

# Chikungunya virus disease

## Annual Epidemiological Report for 2018

### Key facts

- For 2018, 14 countries reported 160 cases of chikungunya virus disease, of which 113 (71%) were confirmed.
- The EU/EEA notification rate was 0.03 cases per 100 000 population.
- Notification rates were highest in the age group 25–64 years and higher among females in most age groups.
- All cases were travel-related. The majority of the cases were probably infected in Asia (55.8%) and Africa (33.3%).

### Methods

This report is based on data for 2018 retrieved from The European Surveillance System (TESSy) on 10 September 2019. 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, 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].

Twenty-five EU/EEA countries reported data on chikungunya virus disease. All countries reported case-based data except for Belgium which reported aggregated data. Eleven countries reported no cases. No data were reported by Bulgaria, Cyprus, Denmark and the three EEA countries: Iceland, Liechtenstein and Norway.

Reported data for chikungunya virus disease were heterogeneous as no specific case definition for chikungunya virus disease was available until 2018. However, one country (Romania) referred to the 2018 chikungunya virus disease case definition, 18 countries referred to the EU generic case definition for viral haemorrhagic fevers, three countries did not specify which case definition was used (Belgium, Finland and France), and three countries used other case definitions (the Czech Republic, Germany and the United Kingdom).

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

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## Epidemiology

For 2018, 14 countries reported 160 cases of chikungunya virus disease, of which 113 (71%) were confirmed. The United Kingdom reported the highest proportion of cases (36.9%), followed by Spain (16.9%) and Germany (16.3%) (Table 1, Figure 1). The EU/EEA notification rate in 2018 was 0.03 cases per 100 000 population.

All cases were travel-related. The probable country of infection was available for 120 of them and these cases had probably acquired their infection in 23 different countries of infection: the majority in Asia (55.8%) and Africa (33.3%), including India (26.7%), Kenya (22.5%) and Thailand (15.0%).

**Table 1. Distribution of chikungunya virus disease cases and rates per 100 000 population by country and year, EU/EEA, 2014–2018**

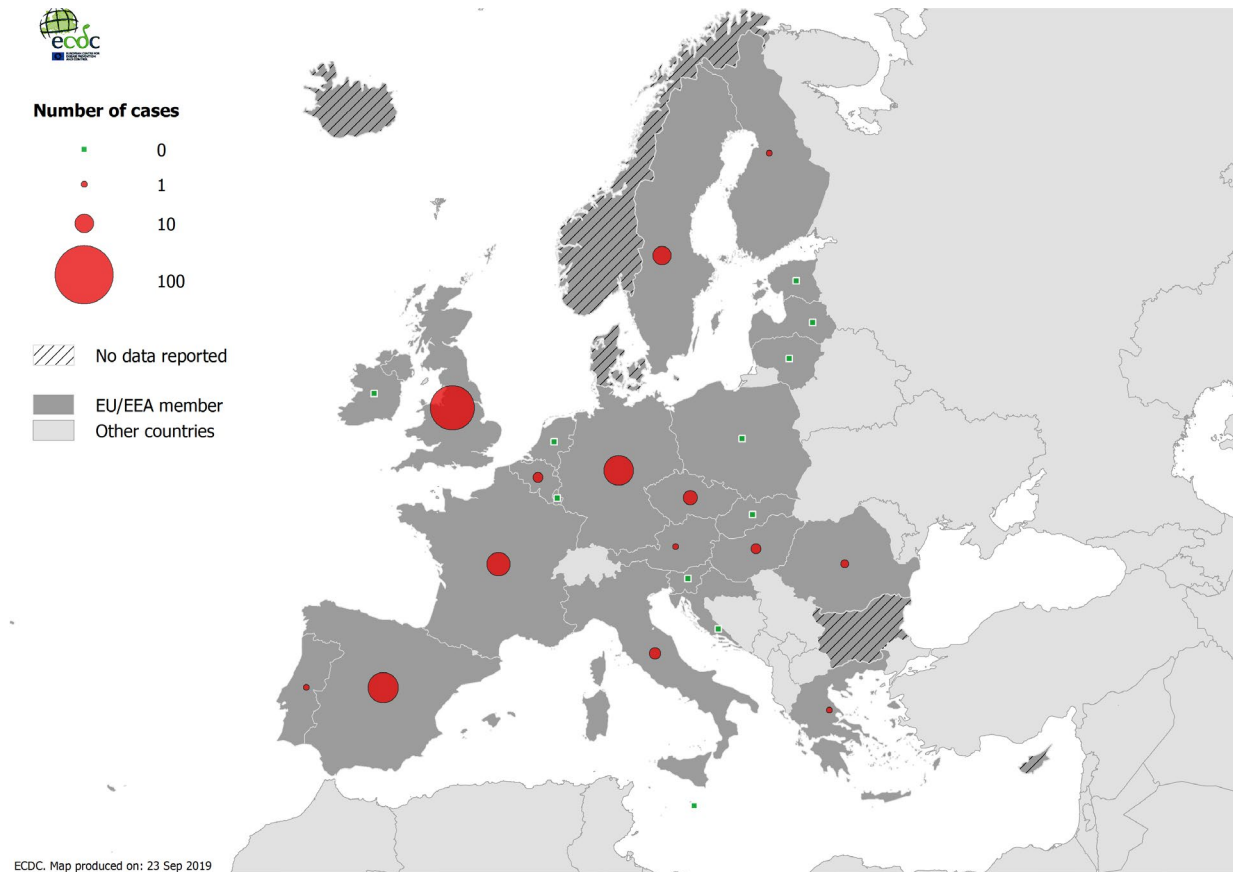
Country	2014		2015		2016		2017		2018			
	Reported cases	Rate	Reported cases	Rate	Reported cases	Rate	Reported cases	Rate	Reported cases	Rate	ASR	Confirmed cases
Austria	.	.	.	.	9	0.1	5	0.1	1	0.0	0.0	0
Belgium	74	0.7	44	0.4	29	0.3	10	0.1	3	0.0	0.0	3
Bulgaria	.	.	.	.	.	.	.	.	.	.	.	.
Croatia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0
Cyprus	.	.	.	.	.	.	.	.	.	.	.	.
Czech Republic	3	0.0	1	0.0	7	0.1	0	0.0	6	0.1	0.1	6
Denmark	.	.	.	.	.	.	.	.	.	.	.	.
Estonia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0
Finland	4	0.1	7	0.1	0	0.0	5	0.1	1	0.0	0.0	1
France	550	0.8	52	0.1	45	0.1	37	0.1	16	0.0	0.0	9
Germany	162	0.2	110	0.1	74	0.1	33	0.0	26	0.0	0.0	26
Greece	1	0.0	0	0.0	2	0.0	0	0.0	1	0.0	0.0	0
Hungary	2	0.0	2	0.0	1	0.0	1	0.0	3	0.0	0.0	3
Iceland	.	.	.	.	.	.	.	.	.	.	.	.
Ireland	1	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0.0	0
Italy	39	0.1	18	0.0	17	0.0	289	0.5	4	0.0	0.0	4
Latvia	0	0.0	2	0.1	0	0.0	0	0.0	0	0.0	0.0	0
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.	.
Lithuania	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0
Luxembourg	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0
Malta	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	0.0	0
Netherlands	33	-	24	-	7	-	0	-	0	-	-	0
Norway	.	.	.	.	.	.	.	.	.	.	.	.
Poland	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0
Portugal	.	.	0	0.0	3	0.0	0	0.0	1	0.0	0.0	1
Romania	0	0.0	0	0.0	0	0.0	0	0.0	2	0.0	0.0	2
Slovakia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0
Slovenia	0	0.0	0	0.0	2	0.1	0	0.0	0	0.0	0.0	0
Spain	272	0.6	234	0.5	105	0.2	51	0.1	27	0.1	0.1	26
Sweden	19	0.2	23	0.2	20	0.2	13	0.1	10	0.1	0.1	10
United Kingdom	301	0.5	106	0.2	169	0.3	104	0.2	59	0.1	0.1	22
EU/EEA	1461	0.3	624	0.1	492	0.1	548	0.1	160	0.0	0.0	113

∴: no data reported

-: no rate calculated.

ASR: age-standardised rate

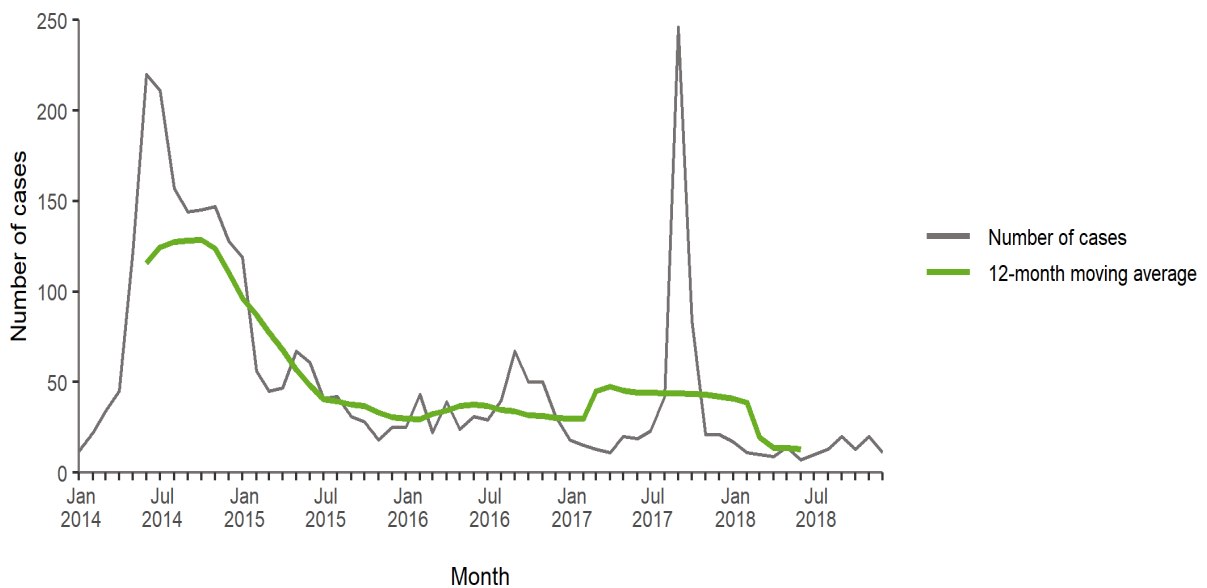
**Figure 1. Distribution of chikungunya virus disease cases by country, EU/EEA, 2018**



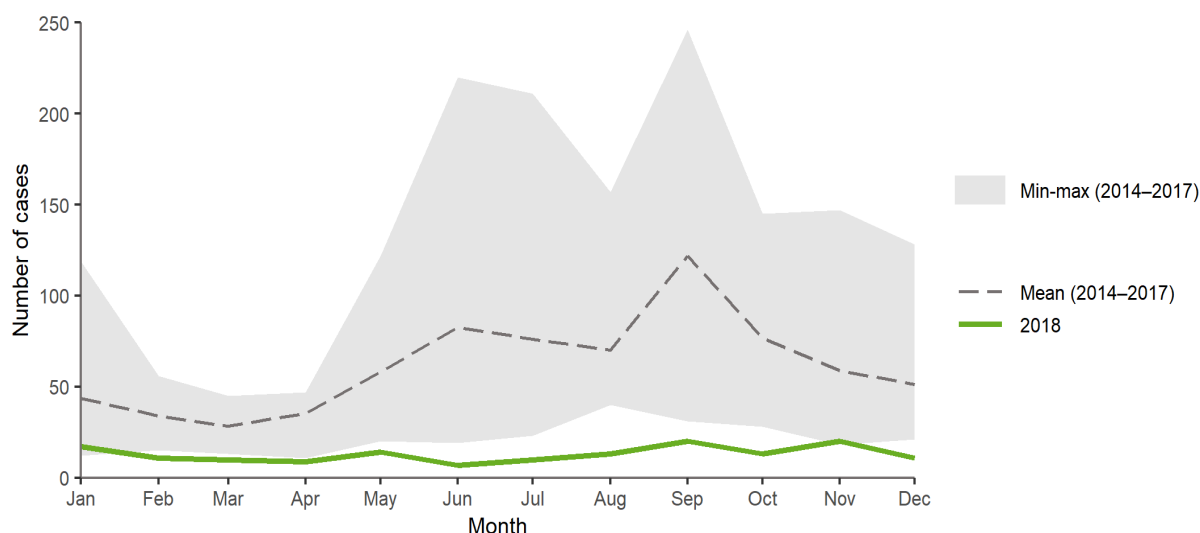
Source: Country reports from Austria, Belgium, Croatia, the Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

The number of cases reported for 2018 was the lowest in the last five years (Figure 2) and the monthly numbers were lower than the respective minimum monthly numbers of cases reported between 2014 and 2017 (Figure 3).

**Figure 2. Distribution of chikungunya virus disease cases by month, EU/EEA, 2014–2018**

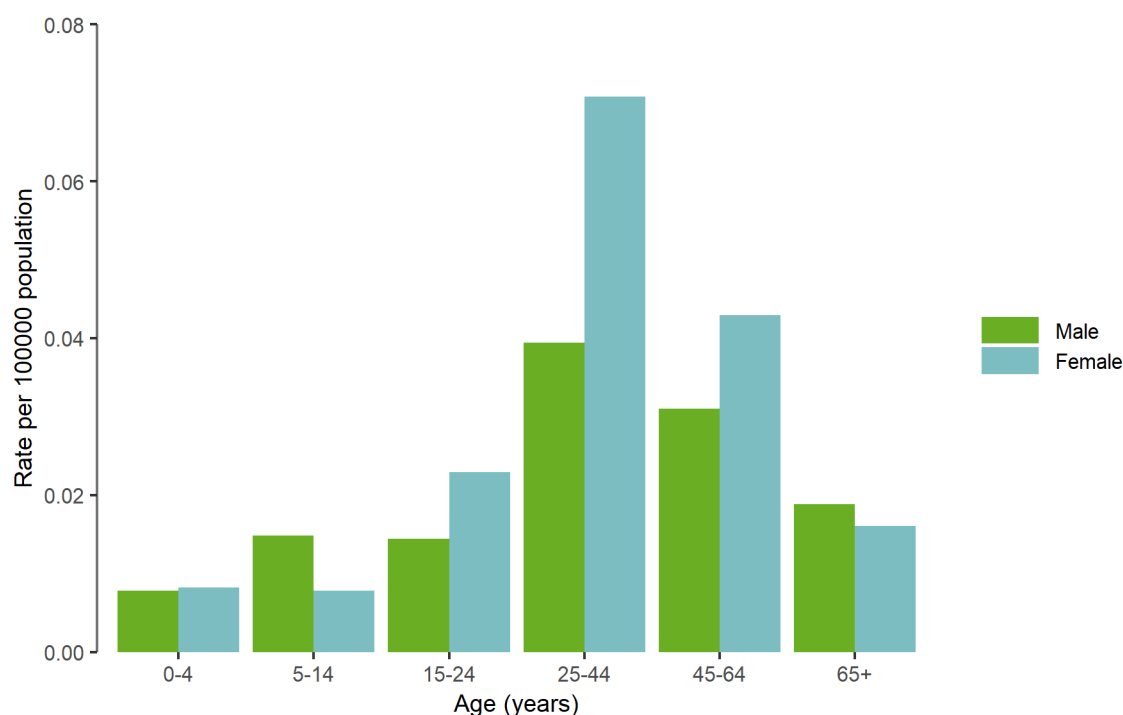


Source: Country reports from Croatia, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

**Figure 3. Distribution of chikungunya virus disease cases by month, EU/EEA, 2018 and 2014–2017**

Source: Country reports from Croatia, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

In 2018, the male-to-female ratio was 0.6:1. The majority of cases were 25–64 years of age ( $n=72$ ; 45%). Rates were highest for 25–44 year-old females (0.07 cases per 100 000). Rates were higher among females in most age groups, except for those aged 5–14 and 65 years and above.

**Figure 4. Distribution of chikungunya virus disease cases per 100 000 population, by age and gender, EU/EEA, 2018**

## Outbreaks and other threats

In 2018, no autochthonous cases of chikungunya virus disease were reported in EU/EEA Member States.

The virus is widespread in the Americas. In 2018, the highest number of chikungunya virus disease cases were reported by Brazil ( $n=65\,000$ ), followed by Paraguay ( $n=1\,200$ ) and Colombia ( $n=663$ ). In Asia, India and Thailand were the countries most affected in 2018, with 47 000 and 3 656 reported cases, respectively. A large outbreak of chikungunya virus disease was observed in Sudan, with over 20 000 cases reported in 2018 [4].

## Discussion

Travel-related cases of chikungunya virus disease in the EU/EEA reflect the situation in tropical regions where the disease is endemic. The number of travel-related cases reported in 2018 was lower than in the four previous years, possibly due to the decrease in virus transmission in the Americas. The number of cases has fluctuated over the years, with the highest number of cases reported in 2014 when a large outbreak of chikungunya virus disease occurred in the Americas. In 2017, two distinct events of autochthonous chikungunya transmission were reported in continental Europe. France reported two clusters in the Var department, with an epidemiological link between the 15 confirmed and two probable cases [5,6]. Italy reported 270 confirmed and 229 probable cases in the Lazio and Calabria regions, both popular holiday destinations with increased population density during the summer holidays when the outbreak was ongoing. This was the first known transmission of chikungunya virus disease in central and southern Italy [5,7-10]. Local outbreaks had previously been reported in Italy in 2007, and in France in 2010 and 2014 [11-14]. These recurrent events of local chikungunya virus transmission in areas where *Aedes albopictus* is established are not unexpected during the summer months, when environmental conditions are favourable for mosquitoes [15].

*Aedes albopictus* mosquitoes are active all year round in tropical and sub-tropical settings. In most temperate areas, mosquitoes overwinter in the egg stage, with no adult mosquito activity during winter months [7]. As chikungunya virus disease is endemic in large areas of the intertropical zone, repeated introductions can occur through viraemic travellers returning from these areas. These introductions may trigger autochthonous transmissions when weather conditions are suitable for *Aedes albopictus* activity in areas where this mosquito species is established [15]. *Aedes albopictus* is established in the southern part of continental EU/EEA. *Aedes aegypti*, the primary vector for chikungunya virus disease transmission, is not established in continental EU/EEA but is established around the Black Sea and in several EU Overseas Countries and Territories such as Madeira and several Caribbean islands (e.g. Martinique and Guadeloupe). More information about vector distribution is available from ECDC's mosquito maps [16].

## Public health implications

Vigilance regarding imported cases of chikungunya virus disease and other diseases transmitted by *Aedes* mosquitoes remains essential. Public health authorities in the EU/EEA should consider raising awareness among clinicians and travel clinic specialists about the risk related to chikungunya virus disease, especially in areas where competent mosquito vectors are present and environmental conditions are suitable for transmission [16]. There is no recommended vaccine and treatment of the disease is purely supportive. Prevention is based on protection against mosquito bites. The detection of an autochthonous case should trigger epidemiological and entomological investigations to assess the size of the transmission area and the potential for onward transmission; it should also guide vector control measures. *Aedes* mosquitoes have diurnal biting activities in both indoor and outdoor environments. Personal protection measures should therefore be applied all day long and especially during the hours of highest mosquito activity (mid-morning and late afternoon to twilight) [17,18].

Transmission of chikungunya virus infection through transfusion and transplantation has not been reported. However, the infection has been transmitted in animal models using intravenous inoculation. Preventive safety measures should therefore be applied to substances of human origin from donors residing in or returning from an affected area [19].

Preparedness plans to contain and/or mitigate the spread of dengue in the EU/EEA should address the following aspects:

- strengthened surveillance systems (including clinician awareness, laboratory capacity and capability for accurate confirmation and rapid notification of cases)
- regular reviews of contingency plans for mosquito-borne outbreaks
- education of the general public on how to control mosquito breeding sites; and
- enhanced vector surveillance and rapid implementation of vector control measures following each case.

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