

# Yellow fever

## Annual Epidemiological Report for 2019

### Key facts

- For 2019, there were no reported cases of yellow fever in the EU/EEA.
- For the previous year, 2018, EU/EEA countries reported 13 travel-related cases of yellow fever, the highest number ever reported in one year. In the four years prior to 2018, only one travel-related case was reported.

### Introduction

Yellow fever is an African mosquito-borne infection of primates. In its natural habitat, it is transmitted between monkeys by forest-dwelling primatophilic *Aedes* mosquitoes. It is caused by a virus of the *Flavivirus* genus of the *Flaviviridae* family. It is distributed in west, central and east Africa and in South America, from Panama to the northern part of Argentina. The disease can cause a wide spectrum of symptoms, from mild to fatal.

### Methods

This report is based on data for 2019 retrieved from The European Surveillance System (TESSy) on 9 October 2020. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

For a detailed description of methods used to produce this report, please refer to the Methods chapter [1].

An overview of the national surveillance systems is available online [2].

A subset of the data used for this report is available through ECDC's online Surveillance atlas of infectious diseases [3].

For 2019, 30 EU/EEA countries reported case-based data (Liechtenstein did not report). Twenty-five countries used the EU case definition, four countries (Denmark, Germany, Italy and the United Kingdom) used an alternative case definition, and France did not specify which definition they used. Surveillance was compulsory in all EU/EEA countries except Belgium and the United Kingdom, comprehensive in all countries, and mostly passive.

### Epidemiology

For 2019, there were no reported cases of yellow fever in the EU/EEA.

For 2018, EU/EEA countries reported 13 travel-related cases of yellow fever, 11 of which were confirmed cases. One case was fatal. The cases were reported by France (7), Germany (2), Czechia (1), the Netherlands (1), Romania (1) and the United Kingdom (1). The case reported by the Netherlands acquired the infection in Senegal or Gambia [4]. All other cases acquired the infection in Brazil.

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This was the highest number of yellow fever cases ever reported in the EU/EEA in one year. In the four years prior to 2018, only one case was reported: an imported case, reported by the Netherlands, with a travel history to Suriname [5].

## Discussion

Yellow fever is endemic in tropical areas of Africa and Central and South America [6]. In the WHO Region of the Americas, Bolivia, Brazil, and Peru reported confirmed cases of yellow fever between December 2018 and February 2019 [7]. Bolivia reported one confirmed case in an unvaccinated individual [7]. For the 2018–2019 season, Brazil reported 75 confirmed cases, including 17 deaths [8]. In the previous seasonal period of 2017–2018, Brazil reported 1 376 human cases, including 483 deaths [7]. The number of cases reported in Brazil for the 2018–2019 season is substantially lower than that for the previous two transmission periods, during which the case numbers reported exceeded those for several decades. Peru reported eight probable and one suspected case between 1 January and 23 February 2019 [7]. No further updates are available for Peru. In November 2019, Venezuela reported one confirmed case of yellow fever, the first since 2005 [9].

Since September 2017, Nigeria has been experiencing a large, geographically widespread, yellow fever outbreak. In 2019, a total of 4 288 suspected and 227 confirmed cases, including 231 deaths, were reported by the Nigerian Centre for Disease Control [10], representing an almost three-fold increase in the number of cases to 2018 [11].

WHO updated their report 'Vaccination requirements and recommendations for international travellers' on 1 July 2019 and this included updating the areas at-risk of yellow fever transmission and their corresponding recommendations [12].

The increase in yellow fever transmission in central and south-eastern Brazil in the 2017–2018 season resulted in a number of travel-related cases among European travellers; at least five of them unvaccinated. The change in the epidemiological situation for yellow fever in Brazil seemed to be particularly noticeable in Ilha Grande, a common travel destination and the place of exposure for several of the travel-related cases [13]. The significant drop in the number of cases for the 2018–2019 season in Brazil was also reflected in the fact that no travel-related cases were reported in the EU/EEA in 2019.

## Public health implications

Vaccination is the most important preventive measure against yellow fever. As described in WHO documents, the vaccine is safe, affordable, highly effective, and a single dose is sufficient to confer sustained immunity and lifelong protection against yellow fever. The vaccine provides effective immunity within 30 days for 99% of those vaccinated [6].

The yellow fever cases in 2018 in non-vaccinated tourists highlight the relevance of yellow fever vaccination for people who want to travel to risk areas for yellow fever. They also emphasise the need for comprehensive pre-travel advice to assess vaccination status. Travel-related cases also demonstrate that the epidemiological situation in each region may evolve rapidly and that pre-travel advice should be completed within a timeframe that takes into account the latest epidemiological situation, while also giving the traveller enough time to organise effective protection through vaccination [13].

The principle vector of the yellow fever virus, the mosquito *Aedes aegypti*, is not established in the continental area of the EU, and therefore the risk of autochthonous transmission from travel-related cases is negligible. However, transmission of yellow fever via the Asian tiger mosquito *Aedes albopictus*, which is present in large parts of the EU, cannot be ruled out [14].

# References

1. European Centre for Disease Prevention and Control. Introduction to the Annual Epidemiological Report Stockholm: ECDC; 2020. Available from: <https://ecdc.europa.eu/en/annual-epidemiological-reports/methods>
2. European Centre for Disease Prevention and Control. Surveillance systems overview [downloadable spreadsheet]. Stockholm: ECDC; 2020. Available from: <https://ecdc.europa.eu/en/publications-data/surveillance-systems-overview-2019>
3. European Centre for Disease Prevention and Control. Surveillance atlas of infectious diseases. Stockholm: ECDC; 2020 [cited 30 Nov 2020]. Available from: <https://atlas.ecdc.europa.eu/public/index.aspx?Dataset=27&HealthTopic=61>
4. Phan MV, Murad SD, van der Eijk AA, Metselaar HJ, Hartog H, Harinck F, et al. Genomic sequence of yellow fever virus from a Dutch traveller returning from the Gambia-Senegal region, the Netherlands, November 2018. *Eurosurveillance*. 2019;24(4):1800684.
5. Wouthuyzen-Bakker M, Knoester M, van den Berg AP, GeurtsvanKessel CH, Koopmans MP, Van Leer-Buter C, et al. Yellow fever in a traveller returning from Suriname to the Netherlands, March 2017. *Eurosurveillance*. 2017;22(11).
6. World Health Organization. Factsheet: yellow fever. Geneva: WHO; 2019 [cited 24 November 2020]. Available from: <https://www.who.int/en/news-room/fact-sheets/detail/yellow-fever>
7. Pan American Health Organization / World Health Organization. Epidemiological Update: Yellow Fever. 6 March 2019 [cited 24 November 2020]. Available from: [https://www.paho.org/hq/index.php?option=com\\_docman&view=download&category\\_slug=yellow-fever-2194&alias=47954-6-march-2019-yellow-fever-epidemiological-update&Itemid=270&lang=en](https://www.paho.org/hq/index.php?option=com_docman&view=download&category_slug=yellow-fever-2194&alias=47954-6-march-2019-yellow-fever-epidemiological-update&Itemid=270&lang=en)
8. World Health Organization. Yellow fever - Brazil 2019 [cited 26 November 2020]. Available from: <https://www.who.int/csr/don/18-april-2019-yellow-fever-brazil/en/>
9. World Health Organization. Yellow fever – Bolivarian Republic of Venezuela 2019 [cited 24 November 2020]. Available from: <https://www.who.int/csr/don/21-november-2019-yellow-fever-venezuela/en/>
10. Nigeria Centre for Disease Control. An update of Yellow Fever outbreak in Nigeria for Week 52, 2019 [cited 24 November 2020]. Available from: <https://ncdc.gov.ng/diseases/sitreps/?cat=10&name=An%20update%20of%20Yellow%20Fever%20outbreak%20in%20Nigeria%20>
11. World Health Organization. Yellow fever – Nigeria 2019 [cited 24 November 2020]. Available from: <https://www.who.int/csr/don/17-december-2019-yellow-fever-nigeria/en/>
12. Emergency Preparedness ADGO/World Health Organization. Vaccination requirements and recommendations for international travellers; and malaria situation per country – 2019 edition. World Health Organization, 4 July 2019.
13. Gossner CM, Haussig JM, de Bellegarde de Saint Lary C, Kaasik Aaslav K, Schlagenhauf P, Sudre B. Increased risk of yellow fever infections among unvaccinated European travellers due to ongoing outbreak in Brazil, July 2017 to March 2018. *Eurosurveillance*. 2018;23(11):18-00106.
14. Amraoui F, Pain A, Piorkowski G, Vazeille M, Couto-Lima D, de Lamballerie X, et al. Experimental adaptation of the Yellow Fever virus to the mosquito *Aedes albopictus* and potential risk of urban epidemics in Brazil, South America. *Sci Rep*. 2018 Sep 25;8(1):14337.