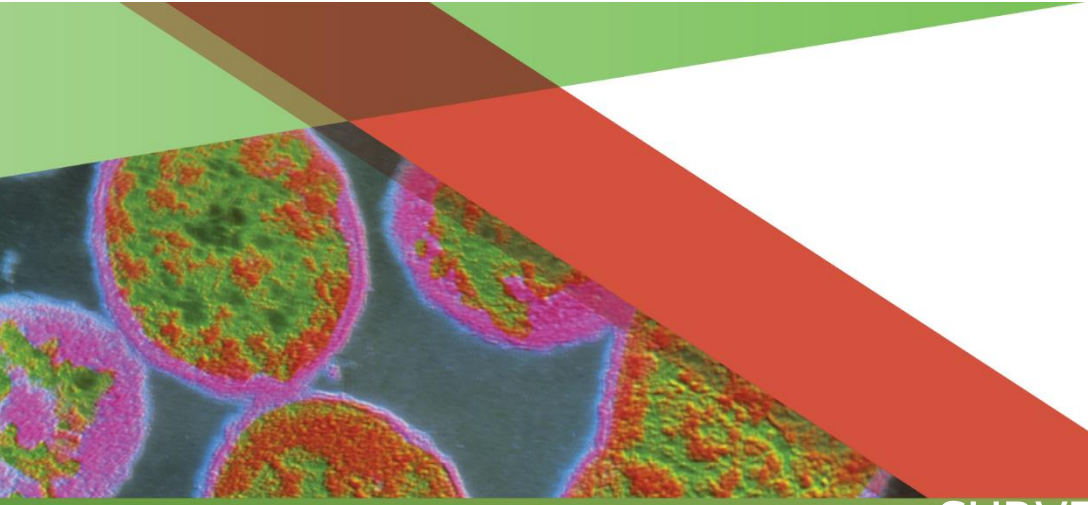


SURVEILLANCE REPORT

Annual Epidemiological Report for 2020

Brucellosis

Key facts

- In 2020, 134 confirmed brucellosis cases were reported in the EU/EEA.
- The notification rate in the EU/EEA was 0.03 cases per 100 000 population. The highest rates were reported in Greece, Portugal, and Sweden.
- The notification rate decreased in the period 2016 to 2020 in the EU/EEA. The COVID-19 pandemic significantly impacted the number of reported cases of brucellosis in 2020 with the case numbers decreasing.
- The highest rate was observed in 45–64-year-old males (0.05 per 100 000 population) and in females over 65 years (0.04 per 100 000 population).

Introduction

Brucellosis is an infection caused by *Brucella* bacteria. Brucellosis occurs worldwide but the Mediterranean region has been particularly affected. Humans can get the disease when they are in contact with infected animals (sheep, goats, cattle, pigs and dogs) or contaminated animal products (unpasteurised milk and dairy products or undercooked meat). The symptoms are both general (fever, weakness, joint pain) and organ-specific (including infections in the brain and heart valves). Untreated, brucellosis can become chronic or lead to death.

Methods

This report is based on data for 2020 retrieved from The European Surveillance System (TESSy) on 5 November 2021. 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]. For 2020, brucellosis data were reported by 28 EU/EEA countries. In Denmark, brucellosis is neither notifiable nor under surveillance. The notification of brucellosis is mandatory in all reporting EU/EEA countries except for Belgium, where notification is based on another (not specified) system.

Suggested citation: European Centre for Disease Prevention and Control. Brucellosis. In: ECDC. Annual epidemiological report for 2020. Stockholm: ECDC; 2022.

Stockholm, September 2022

Nine Member States used the latest case definition (EU 2018), seven used the previous case definition from 2012, seven reported in accordance with the one from 2008 and one from 2002, three reported using other definitions or did not specify which case definition they used. The majority of Member States (26) undertook passive surveillance and 20 countries had surveillance systems that integrated laboratory and epidemiological data from physicians or hospitals. The surveillance systems for brucellosis have national coverage in all reporting EU/EEA countries. For 2020, Spain did not receive data from all regions which normally report, and the case numbers are therefore lower than expected and no notification rate was calculated. Twenty-six Member States reported case-based data and Belgium and Bulgaria reported aggregated data. Both reporting formats were included when calculating numbers of cases and notification rates. No data for 2020 was reported by the United Kingdom due to its withdrawal from the EU on 30 January 2020.

Epidemiology

In 2020, 134 confirmed cases of brucellosis were reported by 28 EU/EEA countries with an overall rate of 0.03 per 100 000 population. Twelve Member States reported no cases. Greece, France, Germany and Italy reported the highest numbers of confirmed cases, accounting for 64.2% of all cases reported in the EU/EEA. Greece had the highest rate at 0.28 per 100 000 population, followed by Portugal with 0.09 per 100 000 population, and Sweden (0.07 per 100 000 population; Table 1, Figure 1). In Sweden, all cases with information on importation were travel related.

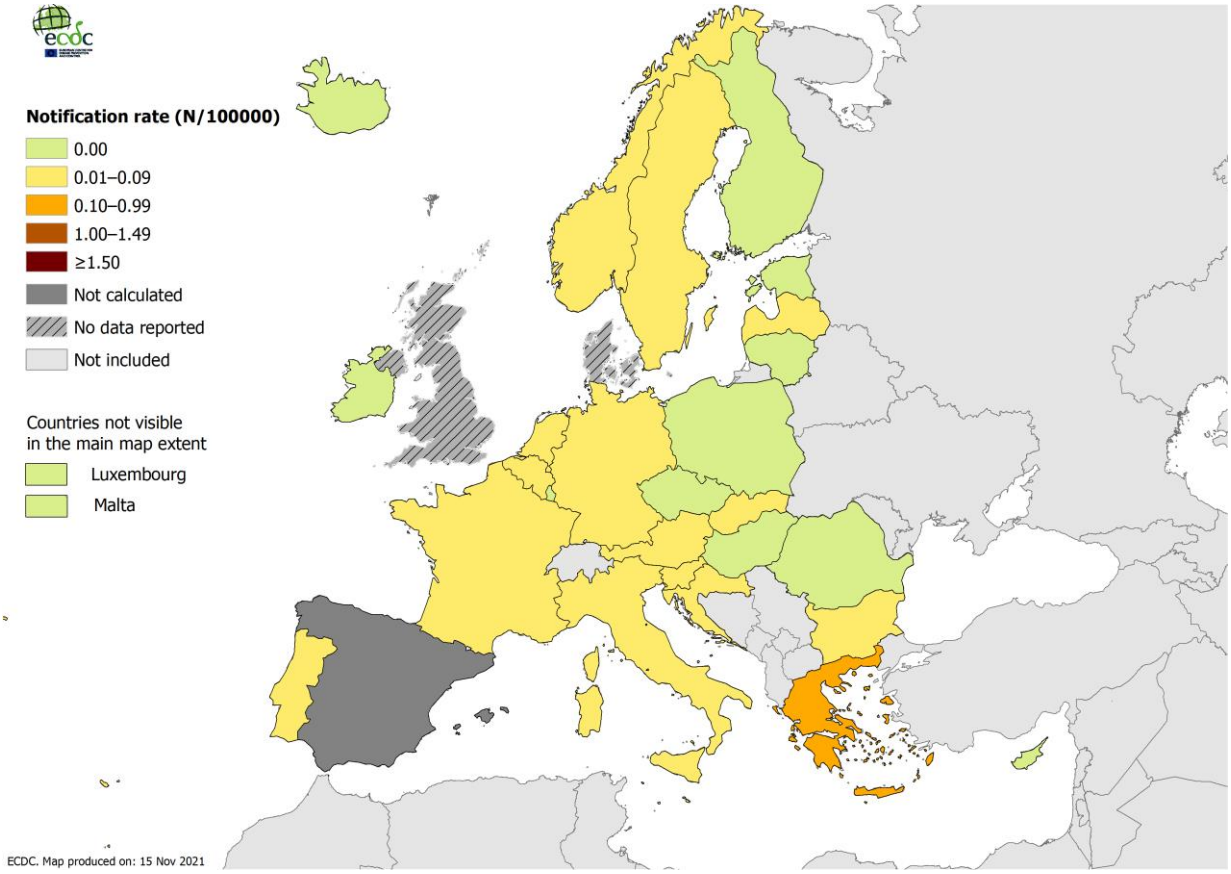
The majority (64.5%) of 129 brucellosis cases with reported information were hospitalised. Two cases were fatal, giving a case fatality rate of 3.5%.

Table 1. Distribution of confirmed brucellosis cases and rates per 100 000 population by country and year, EU/EEA, 2016–2020

Country	2016		2017		2018		2019		2020		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	ASR
Austria	4	0.05	6	0.07	7	0.08	6	0.07	8	0.09	0.08
Belgium	4	0.04	8	0.07	9	0.08	3	0.03	4	0.03	0.04
Bulgaria	0	0.00	2	0.03	1	0.01	0	0.00	1	0.01	0.02
Croatia	2	0.05	1	0.02	3	0.07	3	0.07	1	0.02	0.02
Cyprus	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00
Czechia	1	0.01	1	0.01	4	0.04	4	0.04	0	0.00	0.00
Denmark	.	.	.	.	.	.	.	.	.	.	.
Estonia	0	0.00	0	0.00	1	0.08	1	0.08	0	0.00	0.00
Finland	0	0.00	1	0.02	0	0.00	0	0.00	0	0.00	0.00
France	19	0.03	21	0.03	0	0.00	34	0.05	19	0.03	0.03
Germany	36	0.04	41	0.05	37	0.04	37	0.04	19	0.02	0.02
Greece	119	1.10	94	0.87	97	0.90	65	0.61	30	0.28	0.28
Hungary	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00
Iceland	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00
Ireland	2	0.04	2	0.04	0	0.00	0	0.00	0	0.00	0.00
Italy	211	0.35	99	0.16	94	0.16	49	0.08	18	0.03	0.03
Latvia	0	0.00	0	0.00	0	0.00	0	0.00	1	0.05	0.04
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.
Lithuania	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00
Luxembourg	1	0.17	0	0.00	0	0.00	0	0.00	0	0.00	0.00
Malta	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0.00
Netherlands	5	0.03	2	0.01	5	0.03	7	0.04	2	0.01	0.01
Norway	4	0.08	3	0.06	3	0.06	4	0.08	2	0.04	0.04
Poland	3	0.01	2	0.01	0	0.00	2	0.01	0	0.00	0.00
Portugal	50	0.48	16	0.16	19	0.18	33	0.32	9	0.09	0.08
Romania	1	0.01	3	0.02	1	0.01	1	0.01	0	0.00	0.00
Slovakia	1	0.02	1	0.02	0	0.00	1	0.02	2	0.04	0.04
Slovenia	1	0.05	1	0.05	3	0.15	6	0.29	1	0.05	0.04
Spain	37	0.08	63	0.14	40	0.09	20	0.04	10	-	-
Sweden	19	0.19	14	0.14	11	0.11	14	0.14	7	0.07	0.07
United Kingdom	14	0.02	-	-	-	-	24	0.04	-	-	-
EU-EEA	**534**	**0.10**	**381**	**0.09**	**335**	**0.08**	**314**	**0.06**	**134**	**0.03**	**0.03**

Source: Country reports.
ASR: age-standardised rate.
.: no data reported.
-: no rate calculated.

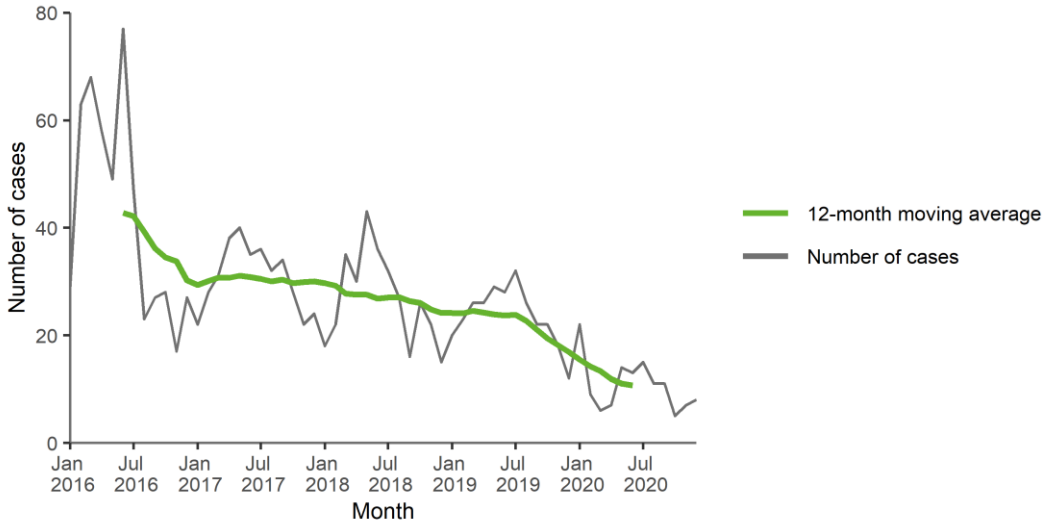
Figure 1. Distribution of confirmed brucellosis cases per 100 000 population by country, EU/EEA, 2020



Source: country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, and Sweden.

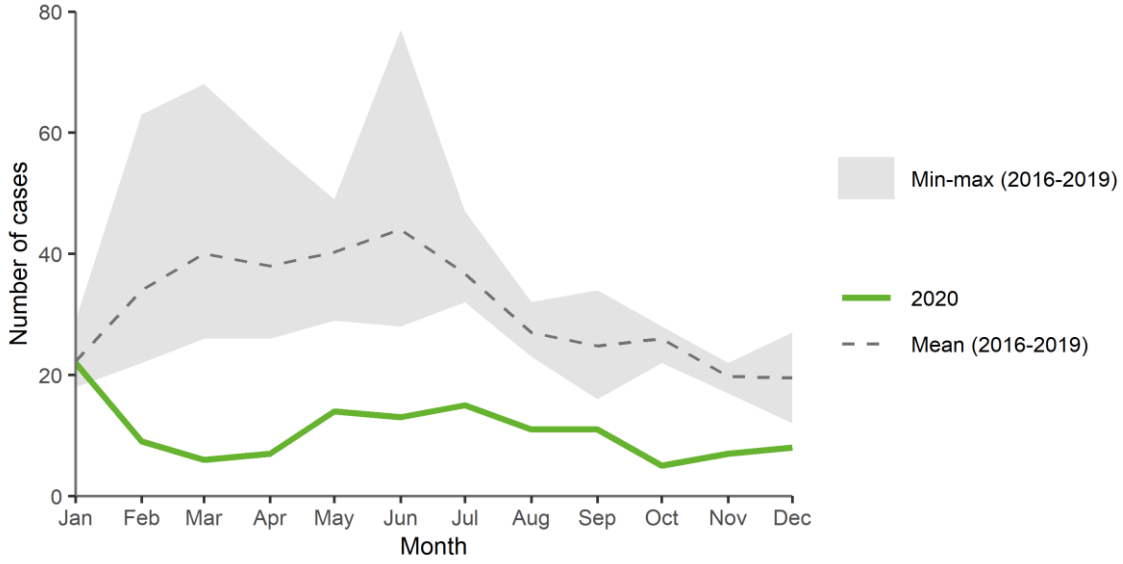
The number of brucellosis cases at the EU/EEA level decreased from 2016 to 2020 (Figure 2). In 2020, fewer cases were reported in all months compared with previous four years (Figure 3). Most cases were reported in summer months which differed from the usual seasonal pattern of more cases in the beginning of the year and early summer (Figure 3).

Figure 2. Distribution of confirmed brucellosis cases by month, EU/EEA, 2016–2020



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

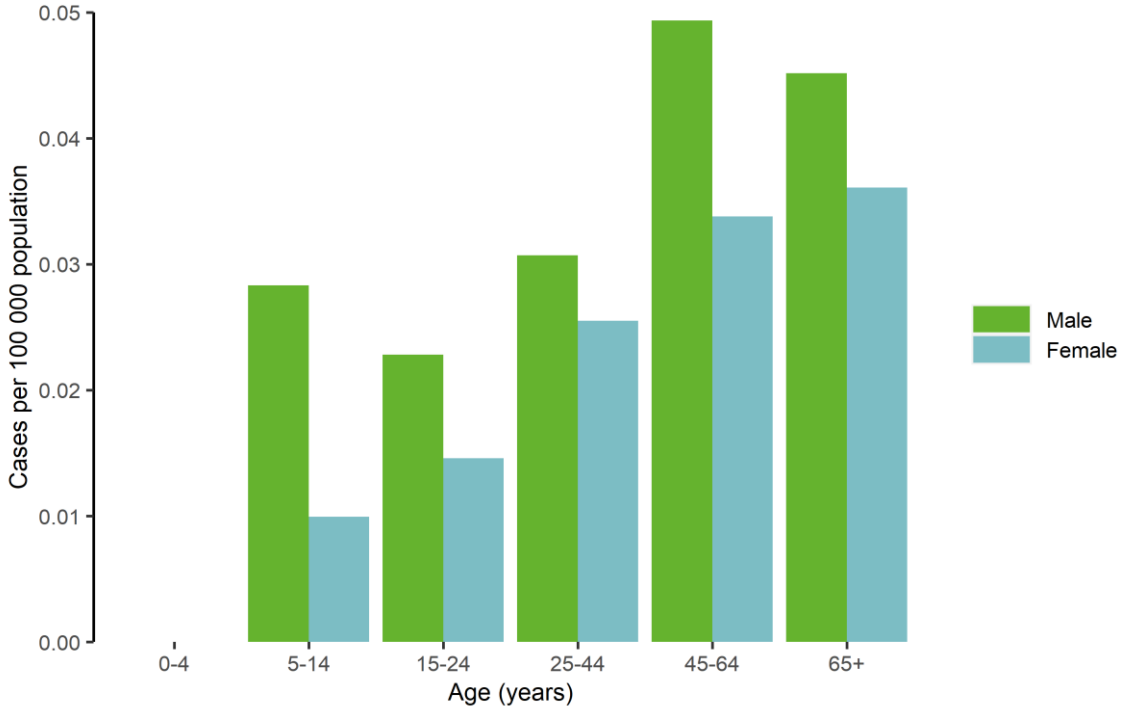
Figure 3. Distribution of confirmed brucellosis cases by month, EU/EEA, 2020 and 2016–2019



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

Sex was reported for all confirmed brucellosis cases: 54.5% were males and 45.5% were females, corresponding to a male-to-female ratio of 1.1:1. The notification rate increased with age from 0.02 per 100 000 population in children in age-group 5-14 years to 0.04 in persons aged over 65 years. No cases were reported in children below four years (Figure 4). By sex, the highest rates were detected in 45–64-year-old males (0.05 per 100 000 population) and in females over 65 years (0.04 per 100 000 population).

Figure 4. Distribution of confirmed brucellosis cases per 100 000 population, by age and sex, EU/EEA, 2020



Outbreaks and other threats

No brucellosis-related national or multi-country threats were reported through ECDC's Epidemic Intelligence Information System for Food- and Waterborne Diseases (EPIS-FWD) in 2020.

Discussion

Brucellosis remains a rare but severe disease in the EU/EEA, with the majority of cases hospitalised. The overall trend of reported brucellosis cases has steadily decreased since 2016. The COVID-19 pandemic significantly impacted the number of reported cases of brucellosis in 2020 with the case numbers decreasing to their lowest level since the beginning of EU-level surveillance in 2007. Factors mentioned by countries which may explain lower case numbers were e.g. people not seeking medical care for mild symptoms due to the risk of exposure to COVID19 in healthcare facilities and less travel due to travel restrictions during the pandemic.

As in previous years, the highest rates of domestically-acquired cases in the EU/EEA in 2020 were reported by Greece and Portugal. Greece continues to report a rate ten times higher than the EU/EEA average, albeit with a gradual decrease of cases since 2014. In Portugal, the notification rate has been decreasing since 2009, even though *Brucella* still represents an ongoing public health threat [4]. An overall decrease of cases was 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 [5]. Greece, Portugal, and Italy 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 [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 travel outside EU. 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. Recent studies showed that the uncontrolled or illegal trade of raw milk cheese challenges food safety standards in the EU and might explain human *Brucella* infections acquired in non-endemic EU countries [4,10].

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 highlight emerging challenges for treatment.

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