

SURVEILLANCE REPORT

Annual Epidemiological Report for 2015

Leptospirosis

Key facts

- In 2015, 1 222 cases of leptospirosis were reported, including 626 confirmed cases.
- The notification rate in the EU/EEA was 0.1 cases per 100 000 population.
- Human leptospirosis was more common 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.
- The number of confirmed cases remained higher in 2015 than the average number of confirmed cases in the period 2011–2013, but lower than during the pronounced peak in 2014.

Methods

This report is based on data for 2015 retrieved from The European Surveillance System (TESSy) on 12 December 2016. 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 2015, 29 EU/EEA countries reported data. Eleven countries used the EU-2012 case definition, eleven used the EU-2008 case definition, and one used the EU-2002 version. Belgium, Denmark, France, Italy and Germany reported cases based on a different case definition. 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*.

Twenty-five countries undertook compulsory surveillance, and 28 had national coverage [2].

Epidemiology

In 2015, 1 222 leptospirosis cases, including 626 (51%) confirmed cases, were reported by 29 EU/EEA countries. The notification rate was 0.1 confirmed cases per 100 000 population (range by country: 0.0 to 0.9 cases per 100 000 population). In 2014, an almost twofold increase in the number of cases was noted compared with the

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average annual number of confirmed cases in previous years. In 2015, the number of cases decreased by 35% compared with 2014 (966 cases in 2014, 626 cases in 2015). Ninety per cent of the cases for which information on hospitalisation was available were hospitalised (272 of 302 cases).

Table 1. Distribution of confirmed leptospirosis cases per 100 000 population, EU/EEA, 2011–2015

Country	2011		2012		2013		2014		National coverage	Reported cases	2015		
	Confirmed cases		Confirmed cases		Confirmed cases		Confirmed cases				Confirmed cases		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate			Number	Rate	ASR
Austria	3	0.0	16	0.2	15	0.2	9	0.1	Y	12	12	0.1	0.1
Belgium	9	0.1	14	0.1	14	0.1	21	0.2	Y	20	16	0.1	-
Bulgaria	12	0.2	4	0.1	3	0.0	31	0.4	Y	17	14	0.2	0.2
Croatia	.	.	.	.	0	0.0	105	2.5	Y	36	36	0.9	0.8
Cyprus	0	0.0	0	0.0	0	0.0	0	0.0	Y	0	0	0.0	0.0
Czech Republic	31	0.3	22	0.2	6	0.1	35	0.3	Y	17	17	0.2	0.2
Denmark	9	0.2	7	0.1	3	0.1	7	0.1	Y	8	8	0.1	0.1
Estonia	2	0.2	5	0.4	2	0.2	2	0.2	Y	2	2	0.2	0.1
Finland	8	0.1	2	0.0	1	0.0	2	0.0	Y	2	2	0.0	0.0
France	71	0.1	25	0.0	36	0.1	96	0.1	Y	632	58	0.1	0.1
Germany	50	0.1	85	0.1	80	0.1	123	0.2	Y	86	86	0.1	0.1
Greece	20	0.2	14	0.1	24	0.2	36	0.3	Y	35	35	0.3	0.3
Hungary	16	0.2	9	0.1	7	0.1	31	0.3	Y	10	10	0.1	0.1
Ireland	16	0.4	15	0.3	13	0.3	22	0.5	Y	16	16	0.3	0.4
Italy	43	0.1	46	0.1	33	0.1	42	0.1	Y	38	38	0.1	0.1
Latvia	6	0.3	1	0.0	1	0.0	7	0.3	Y	2	2	0.1	0.1
Lithuania	3	0.1	20	0.7	10	0.3	3	0.1	Y	10	10	0.3	0.3
Luxembourg	0	0.0	1	0.2	0	0.0	0	0.0	Y	0	0	0.0	0.0
Malta	1	0.2	3	0.7	3	0.7	0	0.0	Y	2	2	0.5	0.4
Netherlands	29	0.2	48	0.3	26	0.2	100	0.6	Y	86	86	0.5	0.5
Poland	3	0.0	2	0.0	0	0.0	10	0.0	Y	4	4	0.0	0.0
Portugal	33	0.3	21	0.2	37	0.4	65	0.6	Y	46	44	0.4	0.4
Romania	98	0.5	74	0.4	65	0.3	92	0.5	Y	39	37	0.2	0.2
Slovakia	7	0.1	8	0.1	5	0.1	12	0.2	Y	7	7	0.1	0.1
Slovenia	9	0.4	4	0.2	0	0.0	31	1.5	Y	11	11	0.5	0.5
Spain	4	-	0	-	0	-	0	-	N	3	3	-	-
Sweden	4	0.0	4	0.0	5	0.1	6	0.1	Y	3	3	0.0	0.0
United Kingdom	52	0.1	78	0.1	50	0.1	78	0.1	Y	78	67	0.1	0.1
EU	539	0.1	528	0.1	439	0.1	966	0.2	Y	1222	626	0.1	0.1
Iceland	.	.	.	.	0	0.0	0	0.0	Y	0	0	0.0	0.0
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.	.	.
Norway	.	.	.	.	.	.	.	.	.	.	.	.	.
EU/EEA	539	0.1	528	0.1	439	0.1	966	0.2	.	1222	626	0.1	0.1

Source: Country reports. Legend: Y = yes, N = no, C = case based, A = aggregated, * = no data reported, ASR = age-standardised rate, - = no report.

Geographical distribution

The countries with the highest number of confirmed cases were Germany (86), Netherlands (86) and the United Kingdom (67). Cyprus, Iceland and Luxembourg reported no cases in 2015 (Figure 1).

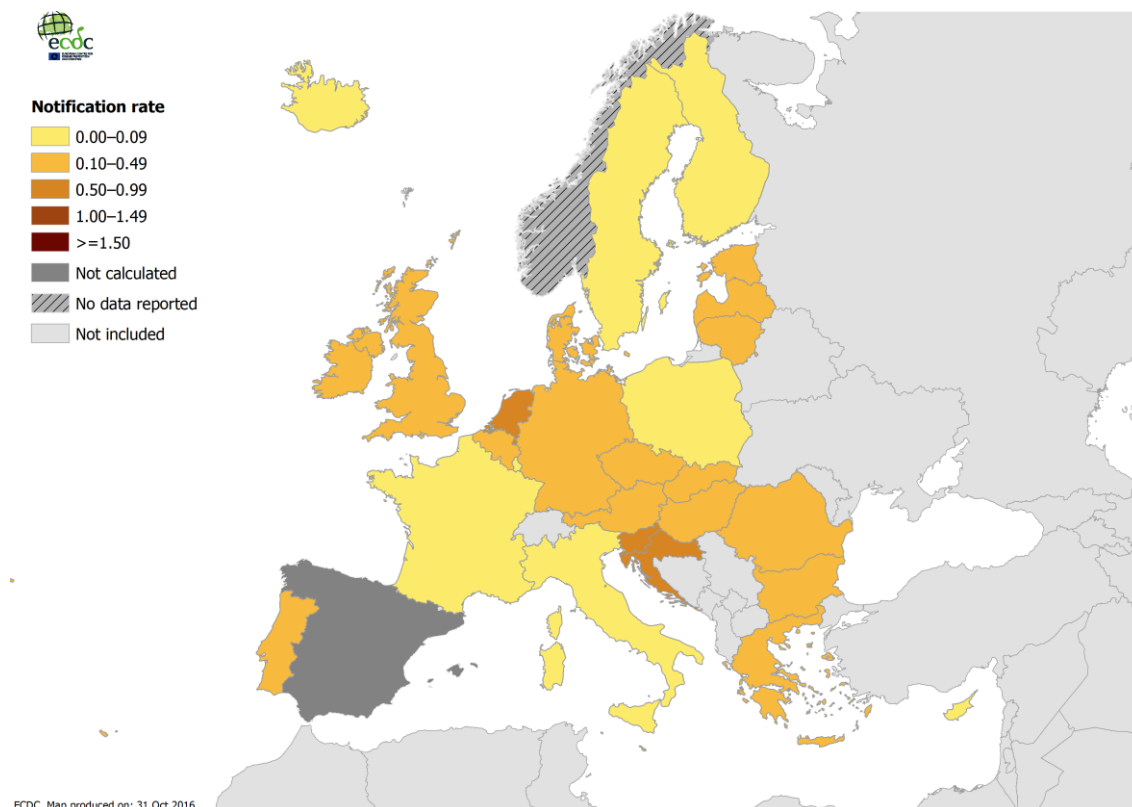
Figure 1. Distribution of confirmed leptospirosis cases per 100 000 population, EU/EEA, 2015



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

There was no clear geographical pattern in the distribution of rates per 100 000 population (Figure 2).

Figure 2. Distribution of confirmed leptospirosis cases per 100 000 population, EU/EEA, 2015



Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain¹, Sweden, the United Kingdom.

¹The rate was not calculated for Spain due to the only partial coverage of the population under surveillance

Age and gender distribution

In 2015, information on gender was provided for all 626 confirmed cases in EU/EEA countries. The male-to-female ratio was 3.5:1. Of 610 confirmed cases reported with age information, 425 (70%) were between 25 and 64 years of age. The highest rate was detected in 45–64-year-old males (0.32 per 100 000 population) (Figure 3).

Figure 3. Distribution of confirmed leptospirosis cases per 100 000 population, by age and gender, EU/EEA, 2015

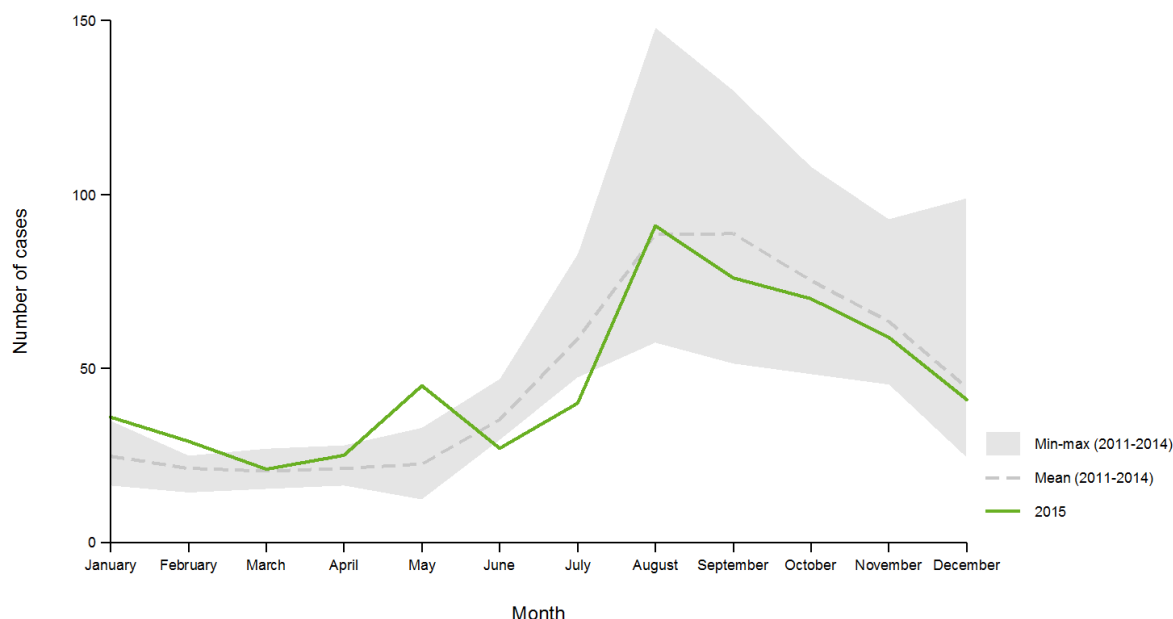


Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

Seasonal distribution and trend

In 2015, the highest number of cases occurred at the end of the summer and in autumn, with 53% of the cases reported between August and November (269 out of 560 confirmed cases with monthly distribution information).

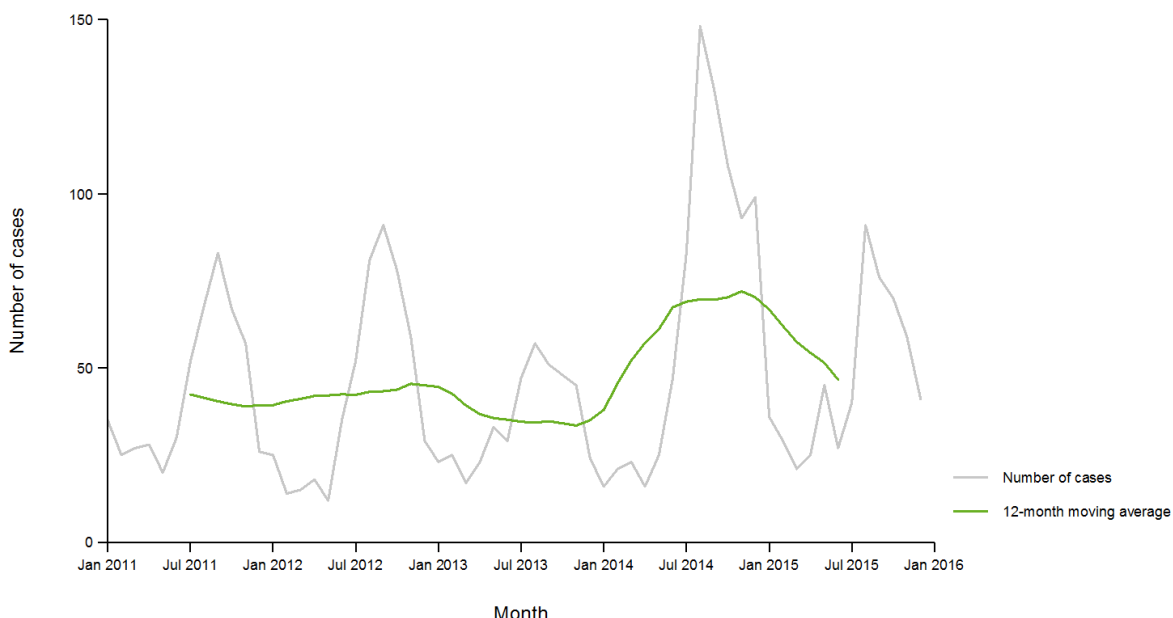
Figure 4. Distribution of confirmed leptospirosis cases by month, EU/EEA, 2015, compared with 2011–2014



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

In 2015, the number of confirmed cases decreased by 35% compared with 2014 when a twofold increase in the number of cases was registered (Figure 5).

Figure 5. Distribution of confirmed leptospirosis cases by month, EU/EEA, 2011–2015



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

Threats description for 2015

In 2015, no threats related to leptospirosis were reported.

Discussion

The EU/EEA leptospirosis notification rate was stable up until 2014 when a twofold increase in the number of cases was recorded. In 2015, the number of cases decreased by 35% compared with 2014. The relatively small number of cases reported by many countries makes it difficult to identify a trend. However, the number of confirmed cases was higher in 2015 than the average number of confirmed cases between 2011 and 2013, but lower than in 2014.

The drastic increase in 2014 could be explained by several events: an outbreak among seasonal workers from Poland who participated in the strawberry campaign in Germany [1]; France reported the highest increase in cases since the establishment of surveillance on the French mainland [2]; Croatia and the Netherlands reported an increase in human cases coinciding with an increase in dogs as a reservoir [3-5]; and in May 2014, multiple floods affected southeast Europe [6].

Leptospirosis predominantly presents as mild flu-like symptoms that are clinically difficult to distinguish from other causes of acute febrile syndrome [7,8]. It may also result in life-threatening manifestations, including acute renal and pulmonary failure and fulminant multi-system disease where the case fatality can be high [8]. Considering the high hospitalisation rate in reported cases, it appears that the surveillance systems in reporting countries may mainly capture the more severe forms of the disease.

There is no clear geographical pattern discernible in the distribution of cases because the numbers of reported cases per country are very low.

In 2015, as in previous years, most of the confirmed cases were males between 24 and 64 years of age. 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, and people who have recently travelled abroad [9].

Leptospirosis has a marked seasonal pattern, with the majority of cases in Europe 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 seasonal pattern [10].

Public health implications

Leptospirosis is a relatively uncommon disease with low rates in European countries. The marked increase in cases in 2014 was associated with events involving known risk factors such as floods, farming, and recreational water sports. This increase was reported to the Early Warning Response System (EWRS) and the Epidemic Intelligence System for Food- and Waterborne Diseases (EPIS-FWD).

Water-related exposures are frequently associated with an increased risk of *Leptospira* infection. The transmission occurs mainly via contact with the urine from infected animal reservoirs, with rodents being the most important source for human and animal infections [11]. Preventive measures should address risk groups, for example people working in outdoor environments favourable for *Leptospira* survival, people participating in recreational water sports or competitions, and people travelling to endemic countries [3,9,12]. Likewise, environmental aspects such as floods and heavy rainfalls should be considered as risk drivers [13]. In addition, the presence of wounds increases the possibility of acquiring leptospirosis [13].

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 awareness of drivers related to climate factors (floods, rainfalls) could reduce the number of human cases. All measures should focus on those who are at risk [13]. Early diagnosis and treatment could limit the severity of the disease and reduce the number of hospitalisations and associated costs [14,15].

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