



SURVEILLANCE REPORT

Annual Epidemiological Report for 2016

Trichinellosis

Key facts

- Trichinellosis is a rare but serious disease in the EU/EEA.
- For 2016, 13 EU/EEA countries reported 101 confirmed cases.
- Both the number of confirmed cases and the overall notification rate of 0.02 per 100 000 population were the lowest recorded since the beginning of the EU-level surveillance.
- Consumption of undercooked meat from pigs raised under non-controlled housing conditions or from hunted wild boar constitutes the highest risk for acquiring trichinellosis in the EU/EEA.

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, 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].

Twenty-nine countries reported data for 2016, fifteen of which reported no cases. Twenty-two countries reported data using the EU case definition for trichinellosis as published in 2008 and 2012 and Luxembourg used the 2002 case definition. France, Germany, Italy and the United Kingdom used another definition and Belgium and Finland did not specify the case definition used [2].

Twenty-six countries had a compulsory notification system and Belgium, France and the United Kingdom used a voluntary system. All countries had comprehensive surveillance of trichinellosis except Belgium, which used a sentinel system. No surveillance system for trichinellosis exists in Denmark [3].

Surveillance systems for trichinellosis had national coverage in all Member States except Belgium.

Nineteen countries have surveillance systems that integrate laboratory and epidemiological data from physicians or hospitals.

Epidemiology

For 2016, 14 EU/EEA countries reported 166 cases of trichinellosis, of which 101 were confirmed and 65 were probable (Table 1). The EU/EEA notification rate was 0.02 cases per 100 000 population. Both the number of confirmed cases and notification rate were the lowest reported since the beginning of EU-level surveillance.

Bulgaria, Romania, and Spain accounted for 72.3% of confirmed cases. Bulgaria reported the highest notification rate in the EU/EEA (0.49 cases per 100 000 population), followed by Romania (0.13) and Croatia (0.12; Table 1, Figure 1).

Of the 58 confirmed cases with available information, 89.7% were domestically acquired. Four countries reported six trichinellosis cases as travel-related. One was associated with travel outside the EU/EEA, one with travel within the EU/EEA and four within unknown travel destinations.

Table 1. Distribution of confirmed trichinellosis cases by year and country, 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	0	0.00	0	0.00	0	0.00	0	0.00	2	0.02	0.02	2
Belgium	0	-	1	-	16	-	0	-	0	-	-	0
Bulgaria	30	0.41	36	0.49	60	0.83	22	0.31	35	0.49	0.49	35
Croatia	.	-	0	0.00	3	0.07	3	0.07	5	0.12	0.12	5
Cyprus	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Czech Republic	1	0.01	0	0.00	0	0.00	0	0.00	0	0.00	0.00	1
Denmark	.	-	.	-	.	-	.	-	.	-	-	.
Estonia	0	0.00	0	0.00	0	0.00	2	0.15	0	0.00	0.00	0
Finland	0	0.00	0	0.00	0	0.00	1	0.02	0	0.00	0.00	0
France	0	0.00	0	0.00	0	0.00	3	0.00	3	0.00	0.00	3
Germany	2	0.00	14	0.02	1	0.00	3	0.00	4	0.00	0.00	4
Greece	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Hungary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Iceland	.	-	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Ireland	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Italy	33	0.06	0	0.00	4	0.01	36	0.06	5	0.01	-	5
Latvia	41	2.01	11	0.54	5	0.25	4	0.20	1	0.05	0.05	1
Liechtenstein	.	-	.	-	.	-	.	-	.	-	-	.
Lithuania	28	0.93	6	0.20	5	0.17	21	0.72	1	0.03	0.03	1
Luxembourg	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Malta	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Netherlands	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Norway	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Poland	1	0.00	4	0.01	6	0.02	1	0.00	4	0.01	0.01	4
Portugal	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Romania	149	0.74	116	0.58	221	1.11	55	0.28	26	0.13	0.13	88
Slovakia	5	0.09	5	0.09	0	0.00	1	0.02	1	0.02	0.02	1
Slovenia	1	0.05	1	0.05	0	0.00	0	0.00	0	0.00	0.00	0
Spain	10	0.02	23	0.05	1	0.00	3	0.01	12	0.03	0.03	14
Sweden	0	0.00	0	0.00	1	0.01	1	0.01	2	0.02	0.02	2
United Kingdom	0	0.00	0	0.00	1	0.00	0	0.00	0	0.00	0.00	0
EU/EEA	301	0.06	217	0.04	324	0.06	156	0.03	101	0.02	0.02	166

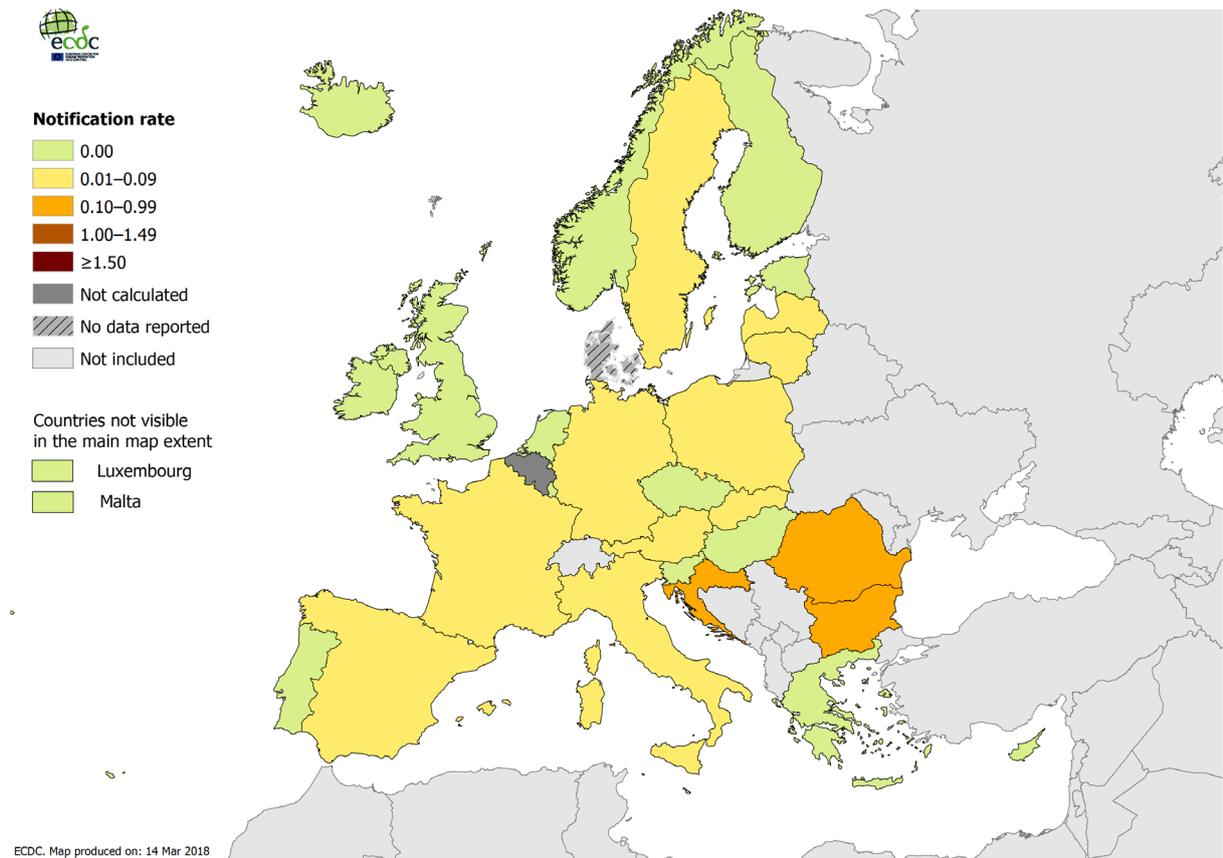
Source: country reports.

ASR: age-standardised rate

-.: no rate calculated

..: no data reported.

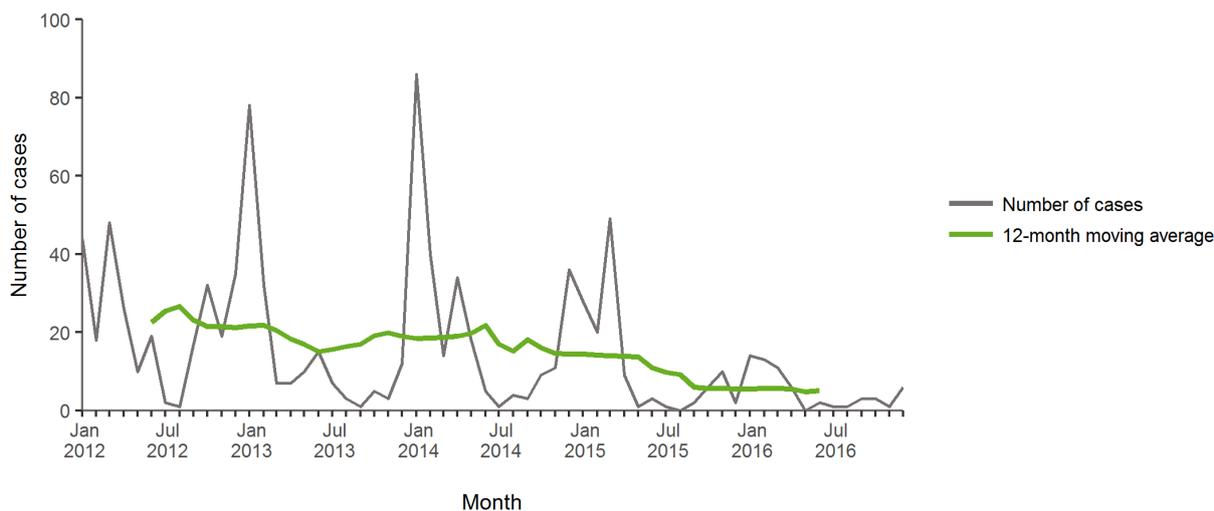
Figure 1. Distribution of confirmed trichinellosis cases per 100 000 population by country, EU/EEA, 2016



Source: country reports from Austria, Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. No rate calculated for Belgium.

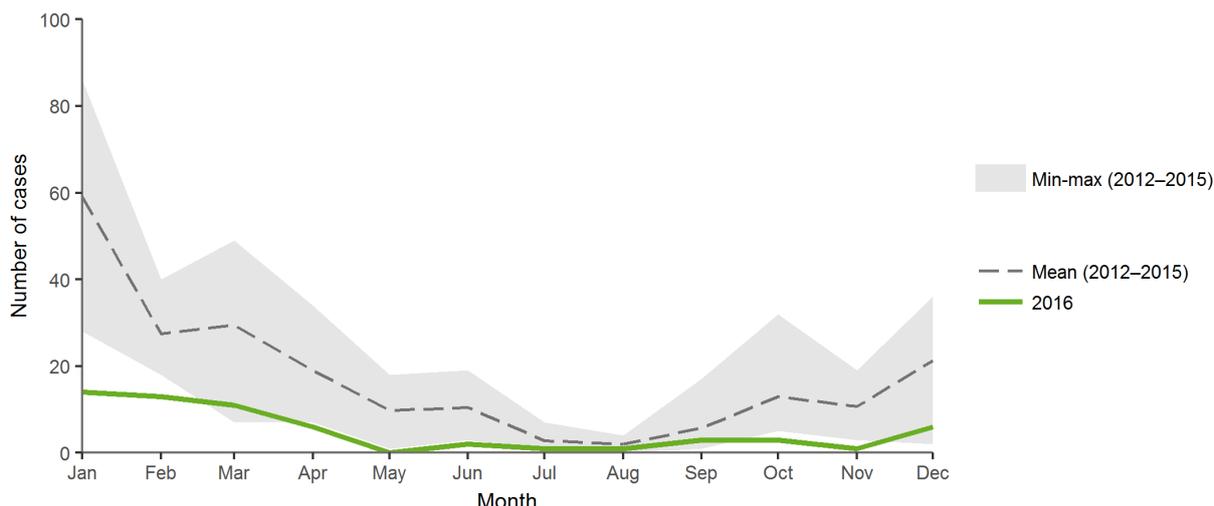
Trichinellosis in the EU/EEA follows a seasonal pattern, with case numbers peaking in January and February (Figure 2). In 2016, this peak was lower than in previous years (Figure 3).

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



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

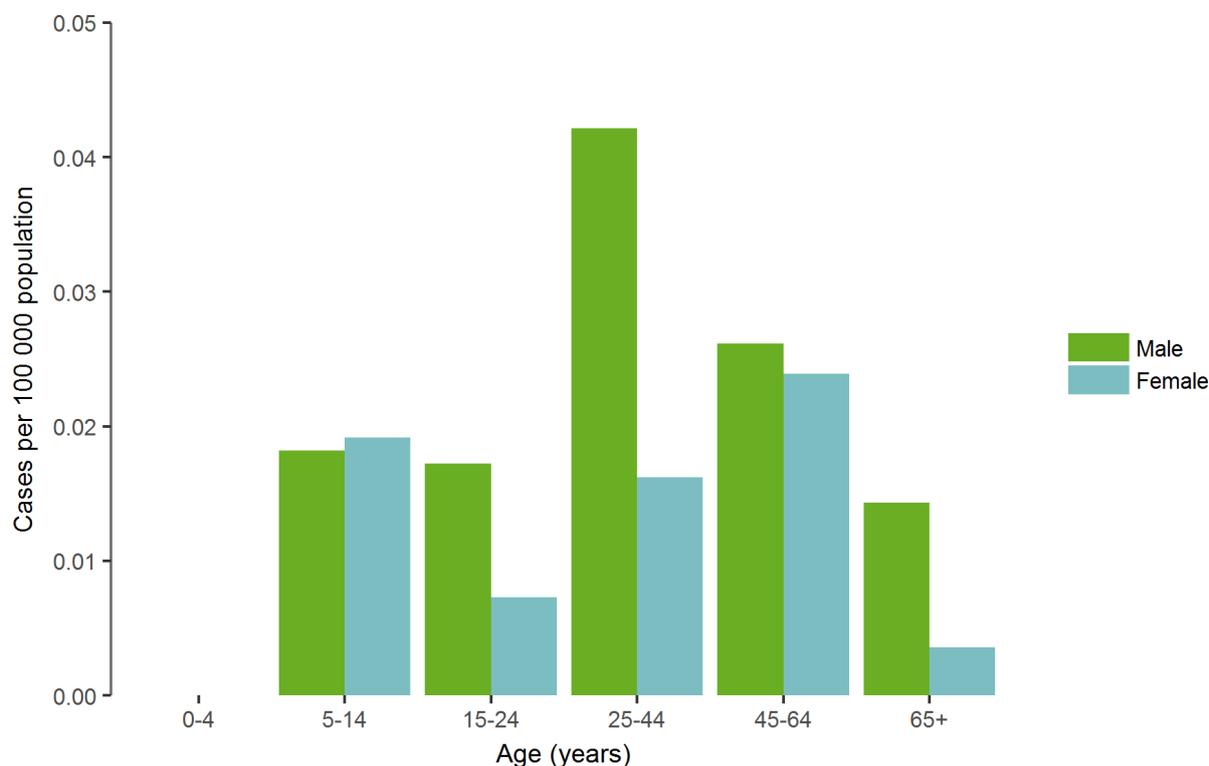
Figure 3. Distribution of confirmed trichinellosis cases by month, EU/EEA, 2012–2015 and 2016



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

The highest notification rate was in males in the age group 25–44 years, with 0.04 cases per 100 000 population (Figure 4). Notification rates were higher for males in all age groups except the age group 5–14 years. No cases were reported in children under five years. The overall male-to-female ratio was 1.2:1. The majority of cases in the age group 5–14 years were reported by Bulgaria, Italy and Romania.

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



Discussion

In the EU/EEA, trichinellosis is a rare but serious human disease. The number of trichinellosis cases has steadily decreased since 2012, with the trend greatly influenced by a number of smaller and larger outbreaks [4]. The EU/EEA notification rate decreased in 2016 and was the lowest ever reported since the beginning of EU-level surveillance in 2007 [4]. The decrease observed was mainly due to a reduced number of trichinellosis cases reported by Italy, Lithuania and Romania, which had reported high case numbers in 2015. Bulgaria and Romania accounted for the majority of trichinellosis cases in 2016.

In 2016, five Member States reported seven *Trichinella* outbreaks to the European Food Safety Authority, the majority of which were associated with 'pig meat and products thereof' (including wild boar) [4]. In Bulgaria, four outbreaks were reported: one of *T. britovi* due to wild boar meat, one of *T. spiralis* due to pig meat and two with unknown sources (I. Rainova, National Centre of Infectious and Parasitic Diseases, Sofia, email, 15 November 2018). One outbreak of *T. britovi* due to wild boar meat was reported in Italy [5].

The Commission Implementing Regulation (EU) 2015/1375 requires tests for *Trichinella* in all slaughtered pigs, wild boars, horses and other farmed or wild animal species susceptible to *Trichinella* infestation from holdings not officially recognised as applying controlled housing conditions [6]. Animals slaughtered for home consumption are not included in the regulation and national rules differ [4]. For carcasses of animals raised under controlled housing conditions, only 10% have to be examined for *Trichinella* and if no autochthonous *Trichinella* infestations have been detected in domestic swine kept under these conditions in the last three years, *Trichinella* examinations are not required [6]. The World Organisation for Animal Health no longer recognises negligible risk status for a whole country or region in an international context. Instead, such recognition is linked to compartments of one or more holdings if specific controlled housing conditions are applied. Belgium and Denmark are the only exceptions as they had achieved negligible risk status before the new regulation was implemented [7].

The recurring peak in trichinellosis cases in January and February may reflect the consumption of various pork products during the Christmas period, as well as wild boar hunting season [4]. *Trichinella* is commonly detected in wildlife [7] and cases related to hunting may account for the higher notification rates observed among adult males. Investigations into domestic pig *Trichinella* infections in Member States identified direct (free-range pigs) and indirect (farmers who hunted) contacts with wild animals, which are reservoirs of these zoonotic nematodes, as sources of domestic pig infections [8]. A study in Lithuania identified the consumption of infected and uninspected pork from small farms and infected wild boar meat as the main cause of human trichinellosis outbreaks from 2008–2017 [9].

Public health implications

Products derived from pig and wild boar meat remain the most important sources of human trichinellosis in the EU/EEA. Consuming undercooked meat from pigs or hunted wild boar that have not been tested for *Trichinella* is a major risk factor for trichinellosis [4] and it is vital that relevant information reaches such consumers.

References

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