

## Tick-borne encephalitis

Reporting on 2014 data retrieved from TESSy\* on 19 November 2015

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### Key facts

- 2 057 cases of tick-borne encephalitis were reported to TESSy in 2014, 1 986 of which were confirmed (96.5%).
- The notification rate in 2014 was 0.42 cases per 100 000 population.
- Age and gender distribution shows a clear predominance of cases in over 45-year-olds and in males.
- Most cases of tick-borne encephalitis occurred between June and October, with a peak in July.

### Methods

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- Twenty-four EU/EEA countries reported data on tick-borne encephalitis (TBE), six countries reported zero cases (Belgium, Bulgaria, Ireland, Italy, Luxembourg and Spain).
- Sixteen countries used the EU case definition, eight countries did not specify which case definition was used (Belgium, Croatia, Finland, Italy, Luxembourg, Poland and Romania), and Germany used an alternative case definition.
- Nineteen reporting countries have a comprehensive surveillance system. Reporting is compulsory in 18 countries, voluntary in three (France, Luxembourg and the United Kingdom) and 'not specified' in three countries (Belgium, Croatia and Poland). Surveillance is mostly passive except in the Czech Republic, Slovakia and the United Kingdom; the disease surveillance method is not specified for four countries (Annex 1). Data reporting is case-based (except in Croatia) and done at the national level.

### Epidemiology

Tick-borne encephalitis became notifiable at the EU level in 2012. In 2014, 2 057 cases were reported to TESSy, 1 986 of which were confirmed (0.42 cases per 100 000 population). The highest rates were notified in the Baltic States. TBE was predominantly reported among males over 45 years of age. Most cases were identified between June and October.

The notification rate in 2014 was lower than in 2013 (0.62 cases per 100 000 population) and in 2012 (0.52 cases per 100 000 population) in most of the reporting countries, except in Finland, France and Norway, where the rate was stable or slightly increased. In 2014, Greece reported its first case since the start of reporting in TESSy.

The notification rate was the highest in Lithuania (12.0 cases per 100 000 population), followed by Latvia (7.4 cases per 100 000 population) and Estonia (6.2 cases per 100 000 population) (Figure 2). Slovenia showed a high notification rate in 2014 (4.9 cases per 100 000 population), but the 2014 numbers were still three times lower than in 2013 and 1.6 times lower than in 2012. As in 2013 and 2012, the highest number of confirmed cases in 2014 was seen in the Czech Republic (n=410) and Lithuania (n=353) (Table 1).

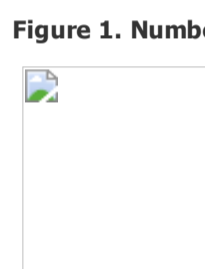
**Table 1. Confirmed TBE cases: number and rate per 100 000 population, EU/EEA, 2010–2014**

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Country	2012		2013		2014					
	Cases	Rate	Cases	Rate	National data	Report type	Reported cases	Confirmed cases	Rate	ASR
Austria	38	0.5	100	1.2	Y	C	81	81	1.0	0.9
Belgium	2	0.0	3	0.0	Y	C	0	0	0.0	0.0
Bulgaria	.	.	.	.	Y	C	0	0	0.0	0.0
Croatia	45	1.1	44	1.0	Y	A	23	23	0.5	0.5
Cyprus	.	.	.	.	.	.	.	.	.	.
Czech Republic	573	5.5	625	5.9	Y	C	410	410	3.9	3.9
Denmark	.	.	.	.	.	.	.	.	.	.
Estonia	178	13.4	114	8.6	Y	C	83	82	6.2	6.2
Finland	39	0.7	38	0.7	Y	C	47	47	0.9	0.8
France	1	0.0	1	0.0	Y	C	9	9	0.0	0.0
Germany	195	0.2	420	0.5	Y	C	265	265	0.3	0.3
Greece	0	0.0	0	0.0	Y	C	1	1	0.0	0.0
Hungary	42	0.4	27	0.3	Y	C	31	26	0.3	0.3
Iceland	.	.	.	.	.	.	.	.	.	.
Ireland	0	0.0	0	0.0	Y	C	0	0	0.0	0.0
Italy	.	.	0	0.0	Y	C	0	0	0.0	0.0
Latvia	72	3.5	230	11.4	Y	C	149	149	7.4	7.2
Liechtenstein	.	.	.	.	.	.	.	.	.	.
Lithuania	351	11.7	487	16.4	Y	C	353	353	12.0	11.7
Luxembourg	.	.	.	.	Y	C	0	0	0.0	0.0
Malta	.	.	.	.	.	.	.	.	.	.
Netherlands	.	.	.	.	.	.	.	.	.	.
Norway	7	0.1	6	0.1	Y	C	13	13	0.3	0.3
Poland	119	0.3	136	0.4	Y	C	195	131	0.3	0.3
Portugal	.	.	.	.	.	.	.	.	.	.
Romania	3	0.0	3	0.0	Y	C	1	1	0.0	0.0
Slovakia	31	0.6	157	2.9	Y	C	116	115	2.1	2.1
Slovenia	164	8.0	307	14.9	Y	C	100	100	4.9	4.8
Spain	0	0.0	0	0.0	Y	C	0	0	0.0	0.0
Sweden	287	3.0	209	2.2	Y	C	178	178	1.8	1.8
United Kingdom	3	0.0	0	0.0	Y	C	2	2	0.0	0.0
<b>EU/EEA</b>	<b>2150</b>	<b>0.5</b>	<b>2907</b>	<b>0.6</b>	.	<b>C</b>	<b>2057</b>	<b>1986</b>	<b>0.4</b>	<b>0.4</b>

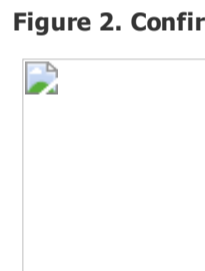
Source: Country reports. Legend: Y = yes, N = no, C = case based, - = no report, ASR: age-standardised rate

**Figure 1. Number of confirmed TBE cases, EU/EEA, 2014**



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

**Figure 2. Confirmed TBE cases per 100 000 population, EU/EEA, 2014**

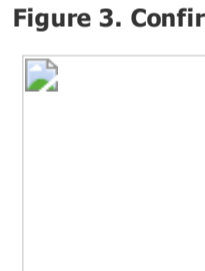


Source: Country reports from Austria, Belgium, Bulgaria, Croatia, the Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

### Age and gender distribution

The proportion of confirmed TBEs cases was higher in men (59.2%), with a male-to-female ratio of 1.4:1. The majority of cases belonged to the age group 45–65 years (n=802, 40.4%), regardless of gender. The rate was highest in the age group 45–64 years (0.62 cases per 100 000 population), followed by the age group over 65 years (0.42 cases per 100 000 population). The lowest rates were observed in children.

**Figure 3. Confirmed TBE cases, by age and gender, EU/EEA, 2014**

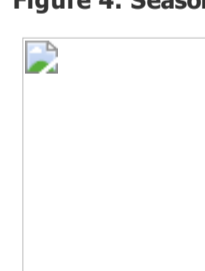


Source: Country reports from Austria, Belgium, Bulgaria, Croatia, the Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

### Seasonality

TBE numbers of reported cases started to increase in April, peaked in July and slowly decreased for the rest of the year, with only a small number of cases reported in December and in January (Figure 4). It is unclear if the cases reported in winter are a result of late reporting or if they refer to the day of diagnosis or the onset of symptoms. It is, however, entirely possible to be exposed to ticks – and to get bitten by them – in winter, even in northern countries.

**Figure 4. Seasonal distribution of confirmed TBE cases, EU/EEA, 2014 compared with 2010–2013**



Source: Country reports from Austria, Belgium, the Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Latvia, Lithuania, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom.

### Enhanced surveillance in 2014

Importation status was available for 1 901 confirmed cases, 1.3% (n=25) of which were travel associated. The United Kingdom only had travel-associated cases. For 22 travel-related cases, another EU country was reported as the probable country of infection, mainly Austria (n=6) and Sweden (n=5). The country of infection was unknown for three cases.

Fourteen of 638 cases (2.2%) for which importation status was available had a history of previous immunisation (5.3% in 2013). Five were reported by Austria, five by Estonia, two by Hungary and two by Slovenia. Nine of these cases had received three vaccine doses, and three cases received four doses.

### Trend

Tick-borne encephalitis became notifiable at the EU level in 2012. In 2014, the number of confirmed cases was 1 986, lower than in the previous years (2 907 in 2013 and 2 150 in 2012).

### Discussion

Tick-borne encephalitis became notifiable in the EU in 2012 and is a growing public health challenge in Europe. The number of countries reporting to TESSy has increased from 19 in 2012 to 24 in 2014; this also includes countries that reported zero cases. During the 2012–2014 period, the annual number of cases reported through routine surveillance was comparable with an ECDC estimate based on an ad hoc survey conducted by ECDC [1].

Cases in people over 45 year of age and cases in males were dominant, possibly due to higher susceptibility to more serious forms of the disease in the elderly and to occupational outdoor exposure in males. Seasonality was comparable with previous surveys and showed a clear peak during the summer months [1][2]. Currently, countries with an increased risk of TBE include Austria, Croatia, the Czech Republic, Estonia, Finland, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia and Sweden [1,2].

### Public health conclusions

People in regions where tick-borne encephalitis is endemic should be aware of the risks of exposure to ticks, protect themselves against tick bites and consider immunisation prior to exposure, which offers the most effective protection.

### References

1. European Centre for Disease Prevention and Control. Epidemiological situation of tick-borne encephalitis in the European Union and European Free Trade Association countries. Stockholm: ECDC; 2012. Available from: <http://ecdc.europa.eu/en/publications/Publications/TBE-in-EU-EFTA.pdf>

2. European Centre for Disease Prevention and Control. Tickborne encephalitis (TBE): factsheet for health professionals [Internet]. 2010 [cited 2010 June 16]. Available from: [http://ecdc.europa.eu/en/healthtopics/emerging\\_and\\_vector-borne\\_diseases/tick\\_borne\\_diseases/tick\\_borne\\_encephalitis/basic\\_facts/Pages/factsheet-health-professionals.aspx](http://ecdc.europa.eu/en/healthtopics/emerging_and_vector-borne_diseases/tick_borne_diseases/tick_borne_encephalitis/basic_facts/Pages/factsheet-health-professionals.aspx)

### Additional information

ECDC Surveillance Atlas of Infectious Diseases

Tick species in Europe: <http://ecdc.europa.eu/en/healthtopics/vectors/vector-maps/Pages/VBORNET-maps-tick-species.aspx>

### Annex

**Table. Tick-borne encephalitis, surveillance systems overview, 2014**



\* 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.