

Leptospirosis

Annual Epidemiological Report for 2016

Key facts

- In 2016, 26 countries in the European Union/European Economic Area (EU/EEA) reported 783 confirmed cases of leptospirosis.
- The notification rate was 0.17 confirmed cases per 100 000 population in the EU/EEA.
- There was no obvious long-term trend, as the notification rate fluctuated between 0.10 and 0.21 cases per 100 000 population between 2012 and 2016.
- Human leptospirosis was reported more commonly in adults, and notification rates were higher for males than females in all age groups.
- Leptospirosis shows a strong seasonality, with higher rates in summer and autumn.

Methods

This report is based on data for 2016 retrieved from The European Surveillance System (TESSy) on 21 February 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].

In 2016, 29 EU/EEA countries reported data (Norway and Liechtenstein did not report data). Twelve countries used the EU-2012 case definition, 11 used the EU-2008 case definition, and one used the EU-2002 version. Denmark, France, Italy and Germany reported cases based on different case definitions. Finland supplied no information on the case definition in use. The 2012 case definition includes laboratory criteria for all pathogenic *Leptospira* spp. while the one from 2008 was limited to *Leptospira interrogans*. In 26 countries, surveillance was based on mandatory reporting, and 28 had national coverage (Spain had no national coverage) [2].

Epidemiology

In 2016, 26 EU/EEA countries reported 1 319 leptospirosis cases, of which 783 (59%) were classified as confirmed (Table 1). Cyprus, Iceland and Luxembourg reported no cases. The countries with the highest number of confirmed cases were Portugal, the Netherlands and Germany.

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The notification rate was 0.17 confirmed cases per 100 000 population (range by country: 0.0 to 0.98 cases per 100 000 population). The overall notification rate fluctuated between 0.10 and 0.21 cases per 100 000 population between 2012 and 2016, with no obvious long-term trends. There was no discernible geographical pattern in the distribution of cases. Five countries (Ireland, Lithuania, the Netherlands, Portugal and Slovenia) had a notification rate above 0.50 confirmed cases per 100 000 population.

Table 1. Distribution of confirmed leptospirosis cases by country and year, EU/EEA, 2012–2016

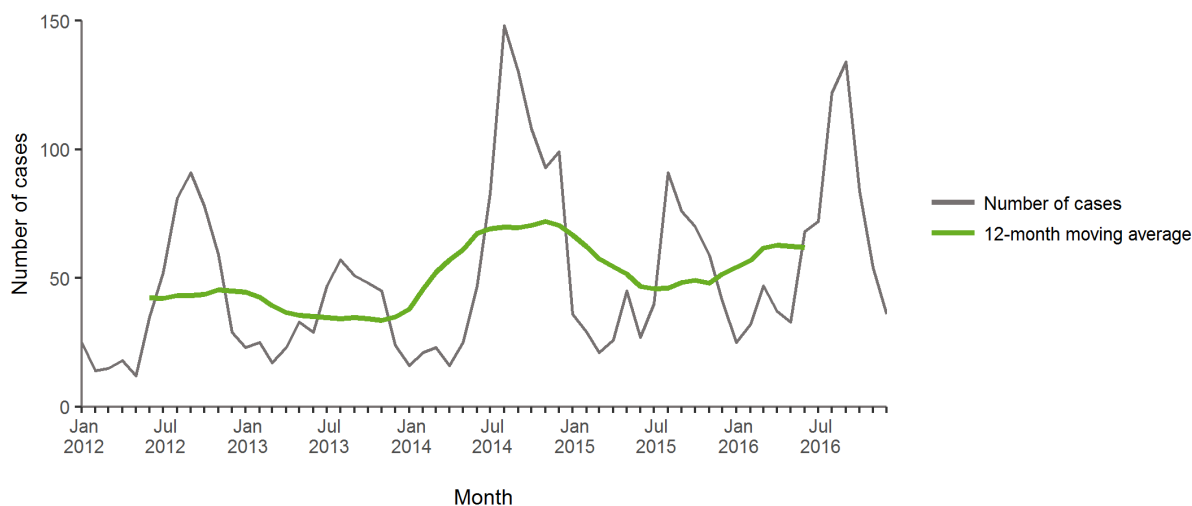
Country	2012		2013		2014		2015		2016			
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Confirmed cases	Rate	ASR	Reported cases
Austria	16	0.19	15	0.18	9	0.11	12	0.14	14	0.16	0.16	14
Belgium	14	0.13	14	0.13	21	0.19	16	0.14	19	0.17	-	27
Bulgaria	4	0.05	3	0.04	31	0.43	14	0.19	9	0.13	0.11	13
Croatia	-	-	0	0.00	105	2.47	36	0.85	11	0.26	0.25	16
Cyprus	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Czechia	22	0.21	6	0.06	35	0.33	17	0.16	18	0.17	0.17	18
Denmark	7	0.13	3	0.05	7	0.12	8	0.14	15	0.26	0.28	15
Estonia	5	0.38	2	0.15	2	0.15	2	0.15	3	0.23	0.21	3
Finland	2	0.04	1	0.02	2	0.04	2	0.04	1	0.02	0.02	1
France	25	0.04	36	0.05	96	0.15	58	0.09	79	0.12	0.12	591
Germany	85	0.11	80	0.10	123	0.15	87	0.11	91	0.11	0.12	93
Greece	14	0.13	24	0.22	36	0.33	35	0.32	19	0.18	0.16	20
Hungary	9	0.09	7	0.07	31	0.31	10	0.10	15	0.15	0.15	15
Iceland	-	-	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Ireland	15	0.33	13	0.28	22	0.48	16	0.35	26	0.55	0.59	26
Italy	46	0.08	33	0.06	42	0.07	38	0.06	54	0.09	0.08	54
Latvia	1	0.05	1	0.05	7	0.35	2	0.10	5	0.25	0.23	5
Lithuania	20	0.67	10	0.34	3	0.10	10	0.34	18	0.62	0.61	18
Luxembourg	1	0.19	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Malta	3	0.72	3	0.71	0	0.00	2	0.47	1	0.23	0.22	1
Netherlands	48	0.29	26	0.15	100	0.59	86	0.51	95	0.56	0.57	95
Poland	2	0.01	0	0.00	10	0.03	4	0.01	4	0.01	0.01	4
Portugal	21	0.20	37	0.35	65	0.62	44	0.42	101	0.98	0.95	105
Romania	74	0.37	65	0.32	92	0.46	37	0.19	65	0.33	0.32	65
Slovakia	8	0.15	5	0.09	12	0.22	7	0.13	10	0.18	0.18	10
Slovenia	4	0.19	0	0.00	31	1.50	11	0.53	17	0.82	0.80	17
Spain	0	-	0	-	0	-	3	-	16	-	-	16
Sweden	4	0.04	5	0.05	6	0.06	3	0.03	1	0.01	0.01	1
United Kingdom	78	0.12	50	0.08	78	0.12	67	0.10	76	0.12	0.12	76
EU-EEA	528	0.12	439	0.10	966	0.21	627	0.13	783	0.17	0.16	1 319

Source: country reports. -: no data reported. Liechtenstein and Norway did not report any data during the five-year period.

In 2016, the number of cases of leptospirosis increased by 25% (rate increase: 31%) in comparison to 2015, but remained below the exceptionally large peak in 2014 (Figure 1). The increase in 2016 involved most countries, but was especially pronounced in Portugal (Table 1).

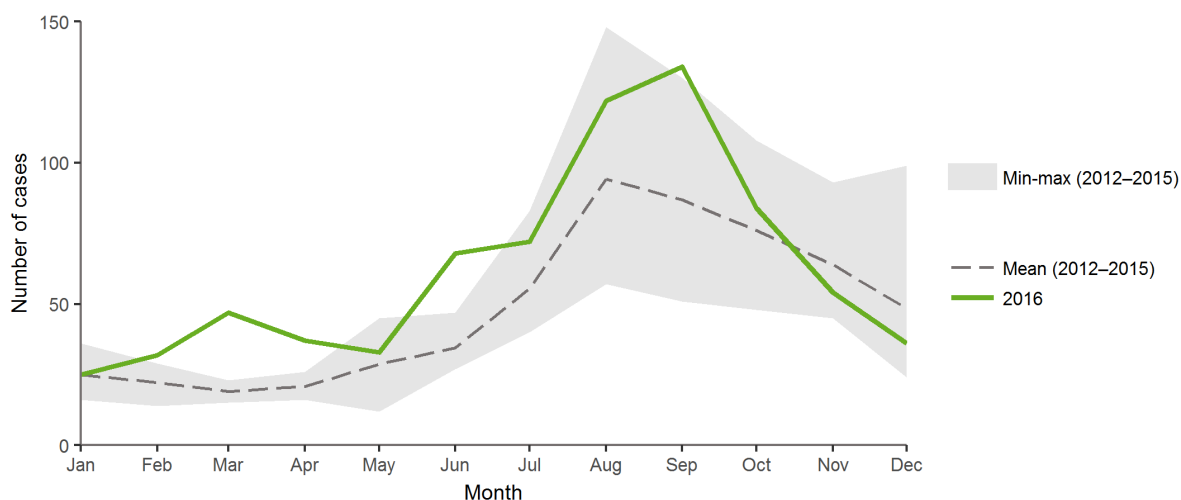
As in previous years, the highest number of cases occurred in summer and autumn, with 64% of the cases reported between June and October (Figure 2). The highest peaks were in August and September.

Figure 1. Distribution of confirmed leptospirosis cases by month, EU/EEA, 2012–2016



Source: Country reports from Austria, Belgium, Bulgaria, Cyprus, Czechia, Denmark, 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.

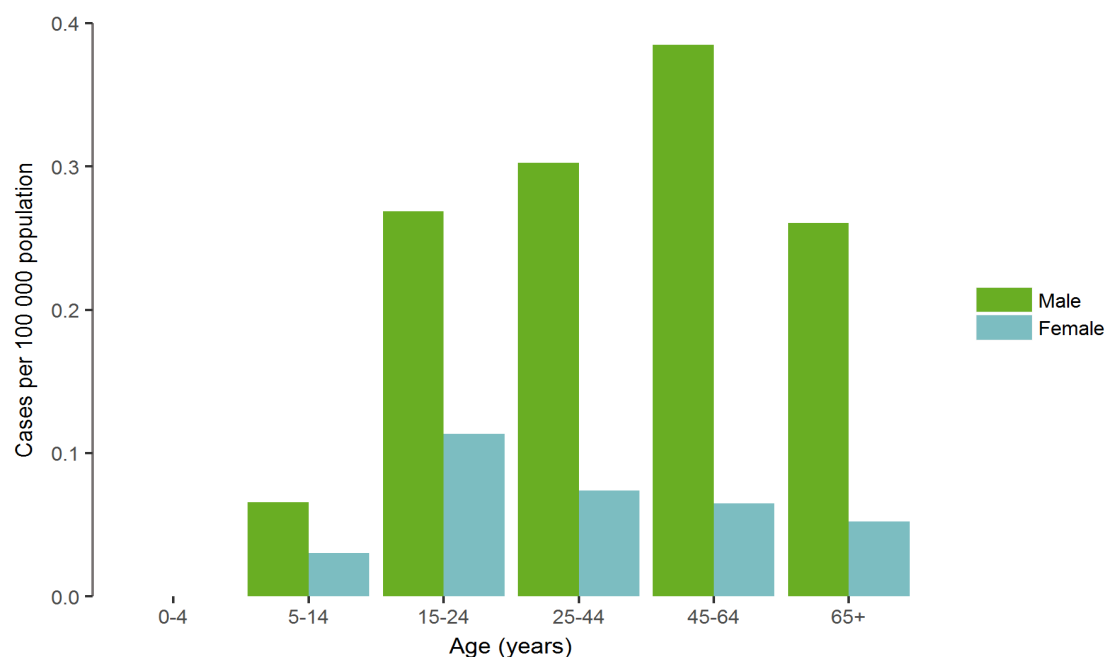
Figure 2. Distribution of confirmed leptospirosis cases by month, EU/EEA, 2016 and 2012–2015



Source: Country reports from Austria, Belgium, Bulgaria, Cyprus, Czechia, Denmark, 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.

In 2016, information on gender was provided for all 783 confirmed cases in EU/EEA countries. The male-to-female ratio was 4.1:1. Of the 763 confirmed cases reported with age information, 515 (68%) were between 25 and 64 years old. The highest rate was detected for 45–64-year-old males (0.22 per 100 000 population) (Figure 3).

Figure 3. Distribution of confirmed leptospirosis cases per 100 000 population, by age and gender, EU/EEA, 2016



Outbreaks and other threats

In 2016, no threats related to leptospirosis were reported.

Discussion

Leptospirosis is a relatively uncommon disease, with low rates in the EU/EEA. Leptospirosis predominantly presents with mild flu-like symptoms that are clinically difficult to distinguish from other causes of acute febrile syndromes [4]. It can also result in life-threatening manifestations, including acute renal and pulmonary failure and fulminant multi-system disease, where the case fatality can be high [4,5].

The transmission occurs mainly via contact with urine from infected animal reservoirs, with rodents being the most important source for human and animal infections [4]. Increases are usually associated with events involving known risk factors such as recreational water sports, farming, exposure to wildlife and rodents, and environmental risk drivers such as floods and heavy rainfalls [6,7].

In 2016, as in previous years, most of the confirmed cases were males between 25 and 64 years old. This could reflect the predominance of cases in risk groups that are exposed to animal reservoirs or contaminated environments, such as farmers and people who engage in water sports or have recently travelled abroad [8].

Leptospirosis has a marked seasonal pattern, with most cases in the EU/EEA occurring between August and October. Environmental drivers of leptospirosis, including rainfall and higher temperatures, in combination with outdoor activities (leisure or occupational) could explain this seasonality [10].

Public health implications

Preventive measures should address risk groups, such as people working in outdoor environments favourable for *Leptospira* survival, people participating in recreational water sports or competitions, and people travelling to endemic countries [6,8,9]. In addition, the presence of wounds increases the risk of acquiring leptospirosis [6].

In order to reduce the number of cases of leptospirosis, preventive measures should be strengthened by applying a multidisciplinary approach that should take into account environmental aspects and cover animal and human populations. Protective clothing and measures taken to reduce exposure as a result of climate-related risk drivers (such as floods and heavy rainfall) could reduce the number of human cases. As the brown rat (*Rattus norvegicus*) is the most common source of human infections, control of rodents in urban areas can contribute to reduced risks of exposure [4]. All measures should focus on those who are at risk [6]. Early diagnosis and treatment could limit the severity of the disease and reduce the number of hospitalisations and associated costs, particularly in endemic countries [10,11].

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