Joint UKBTS Professional Advisory Committee ([1])

Position Statement

Dengue Virus

November 2019

Approved by: Standing Advisory Committee on Transfusion Transmitted Infections

November 2019* - *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. It is estimated that each year there are at least 100 million cases of dengue fever globally, and several hundred thousand cases of the more severe dengue haemorrhagic fever, with up to 10% fatality rate, mainly among children.

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.

Not all dengue infections result in clinically apparent disease: up to 75% of cases being asymptomatic or with very mild symptoms with resolution within 2-3 weeks. Symptomatic cases may range from nonspecific acute febrile illness to severe disease including dengue haemorrhagic fever and dengue shock syndrome.

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 35ºN and 35ºS, 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.

The highest burden of disease occurs in the Indian sub-continent, Africa, SE Asia and the Western Pacific, 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.

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. 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 2017, 2026 imported dengue cases were reported to The European Surveillance System, highlighting the noticeable frequency of travel-associated dengue cases reported by EU/EEA countries. Germany reported the highest proportion of cases (31%) followed by the UK (23%). Travel-related case numbers reported in 2017 were lower than the average yearly number of cases reported between 2013-2016, likely due to lower transmission of the virus in certain countries visited by EU travellers. The most frequently reported suspected countries of infection were Asian countries with greatly increased dengue cases from India (22%) and Sri Lanka. Only 5% of travel–related cases were suspected to have been imported from Indonesia compared with 18% in 2016. Data for the UK available on the ECDC website indicates consistent numbers of Dengue cases imported into the UK (423 – 468 cases per annum; 2015-2018).

In 2018, nine cases of autochthonous dengue were confirmed in the EU; three cases in Spain and six cases in France 2018). In September 2019, France reported 6 cases of Dengue and one case was also reported in Barcelona, Spain.

The likelihood of introduction of DENV to continental EU/EEA countries is considered to be low. Since 2018, Réunion has been facing a major outbreak of dengue, with a first wave observed in 2018 and a second higher wave observed in 2019. This outbreak would, to some extent, increase the level of likelihood of introduction of dengue to the EU/EEA through viraemic travellers, especially in mainland France.

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 2014 (most recent published figures at time of preparing this 2019 revision) in England, Wales and Northern Ireland there were 347 reported cases of dengue fever, reflecting a fall of 37% from the number reported by the PHE Rare and Imported Pathogens Laboratory (RIPL) in 2013. These figures, in turn, were 58% higher than in 2012 (343 cases reported). Between 2009 and 2014, there has been an overall average annual increase of 36%. Of the 2014 cases, travel history was provided for 288 (83%): 61% of the cases were acquired in Southern or South-Eastern Asia, 5% from the Caribbean and 4% from Central and South America, both these areas showing a significant fall in cases since 2013.

Information about international outbreaks of dengue is available on the National Travel Health Network and Centre (NaTHNaC) website: NaTHNaC website

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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 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.

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