

Chikungunya virus disease

Annual Epidemiological Report for 2021

Key facts

- For 2021, 24 countries reported 12 cases of chikungunya virus disease, of which all were confirmed.
- This was the lowest number of cases reported at the EU/EEA level since 2017.
- The EU/EEA notification rate was <0.1 cases per 100 000 population.
- All cases were aged 25–64 years.
- The majority of these cases were probably infected in Africa (n=4; 40%) and Asia (n=4; 40%).
- No autochthonous transmission of chikungunya virus occurred within the EU/EEA.

Introduction

Chikungunya virus disease is a mosquito-borne disease caused by a virus of the *Togaviridae* family. The disease is widespread in tropical and sub-tropical regions. It usually results in high fever, myalgia, skin rash and marked arthralgia. Chronic arthralgia may persist for weeks or months, causing significant disease burden in the affected communities.

Methods

This report is based on data for 2021 retrieved from The European Surveillance System (TESSy) on 25 October 2022. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

For a detailed description of the methods used to produce this report, 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 2021, 24 EU/EEA countries reported data on chikungunya virus disease. No data were reported by five countries (Bulgaria, Cyprus, Denmark, Iceland and Norway). All countries reported case-based data except for Belgium, which reported aggregated data. In addition, as the United Kingdom (UK) left the EU on 31 January 2020, the country was not included in the data call and consequently did not provide data.

Eight countries (Belgium, Greece, Italy, Lithuania, Malta, Poland, Romania and Spain) referred to the 2018 chikungunya virus disease case definition, 11 countries referred to the EU generic case definition for viral haemorrhagic fevers, four countries used other case definitions (Czechia, Germany, Liechtenstein and Sweden) and one country did not specify which case definition was used (France).

All reporting countries except for the Netherlands had a comprehensive surveillance system. Reporting was compulsory in all countries, except for Sweden, where it was voluntary.

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Epidemiology

For 2021, 24 countries reported 12 cases of chikungunya virus disease, all of which were confirmed. This was the lowest number of cases reported at the EU/EEA level since 2017, even excluding the number of cases reported from 2017 to 2019 by the UK, which was not included in the data collection in 2020 and 2021 due to the fact that it is longer an EU Member State. Twenty countries reported no cases.

From 2017 to 2020, the number of reported cases (excluding those from the UK) ranged from 65 in 2020 to 442 in 2017 (Figure 1). An 80% decrease in the number of dengue cases was observed in 2021 compared to 2020. In 2021, France (n=4) and Germany (n=4) reported the highest number of cases (Table 1). The EU/EEA notification rate in 2021 was <0.1 cases per 100 000 population.

Table 1. Number of chikungunya virus disease cases and rates per 100 000 population by country and year, EU/EEA, 2017–2021

Country	2017		2018		2019		2020		2021		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	ASR
Austria	5	0.1	1	0.0	17	0.2	0	0.0	0	0	0
Belgium	10	0.1	3	0.0	60	0.5	8	0.1	2	0	0
Bulgaria	ND	NR	ND	NR	ND	NR	ND	NR	ND	NR	NR
Croatia	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0
Cyprus	ND	NR	ND	NR	ND	NR	ND	NR	ND	NR	NR
Czechia	0	0.0	6	0.1	15	0.1	0	0.0	0	0	0
Denmark	ND	NR	ND	NR	ND	NR	ND	NR	ND	NR	NR
Estonia	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0
Finland	5	0.1	1	0.0	14	0.3	2	0.0	0	0	0
France	35	0.1	16	0.0	108	0.2	13	0.0	3	0	0
Germany	33	0.0	26	0.0	87	0.1	26	0.0	4	0	0
Greece	0	0.0	1	0.0	2	0.0	0	0.0	0	0	0
Hungary	1	0.0	3	0.0	5	0.1	0	0.0	0	0	0
Iceland	ND	NR	ND	NR	ND	NR	ND	NR	ND	NR	NR
Ireland	0	0.0	0	0.0	1	0.0	0	0.0	0	0	0
Italy	289	0.5	4	0.0	25	0.0	6	0.0	0	0	0
Latvia	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0
Liechtenstein	ND	NR	ND	NR	ND	NR	ND	NR	0	0	0
Lithuania	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0
Luxembourg	0	0.0	0	0.0	1	0.2	0	0.0	0	0	0
Malta	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0
Netherlands	0	NR	0	NR	0	NR	0	NR	0	NR	NR
Norway	ND	NR	ND	NR	ND	NR	ND	NR	ND	NR	NR
Poland	0	0.0	0	0.0	2	0.0	0	0.0	0	0	0
Portugal	0	0.0	1	0.0	0	0.0	0	0.0	0	0	0
Romania	0	0.0	2	0.0	0	0.0	0	0.0	0	0	0
Slovakia	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0
Slovenia	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0
Spain	51	0.1	27	0.1	46	0.1	9	0.0	1	0	0
Sweden	13	0.1	20	0.2	58	0.6	1	0.0	2	0	0
UK	104	0.2	59	0.1	94	0.1	ND	NR	ND	NR	NR
EU/EEA	546	0.1	170	0.0	535	0.1	65	0.0	12	0	0

Source: Country reports.

ASR: age-standardised rate.

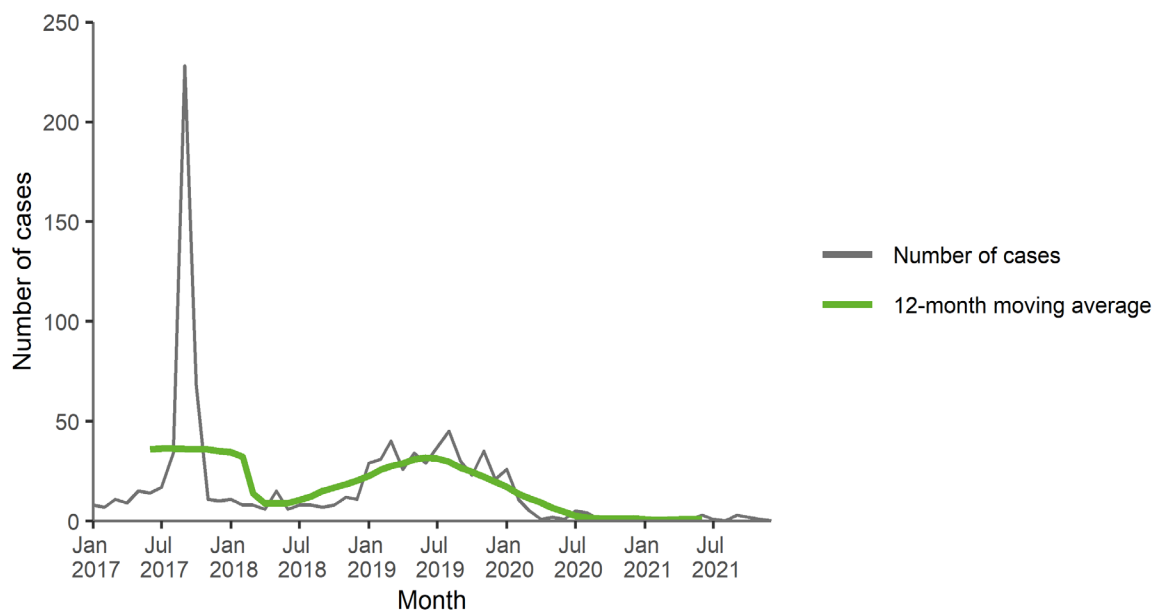
ND: no data reported.

NR: no rate calculated.

Data were not collected from the UK in 2021, as the country left the EU on 31 January 2020. Although the number of cases was provided, rates were not calculated for the Netherlands because the country does not have a comprehensive surveillance system.

Taking into account the information available on month of onset, diagnosis and/or reporting (information available for n=11 cases), disease cases were evenly distributed throughout 2021 (Figures 1, 2). When compared with previous years, the monthly numbers of cases reported were below the historical mean (2017–2020) throughout the year.

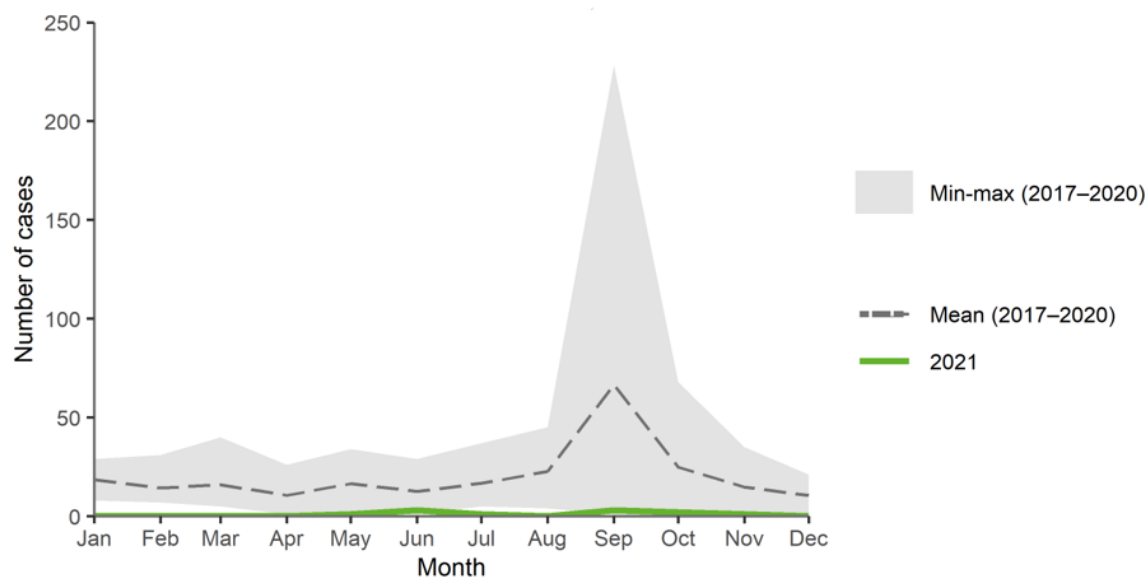
Figure 1. Number of chikungunya virus disease cases by month, EU/EEA, 2017–2021



Source: Country reports from Austria, Croatia, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

Only countries with consistent reporting were included in the seasonality time series.

Figure 2. Number of chikungunya virus disease cases by month, EU/EEA, 2021 and 2017–2020



Source: Country reports from Austria, Croatia, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

Only countries with consistent reporting were included in the seasonality time series.

Information on gender and age was available for all 12 cases reported in 2021. The male-to-female ratio was 0.4:1. All cases were aged 25–64 years, with rates of 0.005 and 0.006 cases per 100 000 population, respectively.

Information on importation status was available for 11 cases, all of which were imported.

In 2021, information on the probable country of infection was available for 10 cases having acquired infection in eight probable countries of infection, mostly in Africa – Burkina Faso (n=1), Côte d'Ivoire (n=1), Kenya (n=1), and Nigeria (n=1); 40% and Asia – Thailand (n=1), Malaysia (n=1), India (n=2); 40%.

Discussion

The low number of chikungunya virus disease cases in the EU/EEA in 2021 can largely be explained by the decrease in travel that occurred due to the restrictions implemented during the COVID-19 pandemic. However, 2021 data should be interpreted with caution, as it is unclear how the COVID-19 pandemic influenced diagnostic capacity and surveillance in EU/EEA countries. The decrease in chikungunya virus disease cases observed in 2021 in the EU/EEA compared to the previous year was also experienced in the African region. However, an increase in cases was experienced in Asia (mostly driven by cases reported in India) and in the Americas and Caribbean region (with the majority of cases reported in Brazil) [4, 5].

As the UK left the EU on 31 January 2020, the country did not report any data in 2020 and 2021 through TESSy. Given that the UK was one of the EU countries reporting the highest number of cases in previous years, comparisons of the total number of cases reported in the EU/EEA and related rates of infection should be made with caution.

No autochthonous transmission of chikungunya virus was reported within the EU/EEA in 2021. The last outbreaks were in 2017 in France (n=17 cases) and in Italy (n=489 cases) [6]. Vector-borne transmission events of chikungunya virus within the EU/EEA are expected in areas where *Aedes albopictus* and *Aedes aegypti* are established, and when environmental conditions allow sufficient vector capacity (from early summer to mid-autumn) [7].

Public health implications

Vigilance regarding travel-related cases of chikungunya and other *Aedes*-borne infections remains essential. Public health authorities in the EU/EEA should consider raising awareness among clinicians and travel clinic specialists of the risk related to such diseases, especially when and where vector-borne secondary transmission may occur. The detection of an autochthonous case in the EU/EEA should trigger epidemiological and entomological investigations to assess the size of the transmission area and the potential for onward transmission, as well as to guide vector control measures.

Aedes albopictus has been the primary vector of chikungunya virus in mainland EU/EEA and is widely established throughout the region [8]. *Aedes aegypti*, the primary vector for chikungunya virus transmission in other regions, has recently established itself in Cyprus (albeit with a localised population) and is present around the Black Sea and in several EU overseas countries and territories (e.g. Aruba, French Polynesia) and outermost regions (e.g. Madeira, Martinique, La Réunion). Further spread and subsequent establishment of *Aedes aegypti* in mainland EU/EEA would increase the likelihood of autochthonous transmission events within the region, as well as the size of the epidemics.

Transmission of chikungunya virus through transfusion and transplantation of substances of human origin has not been documented. However, based on knowledge from other vector-borne diseases, preventive safety measures are applied to substances of human origin from donors residing in or returning from a chikungunya-affected area [9].

There is no licenced vaccine against chikungunya virus disease; prevention is based on protection against mosquito bites.

Personal protective measures principally focus on protection against mosquito bites. *Aedes* mosquitoes have diurnal biting activities in both indoor and outdoor environments. Personal protective measures should therefore be applied all day long and especially during the hours of highest mosquito activity (mid-morning and late afternoon to twilight). Personal protective measures to reduce the risk of mosquito bites include using mosquito bed nets (preferably insecticide-treated nets); sleeping or resting in screened or air-conditioned rooms; wearing clothes that cover most of the body, and using mosquito repellent in accordance with the instructions indicated on the product label.

Travellers visiting areas endemic for *Aedes*-borne diseases (e.g. chikungunya virus disease, dengue, Zika virus disease) and residing in areas of mainland EU/EEA where *Aedes albopictus* and/or *Aedes aegypti* mosquitoes are established should continue to apply personal protective measures after their return for a period of about two weeks. This is to avoid infecting local mosquitoes, which could result in autochthonous transmission within mainland EU/EEA. In addition, local authorities may consider conducting preventive vector control measures against imported chikungunya cases in areas where outbreaks may occur.

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