



## SURVEILLANCE REPORT

### Annual Epidemiological Report for 2015

# Echinococcosis

#### Key facts

- In 2015, 874 confirmed echinococcosis cases were reported in the EU/EEA. Of these, 467 cases were reported as *Echinococcus granulosus*, 135 as *Echinococcus multilocularis*, and 272 as unknown species.
- The EU/EEA notification rate of echinococcosis was 0.2 cases per 100 000 population.
- The highest number of cases was reported in the age group 45–64 years.
- The highest notification rate was reported in those over 64 years.

#### Methods

This report is based on data for 2015 retrieved from The European Surveillance System (TESSy) on 15 November 2016. 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 [1].

An overview of the national surveillance systems is available online [2].

A subset of the data used for this report is available through the interactive *Surveillance atlas of infectious diseases* [3].

Twenty-three countries reported echinococcosis cases using the 2008 or 2012 EU case definitions, which are identical. One country reported in accordance with the 2002 EU case definition, and four countries used other/unspecified definitions. Echinococcosis is under mandatory surveillance in 24 EU/EEA countries; surveillance is voluntary in three [2].

#### Epidemiology

In 2015, 28 EU/EEA countries reported data on echinococcosis, with five countries reporting zero cases and 23 countries reporting 874 confirmed echinococcosis cases which is a small increase compared with 2013 and 2014 (Table 1). The highest number of cases was reported by Bulgaria, accounting for 36% of all reported cases, followed by Germany (17%) and Spain (10%) (Table 1). One death was reported in 2015 due to *E. multilocularis*.

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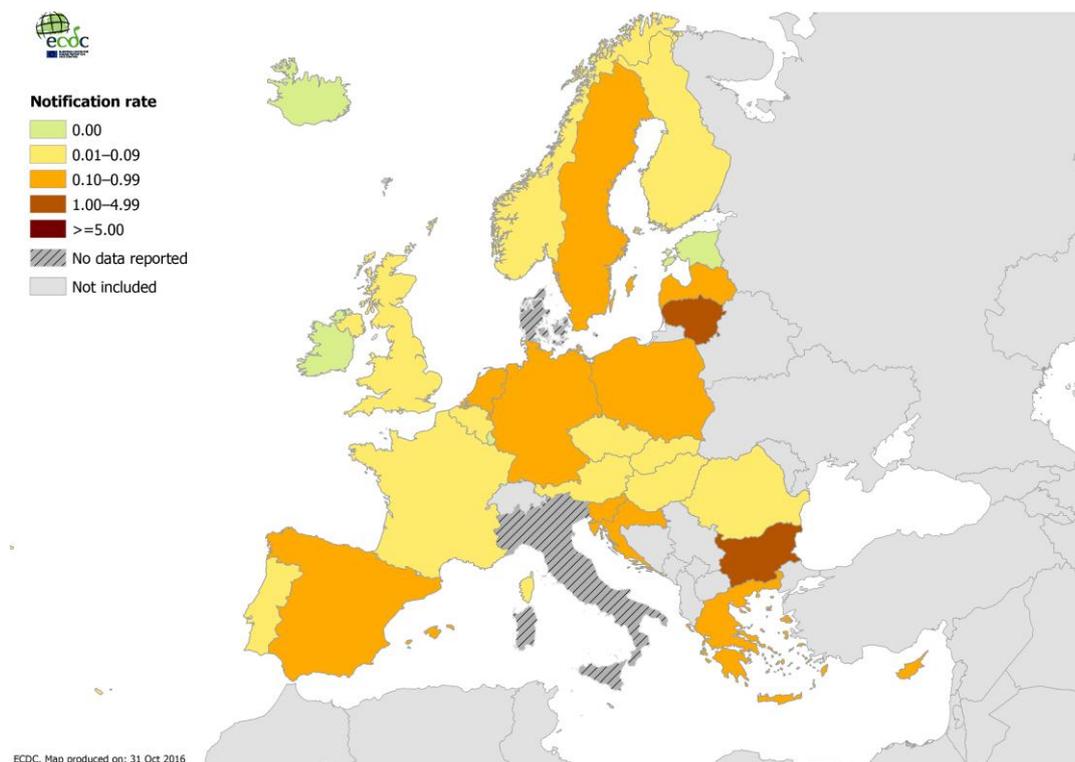
The notification rate was 0.2 confirmed echinococcosis cases per 100 000 population, the same as every year since at least 2011 (Table 1). The highest notification rate was observed in Bulgaria, with 4.3 cases per 100 000 population, followed by Lithuania and Latvia, with 1.1 and 0.5 cases per 100 000 population, respectively (Figure 1). The Netherlands seems to observe a 72% increase in echinococcosis from 2014 to 2015 (from 0.2 to 0.4 cases per 100 000 population), but there is a fluctuation in numbers of new cases over years. Most cases are imported cases in people from high-endemic countries. The reasons for the increase are unknown but could possibly be due to an increased awareness amongst clinicians and a larger influx of people from endemic countries (T. Kortbeek, RIVM, personal communication, 16 Nov 2017).

**Table 1. Number and rate of confirmed echinococcosis cases per 100 000 population, EU/EEA, 2011–2015**

Country	2011		2012		2013		2014		National coverage	2015			Confirmed cases
	Reported cases		Reported cases		Reported cases		Reported cases			Reported cases			
	Number	Rate	Number	Rate	Number	Rate	Number	Rate		Number	Rate	ASR	
Austria	7	0.1	3	0.0	11	0.1	14	0.2	Y	8	8	0.1	0.1
Belgium	1	0.0	6	0.1	15	0.1	15	0.1	Y	6	6	0.1	-
Bulgaria	307	4.2	320	4.4	278	3.8	302	4.2	Y	313	313	4.3	4.4
Croatia	.	.	0	0.0	0	0.0	20	0.5	Y	7	7	0.2	0.2
Cyprus	2	0.2	0	0.0	0	0.0	0	0.0	Y	2	2	0.2	0.2
Czech Republic	0	0.0	0	0.0	2	0.0	6	0.1	Y	3	3	0.0	0.0
Denmark	.	.	.	.	.	.	.	.	.	.	.	.	.
Estonia	0	0.0	3	0.2	3	0.2	1	0.1	Y	0	0	0.0	0.0
Finland	1	0.0	3	0.1	4	0.1	0	0.0	Y	2	2	0.0	0.0
France	45	0.1	49	0.1	34	0.1	32	0.0	Y	48	48	0.1	0.1
Germany	146	0.2	119	0.1	132	0.2	127	0.2	Y	145	145	0.2	0.2
Greece	17	0.2	21	0.2	10	0.1	13	0.1	Y	13	13	0.1	0.1
Hungary	11	0.1	6	0.1	5	0.1	2	0.0	Y	2	2	0.0	0.0
Ireland	0	0.0	0	0.0	1	0.0	0	0.0	Y	0	0	0.0	0.0
Italy	.	.	.	.	.	.	.	.	.	.	.	.	.
Latvia	10	0.5	8	0.4	7	0.3	13	0.6	Y	10	10	0.5	0.5
Lithuania	24	0.8	23	0.8	23	0.8	22	0.7	Y	33	33	1.1	1.0
Luxembourg	1	0.2	0	0.0	0	0.0	0	0.0	Y	0	0	0.0	0.0
Malta	0	0.0	0	0.0	0	0.0	0	0.0	Y	0	0	0.0	0.0
Netherlands	45	0.3	50	0.3	33	0.2	37	0.2	Y	64	64	0.4	0.4
Poland	19	0.0	28	0.1	39	0.1	48	0.1	Y	47	47	0.1	0.1
Portugal	1	0.0	2	0.0	3	0.0	4	0.0	Y	4	4	0.0	0.0
Romania	53	0.3	96	0.5	55	0.3	31	0.2	Y	18	18	0.1	0.1
Slovakia	2	0.0	3	0.1	20	0.4	8	0.1	Y	5	5	0.1	0.1
Slovenia	8	0.4	6	0.3	6	0.3	5	0.2	Y	7	7	0.3	0.3
Spain	53	0.1	96	0.2	94	0.2	70	0.2	Y	83	83	0.2	0.2
Sweden	19	0.2	16	0.2	16	0.2	21	0.2	Y	26	26	0.3	0.3
United Kingdom	9	0.0	7	0.0	14	0.0	25	0.0	Y	26	26	0.0	0.0
EU	781	0.2	865	0.2	805	0.2	816	0.2	Y	872	872	0.2	0.2
Iceland	.	.	.	.	0	0.0	0	0.0	Y	0	0	0.0	0.0
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.	.	.
Norway	3	0.1	2	0.0	2	0.0	0	0.0	Y	2	2	0.0	0.0
EU/EEA	784	0.2	867	0.2	807	0.2	816	0.2	.	874	874	0.2	0.2

Source: Country reports. Legend: Y = yes, . = no data reported, ASR: age-standardised rate, - = no notification rate calculated

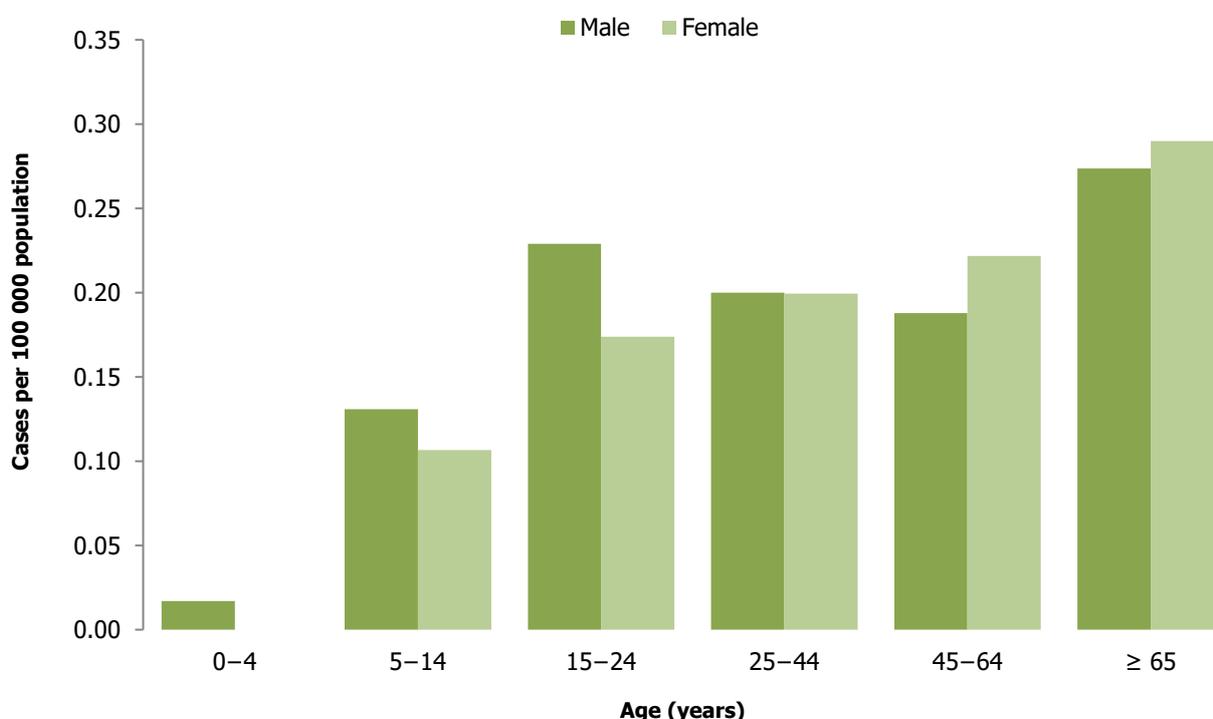
**Figure 1. Confirmed echinococcosis cases: rate per 100 000 population, by country, EU/EEA, 2015**



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

The notification rate was highest among persons ≥ 65 years for both genders. The male-to-female ratio was 0.9:1. In the age groups under 25 years, the notification rate was higher in males, whereas in the age groups over 45 years it was higher in females (Figure 2).

**Figure 2. Confirmed echinococcosis cases: by age and gender, EU/EEA, 2015**



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

## Echinococcosis by species

Species information was known for 68.9% of confirmed cases from 13 countries (information from Bulgaria received via e-mail due to aggregate reporting and included in the results by species).

### *Echinococcus granulosus*

Thirteen countries reported 467 confirmed cases of *E. granulosus* in 2015 (Table 2). This was an increase compared to 2014 when 439 confirmed *E. granulosus* cases were reported. Bulgaria accounted for 67.0% of the cases and Germany for 16.5%. The largest proportional increase was observed in the Netherlands (73.0%, 64 cases in 2015 compared with 37 in 2014). Similar to 2014, the majority of cases in EU countries was observed in the age group 25–44 years (35.1%), followed by the age group 45–64 years (31.6%). Cases were equally distributed by gender. In the years 2008–2015, there was a significantly decreasing trend of *E. granulosus* in the EU/EEA. Please refer to the 2015 EU summary report on zoonoses [4] for trend graphs, trends by country, and information on *E. granulosus* in animals.

### *Echinococcus multilocularis*

Six countries reported 135 cases of *E. multilocularis* in 2015 (Table 2). This represents a 64.6% increase in reported cases compared with 2014 when seven countries reported 82 confirmed *E. multilocularis* cases. This was mainly due to an increase of cases in three countries (France, Germany and Poland) which accounted for 87.4% of all reported *E. multilocularis* cases in the EU in 2015. The majority of cases was reported in the age group 25–64 years of age (55.2%) and ≥ 65 years of age (39.2%). Fifty-two percent of the reported *E. multilocularis* cases were females. In the years 2008–2015, a significantly increasing trend was observed in the EU/EEA. Please refer to the 2015 EU summary report on zoonoses [4] for additional information on *E. multilocularis*.

**Table 2. Reported confirmed echinococcosis cases, by species, EU/EEA, 2014–2015**

Country	Confirmed echinococcosis cases		<i>E. granulosus</i>		<i>E. multilocularis</i>		Species unknown/not reported	
	2014	2015	2014	2015	2014	2015	2014	2015
Austria	14	8	12	2	2	3		3
Belgium	15	6					15	6
Bulgaria	302	313	302	313				
Croatia	20	7					20	7
Cyprus	0	2						2
Czech Republic	6	3					6	3
Estonia	1	0			1			
Finland	0	2						2
France	32	48			32	48		
Germany	127 <sup>1</sup>	145	63	77	25	44	24	24
Greece	13	13					13	13
Hungary	2	2	1				1	2
Iceland	0							
Ireland	0	0						
Latvia	13	10	4	2			9	8
Lithuania	22	33	4	9	8	11	10	13
Luxembourg	0	0						
Malta	0	0						
Netherlands	37	64					37	64
Norway	0	2		1				1
Poland	48	47	13	9	12	26	23	12
Portugal	4	4	1	1			3	3
Romania	31	18	6	2			25	16
Slovakia	8	5	6	2	2	3		
Slovenia	5	7	1				4	7
Spain	70	83	1	4			69	79
Sweden	21	26		19			21	7
United Kingdom	25	26	25	26				
EU/EEA	816	874	439	467	82	135	280	272

<sup>1</sup>The cases numbers by species for Germany for 2014 do not add up to the total case number for Germany the same year. This is due to retrospective updates in TESSy after data extraction for the Annual Epidemiological Report.

## Discussion

Echinococcosis is a rare disease in the EU/EEA. However, it is underreported as recently illustrated in Spain [5], Bulgaria and Romania in a screening project for cystic echinococcosis [6]. Since only almost half of the countries could provide species information for the majority of their cases and some countries are reporting zero cases, it is difficult to draw solid conclusions about the trends for each species. The general trend of echinococcosis gives limited information for public health action, since the two diseases require different prevention and control strategies. Therefore, speciation in diagnosed cases is essential. Based on the species information available, there was a significantly decreasing trend in the EU/EEA in 2008–2015 for infections with *E. granulosus* and an increasing trend for infections with *E. multilocularis* [4].

Due to the long incubation period and passive disease surveillance, echinococcosis is more likely to be reported in adults and the elderly. The long incubation period and challenges in diagnostics, especially in remote areas, make it difficult to identify a seasonal pattern or multiannual trend. The infection may have occurred during childhood, which is why the epidemiology of the disease should be taken into account when designing screening and/or education programmes. Mass screening programmes, registration of cases and diagnostic developments may shed more light on echinococcosis in Europe. The results of EU-funded initiatives such as HERACLES are particularly promising [7].

## Public health implications

Reporting of echinococcosis cases should include species information and preferably data collected at the NUTS-2 or NUTS-3 level. This would allow for a more complete monitoring of cases, foster a better understanding of the epidemiology of these diseases, improve monitoring of spatial and temporal trends, and ultimately lead to the evaluation and design of targeted prevention and control actions.

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