

# Joint UKBTS Professional Advisory Committee (1)

Position Statement

Dengue Virus

November 2020

**Approved by:** Standing Advisory Committee on Transfusion Transmitted Infections

***November 2020 - The contents of this document are believed to be current. Please continue to refer to the website for in-date versions.***

## **Background**

Dengue fever is an acute infection caused by dengue virus, and is the most common insect borne disease worldwide. The incidence of dengue has grown dramatically around the world in recent decades. A vast majority of cases (up to 75%) are asymptomatic or mild and self-managed with resolution within 2-3 weeks, and hence the actual numbers of dengue cases are under-reported. Symptomatic cases may range from nonspecific acute febrile illness to severe disease including dengue haemorrhagic fever and dengue shock syndrome; many cases are highly likely to be misdiagnosed as other febrile illnesses.

One modelling estimate indicates 390 million dengue virus infections per year (95% credible interval 284–528 million), of which 96 million (67–136 million) manifest clinically (with any severity of disease). Another study on the prevalence of dengue estimates that 3.9 billion people are at risk of infection with dengue viruses. Despite a risk of infection existing in 129 countries [3], 70% of the actual burden is in Asia, although the number of cases in Central and South America has been increasing over recent years. where dengue fever is found mostly during or shortly after the rainy season due to more intense mosquito activity. Over the last few years there has been a rising trend of cases in South America and the Caribbean.

The number of dengue cases reported to WHO increased over 8 fold over the last two decades, from 505,430 cases in 2000, to over 2.4 million in 2010, and 4.2 million in 2019. Reported deaths between the year 2000 and 2015 increased from 960 to 4032. However this is partly due to improved identification and reporting. There was a substantial increase in reports of dengue infections in 2019 compared with 2018. Since the beginning of the 2020, the majority of the cases have been reported by Brazil, Paraguay and Bolivia.

There are four distinct variants of dengue virus, all of which have the potential to cause all forms of the disease. Infection with one variant confers lifelong immunity to that variant, but only short-term protection against the other variants. Subsequent infection with a second variant increases the risk of developing dengue haemorrhagic fever.

The dengue virus is primarily transmitted through the bite of an infected *Aedes aegypti* (main vector) or, less widespread, *Aedes albopictus* mosquito. There is no epidemiologically important animal reservoir. *Aedes aegypti* is found worldwide between latitudes 35°N and 35°S, and dengue is currently considered endemic in over 140 countries, covering at least 40% of the world's population. However *Aedes albopictus* has undergone a dramatic global expansion facilitated by human activities, in particular the movement of used tyres and bamboo. Together with passive transit via public and private transport, this has resulted in a widespread global distribution of *Aedes albopictus*, now listed as one of the top 100 invasive species.

# Joint UKBTS Professional Advisory Committee (1)

Position Statement

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November 2020

## **Dengue in the EU/EEA**

Dengue cases are also increasingly being reported outside tropical areas. The continued increase in urbanisation, population growth, and global travel introduces the different serotypes into new populations. In continental Europe limited outbreaks may occur in areas infested by *Aedes albopictus*, an invasive mosquito species that spread over the past twenty years.

Dengue fever is an emerging disease in parts of southern Europe; Since 2010 sporadic locally-acquired cases have been reported in France and Croatia, the first locally acquired cases in mainland Europe since 1928. The likelihood of introduction of the virus to the continental EU/EEA is linked to the number of viraemic travellers returning while the likelihood of sustained transmission is linked to the presence of an established, active and abundant competent vector population.

In October 2012 the first locally acquired cases were reported in the autonomous region of Madeira, Portugal; 2,164 cases were reported in total, with the last one occurring at the end of January 2013. A further larger cluster of cases was identified in France in 2015, originating from an infected traveller returning from French Polynesia

In 2018, 27 countries reported 2191 case of dengue to The European Surveillance System, of which 2033 were confirmed, highlighting the noticeable frequency of travel-associated dengue cases reported by EU/EEA countries. Germany reported the highest proportion of cases (28%) followed by the UK (20%) and France (15%). The majority of the cases were travel-related. Fourteen autochthonous cases were reported in France (n=8) and Spain (n=6). The EU/EEA notification rate in 2018 was 0.4 cases per 100 000 population, similar to previous years.

The majority of travel-related dengue cases in 2018 were imported from Asia, reflecting the dengue situation in tropical regions where the disease is endemic. Compared with 2017, Thailand reported a 50% increase (n=54 482), the Philippines observed a ten-fold increase (n=199 271) and Cambodia experienced a four-fold increase (n=9 885) in 2018.

In 2018-19, 20 cases of autochthonous dengue were confirmed in the EU; 5 cases in Spain (3 in 2018; 2 in 2019) and 15 in France (6 in 2018; 9 in 2019). In all cases there had not been any recent travel outside Spain or France and there are no epidemiological links between the outbreaks. In September 2019, Spain reported the first probable sexual transmission of dengue between two men.

Dengue is not endemic in the EU/EEA and the vast majority of the cases are travellers infected outside of the EU/EEA. The likelihood of dengue becoming established in continental EU/EEA countries is considered to be low. However, when the environmental conditions are favourable, in areas where *Ae. albopictus* is established, viraemic travel-related cases may generate a local transmission of the virus, as demonstrated by the sporadic events of dengue virus transmission since 2010.

# Joint UKBTS Professional Advisory Committee (¹)

## Position Statement

### Dengue Virus

November 2020

Up to November 2020, there have been 7 reported incidents of autochthonous dengue cases (Autochthonous transmission of dengue virus in EU/EEA, 2010-2020; ECDC Surveillance, updated 27<sup>th</sup> October 2020):

- In mid-July a single locally acquired case of dengue type 1 was identified in Herault, France. The individual was infected while staying near a resort in an area between the municipalities of Cessenon-sur-Orb and Murviel-lès-Béziers. The source imported case, recently returned from travel to Costa Rica, was identified nearby. A further single case of dengue type 2 was reported in Herault at the end of September.
- In August ten locally acquired cases of dengue type 1 were detected in a family cluster in Vicenza Province, North-East Italy where *Aedes albopictus* mosquitoes are endemic. The primary case was an importation from West Sumatra, Indonesia. This is the first outbreak of autochthonous dengue reported in Italy
- In September five locally acquired cases of dengue (type not reported) were identified in Nice, France. All 5 individuals having frequented or residing in the same district in Nice.
- In September three locally acquired cases of dengue (type not reported) were identified in the Var region of France. The case was in a Dutch tourist to the region, diagnosed on her return to The Netherlands. No other risk was identified, and no link with the cluster in Nice was found.
- Two single cases of locally acquired dengue (type not reported) were reported and the end of August/early September in France (Gard and Alpes-Maritime departments).

## **Dengue in the UK**

Indigenous dengue infection does not occur in the United Kingdom, and active dengue surveillance is not performed. The true incidence of dengue fever in UK travellers is likely to be under-reported due to the high proportion of asymptomatic cases, but cases are reported each year in travellers returning from endemic areas. In 2018 (most recent published figures at time of preparing this 2020 revision) in the UK there were 432 reported cases of dengue fever, of which 366 were confirmed. The number of reported cases has been similar over the last few years, reported cases from 2015 to 2017 being 423, 468 and 465 respectively.

Information about international outbreaks of dengue is available on the National Travel Health Network and Centre (NaTHNaC) website: <http://travelhealthpro.org.uk>

There is no evidence of person-to-person transmission except via blood and other donated products. Blood donations in countries with outbreaks of dengue fever have been found to contain virus and cases of transmission via blood transfusion and through solid organ and tissue transplantation have been reported. A vaccine against dengue is now licensed in 20 countries. However, the WHO recommends that it is only given to persons with confirmed prior dengue virus infection as individuals that have not been previously infected may be at risk of

# Joint UKBTS Professional Advisory Committee (1)

**Position Statement**

**Dengue Virus**

**November 2020**

developing severe dengue if they get dengue after being vaccinated. However, in most non-endemic countries treatment is currently symptomatic only, and neither the vaccine or prophylactic drugs are available in the EU.

Visitors to many dengue affected areas will be excluded from donation for four months under current malaria guidelines, but not all affected areas are covered by malaria exclusions. Visitors to dengue affected areas should not donate blood or tissues for six months from their return to the UK if they have been infected or may have been infected with dengue virus, or for four weeks from their return if they have had no symptoms suggesting that they may have been infected with dengue virus.

Countries affected by dengue virus and any applicable time limits are shown in the Geographical Disease Risk Index (GDRI) and any associated Change Notifications.

(1) Joint United Kingdom Blood Transfusion and Tissue Transplantation Services Professional Advisory Committee (JPAC)