in tropical areas of the world like India, Southeast Asia, Southern China, Taiwan, Mexico, Africa, Central and South America etc.*

*Dengue fever is transmitted by the bite of an Aedes mosquito (Aedes.aegypti) which is infected by flavivirus. The mosquito becomes infected when it bites a person with dengue virus in their blood. It can't be spread directly from one person to another person. Symptoms include fever, headache, swollen lymph nodes, red spots on the legs, pain behind the eyes, muscle and joint pains, and a characteristic red color skin rashes. Sometimes the disease develops into life-threatening Dengue Hemorrhagic fever, resulting in bleeding, low levels of blood platelets and blood plasma leakage, or into Dengue shock syndrome, where dangerously low blood pressure occurs. Prevention depends on control and protection from the bites of the mosquito that transmits it. Paracetamol can be taken, but Aspirin should be avoided. Apart from working to develop a vaccine against dengue, there are ongoing efforts to develop antiviral drugs used to treat attacks of dengue fever and prevent severe complications.*

### **1. Introduction**

Fever is also known as pyrexia and febrile repines, means having a temperature above the normal range. Fever can be caused by medical conditions ranging from not serious to potentially serious this includes viral, bacterial and parasitic infections such as common cold urinary infections meningitis etc.

- Dengue fever: Dengue also called as break bone fever is caused by a virus, the disease is widely distributed in warm countries. There is sudden high fever with rash on the face and intense pain in the head, eyes, muscle, and joints. Dengue is not fatal; it is transmitted by Aedes aegypti, Aedes albopictus and Culex fatigans. Dengue often breaks out abruptly in an epidemic form which spreads rapidly.

Dengue fever vaccine is not available commercially anywhere and treatment for dengue is not only through intravenous oral rehydration or Blood transfusion/intravenous fluids are preferable for severe cases.

Studies and research is ongoing process in various parts on the world to find out the vaccine as well as treatment for the virus. It is an endemic problem faced by more than 100 countries like India, Mexico, Hawaii, southern china and African countries etc.,

### **2. Causes of Dengue**

The virus is transmitted from an infected mosquito to human to human. The main causative virus is being passed on when someone else is bitten by the infected mosquito if a person suffering from dengue fever and there is a possibility to contact it again because of number of type of viruses, but once if the person infected again then the dengue hemorrhagic fever ( particularly in young ones may become unusual because the primary exposure to virus may cause the body to carry antibodies that allow the body to fight against the virus more easily the second time.

### **3. Complications of Dengue**

Complications are generally noticed in people suffering from dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). Most of the people suffering from dengue get better within 15 days but some individual can suffer fatigue and depression for months, in severe cases because of severity of the virus infection death may cause within 10-20 days



Figure 1: Dengue causative virus- Flavivirus

The main causative of dengue is flavivirus. It is spherical in structure and 40-55mm indicating the main genome of virus is RNA. The replication of the virus is possibly done in the cytoplasm of the cell and in the mode of infection of different types and the severity of multiplication is differently noticed.



Figure 2: Dengue transmitting vector-Aedes aegypti (Mosquito)

- Nature of the aedes mosquito: It is one having distinct feature white and black stripes /spots may clearly represented on body and legs and it is more active on biting during day time. It lives mostly in fresh water /stagnant water and lays eggs in large number where the water is clean and stagnant. It looks differently from other mosquitoes and it is only a transmitter for virus by biting infected human to other.

#### 4. Symptoms of Dengue Fever

As there are different phases of severity for dengue fever the symptoms vary from one to another individual. It occurs on phases like febrile phase, Critical phase, and Recovery phase

##### 4.1. Symptoms of Febrile Phase

- Mouth and more bleeding
- Severe flushing
- Nausea and vomiting
- Headache

##### 4.2. Symptoms of Critical Phase

- Severity in DSS (dengue Shock Syndrome) may result in critical phase
- Pleural infections,
- Hypotension /Intense breathing problem,
- Internal bleeding, which can result in black vomit and feces

##### 4.3. Symptoms of Recovery Phase

- Decreased /lowering in heart rate,
- Body rashes disappearance,
- Itching,
- Normal blood pressure

### 5. Dengue Shock Syndrome (DSS)

The worst form of dengue which can also result in death, again fever syndrome also appearing because of DSS

#### 5.1. The Symptoms of DSS are

- Severe stomach ache
- Fast drop of blood pressure
- Heavy nose bleeding
- Vomiting
- Dis-orientation /lacking of counseling
- Death may possible due to DSS.

#### 5.2. State Wise Analysis

Objective:

The number of dengue cases recorded as per different news papers &news channels in different states (approximately) shows the treacherous effect of disease in all places.

In the present study four states i.e., Maharastra, Karnataka, Andhrapradesh and Gujarat was taken as case study and the graphs are shown, for seven years 2009-2015.

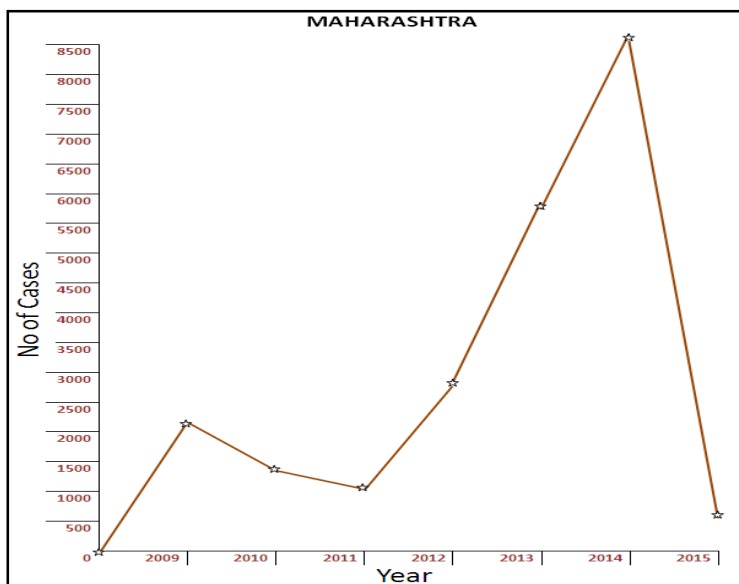


Figure 3

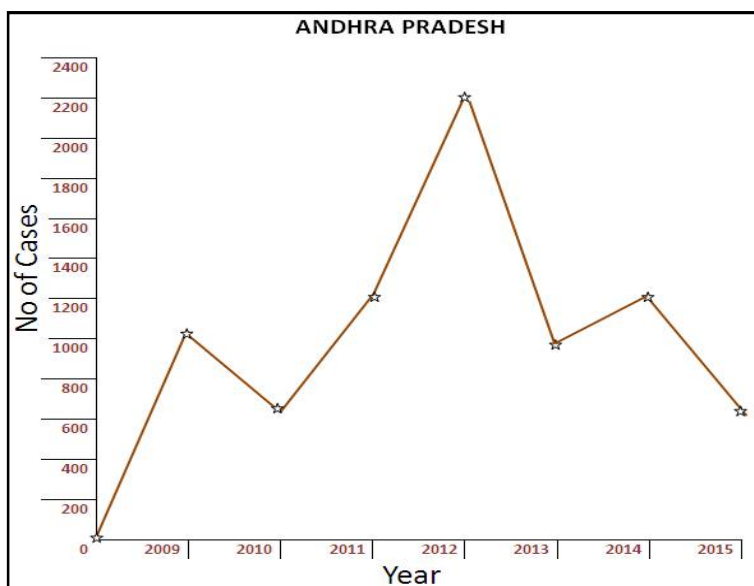


Figure 4

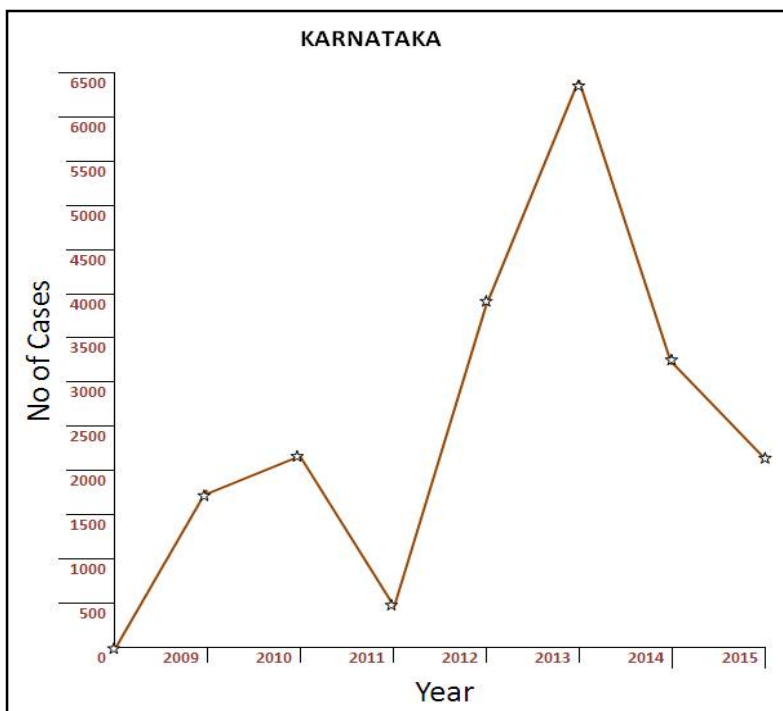


Figure 5

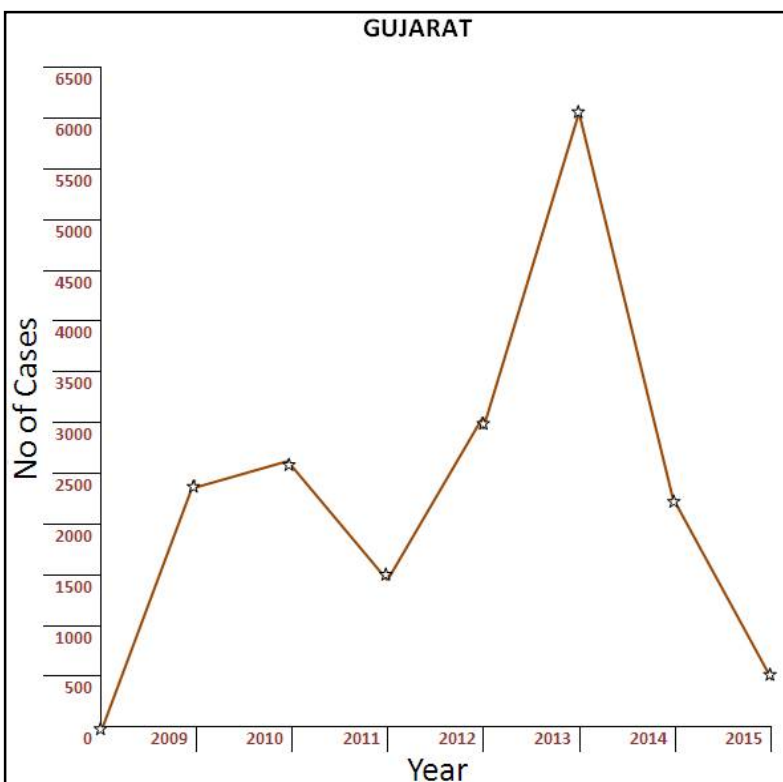


Figure 6

5.3. Discussion

The graphs clearly show the affect of dengue virus and increasing the number of cases as per records, to control this global spread there is no specified medicine to cure or prevent Dengue. Antibiotics are not at all prescribed as they will bring the blood platelets or thrombocytes countdown, which may result in heavy bleeding. To cool down the heavy temperature, paracetamol can give for initial relief and other personal medications are not preferable for patients. Medication under supervision of physician is preferable and constant rest, nutritious diet is necessary.

## 6. Prevention Methods to Control Mosquitoes

Mosquitoes which transmit human diseases are among the most important and deadly enemies of mankind and steps have to be taken for their destruction, but general measures will not be effective against all types, therefore, habits and breeding places of mosquitoes must be studied before effective measures are taken for their eradication. The following general methods may be used for the control of mosquitoes:

### 6.1. Personal Protection

- a) In mosquito-infected area protective clothing may be used, such as will cover the exposed parts of the body, especially after sunset.
- b) Mosquito repellents indalone which keep mosquitoes away, Repellent No.448 of the American navy is very effective for long periods.
- c) While sleeping fine mesh mosquito nets prevent them from biting and bed rooms or houses could be screened to prevent entry of mosquitoes.
- d) Painting walls with creosote repels mosquitoes.

### 6.2. Destruction of Adults

- a) Killing of mosquitoes can be done by spraying liquid insecticides like flit the latter not only kills mosquitoes but also makes them leave a house.
- b) A mixture of water and 10% D.D.T. in oil sprayed from the air is very effective in killing large number of mosquitoes in towns, ponds, marshes and forests.
- c) Fumigation of dwellings with sulphur dioxide is also useful.

### 6.3. Destruction of Larvae

It is easier and more effective to kill mosquitoes in their larval forms than adults, and several methods are used with success.

#### 6.3.1. Oiling

The breeding places of mosquitoes are sprayed with petroleum oils, the oil film formed on the surface of water does not asphyxiate the larvae, as it is commonly believed, but its toxic to them, and the oiling must be replicated to kill those larvae and pupae which will hatch later.

#### 6.3.2. Panama Larvicide

It is a mixture of caustic soda, resin, and phenol in water; it has been used most effectively in the Panama Canal region. The Panama larvicide mixes well with water and kills both the larvae and algae on which they feed. One part of Panama lairs sufficient for 10,000 parts of water.

#### 6.3.3. Paris Green

It's a powder of arsenic mixed with fine dust, one part of powder with 100 parts of dust. This can be thrown in the wind and it will cover the surface of a pond; it is insoluble in water and remains floating and is eaten by surface feeding larvae which feed on surface.

#### 6.3.4. Natural Enemies

Fishes, minnows and Gambusia live on larvae and pupae of mosquitoes, and their introduction in a breeding place is helpful, but for this the brush and floating vegetation must be cleared so that the fish can reach the larvae.

#### 6.3.5. Chemical Larvicide

One part of D.D.T. emulsion in thirty million parts of water is used most extensively as a spray to kill larvae, but it takes 50 hours. Planes can be used for this purpose on large areas.

### 6.4. Elimination of Breeding Places

For those mosquitoes which breed in rain filled containers and cisterns, like Aedes, emptying of water is effective. For large ponds and swamps digging a sloping ditch removes large volumes of water. Small ponds can be filled up with mud. In India, cycles of 5 wet days followed by 2 to 4 dry days were found to be highly effective in controlling Anopheles in fields.

### 6.5. Preventive Medicine

To get relief in the initial stages of dengue fever, paracetamol can be taken but aspirin should be avoided.

## 7. Conclusion

The deaths are regulated in all the places but the number of cases may alter every year. It is more relevant in the year 2015 in the states like Kerala and Karnataka, Maharashtra, Gujarat and Andhra Pradesh.

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