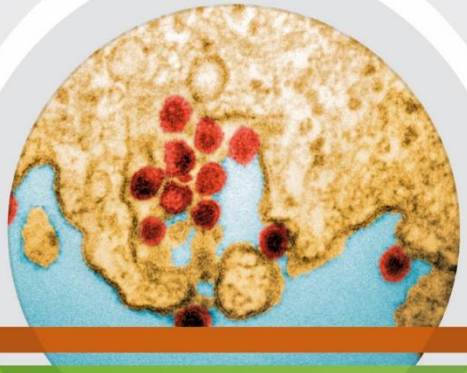


SURVEILLANCE REPORT

Annual Epidemiological Report for 2016

Chikungunya virus disease

Key facts

- In 2016, 16 countries reported 476 travel-associated cases of chikungunya, of which 366 (76.9%) were confirmed.
- The EU/EEA notification rate was 0.1 cases per 100 000 population.
- The highest notification rates were in men and women 25–44 years of age.
- The number of cases increased during the winter, Easter and summer holidays, reflecting travel patterns of EU populations.
- A total of 42.8% of the cases were associated with travel to India.

Methods

This report is based on data for 2016 retrieved from The European Surveillance System (TESSy) on 4 April 2018. 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].

Twenty-five EU/EEA countries reported data on chikungunya. Nine reported no cases (Croatia, Estonia, Finland, Latvia, Lithuania, Luxembourg, Poland, Romania and Slovakia). No data were reported by Bulgaria, Cyprus, Denmark and the three EEA countries: Iceland, Liechtenstein and Norway.

Reported data for chikungunya were heterogeneous as no specific EU case definition was available in 2016, similar to previous years. Eighteen countries referred to the EU's generic case definition for viral haemorrhagic fevers, three countries did not specify which case definition was used (Belgium, Finland and France) and four countries used other case definitions (Czech Republic, Germany, Sweden and United Kingdom).

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

Suggested citation: European Centre for Disease Prevention and Control. Chikungunya virus disease. In: ECDC. Annual epidemiological report for 2016. Stockholm: ECDC; 2018.

Stockholm, October 2018

Epidemiology

In 2016, 16 countries reported 476 cases of chikungunya, of which 366 (76.9%) were laboratory confirmed. The number of cases has been fluctuating over the years, with the highest number of cases reported in 2014 when the large outbreak of chikungunya occurred in the Americas.

As in 2015, the EU/EEA notification rate in 2016 was 0.1 cases per 100 000 population. This is higher than 2012 and 2013, but lower than 2014.

The United Kingdom and Spain reported the highest number of cases, with 169 and 105 respectively (Table 1, Figure 1).

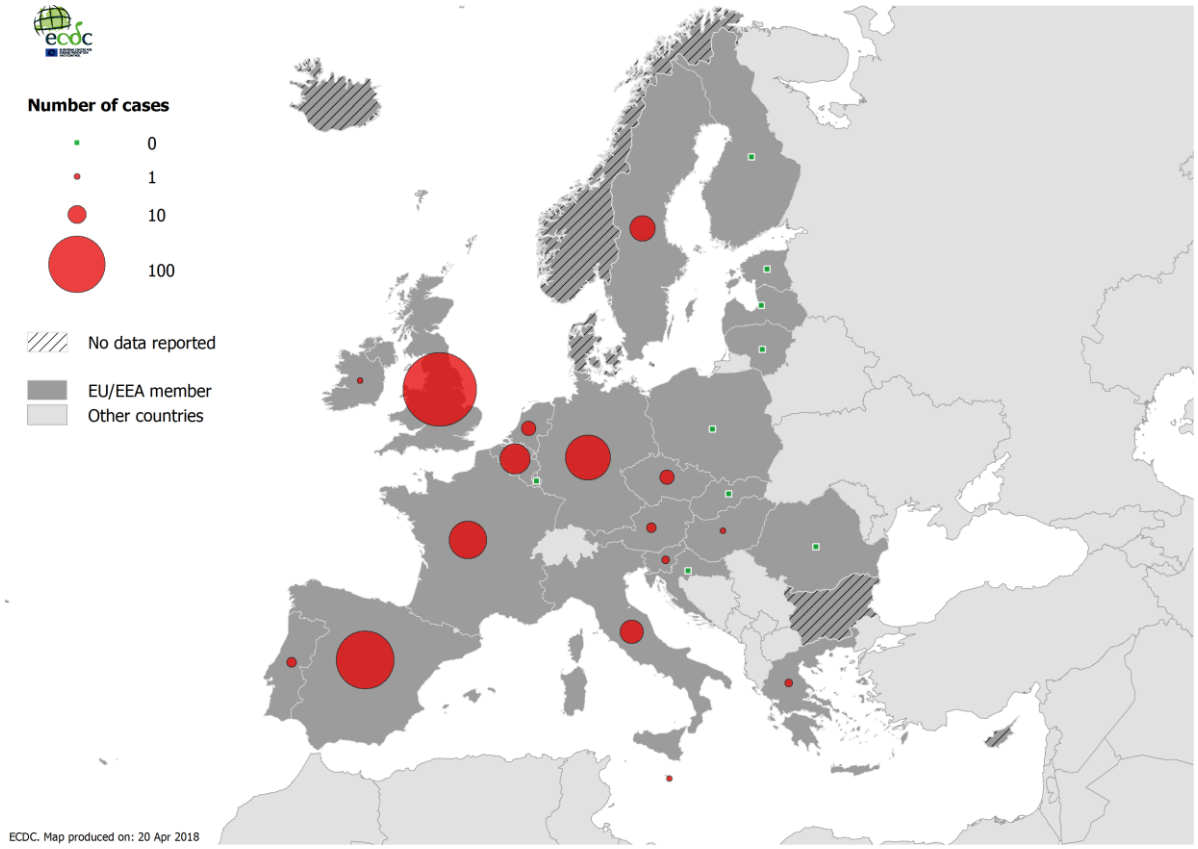
All cases were travel-related.

Table 1. Distribution of chikungunya cases, EU/EEA, 2012 to 2016

	2012		2013		2014		2015		2016			
Country	Reported cases	Rate	Reported cases	Rate	Reported cases	Rate	Reported cases	Rate	Reported cases	Rate	ASR	Confirmed cases
Austria	0	0.0	0	0.0	.	.	.	.	3	0.0	0.0	3
Belgium	6	0.1	7	0.1	74	0.7	44	0.4	29	0.3	0.3	29
Bulgaria	.	.	.	.	.	.	.	.	.	.	.	.
Croatia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0
Cyprus	.	.	.	.	.	.	.	.	.	.	.	.
Czech Republic	0	0.0	0	0.0	3	0.0	1	0.0	7	0.1	0.1	7
Denmark	.	.	.	.	.	.	.	.	.	.	.	.
Estonia	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0
Finland	0	0.0	1	0.0	4	0.1	7	0.1	0	0.0	0.0	0
France	6	0.0	11	0.0	550	0.8	52	0.1	45	0.1	0.1	45
Germany	9	0.0	16	0.0	162	0.2	110	0.1	64	0.1	0.1	64
Greece	0	0.0	0	0.0	1	0.0	0	0.0	2	0.0	0.0	2
Hungary	0	0.0	0	0.0	2	0.0	2	0.0	1	0.0	0.0	1
Iceland	.	.	.	.	.	.	.	.	.	.	.	.
Ireland	0	0.0	0	0.0	1	0.0	1	0.0	1	0.0	0.0	1
Italy	5	0.0	3	0.0	39	0.1	18	0.0	17	0.0	0.0	17
Latvia	0	0.0	0	0.0	0	0.0	2	0.1	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	0	0.0	0	0.0	1	0.2	0.2	0
Netherlands	.	.	.	.	33	-	24	-	7	-	-	7
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	3
Romania	0	0.0	0	0.0	0	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	0.0	0
Slovenia	0	0.0	0	0.0	0	0.0	0	0.0	2	0.1	0.1	2
Spain	2	-	2	-	272	0.6	234	0.5	105	0.2	0.2	97
Sweden	2	0.0	6	0.1	19	0.2	23	0.2	20	0.2	0.2	20
United Kingdom	21	0.0	26	0.0	301	0.5	106	0.2	169	0.3	0.3	68
EU/EEA	**51**	**0.0**	**72**	**0.0**	**1461**	**0.3**	**624**	**0.1**	**476**	**0.1**	**0.1**	**366**

Source: Country reports.
ASR: Age-standardised rate
.: No data reported
-: No rate calculated.

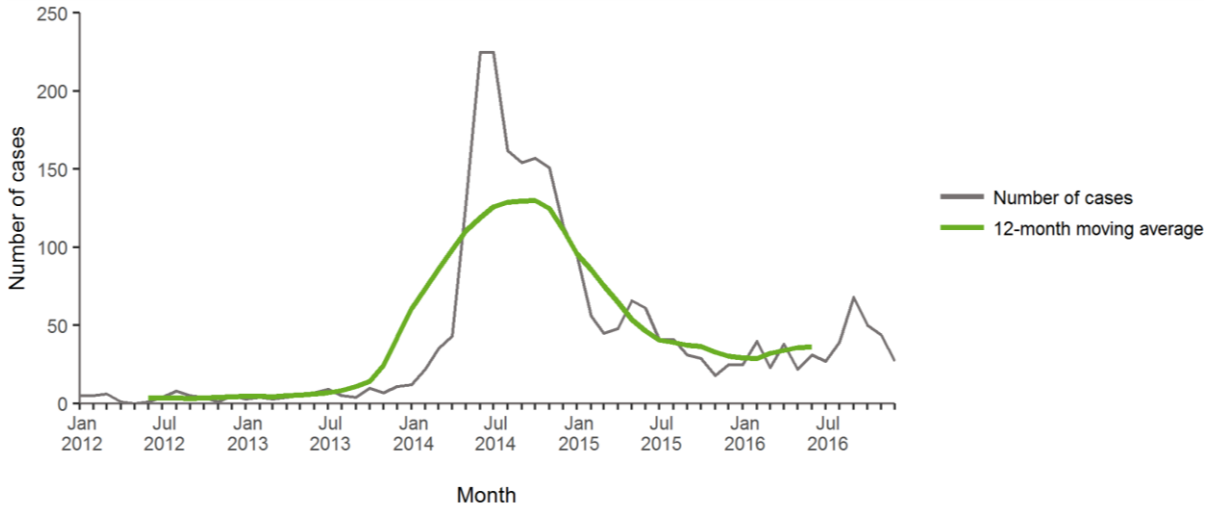
Figure 1. Distribution of chikungunya cases by country, EU/EEA, 2016



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

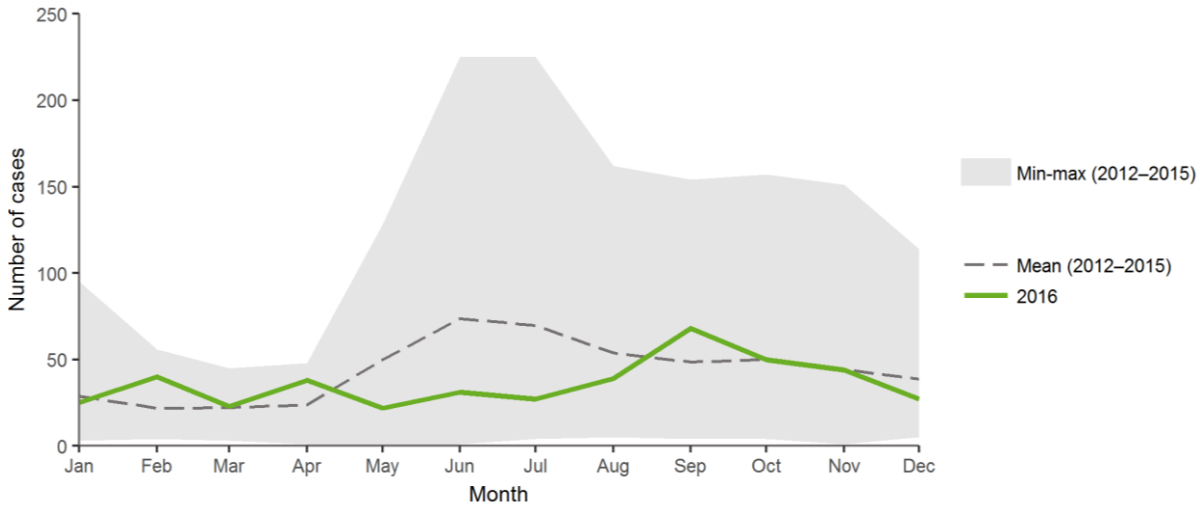
Chikungunya cases fluctuated during the year, with three peaks of cases in February (42 reported cases), April (39 reported cases) and August to November (52 reported cases/month). These three peaks relate to the winter, Easter and summer holiday periods. The seasonal pattern of reported cases differs slightly from that of the mean of cases reported for the period 2012 to 2015. This is mostly due to the high number of travel-related cases infected in the Americas during the summer months in 2014, which bias the background data (Figures 2 and 3).

Figure 2. Distribution of chikungunya cases by month, EU/EEA, 2012 to 2016



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

Figure 3. Distribution of chikungunya cases by month, EU/EEA, 2016 and 2012 to 2015

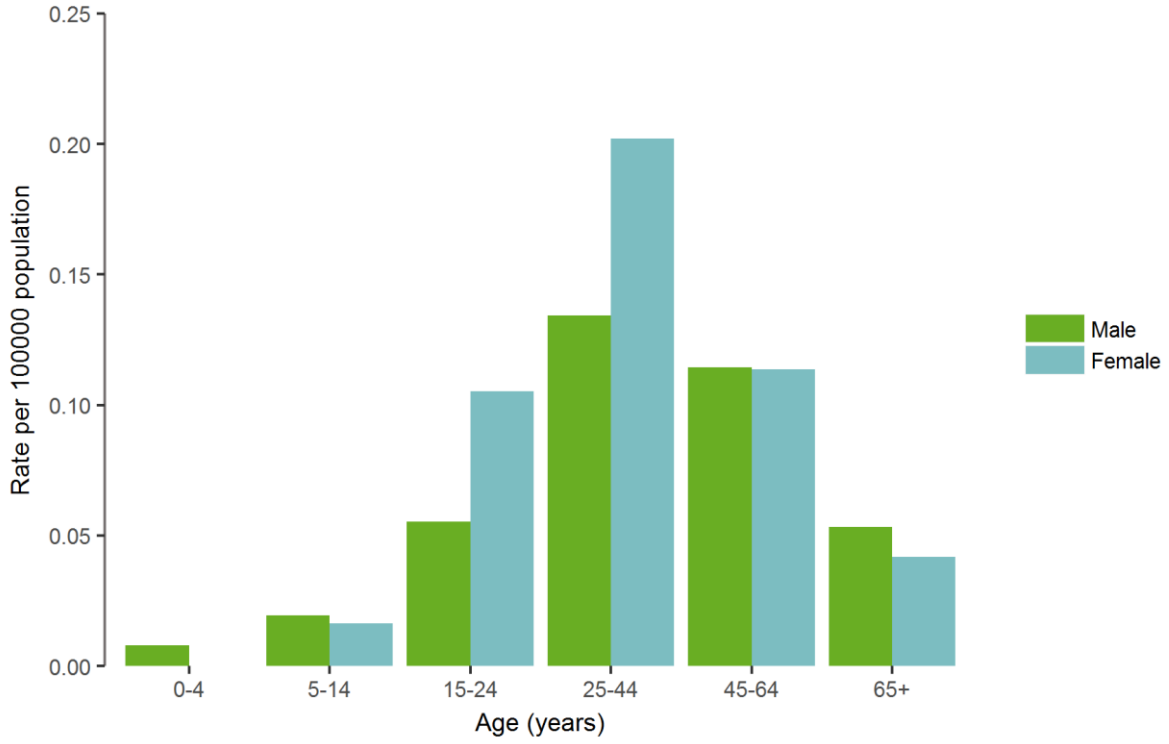


Source: Country reports from Belgium, Croatia, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

In 2016, the male-to-female ratio was 0.8:1. The majority of cases were 25–44 years of age (n=218, 45.8%) and the age distribution was comparable in both genders. The gender difference was more pronounced in the 15-24 and 25-44 age groups.

The highest rates were observed in the age group 25-44 years, with 0.2 cases per 100 000 population (Figure 4).

Figure 4. Distribution of chikungunya cases per 100 000 population by age and gender, EU/EEA, 2016



In 2016, most of the 318 cases for which the probable place of infection was known were infected in India (n=136, 42.8%) and Brazil (n=46, 14.5%).

Outbreaks and other threats

As in previous years, Asia and the Americas were the regions most affected by chikungunya [4].

In 2016, India has been particularly affected, with over 58 000 cases, more than double the number of cases reported in 2015 [4].

In the Americas, there were over 504 000 cases reported in 2016, which corresponds to a 31% decrease compared with 2015 [5,6]. Brazil reported the most cases, with about 409 000, which represents a significant increase compared with 2015, when there were about 24 000 [4].

There were no outbreaks of chikungunya in the continental EU/EEA in 2016.

Discussion

Travel-related cases of chikungunya in the EU/EEA reflect the evolution of the situation in tropical regions where the disease is endemic. The number of travel-related cases reported in 2016 was lower than in 2014 and 2015, which relates to the overall decrease in transmission of the virus in the Americas.

The age and gender distribution of chikungunya cases mostly reflect EU/EEA population travel patterns. Similarly, the seasonality in case occurrence reflects holiday seasons.

There was no autochthonous chikungunya transmission in continental EU/EEA. Italy in 2007 and France in 2010 and 2014 reported autochthonous chikungunya cases following introduction of the virus [7-9]. These recurrent events highlight the risk of local transmission of chikungunya virus in areas where competent mosquito vectors are established. In the continental EU/EEA, *Aedes albopictus* is established in the southern part of the EU (more information about vector distribution is available from: http://ecdc.europa.eu/disease-vectors/surveillance-and-disease-data/mosquito-maps) and between mid-spring and mid-autumn, environmental conditions are generally considered favourable for vector activity and therefore autochthonous transmission of chikungunya virus [10]. *Aedes aegypti*, the primary vector for chikungunya virus transmission is not present in the continental EU/EEA, but the species is established around the Black Sea and in several Outermost Regions of the EU such as Madeira and several islands in the Caribbean region (e.g. Martinique and Guadeloupe).

Public health implications

Vigilance regarding imported cases of chikungunya and other diseases transmitted by *Aedes* mosquitoes remains essential. Public health authorities should raise awareness about the risk related to chikungunya among clinicians and travel clinic specialists in the EU/EEA, especially in areas where competent mosquito vectors are present and environmental conditions are suitable for transmission [10].

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

- strengthening surveillance systems, including the adoption of a specific case definition and the rapid detection and notification of cases at local, national and international levels
- regular reviews of contingency plans for mosquito-borne outbreaks
- education and engagement of the general public in the control of mosquito breeding sites
- strengthening vector surveillance systems and rapid implementation of vector control measures around each case; and
- considering the adoption of blood safety measures in affected areas similar to those for West Nile virus infection.

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