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WIDE SPREAD OF BREAK BONE FEVER (DENGUE)

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❖ ABSTRACT

Dengue fever is an acute viral infection caused by the dengue virus (DENV), which is transmitted to humans through the bite of an infected Aedes mosquito, especially Aedes aegypti. It is characterized by sudden high fever, severe headache, pain behind the eyes, muscle and joint pain, rash, and sometimes mild bleeding. In severe cases, it can progress to dengue hemorrhagic fever or dengue shock syndrome, which can be life-threatening Onset of symptoms usually occurs **3 – 14 days** after exposure to an infected Onset of symptoms usually occurs **3 – 14 days** after exposure to an infected is now **endemic in more than 100 countries**, mostly tropical and subtropical region.This may lead to rapid collapse of platelet count of an infected individual Avoid mosquito bites (use repellents, bed nets, eliminate standing water where mosquitoes breed) Vaccines are available in some countries / for certain groups, but prevention of mosquito exposure remains central IV fluids (to maintain blood pressure and hydration)Blood or platelet transfusions, if there is severe bleeding Oxygen therapy for breathing difficulty.

❖ KEYWORDS: *Dengue, risk factors, sanitation, platelet transfusion, NSAIDS.*

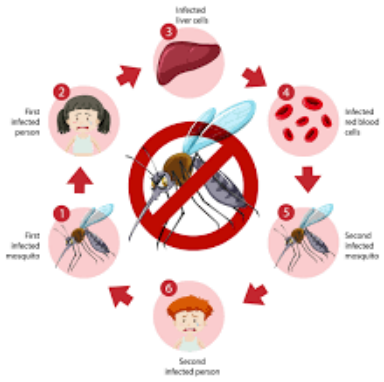
❖ INTRODUCTION

Dengue fever is an acute viral infection caused by the dengue virus (DENV), which is transmitted to humans through the bite of an infected female Aedes mosquito, mainly Aedes aegypti and Aedes albopictus .It is one of the most common mosquito-borne diseases in tropical and subtropical regions around the world, especially in Asia, the Pacific, the

Americas, and Africa. Dengue affects millions of people each year, posing a major public health problem in many developing countries. The disease is caused by four closely related virus serotypes — DENV-1, DENV-2, DENV-3, and DENV-4. Infection with one serotype provides lifelong immunity to that specific type but only temporary protection against the others. Therefore, a person can get dengue up to four times in their lifetime. Incubation period: 4–10 days after being bitten by an infected mosquito Symptoms include Sudden high fever, severe headache, pain behind the eyes, joint and muscle pain, nausea, vomiting, skin rash, and mild bleeding (like nose or gum bleeding)The illness is sometimes called break bone fever" because of the intense muscle and joint pain .In some cases, dengue can progress to severe dengue (dengue hemorrhagic fever or dengue shock The virus is transmitted to humans through the bite of an infected female Aedes mosquito, primarily ,Aedes aegypti (main vector)

Aedes albopictus (secondary vector) These mosquitoes are daytime biters, most active during early morning and late afternoon.

After biting an infected person, the mosquito becomes capable of transmitting the virus to others after an incubation period of about 8–12 days .Human beings are the main reservoir for the dengue virus .In some regions, monkeys can also act as secondary reservoirs (especially in forested cycles).When an infected mosquito bites a human, the virus enters the bloodstream and multiplies .The virus infects white blood cells and tissues, leading to immune system activation and release of chemical mediators, which cause Fever Inflammation, Vascular leakage (in severe cases)If a person who has had dengue before gets infected with a different serotype, the immune response can trigger a more severe reaction due to a process called antibody-dependent enhancement (ADE). syndrome), which can cause serious bleeding, organ damage, and ev deaifnot treated promptly en death if not treated promptly.



The life cycle of an Aedes mosquito has four distinct stages:

*Egg

*Larva

*Pupa

*Adult mosquito

This cycle takes about 8–10 days under warm, humid conditions.

1. Egg Stage

Female mosquitoes lay 100–200 eggs at a time on damp surfaces just above the waterline in containers like buckets, flower pots, tires, and tanks.Eggs can survive for months without water.When they come in contact with water, they hatch into larvae.

2. Larva Stage

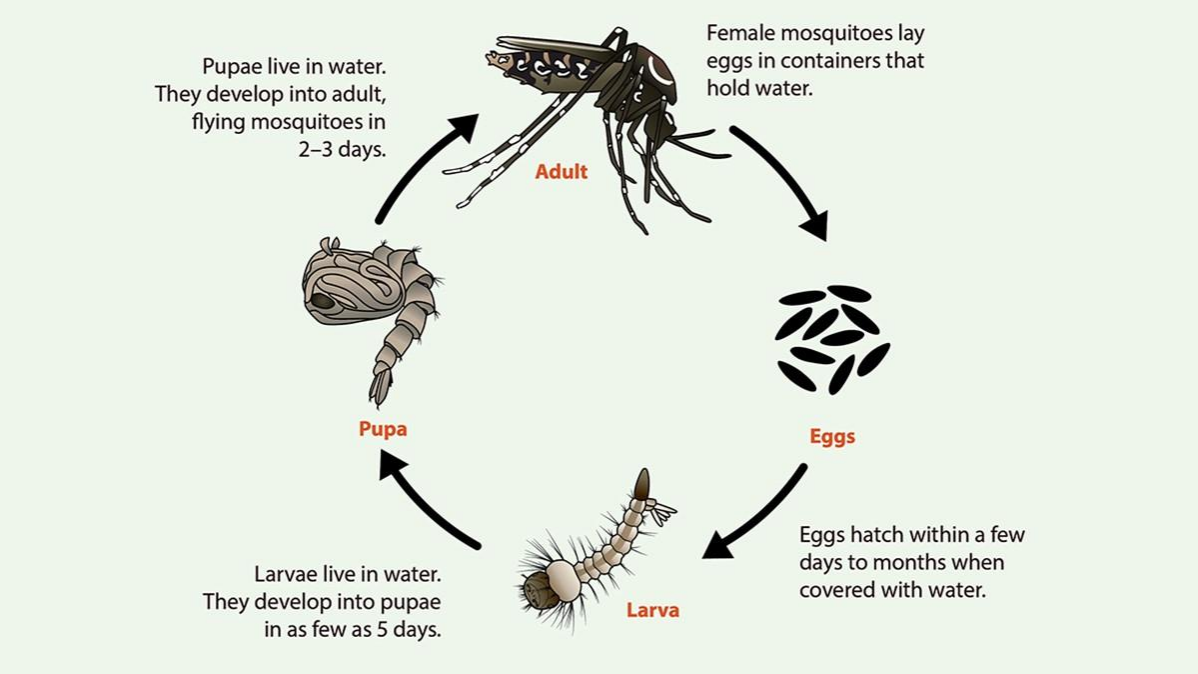
Larvae live in water and feed on organic matter such as microorganisms.They undergo four molts (instars) as they grow.They breathe through a tube at the surface of the water.This stage lasts about 4–5 days.

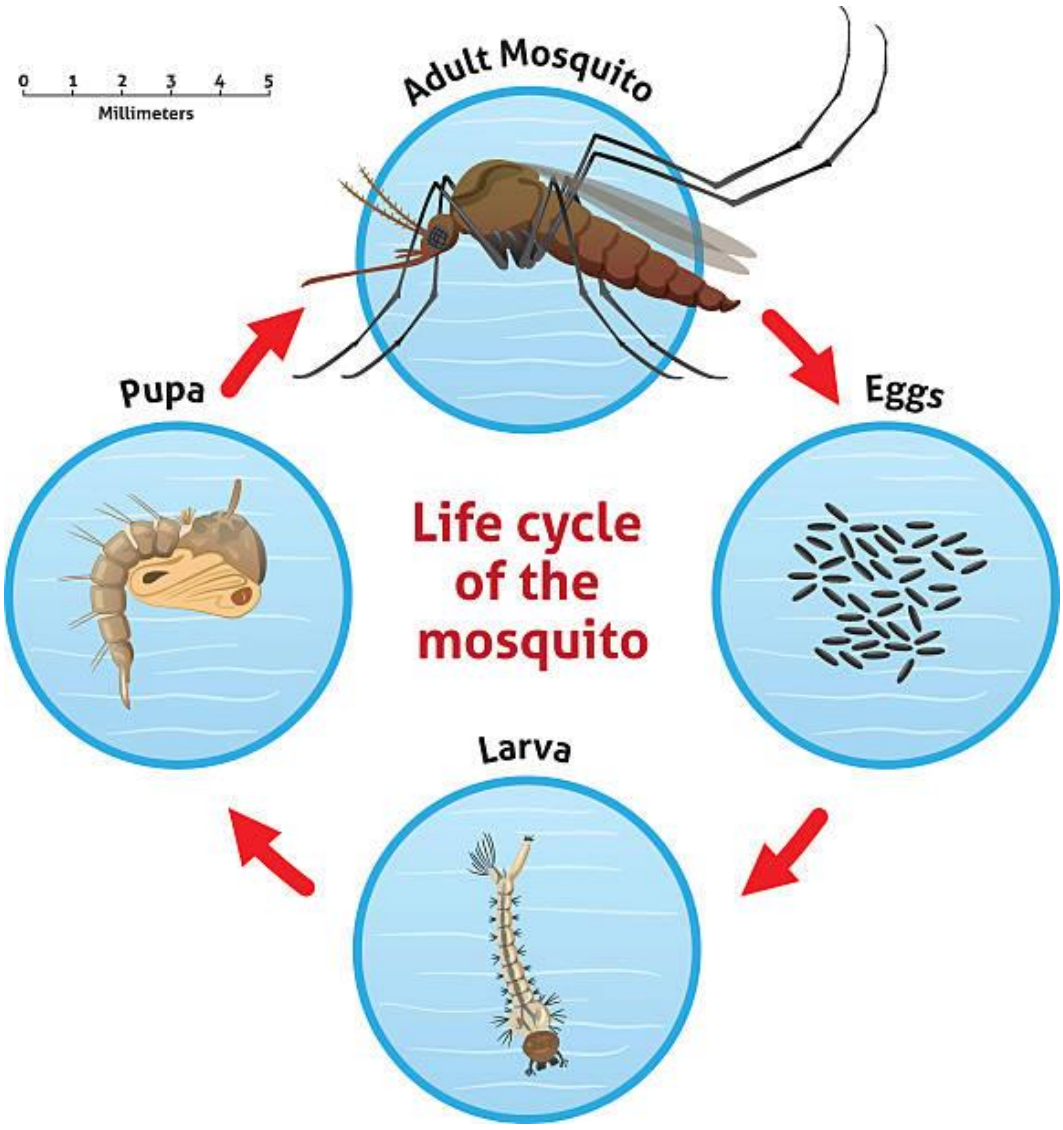
3. Pupa Stage

The pupa (also called a “tumbler”) is an inactive, non-feeding stage where the mosquito transforms into an adult.This stage lasts 1–2 days.

4. Adult Mosquito Stage

The adult mosquito emerges from the pupal case and rests for a few hours to dry its body and wings.Female mosquitoes need blood meals to produce eggs, while males feed only on nectar.Aedes aegypti typically bites during the daytime, especially in the early morning and late afternoon.After biting an infected person, the mosquito becomes capable of transmitting the virus to others after 8–12 days (the extrinsic incubation


Female mosquitoes lay eggs in containers that hold water.
Adult
Eggs
Eggs hatch within a few days to months when covered with water.
Larva
Larvae live in water. They develop into pupae in as few as 5 days.
Pupa
Pupae live in water. They develop into adult, flying mosquitoes in 2–3 days.


0 1 2 3 4 5
Millimeters
Adult Mosquito
Eggs
Larva
Pupa
Life cycle of the mosquito

Dengue Virus Life Cycle in Humans

The **human life cycle of dengue virus** (also called the **pathogenesis**

1.Transmission (Entry of the Virus)

- The **female *Aedes aegypti* or *Aedes albopictus*** mosquito bites a human to feed on blood.If the mosquito carries the **dengue virus (DENV)** in its saliva, the virus enters the human bloodstream through the mosquito's bite.

2. Virus Replication and Spread

Once inside the body, the virus infects immune cells such as monocytes, macrophages, and dendritic cells in the skin These infected cells travel to lymph nodes, where the virus multiplies rapidly .The virus then spreads throughout the bloodstream, leading to viremia (presence of virus in the blood).

3. Incubation Period

- This is the time between infection and appearance of symptoms, usually **4–10 days** after the mosquito bite .The person feels normal during this period, but the virus is actively multiplying inside the body.

4. Symptomatic Phase (Dengue Fever)

- As the virus spreads, the body's immune system reacts, releasing chemicals called cytokines, which cause:High fever, severe headache and body pain, pain behind the **eyes**, rash and mild bleeding

  This phase lasts about **2–7 days**.

5. Critical Phase (Severe Dengue)

In some people — especially those previously infected with another dengue serotype — the immune response becomes **overactive**, leading to,plasma leakage (fluid escapes from blood vessels ,drop in platelet count ,bleeding and shock

6. Recovery Phase

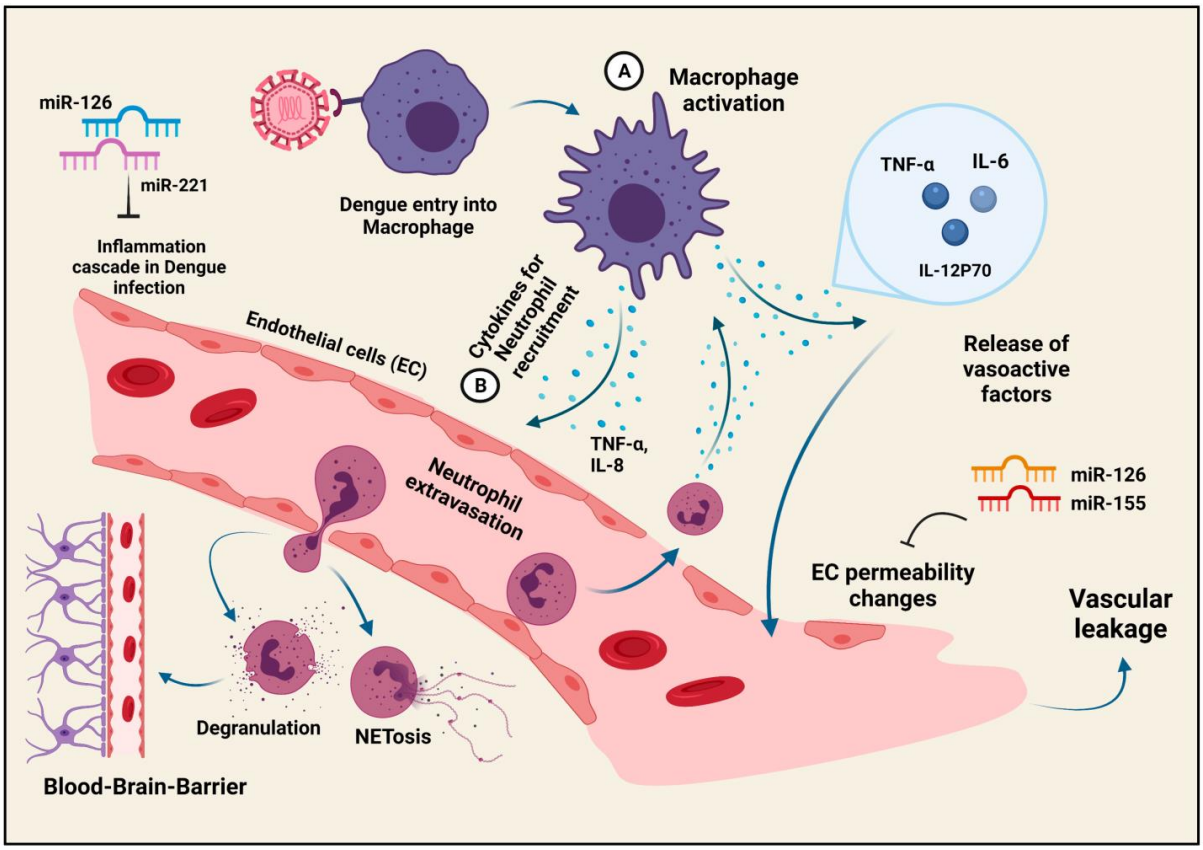
- After the critical period, most people recover as their immune system clears the virus.
- Antibodies (IgM and later IgG) are produced, providing long-term immunity to that specific dengue serotype.

7. Reinfection

- If the same person is later infected with a different dengue serotype, the immune response can be more severe due to antibody-dependent enhancement **(ADE)** — the body's previous antibodies help the new virus infect cells more efficiently, increasing the risk of severe dengue.

Summary Table

Stage	Description	Duration
Transmission	Bite by infected *Aedes* mosquito	—
Virus replication	Virus multiplies in immune cells	1–3 days
Incubation period	No symptoms; virus spreading	4–10 days
Symptomatic phase	Fever, pain, rash	2–7 days
Critical phase	Risk of plasma leakage, shock	1–2 days
Recovery phase	Symptoms improve, antibodies form	2–3 days



Hospital Treatment

Intravenous (IV) fluids: To maintain hydration and prevent shock in severe cases.Blood or platelet transfusions: If there is severe bleeding or very low platelet count.Oxygen theraphy for patients with breathing difficulty .Close monitoring: Vital signs, blood counts, and organ

function are regularly checked .Medications There are no antiviral drugs proven to kill the dengue virus.

Treatment focuses on symptom management:

Fever: Paracetamol

Pain: Paracetamol

Prevent dehydration: Oral or IV fluids

Note: Avoid self-medicating with NSAIDs (ibuprofen, aspirin) because dengue lowers platelet counts, increasing the risk of internal bleeding.

Recovery Phase

- Most people recover within **1–2 weeks**. Continued hydration and rest are important.Follow-up with a doctor may be necessary if symptoms worsen or new
- bleeding appears.

❖ REPORT

Dengue is a viral infection give rise by the mosquito female Aedes aegypti. The signs of an effected individual may be as severe headache, high fever, emesis in severe cases it leads to drastic loss of platelet count it can be diagnosed by the test RT-PCR(5days),NS1 Antigen test IgM Serology. Eventually it can be managed by no specific antigen therapy for mild cases NSAIDS can be prescribed in dreadful cases IV fluids and blood transfusion is stipulated. It can be eradicated by taking vaccine CYD-TDV vaccine (dengvaxia).

❖ CONCLUSION

Dengue is a viral infection bring by the mosquito female Aedes aegypti. The testimony of an effected individual may be as high fever, emesis in severe cases it leads to major loss of platelet count. The virus life cycle is come to pass in both mosquito and human, it can be diagnosed by the test RT-PCR(5days),NS1 Antigen test IgM Serology. Eventually it can be managed by no specific antigen therapy for mild cases NSAIDS can be prescribed in dreadful cases IV fluids and blood transfusion is stipulated. It can be eradicated by taking vaccine CYD-TDV vaccine (dengvaxia).

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