



# DISEASES TRANSMITTED BY MOSQUITOES

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**MOSQUITOES AND DISEASES THAT TRANSMIT, SUCH AS MALARIA, YELLOW FEVER, DENGUE FEVER, JAPANESE ENCEPHALITIS, AND MANY OTHERS, ARE A FEARED THREAT, ESPECIALLY FOR PEOPLE LIVING IN TROPICAL AREAS.**

**ON A GLOBAL SCALE, MOSQUITOES INFECT MORE THAN 700 MILLION PEOPLE A YEAR.**

**MOSQUITOES CAN ACT AS VECTORS FOR MANY DISEASE-CAUSING VIRUSES AND PARASITES.**

**INFECTED MOSQUITOES CARRY THESE ORGANISMS FROM PERSON TO PERSON WITHOUT EXHIBITING SYMPTOMS THEMSELVES. TOURISM HAS DEVELOPED SHARPLY IN RECENT YEARS AND EXOTIC COUNTRIES ARE A BIG DRAW, WE WILL BRIEFLY DESCRIBE INDIVIDUAL DISEASES, THEIR THERAPY, AND POSSIBLE PREVENTION IN THIS ARTICLE. MOSQUITOES CAN TRANSMIT VARIOUS DISEASES, WHETHER VIRAL OR PARASITIC. ONE OF THE MOST FAMOUS MOSQUITO-BORNE DISEASES IS MALARIA.**

**MALARIA ONE OF THE MOST PREVALENT INFECTIOUS DISEASES, AFFECTING MAINLY TROPICAL AND SUBTROPICAL REGIONS – SUB-SAHARAN AFRICA, SOUTHEAST ASIA, THE AMAZON REGION OF SOUTH AMERICA, INDIA.**

**APPROXIMATELY 300–500 MILLION PEOPLE GET SICK A YEAR. ORIGIN AND TRANSMISSION: THE TERM “MALARIA” INCLUDES SEVERAL FEBRILE DISEASES THAT ARE CAUSED BY PARASITIC ELEMENTS. ACCORDING TO THE TYPE OF PLASMODIUM,**

**WE KNOW SEVERAL TYPES OF MALARIA, DIFFERENT IN PARTICULAR BY CLINICAL COURSE AND MORTALITY. THE CARRIER TO HUMANS IS A FEMALE MOSQUITO, OF THE GENUS ANOPHELES, INFECTED WITH THIS PARASITE. AFTER THE PINCHING OF A PERSON,**

**PLASMODIUM TRAVELS TO THE LIVER, WHERE ITS REPRODUCTION OCCURS. SUBSEQUENTLY, IT ENTERS THE RED BLOOD CELLS – ERYTHROCYTES, WHERE THEY MULTIPLY MASSIVELY AGAIN, DAMAGE THEM AND FLUSH INTO THE BLOODSTREAM. THESE PERIODS OF LEACHING INTO THE BLOOD CAUSE A TYPICAL CLINICAL PICTURE IN THE FORM OF “MALARIAL SEIZURES.” PREGNANT WOMEN AND CHILDREN ARE PARTICULARLY AT RISK BECAUSE IN AREAS WHERE MALARIA OCCURS,**

Clinical signs of malariaThe disease often begins suddenly, with headaches, muscles, fatigue, alternating chills with a feeling of heat and, above all, fever. Also, symptoms from the digestive tract, such as vomiting, diarrhea, may be present. Initially, these are flu-like symptoms. Feverish seizures begin to repeat rhythmically, which is an important diagnostic step for the doctor (in addition to a history of staying in a tropical country). In the next course of the disease, pallor of the skin and mucous membranes, an image of anemia (from the breakdown of red blood cells), or yellow discoloration of the skin and sclera (jaundice) occurs. In the absence of treatment, especially if it is a serious — a tropical type of malaria, severe and sometimes fatal complications can develop for several days. These include damage to the kidneys, heart, digestive tract (diarrhea), lungs (edemas) and “cerebral malaria” (cerebral malaria), which can lead to a coma, up to death.

## **Diagnosis and treatment of malaria**

The diagnosis is established during an active disease, microscopic evidence of malaria parasites in the blood preparation (blood smear), during the feverish phase. But even the clinical symptoms themselves and anamnestic-reported stay in a tropical country increase the suspicion of this disease. Malaria is a life-threatening disease, therefore, when suspected, it is necessary to see a doctor immediately. The disease should be treated at an early stage. In the treatment, antimalarials are used, in which the doctor must take into account the place and length of stay abroad, the appearance of resistance — resistance of reptile to antimalarials in the place of stay and the health of the traveler. Treatment of malaria, especially of severe types, must begin as soon as possible, even if suspected, even without the existing result of microscopic evidence of parasites.

**Prevention** — prophylaxis If you plan to travel to an area with the appearance of malaria, you should first consult your doctor about taking chemoprophylaxis — prevention drugs (antimalarial). However, beware, the use of protective equipment does not protect you 100% from malaria. Therefore, it is necessary not to forget about the use of repellents — means for insect repellent, wearing long pants, long-sleeved T-shirts, sleeping under a mosquito net — mosquito nets.

Other diseases, transmitted by various types of mosquitoes, include:

## **Yellow fever**

The causative agent of the disease is the yellow fever virus, RNA-virus from the genus flaviviruses. It is found endemically in some tropical countries of Africa and America. A person can become infected exclusively by stinging a yellow fever mosquito (*Aedes aegypti*). Yellow fever is an acute, febrile disease. It belongs to hemorrhagic infectious diseases, therefore it is accompanied by internal and external bleeding. It takes place in two stages. At the first stage, non-specific symptoms, such as fever, chills, headaches or limbs, slowed pulse, nausea and vomiting, occur, which can subside after a few days. It follows, but only in the part of the affected, the second phase with a re-output of temperature, jaundice, kidney damage, as well as internal and external bleeding, which in 50% of cases ends fatally. In the framework of prophylaxis, a vaccine is used, which contains a weakened strain of yellow fever virus (vaccination with a live vaccine).

## **Dengue fever**

The causative agent is a dengue virus, serotypes 1–4. It occurs endemically in tropical areas. Transmission to humans is mediated by mosquitoes, mainly a species of *Aedes aegypti*. Air transport also contributes to the transmission of the disease, with cases of so-called “sickness” already described. “airport dengue fever”. Dengue infection can occur with the image of feverish virosis, with a skin rash—sowing, but also as a severe hemorrhagic fever, which can result in shock syndrome (DSS—dengue shock syndrome).

## **Papatači fever**

The disease is provoked by viruses from the genus Phlebovirus, transmitted by the phlebotomus Papatači mosquito. This feverish disease occurs in the Mediterranean, the Balkans, the Regions of the Caucasus, the Red Sea, Iran, Iraq, Afghanistan, India, and elsewhere. Clinically, it occurs as a sudden fever, accompanied by headaches and sweating. Symptoms last 3 days, and the course of the disease is mostly uncomplicated.

## **Chikungunya**

The causative agent of fever is an alpha-faith in the family Togaviridae. The virus is widespread in sub-Saharan Africa, the Arabian Peninsula, Southeast Asia, New Guinea, and some western Pacific islands.

The carrier of the infection is a mosquito of the genus *Aedes*. The disease begins suddenly with temperature (39–40 st. C), with chills, which lasts a maximum of 10 days.

Accompanying symptoms are nausea, headaches, muscle and joint pain. Skin rash appears in 60–80% in the area of the trunk and limbs. A rare complication that has been described in this disease is meningoencephalitis — inflammation of the brain and its enveloping. Treatment is symptomatic, i.e. treatment of clinical signs.

# Japanese Encephalitis B

The causative agent of the disease is flaviviruses, which is transmitted by mosquitoes, mainly *Culex tritaeniorhynchus*.

In the clinical picture dominated high temperature, fatigue, possibly vomiting. In some cases, a disorder of gait is also present, tremor of the limbs to convulsions, which, with a bad course, can progress into a coma.

In prophylaxis, an inanimate vaccine is available in our country, suitable for travelers to endemic areas of Asia, especially during the rainy season.

# West Nile Fever

Its originator is widespread in the world. In Europe, it has been demonstrated in southern Russia, Ukraine, Moldova, Belarus, Romania, France, Spain, Portugal, Hungary, Slovakia, and the Czech Republic (Hubálek and Halouzka 1996). The carrier of this virus is a species of *Culex pipiens* mosquito and is often the cause of the outbreak. The clinical picture is characterized by a sudden onset of fever lasting 3–5 days. Other symptoms include headaches, neck, musculoskeletal system, sowing of rashes on the torso and limbs, fatigue, loss of appetite, and abdominal pain. In 15% of cases of West Nile fever, complications such as inflammation of the brain, liver, pancreas, and heart muscle were described. The mortality rate varies between 5–10% of the infected.