National Vector Borne Disease Control Programme

HEALTH BULLETIN FOR ASHA
ON PREVENTION AND CONTROL OF VECTOR BORNE DISEASES:
DENGUE FEVER

Bulletin 3 – March 2007

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Dengue Fever (DF)

Dengue is a viral disease spread amongst humans by the bite of an infected mosquito, *Aedes aegypti*. It occurs commonly as dengue fever.

Dengue Haemorrahagic Fever (DHF) / Dengue Shock Syndrome (DSS)

Dengue is caused by a virus belonging to genus *Flavivirus*. There are 4 serotypes of this virus (DEN-1, DEN-2, DEN-3 & DEN-4) and all are prevalent in India. The first infection with any serotype produces a self-limiting disease (Classical Dengue) with about a week's course of illness. There is long lasting immunity against the specific serotype responsible for the infection. However, subsequent infection with a different serotype may produce classical dengue or at times, in a few persons, produce severe form of illness (Dengue Haemorrahagic Fever or Dengue Shock Syndrome) that needs appropriate case management to prevent death.

Dengue Vector *Aedes aegypti*

Fig 1: *Aedes aegypti* mosquito

The *Aedes aegypti* mosquito is a small, black mosquito with white stripes and is approximately 5 mm in size, is a day biter, bites repeatedly and feeds on human beings in domestic and peridomestic situations.

In most states of India, *Aedes aegypti* mosquito is the major vector capable of transmitting dengue in different areas. In Kerala, *Aedes albopictus* play a role in transmission and breeds prolifically in water collected in the containers used for collection of latex in rubber plantation areas.

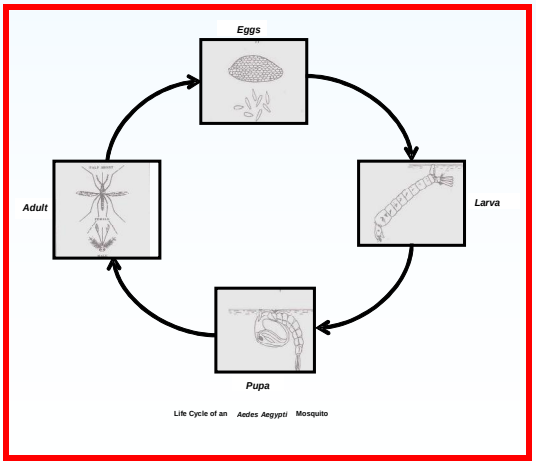

Fig 2: Life Cycle of an *Aedes aegypti* mosquito

The life cycle of an ***Aedes aegypti*** mosquito follows the pattern of other mosquitoes and comprises of four stages namely egg, larva, pupa and adult. Torpedo shaped eggs are laid in small water containers. The first stage larva (feeding stage) appears within 24 hours of contact with water. There are in all four larval stages, which last for 5-6 days. The fourth stage larva is followed by the comma-shaped, non feeding stage called pupa. This gives rise to the adult. The life-cycle under optimum conditions is completed within 7-10 days.

The female mosquitoes can survive up to 3 weeks under optimal conditions of temperature and humidity.

Dengue is preventable

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Transmission of Dengue

Dengue Transmission Cycle (Man-Mosquito Cycle)

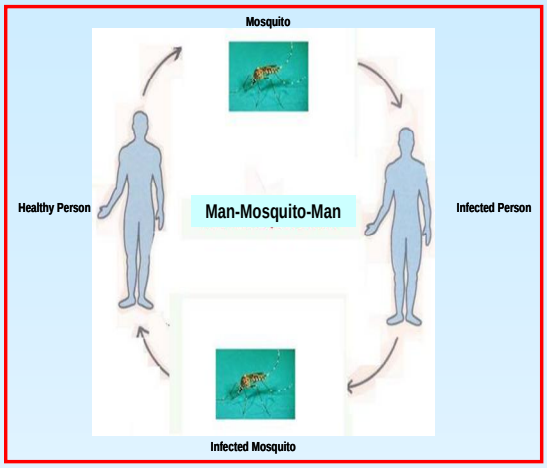

Fig 3: Dengue Transmission Cycle (Man-Mosquito Cycle)

The infected female *Aedes aegypti* mosquito transmits the dengue virus. When a female mosquito bites an infected person for a blood-meal, the virus circulating in the blood is also taken up. Once the mosquito becomes infected, it remains so for life.

The virus then multiplies in different organs of the female mosquito. After 8-10 days, the virus is ready to be passed on to a healthy person. When this infected insect (vector) bites a healthy person, the disease pathogen is transmitted to the next human host.

After the entry of the virus in the person, it multiplies in the blood of the human host. The symptoms develop when the virus has multiplied in sufficient numbers. This happens generally about 4-6 days (average) after getting infected with the virus. In this way, the spread of dengue fever goes on in the community unless effective prevention and control measures are undertaken.

An emerging public health problem

Dengue is the most important emerging public health challenge in India. Dengue viral activity has been widespread in India mainly in urban areas. However, with changing lifestyles and water management systems, the disease has spread to rural areas also. Dengue is an epidemic prone disease and the outbreaks usually occur during monsoons due to increased breeding potential of mosquito vectors. Outbreaks can also occur in areas with water scarcity.

The warm climate in the country offers congenial conditions for transmission and the population is at risk of dengue, except people who are living in areas above 5000 feet altitude, as dengue vectors are not found in cold climate.

Factors contributing to Dengue transmission

Human activities, behaviour and life styles have been responsible for spread of dengue fever. Some of the activities are -

- Unplanned and uncontrolled urbanization
- Inadequate/improper solid waste management and water supply and disposal systems
- Increased population movement facilitating spread of virus to newer areas
- Developmental activities creating increased breeding potential for mosquitoes

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Potential Breeding Sites for *Aedes* mosquitoes

The *Aedes* mosquito breeds in small water collections and water storage containers like drums and barrels, earthen pots and jars, flower pots and plant saucers, disused tyres, discarded plastic glasses and bottles, coconut shells, latex collecting cups in rubber plantations, desert coolers, overhead tanks, open cement tanks, curing tanks, mortar and pestle. The mosquito rests indoors, in closets and other dark places. Outside, the mosquito rests where it is cool and shady. The female mosquito lays eggs in clean water containers in and around houses, schools and work places.

Water storage tanks

Water coolers

Overhead water tanks

Barrels and dustbins

Discarded Plastic containers/ junk material

Discarded, Old tyres

Coconut shells

Construction sites

Under ground tanks

Mortar and Pestle

Rubber plantations

Arecanut soaking pot

Figure 4: Potential Breeding Sites for *Aedes* mosquitoes

Symptoms of Dengue

- High fever (sudden sharp rise in temperature) usually indistinguishable from other viral fever in case of primary dengue infection; accompanied by rash.
- Severe headache and flushed face
- Backache, severe pain in muscles and joints/bones of the extremities (The severe joint pains caused by Dengue Fever (DF) is the reason why DF is also called break-bone fever).
- Pain around eyes particularly on eye movement (retro-orbital pain), fear from strong light (Photophobia)
- Rash-diffuse or fleeting pinpoint eruptions on face, neck and chest followed by conspicuous rash on 3rd or 4th day.
- Other symptoms may include altered taste sensation, sore throat, nausea and vomiting, general depression, etc.

Look out for symptoms of Dengue/DHF

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Dengue may be fatal if a complication occurs such as high fever and a tendency to bleed.

Dengue Haemorrhagic Fever – Common symptoms for DHF include –

- Sudden rise in temperature (high fever) with flushing face and other symptoms of dengue fever like headache, muscle or joint pain, vomiting, etc.
- Rash, easy bruising and bleeding.
- Fine petechiae (scattered, pale and round areas on skin) on the extremities, axillae and face.

In any case of dengue fever, if there is bleeding from the nose, gums or black tarry stools, it indicates DHF and needs immediate admission to the hospital.

Treatment for Dengue

There is no specific treatment for Dengue/DHF. The patients need symptomatic medicines based on the presentation of the disease. Dengue fever can be managed with general medicines available with all medical care agencies like Primary Health Centres (PHCs) /Community Health Centre (CHCs) / clinics / Hospitals.

- Persons infected with dengue should use only Paracetamol tablets to keep the body temperature below 39° Celsius.
- Cold sponging is also helpful in bringing the temperature down.
- Avoid use of aspirin or anti-inflammatory drugs generally used by the people for treatment. Use of such drugs may precipitate bleeding.
- Patients should be advised to take rest, drink plenty of fluids, and consult a physician. Maintaining the proper fluid balance in the body is paramount to managing DHF.
- DHF causes loss of plasma of blood, which may become fatal if not managed properly. Suspected DHF patients must report immediately to PHCs/CHCs/hospitals for proper diagnosis & management.

Role of Accredited Social Health Activist (ASHA)

ASHA can help in detecting an unusual increase in fever incidence in her village which may be due to dengue.

1. **Conducting fever alert surveillance and timely reporting –** ASHA would conduct door-to-door fever alert surveillance activity on a weekly basis and report any occurrence of fever outbreak to the ANM/ health workers as well as the Medical Officer, Sector PHC. If the number of fever cases reported is five or more in a village in a week, it would be considered as an outbreak of fever.

   She could prescribe Paracetamol tablets three times a day to such patients with advice to take rest and drink plenty of fluids & fruit juices.

2. **Source reduction through health education –** As *Aedes* mosquitoes breed in clean water collections in and around houses, ASHA would provide health education to the community for preventing breeding of mosquitoes and advising the community for protection from mosquito bites by taking the following steps –

Free diagnosis and treatment for Dengue is available at government hospitals

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- Keeping clean environment in and around houses.
- Covering all water tanks and containers with tight lids.
- Emptying & drying water coolers, tanks, other water storage containers, at least once a week before refilling.
- Disposing & destroying all containers, junk materials, tyres, coconut shells, etc.
- Cleaning and draining roof gutters, tree holes, etc. and placing salt in ant-traps at least once a week.
- Turning sap containers used in rubber plantation upside down when not in use. This will prevent water collection in the latex collecting cups during the non-collecting season of latex by keeping the cups either tightly covered or inverted.
- Wearing full sleeved clothing to cover the body.
- Using mosquito nets, preferably insecticide treated ones, even when resting during the day time; as the *Aedes aegypti* mosquito is a day biter.

***Aedes* breeding can be prevented by taking the following preventive action:**

Figure 5: Prevent breeding of *Aedes* mosquitoes

Prevent breeding of mosquitoes and protect yourselves from mosquito bites …

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ASHA should advise the community that in stagnant water collections which cannot be emptied and dried, temephos may be added to the water in the prescribed quantity to make it free of *Aedes* mosquitoes.

3. **Community mobilization -** ASHA would explain that the vector mosquito *Aedes aegypti* does not breed in dirty water, garbage dumps and drains, which are the common sites for breeding of mosquitoes spreading filaria. The *Aedes aegypti* mosquito breeds in clean water in any type of man made containers or storage containers found in and around the premises, as explained above. This is a common fallacy among people and needs to be understood correctly. **C*ommunity action is the key to dengue prevention.*** Through community education, every household can undertake the very simple measures to prevent existing water collections from becoming places for breeding of *A.aegypti*. She must educate the residents living in areas infested with *Aedes aegypti* that the best preventive measure to reduce the risk of acquiring dengue is to eliminate the places where the mosquito lays her eggs, primarily artificial containers that hold water. This can be done by elimination of breeding sites. Since the mosquito does not travel far, "house cleaning" by all members of a community will ensure that no breeding places exist, preventing dengue from occurring.

   The main strategy in the prevention and control of dengue is "source reduction", or prevention of breeding places.

ASHA should help the community to organize a monthly cleanliness campaign in the village through the Village Health & Sanitation Committee

4. **Dissemination of information on early fever reporting and appropriate case management -** ASHA would be providing information to the community pertaining to prevention and control of Dengue. Further, ASHA would also explain the importance of early fever reporting and appropriate case management through Inter-personal communication. ASHA would also inform the community about the availability of free diagnostic and treatment facilities for Dengue available at government hospitals.

5. **Patient Education on danger signs for Dengue -** ASHA would provide health education to the community on the symptoms of Dengue/DHF. ASHA will also educate the community about the danger signs for Dengue so that the patient if suffering from the following complaints can be rushed by the family members to a hospital immediately.

- Bleeding from any site (fresh red spots on skin, black stools, red urine, nose bleed, bleeding from vaginum)
- Severe abdominal pain, refusal to take orally / poor intake, persistent vomiting
- Not passing urine for 12 hours / decreased urinary output
- Restlessness, seizures, excessive crying (in case of a young infant), altered sensorium and behaviour change and severe persistent head ache
- Cold clammy skin
- Sudden drop in temperature

DHF may prove fatal if the patient is not admitted to a hospital

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6. **Dengue outbreak situation –** The role of ASHA in a dengue outbreak situation may be described as under –

- Provide paracetamol tablets to all fever cases in the following dosage -

Age	Paracetamol Drug Dosage
1-2 years	**60-120 mg**
3-6 years	**120 mg**
7-12 years	**240 mg**
Adult	**500 mg**

Table: Paracetamol Drug Dosage Chart

- Advising cold sponging so that the temperature does not shoot up 39° Celsius or above.
- Advising the patient to take plenty of fluids/ fruit juice.
- Advising not to use Aspirin or other drugs without consultation of the doctor.
- Informing the health workers of sub-centre about the upsurge in fever cases.
- Referring the cases having any sign of bleeding from nose, skin, black tarry stools or petechiaecal haemorrhage in skin to the hospital for immediate admission.
- Organising interim village cleanliness drive to remove all junk materials with the help of Village Health and sanitation Committee.
- House to house checking for water storage containers and emptying them on every 6^{th}-7^{th} day.
- Treating water containers which cannot be emptied with Temephos (1 ppm dose) with the help of the health workers.

Dengue fever could be fatal.
Avoid its spread.
Report to Medical Officer, PHC
or Health Worker
in case of an upsurge in fever cases.