**DENGUE**

Dengue fever, commonly known as **breakbone** fever, is a mosquito-borne infectious disease caused by the **dengue virus**. It is caused when an **Aedes** mosquito carrying the virus bites a healthy person. This disease is mainly found in the tropical and sub-tropical regions of the world.

**CAUSATIVE AGENT**

Dengue is caused by the virus called **dengue virus (DENV)**. There are four DENV serotypesnamely - **DENV-1, DENV-2, DENV-3, and DENV-4.**

**TRANSMISSION**

Dengue viruses are spread to people through the bite of an infected **Aedes** species (**A.aegypti *or* A. albopictus**) mosquito. The virus enters a mosquito when it bites an already infected person. And the illness is spread when it bites a healthy person, and the virus spreads through the person’s bloodstream.

**SYMPTOMS**

Symptoms typically begin three to fourteen days after infection. Mild symptoms of dengue can be confused with other illnesses that cause fever, aches and pains, or a rash.

The most common symptom of dengue is **fever** 104 F (40 C) with any of the following:

* Nausea, vomiting
* Headache
* Skin rash, which appears two to five days after the onset of fever
* Aches and pains (eye pain, typically behind the eyes, muscle, joint, or bone pain)

Symptoms of dengue typically last 2–7 days. Most people will recover after about a week.

**SYMPTOMS OF SEVERE DENGUE**

Severe dengue happens when the blood vessels become damaged and leaky. And the number of clot-forming cells (platelets) in the bloodstream drops. This can lead to shock, internal bleeding, organ failure and even death.

Severe dengue fever is a life-threatening. The warning signs usually begin the first day or two after your fever goes away, and may include:

* Severe stomach pain
* Persistent vomiting (at least 3 times in 24 hours)
* Bleeding from gums or nose
* Blood in urine, stools or vomit
* Bleeding under the skin, which might look like bruising
* Difficult or rapid breathing
* Fatigue
* Irritability or restlessness
* If one had dengue in the past, he/she is more likely to develop severe dengue.
* Infants and pregnant women are at higher risk for developing severe dengue.

There are three types of fever a person is prone to, namely – **Mild Dengue Fever**, **Dengue Haemorrhagic Fever** and **Dengue Shock Syndrome.**

* **Mild Dengue Fever** – Symptoms are seen after a week from the bite and include severe or fatal complications.
* **Dengue Haemorrhagic Fever** – Symptoms are mild but can gradually worsen within a few days.
* **Dengue Shock Syndrome** – This is a severe form of dengue and can even cause death.

**TREATMENT**

There is no specific treatment of Dengue fever or cure as Dengue is a virus. Timely intervention can help, depending on how severe the disease is. Here are a few basic treatments of Dengue fever:

* **Medication:**Painkillers like Tylenol or Paracetamol are generally prescribed to the patients. IV drips are sometimes supplemented in case of severe dehydration.
* **Stay hydrated:** This is crucial as most of bodily fluids are lost during vomiting and high fever. Continuous intake of fluids will make sure that the body does not easily dehydrate.
* **Hygiene:** Hygiene is of the utmost importance. The patient can opt for a sponge bath if not a regular bath. Add a few drops of [disinfectant liquid](https://www.dettol.co.in/en/products/disinfectant-liquids/dettol-disinfectant-multi-use-hygiene-liquid/)  to the water being used for bathing. It is also advisable to sanitize your hand with a [hand sanitizer](https://www.dettol.co.in/en/products/hand-sanitiser/dettol-instant-hand-sanitizer/)  before and after visiting the patient in the hospital. Disinfect the water used to wash the patient’s clothes to rid the clothes of germs.

**PREVENTION**

The best way to prevent the disease is to prevent bites by infected mosquitoes. This involves protecting yourself and making efforts to keep the mosquito population down.

* Use mosquito repellents, even indoors.
* When outdoors, wear long-sleeved shirts and long pants tucked into socks.
* Make sure window and door screens are secure and free of holes. If sleeping areas are not screened or air conditioned, use mosquito nets.
* To reduce the mosquito population, get rid of places where mosquitoes can breed.

**MALARIA**

Malaria is a potentially life-threatening parasitic disease caused by infection

with Plasmodium protozoa transmitted by an infective

female Anopheles mosquito called "malaria vectors." There are four kinds of

malaria parasites that can infect humans: Plasmodium vivax, P. ovale, P. malariae,

and P. falciparum. P. falciparum causes a more severe form of the disease and

those who contract this form of malaria have a higher risk of death..

**CAUSATIVE AGENT**

Malaria is caused by a protozoan parasite of the genus plasmodium. The parasite

is transmitted to humans most commonly through mosquito bites.

Symptoms: Malaria signs and symptoms typically begin within a few weeks after

being bitten by an infected mosquito. However, some types of malaria parasites

can lie dormant in your body for up to a year. Signs and symptoms of malaria may

include:

➢ Fever

➢ Chills

➢ General feeling of discomfort

➢ Headache

➢ Nausea and vomiting

➢ Diarrhea

➢ Abdominal pain

➢ Muscle or joint pain

➢ Fatigue

➢ Rapid breathing

➢ Rapid heart rate

➢ Cough

➢ Some people who have malaria experience cycles of malaria "attacks." An

attack usually starts with shivering and chills, followed by a high fever,

followed by sweating and a return to normal temperature.

Symptoms of severe malaria include:

➢ swelling of the blood vessels of the brain, or cerebral malaria

➢ an accumulation of fluid in the lungs that causes breathing problems,

or pulmonary edema

➢ organ failure of the kidneys, liver, or spleen

➢ anemia due to the destruction of red blood cells

➢ low blood sugar

**MODE OF TRANSMISSION**

In most cases, malaria is transmitted through the bites of

female Anopheles mosquitoes. Anopheles mosquitoes lay their eggs in water,

which hatch into larvae, eventually emerging as adult mosquitoes. The female

mosquitoes seek a blood meal to nurture their eggs. Transmission is more intense

in places where the mosquito lifespan is longer (so that the parasite has time to

complete its development inside the mosquito) and where it prefers to bite

humans rather than other animals.

Transmission also depends on climatic conditions that may affect the number and

survival of mosquitoes, such as rainfall patterns, temperature and humidity. In

many places, transmission is seasonal, with the peak during and just after the rainy

season. Malaria epidemics can occur when climate and other conditions suddenly

favour transmission in areas where people have little or no immunity to malaria.

They can also occur when people with low immunity move into areas with intense

malaria transmission, for instance to find work, or as refugees.

Mosquito transmission cycle

• **Uninfected mosquito**. A mosquito becomes infected by feeding on a person

who has malaria.

• **Transmission of parasite**. If this mosquito bites you in the future, it can

transmit malaria parasites to you.

• **In the liver**. Once the parasites enter your body, they travel to your liver —

where some types can lie dormant for as long as a year.

• **Into the bloodstream**. When the parasites mature, they leave the liver and

infect your red blood cells. This is when people typically develop malaria

symptoms.

• **On to the next person**. If an uninfected mosquito bites you at this point in the

cycle, it will become infected with your malaria parasites and can spread them

to the other people it bites.

Other modes of transmission

Because the parasites that cause malaria affect red blood cells, people can also

catch malaria from exposure to infected blood, including:

• From mother to unborn child

• Through blood transfusions

• By sharing needles used to inject drugs

**Prevention**

Vector control is the main way to prevent and reduce malaria transmission. Two

forms of vector control

1. INSECTICIDE-TREATED MOSQUITO NETS AND

2. INDOOR RESIDUAL SPRAYING

**1. INSECTICIDE-TREATED MOSQUITO NETS:** Sleeping under an insecticide treated net (ITN) can reduce contact between mosquitoes and humans by

providing both a physical barrier and an insecticidal effect. Population-wide

protection can result from the killing of mosquitoes on a large scale where

there is high access and usage of such nets within a community.

**2. INDOOR RESIDUAL SPRAYING** (IRS) with insecticides is another powerful

way to rapidly reduce malaria transmission. It involves spraying the inside of

housing structures with an insecticide, typically once or twice per year. To

confer significant community protection, IRS should be implemented at a

high level of coverage.

**ANTIMALARIAL DRUGS**

➢ Antimalarial medicines can also be used to prevent malaria. For travellers,

malaria can be prevented through chemoprophylaxis, which suppresses the

blood stage of malaria infections, thereby preventing malaria disease.

➢ For pregnant women living in moderate-to-high transmission areas, WHO

recommends at least 3 doses of intermittent preventive treatment with

sulfadoxine-pyrimethamine at each scheduled antenatal visit after the first

trimester.

➢ For infants living in high-transmission areas of Africa, 3 doses of intermittent

preventive treatment with sulfadoxine-pyrimethamine are recommended.

**VACCINES AGAINST MALARIA**

RTS,S/AS01 (RTS,S) is the only vaccine to show that it can significantly reduce

malaria, and life-threatening severe malaria, in young African children. It acts

against P. falciparum, the most deadly malaria parasite globally and the most

prevalent in Africa. Among children who received 4 doses in large-scale clinical

trials, the vaccine prevented approximately 4 in 10 cases of malaria over a 4-year

period.