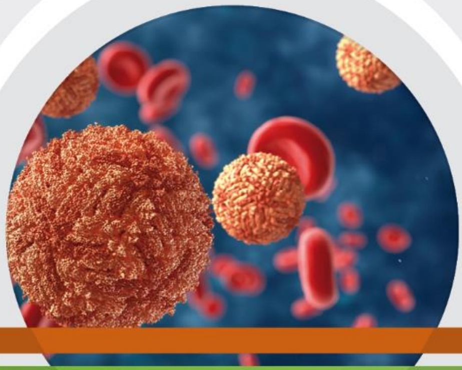

SURVEILLANCE REPORT

Annual Epidemiological Report for 2016

Zika virus infection

Key facts

- The outbreak of Zika virus infection in South and Central America that started in 2015 led to a large number of travel-associated infections in EU/EEA countries.
- A total of 2 119 cases were reported in 2016, with an overall notification rate of 0.6 cases per 100 000 persons in 2016.
- More than half the cases were reported by France and most were linked with travel to the Caribbean.
- No autochthonous cases of Zika virus infection were reported in the EU/EEA in 2016.
- There were 20 sexually transmitted cases.

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-three EU/EEA countries reported data on Zika virus infection in 2016. Estonia and Latvia reported zero cases. No data were reported by Bulgaria, Croatia, Cyprus, Germany, Iceland, Liechtenstein, Lithuania and Poland.

Zika virus infection data were reported in accordance with an interim case definition which was agreed upon by the Health Security Committee of the European Union in March 2016 [4]. Countries reported only confirmed cases to TESSy.

Information on the surveillance system type was provided by 20 countries: all reported having a comprehensive surveillance system. Belgium, Greece, Hungary and Malta did not provide information on the comprehensiveness of the surveillance system. Reporting is compulsory in 16 countries, voluntary in three (Luxembourg, Slovenia and

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Sweden), and reported as 'other' in the United Kingdom [2]. Data reporting is case-based except in Luxembourg and Norway.

Epidemiology

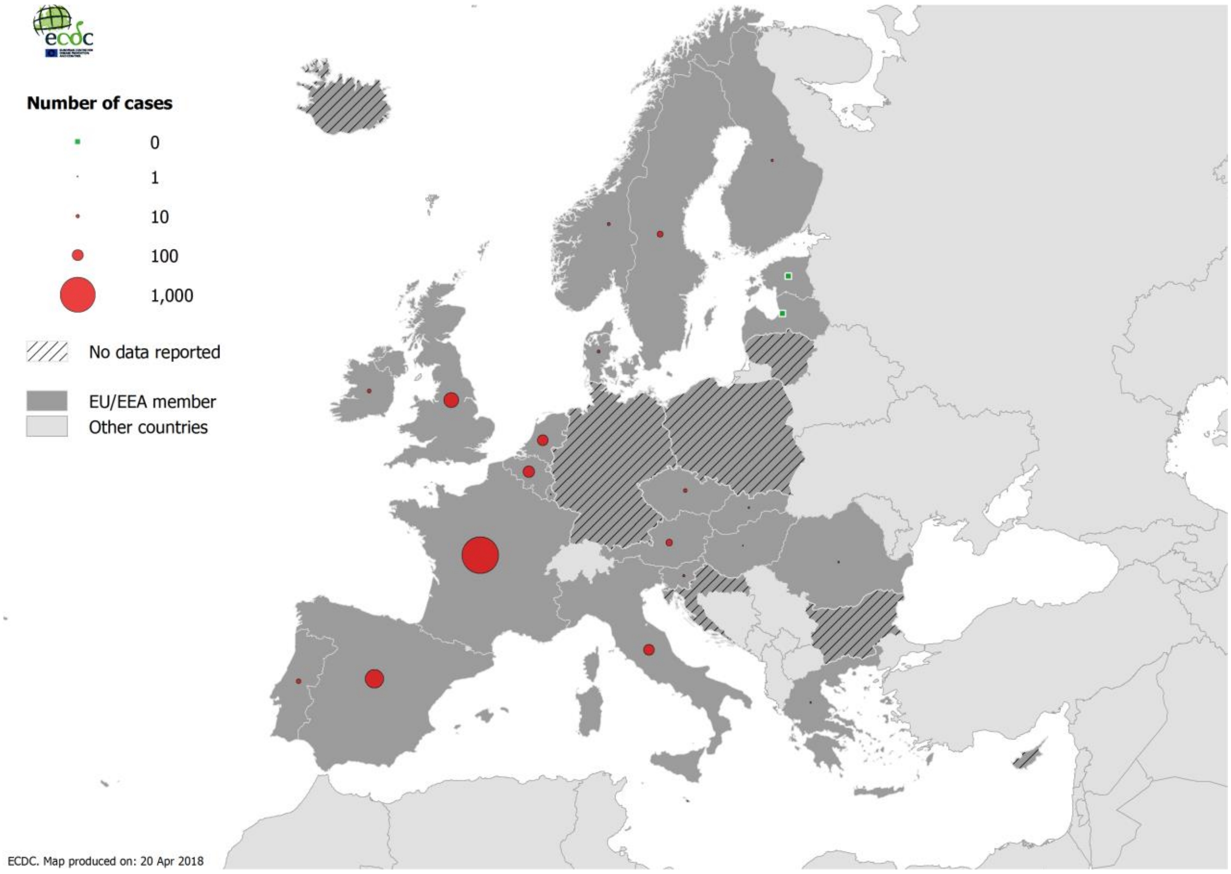
In 2016, 23 countries reported 2 119 cases (Table 1) resulting in a notification rate of 0.6 cases per 100 000 inhabitants. The largest numbers of cases were reported by France (1 141), Spain (301) and Belgium (120) (Figure 1). Notification rates were highest in France (1.7/100 000) and Belgium (1.1/100 000). Fewer than 10 cases were reported by Denmark, Estonia, Finland, Greece, Hungary, Latvia, Luxembourg, Malta, Norway, Romania, Slovakia and Slovenia.

Table 1. Distribution of Zika virus infection cases, EU/EEA, 2015 to 2016

Countries	2015	2016	2015	2016
	Number	Rate	Number	Rate
Austria	1	0.0	41	0.5
Belgium	1	0.0	120	1.1
Bulgaria	.	.	.	.
Croatia	.	.	.	.
Cyprus	.	.	.	.
Czech Republic	.	.	13	0.1
Denmark	.	.	8	0.1
Estonia	.	.	0	0.0
Finland	1	0.0	6	0.1
France	.	.	1 141	1.7
Germany	.	.		.
Greece	.	.	2	0.0
Hungary	.	.	2	0.0
Iceland	.	.	.	.
Ireland	1	0.0	15	0.3
Italy	.	.	101	0.2
Latvia	0	0.0	0	0.0
Liechtenstein	.	.	.	.
Lithuania	.	.	.	.
Luxembourg	.	.	2	0.3
Malta	.	.	2	0.5
Netherlands	11	0.1	98	0.6
Norway	.	.	8	0.2
Poland	.	.	.	.
Portugal	.	.	18	0.2
Romania	.	.	3	0.0
Slovakia	.	.	3	0.1
Slovenia	.	.	7	0.3
Spain	10	0.0	301	0.6
Sweden	1	0.0	34	0.3
United Kingdom	3	0.0	194	0.3
EU/EEA	**29**	**0.0**	**2 119**	**0.6**

Source: Country reports.
.: No data reported.

Figure 1. Distribution of Zika virus infection cases by country, EU/EEA, 2016

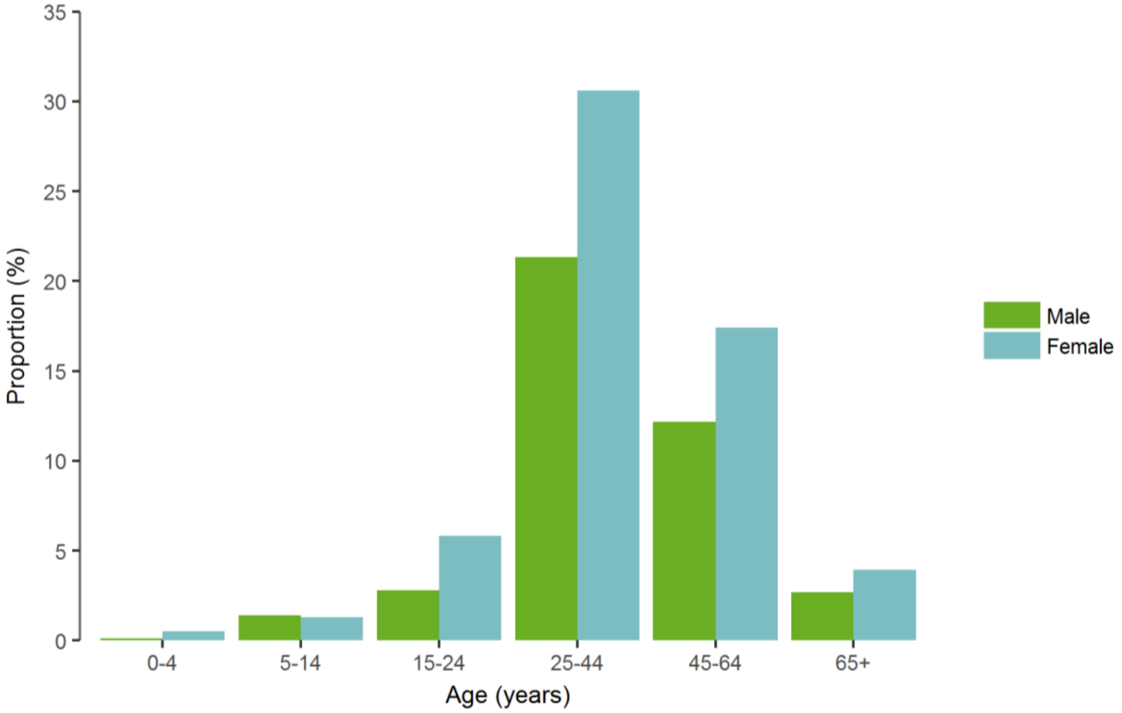


Among cases where gender was reported (n=1 982), the majority were female (n=1 178, 59%). Age was reported for 92% of cases (n=1942); cases were most frequently reported among 25–44 year-olds (52%) and 45–64 year-olds (30%). The mean age was 40 years and did not differ by gender (p=0.4). There was a higher proportion of females compared with males in all age groups except for 5–14 year-olds (Figure 2). The overall male-to-female ratio was 0.7.

Pregnancy status was known for 1 085 female cases (92%). Of these, 113 (10%) were known to be pregnant. Pregnant women were younger than non-pregnant women (mean age: 31 years vs. 41 years, respectively; p≤0.01). The outcome of pregnancy was known for 43 pregnant women, and 35 were reported to have had live births, two miscarried, three had termination of pregnancy, and a further three were reported to have had infants with microcephaly.

The importation status was reported for 2 080 cases (98%). Of these, 2 059 were imported. The 21 locally acquired cases were acquired sexually (20, all females) and vertically (one case). There was no autochthonous vector-borne transmission reported in the EU/EEA during 2016. The place of infection was known for 1 849 imported cases, with the most infections acquired in the Caribbean (71%), South America (16%) and Central America (12%).

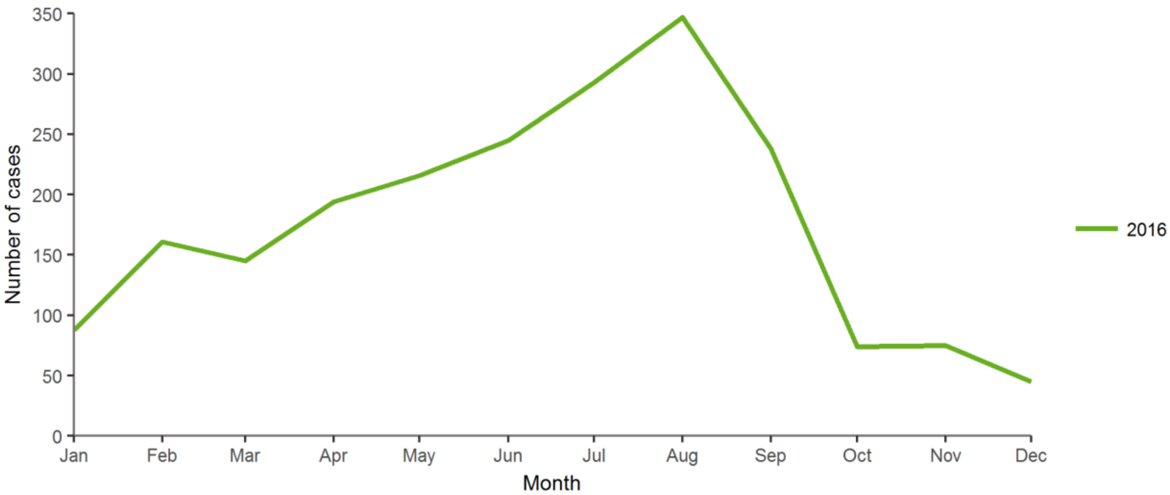
Figure 2. Distribution of Zika virus infection cases, by age and gender, EU/EEA, 2016



Trend

During 2016, the number of reported cases of Zika virus infection increased from January, peaking in August before decreasing rapidly until October. This decrease continued, at a lower rate, until December. Trends by place of infection differed: the number of cases reported as infected in South America peaked in February (62 cases) and then declined with no cases reported infected in South America in November and December; cases reported as infected in Central America peaked in August (63 cases) and declined thereafter; cases infected in the Caribbean also peaked in August (223 cases) and decreased drastically in September (148 cases) and October (38 cases). With the exception of January, cases infected in the Caribbean accounted for more than 50% of the cases imported each month. In January, it was cases infected in South America that accounted for the majority (69%) of imported cases.

Figure 3. Distribution of Zika virus infection cases by month, EU/EEA, 2016



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

Discussion

Zika virus infection emerged in 2015 as an outbreak of unprecedented magnitude in the Americas; at the same time, an increase in the number of infants born with microcephaly was reported [5]. In February 2016, the World Health Organization (WHO) declared that 'the recent cluster of microcephaly cases and other neurological disorders reported in Brazil, following a similar cluster in French Polynesia in 2014, constitutes a Public Health Emergency of International Concern' and encouraged the investigation of an association with Zika virus infection, which at the time had not been confirmed [6]. The association with microcephaly was eventually confirmed [7,8], with more than 3 700 confirmed cases of microcephaly reported in the Americas [9].

The large outbreak in South America led to concerns in Europe about importation of cases as well as potential local transmission in areas where *Aedes albopictus* and *Ae. aegypti* are present. The competence of European populations of *Ae. albopictus* for transmission of Zika virus was not well known at the time, and as a result surveillance was implemented at the European level. In March 2016, the European Union Health Security Committee approved an interim case definition for surveillance of Zika virus infection. Surveillance started with two main objectives: the early detection of locally acquired cases in the EU/EEA and timely reporting of travel-associated cases, particularly of those residing in areas in the EU/EEA where *Ae. albopictus* or *Ae. aegypti* are established (receptive areas), so that appropriate control measures can be taken. Zika virus surveillance kicked off in week 22 of 2016, with weekly reporting of cases to TESSy. Retrospective data were reported by countries as far back as possible.

The increase in reported cases in the EU/EEA during the first eight months of 2016 likely reflected the establishment of surveillance in EU Member States as well as the progression of the epidemic in the Americas. In early 2016, the outbreak in South America peaked. In mid-2016, increased intensity of the epidemic was reported from the Caribbean and in Central America [10]. The large proportion of cases associated with travel to the Caribbean can be explained by travel pattern of European residents, major European holiday travel periods coinciding with high epidemic activity, and the higher intensity of the epidemics in insular settings [11].

Although there was concern regarding autochthonous transmission in the EU/EEA, there have been no reports of local vector-borne transmission in Europe – despite the large number of returning travellers to areas where *Ae. albopictus* is endemic [12]. Investigators have established that European populations of *Ae. albopictus* are probably not efficient vectors of Zika virus [13-15] although *Ae. albopictus* has been implicated in the outbreak in Gabon [16].

Public health implications

The Zika virus outbreak in the Americas peaking in 2016 had severe consequences for infants born in the region. The impact in Europe was limited due to the lack of autochthonous transmission and possibly also due to the travel recommendations which were announced quickly, particularly for pregnant women [17]. Despite the evidence of limited competence of European *Ae. albopictus* populations in transmitting Zika virus infection, continued surveillance is warranted to enable the early detection of outbreaks and efficient response measures.

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