

## Annual epidemiological report

# Echinococcosis

Reporting on 2014 data retrieved from TESSy\* on 4 December 2015

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### Key facts

- In 2014, 801 confirmed echinococcosis cases were reported in the EU/EEA. Of these, 439 cases, including one death, were reported as *Echinococcus granulosus*, and 82 were reported as *Echinococcus multilocularis*.
- The notification rate of echinococcosis was 0.2 cases per 100 000 population in the EU/EEA.
- The highest number of cases was reported in the age group 25–44 years; the highest notification rate was reported in the age groups 25 years of age and above.

### Methods

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- In 2014, 28 of 31 EU/EEA countries reported data on echinococcosis. Of these, seven reported zero cases.
- Twenty-three countries reported echinococcosis cases, using the 2008 or 2012 EU case definitions, which are identical for echinococcosis. One country reported in accordance with the 2002 EU case definition, and four countries used other/unspecified definitions (Annex).
- Echinococcosis is under active surveillance in 10% of the reporting countries (3/28); see Annex.

### Epidemiology

In 2014, 801 confirmed echinococcosis cases were reported by 21 EU/EEA countries, which is in line with 2013, when 802 cases were reported (Table 1). The highest number of cases was reported by Bulgaria (N=302), accounting for 38% of all reported cases, followed by Germany (N=112 cases, 14%), and Spain (n=77 cases, 10%) (Table 1, Figure 1). One death was reported due to *E. granulosus*.

The notification rate was 0.2 confirmed echinococcosis cases per 100 000 population (Figure 2). The highest notification rate was observed in Bulgaria, with 4.2 cases per 100 000 population, followed by Lithuania with 0.7 cases per 100 000 and Latvia with 0.6 cases per 100 000 population.

Table 1. Reported confirmed echinococcosis cases: number and rate per 100 000 population, EU/EEA, 2010–2014

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Country	2010		2011		2012		2013		2014					
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	National data	Report type	Reported cases	Confirmed cases	Rate	ASR
Austria	21	0.3	7	0.1	3	0.0	11	0.1	Y	C	14	14	0.2	0.2
Belgium	1	0.0	1	0.0	6	0.1	15	0.1	Y	A	15	15	0.1	0.1
Bulgaria	291	3.9	307	4.2	320	4.4	278	3.8	Y	A	302	302	4.2	4.2
Croatia	.	.	.	.	0	0.0	0	0.0	Y	A	20	20	0.5	0.4
Cyprus	0	0.0	2	0.2	0	0.0	0	0.0	Y	C	0	0	0.0	0.0
Czech Republic	5	0.0	0	0.0	0	0.0	2	0.0	Y	C	6	6	0.1	0.1
Denmark	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Estonia	0	0.0	0	0.0	3	0.2	3	0.2	Y	C	1	1	0.1	0.1
Finland	1	0.0	1	0.0	3	0.1	4	0.1	Y	C	0	0	0.0	0.0
France	33	0.1	45	0.1	49	0.1	34	0.1	Y	C	32	32	0.0	0.0
Germany	117	0.1	146	0.2	118	0.1	127	0.2	Y	C	112	112	0.1	0.1
Greece	11	0.1	17	0.2	21	0.2	10	0.1	Y	C	13	13	0.1	-
Hungary	9	0.1	11	0.1	6	0.1	5	0.1	Y	C	2	2	0.0	0.0
Iceland	.	.	.	.	.	.	0	0.0	Y	C	0	0	0.0	0.0
Ireland	1	0.0	0	0.0	0	0.0	1	0.0	Y	C	0	0	0.0	0.0
Italy	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Latvia	14	0.7	10	0.5	8	0.4	7	0.3	Y	C	13	13	0.6	0.6
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lithuania	23	0.7	24	0.8	23	0.8	23	0.8	Y	C	22	22	0.7	0.7
Luxembourg	1	0.2	1	0.2	0	0.0	0	0.0	Y	C	0	0	0.0	0.0
Malta	0	0.0	0	0.0	0	0.0	0	0.0	Y	C	0	0	0.0	0.0
Netherlands	35	0.2	45	0.3	50	0.3	33	0.2	Y	A	30	30	0.2	0.2
Norway	1	0.0	3	0.1	2	0.0	2	0.0	Y	C	0	0	0.0	0.0
Poland	36	0.1	19	0.0	28	0.1	39	0.1	Y	C	48	48	0.1	0.1
Portugal	3	0.0	1	0.0	2	0.0	3	0.0	Y	C	4	4	0.0	0.0
Romania	55	0.3	53	0.3	96	0.5	55	0.3	Y	C	36	31	0.2	0.2
Slovakia	9	0.2	2	0.0	3	0.1	20	0.4	Y	C	8	8	0.1	0.1
Slovenia	8	0.4	8	0.4	6	0.3	6	0.3	Y	C	5	5	0.2	0.2
Spain	82	0.2	53	0.1	96	0.2	94	0.2	Y	C	77	77	0.2	0.2
Sweden	30	0.3	19	0.2	16	0.2	16	0.2	Y	C	21	21	0.2	0.2
United Kingdom	7	0.0	9	0.0	7	0.0	14	0.0	Y	C	25	25	0.0	0.0
<b>EU/EEA</b>	<b>794</b>	<b>0.2</b>	<b>784</b>	<b>0.2</b>	<b>866</b>	<b>0.2</b>	<b>802</b>	<b>0.2</b>	.	<b>C</b>	<b>806</b>	<b>801</b>	<b>0.2</b>	<b>0.2</b>

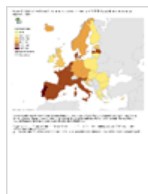
Source: Country reports. Legend: Y = yes, N = no, C = case based, A = aggregated, . = no data reported, ASR: age-standardised rate, - = no report

Figure 1. Reported confirmed echinococcosis cases: number of cases, EU/EEA, 2014



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, the United Kingdom.

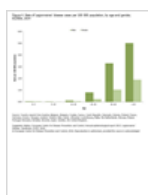
Figure 2. Reported confirmed echinococcosis cases: rate per 100 000 population, by age and gender, EU/EEA, 2014



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, the United Kingdom.

The male-to-female ratio observed for reported confirmed echinococcosis cases was 0.8:1. The notification rate was 0.2 cases per 100 000 for both sexes (Figure 3). However, in the age group 45-64, the notification rate was twice as high in females compared with males.

Figure 3. Reported confirmed echinococcosis cases: age and gender, EU/EEA, 2014



Source: Country reports from Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. Austria did not report data over the whole period at the level of detail required for the analysis.

Figure 4. Reported confirmed echinococcosis cases: seasonal distribution, EU/EEA, 2014 compared with 2009–2013



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

Figure 5. Confirmed echinococcosis cases: trend and numbers, EU/EEA, 2010–2014



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

#### Echinococcosis by species

Species information was available in TESSy for 27% of all reported confirmed cases in 2014. Bulgaria reported echinococcosis to TESSy in an aggregated format which does not include information on species, but later communicated that all cases in Bulgaria were *Echinococcus granulosus*. With the information from Bulgaria included, species information was available for 62% of all reported confirmed cases.

#### *Echinococcus granulosus*

*Echinococcus granulosus* causes cystic echinococcosis (CE) which is characterised by benign parasitic cysts occurring in the liver or the lung but also the brain, spleen, or kidneys [1,2]. Rupture of the cysts may occur which leads to parasite dissemination to other organs and strong systemic immunological reactions. Thirteen countries reported 439 confirmed cases of *E. granulosus* in 2014 (Table 2). This was an increase compared to 2013, when 397 confirmed *E. granulosus* cases were reported. Bulgaria accounted for 69% of the cases and Germany for 14%. The largest proportional increase was observed in Austria (500%, 12 cases in 2014 vs 2 in 2013) and the UK (79%, 25 cases vs 14) while Bulgaria reported the largest increase in number of cases. Similar to 2013, the majority of cases were observed in the age group 25-44 (41%), followed by the age group 45-64 (25%). Nearly 60% of the cases were females. A multiannual trend along with information on *E. granulosus* in animals is available in the [EU summary report on zoonoses, 2014](#).

#### *Echinococcus multilocularis*

Alveolar echinococcosis (AE), caused by *Echinococcus multilocularis*, is characterised by malignant lesions in the liver, which may metastasise to the lung, spleen or brain [1,2]. Seven countries reported 82 cases of *E. multilocularis* in 2014 (Table 2). This represents a 20% decrease in reported cases compared to 2013, when the same seven countries reported 104 confirmed *E. multilocularis* cases. The majority of cases were reported in the age group 25-64 (45%) and ≥65 (38%). Fifty-seven percent of the reported *E. multilocularis* cases were females. A multiannual trend along with information on *E. multilocularis* in animals is available in the [EU summary report on zoonoses, 2014](#).

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

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Country	All confirmed echinococcosis cases	<i>E. granulosus</i>	<i>E. multilocularis</i>	Unknown/not reported
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	es		2013	2014	2013	2014	2013	2014
	2013	2014						
Austria	11	14	2	12	9	2	0	0
Belgium	15	15					15	15
Bulgaria	278	302	278	302			0	0
Croatia	0	20					0	20
Cyprus	0	0					0	0
Czech Republic	2	6					2	6
Estonia	3	1			1	1	2	0
Finland	4	0					4	0
France	34	32			34	32	0	0
Germany	127	112	63	63	36	25	29	21
Greece	10	13					10	13
Hungary	5	2		1			5	1
Iceland	0	0					0	0
Ireland	1	0					1	0
Latvia	7	13	3	4			4	9
Lithuania	23	22	6	4	10	8	7	10
Luxembourg	0	0					0	0
Malta	0	0					0	0
Netherlands	33	30					33	30
Norway	2	0	1				1	0
Poland	39	48	13	13	9	12	17	23
Portugal	3	4	2	1			1	3
Romania	55	31		6			55	25
Slovakia	20	8	14	6	5	2	1	0
Slovenia	6	5	1	1			5	4
Spain	94	77		1			94	69
Sweden	16	21					16	21
United Kingdom	14	25	14	25			0	0
EU/EEA	802	801	397	439	104	82	302	270

#### Threats description for 2014

No threats were reported to/detected by ECDC in 2014 in relation to usual increase in echinococcosis cases.

## Discussion

Echinococcosis is a rare disease in the EU/EEA. However, it is under-reported as illustrated recently in Spain [3]. Since species information was available for only 27% of the reported confirmed echinococcosis cases, it is not possible to draw conclusions about the trends for AE and CE. 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.

Due to the long incubation period and the use of passive surveillance, this disease is more likely to be seen 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 for AE and CE. The infection causing AE/CE may have occurred in childhood, hence the epidemiology of the disease should be taken into account when designing screening programmes and/or education programmes. Moreover, further studies on risk factors, spatial and temporal patterns would make control and prevention programmes more effective. Mass screening programmes, registration of cases and diagnostic developments may shed more light on AE and CE in Europe, hence the results of EU-funded initiatives such as HERACLES and Echinorisk should be closely monitored.

## Public health conclusions

Reporting of echinococcosis cases should include species information and preferably data at the NUTS-2 or NUTS-3 level. This would allow for a more complete monitoring of CE and AE cases, would 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.

## References

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2. McManus DP, Gray DJ, Zhang W, Yang Y. Diagnosis, treatment, and management of echinococcosis. *BMJ*. 2012 Jun 11;344:e3866.
3. Lopez-Bernus A, Belhassen-García M, Carpio-Perez A, Perez Del Villar L, Romero-Alegria A, Velasco-Tirado V, et al. Is cystic echinococcosis re-emerging in western Spain? *Epidemiol Infect*. 2015 Nov;143(15):3351-7.

## Additional information

ECDC [Surveillance Atlas of Infectious Diseases](#)

European Food Safety Authority and European Centre for Disease Prevention and Control. The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2014. *EFSA Journal* 2015; 13(12):4329. Available from: <http://ecdc.europa.eu/en/publications/Publications/zoonoses-trends-sources-EU-summary-report-2014.pdf>

## Annex

Table. Echinococcosis, surveillance systems overview, 2014

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\* 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.



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