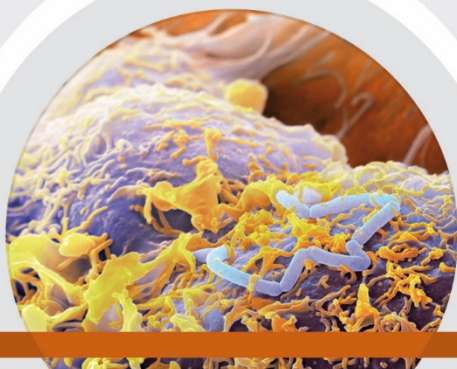




SURVEILLANCE REPORT

Annual Epidemiological Report for 2016

Listeriosis

Key facts

- In 2016, 30 countries reported 2 555 confirmed listeriosis cases in the EU/EEA.
- The EU/EEA notification rate was 0.47 cases per 100 000 population.
- The highest rates were detected in infants below one year of age and among elderly people over 64 years of age (1.3 and 1.6 cases per 100 000 population respectively).
- The listeriosis notification rate in the EU/EEA shows an increasing trend.

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, 30 EU/EEA Member States reported listeriosis data. Belgium and Spain had only partial population coverage. Twelve Member States used the EU case definition from 2012, 10 used the 2008 definition, five used another case definition and three did not specify which case definition was used. The majority of Member States (26 of 30) conducted passive surveillance. In 21 countries, cases were reported by both laboratories and physicians and/or hospitals. Twenty-seven of the 30 Member States reported case-based data.

In addition to case-based TESSy surveillance, ECDC coordinated molecular typing-enhanced surveillance of listeriosis through isolate-based data collection in 2016. A typing-based multi-country cluster of *L. monocytogenes* was defined as at least two different countries reporting at least one isolate each with matching pulsotypes (both *ApaI* and *AscI* restriction enzymes), with the reports a maximum of 16 weeks apart.

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Stockholm, December 2018

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Epidemiology

In 2016, 2 555 confirmed cases of listeriosis were reported by 30 EU/EEA countries, with an overall notification rate of 0.47 per 100 000 population. Germany and France had the highest numbers of reported cases (697 and 375 respectively), corresponding to 42.0% of all cases reported in the EU/EEA. The highest incidence rates were observed in Belgium and Finland. Figure 3 illustrates the country-specific age-standardised rates per 100 000 population.

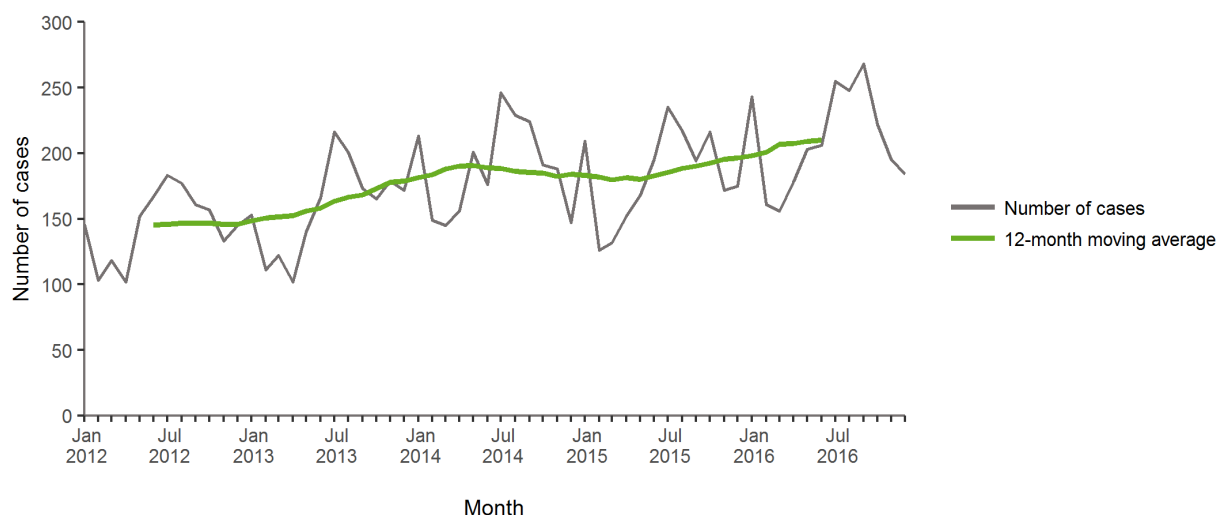
Table 1. Distribution of confirmed listeriosis cases and rates per 100 000 population, EU/EEA, 2012–2016

Country	2012		2013		2014		2015		2016			
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Confirmed cases	Rate	ASR	Reported cases
Austria	36	0.43	36	0.43	49	0.58	38	0.44	46	0.53	0.50	46
Belgium	83	1.36	66	0.85	84	1.07	83	0.92	104	1.15	1.07	104
Bulgaria	10	0.14	3	0.04	10	0.14	5	0.07	5	0.07	0.07	5
Croatia	0	0.00	0	0.00	4	0.09	2	0.05	4	0.10	0.09	4
Cyprus	1	0.12	1	0.12	0	0.00	0	0.00	0	0.00	0.00	0
Czech Republic	32	0.30	36	0.34	38	0.36	36	0.34	47	0.45	0.43	47
Denmark	50	0.90	51	0.91	92	1.63	44	0.78	40	0.70	0.66	40
Estonia	3	0.23	2	0.15	1	0.08	11	0.84	9	0.68	0.64	9
Finland	61	1.13	61	1.12	65	1.19	46	0.84	67	1.22	1.07	67
France	346	0.53	369	0.56	373	0.57	412	0.62	375	0.56	0.54	375
Germany	414	0.52	463	0.57	598	0.74	580	0.71	697	0.85	0.73	707
Greece	11	0.10	10	0.09	10	0.09	31	0.29	20	0.19	0.16	20
Hungary	13	0.13	24	0.24	39	0.39	37	0.38	25	0.25	0.25	25
Iceland	4	1.25	1	0.31	4	1.23	0	0.00	0	0.00	0.00	0
Ireland	11	0.24	8	0.17	15	0.33	19	0.41	13	0.28	0.31	13
Italy	112	0.19	143	0.24	132	0.22	153	0.25	179	0.30	0.24	179
Latvia	6	0.29	5	0.25	3	0.15	8	0.40	6	0.30	0.30	6
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-
Lithuania	8	0.27	6	0.20	7	0.24	5	0.17	10	0.35	0.31	10
Luxembourg	2	0.38	2	0.37	5	0.91	0	0.00	2	0.35	0.35	5
Malta	1	0.24	1	0.24	1	0.24	4	0.93	1	0.23	0.22	1
Netherlands	73	0.44	72	0.43	90	0.53	71	0.42	89	0.52	0.51	89
Norway	30	0.60	21	0.42	29	0.57	18	0.35	19	0.36	0.38	19
Poland	54	0.14	58	0.15	87	0.23	70	0.18	101	0.27	0.27	101
Portugal	-	-	-	-	-	-	28	0.27	31	0.30	0.27	32
Romania	11	0.05	9	0.04	5	0.03	12	0.06	9	0.05	0.04	9
Slovakia	11	0.20	16	0.30	29	0.54	18	0.33	10	0.18	0.19	10
Slovenia	7	0.34	16	0.78	18	0.87	13	0.63	15	0.73	0.69	15
Spain	109	-	140	-	161	-	206	-	362	-	-	363
Sweden	72	0.76	93	0.97	125	1.30	88	0.90	68	0.69	0.63	68
United Kingdom	183	0.29	192	0.30	201	0.31	186	0.29	201	0.31	0.31	201
EU/EEA	1 754	0.38	1 905	0.40	2 275	0.47	2 224	0.44	2 555	0.47	0.43	2 570

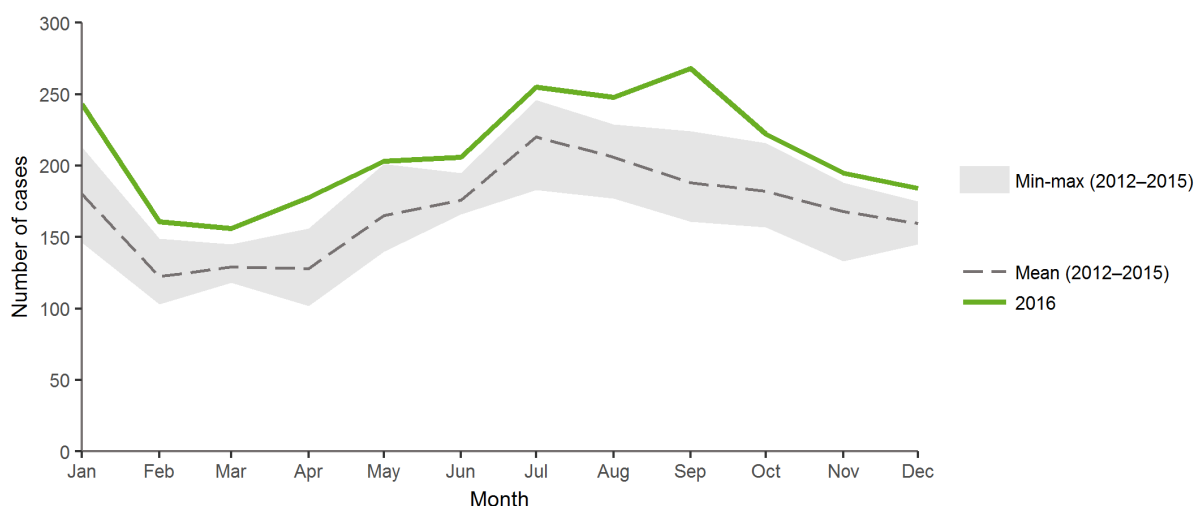
Source: country reports.

..: no data reported

-.: no notification rate calculated.

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

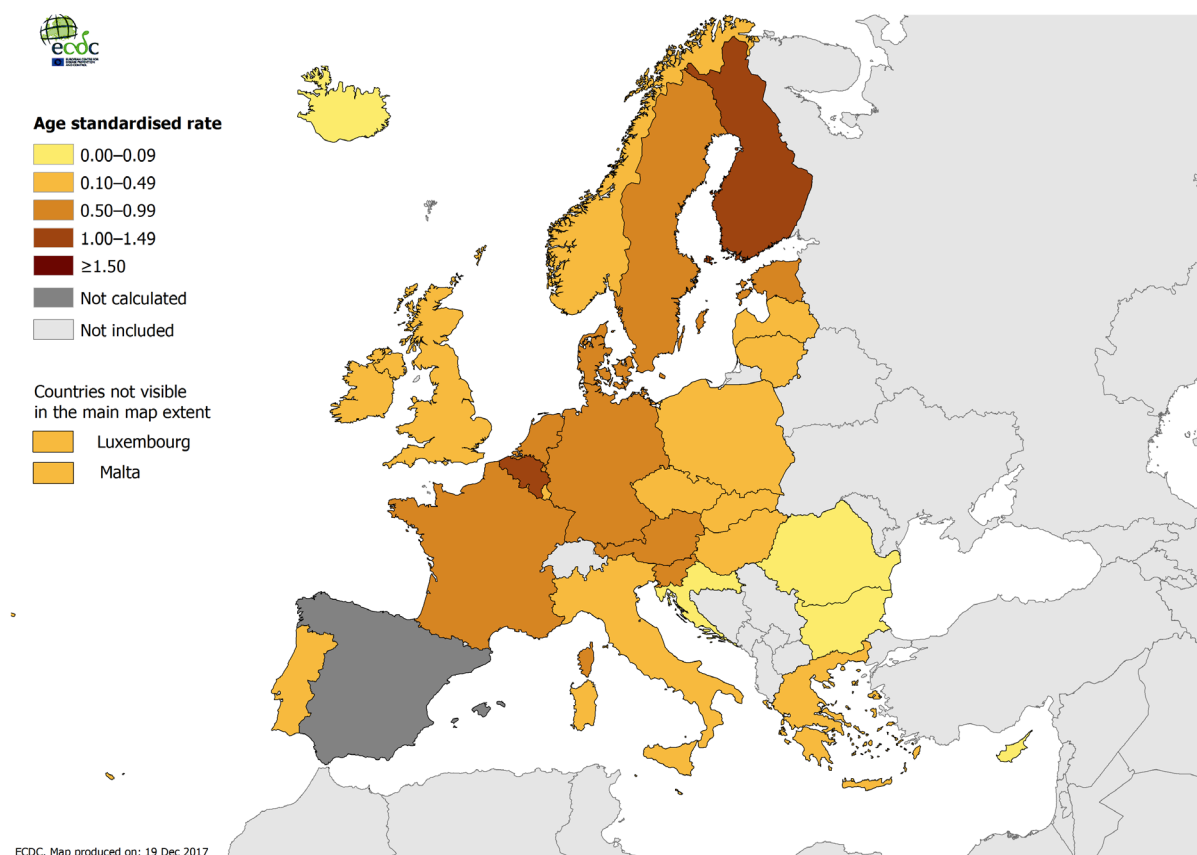
Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

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

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

Reported listeriosis cases at the EU/EEA level show an increasing trend. Twelve Member States (Finland, France, Germany, Greece, Hungary, Italy, the Netherlands, Poland, Romania, Slovenia, Spain and Sweden) have had a significant increasing trend of confirmed listeriosis cases ($p < 0.01$) since 2008 [4]. None of the Member States observed decreasing trends between 2008–2016 or 2012–2016.

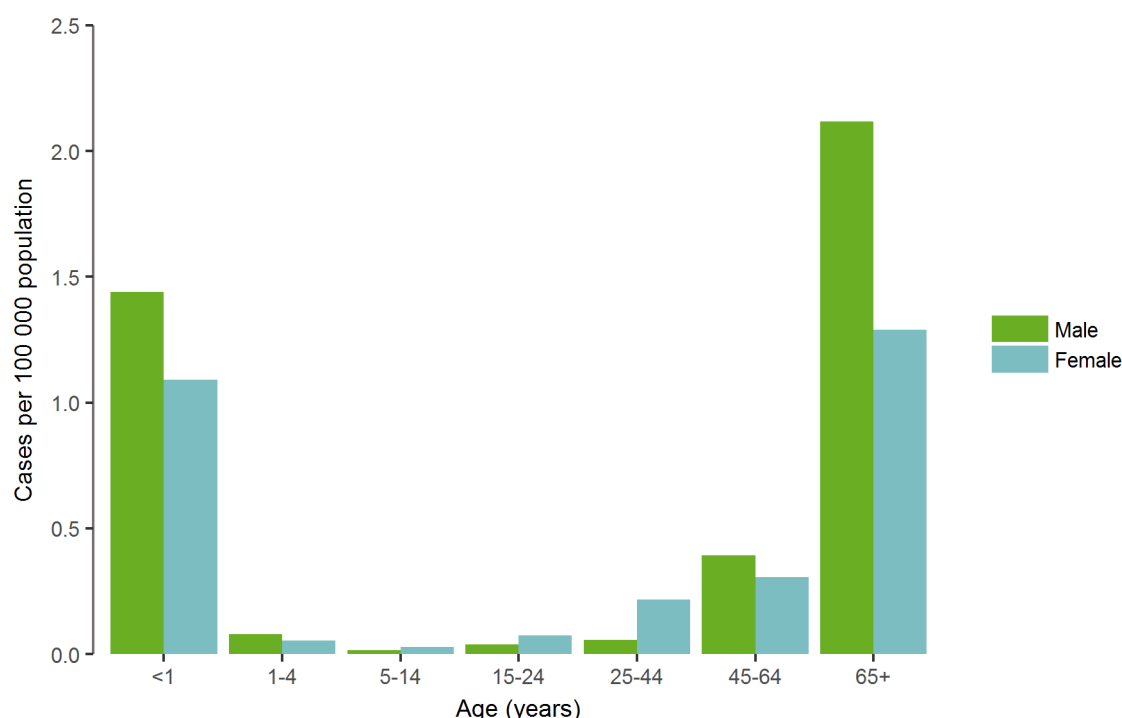
In 2016, cases of listeriosis showed a seasonal pattern similar to the previous years, but at a higher level throughout the year than in previous years. The highest numbers of cases were reported in July, August and September.

Figure 3. Distribution of confirmed listeriosis cases per 100 000 population by country, EU/EEA, 2016

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

The gender distribution of confirmed listeriosis cases for which information was provided (N=2 551) was 52.9% males and 47.1% females in EU/EEA countries, corresponding to a male-to-female ratio of 1.1:1. The most affected age groups were infants under one year (74 cases; 2.9%, notification rate: 1.3 per 100 000 population) and those over 64 years (1 665 cases; 65.4%, notification rate: 1.6 per 100 000 population).

Figure 4. Distribution of confirmed listeriosis cases per 100 000 population by age and gender, EU/EEA, 2016



Molecular typing-enhanced surveillance

In 2016, 10 countries submitted *L. monocytogenes* molecular typing data to TESSy and five molecular typing cluster investigations were initiated in ECDC's Epidemic Intelligence information System (EPIS). All were small microbiological clusters and led to no further outbreak investigations.

Outbreaks and other threats

In 2016, five urgent inquiries on listeriosis were launched in EPIS by four different EU Member States and one non-EU/EEA country. In four events, no multi-country aspect was identified. For one event, possibly associated isolates were detected by pulsed-field gel electrophoresis (PFGE) from other countries, but no epidemiological link was established.

No rapid outbreak assessments related to listeriosis were published in 2016.

Discussion

Listeriosis is a relatively uncommon disease, but typically causes a high proportion of severe cases and deaths in susceptible populations. EU/EEA surveillance of listeriosis focuses on these severe invasive forms of the disease where the risk groups are mainly elderly and immunocompromised persons, as well as pregnant women and infants. Notification of listeriosis cases in humans is compulsory in the vast majority of EU/EEA Member States. Listeriosis can also manifest in milder forms causing gastrointestinal symptoms, but these cases are usually not notified at country level and also do not come within the scope of EU/EEA-level surveillance.

In 2016, the majority of listeriosis cases in the EU/EEA were reported in persons over 64 years, especially males. Almost all reported listeriosis cases in the EU/EEA were hospitalised in 2016 (97.7%) and 247 cases were fatal [4]. The listeriosis case rate has steadily increased in recent years among those >75 years old, as well as females aged between 25 and 44 years (probably pregnancy-related) [5]. For the elderly population, the increase is probably linked to the growing proportion of people aged over 45 years with underlying health conditions. The rise in consumption of ready-to-eat foods and an improved listeriosis surveillance system in certain Member States may have also contributed to the rising trend.

In 2016, five *Listeria* outbreaks were reported to the European Food Safety Agency (EFSA) comprising 25 cases [4]. Outbreaks due to *Listeria* were associated with the highest proportion of deaths among food-borne illnesses

(8.0%) and *Listeria* was one of the food- and waterborne pathogens associated with the highest proportions of hospitalisations during outbreaks (56.0%).

ECDC, EFSA and the EU reference laboratory for *L. monocytogenes* have set up a joint database collecting PFGE typing data for human, food, animal and environmental isolates from public health institutes and food safety and veterinary authorities to enable detection of listeriosis outbreaks affecting several countries [6]. Technical development is evolving fast and compared to PFGE, whole genome sequencing (WGS)-based methods show a superior discriminatory power confirming that several *L. monocytogenes* strains show prolonged international transmission [7]. Furthermore, *L. monocytogenes* is one of the pathogens for which a rapid transition from traditional to WGS-based typing methods is occurring in the public health laboratories of the EU/EEA [8], and it will be the first food- and waterborne pathogen for which comprehensive WGS-assisted real-time surveillance is planned to be established at the EU/EEA level. At the same time, the global PulseNet International network is working on the standardisation of WGS-based *L. monocytogenes* multilocus sequence typing (MLST) schemes and definition of strain nomenclature to achieve international data comparability [9].

Public health implications

The increasing trend in the number of listeriosis cases in the EU/EEA, probably partly due to the absolute increased population size of the elderly susceptible population [5], is worrying and calls for more attention to be placed on the prevention and control of the disease and outbreaks. Raising awareness of listeriosis and foods in risk groups is important, especially among the elderly, where the majority of cases occur. In addition, supranational cross-sectorial collaboration is essential for addressing the occurrence of persistent *L. monocytogenes* strains in humans.

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