

DENGUE

Dengue is a viral febrile illness that is most commonly transmitted to humans through the bite of infected *Aedes* species mosquitoes. It occurs primarily in tropical and subtropical climates worldwide, mostly in urban and semi-urban areas.

This disease is endemic in numerous countries in Africa, the Americas, Southeast Asia, Eastern Mediterranean, and the Western Pacific region. The number of infections worldwide is rising, and the virus is also spreading to areas where it was not previously present.

In Europe, indigenous or locally acquired cases have been confirmed in Croatia, France, Spain, and Italy, as well as on the Portuguese island of Madeira. It is no longer just a matter of individual cases; larger local outbreaks have also been reported. The ECDC reported 83 locally acquired cases in France, 213 in Italy, and 8 in Spain for the year 2024.

Dengue is not endemic in Slovenia, and indigenous transmission among humans has not yet been confirmed. In Slovenia, we have recorded imported cases among individuals who became infected while traveling or staying in areas where dengue is present.

Cause

Dengue is caused by the dengue virus, which is a member of *Flavivirus* genus within the *Flaviviridae* family. There are 4 dengue virus serotypes: DENV-1, DENV-2, DENV-3, and DENV-4. Each of them can cause a mild or severe form of the disease.

Incubation period

The time from infection to the onset of symptoms is usually 4 to 10 days, but can range from 3 to 14 days.

Transmission

The dengue virus is transmitted to humans through the bites of infected female mosquitoes, primarily the *Aedes aegypti* mosquito. The virus can also be transmitted by the *Aedes albopictus*, tiger mosquito, which is also present in part of Europe and Slovenia.

A mosquito becomes infected when it feeds on the blood of a person who has the virus in their blood. The source of the virus may be a person with symptoms, a presymptomatic person, or an asymptomatic person. Transmission of the virus from a person to a mosquito is possible as early as about two days before the onset of symptoms and for about two days after the fever subsides. In most people infected with the virus, viremia (that is, the presence of the virus in the blood) lasts about four to five days, but it can also last longer.

After a mosquito is infected, it takes time for the virus to multiply to a sufficient level within the mosquito and reach salivary glands. The rate at which the virus multiplies depends primarily on temperature, and this process takes approximately 8–12 days at 25–18 °C. An infected mosquito transmits the dengue virus until the end of its life.

Aedes mosquitoes bite mainly during the day and can bite throughout the day, although they are often most active in the early morning and late afternoon. Therefore, protection against bites is necessary not only in the morning and evening, but throughout the day.

Dengue is not transmitted with casual indirect human contacts. In extremely rare cases, however, transmission is possible through infected blood, during blood transfusions, stem cell and organ transplantations, from mother to child, and due to needle injuries in healthcare settings.

Susceptibility to infection

Anyone who comes into contact with dengue virus is susceptible to infection. Travellers who travel to areas with ongoing transmission or a current dengue outbreak are particularly at risk.

After recovering from an infection, long-term protection develops against the serotype that caused the infection, while protection against the other three serotypes is only temporary. Reinfection with a different serotype is associated with a higher risk of severe dengue, although severe dengue can also develop during the first infection.

Symptoms

Dengue virus infection is most often asymptomatic. Estimates of the proportion of asymptomatic infections range from approximately 40 to 80 percent. When symptoms do appear, the illness often begins suddenly and may resemble the flu. The fever typically lasts 2 to 7 days.

The main symptoms and signs include high fever, severe headache, pain behind the eyes, muscle and joint pains, nausea vomiting, enlarged lymph nodes, and a rash. Mild bleeding may also occur (e.g., nosebleeds or bleeding from the gums, petechiae, and bruises).

According to the current classification, we distinguish between dengue without warning signs, dengue with warning signs, and severe dengue. Up to approximately 5% of people who develop symptomatic dengue may develop a severe, life-threatening form of the disease.

Warning signs often appear when the fever subsides or stops. These include severe abdominal pain, persistent vomiting, rapid or laboured breathing, fluid accumulation, bleeding from the mucous membranes, blood in vomit or stool, extreme fatigue, drowsiness, restlessness, pale and cold skin, and a feeling of extreme weakness.

The critical period generally begins when the fever subsides and lasts approximately 24–48 hours. In case of severe dengue, increased capillary permeability can cause fluid to leak from the bloodstream, which may lead to shock. Severe dengue can also be accompanied by severe haemorrhaging or organ damage, such as to the liver, heart, or central nervous system.

The end of fever does not always mean that illness has run its course. If warning signs appear as the fever subsides or if the patient's condition worsens, seek medical attention immediately.

Treatment

There is no specific antiviral treatment for dengue. Treatment is supportive and includes rest, adequate fluid intake, monitoring the patient's condition, and, if necessary, paracetamol to reduce fever and relieve pain.

Aspirin (acetylsalicylic acid), ibuprofen, and other nonsteroidal anti-inflammatory drugs are not recommended because they may increase the risk of bleeding. Patients should consult a doctor or pharmacist before using these medications.

People with warning signs or severe dengue require hospitalization and careful fluid replacement. Early detection of the disease and timely, appropriate medical care can reduce the mortality rate from severe dengue to less than 1%.

Prevention

Preventing dengue relies primarily on protecting against mosquito bites and reducing the number of places where mosquitoes breed. Since *Aedes* mosquitoes bite mainly during the day, protective measures should be taken throughout the day.

Protection against mosquito bites

1. Wear light-coloured, loose-fitting clothing with long sleeves and long pants that cover as much skin as possible.
2. Apply insect repellents containing DEET, Icaridin, Picaridin, or IR3535 to exposed skin and clothing. Always follow the manufacturer's instructions, age restrictions, and directions for use.
3. Use mosquito screens on windows and doors; if you are resting or sleeping during the day, use a mosquito net over your bed as well.
4. If possible, choose accommodations with air conditioning and well-sealed rooms.
5. If necessary, use appropriate insecticides, electric vaporizers, or mosquito coils in accordance with the instructions for safe use.

Reducing mosquito breeding

1. Regularly empty, clean, or cover containers that can hold water, such as flower pot saucers, buckets, barrels, watering cans, and other small outdoor containers.
2. Remove trash and objects that can collect water after it rains.
3. Cover water containers tightly and clean them regularly; when emptying them is not possible, use a registered insecticide for this purpose in accordance with the instructions.

Recommendations for travellers

1. Before travelling, check the epidemiological situation at your destination and, if necessary, consult a clinic specializing in vaccinations and travel medicine.
2. Before you leave, make sure you have adequate health insurance, a travel first-aid kit, and information about healthcare options at your destination.
3. If you develop a fever during your trip or within two weeks of returning from a dengue-affected area, tell your doctor where you travelled.
4. A person with suspected dengue fever should protect themselves from further mosquito bites, especially during the first week of the illness, to reduce the likelihood that local mosquitoes will become infected and transmit the virus further.

Vaccination against dengue

Qdenga® vaccine has a valid marketing authorization in the European Union, but it is not currently available on the Slovenian market.

Qdenga® vaccine is authorised in the European Union for dengue prevention in individuals aged four years and older. Basic vaccination includes two doses, 0.5 ml each; the second dose is administered three months after the first one.

The decision regarding a traveller's vaccination is made on individual basis after consultation with a travel medicine specialist. For people from non-endemic countries, the expected benefit is greatest among those who have already had dengue and are travelling again to a risk area. The World Health Organization states that the benefit for travellers without a prior infection is lower than for those who have previously been infected.

In individuals who had not been infected with the dengue virus prior to vaccination, efficacy was demonstrated against DENV-1 and DENV-2, however it was not demonstrated against DENV-3. For DENV-4, efficacy could not be reliably demonstrated due to the small number of cases. These findings do not imply that the vaccine provides the same level of protection against all serotypes in all individuals.

Protection starts approximately 14 days after the first dose. For longer-lasting protection, the vaccination must be completed with a second dose three months later. The vaccine does not prevent all cases of dengue and does not replace protection against mosquito bites.

Because Qdenga® is a live-attenuated vaccine, it is contraindicated in pregnant women, breastfeeding mothers, and individuals with certain congenital or acquired immune deficiency or those who are receiving certain immunosuppressive therapies. An individual medical consultation is therefore required prior to vaccination.

Sources

[World Health Organization \(WHO\): Dengue – fact sheet, 21. 8. 2025](#)

[European Centre for Disease Prevention and Control \(ECDC\): Factsheet for health professionals about dengue](#)

[ECDC: Historical data on local transmission of dengue in the EU/EEA](#)

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[Evropska komisija: Qdenga – Povzetek glavnih značilnosti zdravila in navodilo za uporabo](#)

[WHO: Vaccines and immunization – Dengue, Questions and answers, 10. 4. 2025](#)

[WHO: WHO position paper on dengue vaccines – May 2024](#)