

# Dengue epidemic in Réunion, 2021

5 May 2021

## Event summary

In 2019, Réunion experienced an unusually large dengue epidemic, which was followed in 2020 by an epidemic of similar magnitude. Currently, Réunion is once again facing a large dengue epidemic, which is likely to be comparable in size to that of the preceding two years. The epidemic peak is expected to be reached in the coming weeks.

## Risk assessed

The risk related to dengue for EU/EEA citizens travelling to or residing in Réunion is currently high if they do not apply protective measures. The risk of a dengue outbreak in mainland EU/EEA<sup>1</sup> is currently assessed as low, with environmental conditions unfavourable to vector activity and virus replication. These conditions are expected to become more favourable in coming months, with high vector abundance expected from early summer through early autumn in mainland EU/EEA.

## Options for response

Most cases of dengue are acquired via the bite of an infected mosquito. However, the virus may also be transmitted via Substances of Human Origin (SoHO) and through sexual intercourse.

Dengue prevention is based on protection against mosquito bites. As *Aedes* mosquitoes have a diurnal biting pattern, both indoors and outdoors, personal protective measures (PPM) against mosquito bites should be applied all day long. Special care should be taken during the hours of highest mosquito activity (morning and late afternoon to sunset). PPM to reduce the risk of mosquito bites include the use of mosquito repellent in accordance with the instructions indicated on the product label, wearing long-sleeved shirts and long trousers and using insecticide-treated mosquito bed nets. These measures are essential for providing protection from mosquito bites in rooms that are not adequately screened or air-conditioned.

<sup>1</sup> Mainland EU/EEA refers to the EU/EEA excluding the EU Outermost Regions (e.g. Réunion) and the EU Overseas Countries and Territories

Travellers returning from areas where dengue virus circulation occurs should be advised to seek medical attention if presenting with symptoms compatible with dengue in the first two weeks after return, particularly if returning to areas where the *Ae. albopictus* mosquito is established and during the high vector activity period. Symptomatic patients should be advised on how to apply PPM against mosquito bites in order to prevent transmission of the virus to local mosquitoes in mainland EU/EEA.

## Event background

Since 2019, Réunion has been facing a large epidemic of dengue with epidemic waves during the Austral winter. In 2019 and 2020 there were 18 188 and 16 068 cases, respectively [1,2]. The peaks of the epidemics were reached between week 16 and week 19 (week of onset) [3].

In 2021 and as of 27 April 2021, French authorities have reported 7 864 confirmed dengue cases in Réunion [4], including 1 599 confirmed cases in week 14 and 1 443 confirmed cases in week 15 (Figure 1), with the whole island affected. Among the hospitalised dengue cases, 22% had severe dengue, which is slightly higher than in 2019 (17%) and 2020 (16%). Two deaths are considered to be directly related to dengue. In 2021, only dengue virus serotype 1 (DENV-1) has been detected [4]. During the 2020 epidemic, dengue virus serotype 1, 2 and 3 (DENV-1, 2 and 3) were detected with the majority of serotyped samples corresponding to DENV-1 [5].

The mosquito *Aedes albopictus* is considered to be the principal vector of this epidemic.

## Risk assessment questions

- What is the risk related to dengue for EU/EEA citizens travelling to or residing in Réunion?
- What is the risk related to having an outbreak of dengue in mainland EU/EEA following introduction of the virus from Réunion?

## ECDC risk assessment

### What is the risk related to dengue for EU/EEA citizens travelling to or residing in Réunion?

In 2019, Réunion experienced an unusually large dengue epidemic, which was followed in 2020 by an epidemic of similar magnitude. The epidemic peaks were reached between week 16 and week 19. Currently, Réunion is once again facing an epidemic of dengue which is likely to be comparable in size to the epidemics of 2019 and 2020.

The **likelihood** of infection for EU/EEA citizens travelling to or residing in Réunion is currently considered as **high**, if they do not apply protective measures, particularly in the communes where the circulation of the virus is intense (i.e. St Paul and Port). The likelihood of infection can be considerably reduced by thorough and consistent application of protective measures against mosquito bites.

The **impact** of this epidemic is considered to be **moderate**, as up to 5% of dengue cases may develop severe symptoms [6,7], a significant number of people may be affected but supportive treatment and control measures are available.

The **risk** related to infection with dengue virus for EU/EEA citizens travelling to or residing in Réunion is therefore considered as **high**.

### What is the risk related to having an outbreak of dengue in mainland EU/EEA following introduction of the virus from Réunion?

The likelihood for transmission of dengue virus in mainland EU/EEA is linked to importation of the virus by viraemic travellers into receptive areas, which are areas where the competent vector is established and when it is active. According to data submitted to The European Surveillance System, in 2019, there were 4 149 dengue cases imported to the EU/EEA, of which 116 cases (3%) were imported from Réunion. In comparison, in 2019 there were 926, 346 and 240 cases imported from Thailand, India and Cuba, respectively.

While most dengue epidemics around the world are driven by *Ae. aegypti*, the epidemic in Réunion is driven by *Ae. albopictus*. *Ae. albopictus* is established in the southern and central parts of mainland EU/EEA [8].

Currently, the **likelihood** of a dengue outbreak occurring in mainland EU/EEA is **very low**, as the environmental conditions are not currently favourable to vector activity and virus replication. Environmental conditions in mainland EU/EEA are expected to become more favourable for the growth of mosquito populations and virus replication in the coming months, with high vector abundance expected from early summer through early autumn. To date, all autochthonous outbreaks of dengue in mainland EU/EEA have occurred between July and November and have been limited in size to 10 or fewer reported cases [9].

The **impact** of a dengue outbreak in mainland EU/EEA is considered to be **low** as up to 5% of dengue cases may develop severe symptoms [6,7], but a limited number of people would be affected.

Therefore, the **risk** related to having an outbreak of dengue in mainland EU/EEA following introduction of the virus from Réunion is considered **low**.

## Options for response

Most cases of dengue are acquired via the bite of an infected mosquito. However, the virus may as well be transmitted via Substances of Human Origin (SoHO) and through sexual intercourse.

### Vector-borne transmission

Dengue prevention is based on protection against mosquito bites. As *Aedes* mosquitoes have a diurnal biting pattern, both indoors and outdoors, PPM against mosquito bites should be applied all day long. Special care should be taken during the hours of highest mosquito activity (morning and late afternoon to sunset). Personal protective measures to reduce the risk of mosquito bites include the use of mosquito repellent in accordance with the instructions indicated on the product label, wearing long-sleeved shirts and long trousers and using insecticide-treated mosquito bed nets. These measures are essential for providing protection from mosquito bites in rooms that are not adequately screened or air-conditioned.

During the period of high vector activity in mainland EU/EEA (early summer through early autumn), timely detection of imported dengue cases is essential to prevent local transmission. The detection of an autochthonous case in receptive areas of mainland EU/EEA represents an important trigger for epidemiological and entomological investigations to assess the potential for onward transmission, and to guide vector control measures to lower the mosquito population density. Increased awareness among clinicians and travellers returning from areas with active dengue virus transmission, combined with adequate laboratory diagnostic capability, are instrumental for the early detection of travel-associated cases.

Travellers returning from areas where dengue virus circulation occurs should be advised to seek medical attention if presenting with symptoms compatible with dengue in the first two weeks after return, particularly if returning to areas where the *Ae. albopictus* mosquito is established and during the high vector activity period. Symptomatic patients should be advised on how to apply personal protective measures against mosquito bites in order to prevent transmission of the virus to local mosquitoes in mainland EU/EEA.

### Transmission through substances of human origin

Dengue virus can be transmitted through infectious SoHO donated by asymptomatic, viraemic donors. The precise level of risk of virus transmission through SoHO cannot be adequately assessed due to the small number of cases reported. Of 15 350 blood donation samples tested retrospectively in Puerto Rico in 2007, 29 (0.19%) were positive [10].

Donation screening using nucleic acid testing (NAT) is the main tool to reduce the risk of transmission in areas where the virus circulates and when deferrals may potentially affect supply. For plasma and platelet donations, pathogen-reduction technology may also be considered [11].

In areas where the virus circulates, donors with flulike symptoms should be deferred for 28 days after the resolution of symptoms [11].

Potential asymptomatic donors whose travel histories place them at risk of dengue infection should be deferred for 28 days upon return to non-endemic areas [11]. Donors of organs, cells and tissues living in or coming from dengue-affected areas should be tested for the presence of viral RNA using NAT [12,13].

Dengue cases should be deferred for 120 days after full recovery from clinical dengue [11].

## Sexual transmission

In 2019, one event of sexual transmission was reported in Spain [14]. While this mode of transmission is considered extremely rare, persons returning from dengue endemic areas with symptoms of dengue, and patients diagnosed with dengue (irrespective of sexual orientation), should be made aware of the potential risks of sexual transmission of dengue virus. Transmission can be mitigated through abstinence from sexual contact or practicing safe sex (i.e. using condoms during the course of their disease).

## Vaccination

There is currently only one dengue vaccine approved by the European Medicine Agency: Dengvaxia by Sanofi Pasteur. It is authorised for persons between nine and 45 years of age living in a dengue endemic area (e.g. Réunion) and who previously had a laboratory-confirmed dengue virus infection [15]. This excludes the populations of mainland EU/EEA and territories outside tropical areas as these are not endemic for dengue.

## Additional resources

General information about dengue is available on an ECDC factsheet [16]:

<https://www.ecdc.europa.eu/en/dengue-fever/facts>

Laboratories of EVD-LabNet with capacity to test for dengue [17]: <https://www.evd-labnet.eu/evd-labnet-directory-search>

## Source and date of request

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## Consulted experts

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## Disclaimer

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This report was written with the coordination and assistance of an Internal Response Team at the European Centre for Disease Prevention and Control. All data published in this risk assessment are correct to the best of our knowledge at the time of publication. Maps and figures published do not represent a statement on the part of ECDC or its partners on the legal or border status of the countries and territories shown.

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