Diseases Transmitted By Insects And Ticks In Europe

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Overview

Europe has several native insects and tick species capable of transmitting diseases. Non-native mosquitoes (e.g. Aedes spp) have also become established, increasing the risk of locally acquired mosquito-borne diseases previously rare in Europe [1].

As insect activity increases during the spring, summer and autumn in Europe, travellers may be at risk of insect or tick-borne diseases, some are highlighted in this article.

Insect-borne illnesses may be mild and self-limiting. However, some diseases can potentially cause severe, occasionally life threatening, illness.

Chikungunya (CHIKV)

CHIKV is a viral infection transmitted by infected Aedes spp. mosquitoes. The disease is found in tropical and sub-tropical parts of Africa, the Indian Ocean islands, South and South East Asia and has recently emerged in several countries in the Caribbean and Pacific regions. It is also an emerging disease in parts of Europe [2].

The first locally acquired cases of CHIKV reported in Europe occurred in the summer of 2007 in north east Italy [3]. In 2010, two locally acquired cases of CHIKV were reported in the Provence-Alpes-Côte d’Azur region of south eastern France [4].

In October 2014, a total of 11 locally acquired CHIKV cases were identified in the Languedoc-Roussillon region of southern France [5].

Whilst there have been imported cases of CHIKV in United Kingdom (UK) travellers returning from other affected areas, as of December 2013 there have been no CHIKV cases reported in UK travellers returning from Europe [6].

Crimean Congo haemorrhagic fever (CCHF)

CCHF is a viral infection transmitted by infected Hyalomma ticks, it is found in Africa, Asia, the Middle East and eastern Europe [7]. Outbreaks have been recorded in Albania, Iran, Kazakhstan, Kosovo, Russia, and Turkey in recent years [7]. In July 2008, Greece reported the first clinical case of CCHF [7].
As of November 2014, one case of CCHF has been identified in a UK traveller returning from Europe (Bulgaria) [8]. A case was also reported in a traveller returning from Afghanistan in 2012 [8].

**Dengue**

Dengue is a viral infection transmitted by infected Aedes spp. mosquitoes.

The first reported locally acquired cases of dengue in Europe were in France and Croatia in 2010 [9 – 11]. The Autonomous Region of Madeira, Portugal, reported their first cases of locally acquired dengue in October 2012 [12]. A large outbreak followed, during which 1,080 confirmed cases were reported, with 78 cases in European nationals including British tourists, who had visited Madeira [13].

In October 2013, a locally acquired case was reported in Provence-Alpes-Côte d’Azur, south eastern France [13]. As of 3 November 2014, four locally acquired cases were reported between August and October from two departments of Provence-Alpes-Côte d’Azur [5].

**Dirofilariasis**

Dirofilariasis is a parasitic infection in which microscopic larval worms (microfilaria) are transmitted from infected dogs or cats to humans by the bite of a mosquito (usually Aedes or Culex spp.). Dirofilarial infection is an emerging zoonosis in parts of Europe, including France, Hungary, Italy, Germany, Latvia, Poland and the Ukraine, with small numbers of human cases reported annually [14 -18].

Dirofilariasis is very rare in UK travellers, but occasional cases (one or two a year) are reported in travellers returning from endemic countries, including those around the Mediterranean [Personal Communication: Professor Peter Chiodini. Hospital for Tropical Diseases, London. 30 May, 2013].

**Leishmaniasis**

Leishmaniasis is an infection caused by a protozoan parasite of the genus Leishmania and is transmitted to humans by a bite from an infected phlebotomine sandfly. The parasite is found in many tropical/sub-tropical regions of the world, and in parts of Europe. There are different clinical forms of the disease including cutaneous (CL) and visceral (VL) leishmaniasis. Both types occur throughout the Mediterranean. CL has been reported in Albania, Croatia, Cyprus, France, Greece, Italy and Turkey [19].

Every year since 2006, a small number of both CL and VL cases have been reported in UK travellers returning from European countries. These include: Cyprus, Greece, Malta, Portugal, Spain and Turkey [Personal Communication: Travel and Migrant Health Section. Public Health England. 29 May, 2013].
Lyme disease

Lyme disease is a bacterial infection caused by a spirochaete bacterium of the genus Borrelia (B.garinii and B. burgdorferi in Europe). It is transmitted to humans by a bite from an infected Ixodes tick. Lyme disease is endemic in parts of the UK. Regions of Europe with high tick infection rates include: Austria, Czech Republic, southern Germany, Switzerland, Slovakia and Slovenia [20].

Public Health England reports that since 2000, an average 15% of cases reported in England and Wales were acquired abroad, mostly by tourists. Destinations included USA, France, Germany, Scandinavia and other northern and central European countries. In recent years, there have been greater numbers of cases acquired in central and eastern Europe, reflecting increased tourism to and immigration from these areas [21].

Malaria

Malaria is caused by Plasmodium parasites and is spread to humans by infected Anopheles spp. mosquitoes. Transmission is occasionally reported in Europe.

Cases of locally acquired malaria have occurred in Greece since 2009, with the highest case numbers reported in 2011. In November 2013, Greece reported two cases from Evros, and one from Karditsa [22]. Malaria tablets are not currently recommended for Greece or other countries reporting a small number of cases.

Italy also reported two cases of probable locally acquired malaria in 2009–2011 [13].

France and the Netherlands have recently reported malaria cases without current travel history. These reports indicate local transmission of malaria remains possible in Europe, though the transmission route is not always easily detected [13].

Turkey is currently the only European country where there is a recommendation for malaria tablets (certain areas only). Information about malaria risk and chemoprophylaxis recommendations in Turkey is available on the Country Information pages. There have been no cases of malaria reported in UK travellers returning from Turkey.

Tick-borne encephalitis (TBE)

TBE is a viral infection transmitted to humans by the bite of infected Ixodes ricinus ticks or through ingestion of unpasteurised dairy products from infected animals.

European TBE (or Central European encephalitis) is endemic in parts of central, eastern and northern Europe. The risk area extends to the west of Europe as far as Switzerland and the French region of Alsace [23]. The estimated number of clinical cases in European countries each year is 3,000 [24].
Since 2011, four confirmed cases of TBE have been reported in the UK. All of the cases had history of travel to endemic areas. One case was reported in 2011 (travel to Czech Republic) and three were reported in 2012 (two cases travelled to Latvia and Sweden and one travelled to three countries: Latvia, Lithuania and Estonia). All of these countries are known to be endemic for TBE [25].

**West Nile virus (WNV)**

WNV is a viral illness of humans and birds transmitted by Culex spp. mosquitoes. Outbreaks and intermittent cases of WNV infection have occurred in Europe since the 1950s. WNV activity in the European Union and surrounding countries is monitored during the transmission season: a map of reported cases is available on the [European Centre for Disease Prevention and Control website](https://www.ecdc.europa.eu/en). Countries reporting human cases include:

Albania, Austria, Belarus, Bosnia, Bulgaria, Croatia, the Czech Republic, France, Greece, Hungary, Italy, Kosovo, Moldova, Montenegro, Portugal, Romania, the Russian Federation, Serbia, Slovakia, Spain and the Ukraine [26].

As of December 2013, no imported cases of WNV have been reported in UK travellers returning from Europe [27].

**Advice for travellers**

Generally, insect and tick activity increases in Europe during the warmer spring, summer and early autumn months (May to October) but may continue year round in sub-tropical regions. Reduce the risk of insect or tick-borne diseases by using insect bite avoidance measures.

- Aedes spp. mosquitoes bite during daylight hours.
- Anopheles and Culex spp. mosquitoes bite during the evening and night. Malaria tablets are recommended for a small area within Turkey between May and October, see the [Country Information pages](https://travel.healthpro.org.uk) for further details.
- Sandflies bite at dusk and after dark, but will bite during the day if disturbed.
- Ticks do not jump or fly but opportunistically attach themselves to passing humans. They then crawl to a suitable feeding place, often the nape of the neck, groin or arm-pit.
- Remove ticks carefully or get medical help.
- There is an effective vaccine to protect against TBE for those visiting risk areas. A number of European countries are affected, information can be found on our [Country Information pages](https://travel.healthpro.org.uk).

**Advice for health professionals - the returned traveller**

Health professionals should be alert to the possibility of insect or tick-borne disease when consulting with an ill-returned traveller from Europe or neighbouring countries. Health professionals
who suspect a case of insect or tick-borne disease in a traveller should liaise with their local infectious disease physician, microbiologist or virologist.

The Imported Fever Service: Public Health England is available to local infectious disease physicians or microbiologists should specialist advice be needed on 0844 7788990.

**Resources**

- European Centre for Disease Prevention and Control: Vector-borne diseases
- Insect and tick bite avoidance

**REFERENCES**


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