

# CHIKUNGUNYA

## in the WHO EUROPEAN REGION

This information leaflet contains six sections and is intended for a generic and public health audience:

### 1. Chikungunya appeared in Europe in 2007.

What are the risks in European countries?

### 2. Chikungunya is transmitted by *Aedes* mosquitoes.

How is the disease transmitted? What are the risk factors?

### 3. Disease characteristics of chikungunya.

What are the symptoms and how can it be treated?

### 4. Chikungunya can be prevented.

What measures can be taken to protect yourself?

### 5. WHO response.

How is WHO responding and what support could you get?

### 6. More information is available.

Where can you find more information and guidance on effective prevention and control activities?



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### Key messages

- Chikungunya is a mosquito-borne viral disease, caused by the Chikungunya virus (family: *Togaviridae*, genus: *Alphavirus*). It is transmitted to humans by virus-carrying *Aedes* mosquitoes. Symptoms are fever, joint and muscle pain, headache, nausea, fatigue and rash. Most patients recover fully.
- In recent decades the *Aedes* mosquitoes carrying chikungunya have spread to the European Region. In 2007, a chikungunya outbreak was reported for the first time in Italy.
- The presence of natural and man-made containers that serve as mosquito breeding sites around human habitation is a significant risk factor for chikungunya.
- There is no cure for the disease. Treatment is focused on relieving the symptoms; however some of the symptoms may last for weeks.
- Vector control and risk communication are needed to tackle the spread of the disease.
- Tourists are at risk of infection when travelling to Africa, Asia, the Caribbean and the Indian subcontinent.



# 1. Chikungunya appeared in Europe in 2007

Local transmission of chikungunya in Europe was reported for the first time in 2007, in a localized outbreak in north-eastern Italy. More than 200 cases were confirmed showing that transmission by *Ae. albopictus* is possible in a European context. The second autochthonous transmission in Europe occurred in southern France in 2010 (a single case). In December 2013, France reported 2 laboratory-confirmed autochthonous (native) cases of chikungunya in the French part of the Caribbean island of St Martin. Since then, local transmission has been confirmed in the Dutch part of Saint Martin, Anguilla, British Virgin Islands, Dominica, French

Guiana, Guadeloupe, Martinique and St Barthelemy. Aruba only reported imported cases. A large number of imported cases in Europe were associated with the outbreak in the Indian Ocean, which started in 2005.

Chikungunya, a mosquito-borne viral disease, was first described during an outbreak in southern Tanzania in 1952. The name derives from a word in the Kimakonde language, meaning “to become contorted” and describes the stooped appearance of sufferers with joint pain.



Riverbank, Castiglione di Cervia, province of Ravenna, 18 September 2007.

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# 2. Chikungunya is transmitted by mosquitoes

The virus is transmitted from human to human by the bites of infected female mosquitoes. Most commonly, the mosquito species involved are *Aedes aegypti* and *Aedes albopictus* (often called the tiger mosquito). Both species can transmit other viral pathogens (e.g. dengue, yellow fever, and West Nile viruses).

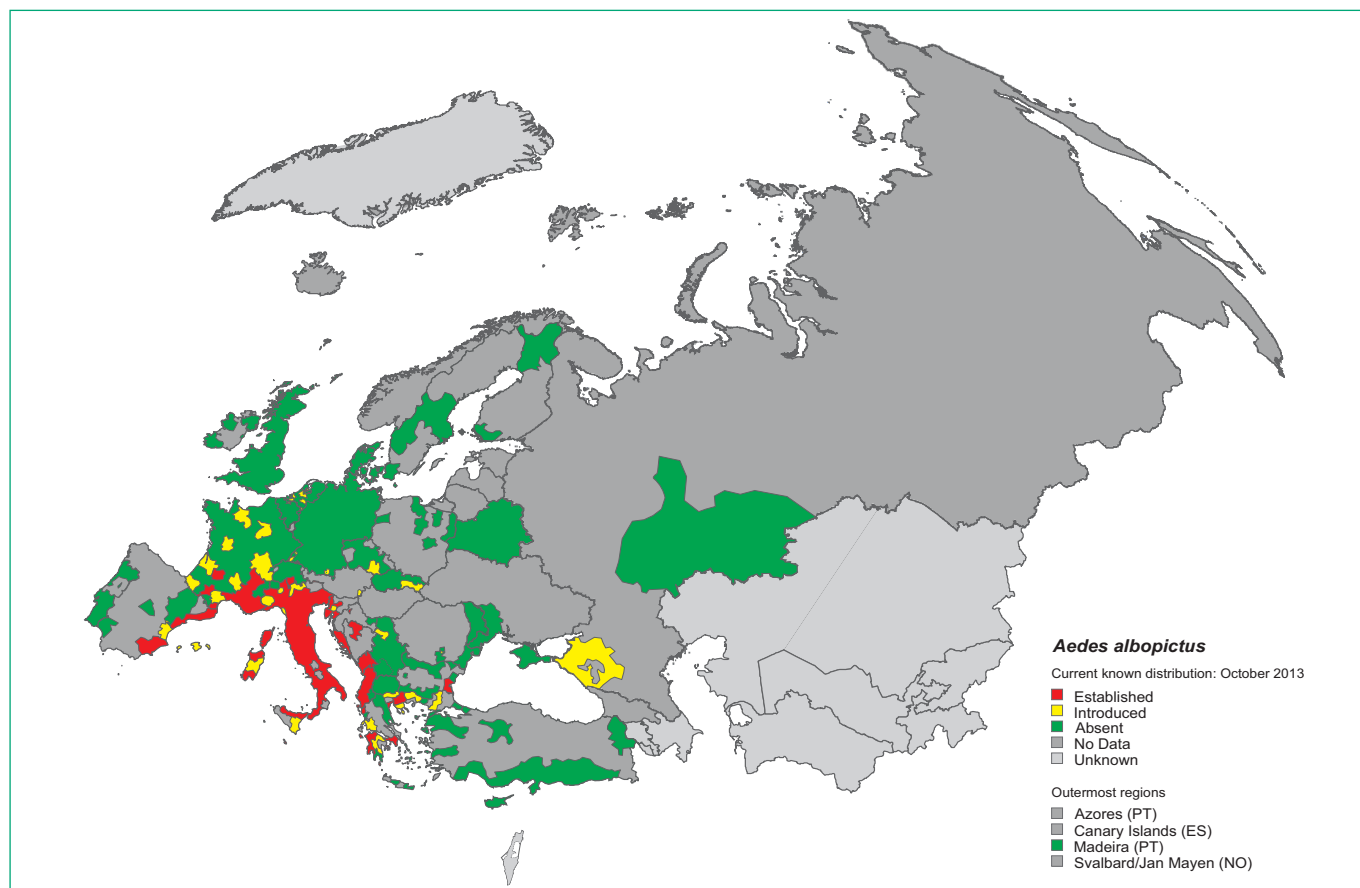
The presence of natural and man-made containers that serve as breeding sites around human habitation is a significant risk factor for chikungunya in those areas where *Aedes* species are established or present. Travelling to risk areas without precaution provides a further risk after return.

Changes in travel, trade, migration, urbanization and environmental factors affect the distribution of insect vectors and disease transmission in the European Region.

- ***Aedes albopictus*** is reported to be widely established and spreading in the Mediterranean basin from Spain to Greece. Recently it was found at places around the Black Sea coast (Bulgaria, Georgia, Romania, southern Russian Federation, Turkey). A few mosquitoes have been detected in countries north of the Alps but their establishment has so far not been confirmed. Once the mosquito is established it is very difficult to eliminate. The *Ae. albopictus* species thrives in a wide range of water-filled containers, including tree holes and rock pools, in addition to artificial containers such as vehicle tyres, saucers beneath plant pots, rain water barrels and cisterns, and catch basins. This diversity of habitats explains the abundance of *Ae. albopictus* in urban as well as peri-urban areas and shady city parks.

- ***Aedes aegypti*** was widespread in southern Europe until the early 1950s. Re-introductions are now occurring and

Fig. 1. The current known distribution of *Aedes albopictus* in Europe at NUTS3 administrative level. The map is based only on confirmed data (published and unpublished) provided by experts from the respective countries as part of the VBORNET project.



© ECDC. Map redrawn by WHO

the species is established on the island of Madeira and the north-eastern Black Sea coast. *Aedes aegypti* is closely associated with human habitation and uses the same artificial outdoor habitats as *Ae. albopictus* and occasionally indoor breeding sites, including flower vases, water storage vessels and concrete water tanks in bathrooms.

- High air humidity favours adult longevity and therefore the increases the potential for virus transmission.
- Cold spells with winter frosts are expected to limit the survival of *Aedes*' eggs, but some cold countries are experiencing temporary summer expansions.

Both mosquitoes can be found biting throughout daylight hours, though there may be peaks of activity at dawn and dusk. Both species are found biting outdoors, but *Ae. aegypti* will also readily feed indoors.

Environmental changes and changes in climate are also impacting the distribution of the vectors and the disease:

- Annual mean temperatures of 15°C for *Ae. aegypti* and 11°C for *Ae. albopictus* seem to be indicative thresholds for the persistence of these vector populations. Higher temperatures favour larval development and adult mosquito activity.
- Higher rainfall increases the number of flooded larval habitats; however, lower rainfall prompts people to store water in containers that mosquitoes can use as breeding sites.



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*Aedes albopictus* thrives in a wide range of water-filled containers, including artificial containers such as vehicle tyres.

### 3. Disease characteristics of chikungunya

After the bite of an infected mosquito, onset of illness occurs usually between three and seven days but can range from 2–12 days. Chikungunya is characterized by an abrupt onset of fever frequently accompanied by joint pain. The joint pain is often very debilitating, but usually lasts for a few days or weeks. Other common signs and symptoms include muscle pain, headache, nausea, fatigue and rash.

Most patients recover fully, but in some cases joint pain may persist for several months, or even years. Occasional cases of eye, neurological, heart and gastrointestinal complications

have been reported. Serious complications are not common, but in older people, the disease can contribute to earlier death that may be due to the frequency of concomitant underlying diseases or decreased immunologic response. When symptoms are mild the infection may go unrecognized, or be misdiagnosed especially in areas where dengue occurs.

There is no vaccine nor specific antiviral drug treatment for chikungunya. Treatment is directed primarily at relieving the symptoms, including the joint pain, using anti-pyretics, optimal analgesics and fluids.

### 4. Chikungunya can be prevented

The lack of a vaccine or specific treatment, in combination with the presence of *Ae. aegypti* and *Ae. albopictus* in parts of the WHO European Region, make preventive measures necessary.

#### Control the vector

At present, stopping the invasion of *Aedes* vector mosquitoes is the only method to prevent or control the transmission of Chikungunya virus. Prevention and control relies heavily on reducing the number of natural and artificial water-filled container habitats that support breeding of the mosquitoes. During outbreaks, insecticides may be sprayed to kill flying mosquitoes, applied to surfaces in and around containers where the mosquitoes land, and used to treat water in containers to kill the immature larvae.

#### Stop spreading of the disease

In case chikungunya carrying mosquitoes establish in the environment, prevention of disease outbreaks should be prioritized. During outbreaks of chikungunya, clothing which minimizes skin exposure to the day-biting vectors is

recommended. Repellents can be applied to exposed skin or to clothing in strict accordance with product label instructions. Repellents should contain DEET, IR3535 or icaridin. For those who sleep during daytime, particularly young children, or sick or older people, insecticide treated mosquito nets provide good protection. Mosquito coils or other insecticide vaporizers may also reduce indoor biting.

Basic precautions should be taken by people travelling to risk areas and these include use of repellents, wearing long sleeves and pants and ensuring rooms are fitted with screens to prevent mosquitoes from entering.



*Aedes albopictus* thrives in a wide range of water-filled containers.

## 5. WHO response

To assist Member States in reducing the risks of re-emergence of chikungunya and other vector-borne infectious diseases, the WHO Regional Office for Europe has developed a *Regional Framework for Surveillance and Control of Invasive Mosquito Vectors and Re-emerging Vector-borne Diseases 2014–2020*.

Furthermore, these risks are addressed in *Protecting Health in an Environment Challenged by Climate Change: European Regional Framework for Action* and the “Commitment to act” of the Fifth Ministerial Conference on Environment and Health.

The WHO Regional Office for Europe:

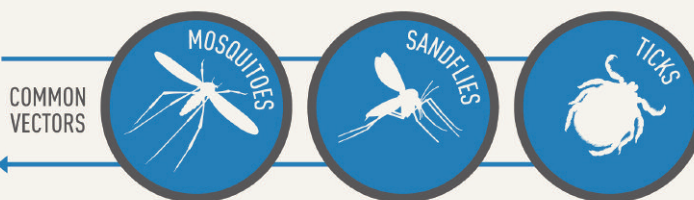
- works in partnership with other institutions and agencies to anticipate potential risks from the introduction of invasive mosquitoes and re-emergence of vector-borne diseases, particularly at the animal-human-ecosystem interface; Together with the European Commission, the European Centre for Disease Prevention and Control and the European Mosquito Control Association, the WHO raises awareness on the problem and provides advice to countries on surveillance and control activities;
- assists European Member States on chikungunya control under the International Health Regulations (IHR); Prevention of mosquito invasions and disease emergence serves the IHR requirement to manage acute public health events that can cross borders, by developing and strengthening capacities at designated ports, airports and ground crossings;
- provides technical support and guidance to countries for effective management of cases and outbreaks;
- uses regional and bilateral collaboration and coordination to share methods for surveillance, risk assessment, information and control measures and provides guidance to implement these methods;
- provides training on clinical management, diagnosis and vector control together with its collaborating centres and publishes guidelines and handbooks for case management and vector control.

### Box 1. What is a vector-borne disease?

- Vector-borne diseases are illnesses caused by pathogens in human populations.
- These diseases are spread by vectors: living organisms that can transmit pathogens between humans or from animals to humans.
- Many vectors are bloodsucking insects, which ingest pathogens during a blood meal from infected hosts (humans or animals) and transfer them to new hosts during subsequent blood meals.
- Mosquitoes are the best known disease vectors. Others include certain species of ticks, flies, sandflies, and fleas.

## VECTORS MAY BE A THREAT TO YOU, AT HOME AND WHEN TRAVELLING

**VECTORS** ARE SMALL ORGANISMS THAT CARRY SERIOUS DISEASES



## 6. More information is available

### WHO documents

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