World Health Organization
Regional Office for the Eastern Mediterranean

Fact sheet

Dengue and severe dengue

Key facts

- Dengue is a mosquito-borne viral infection.
- The infection causes flu-like illness, and occasionally develops into a potentially lethal complication called severe dengue.
- The global incidence of dengue has grown dramatically in recent decades.
- About half of the world's population is now at risk.
- Dengue is found in tropical and sub-tropical climates worldwide, mostly in urban and semi-urban areas.
- There is no specific treatment for dengue/ severe dengue, but early detection and access to proper medical care lowers fatality rates below 1%.
- Dengue prevention and control solely depends on effective vector control measures.

Dengue is a mosquito-borne infection found in tropical and sub-tropical regions around the world. In recent years, transmission has increased predominantly in urban and semi-urban areas and has become a major international public health concern.

There are four distinct, but closely related, serotypes of the virus that cause dengue (DEN-1, DEN-2, DEN-3 and DEN-4). Recovery from infection by one provides lifelong immunity against that particular serotype. However, cross-immunity to the other serotypes after recovery is only partial and temporary. Subsequent infections by other serotypes increase the risk of developing severe dengue.

Regional burden of dengue

The incidence of dengue has grown dramatically around the world in recent decades. Within the Eastern Mediterranean Region, the incidence of dengue has increased dramatically since 2000, with a total of 16 reported outbreaks including 60 790 suspected/confirmed cases and 245 deaths.

Dengue is considered a re-emerging disease in the Region due to the fact that it is not yet mapped and known in the affected Member States. Not enough epidemiological data are being generated as yet. Many factors are responsible for the rise in incidence in the Region. These include demographic changes explained by unprecedented population growth and unplanned and uncontrolled urbanization. This has led to enhancement of vector breeding and thus increased contact between humans and vectors (i.e. more mosquitoes living closer to more people). Other factors responsible for the emergence of the disease includes increased air travel, inadequate and deteriorating public health infrastructure and changes in vector distribution and density associated with lack of effective mosquito control.

Transmission

The *Aedes aegypti* mosquito is the primary vector of dengue. The virus is transmitted to humans through the bites of infected female mosquitoes. After virus incubation for 4–10 days, an infected mosquito is capable of transmitting the virus for the rest of its life.

Infected humans are the main carriers and multipliers of the virus, serving as a source of the virus for uninfected mosquitoes. Patients who are already infected with the dengue virus can transmit the infection (for 4–5 days; maximum 12) via *Aedes* mosquitoes after their first symptoms appear.

The *Aedes aegypti* mosquito lives in urban habitats and breeds mostly in man-made containers. Unlike other mosquitoes Ae. aegypti is a daytime feeder; its peak biting periods are early in the morning and in the evening before dusk. Female *Ae. aegypti* bites multiple people during each feeding period.

Aedes albopictus is a secondary dengue vector in Asia.

Characteristics

Dengue fever is a severe, flu-like illness that affects infants, young children and adults, but seldom causes death.

Dengue should be suspected when a high fever (40°C/ 104°F) is accompanied by two of the following symptoms: severe headache, pain behind the eyes, muscle and joint pains, nausea, vomiting, swollen glands or rash. Symptoms usually last for 2–7 days, after an incubation period of 4–10 days after the bite from an infected mosquito.

Severe dengue is a potentially deadly complication due to plasma leaking, fluid accumulation, respiratory distress, severe bleeding, or organ impairment. Warning signs occur 3–7 days after the first symptoms in conjunction with a decrease in temperature (below 38°C/100°F) and include: severe abdominal pain, persistent vomiting, rapid breathing, bleeding gums, fatigue, restlessness, blood in vomit. The next 24–48 hours of the critical stage can be lethal; proper medical care is needed to avoid complications and risk of death.

Treatment

There is no specific treatment for dengue fever.

For severe dengue, medical care by physicians and nurses experienced with the effects and progression of the disease can save lives – decreasing mortality rates from more than 20% to less than 1%. Maintenance of the patient's body fluid volume is critical to severe dengue care.

Immunization

There is no vaccine to protect against dengue. Developing a vaccine against dengue/severe dengue has been challenging although there has been recent progress in vaccine development. WHO provides technical advice and guidance to countries and private partners to support vaccine research and evaluation. Several candidate vaccines are in various phases of trials.

Prevention and control

At present, the only method to control or prevent the transmission of dengue virus is to combat vector mosquitoes through:

- Preventing mosquitoes from accessing egg-laying habitats by environmental management and modification;
- Disposing of solid waste properly and removing artificial man-made habitats;
- Covering, emptying and cleaning of domestic water storage containers on a weekly basis;
- Applying appropriate insecticides to water storage outdoor containers;
- Using of personal household protection such as window screens, long-sleeved clothes, insecticide-treated materials, coils and vaporizers;

- Improving community participation and mobilization for sustained vector control;
- Applying insecticides as space spraying during outbreaks as one of the emergency vector control measures;
- Active monitoring and surveillance of vectors, which should be carried out to determine the effectiveness of control interventions.

WHO response

WHO responds to dengue in the following ways:

- Supports countries in the confirmation of outbreaks through its collaborating network of laboratories;
- Provides technical support and guidance to countries for the effective management of dengue outbreaks;
- Supports countries to improve their reporting systems and capture the true burden of the disease;
- Provides training on clinical management, diagnosis and vector control at the regional level with some of its collaborating centres;
- Formulates evidence-based strategies and policies;
- Develops new tools, including insecticide products and application technologies;
- Gathers official records of dengue and severe dengue from over 100 Member States;
- Publishes guidelines and handbooks for case management, dengue prevention and control for member States.

For more information:
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