Annual epidemiological report

Leptospirosis

Reporting on 2014 data retrieved from TESSy* on 10 October 2015

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Key facts

- In 2014, 1 593 cases of leptospirosis were reported, including 937 confirmed.
- The notification rate in the EU/EEA was 0.23 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 showed a strong seasonality, with higher rates in summer and autumn.
- An unprecedented twofold increase was noted in the number of cases in 2014 compared with the average annual number of confirmed cases in previous years.

Methods

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• In 2014, 27 EU countries reported data.

• Fifteen countries used the EU-2008 case definition; the EU-2012 case definition was used by six countries. Denmark, France and Germany reported cases bases on a different, unspecified case definition. Belgium and Finland supplied no information on the case definition they were using. The newer 2012 case definition includes laboratory criteria for any pathogenic *Leptospira* spp. while the one from 2008 was restricted to *Leptospira interrogans*.

• Twenty-three countries undertook compulsory surveillance, and 25 had national coverage (Annex).

Epidemiology

In 2014, 1 593 leptospirosis cases, including 937 confirmed cases, were reported by 27 EU countries. The notification rate was 0.2 confirmed cases per 100 000 population (range by country: 0.0 to 2.5 cases per 100 000 population). Cyprus has reported no cases since 2010. Luxembourg, Malta and Spain reported no cases in 2014. In 2014, there was a notable increase in the number of reported cases in France, where only 96 of 628 cases were confirmed, which represents a 2.7-fold increase in confirmed cases compared with 2013. Compared with the average case numbers in the previous four years, the Netherlands and Hungary experienced a threefold increase in 2014. An increase in case numbers in 2014 was also noted in Bulgaria, the Czech Republic, Germany, Latvia, Poland, Portugal and Slovenia. Thirteen countries provided information on hospitalisation for >90% of their cases, and among these, 93% (404 of 434) of the confirmed cases were hospitalised.

Table 1. Reported confirmed leptospirosis cases: numbers and rate per 100 000 population, EU/EEA, 2010–2014

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Country	2010		2011		2012		2013		2014		
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Reported cases	Confirmed cases	Rate
Austria	9	0.1	3	0.0	16	0.2	15	0.2	9	9	0.1
Belgium	7	0.1	15	0.1	16	0.1	15	0.1	34	34	0.3
Bulgaria	11	0.1	12	0.2	4	0.1	3	0.0	43	31	0.4
Croatia	.	.	.	.	.	.	0	0.0	105	105	2.5
Cyprus	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0.0
Czech Republic	40	0.4	31	0.3	22	0.2	6	0.1	37	35	0.3
Denmark	6	0.1	9	0.2	7	0.1	3	0.1	7	7	0.1
Estonia	1	0.1	2	0.2	5	0.4	2	0.2	2	2	0.2
Finland	0	0.0	8	0.1	2	0.0	1	0.0	2	2	0.0
France	39	0.1	71	0.1	25	0.0	36	0.1	628	96	0.1
Germany	70	0.1	50	0.1	85	0.1	80	0.1	160	123	0.2
Greece	24	0.2	20	0.2	14	0.1	24	0.2	36	36	0.3
Hungary	9	0.1	16	0.2	9	0.1	7	0.1	62	31	0.3
Iceland	.	.	.	.	.	.	0	0.0	.	.	.
Ireland	17	0.4	16	0.4	15	0.3	13	0.3	23	22	0.5
Italy	33	0.1	43	0.1	7	0.0	.	.	.	.	.
Latvia	2	0.1	6	0.3	1	0.0	1	0.0	7	7	0.3
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.
Lithuania	5	0.2	3	0.1	20	0.7	10	0.3	3	3	0.1
Luxembourg	0	0.0	0	0.0	1	0.2	0	0.0	0	0	0.0
Malta	1	0.2	1	0.2	3	0.7	3	0.7	0	0	0.0
Netherlands	30	0.2	29	0.2	48	0.3	26	0.2	100	100	0.6
Norway	.	.	.	.	.	.	.	.	.	.	.
Poland	4	0.0	3	0.0	2	0.0	0	0.0	43	10	0.0
Portugal	29	0.3	33	0.3	21	0.2	37	0.4	69	65	0.6
Romania	181	0.9	98	0.5	74	0.4	65	0.3	96	92	0.5
Slovakia	27	0.5	7	0.1	8	0.1	5	0.1	12	12	0.2
Slovenia	9	0.4	9	0.4	4	0.2	0	0.0	31	31	1.5
Spain	0	-	4	-	0	-	0	-	0	0	-
Sweden	4	0.0	4	0.0	4	0.0	5	0.1	6	6	0.1
United Kingdom	42	0.1	52	0.1	78	0.1	50	0.1	78	78	0.1
EU/EEA	**600**	**0.1**	**545**	**0.1**	**491**	**0.1**	**407**	**0.1**	**1593**	**937**	**0.2**

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

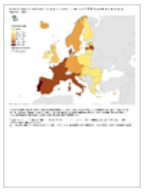
Geographical distribution

Scandinavian and Baltic countries experienced a decline in the number of reported confirmed cases in 2014 compared with other EU/EEA countries in 2014 (Figure 1). There is no clear geographical pattern in the distribution of rates per 100 000 population (Figure 2).

Figure 1. Reported confirmed leptospirosis cases: number of cases, EU/EEA, 2014

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.

Figure 2. Reported confirmed leptospirosis cases: rate per 100 000 population, EU/EEA, 2014

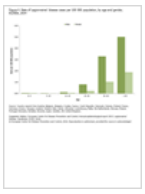


Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

Age and gender distribution

In 2014, information on gender and age was provided for 902 confirmed cases in EU countries (Figure 3). More males are affected in all age groups, and the male-to-female ratio is 5.8:1 (range by country from 2 to 12). More than 40% of the confirmed cases with information on age distribution are between 45 and 65 years of age. For most of the countries, the highest rates are reported in the age group of 45–64 years (range: 0.04 to 4.47 cases per 100 000 population per year in this age group), except for Denmark, Lithuania, the Netherlands and Sweden, where the highest rates are in the age group of 25–44 years. Only 11 confirmed cases were younger than 15 years of age.

Figure 3. Reported confirmed leptospirosis cases: rates by age group and gender, EU/EEA, 2014



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.

Seasonality and trend

In 2014, Belgium, Bulgaria and Croatia were not included in the seasonality and trend analysis due to lacking information on the monthly distribution of reported cases. Two thirds (62.2%) of the 707 confirmed cases with information on monthly distribution occurred during the six months of summer and autumn (Figure 4), with the highest occurrence in the three months between August and October (accounting for 39.4% of the 707 confirmed cases).

Figure 4. Reported confirmed leptospirosis cases by month, EU/EEA, 2014, compared with 2010–2013

Source: Country reports from Austria, Cyprus, 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 2014, there was a noticeable increase in the total number of cases in comparison with previous years (Figure 5).

Figure 5. Reported confirmed leptospirosis cases: trend and case numbers, EU/EEA, 2010–2014

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 2014

In 2014, no threats related to leptospirosis were reported.

Discussion

The EU/EEA leptospirosis notification rate decreased slightly in previous years [1] but in 2014 a marked increase to 0.23 cases per 100 000 population was recorded. This increase can be explained by a number of events which were also reported to the Early Warning Response System (EWRS) and the Epidemic Intelligence System for Food- and Water-borne Diseases (EPIS-FWD). In June 2014, an outbreak among seasonal Polish strawberries harvesters working in Germany was reported [2]. Risk factors included rodents and rainy weather conditions – similar to a previous outbreak in 2007 [3]. France reported the highest increase in cases since the establishment of surveillance on the French mainland [4]. Croatia and the Netherlands reported an increase in human cases coinciding with an increase in dogs as a reservoir [5,6,7]. Moreover, in May 2014, multiple floods affected southeast Europe [8], which also contributed to the increase of leptospirosis cases.

Leptospirosis predominantly presents as mild flu-like symptoms that are clinically difficult to distinguish from other causes of acute febrile syndrome [9,10]. It may also result in life-threatening manifestations, including acute renal and pulmonary failure and fulminant multi-system disease where the fatality can be high [10]. Considering the high hospitalisation rate in countries reporting this variable, it appears as the surveillance systems in these countries mainly capture the more severe forms of the disease.

There is no clear geographical pattern in the distribution of rates per 100 000 population due to the low number of reported cases per country. Overall, Scandinavian and Baltic countries have lower numbers of reported confirmed cases than other geographical areas in the EU in 2014.

In 2014, as in previous years, most of the confirmed cases with information on age and gender (60% of 903 confirmed cases) were working age males (24 to 64 years of age). This can reflect the predominance of cases in risk groups that are exposed to animal reservoirs or contaminated environments, such as farmers and people who do water sports, as well as people who have recently travelled abroad [1,11].

Leptospirosis has a marked seasonal pattern, with the majority of cases in Europe occurring between August and October. The relatively small number of cases reported by many countries can make the interpretation of trends in annual cases challenging. Nevertheless, environmental drivers of leptospirosis, including rainfall and higher temperatures, in combination with outdoor activities (leisure or occupational) could explain the seasonal pattern [12].

Public health conclusions

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 Water-borne 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 [14]. Preventive measures should address risk groups such as people working in environments favourable for *Leptospira* survival, participating in recreational water sports or competitions, and travelling to endemic countries [5,11,14]. Likewise, environmental aspects like floods and heavy rainfalls should be considered as risk drivers [15]. In addition, the presence of wounds in a risk setting increases the possibility of acquiring leptospirosis [15].

In order to reduce the number of cases of leptospirosis, preventive measures should be strengthened by applying a multidisciplinary approach which should take into account environmental aspects and both animal and human populations. Protective clothes 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 [15]. Early diagnosis and treatment could limit the severity of the disease and reduce the number of hospitalisations and associated costs [16,17].

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Additional information

ECDC Surveillance Atlas of Infectious Diseases

Annex

Table. Leptospirosis, surveillance systems overview, 2014

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* The European Surveillance System (TESSy) is a system for the collection, analysis and dissemination of data on communicable diseases. EU Member States and EEA countries contribute to the system by uploading their infectious disease surveillance data at regular intervals.

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