

Brucellosis

Annual Epidemiological Report for 2017

Key facts

- In 2017, 381 confirmed brucellosis cases were reported in the EU/EEA.
- The notification rate in the EU/EEA was 0.09 cases per 100 000 population. The highest rates were reported in southern EU Member States (Greece, Italy and Portugal).
- The highest rate was observed in 25–44-year-old males (0.16 per 100 000).
- The notification rate was stable from 2013–2017 in the EU/EEA.

Methods

This report is based on data for 2017 retrieved from The European Surveillance System (TESSy) on 11 September 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].

In 2017, 28 EU/EEA Member States (26 EU Member States plus Iceland and Norway) reported brucellosis data, all of them with national coverage. Eleven Member States used the EU case definition from 2012 [4], 12 the one from 2008 and one the case definition from 2002, whereas two Member States reported using another case definition and two did not specify it. The majority of the Member States (26) undertook passive surveillance and in 17 countries, both laboratory and physicians and/or hospitals reported cases. Twenty-seven Member States reported case-based data.

Epidemiology

In 2017, 381 confirmed cases of brucellosis were reported by 28 EU/EEA countries with an overall rate of 0.09 per 100 000 population. Eight Member States reported no cases. Greece, Italy and Spain reported the highest numbers of confirmed cases, accounting for 67.2% of all cases reported in the EU/EEA. Greece had the highest rate at 0.87 per 100 000 population, followed by Italy and Portugal (both with 0.16 per 100 000 population), as well as Spain and Sweden (0.14 per 100 000 population; Table 1, Figure 1). In Sweden, all cases were travel-related.

Suggested citation: European Centre for Disease Prevention and Control. Brucellosis. In: ECDC. Annual epidemiological report for 2017. Stockholm: ECDC; 2019.

Stockholm, June 2019

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The majority (60.1%) of 173 brucellosis cases with reported information were hospitalised. One case was fatal, giving a case fatality rate of 0.8%.

Table 1. Distribution of confirmed brucellosis cases and rates per 100 000 population by country and year, EU/EEA, 2013–2017

Country	2013		2014		2015		2016		2017			
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Confirmed cases	Rate	ASR	Reported cases
Austria	7	0.08	1	0.01	1	0.01	4	0.05	6	0.07	0.07	6
Belgium	0	0.00	0	0.00	9	0.08	4	0.04	8	0.07	-	8
Bulgaria	0	0.00	2	0.03	36	0.50	0	0.00	2	0.03	0.03	2
Croatia	0	0.00	1	0.02	0	0.00	2	0.05	1	0.02	0.03	1
Cyprus	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Czech Republic	0	0.00	0	0.00	0	0.00	1	0.01	1	0.01	0.01	1
Denmark	.	.	.	.	.	.	.	.	.	.	.	.
Estonia	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Finland	0	0.00	1	0.02	0	0.00	0	0.00	1	0.02	0.02	1
France	19	0.03	14	0.02	17	0.03	19	0.03	21	0.03	0.03	23
Germany	26	0.03	45	0.06	44	0.05	36	0.04	41	0.05	0.05	41
Greece	159	1.44	135	1.24	109	1.00	119	1.10	94	0.87	0.87	95
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	0.00	0.00	0
Ireland	1	0.02	3	0.06	0	0.00	2	0.04	2	0.04	0.05	2
Italy	141	0.24	121	0.20	105	0.17	211	0.35	99	0.16	0.16	99
Latvia	1	0.05	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.	.
Lithuania	2	0.07	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Luxembourg	0	0.00	0	0.00	0	0.00	1	0.17	0	0.00	0.00	0
Malta	1	0.24	0	0.00	0	0.00	0	0.00	0	0.00	0.00	0
Netherlands	5	0.03	1	0.01	7	0.04	5	0.03	2	0.01	0.01	2
Norway	2	0.04	2	0.04	2	0.04	4	0.08	3	0.06	0.06	3
Poland	1	0.00	1	0.00	4	0.01	3	0.01	2	0.01	0.01	2
Portugal	22	0.21	50	0.48	46	0.44	50	0.48	16	0.16	0.15	16
Romania	0	0.00	2	0.01	0	0.00	1	0.01	3	0.02	0.01	3
Slovakia	1	0.02	0	0.00	1	0.02	1	0.02	1	0.02	0.02	1
Slovenia	0	0.00	0	0.00	0	0.00	1	0.05	1	0.05	0.04	1
Spain	87	0.19	56	0.12	33	0.07	37	0.08	63	0.14	0.13	68
Sweden	10	0.10	16	0.17	13	0.13	19	0.19	14	0.14	0.14	15
United Kingdom	15	0.02	11	0.02	12	0.02	14	0.02	.	.	.	.
EU/EEA	500	0.10	462	0.09	439	0.09	534	0.10	381	0.09	0.08	390

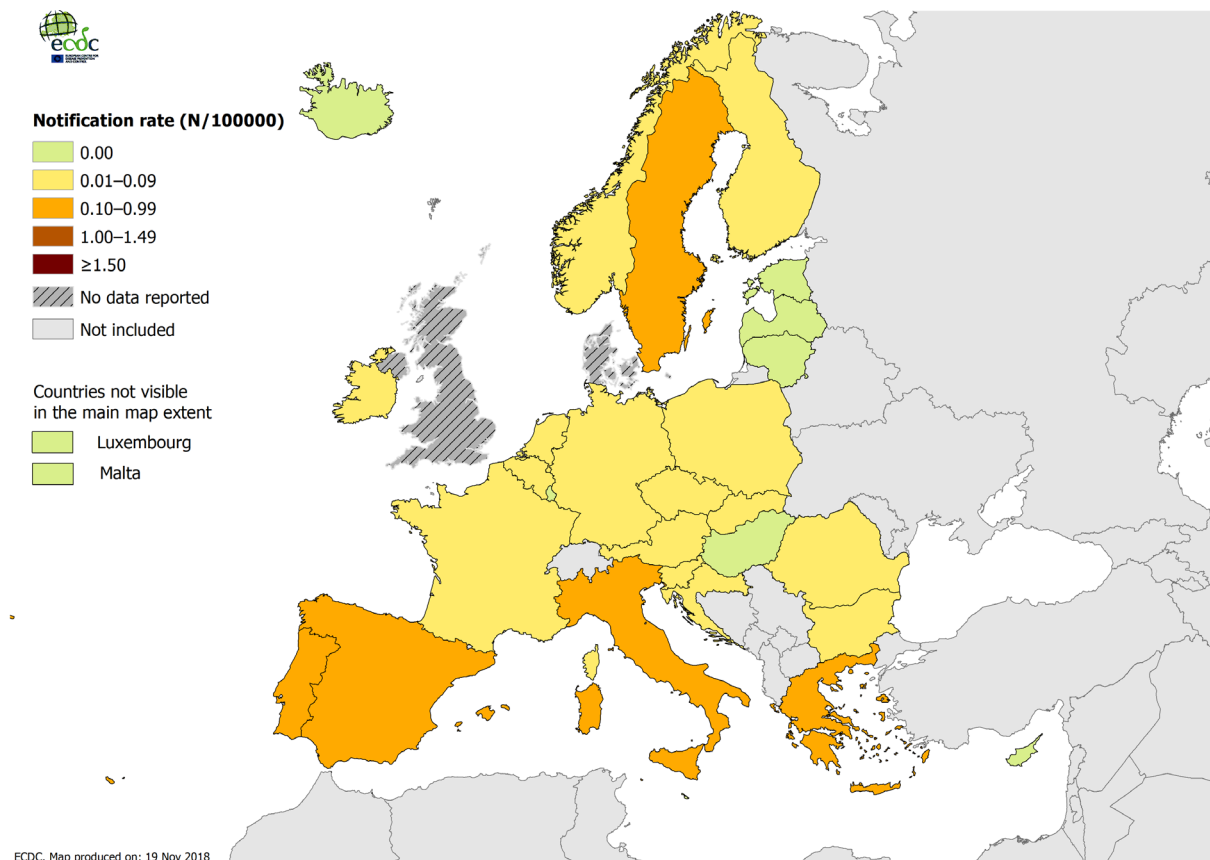
Source: country reports.

ASR: age-standardised rate

-.: no rate calculated

..: no data reported.

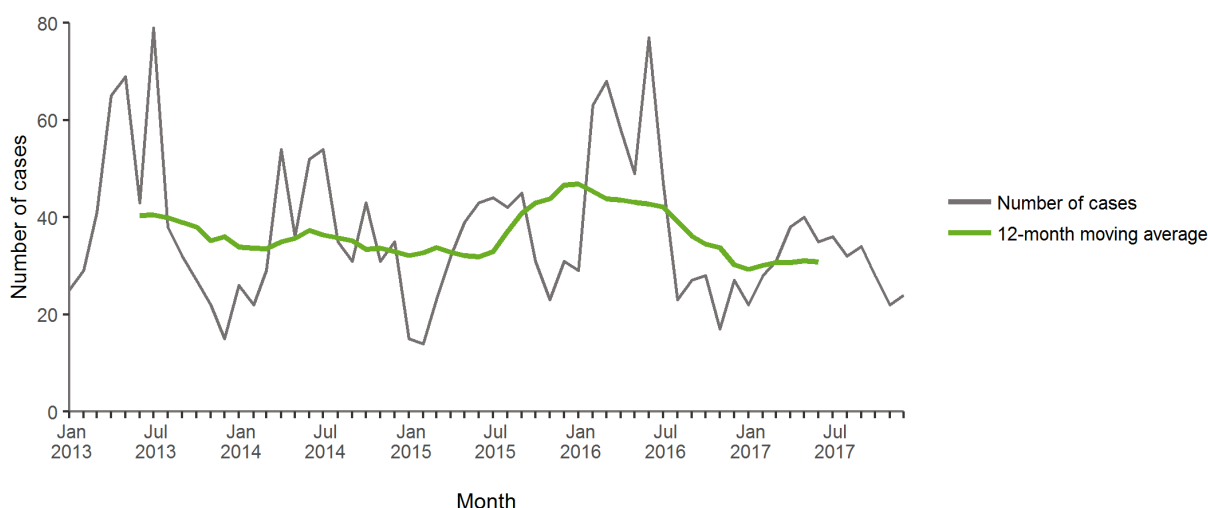
Figure 1. Distribution of confirmed brucellosis cases per 100 000 population by country, EU/EEA, 2017



Source: country reports from Austria, Belgium, 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 and Sweden.

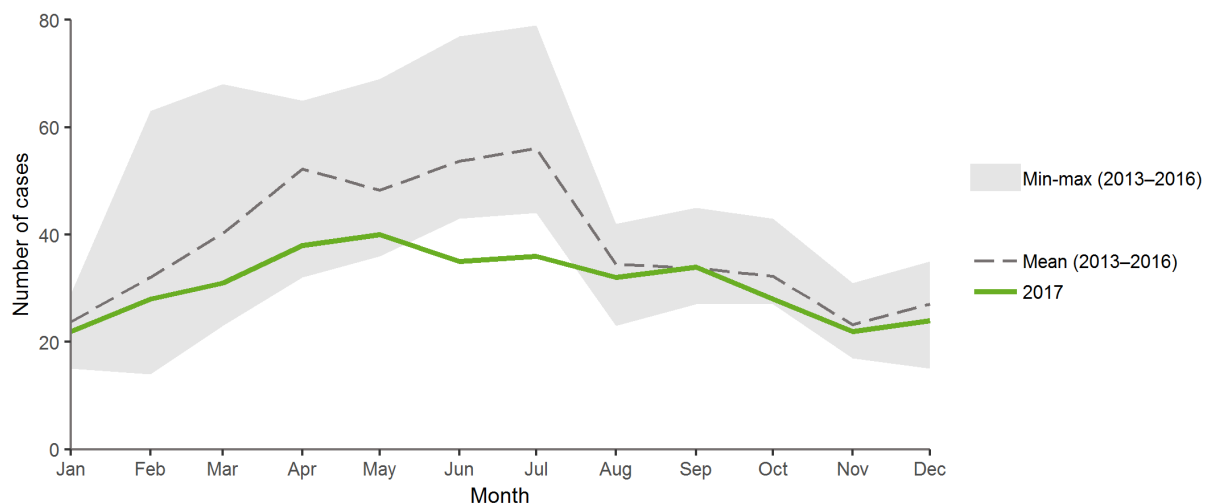
The number of brucellosis cases at the EU/EEA level decreased from 2012–2015, increased in 2016 and decreased to the lowest level in 2017 compared with the previous four years (Figure 2). In 2017, the usual seasonal pattern occurred with more cases reported in February–June compared with the rest of the year. However, fewer cases were reported in the spring and early summer compared with previous years (Figure 3).

Figure 2. Distribution of confirmed brucellosis cases by month, EU/EEA, 2013–2017



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

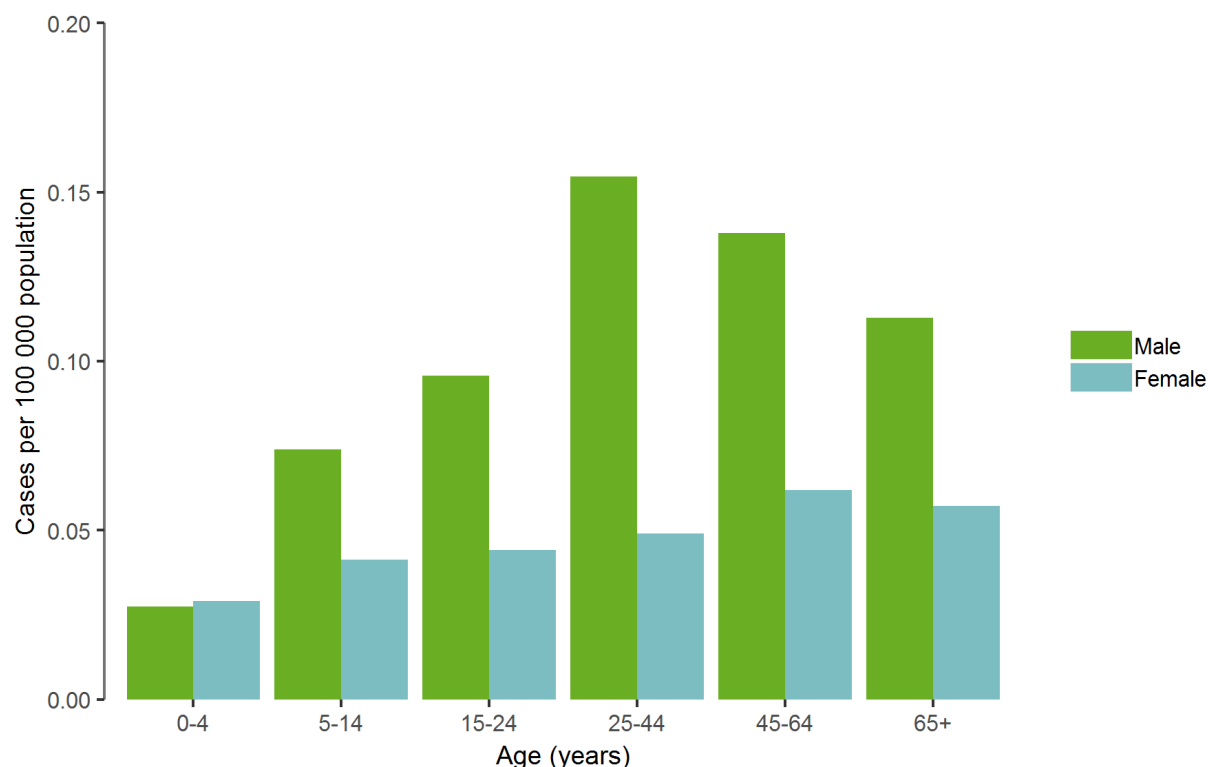
Figure 3. Distribution of confirmed brucellosis cases by month, EU/EEA, 2013–2016 and 2017



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

Gender was reported for all confirmed brucellosis cases: 68.3% were males and 31.7% were females, corresponding to a male-to-female ratio of 2.1:1. The notification rate increased with age from ≤ 0.02 per 100 000 population in children under 5 years of age to 0.1 in persons aged up to 64 years (Figure 4). By gender, the highest rates were detected in 25–44-year-old males (0.16 per 100 000 population) and 45–64-year-old females (0.06 per 100 000 population).

Figure 4. Distribution of confirmed brucellosis cases per 100 000 population by age and gender, EU/EEA, 2017



Outbreaks and other threats

No brucellosis-related multi-country threats were reported in 2017.

Discussion

Brucellosis remains a rare but severe disease in the EU/EEA, with the majority of cases hospitalised. In 2017, the number of reported brucellosis cases decreased to the lowest level since the beginning of EU-level surveillance in 2007. One foodborne brucellosis outbreak of two cases was reported in Germany in 2017 [5]. *B. melitensis* is the predominant species causing human brucellosis, but the occurrence of different *Brucella* species varies among geographic regions. *B. abortus* or *B. suis* may significantly contribute to the number of human infections in endemic regions with extensive cattle or swine livestock farming.

As in previous years, the highest rates of domestically acquired cases in the EU/EEA in 2017 were reported by Greece, Italy, Portugal and Spain. These countries have not yet obtained the status of being officially free from bovine (*B. abortus*) and ovine and caprine brucellosis (*B. melitensis*). Despite all elimination efforts in animals, brucellosis remains an endemic disease in humans in these countries [4]. Greece continues to report the highest annual rate, albeit with a gradual decrease of cases in the last five years. In 2016, the increased number of reported brucellosis cases in Italy led to the highest level of reported cases in the EU/EEA in the last five years. A tenfold increase of brucellosis cases was observed in Messina, Sicily and was linked to the consumption of locally produced unpasteurised fresh cheese. An overall decrease of cases has been notified in all regions in Italy in the last 20 years, but brucellosis remains an important health problem, particularly in the southern part of the country, where 89% of the annual cases are reported [6].

A large proportion of cases occurred in working-age males, possibly indicating occupational exposure. Persons working with farm animals, including farmers, livestock breeders, butchers, abattoir workers and veterinarians, are known to be at increased risk of brucellosis [7].

Bovine brucellosis, as well as ovine and caprine brucellosis, has been widely eradicated by most EU Member States. As a result, brucellosis has become rare in northern and western Europe, where most of the cases are linked to travelling. Disease incidence may also be elevated among migrants who have recently arrived from geographic areas where brucellosis is endemic, such as the Middle East and parts of Africa, Asia and Central and South America [8,9]. Food-borne exposure is normally limited to persons consuming unpasteurised milk, dairy products or undercooked meat and is often the result of consuming food products from countries where brucellosis is endemic in animals.

Public health implications

In Member States that are not free from ovine and caprine or bovine brucellosis, EU-co-funded national brucellosis eradication programmes are important for reducing brucellosis in animals. Besides efforts to control brucellosis in animals, organised prevention efforts and raised awareness are needed within the occupational health framework. The migration of persons from endemic areas may cause an increase in the number of cases in countries where brucellosis was not previously prevalent. Physicians and diagnosing laboratories should be aware of the symptoms of the disease, which is caused by highly pathogenic bacteria. Information on occupational and travel history should be consistently collected as part of brucellosis surveillance in humans. The isolation of antibiotic-resistant *Brucella* strains highlights emerging challenges for treatment [10].

References

1. European Centre for Disease Prevention and Control. Introduction to the Annual Epidemiological Report. In: ECDC. Annual epidemiological report for 2017 [Internet]. Stockholm: ECDC; 2017 [cited 11 September 2018]. Available from: <http://ecdc.europa.eu/annual-epidemiological-reports/methods>
2. European Centre for Disease Prevention and Control. Surveillance systems overview [Internet, downloadable spreadsheet]. Stockholm: ECDC; 2018 [cited 11 September 2018]. Available from: <http://ecdc.europa.eu/publications-data/surveillance-systems-overview-2017>
3. European Centre for Disease Prevention and Control. Surveillance atlas of infectious diseases [Internet]. Stockholm: ECDC; 2017 [cited 11 September 2018]. Available from: <http://atlas.ecdc.europa.eu/public/index.aspx?Dataset=27&HealthTopic=8>
4. European Commission. Commission implementing Decision of 8 August 2012 amending Decision 2002/253/EC laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council (notified under document C(2012) 5538) – (Text with EEA relevance) – (2012/506/EU). Annex 2.5. Brucellosis (*Brucella spp.*). Off J Eur Un. 2012 27 Sep;L262/7.
5. 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 2016. EFSA J. 2017 Nov 13;15(12):5077. Available from: <http://ecdc.europa.eu/publications-data/european-union-summary-report-trends-and-sources-zoonoses-zoonotic-agents-and-9>
6. Facciola A, Palamara MAR, D'Andrea G, Marano F, Magliarditi D, Puglisi G, et al. Brucellosis is a public health problem in southern Italy: Burden and epidemiological trend of human and animal disease. J Infect Public Health. 2018 Nov-Dec;11(6):861-866.
7. Lytras T, Danis K, Dounias G. Incidence Patterns and Occupational Risk Factors of Human Brucellosis in Greece, 2004–2015. Int J Occup Environ Med. 2016 Oct;7(4):221-6.
8. Norman FF, Monge-Maillo B, Chamorro-Tojeiro S, Pérez-Molina JA, López-Vélez R. Imported brucellosis: A case series and literature review. Travel Med Infect Dis. 2016 May-Jun;14(3):182-99.
9. Georgi E, Walter MC, Pfalzgraf MT, Northoff BH, Holdt ML, Scholz HC, et al. Whole genome sequencing of *Brucella melitensis* isolated from 57 patients in Germany reveals high diversity in strains from Middle East. PLoS One. 2017 Apr 7;12(4):e017425.
10. Cama BAV, Ceccarelli M, Venanzi Rullo E, Ferraiolo F, Paolucci IA, Maranto D, et al. Outbreak of *Brucella melitensis* infection in Eastern Sicily: risk factors, clinical characteristics and complication rate. New Microbiol. 2019 Jan;42(1):43-48.