SURVEILLANCE REPORT

Annual Epidemiological Report for 2015

Botulism

Key facts

- In 2015, 18 EU/EEA countries reported 201 cases of botulism, 146 of which (72.6%) were confirmed. Twelve countries notified zero cases.
- The overall notification rate was <0.1 cases per 100 000 population.
- The United Kingdom notified the highest number of cases (N=47). Norway presented the highest notification rate (0.3 cases per 100 000 population).

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, 30 countries reported data, including 12 countries that reported zero cases.

Twelve countries reported in accordance with the 2012 EU case definition, 10 countries used the 2008 EU case definition, and the remaining seven countries used other case definitions.

Botulism is a mandatorily notifiable disease in all reporting countries.

Epidemiology

In 2015, 18 EU/EEA countries reported 201 cases of botulism, 146 of which (72.6%) were reported as confirmed. Twelve countries reported no cases. Liechtenstein had not reported data for 2015 at the time of the data extraction. The EU/EEA notification rate was <0.1 cases per 100 000 population (Table 1).

The countries with the highest number of confirmed cases were Italy (33), the United Kingdom (20), Poland (18), Romania (16) and France (15). Ten countries reported between two and six confirmed cases each.

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Norway reported the highest notification rate, 0.3 cases per 100 000 population, followed by Croatia, Italy, Lithuania, Portugal and Romania with 0.1 cases per 100 000 each (Table 1).

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

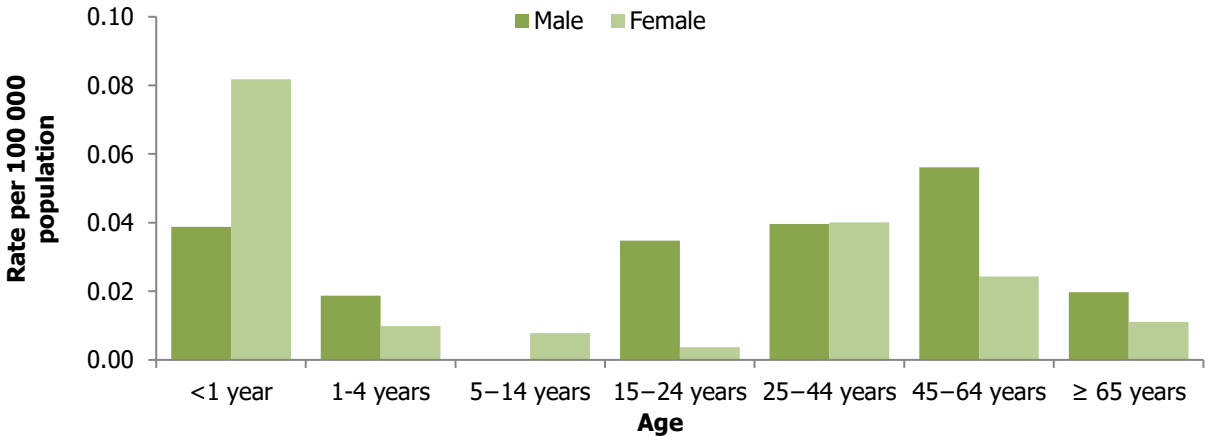
Country	2011		2012		2013		2014		2015				
	Confirmed cases		Confirmed cases		Confirmed cases		Confirmed cases		National coverage	Reported cases	Confirmed cases		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate			Number	Rate	ASR
Austria	5	0.06	0	0.00	1	0.01	1	0.01	Y	5	4	0.05	0.05
Belgium	0	0.00	0	0.00	0	0.00	1	0.01	Y	2	2	0.02	-
Bulgaria	2	0.03	2	0.03	1	0.01	3	0.04	Y	3	2	0.03	0.03
Croatia	.	.	.	.	0	0.00	0	0.00	Y	5	5	0.12	0.12
Cyprus	0	0.00	0	0.00	0	0.00	0	0.00	Y	0	0	0.00	0.00
Czech Republic	0	0.00	0	0.00	4	0.04	1	0.01	Y	1	0	0.00	0.00
Denmark	2	0.04	2	0.04	0	0.00	0	0.00	Y	2	2	0.04	0.03
Estonia	0	0.00	0	0.00	0	0.00	0	0.00	Y	0	0	0.00	0.00
Finland	2	0.04	0	0.00	1	0.02	0	0.00	Y	0	0	0.00	0.00
France	11	0.02	6	0.01	15	0.02	6	0.01	Y	22	15	0.02	0.02
Germany	7	0.01	0	0.00	6	0.01	5	0.01	Y	3	3	0.00	0.00
Greece	0	0.00	0	0.00	0	0.00	0	0.00	Y	0	0	0.00	0.00
Hungary	5	0.05	4	0.04	2	0.02	12	0.12	Y	4	3	0.03	0.03
Ireland	1	0.02	0	0.00	1	0.02	1	0.02	Y	0	0	0.00	0.00
Italy	24	0.04	35	0.06	40	0.07	25	0.04	Y	35	33	0.05	0.05
Latvia	0	0.00	0	0.00	0	0.00	0	0.00	Y	0	0	0.00	0.00
Lithuania	3	0.10	1	0.03	4	0.13	3	0.10	Y	2	2	0.07	0.07
Luxembourg	0	0.00	0	0.00	0	0.00	0	0.00	Y	0	0	0.00	0.00
Malta	0	0.00	0	0.00	0	0.00	0	0.00	Y	0	0	0.00	0.00
Netherlands	0	0.00	1	0.01	0	0.00	0	0.00	Y	0	0	0.00	0.00
Poland	21	0.06	9	0.02	8	0.02	17	0.04	Y	30	18	0.05	0.05
Portugal	1	0.01	0	0.00	1	0.01	1	0.01	Y	7	6	0.06	0.06
Romania	18	0.09	15	0.07	25	0.12	31	0.16	Y	17	16	0.08	0.08
Slovakia	0	0.00	0	0.00	0	0.00	0	0.00	Y	1	0	0.00	0.00
Slovenia	0	0.00	2	0.10	0	0.00	0	0.00	Y	0	0	0.00	0.00
Spain	7	0.01	5	0.01	1	0.00	2	0.00	Y	2	2	0.00	0.00
Sweden	0	0.00	2	0.02	2	0.02	1	0.01	Y	0	0	0.00	0.00
United Kingdom	6	0.01	3	0.00	0	0.00	0	0.00	Y	47	20	0.03	0.03
EU	115	0.02	87	0.02	112	0.02	110	0.02	Y	188	133	0.03	0.03
Iceland	0	0.00	0	0.00	0	0.00	0	0.00	Y	0	0	0.00	0.00
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.	.	.
Norway	0	0.00	0	0.00	8	0.16	4	0.08	Y	13	13	0.25	0.26
EU/EEA	115	0.02	87	0.02	120	0.02	114	0.02	.	201	146	0.03	0.03

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

Age and gender distribution

Among the confirmed cases for which gender was reported (N=7 255), 51.2% were male, with a male-to-female ratio of 1:1. The highest rates were detected in 0–4-year-old children, both in males and females (9.8 and 8.8 cases per 100 000, respectively) (Figure 2). Overall, the rates were higher in younger age groups (<25 years).

Figure 1. Distribution of confirmed botulism cases per 100 000 population, by age and gender, EU/EEA, 2015



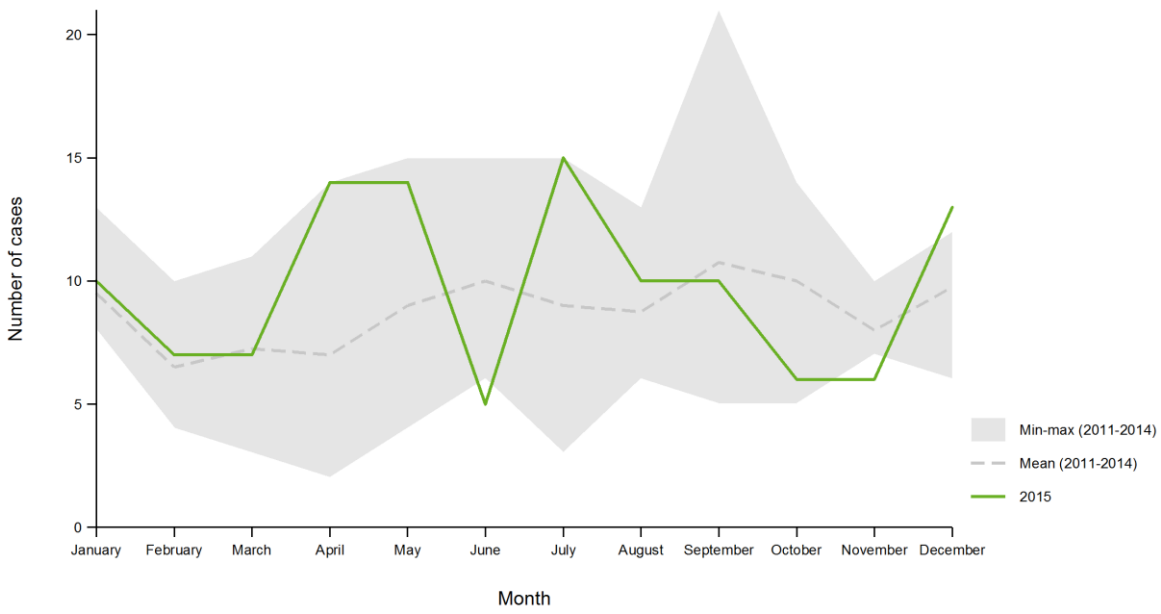
Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden,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

With 86 confirmed cases in males and 56 in females, the male-to-female ratio was 1.5:1 in 2015. The most affected age groups were 45–65-year-old males, and <1 year-old females (Figure 1).

Consistently with previous years, data from 2015 show no seasonality but irregular, random peaks (Figure 2). Figure 3 shows a stable secular trend for EU/EEA countries.

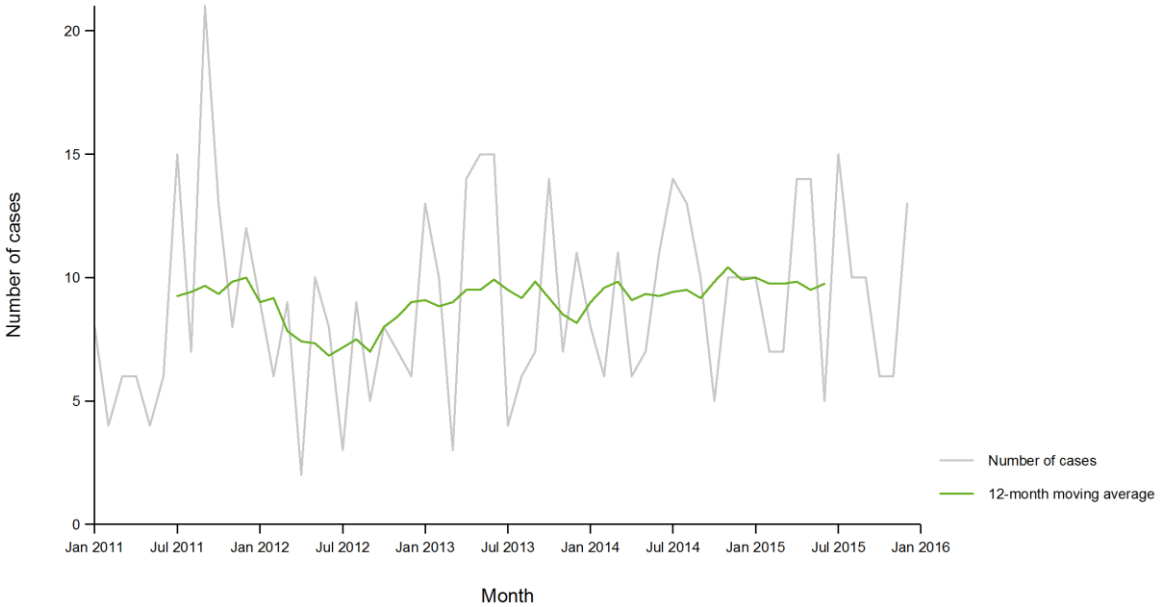
Seasonal distribution and trend

Figure 2. Distribution of confirmed botulism cases by month, EU/EEA, 2011–2015



Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the 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.

Figure 3. Distribution of confirmed botulism cases by month and 12-month moving average, EU/EEA, 2011–2015



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

Threats description for 2015

A large outbreak of wound botulism caused by *Clostridium botulinum* type B occurred among injecting drug users in 2014–2015. All cases had a recent history of injecting heroin obtained in or through Glasgow. Other European countries were also affected. Norway reported eight and Scotland notified 40 cases between December 2014 and June 2015 [1,2]. One sporadic case of wound botulism was detected in England but no epidemiological link to the cases in Norway and Scotland could be identified. Four deaths were recorded, two of which were attributed to botulism. In the United Kingdom, the botulism mortality rate was 10% [2,3].

In August 2015, a cluster of three cases of food-borne botulism due to *Clostridium baratii* type F, a rare *Clostridium* species with the capacity to produce a highly potent toxin, occurred in France. The likely source of illness was a sauce Bolognese, consumed at a restaurant [4]. Frozen and defrosted ground meat tested positive for *C. baratii* but no toxin was detected. This was the second outbreak of food-borne botulism within a year caused by *C. baratii* in France [4].

In 2015, a case of food-borne botulism was reported in Slovakia. *Clostridium botulinum* type A was isolated from three commercial hummus products [5]. The product was sold in Slovakia and the Czech Republic, but was withdrawn from the market after a warning in the European Commission's Rapid Alert System for Food and Feed (RASFF). Further investigation revealed the presence of a very rare subtype botulinum neurotoxin A3 (BoNT/A3) [5].

Discussion

Botulism case numbers reported by national surveillance schemes were relatively stable in 2013—2015. In 2015, outbreaks were detected among intravenous drug users Scotland and Norway, and France reported cases linked to meat consumed in a restaurant. A sporadic case was associated with a commercial hummus product, a more typical product at risk of botulism. In France, *Clostridium baratii* caused two food-borne outbreaks within a short time period, underlining the fact that other species than *C. botulinum* can also produce lethal toxin.

Public health implications

Botulism is a rare disease in the EU/EEA but it still occurs sporadically and as small clusters of various disease forms. A large outbreak among injecting drug users due to contaminated heroin has been ongoing in Europe since 2013 [1,2,6]. The food-borne outbreaks due to BoNT F are of concern because bivalent AB antitoxin and trivalent ABE antitoxins may lack effectiveness for the treatment of type F botulism, which may progress rapidly towards respiratory failure requiring ventilatory support [7]. Preparedness for treatment of type F botulism with heptavalent antitoxin is warranted in the EU/EEA.

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