Surveillance Atlas of Infectious Diseases FWD (2025 data)

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Brucellosis

Last updated: 31 August 2026

Data retrieval from EpiPulse cases: 21 August 2026

Brucellosis is a systemic infection caused by bacteria of the genus *Brucella*. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on brucellosis reported by the EU/EEA countries. Cases are to be reported according to the 2018 EU case definition for brucellosis[1]:

Clinical criteria

Any person with fever

And at least one of following seven:

— Sweating (profuse, malodorous, specially nocturnal);

— Chills;

— Arthralgia;

— Weakness;

— Depression;

— Headache;

— Anorexia.

Laboratory criteria

At least one of the following three:

— Isolation of human pathogenic *Brucella* spp. from a clinical specimen;
— Human pathogenic *Brucella* specific antibody response (Standard Agglutination Test, Complement Fixation, ELISA);

— Detection of human pathogenic *Brucella* spp. nucleic acid in a clinical specimen.

Epidemiological criteria

At least one of the following five epidemiological links:

— Exposure to contaminated food/drinking water;

— Exposure to products from a contaminated animal (milk or milk products);

— Animal to human transmission (contaminated secretions or organs e.g. vaginal discharge, placenta);

— Exposure to a common source;

— Laboratory exposure.

Case classification

A. Possible case: NA
B. Probable case: Any person meeting the clinical criteria with an epidemiological link
C. Confirmed case: Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(Compared to the 2008 and 2012 EU case definition, the 2018 EU case definition allows genotypic tests for laboratory confirmation and has laboratory exposure as a possible epidemiological link. The note is also a new addition.)

[1] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[2]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed brucellosis cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;
- Pathogen species.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

[2] Available from: Home - Eurostat (europa.eu)

Data quality

EU/EEA countries reporting data on brucellosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed brucellosis cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness pathogen species (%).
-

Interpretation

The data shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment and under-reporting between countries.

The notification of brucellosis in humans is mandatory in all EU/EEA countries, except in Belgium, where surveillance is based on another system. In Denmark, brucellosis is neither notifiable nor under surveillance. The surveillance systems have full national coverage in all reporting countries. In Belgium, full national coverage was established in 2015 and rates before this date are not displayed. For 2020-2021, Spain has not received data from all regions and rates are therefore not displayed for these years. All reporting countries report case-based data except Bulgaria, which reported aggregate data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available. The COVID-19 pandemic seems to have impacted on brucellosis surveillance data in 2020-2021. Factors mentioned by countries resulting in lower case numbers were e.g. people avoiding to seek medical care for mild symptoms due to risk of exposure to COVID-19 in health care facilities and less travel due to travel restriction etc.

The completeness of some variables such as hospitalisation, outcome or travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account limitations.

Reports published by ECDC on brucellosis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2022 – Brucellosis:
Brucellosis - Annual epidemiological report (europa.eu)

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2025. The European Union One Health 2024 Zoonoses Report (December 2025):
https://www.ecdc.europa.eu/en/publications-data/european-union-one-health-2024-zoonoses-report

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	O	Co	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2018
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	EU-2012
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-SEPI	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Portugal	PT-BRUCELLOSIS	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Campylobacteriosis

Last updated: 31 August 2026

Data retrieval from EpiPulse cases: 21 August 2026

Campylobacteriosis is an infectious disease caused by bacteria of the genus *Campylobacter.* For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on campylobacteriosis reported by the EU/EEA countries. Cases should be reported according to the 2018 EU case definition for *Campylobacter* enteritis[3]:

Clinical criteria

Any person with the following three:

— Diarrhoea;

— Abdominal pain;

— Fever.

Laboratory criteria

At least one of the following two:

— Isolation of human pathogenic *Campylobacter* spp. from a clinical specimen;

— Detection of *Campylobacter* spp. nucleic acid in a clinical specimen.

Note: Antimicrobial susceptibility testing of *Campylobacter* spp. should be performed on a representative subset of isolates

Epidemiological criteria

At least one of the following five epidemiological links:

— Animal to human transmission;

— Human to human transmission;

— Exposure to a common source;

— Exposure to contaminated food/drinking water;

— Environmental exposure.

Case classification

A. Possible case: NA

B. Probable case: Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case: Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

Antimicrobial resistance

The results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States as specified in the EU protocol for harmonised monitoring of antimicrobial

[3] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

resistance in human Salmonella and *Campylobacter* isolates[4]

(Compared with the 2008 and 2012 EU case definition, the 2018 EU case definition allows genotypic tests for laboratory confirmation and includes a requirement for antimicrobial susceptibility testing and reporting of results. The note is also a new addition.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[5]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed campylobacteriosis cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);

[4] The EU protocols, including future updates, can be found at the following ECDC webpage: https://ecdc.europa.eu/en/publications- data/eu-protocol-harmonised-monitoring-antimicrobial-resistance-human-salmonella-and-0

[5] Available from: Home - Eurostat (europa.eu)

- Gender;
- Pathogen species.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

Data quality

EU/EEA countries reporting data on campylobacteriosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed campylobacteriosis cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness pathogen species (%).

Interpretation

The results shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does the number of samples tested.

The notification of campylobacteriosis is mandatory in 27 EU/EEA countries. In three EU Member States (Belgium, France, and the Netherlands) notification is voluntary. Latvia did not report Campylobacteriosis data in 2024. The surveillance systems for campylobacteriosis have full national coverage in all EU Member States except three (France, the Netherlands and Spain). The coverage of the surveillance system in is estimated to be 20% in France, 64% in the Netherlands in 2021-2025 (58% in 2019-2020 and 52% in 2016-2018), and 82%, 80% and 73% in 2024-2025, 2023 and 2021-2022, respectively in Spain. These proportions were used when calculating the national notification rates for these Member States. No estimate of population coverage in Spain was provided prior 2021, so notification rates were not calculated. Full national coverage was established in 2015 in Belgium and in 2025 in Italy and rates before these dates are not displayed, respectively. The drop in cases in Luxembourg in 2019 is a surveillance artefact caused by a change to non-culture-based methods (PCR) in private laboratories, resulting in reduced number of isolates sent to the national reference laboratory. From 2020, laboratory confirmation with PCR is included in the notification system which along with a new electronic laboratory notification system resulted in an increase in *Campylobacter* notifications. All countries reported case-based data except Bulgaria which reported aggregated data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The COVID-19 pandemic significantly impacted on campylobacteriosis surveillance data in 2020-2022. Factors mentioned by countries resulting in lower case numbers were e.g. people avoiding seeking medical care for mild symptoms due to risk of exposure to COVID-19 in health care facilities, limited laboratory capacity due to reallocation of resources to SARS-CoV-2, fewer restaurant visits, increased hand washing, less travel due to travel restriction etc.

The completeness of some variables such as outcome or travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not.

Reports published by ECDC on campylobacteriosis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2022 – Campylobacteriosis:
Annual epidemiological report for 2022 - Campylobacteriosis (europa.eu)

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2025. The European Union One Health 2024 Zoonoses Report (December 2025):
https://www.ecdc.europa.eu/en/publications-data/european-union-one-health-2024-zoonoses-report

Fourth external quality assessment on species identification and antimicrobial susceptibility testing of *Campylobacter*, 2018:
https://www.ecdc.europa.eu/sites/default/files/documents/fourth-campylobacter-external-quality-assessment.pdf

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-LABNET	V	Se	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2018
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	EU-2018
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	EU-2012
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	EU-2018
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-SEPI	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	N	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-AMR	V	Se	P	C	Y	N	N	N	Not specified/unknown
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Portugal	PT-CAMP	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Antimicrobial resistance in *Campylobacter jejuni* and *C. coli*

Last updated: 16 April 2026

Data retrieval from EpiPulse Cases: 5 December 2025

Campylobacteriosis is an infection caused by *Campylobacter* bacteria, with the most common species being *C. jejuni* and *C. coli*. Campylobacteriosis usually causes self-limiting gastroenteritis but antimicrobial treatment may be needed in case of severe illness. For a more detailed description of the disease and its epidemiology, please click here.

Data

The Surveillance Atlas of Infectious Diseases displays data on antimicrobial resistance (AMR) in *C. jejuni* and *C. coli* reported by the EU/EEA countries. According to the 2018 EU case definition for *Campylobacter* enteritis[6], antimicrobial susceptibility testing of *Campylobacter* spp. should be performed on a representative subset of isolates. The results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States as specified in the EU protocol for harmonised monitoring of antimicrobial resistance in human *Salmonella* and *Campylobacter* isolates[7]. The panel of antimicrobial agents to test is also defined in the EU protocol.

AMR data are collected as part of the case-based datasets for campylobacteriosis and, since the 2013 data collection, as part of the molecular surveillance of *Campylobacter* isolates. The case-based dataset contains data from clinical treatment of patients and the results are therefore by default interpreted using clinical breakpoints for assessing treatment options. Countries apply clinical breakpoints from the European Committee on Antimicrobial Susceptibility Testing (EUCAST) but some also use national breakpoints or breakpoints from the French Society of Microbiology (CA-SFM) when no EUCAST criteria are available. The isolate-based data are submitted by the National Public Health Reference Laboratories (NPHRLs) who do reference testing of isolates and can report the actual results of the antimicrobial susceptibility testing (AST) as minimum inhibitory concentration (MIC) or inhibition zone diameter. Such data are interpreted both with EUCAST clinical breakpoints, where available, but also with EUCAST epidemiological cut-off values where possible, to detect acquired resistance. Since 2019, data can also be reported as phenotypes predicted from sequencing of the bacterial genome and since 2023, *Campylobacter* sequences can be reported which are analysed for both genes/mutations and predicted resistance with ResFinder at ECDC. Data from genetic typing are categorised as predicted wild type or predicted non-wild type and presented in the Atlas with the data interpreted with epidemiological cut-off values.

Data collection and analysis

Data are collected on an annual basis for the previous year. Before analysis, data are validated with nominated data providers in EU/EEA countries. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, application of other interpretive criteria/breakpoints and use of different denominators. For quantitative data reported as MIC values or zone diameters, the criteria applied to categorise the data are listed in table 1.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Criteria used to interpret quantitative data:

Antimicrobial	Clinical breakpoint applied	Epidemiological cut-off applied
Gentamicin	CA-SFM 2024	EUCAST June 2025
Erythromycin	EUCAST 2024	EUCAST June 2025
Ciprofloxacin	EUCAST 2024	EUCAST June 2025
Tetracycline	EUCAST 2024	EUCAST June 2025

[6] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions

[7] The EU protocols, including future updates, can be found at the following ECDC webpage: https://ecdc.europa.eu/en/publications- data/eu-protocol-harmonised-monitoring-antimicrobial-resistance-human-salmonella-and-0

Ciprofloxacin+erythromycin	Resistance to both agents, see criteria for respective agent	Non-wild type to both agents, see criteria for respective agent

Surveillance Atlas indicators

The Surveillance Atlas indicators for *Campylobacter* antimicrobial resistance are:

1. Non-wild type (NWT) isolates percentage;
2. Non-wild type or I+R isolates percentage;
3. Clinically resistant (R) isolates percentage
4. Total tested isolates

For the resistance indicators, the data may be displayed in a bar chart as:

- Proportion resistant isolates by age-group (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Proportion resistant isolates by gender;
- Proportion resistant isolates by geographical region, in case of travel-associated infections

Indicators are displayed as "**–**" and not calculated for when fewer than 10 isolates had been tested for the selected combination (e.g. *Campylobacter* specie, importation status and antimicrobial) and time period.

Indicators by age group and gender are not displayed if more than 50% of cases have undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period.

The Surveillance Atlas indicators were calculated from 2013 up to the end of 2024.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

Interpretation

The data shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment and under-reporting between countries.

All data provided as measured MIC or zone mm values were results of antimicrobial susceptibility testing at the NPHRLs, with the exception of Finland where the quantitative data had been collected from regional laboratories. The NPHRLs participate in external quality assessments arranged by ECDC to maintain a high data quality. The submission of isolates to the NPHRLs however vary by country – in some countries, most *Campylobacter* isolated from human infections are sent to the NPHRL while in others, isolates may be sent only when further typing is deemed necessary, in outbreak situations or is focused on specific serotypes. Data interpreted with clinical breakpoints are normally from local or regional laboratories and reported together with the information on the clinical case. In these cases, the antimicrobial susceptibility testing has primarily been performed with the purpose of treatment of the case rather than AMR monitoring. For this reason, the number of tests per antimicrobial varies.

The guidelines for clinical breakpoints have varied among countries in Europe, and in some instances even between laboratories in the same country. Clinical breakpoints may also change over time, as breakpoints are revised. By now, all European laboratories have changed to EUCAST clinical guidelines, but this has happened at different times in different countries. For information on the test method and criteria used by country, see the Materials and methods

section in the respective EFSA-ECDC AMR report for the year in question. For data submitted as quantitative values, the current breakpoints are applied also to historical data.

The completeness of the travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. For *Campylobacter* AMR data, information on travel status is lacking from many countries. For that reason, the category 'domestic or unknown' can be selected as it is anticipated that a missing value is more likely to represent no travel as travel-related infections are more likely to be notified as such by the doctor.

For 2024, information on AMR in *Campylobacter* isolates from human clinical cases was reported by 25 EU/EEA countries. No data were reported by the United Kingdom from 2020 data onwards due to its withdrawal from the EU on 30 January 2020.

Reports published by ECDC on Campylobacter AMR

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual Epidemiological Report for 2022 - Campylobacteriosis:
https://www.ecdc.europa.eu/en/publications-data/campylobacteriosis-annual-epidemiological-report-2022

EFSA and ECDC, 2026. The European Union Summary Report on Antimicrobial Resistance in zoonotic and indicator bacteria from humans, animals and food in 2023-2024:
https://www.ecdc.europa.eu/en/publications-data/european-union-summary-report-antimicrobial-resistance-zoonotic-and-indicator-10

Annex 1. Campylobacter AMR surveillance data overview, 2013-2024

Country	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Austria	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Belgium	-	-	-	-	-	-	-	-	-	-	-	-
Bulgaria	WGS	WGS	SIR	-	-	SIR	-	-	-	-	-	-
Cyprus	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	-	-
Croatia	-	WGS	-	-	-	-	-	-	-	-	-	-
Czechia	-	-	-	-	-	-	-	-	-	-	-	-
Denmark	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	-	Q
Estonia	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR
Finland	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	-	-
France	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR
Germany	Q	Q	Q	Q	-	-	-	-	-	-	-	-
Greece	Q	Q	Q	-	-	-	-	-	-	-	-	-
Hungary	SIR	SIR	SIR	SIR	-	-	-	-	-	-	-	-
Iceland	Q	Q	Q	Q	SIR	SIR	SIR	SIR	SIR	SIR	-	SIR
Ireland	WGS	WGS	WGS	WGS	-	-	SIR	SIR	-	-	-	-
Italy	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR
Latvia	WGS	WGS	-	-	-	-	-	-	-	-	-	-
Lithuania	SIR	SIR	SIR	SIR	-	SIR	SIR	SIR	SIR	SIR	SIR	SIR
Luxembourg	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Malta	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR	SIR
Netherlands	WGS	WGS	WGS	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR
Norway	Q	Q	Q	Q	Q	Q	-	Q	Q	Q	Q	Q
Poland	Q	Q	Q	SIR	SIR	SIR	SIR	SIR	-	-	-	-
Portugal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	-
Romania	WGS	Q	Q	Q	-	Q	Q	Q	Q	Q	Q	Q
Slovakia	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR
Slovenia	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR
Spain	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR	SIR
Sweden	-	-	-	WGS	WGS	-	-	-	-	-	-	-
United Kingdom	-	-	-	-	-	SIR	SIR	SIR	SIR	SIR	SIR	SIR

Q – quantitative data, MIC or zone mm; SIR – data interpreted with clinical breakpoints; WGS – resistance predicted from genotypic methods; - no data reported

Echinococcosis

Last updated: 31 August 2026

Data retrieval from EpiPulse cases: 21 August 2026

Echinococcosis is a zoonotic disease caused by the larval stage of *Echinococcus* tapeworms. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on echinococcosis reported by the EU/EEA countries. Cases should be reported according to the 2018 EU case definition for echinococcosis[8]:

Clinical criteria

Not relevant for surveillance purposes.

Diagnostic criteria

At least one of the following five:

— Histopathology or parasitology compatible with *Echinococcus multilocularis* or *granulosus* (e.g. direct visualisation of the protoscolex in cyst fluid);

— Detection of *Echinoccocus granulosus* pathognomonic macroscopic morphology of cyst(s) in surgical specimens;

— Typical organ lesions detected by imaging techniques (e.g. computerised tomography, sonography, MRI) AND confirmed by a serological test;

— *Echinococcus* spp. specific serum antibodies by high-sensitivity serological test AND confirmed by a high specificity serological test;

— Detection of *Echinococcus multilocularis* or *granulosus* nucleic acid in a clinical specimen.

Epidemiological Criteria NA

Case classification

A. Possible case: NA
B. Probable case: NA
C. Confirmed case: Any person meeting the diagnostic criteria

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(There are no differences between the 2018 and previous versions of the EU case definitions for echinococccosis.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[9]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

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[8] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.
[9] Available from: Home - Eurostat (europa.eu)

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed echinococcosis are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

a) Indicators for confirmed cases of *E. granulosus* cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Number of deaths derived from reporting of disease outcome;
4. Case fatality calculated as proportion of deaths among confirmed cases with known information on disease outcome (%);

b) Indicators for confirmed cases of *E. multilocularis* cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Number of deaths derived from reporting of disease outcome;
4. Case fatality calculated as proportion of deaths among confirmed cases with known information on disease outcome (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;
- Pathogen species.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

Data quality

EU/EEA countries reporting data on echinococcosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed echinococcosis cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness pathogen species (%).

Interpretation

The data shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment between countries.

Cases of cystic and alveolar echinococcosis are reported to ECDC as 'echinococcosis' since the EU case definition does not distinguish between the two forms of the disease. ECDC can differentiate between the two forms by analysing the reported species. The notification of echinococcosis in humans is mandatory in 25 EU/EEA countries. In three countries, the notification is voluntary (Belgium, France, and the Netherlands). Italy reports echinococcosis data from 2023 onwards. No surveillance system exists for echinococcosis in Denmark, and Liechtenstein. The surveillance systems for echinococcosis have full national coverage in all reporting countries. In Belgium, a change in the surveillance was made in 2015 and rates before this date are not displayed. For 2020 and 2021, Spain has not received data from all regions and rates are therefore not displayed for these years. All reporting countries provide case-based data except Bulgaria and the Netherlands, which report aggregated data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The completeness of some variables such as hospitalisation, outcome or travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account limitations.

Reports published by ECDC on echinococcosis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2022 – Echinococcosis:
Echinococcosis - Annual Epidemiological Report for 2022 (europa.eu)

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2025. The European Union One Health 2024 Zoonoses Report (December 2025):
https://www.ecdc.europa.eu/en/publications-data/european-union-one-health-2024-zoonoses-report

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	V	O	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2018
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	EU-2012
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	Y	Y	.	Not specified/unknown
Germany	DE-SURVNET@RKI-7.3	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-LIMS	V	Co	P	A	Y	N	N	.	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Portugal	PT-ECHINOCOCCOSIS	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Hepatitis A

Last updated: 31 August 2026

Data retrieval from EpiPulse cases: 21 August 2026

Hepatitis A is an acute inflammation of the liver caused by hepatitis A virus. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on hepatitis A reported by the EU/EEA countries. Cases should be reported according to the 2018 EU case definition for acute hepatitis A[10]:

Clinical criteria

Any person with a discrete onset of symptoms (e.g. fatigue, abdominal pain, loss of appetite, intermittent nausea and vomiting)

AND at least one of the following three:

— Fever;

— Jaundice;

— Elevated serum aminotransferase levels.

Laboratory criteria

At least one of the following three:

— Detection of hepatitis A virus nucleic acid in serum or stool;

— Hepatitis A virus specific antibody response;

— Detection of hepatitis A virus antigen in stool.

Epidemiological criteria

At least one of the following four:

— Human to human transmission;

— Exposure to a common source;

— Exposure to contaminated food/drinking water;

— Environmental exposure.

Case classification

A. Possible case: NA

B. Probable case: Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case: Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(The note is the only difference between the 2018 EU case definition and the 2012 and 2008 EU case definitions.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators

[10] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

by age group for the calculation of notification rates were obtained from Eurostat[11]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed hepatitis A cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;
- Probable country of infection.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

Data quality

EU/EEA countries reporting data on hepatitis A as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries

[11] Available from: Home - Eurostat (europa.eu)

reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed hepatitis A cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness probable country of infection (%).

Interpretation

The results shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment and under-reporting between countries.

The notification of hepatitis A is mandatory in 29 EU/EEA countries (not specified in Belgium), and the surveillance systems have full national coverage in all reporting countries. For 2020, Spain has not received data from all regions and rate is therefore not displayed for that year. In Belgium, full national coverage was established in 2015 and rates before this date are not displayed. All reporting countries provide case-based data except Bulgaria which report aggregate data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The COVID-19 pandemic significantly impacted on the hepatitis A surveillance data in 2020-2022. Factors mentioned by countries resulting in lower case numbers were e.g. less travel due to travel restrictions, fewer social interactions, people avoiding to seek medical care for mild symptoms due to risk of exposure to COVID-19 in health care facilities, limited laboratory capacity due to reallocation of resources to SARS-CoV-2, fewer restaurant visits, etc.

The completeness of some variables such as outcome or travel history varies between countries and years. Some countries are able to collect and integrate this type of information from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account limitations.

Reports published by ECDC on hepatitis A

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Hepatitis A in Western Balkans and Türkiye, 2015–2024 (18 June 2026):

https://www.ecdc.europa.eu/en/hepatitis-western-balkans-and-turkiye-2015-2024

Communicable disease threats report, 22 - 28 November 2025, week 48 (28 November 2025):

https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-22-28-november-2025-week-48

Communicable disease threats report, 15 -21 November 2025, week 47 (21 November 2025):

https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-15-21-november-2025-week-47

Communicable disease threats report, 14-20 June 2025, week 25 (19 June 2025):

https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-14-20-june-2025-week-25

Rapid Risk Assessment: Multi-country outbreak of hepatitis A in the EU/EEA (18 June 2025):

https://www.ecdc.europa.eu/en/news-events/ecdc-releases-risk-assessment-actions-needed-address-spike-hepatitis-cases

Communicable disease threats report, 24-30 May 2025, week 22:

https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-24-30-may-2025-week-22

Annual epidemiological report for 2022 – Hepatitis A:
Annual epidemiological report 2022 - Hepatitis A (europa.eu)

Severi E, Tavoschi L, Carrillo-Santisteve P, Westrell T, Gaetano Marrone G et al. Hepatitis A notifications in the EU/EEA, 2010–2019: what can we learn from case reporting to the European Surveillance System? Eurosurveillance 2023. Vol 28.
https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2023.28.19.2200575

Epidemiological update 29 September 2022: Spread of hepatitis A virus strains of genotype IB in several EU countries and the United Kingdom:
https://www.ecdc.europa.eu/en/news-events/spread-hepatitis-virus-strains-genotype-ib-several-eu-countries-and-united-kingdom

Rapid risk assessment: Hepatitis A outbreak in the EU/EEA mostly affecting men who have sex with men, 3rd update (28 June 2017):
https://ecdc.europa.eu/en/publications-data/rapid-risk-assessment-hepatitis-outbreak-eueea-mostly-affecting-men-who-have-sex

Epidemiological update 12 September 2018: Hepatitis A outbreak in the EU/EEA mostly affecting men who have sex with men:
https://ecdc.europa.eu/en/news-events/epidemiological-update-hepatitis-outbreak-eueea-mostly-affecting-men-who-have-sex-men-2

Hepatitis A virus in the EU/EEA, 1975-2014: A systematic review of seroprevalence and incidence comprising European surveillance data and national vaccination recommendations:
https://ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/hepatitis-a-virus-EU-EEA-1975-2014.pdf

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REF_FLA_FRA	.	.	.	C	.	.	.	.	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2018
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Other
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	EU-2012
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-HEPA	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Portugal	PT-HEPATITISA	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	EU-2012
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Listeriosis

Last updated: 31 August 2026

Data retrieval from EpiPulse cases: 21 August 2026

Listeriosis is an infection caused by the bacterium *Listeria monocytogenes.* For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on listeriosis reported by the EU/EEA countries. Cases should be reported according to the 2018 EU case definition for listeriosis[12]:

Clinical criteria

Any person with at least one of the following five:

— Fever

— Meningitis, meningoencephalitis, or encephalitis

— Influenza-like symptoms

— Septicaemia

— Localized infections such as arthritis, endocarditis, endophthalmitis, and abscesses

Listeriosis in pregnancy:

— Pregnancy-related consequences of *Listeria* infection defined as: miscarriage, stillbirth or premature birth during the pregnancy

— Listeriosis of newborns defined as one of the following

  — Stillbirth (fetal death after 20 weeks of gestation)

  — Premature birth (before 37 gestational weeks)

OR

At least one of the following five in the first month of life (neonatal listeriosis):

— Meningitis or meningoencephalitis

— Septicaemia

— Dyspnoea

— Granulomatosis infantiseptica

— Lesions on skin, mucosal membranes or conjunctivae

Laboratory criteria

At least one of the following two:

— Isolation of *Listeria monocytogenes* or detection of nucleic acid of *Listeria monocytogenes* from a normally sterile site

— In a pregnancy-associated case also: Isolation of *Listeria monocytogenes* or detection of nucleic acid from *Listeria monocytogenes* in a normally non-sterile site (for example, placental tissue, amniotic fluid, meconium, vaginal swab) or from a foetus, stillborn, newborn or the mother

Epidemiological criteria

At least one of the following four epidemiological links:

— Exposure to a common source

— Human to human transmission (vertical transmission)

— Exposure to contaminated food

— Animal to human transmission

Case classification

[12] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

A. Possible case: NA

B. Probable case: Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case: Any person meeting the laboratory criteria for a normal sterile site

OR

In a pregnancy-associated case (mother or newborn in the first month of life) meeting the laboratory criteria, only the mother is to be reported as a case.

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(The EU case definitions 2018 have been simplified in relation to pregnancy-associated listeriosis where now only the mother should be reported as a case. Compared to the 2008 and 2012 EU case definitions, genotypic methods are now allowed for laboratory confirmation of listeriosis and the note is also new.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data in EpiPulse Cases at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[13]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed listeriosis cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

Indicators for confirmed listeriosis 65 years of age and above are:

1. Number of reported cases;

[13] Available from: Home - Eurostat (europa.eu)

2. Notification rate per 100 000 population;
3. Number of deaths derived from reporting of disease outcome;
4. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups <1, 1-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Age-specific notification rate for confirmed cases 65 years of age and above (for age groups 65-69, 70-74, 75-79, 80-84, 85 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (<1, 1-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Age groups for confirmed cases 65 years of age and above (65-69, 70-74, 75-79, 80-84, 85 years and above);
- Gender;
- Serogroup (data from both traditional serotyping and serotyping with molecular methods).

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

Data quality

EU/EEA countries reporting data on listeriosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed listeriosis cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness serogroup (%).

Interpretation

The results shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment between countries.

The notification of listeriosis in humans is mandatory in all EU/EEA countries, except in Belgium. The surveillance systems for listeriosis have full national coverage in all reporting countries except in Belgium. The population coverage is estimated to be 80% in Belgium since 2015. Spain reported estimated population coverage 97% between 2021-2023. These proportions were used when calculating the national notification rates for these two Member States in

the respective years. No estimate of population coverage in Spain was provided prior 2021, so notification rates were not calculated. Latvia did not report listeriosis data in 2024. All countries provide case-based data except Bulgaria, which reported aggregate data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

Listeriosis infections are most commonly reported in the elderly population (>65 years old) with hospitalisation and case fatality increasing with age.

The completeness of some variables such as outcome or travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account all these limitations.

Reports published by ECDC on listeriosis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Eleventh external quality assessment scheme for Listeria monocytogenes typing in EU/EEA and EU enlargement countries, 2024 (11 May 2026):
https://www.ecdc.europa.eu/en/publications-data/listeria-monocytogenes-typing-eleventh-external-quality-assessment-scheme

Communicable disease threats report, 9 - 15 August 2025, week 33 (15 August 2025):
https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-9-15-august-2025-week-33

Annual epidemiological report for 2023 – Listeriosis (March 2025):
Listeriosis Annual Epidemiological Report 2023 (europa.eu)

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2025. The European Union One Health 2024 Zoonoses Report (December 2025):
https://www.ecdc.europa.eu/en/publications-data/european-union-one-health-2024-zoonoses-report

Tenth external quality assessment scheme for *Listeria monocytogenes* typing (March 2025):
Tenth external quality assessment scheme for Listeria monocytogenes typing (europa.eu)

Rapid Outbreak Assessment: Prolonged multi-country outbreak of *Listeria monocytogenes* ST173 linked to consumption of fish products (19 June 2024):
https://efsa.onlinelibrary.wiley.com/doi/pdf/10.2903/sp.efsa.2024.EN-8885

Rapid Outbreak Assessment: Prolonged multi-country outbreak of *Listeria monocytogenes* ST1607 linked to smoked salmon products (25 April 2024):
https://www.ecdc.europa.eu/sites/default/files/documents/ROA_2023-FWD-00003-Lm-ST1607_DK.pdf

Rapid outbreak assessment: Prolonged multi country cluster of *Listeria monocytogenes* ST155 infections (13 December 2023):
Prolonged mulit-country cluster of Listeria monocytogenes ST155 infections linked to ready-to-ead fish products (europa.eu)

European listeria typing exercise ELiTE joint report (February 2021):
https://www.ecdc.europa.eu/sites/default/files/documents/European-listeria-typing-exercise-ELiTE-joint-report.pdf

Proficiency test for *Listeria monocytogenes* whole genome assembly 2018:
http://ecdc.europa.eu/sites/portal/files/documents/Listeria-WGA-2019.pdf

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2018
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	EU-2018
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	EU-2012
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	EU-2018
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-SEPI	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Portugal	PT-LIST	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Salmonellosis and typhoid/paratyphoid fever

Last updated: 31 August 2026

Data retrieval from EpiPulse cases: 21 August 2026

Salmonellosis is an infection caused by bacteria belonging to the genus *Salmonella*. Non-typhoidal salmonellosis (*Salmonella* spp. other than *S*. Typhi and *S*. Paratyphi) usually causes gastroenteritis whereas typhoid and paratyphoid fever are systemic infections. For a more detailed description of the disease and its epidemiology please click on the *salmonellosis page* and the *typhoid/parathyphoid page*.

Data

The Surveillance Atlas of Infectious Diseases displays data on salmonellosis reported to EpiPulse Cases by the EU/EEA countries since 2007. Typhoidal salmonellosis data is no longer subject to annual data collection since 2004. Countries can on a voluntary basis, continue to report those tested for AMR in the *Salmonella* reporting like earlier as it would allow monitoring of strains with multidrug resistance or extremely-drug resistance among travellers.

Case definition of non-typhoidal salmonellosis

The Surveillance Atlas of Infectious Diseases displays data on salmonellosis reported by the EU/EEA countries. Cases should be reported according to the 2018 EU case definition for *Salmonella* enteritis[14]:

Clinical criteria

Any person with at least one of the following four:

— Diarrhoea;

— Fever;

— Abdominal pain;

— Vomiting.

Laboratory criteria

At least one of the following two:

— Isolation of *Salmonella* (other than *S*. Typhi or *S*. Paratyphi) in a clinical specimen

— Detection of nucleic acid from *Salmonella* (other than *S*. Typhi or *S*. Paratyphi) in a clinical specimen

Note: Antimicrobial susceptibility testing of *Salmonella enterica* should be performed on a representative subset of isolates

Epidemiological criteria

At least one of the following five epidemiological links:

— Human to human transmission;

— Exposure to a common source;

— Animal to human transmission;

— Exposure to contaminated food/drinking water;

— Environmental exposure.

Case classification

A. Possible case NA

B. Probable case: any person meeting the clinical criteria with an epidemiological link

[14] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

C. Confirmed case: any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

Antimicrobial resistance

The results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States as specified in the EU protocol for harmonised monitoring of antimicrobial resistance in human Salmonella and Campylobacter isolates.[15]

(Compared with the 2008 and 2012 EU case definition, the 2018 EU case definition allows genotypic tests for laboratory confirmation and includes a requirement for antimicrobial susceptibility testing and reporting of results. The note is also a new addition.)

Case definition of typhoid/paratyphoid fever (*Salmonella* Typhi/Paratyphi)

The Surveillance Atlas of Infectious Diseases displays data on salmonellosis reported by the EU/EEA countries. Cases should be reported according to the 2018 EU case definition for typhoid and paratyphoid fever[26]:

Clinical criteria

Any person with at least one of the following two:

— Onset of sustained fever

OR

— At least two of the following four:

- Headache;
- Relative bradycardia;
- Non-productive cough;
- Diarrhoea, constipation, malaise or abdominal pain.

Laboratory criteria

At least one of the following two:

— Isolation of *Salmonella* Typhi or Paratyphi from a clinical specimen

— Detection of *Salmonella* Typhi or Paratyphi nucleic acid in a clinical specimen

Epidemiological criteria

At least one of the following three epidemiological links:

— Exposure to a common source;

— Human to human transmission;

— Exposure to contaminated food/drinking water.

Case classification

A. Possible case: NA

B. Probable case: any person meeting the clinical criteria with an epidemiological link

C. Confirmed case: any person meeting the clinical and the laboratory criteria

[15] The EU protocols, including future updates, can be found at the following ECDC webpage: https://ecdc.europa.eu/en/publications- data/eu-protocol-harmonised-monitoring-antimicrobial-resistance-human-salmonella-and-0

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(Inclusion of genotypic tests for laboratory confirmation and the note are the differences between the 2018 EU case definition of typhoid and paratyphoid fevers and the 2012 and 2008 EU case definitions.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. For the calculation of notification rates, country population denominators by age group were obtained from Eurostat[16] and adjusted according to the percent coverage of the surveillance system generating reports, where this information was available. Note that the data published in the Surveillance Atlas might differ from figures in national reports and in official ECDC and EFSA reports due to different dates of reporting, inclusion of cases reflecting different case definitions and the use of different denominators.

When information for a collected variable was unknown for more than 50% of cases in a given geographical region and time period, the corresponding indicator was not calculated and is displayed as "-" in the Surveillance Atlas Table. The exceptions to this rule are the age-standardised rate and the notification rate for domestic cases, which were calculated when the completeness the age resp. travel information was at least 90%.

Surveillance systems across the EU/EEA countries are heterogeneous and an overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed non-typhoidal salmonellosis cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases (%);
6. Number of deaths derived from reporting of outcome of the disease;
7. Case-fatality calculated as proportion of deaths among cases with known information on outcome of the disease (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel associated cases among confirmed cases (%);

a) Indicators for confirmed cases of *Salmonella* Enteritidis, *Salmonella* Typhimurium (all types, including also monophasic) and typhoid and paratyphoid fever cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Proportion of travel-associated cases among all reported confirmed cases (%).

[16] Available from: Home - Eurostat (europa.eu)

b) Indicators for confirmed cases of other *Salmonella* serotype are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Number of deaths.

For all indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- gender;

In addition, the data may be displayed in the bar or pie chart as follows:

- for salmonellosis confirmed cases by:
  - most frequent serotypes;
- for *Salmonella* Enteritidis and *Salmonella* Typhimurium confirmed cases by:
  - phagetype;
  - travel-associated cases;
- for typhoid and paratyphoid fever confirmed cases by:
  - serotype;
  - probable country of infection.

Symbols used in the Surveillance Atlas:

Symbol	Comment
-	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for the related time period.

Data quality

EU/EEA countries reporting data on salmonellosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed salmonellosis cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness serotype (%).

Interpretation

The results shown in the Atlas should be interpreted with caution and taking into account data quality issues and differences between Member State surveillance systems. Particular caution is required when interpreting data on e.g. hospitalisation, outcome, importation or serotype for which completeness varies between countries and years. Even if data completeness is high for some variables, this does not reflect the level of case under-ascertainment or under-reporting which may differ between countries depending on the characteristics of their surveillance systems. Hence,

the reader should refrain from making direct comparisons between countries without considering all these limitations in the data.

Non-typhoidal salmonellosis

Notification of non-typhoidal salmonellosis is mandatory in 27 of EU-EEA countries. In three EU Member States, reporting is voluntary (Belgium, France, and the Netherlands). The surveillance systems for salmonellosis have full national coverage in all Member States except in three (Belgium, the Netherlands and Spain). The population coverage in 2022-2025 is estimated to be 85% in Belgium, 64% in the Netherlands in all reporting years, and 82%, 80% and 73% in Spain in 2024-2025, 2023 and 2021-2022, respectively. These proportions were used when calculating the national notification rates for these Member States. In Belgium, a change in the surveillance was made in 2015 and rates before this date are not displayed. No information on estimated coverage was provided by Spain prior 2021, so notification rates were not calculated. All countries report case-based data except Bulgaria which reports aggregated data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The COVID-19 pandemic significantly impacted on the surveillance data for salmonellosis in 2020-2022. Factors mentioned by countries resulting in lower case numbers were e.g. people avoiding to seek medical care for mild symptoms due to risk of exposure to COVID-19 in health care facilities, limited laboratory capacity due to reallocation of resources to SARS-CoV-2, fewer restaurant visits, increased hand washing, less travel due to travel restriction etc.

The observed differences in hospitalisation rates across the EU/EEA countries are more likely to reflect the diversity in national healthcare and surveillance systems than differences in the severity of the disease. Interestingly, the countries reporting the highest proportions of hospitalised cases (>80%) also reported the lowest notification rates of salmonellosis, which suggests that surveillance systems in those countries primarily focus on the more severe cases.

Typhoid and paratyphoid fever

As of 1 January 2024, typhoid and paratyphoid fever are under voluntary notification in EU/EEA countries. The surveillance systems have full national coverage in all EU Member States except in Belgium. The population coverage is estimated to be 85% in Belgium in 2022-2025, these proportions were used when calculating the national notification rates. No information on estimated coverage was provided by Spain prior to 2021; therefore, notification rates were not calculated. All countries report case-based data except Bulgaria which reports aggregated data for salmonellosis from which typhoid and paratyphoid cases cannot be distinguished.

The COVID-19 pandemic and the withdrawal of the United Kingdom from the EU in 2020 significantly impacted on the surveillance data for typhoid and paratyphoid fever in 2020-2021. Travel restrictions most likely had the highest impact on reducing the case numbers in the EU/EEA.

The switch from mandatory to voluntary reporting for typhoid and paratyphoid fever surveillance did not noticeably affect the surveillance data in 2024-2025. Almost all countries continued to report typhoid fever cases in a range similar to previous years.

Regarding typhoid/paratyphoid fever, we appreciate if countries could, on a voluntary basis, continue to report those tested for AMR in the *Salmonella* reporting like earlier as it would allow monitoring of strains with multidrug resistance or extremely-drug resistance among travellers.

Reports published by ECDC on salmonellosis and typhoid/paratyphoid fever

More information is available in ECDC reports. Later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data retrospectively. Therefore, the data presented in the reports might slightly differ from those presented in the Surveillance Atlas.

Communicable disease threats report, 15 - 21 August 2026, week 34 (21 August 2026):
https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-15-21-august-2026-week-34

Rapid outbreak assessment – Multi-country outbreak of Salmonella Stanley ST2045 infections linked to consumption of flavoured noodle products:
https://www.ecdc.europa.eu/sites/default/files/documents/ROA-Salmonella-Stanley.pdf

https://www.ecdc.europa.eu/en/news-events/multi-country-outbreak-salmonella-stanley-infections-linked-flavoured-noodle-productshttps://www.ecdc.europa.eu/en/news-events/multi-country-outbreak-salmonella-stanley-infections-linked-flavoured-noodle-products

Rapid outbreak assessment – Multi-country outbreak of Salmonella Bovismorbificans ST377 infections linked to the consumption of alfalfa sprouted seeds (25 June 2026):
https://www.ecdc.europa.eu/en/publications-data/rapid-outbreak-assessment-multi-country-outbreak-salmonella-bovismorbificans

Communicable disease threats report, 2-8 May 2026, week 19 (8 May 2026):
Communicable disease threats report, 2-8 May 2026, week 19

Communicable disease threats report, 18-24 April 2026, week 17 (24 April 2026):
Communicable disease threats report, 18-24 April 2026, week 17

The European Union Summary Report on Antimicrobial Resistance in zoonotic and indicator bacteria from humans, animals and food in 2023–2024 (18 February 2026)
https://www.ecdc.europa.eu/en/publications-data/european-union-summary-report-antimicrobial-resistance-zoonotic-and-indicator-10

Annual epidemiological report for 2023 – Salmonellosis:
Salmonellosis - Annual Epidemiological Report for 2023

Annual epidemiological report for 2021 – Typhoid and paratyphoid fever:
https://www.ecdc.europa.eu/sites/default/files/documents/AER-Typhoid-paratyphoid-2021.pdf

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2025. The European Union One Health 2024 Zoonoses Report (December 2025):
https://www.ecdc.europa.eu/en/publications-data/european-union-one-health-2024-zoonoses-report

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2025. The European Union Summary Report on Antimicrobial Resistance in zoonotic and indicator bacteria from humans, animals and food in 2022-2023 (March 2025):
https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2024.8583

Fourteenth external quality assessment scheme for *Salmonella* typing (June 2024):
https://www.ecdc.europa.eu/en/publications-data/fourteenth-external-quality-assessment-salmonella-typing-eueea-and-eu-enlargement

Fourth external quality assessment on antimicrobial susceptibility testing and detection of ESBL-, acquired AmpC-, and carbapenemase-production of *Salmonella*, 2018 (May 2021):
https://www.ecdc.europa.eu/en/publications-data/fourth-external-quality-assessment-antimicrobial-susceptibility-testing-salmonella

Rapid Outbreak Assessment: Three clusters of *Salmonella* Enteritidis ST11 infections linked to chicken meat and chicken products
https://www.ecdc.europa.eu/en/publications-data/three-clusters-salmonella-enteritidis-st11-infections-linked-chicken-meat-and

Rapid Outbreak Assessment: Multi-country outbreak of *Salmonella* Mbandaka ST413 linked to consumption of chicken meat products in the EU/EEA and the UK – first update.
https://www.ecdc.europa.eu/en/publications-data/rapid-outbreak-assessment-multi-country-outbreak-salmonella-mbandaka-st413-linked

Rapid Outbreak Assessment: Prolonged multi-country outbreak of *Salmonella* Strathcona ST2559 linked to consumption of tomatoes in the EU/EEA and the UK
https://www.ecdc.europa.eu/en/publications-data/rapid-outbreak-assessment-prolonged-multi-country-outbreak-salmonella-strathcona

Rapid Outbreak Assessment: Prolonged cross-border multi-serovar *Salmonella* outbreak linked to consumption of sprouted seeds

https://www.ecdc.europa.eu/sites/default/files/documents/salmonella-outbreak-sprouted-seeds-outbreak-assessment-march-2025_0.pdf

Prolonged multi-country outbreak of Salmonella Strathcona ST2559 linked to consumption of tomatoes in the European Union/European Economic Area – first update
https://www.ecdc.europa.eu/en/publications-data/prolonged-multi-country-outbreak-salmonella-strathcona-st2559-linked-consumption

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	EU-2018
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	EU-2012
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-SEPI	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	N	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-LSI	V	Se	P	C	Y	N	N	N	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Portugal	PT-SALMONELLOSIS	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Antimicrobial resistance in *Salmonella* spp.

Last updated: 16 April 2026

Data retrieval from EpiPulse Cases: 5 December 2025

Salmonellosis is an infection caused by *Salmonella* bacteria. Non-typhoidal salmonellosis (*Salmonella* spp. other than *S*. Typhi and *S*. Paratyphi) usually causes gastroenteritis whereas typhoid and paratyphoid fever are systemic infections. Typhoid and paratyphoid fevers are routinely treated with antimicrobials while for infections with non-typhoidal *Salmonella*, antimicrobial treatment is only required in case of severe illness. For a more detailed description of the disease and its epidemiology please click on the *salmonellosis page* and the *typhoid/parathyphoid page*.

Data

The Surveillance Atlas of Infectious Diseases displays data on antimicrobial resistance (AMR) in *Salmonella* spp. reported by the EU/EEA countries. According to the 2018 EU case definition for *Salmonella* enteritis[17], antimicrobial susceptibility testing of *Salmonella* spp. should be performed on a representative subset of isolates. The results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States as specified in the EU protocol for harmonised monitoring of antimicrobial resistance in human *Salmonella* and *Campylobacter* isolates[18]. The panel of antimicrobial agents to test is also defined in the EU protocol.

AMR data are collected as part of the case-based datasets for salmonellosis and, since the 2013 data collection, as part of the molecular surveillance of *Salmonella* isolates. The case-based dataset contains data from clinical treatment of patients and the results are therefore by default interpreted using clinical breakpoints for assessing treatment options. Most countries apply clinical breakpoints from the European Committee on Antimicrobial Susceptibility Testing (EUCAST) but some also use national breakpoints or breakpoints from the Clinical and Laboratory Standards Institute (CLSI) when no EUCAST criteria are available. The isolate-based data are submitted by the National Public Health Reference Laboratories (NPHRLs) who do reference testing of isolates and can report the actual results of the antimicrobial susceptibility testing (AST) as minimum inhibitory concentration (MIC) or inhibition zone diameter. Such data are interpreted both with EUCAST clinical breakpoints, where available, but also with EUCAST epidemiological cut-off values where possible, to detect acquired resistance. Since 2019, data can also be reported as phenotypes predicted from sequencing of the bacterial genome and since 2023, *Salmonella* sequences can be reported which are analysed for both genes/mutations and predicted resistance with ResFinder at ECDC. Data from genetic typing are categorised as predicted wild type or predicted non-wild type and presented in the Atlas with the data interpreted with epidemiological cut-off values.

Data collection and analysis

Data are collected on an annual basis for the previous year. Before analysis, data are validated with nominated data providers in EU/EEA countries. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, application of other interpretive criteria/breakpoints and use of different denominators. For quantitative data reported as MIC values or zone diameters, the criteria applied to categorise the data are listed in table 1.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Criteria used to interpret quantitative data:

Antimicrobial	Clinical breakpoint applied	Epidemiological cut-off applied
Ampicillin	EUCAST 2024	EUCAST July 2025

[17] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions

[18] The EU protocols, including future updates, can be found at the following ECDC webpage: https://ecdc.europa.eu/en/publications- data/eu-protocol-harmonised-monitoring-antimicrobial-resistance-human-salmonella-and-0

Azithromycin	NA	EUCAST July 2025
Cefotaxime	EUCAST 2024	EUCAST July 2025
Ceftazidime	EUCAST 2024	EUCAST July 2025
Chloramphenicol	EUCAST 2022	EUCAST July 2025
Ciprofloxacin/pefloxacin	EUCAST 2024	Previous EUCAST ECOFF applied, according to Commission Implementing Decision (EU) 2020/1729
Colistin[1]	EUCAST 2024	NA
(Fluoro)quinolones	Resistance to either ciprofloxacin, pefloxacin or nalidixic acid	Non-wild type to either ciprofloxacin, pefloxacin or nalidixic acid
Gentamicin	EUCAST 2024[19]	EUCAST July 2025
Meropenem	EUCAST 2024	Previous EUCAST ECOFF applied, according to Commission Implementing Decision (EU) 2020/1729
Nalidixic acid	NA	EUCAST July 2025
Sulfamethoxazole	NA	CLSI M100-S34 clinical breakpoint for Enterobacterales
Tetracycline	NA	EUCAST July 2025
Tigecycline	NA	EUCAST ECOFF removed. ECOFF defined by EFSA for reporting 2024 data[2]
Trimethoprim	EUCAST 2024	EUCAST July 2025
Trimethoprim-sulfa	EUCAST 2024	EUCAST July 2025 for disk diffusion, old EUCAST ECOFF for MIC
Ciprofloxacin+cefotaxime	Resistance to both agents, see criteria for respective agent	Non-wild type to both agents, see criteria for respective agent

NA – not applicable; [1] colistin only applicable for dilution method; [2] EFSA, 2025. Manual for reporting 2024 antimicrobial resistance data under Directive 2003/99/EC and Commission Implementing Decision (EU) 2020/1729 - - 2025 - EFSA Supporting Publications - Wiley Online Library.

Surveillance Atlas indicators

The Surveillance Atlas indicators for *Salmonella* antimicrobial resistance are:

5. Non-wild type (NWT) isolates percentage;
6. Non-wild type or I+R isolates percentage;
7. Clinically resistant (R) isolates percentage
8. Total tested isolates

For the resistance indicators, the data may be displayed in a bar chart as:

- Proportion resistant isolates by age-group (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Proportion resistant isolates by gender;

[19] EUCAST clinical breakpoints for *Enterobacterales* applied for monitoring purposes. Note however that according to a EUCAST expert rule, all *Salmonella* isolates should be reported as resistant to aminoglycosides since aminoglycosides appear to be ineffective in the treatment of invasive *Salmonella* infections

- Proportion resistant isolates by geographical region, in case of travel-associated infections

Indicators are displayed as "**–**" and not calculated for when fewer than 10 isolates had been tested for the selected combination (e.g. *Salmonella* serotype, importation status and antimicrobial) and time period.

Indicators by age group and gender are not displayed if more than 50% of cases have undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period.

The Surveillance Atlas indicators were calculated from 2013 up to the end of 2024.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

Interpretation

The data shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment and under-reporting between countries.

All data provided as measured MIC or zone mm values were results of antimicrobial susceptibility testing at the NPHRLs, with the exception of Italy for *Salmonella* where some regional laboratories also contributed. The NPHRLs participate in external quality assessments arranged by ECDC to maintain a high data quality. The submission of isolates to the NPHRLs however vary by country – in some countries, all *Salmonella* isolated from human infections are sent to the NPHRL while in others, isolates may be sent only when further typing is deemed necessary, in outbreak situations or is focused on specific serotypes. Data interpreted with clinical breakpoints are normally from local or regional laboratories and reported together with the information on the clinical case. In these cases, the antimicrobial susceptibility testing has primarily been performed with the purpose of treatment of the case rather than AMR monitoring. For this reason, the number of tests per antimicrobial varies.

The guidelines for clinical breakpoints vary among countries in Europe, and in some instances even between laboratories in the same country. By now, most European laboratories have changed from CLSI to EUCAST clinical guidelines. As a result, the interpretation of results may have changed over time. In addition, clinical breakpoints may change over time, as breakpoints may be revised. This is particularly the case for ciprofloxacin where the EUCAST clinical breakpoint for *Salmonella* was significantly lowered in 2014. As countries implemented this change at different times, a combined resistance to fluoroquinolones and quinolones is also presented to circumvent this problem. For data submitted as quantitative values, the current breakpoints are applied also to historical data.

In *Salmonella*, clonal spread is occurring and certain resistance patterns are commonly associated with specific *Salmonella* serotypes, e.g. resistance to ampicillin, streptomycin, sulfonamides and tetracycline (ASSuT) in monophasic *S.* Typhimurium DT193 and highly-ciprofloxacin resistant and multidrug-resistant *S.* Kentucky ST198. As the serovar distribution within *Salmonella* spp. varies by country depending on their frequency among human cases and/or specific sampling strategies for further typing and susceptibility testing at the NPHRLs, comparisons between countries should be avoided at the level of *Salmonella* spp.

The completeness of the travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. For *Salmonella* AMR data, information on travel status is lacking from many countries. For that reason, the category 'domestic or unknown' can be selected as it is anticipated that a missing value is more likely to represent no travel as travel-related infections are more likely to be notified as such by the doctor.

For 2024, information on AMR in *Salmonella* isolates from human clinical cases was reported by 29 EU/EEA countries. No data from 2020 onwards were reported by the United Kingdom due to its withdrawal from the EU on 30 January 2020.

Reports published by ECDC on Salmonella AMR

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

EFSA and ECDC, 2025. The European Union Summary Report on Antimicrobial Resistance in zoonotic and indicator bacteria from humans, animals and food in 2023-2024:
https://www.ecdc.europa.eu/en/publications-data/european-union-summary-report-antimicrobial-resistance-zoonotic-and-indicator-10

Salmonellosis - Annual Epidemiological Report for 2023:
https://www.ecdc.europa.eu/en/publications-data/salmonellosis-annual-epidemiological-report-2023

Annex 1. *Salmonella* AMR surveillance data overview, 2013-2024

Country	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Austria	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Belgium	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR	SIR
Bulgaria	WGS	WGS	SIR	Q	-	-	-	-	-	-	-	-
Croatia	Q	SIR	Q	-	-	-	-	-	-	-	-	-
Cyprus	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	-	-
Czech Republic	Q	Q	Q	-	-	-	-	-	-	-	-	-
Denmark	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Estonia	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR
Finland	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
France	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR	SIR
Germany	Q	Q	Q	Q	-	SIR*	SIR*	SIR*	SIR*	SIR*	SIR*	SIR
Greece	Q	Q	Q	Q	-	Q	-	Q	Q	Q	Q	SIR
Hungary	SIR	SIR	SIR	SIR	SIR	-	SIR	SIR	SIR	SIR	SIR	SIR
Iceland	Q	Q	Q	Q	SIR	SIR	SIR	SIR	SIR	SIR	-	SIR
Ireland	WGS	WGS	WGS	-	WGS	WGS	Q	Q	Q	Q	Q	Q
Italy	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR
Latvia	WGS	WGS	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR
Lithuania	SIR	SIR	SIR	SIR	-	SIR	SIR	SIR	SIR	SIR	SIR	SIR
Luxembourg	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Malta	Q	Q	Q	Q	Q	Q*	SIR*	SIR*	SIR*	SIR*	SIR*	SIR
Netherlands	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR
Norway	Q	Q	Q	Q	Q	Q	-	Q	Q	Q	Q	Q
Poland	Q	Q	Q	Q	-	SIR*	SIR*	SIR*	-	-	-	-
Portugal	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	-
Romania	WGS	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Slovakia	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR	SIR
Slovenia	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR	SIR	SIR
Spain	Q	Q	Q	Q	Q	Q	Q	Q	Q	SIR	SIR	SIR
Sweden	WGS	WGS	WGS	WGS	WGS	WGS	-	-	-	-	-	-
United Kingdom	-	-	-	-	-	SIR	SIR	SIR	SIR	SIR	SIR	SIR

Q – quantitative data, MIC or zone mm; SIR – data interpreted with clinical breakpoints; WGS – acquired resistance predicted from genotypic methods; - no data reported; * *Enterobacterales* breakpoints used for ciprofloxacin instead of *Salmonella* breakpoints

Shigellosis

Last updated: 10 October 2025

Data retrieval from EpiPulse cases: 21 August 2026

Shigellosis is an acute bacterial infection caused by bacteria of the genus *Shigella.* For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on shigellosis reported by the EU/EEA countries. Cases are to be reported according to the 2018 EU case definition for shigellosis[20]:

Clinical criteria

Any person with at least one of the following four:

— Diarrhoea;

— Fever;

— Vomiting;

— Abdominal pain;

Laboratory criteria

For a confirmed case:

— Isolation of *Shigella* spp. from a clinical specimen

For a probable case:

— Detection of Shigella spp. nucleic acid in a clinical specimen

Note: Antimicrobial susceptibility testing of *Shigella* should be performed, if possible

Epidemiological criteria

At least one of the following five epidemiological links:

— Human to human transmission;

— Exposure to a common source;

— Anima to human transmission;

— Exposure to contaminated food/drinking water;

— Environmental exposure.

Case classification

A. Possible case NA

B. Probable case: Any person meeting the clinical criteria with an epidemiological link
OR
Any person meeting the clinical criteria and laboratory criteria for a probable case

C. Confirmed case: Any person meeting the clinical and the laboratory criteria for a confirmed case

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases

Antimicrobial resistance

The results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States.

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[20] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

(Compared with the 2008 and 2012 EU case definition, the 2018 EU case definition allows genotypic tests for laboratory confirmation of a probable case and includes a recommendation for antimicrobial susceptibility testing and reporting to ECDC. The note is also a new addition.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[21]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed cases of shigellosis are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;
- Pathogen species;
- Probable country of infection.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

[21] Available from: Home - Eurostat (europa.eu)

Data quality

The Surveillance Atlas indicators were calculated up to the end of 2022. EU/EEA countries reporting data on shigellosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed shigellosis cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness pathogen species (%);
- Completeness probable country of infection (%);

Interpretation

The results shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment between countries.

The notification of shigellosis is mandatory in 28 EU/EEA countries. Two Member States have voluntary notification (Belgium, and France). Cyprus and Latvia did not report shigellosis data in 2024. The surveillance systems for shigellosis have full national coverage in all reporting countries except in France. In France, the coverage of the surveillance system is estimated to 44% of the population, and this proportion was used when calculating the national notification rate. In Belgium and in Italy, full national coverage was established in 2015 and 2023, respectively and rates before these years were not displayed. For 2020, Spain has not received data from all regions and rate is therefore not calculated. All countries provide case-based data except Bulgaria which report aggregate data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The COVID-19 pandemic and the withdrawal of the United Kingdom from the EU in 2020 significantly impacted on the surveillance data for shigellosis in 2020-2021. Factors mentioned by countries resulting in lower case numbers were e.g. less travel due to travel restriction, fewer social interactions, people avoiding seeking medical care for mild symptoms due to risk of exposure to COVID-19 in health care facilities, limited capacity for diagnosis of mild diseases in health care, etc.

The completeness of some variables such as outcome or travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account limitations.

Reports published by ECDC on shigellosis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Epidemiological update: Spread of multidrug-resistant and extensively-drug resistant Shigella in Europe (20 May 2026):
https://www.ecdc.europa.eu/en/news-events/epidemiological-update-spread-multidrug-resistant-and-extensively-drug-resistant

Epidemiological update: Shigellosis and other gastrointestinal infections in travellers returning from Cabo Verde:
https://www.ecdc.europa.eu/en/news-events/epidemiological-update-shigellosis-and-other-gastrointestinal-infections-travellers

Communicable disease threats report, 29 November - 5 December 2025, week 49 (5 December 2025):

https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-29-november-5-december-2025-week-49

The European Union summary report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2022–2023 (5 March 2025):
https://www.ecdc.europa.eu/en/publications-data/european-union-summary-report-antimicrobial-resistance-zoonotic-and-indicator-9

Communicable disease threats report, 1 - 7 February 2025, week 6 (7 February 2025):
https://www.ecdc.europa.eu/en/publications-data/communicable-disease-threats-report-1-7-february-2025-week-6

Annual epidemiological report for 2022– Shigellosis:
Shigellosis - Annual epidemiological report 2022 (europa.eu)

Epidemiological update 18 July 2023: Spread of multidrug-resistant Shigella in EU/EEA among gay, bisexual and other men who have sex with men:
Spread of multidrug-resistant Shigella in EU/EEA among gay, bisexual and other men who have sex with men (europa.eu)

Rapid risk assessment: Outbreak of *Shigella sonnei* in the EU/EEA, the United Kingdom, and the United States among travellers returning from Cabo Verde (17 February 2023):
https://www.ecdc.europa.eu/sites/default/files/documents/shigella-sonnei-risk-assessment-february-2023.pdf

Rapid risk assessment: Increase in extensively-drug resistant Shigella sonnei infections in men who have sex with men in the EU/EEA and the UK (23 February 2022):
https://www.ecdc.europa.eu/en/publications-data/rapid-risk-assessment-increase-extensively-drug-resistant-shigella-sonnei

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2018
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Other
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	EU-2012
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-SEPI	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	N	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Portugal	PT-SHIGELLOSIS	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Antimicrobial resistance in *Shigella spp.*

Last updated: 19 December 2025

Data retrieval from EpiPulse Cases: 12 December 2025

Shigellosis is a gastrointestinal infection caused by one of four species of *Shigella* bacteria: *Shigella sonnei*, *S. flexneri*, *S. boydii* and *S. dysenteriae*. Rehydration therapy is given to people who are ill with shigellosis to stop them from becoming dehydrated. Antibiotics are used to treat severe illness and will shorten the duration of illness and reduce the risk of spread to other people. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on antimicrobial resistance (AMR) in *Shigella* spp. reported by the EU/EEA countries. According to the 2018 EU case definition for shigellosis[22], antimicrobial susceptibility testing of *Shigella* should be performed, if possible and the results of antimicrobial susceptibility tests must be reported according to the methods and criteria agreed between ECDC and Member States.

AMR data for *Shigella* are collected as part of the case-based datasets for shigellosis since the 2017 data collection. The case-based dataset contains data from clinical treatment of patients and the results are therefore by default interpreted using clinical breakpoints for assessing treatment options.

Data collection and analysis

Data are collected on an annual basis for the previous year. Before analysis, data are validated with nominated data providers in EU/EEA countries. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting or use of different denominators.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Antibiotics reported for Shigella AMR:

Antimicrobial	Type of breakpoints
Ampicillin	Clinical breakpoints
Ciprofloxacin	Clinical breakpoints
Cefotaxime	Clinical breakpoints
Ceftazidime	Clinical breakpoints
Trimethoprim-sulfa	Clinical breakpoints
Azithromycin	Epidemiological cut-off value (clinical breakpoints not available)

Surveillance Atlas indicators

The Surveillance Atlas indicators for *Shigella* antimicrobial resistance are:

9. Non-wild type (NWT) isolates percentage;
10. Non-wild type or I+R isolates percentage;
11. Clinically resistant (R) isolates percentage
12. Total tested isolates

[22] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions

For the resistance indicators, the data may be displayed in a bar chart as:

- Proportion resistant isolates by age-group (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Proportion resistant isolates by gender;
- Proportion resistant isolates by geographical region, in case of travel-associated infections

Indicators are displayed as "**–**" and not calculated for when fewer than 10 isolates had been tested for the selected combination (e.g. *Shigella* specie, importation status and antimicrobial) and time period.

Indicators by age group and gender are not displayed if more than 50% of cases have undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period.

The Surveillance Atlas indicators are calculated from 2017 up to the end of 2024.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

Interpretation

The data shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment and under-reporting between countries.

The shigella AMR data is normally from local or regional laboratories and reported together with the information on the clinical case. Since the antimicrobial susceptibility testing has primarily been performed with the purpose of treatment of the case rather than AMR monitoring, the number of tests per antimicrobial can vary according to local practices.

The guidelines for clinical breakpoints applied may vary among countries in Europe, and possibly also between laboratories in the same country. Clinical breakpoints from one organisation may also change over time, as breakpoints may be revised.

The completeness of the travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. For that reason, the category 'domestic or unknown' can be selected as it is anticipated that a missing value is more likely to represent no travel as travel-related infections are more likely to be notified as such by the doctor.

Reports published by ECDC on Shigella AMR

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2022 – Shigellosis:
https://www.ecdc.europa.eu/en/publications-data/shigellosis-annual-epidemiological-report-2022

Epidemiological update18 Jul 2023: Spread of multidrug-resistant *Shigella* in EU/EEA among gay, bisexual and other men who have sex with men:
https://www.ecdc.europa.eu/en/news-events/spread-multidrug-resistant-shigella-eueea-among-gay-bisexual-and-other-men-who-have-sex

Rapid risk assessment: Increase in extensively-drug resistant *Shigella sonnei* infections in men who have sex with men in the EU/EEA and the UK (23 February 2022):
https://www.ecdc.europa.eu/en/publications-data/rapid-risk-assessment-increase-extensively-drug-resistant-shigella-sonnei

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	EU-2018
Cyprus	CY-LABNET	V	Se	A	C	Y	N	N	N	Not specified/unknown
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Other
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Other
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Italy	IT-ENTERNET	V	Se	P	C	Y	N	N	N	Other
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	N	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	EU-2018
Portugal	PT-SHIGELLOSIS	Cp	Co	P	C	Y	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008

STEC/VTEC infection

Last updated: 31 August 2026

Data retrieval from EpiPulse cases: 21 August 2026

STEC/VTEC infection is caused by bacteria from a group of pathogenic *Escherichia coli* capable of producing Shiga toxins or verocytotoxins. Some STEC/VTEC strains have been linked with a potentially fatal haemolytic-uraemic syndrome (HUS), affecting renal function and requiring hospital care. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on human infection with STEC/VTEC reported to EpiPulse Cases by EU/EEA countries since 2007. Cases are to be reported according to the 2018 EU case definition for Shiga toxin/verocytotoxin-producing *E. coli* infection (STEC/VTEC), including haemolytic-uraemic syndrome (HUS)[23]:

Clinical criteria

STEC/VTEC diarrhoea

Any person with at least one of the following two:

— Diarrhoea;

— Abdominal pain.

HUS

Any person with acute renal failure and at least one of the following two:

— Microangiopatic haemolytic anaemia;

— Thrombocytopenia.

Laboratory criteria

At least one of the following four:

— Isolation/cultivation of *Escherichia coli* that produces Shiga toxin/verocytotoxin or harbours stx1/vtx1 or stx2/vtx2 gene(s)

— Isolation of non-sorbitol-fermenting (NSF) *Escherichia coli* O157 (without testing for the toxin or toxin-producing genes)

— Direct detection of stx1/vtx1 or stx2/vtx2 gene(s) nucleic acid

— Direct detection of free Shiga toxin/verocytotoxin in faeces

Only for HUS the following can be used as a laboratory criterion to confirm STEC/VTEC:

— *Escherichia coli* serogroup-specific (LPS) antibody response

Epidemiological criteria

At least one of the following five epidemiological links:

— Human to human transmission;

— Exposure to a common source;

— Animal to human transmission;

— Exposure to contaminated food/drinking water;

— Environmental exposure.

Case classification:

A. Possible case of STEC-associated HUS: Any person meeting the clinical criteria for HUS

B. Probable case of STEC/VTEC: Any person meeting the clinical criteria and with an epidemiological link

C. Confirmed case of STEC/VTEC: Any person meeting the clinical and the laboratory criteria

[23] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases

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(The note is the only difference between the 2018 EU case definition and the 2012 EU case definition.)

Data collection and analysis

Data for STEC/VTEC infections are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in each EU/EEA country. For the calculation of notification rates, country population denominators by age group were obtained from Eurostat[24]. Note that the data published in the Surveillance Atlas might differ from figures in national reports and in official reports published by ECDC and EFSA due to different times of data extraction, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous. An overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed cases of STEC/VTEC infection are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases (%);
6. Number of deaths derived from the reported outcome of the disease.
7. Case fatality calculated as proportion of deaths among cases with known information on outcome of the disease (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel associated cases among confirmed cases (%).

a) Indicators for HUS cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Number of deaths.
4. Case fatality (%);

b) Indicators for cases of a selected serogroup/antigen O are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Number of reported HUS cases;
4. Number of deaths;

For notification rate indicators, the data may be displayed in a bar chart as:

[24] Available from: Home - Eurostat (europa.eu)

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;

In addition, the data may be displayed in the bar or pie chart as follows:

- for confirmed cases by:
  - O-group;
  - HUS;
  - Vtx1, vtx2, eae presence;

- for HUS cases by:
  - O-group;
  - Vtx1, vtx2, eae presence.

Symbols used in the Surveillance Atlas Table:

Symbol	Comment
-	Indicator is not calculated for the related geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

Data quality

EU/EEA countries reporting data on STEC/VTEC infections as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of the reported data for confirmed STEC/VTEC infections cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness Antigen O (%);
- Completeness HUS (%);
- Completeness vtx1 + vtx2 + eae (%);
- Completeness aggR + aaiC (%).

Interpretation

The results shown in the Surveillance Atlas should be interpreted carefully. Surveillance systems used for reporting data to ECDC are heterogeneous; some are based on clinical syndromes such as bloody diarrhoea or HUS, some are based on laboratory results only. Heterogeneity also exists in the amount of samples tested and isolates typed.

The notification of STEC/VTEC infections is mandatory in 28 EU/EEA countries. In France notification is based on a voluntary system and Belgium did not specify their system. The surveillance systems for STEC/VTEC infections have

full national coverage in all reporting countries except France. The STEC/VTEC surveillance in France is centred on paediatric haemolytic uraemic syndrome (HUS) surveillance (coverage estimated at 85% from 2016-2017), Therefore, no notification rates is calculated for France. The coverage of the surveillance system is estimated to be 97% in Spain in 2021-2023, so that proportion was used when calculating the national notification rate. No estimate of population coverage in Spain was provided prior 2020, so notification rates were not calculated. In Belgium, full national coverage was established in 2015 and rates before this date are not displayed. All countries provide case-based data.

STEC/VTEC infections had a dominant peak in the summer of 2011, which was attributed to a large enteroaggregative STEC/VTEC O104:H4 outbreak associated with the consumption of contaminated raw sprouted seeds affecting more than 3 800 persons in Germany and linked cases in an additional 15 countries. In the years following the outbreak, the EU/EEA notification rate was higher than before the outbreak. This is likely to result from increased awareness and a higher number of laboratories with a capacity to test for the presence of serogroups other than O157. Increased use of PCR in primary diagnostics has also resulted in an increase in the case numbers in many countries in recent years.

The COVID-19 pandemic significantly impacted on the surveillance data for STEC/VTEC infections in 2020-2021. Factors mentioned by countries resulting in lower case numbers were e.g. people avoiding to seek medical care for mild symptoms due to risk of exposure to COVID-19 in health care facilities, limited laboratory capacity due to reallocation of resources to SARS-CoV-2, fewer restaurant visits, increased hand washing, less travel due to travel restriction etc.

The completeness of some variables such as e.g. hospitalisation, outcome, importation, serogroup or virulence genes vary between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account limitations.

Reports published by ECDC on STEC/VTEC infection

More information on the disease epidemiology is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data retrospectively. Therefore, the data presented in the reports might slightly differ from those presented in the Surveillance Atlas.

Results of the survey of carbapenem- and/or colistinresistant Enterobacterales, 2019 (13 May 2026):
https://www.ecdc.europa.eu/en/publications-data/results-survey-carbapenem-andor-colistinresistant-enterobacterales-2019

The European Union Summary Report on Antimicrobial Resistance in zoonotic and indicator bacteria from humans, animals and food in 2023–2024 (18 February 2026):
https://www.ecdc.europa.eu/en/publications-data/european-union-summary-report-antimicrobial-resistance-zoonotic-and-indicator-10

Annual epidemiological report for 2023 – Shiga-toxin-producing *Escherichia coli* (STEC) infection:
STEC infection Annual Epidemiological Report 2023 (europa.eu)

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2025. The European Union One Health 2024 Zoonoses Report (December 2025):
https://www.ecdc.europa.eu/en/publications-data/european-union-one-health-2024-zoonoses-report

Thirteenth external quality assessment scheme for typing of Shiga toxin-producing *Escherichia coli*: (July 2025):
https://www.ecdc.europa.eu/en/publications-data/thirteenth-external-quality-assessment-scheme-typing-shiga-toxin-producing

Rapid risk assessment: Increase in OXA-244 -producing *Escherichia coli* in the European Union/European Economic Area and the UK since 2013, first update (20 July 2021):
OXA-244 producing E. coli in the EU EEA and the UK since 2013 - first update (europa.eu)

Increase in OXA-244-producing *Escherichia coli* in the European Union/European Economic Area and the UK since 2013 (18 February 2020):
Increase in OXA-244-producing Escherichia coli in the European Union/European Economic Area and the UK since 2013 (europa.eu)

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REF_FLA_FRA	.	.	.	C	.	.	.	.	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Czechia	CZ-ISIN	Cp	Co	A	C	Y	N	N	N	EU-2018
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	EU-2018
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	EU-2012
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Other
France	FR-RENASHU	V	Co	P	C	Y	N	N	N	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-VTEC	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Italy	IT-NRL E.coli	O	Se	P	C	Y	N	N	N	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-SEPI	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-ENTEROHAEMORHAGIC_ECOLI	Cp	Co	P	C	Y	Y	N	N	Other
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Portugal	PT-VTEC	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-NRL	V	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Congenital toxoplasmosis

Last updated: 31 August 2026

Data retrieval from EpiPulse cases: 21 August 2026

Congenital toxoplasmosis is an infection caused by the parasite *Toxoplasma gondii* and transmitted by acutely infected pregnant women through placenta to their unborn fetus. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on congenital toxoplasmosis reported by the EU/EEA countries. Cases are to be reported according to the 2018 EU case definition for congenital toxoplasmosis[25]:

Clinical criteria

Not relevant for surveillance purposes.

Laboratory criteria

At least one of the following four:

— Demonstration of *Toxoplasma gondii* in body tissues or fluids;

— Detection of *Toxoplasma gondii* nucleic acid in a clinical specimen;

— *Toxoplasma gondii* specific antibody response (IgM, IgG, IgA) in a new-born;

— Persistently stable IgG *Toxoplasma gondii* titres in an infant (< 12 months of age).

Epidemiological Criteria NA

Case classification

A. Possible case NA
B. Probable case NA
C. Confirmed case: Any infant meeting the laboratory criteria

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(There are no differences between the 2018 EU case definition and those of 2008 and 2012.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[26]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous. Overviews of surveillance systems and of the screening policies for pregnant women are displayed in Annexes 1&2.

[25] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

[26] Available from: Home - Eurostat (europa.eu)

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed congenital toxoplasmosis are:

1. Number of reported cases;
2. Notification rate per 100 000 live birth;
3. Number of deaths derived from reporting of disease outcome;
4. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Gender.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

Data quality

EU/EEA countries reporting data on congenital toxoplasmosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed congenital toxoplasmosis cases are:

- Completeness gender (%);
- Completeness disease outcome (%);

Interpretation

The data shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment between countries.

The notification of **toxoplasmosis** is mandatory in 20 EU/EEA countries. Austria, Belgium, Denmark, Greece, Italy, Liechtenstein, the Netherlands, Norway and Sweden do not have surveillance systems for toxoplasmosis (Annex 1). The surveillance systems for toxoplasmosis have full national coverage in all reporting countries. In Spain, full national coverage was established in 2023 and rates before this date are not displayed.

Five countries (Austria, Belgium, France, Slovakia and Slovenia) have active surveillance and Greece has passive surveillance of **congenital toxoplasmosis** cases with compulsory screening of pregnant women (Annex 2). Austria and Belgium however do not report to EpiPulse Cases. Four countries have voluntary screening while another eight has no screening policies and/or surveillance of congenital toxoplasmosis. France regularly reports the highest number of cases in the EU, most likely due to its sensitive surveillance system which includes screening of pregnant women, follow-up of those that are negative to detect infection during pregnancy and laboratory confirmation of any congenital toxoplasmosis cases detected during this process, including asymptomatic cases. The French data are reported to EpiPulse Cases with one year delay compared to other countries.

The completeness of some variables such as outcome varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account limitations.

Reports published by ECDC on congenital toxoplasmosis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2021 – Congenital toxoplasmosis:
https://www.ecdc.europa.eu/sites/default/files/documents/congenital-toxoplasmosis-annual-epidemiological-report-2021.pdf

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2024. The European Union One Health 2023 Zoonoses Report (December 2024):
The-European-Union-One-Health-2023-Zoonoses-report.PDF

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2018
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	EU-2012
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Portugal	PT-TOXO	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018

Annex 2. Screening policies for pregnant women, overview

Country	No screening	Compulsory screening	Voluntary screening	Report to EpiPulse Cases	Comments
Austria		x		No	Serological screening starting in first trimester since 1974. Monthly follow-up during pregnancy of seronegative women.
Belgium		x		No	Serological screening starting in first trimester. No consensus on follow-up during pregnancy of seronegative women.
Bulgaria			x	Yes	
Czechia			x	Yes	Serological screening is not mandatory but is recommended as part of prenatal screening at gynaecological outpatient wards. Screening is not covered by statutory health insurance.
Denmark	x			No	Surveillance and screening active from 1999–2007.
Estonia	x			Yes	
France		x		Yes	Serological screening starting in first trimester. Monthly screening during pregnancy of seronegative women.
Germany			x	Yes	Screening not covered by statutory health insurance.
Greece		x		Yes	Congenital toxoplasmosis is under surveillance through passive screening with the mandatory notification form (but not toxoplasmosis in general). Screening is performed during pregnancy through serological and ultrasound testing to pregnant women and if there is such indication and compatible symptoms in the fetus.
Hungary			x	Yes	
Iceland	x			Yes	Suspected cases tested on individual basis.
Ireland	x			Yes	Testing for *Toxoplasma* requested if there are clinical indications e.g. a woman is symptomatic, for investigation of late miscarriage or if there are ultrasound findings consistent with congenital toxoplasmosis.
Malta	x			No	
Netherlands	x			No	
Norway	x			No	
Slovakia		x		Yes	Serological screening starting in first trimester. Follow-up during pregnancy of seronegative women.
Slovenia		x		Yes	
Sweden	x			No	Suspected cases or women at high risk of infection tested on individual basis.
United Kingdom	x			Yes (until 2020)	

Trichinellosis

Last updated: 31 August 2026

Data retrieval from EpiPulse cases: 21 August 2026

Trichinellosis is a disease caused by an infection with the intestinal parasite *Trichinella*, most commonly the species *T. spiralis*. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on trichinellosis reported by the EU/EEA countries. Cases are to be reported according to the 2018 EU case definition for trichinellosis[27]:

Clinical criteria

Any person with at least three of the following six:

— Fever;

— Muscle soreness and pain;

— Diarrhoea;

— Facial oedema;

— Eosinophilia;

— Subconjunctival, subungual and retinal haemorrhages.

Laboratory criteria

At least one of the following two:

— Demonstration of *Trichinella* larvae in tissue obtained by muscle biopsy;

— *Trichinella* specific antibody response (IFA test, ELISA or Western Blot).

Epidemiological criteria

At least one of the following two epidemiological links:

— Exposure to contaminated food (meat);

— Exposure to a common source.

Case classification

A. Possible case NA

B. Probable case: Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case: Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(The note is the only difference between the 2018 EU case definition of anthrax and the 2012 and 2008 EU case definitions.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[28]. Note that data published in the

[27] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

[28] Available from: Home - Eurostat (europa.eu)

Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed trichinellosis cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;
- Pathogen species (*T. spiralis* or other species).

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to EpiPulse Cases for a given time period.

Data quality

EU/EEA countries reporting data on trichinellosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries

reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed trichinellosis are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness pathogen species (%);

Interpretation

The results shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does the amount of samples tested.

The notification of trichinellosis is mandatory in 27 EU/EEA countries. Two countries have voluntary notification (Belgium and France). No surveillance system for trichinellosis exists in Denmark. The surveillance systems for trichinellosis have full national coverage in all reporting countries. For 2020 and 2021, Spain did not receive data from all regions normally reporting. The case numbers are therefore lower than expected and notification rates were not calculated for these two years. Most of the countries provide case-based data except Bulgaria, which report aggregate data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The completeness of some variables such as outcome or travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not.

Reports published by ECDC on trichinellosis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in EpiPulse Cases retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2022 – Trichinellosis:
https://www.ecdc.europa.eu/sites/default/files/documents/trichinellosis-annual-epidemiological-report-2022.pdf

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2025. The European Union One Health 2024 Zoonoses Report (December 2025):
https://www.ecdc.europa.eu/en/publications-data/european-union-one-health-2024-zoonoses-report

Annex 1. Surveillance systems overview, 2025

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2018
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	EU-2012
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-SEPI	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Portugal	PT-TRICHINOSIS	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Diseases no longer subject to annual data collection since 2024 (data available for 2007 - 2023)

Anthrax

Last updated: 2 September 2024

Data retrieval from TESSy: 2 September 2024

Anthrax is a zoonotic disease caused by the spore-producing bacterium *Bacillus anthracis*. Humans may acquire the infection after exposure to spores in the soil or in animals. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on anthrax reported by the EU/EEA countries. Cases are to be reported according to the 2018 EU case definition for anthrax[29]:

Clinical criteria

Any person with at least one of the following clinical forms:

Cutaneous anthrax

At least one of the following two:

— Papular or vesicular lesion

— Depressed black eschar with surrounding oedema

Gastrointestinal anthrax

— Fever or feverishness

AND at least one of the following two:

— Severe abdominal pain

— Diarrhoea

Inhalational anthrax

— Fever or feverishness

AND at least one of the following two:

— Acute respiratory distress

— Radiological evidence of mediastinal widening

Meningeal/meningoencephalitic anthrax

— Fever

AND at least one of the following three:

— Convulsions

— Loss of consciousness

— Meningeal signs

Anthrax septicaemia

Laboratory criteria

At least one of the following two:

— Isolation of *Bacillus anthracis* from a clinical specimen

— Detection of *Bacillus anthracis* nucleic acid in a clinical specimen

[29] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions

Positive nasal swab without clinical symptoms does not contribute to a confirmed diagnosis of a case

Epidemiological criteria

At least one of the following three epidemiological links:

— Animal to human transmission

— Exposure to a common source

— Exposure to contaminated food/drinking water

Case classification

A. Possible case: NA
B. Probable case: Any person meeting the clinical criteria with an epidemiological link
C. Confirmed case: Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(The note is the only difference between the 2018 EU case definition of anthrax and the 2012 and 2008 EU case definitions.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicator for confirmed anthrax is:

1. Number of reported cases;

For this indicator, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (< 1 year, 1-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to TESSy for a given time period.

Data quality

EU/EEA countries reporting data on anthrax as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age.

The Surveillance Atlas indicator for data quality of confirmed anthrax cases is:

- Completeness age (%).

Interpretation

The data shown in the Surveillance Atlas should be interpreted carefully as national surveillance systems differ from each other.

The notification of anthrax is mandatory and surveillance systems have full national coverage in all EU/EEA countries. In Belgium, full national coverage was established in 2015. In Spain, not all regions have reported data for 2020 and 2021 and case numbers might therefore not be complete. All countries provide case-based data.

Reports published by ECDC on anthrax

More information is available in ECDC reports. Note that later retrieval of data related to the same period may result in slightly different numbers as countries have the possibility to update data in TESSy retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2021 – Anthrax:
https://www.ecdc.europa.eu/sites/default/files/documents/anthrax-annual-epidemiological-report-for-2021.pdf

Annex 1. Surveillance systems overview, 2023

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	Cp	Co	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2008
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Other
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	EU-2012
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-ANTH	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Portugal	PT-ANTRAX	Cp	Co	P	C	.	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2012

Botulism

Last updated: 2 September 2024

Data retrieval from TESSy: 2 September 2024

Botulism is a serious paralytic illness caused by a preformed nerve toxin produced in most cases by *Clostridium botulinum*. Three forms of botulism are distinguished according to the site of toxin production: foodborne, wound and intestinal (infant and adult) botulism. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on botulism reported by the EU/EEA countries. Cases are to be reported according to the 2018 EU case definition for botulism[30]:

Clinical criteria

Any person with at least one of the following clinical forms:

Food-borne and wound botulism

At least one of the following two:

— Bilateral cranial nerve impairment (e.g. diplopia, blurred vision, dysphagia, bulbar weakness);

— Peripheral symmetric paralysis.

Infant botulism

Any infant with at least one of the following six:

— Constipation;

— Lethargy;

— Difficulty in sucking or feeding;

— Ptosis;

— Dysphagia;

— General muscle weakness.

The type of botulism usually encountered in infants (< 12 months of age) can affect children also over 12 months of age and occasionally adults, with altered gastrointestinal anatomy and microflora.

Laboratory criteria

At least one of the following three:

— Isolation of BoNT-producing clostridia (for example, *Clostridium botulinum*, *C. baratii*, *C. butyricum*) for infant botulism (stool) or wound botulism (wound);

— Detection of botulinum neurotoxins in a clinical specimen;

— Detection of genes encoding for botulinum neurotoxins in a clinical specimen.

Epidemiological criteria

At least one of the following two epidemiological links:

— Exposure to a common source (e.g. food, sharing of needles or other devices)

— Exposure to contaminated food/drinking water

Case classification

A. Possible case: NA
B. Probable case: Any person meeting the clinical criteria with an epidemiological link
C. Confirmed case: Any person meeting the clinical and the laboratory criteria

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[30] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

(Compared to the 2008 and 2012 EU case definition of botulism, the 2018 EU case definition covers also other species of BoNT-producing *Clostridium* and allows genotypic tests for laboratory confirmation.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[31]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed botulism are:

2. Number of reported cases;
3. Notification rate per 100 000 population;
4. Age-standardised rate per 100 000 population;
5. Number of hospitalised cases;
6. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
7. Number of deaths derived from reporting of disease outcome;
8. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
9. Notification rate for domestic cases per 100 000 population;
10. Proportion of travel associated cases among confirmed cases with known travel history outside the reporting country (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups < 1 year, 1-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate.

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (< 1 year, 1-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;
- Neurotoxin type.

Symbols used in the Surveillance Atlas table:

Symbol	Comment

[31] Available from: Home - Eurostat (europa.eu)

–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to TESSy for a given time period.

Data quality

EU/EEA countries reporting data on botulism as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed botulism cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness neurotoxin type (%);

Interpretation

The data shown in the Surveillance Atlas should be interpreted carefully as national surveillance systems differ from each other.

The notification of botulism is mandatory and the surveillance systems have full national coverage in all EU/EEA countries. In Belgium, full national coverage was established in 2015 and rates before this date are not displayed. For 2020, Spain has not received data from all regions and rates are therefore not displayed for these years. All countries provide case-based data.

The completeness of some variables such as hospitalisation, outcome or travel history varies between countries and years; some countries are able to collect and integrate these data from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account limitations.

Reports published by ECDC on botulism

More information is available in ECDC reports. Note that later retrieval of data related to the same period may result in slightly different numbers as countries have the possibility to update data in TESSy retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2022 – Botulism:
Annual Epidemiological Report, Botulism, 2022 (europa.eu)

Epidemiological update on iatrogenic botulism cases in Europe (3 April 2023):
Update on iatrogenic botulism cases in Europe (europa.eu)

Epidemiological update 14 March 2023: Botulism cases in Europe following medical interventions with botulinum neurotoxin:
Botulism cases in Europe following medical interventions with botulinum neurotoxin (europa.eu)

Annex 1. Surveillance systems overview, 2023

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Belgium	BE-REFLAB	Cp	Co	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2008
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Other
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	EU-2012
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-BOTU	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Other
Portugal	PT-BOTULISM	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Cholera

Last updated: 2 December 2024

Data retrieval from TESSy: 2 September 2024

Cholera is a highly infectious acute enteric illness caused by the bacterium *Vibrio cholerae,* serogroups O1 or O139. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on cholera reported by the EU/EEA countries. Cases are to be reported according to the 2018 EU case definition for cholera[32]:

Clinical criteria

Any person with at least one of the following two:

— Diarrhoea;

— Vomiting.

Laboratory criteria

— Isolation of *Vibrio cholerae* from a clinical specimen;

AND

— Demonstration of O1 or O139 antigen in the isolate;

AND

— Demonstration of cholera-enterotoxin or the cholera-enterotoxin gene in the isolate.

Epidemiological criteria

At least one of the following four epidemiological links:

— Exposure to a common source;

— Human to human transmission;

— Exposure to contaminated food/drinking water;

— Environmental exposure.

Case classification

A. Possible case: NA

B. Probable case: Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case: Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(The note is the only difference between the 2018 EU case definition and the 2012 and 2008 EU case definitions.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[33]. Note that data published in the

[32] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

[33] Available from: Home - Eurostat (europa.eu)

Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed cholera cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;
- Probable country of infection.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to TESSy for a given time period.

Data quality

EU/EEA countries reporting data on cholera as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed cholera cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness probable country of infection (%).

Interpretation

The data shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment between countries.

The notification of cholera is mandatory and the surveillance systems have full national coverage in all EU/EEA countries. In Belgium, full national coverage was established in 2015 and rates before this date are not displayed. For 2020 and 2021, Spain has not received data from all regions and rates are therefore not displayed for these years. All reporting countries report case-based data except Bulgaria, which reported aggregate data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The COVID-19 pandemic significantly impacted on cholera surveillance data in 2020-2021 as no laboratory-confirmed cases were reported. This most likely due to the travel restrictions implemented.

The completeness of some variables such as outcome or importation varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account limitations.

Reports published by ECDC on cholera

More information is available in ECDC reports. Note that later retrieval of data related to the same period may result in slightly different numbers as countries have the possibility to update data in TESSy retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2022 – Cholera:
https://www.ecdc.europa.eu/en/publications-data/cholera-annual-epidemiological-report-2022

Monthly global cholera outbreak report
https://www.ecdc.europa.eu/en/all-topics-z/cholera/surveillance-and-disease-data/cholera-monthly.

Annex 1. Surveillance systems overview, 2023

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	Cp	Co	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2008
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Other
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	EU-2012
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-CHOL	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Portugal	PT-CHOLERA	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2012

Cryptosporidiosis

Last updated: 2 September 2024

Data retrieval from TESSy: 2 September 2024

Cryptosporidiosis is an acute diarrhoeal disease caused by an intracellular protozoan parasite *Cryptosporidium spp*. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on cryptosporidiosis reported by the EU/EEA countries. Cases should be reported according to the 2018 EU case definition for cryptosporidiosis[34]:

Clinical criteria

Any person with at least one of the following two:

— Diarrhoea;

— Abdominal pain.

Laboratory criteria

At least one of the following four:

— Demonstration of *Cryptosporidium* oocysts in stool;

— Demonstration of *Cryptosporidium* in intestinal fluid or small-bowel biopsy specimens;

— Detection of *Cryptosporidium* nucleic acid in stool;

— Detection of *Cryptosporidium* antigen in stool.

Epidemiological criteria

At least one of the following five epidemiological links:

— Human to human transmission;

— Exposure to a common source;

— Animal to human transmission;

— Exposure to contaminated food/drinking water;

— Environmental exposure.

Case classification

A. Possible case: NA

B. Probable case: Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case: Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(Requirements for only one of two clinical criteria and the note are the changes in the 2018 EU case definition compared to the 2012 and 2008 EU case definitions.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[35]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

[34] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

[35] Available from: Home - Eurostat (europa.eu)

Indicators were displayed as "–" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed cryptosporidiosis cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to TESSy for a given time period.

Data quality

EU/EEA countries reporting data on cryptosporidiosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed cryptosporidiosis cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%).

Interpretation

The results shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does the number of samples tested.

The notification of cryptosporidiosis is mandatory in 23 EU/EEA countries. In three countries (Belgium, France and Greece) the notification is voluntary. France and Italy report cryptosporidiosis data from 2023 onwards. No surveillance system exists in Austria, Denmark, Liechtenstein and the Netherlands. The surveillance systems for cryptosporidiosis have full national coverage in all reporting countries except in Spain and no information on coverage from France. For 2020, not all regions in Spain have reported and case numbers might therefore be lower than expected. The coverage of the surveillance system in 2023 and in 2021-2022 is estimated to be 92% and 91%, respectively in in Spain. These proportions were used when calculating notification rates for these years. No estimate of population coverage in Spain was provided prior 2021, so notification rates were not calculated. In Belgium, full national coverage was established in 2015 and rates before this date are not displayed. In the Netherlands, a cryptosporidiosis project was performed, and available data was reported to ECDC from 2013 to 2018. Greece reports data on laboratory-confirmed cases collected from public hospitals from 2018 onwards. In Luxembourg in 2020, the notification system changed to include all electronic laboratory reports and not only reports from general practitioners and this change resulted in a major increase in cases.

All reporting countries report case-based data except Belgium, Bulgaria, and Greece which reports aggregate data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The COVID-19 pandemic resulted in a significant drop in cases in 2020-2021 at the EU level. Reasons for this could be due to less travel due to travel restrictions, people avoiding seeking medical care for mild symptoms due to risk of exposure to COVID-19 in health care facilities, limited laboratory capacity due to reallocation of resources to SARS-CoV-2 and regions not having sufficient resources to report data to the national level.

The completeness of some variables such as outcome or travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not.

Reports published by ECDC on cryptosporidiosis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in TESSy retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2021 – Cryptosporidiosis:
Cryptosporidiosis – Annual Epidemiological Report 2021 (europa.eu)

Annex 1. Surveillance systems overview, 2023

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Belgium	BE-LABNET	V	Se	P	C	Y	N	.	.	EU-2012
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2008
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2008
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	EU-2012
France		V	.	.	C	.	.	.	.	Not specified/Unknown
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-Lab_Hospital	V	O	A	A	Y	N	Y	N	Other
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	N	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Portugal	PT-CRYP	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Giardiasis (lambliasis)

Last updated: 18 December 2024

Data retrieval from TESSy: 2 September 2024

Giardiasis is an intestinal infection caused by ingestion of cysts from the protozoan *Giardia lamblia* (*Giardia intestinalis* and *Giardia duodenalis* are synonyms). For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on giardiasis reported by the EU/EEA countries. Cases should be reported according to the 2018 EU case definition for giardiasis lambliasis[36]:

Clinical criteria

Any person with at least one of the following four:

— Diarrhoea;

— Abdominal pain;

— Bloating;

— Signs of malabsorption (e.g. steatorrhoea, weight loss).

Laboratory criteria

At least one of the following two:

— Demonstration of *Giardia lamblia* cysts or trophozoites in stool, duodenal fluid or small-bowel biopsy;

— Demonstration of *Giardia lamblia* antigen in stool, duodenal fluid or small-bowel biopsy

— Detection of *Giardia lamblia* nucleic acid in stool, duodenal fluid or small-bowel biopsy

Epidemiological criteria

At least one of the following four epidemiological links:

— Exposure to contaminated food/drinking water;

— Human to human transmission;

— Exposure to a common source;

— Environmental exposure.

Case classification

A. Possible case: NA

A. Probable case: Any person meeting the clinical criteria with an epidemiological link

B. Confirmed case: Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(Compared to the 2008 and 2012 EU case definition, the 2018 EU case definition allows genotypic tests for laboratory confirmation and includes more clinical specimens in the laboratory criteria. The note is also a new addition.)

Data collection and analysis

[36] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[37]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed giardiasis cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;
- Probable country of infection.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to TESSy for a given time period.

[37] Available from: Home - Eurostat (europa.eu)

Data quality

EU/EEA countries reporting data on giardiasis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed giardiasis cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness probable country of infection (%).

Interpretation

The results shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment between countries.

The notification of giardiasis is mandatory in 23 EU/EEA countries. In two Member States (Belgium and Greece) the notification is voluntary. No surveillance system exists in Austria, Denmark, France, Liechtenstein, and the Netherlands. The surveillance systems for giardiasis have full national coverage in all reporting countries except in Romania and Spain. For 2020, not all regions in Spain have reported and case numbers might therefore be lower than expected. The coverage of the surveillance system in 2023 and in 2021-2022 is estimated to be 92% and 91%, respectively in in Spain. These proportions were used when calculating notification rates for these years. No estimate of population coverage in Spain was provided prior 2021, so notification rates were not calculated. For Romania, no estimates were provided for any years as well as for Spain prior 2021, so notification rates were not calculated. In Belgium, full national coverage was established in 2015 and rates before this date are not displayed. Greece reports data on laboratory-confirmed cases collected from public hospitals from 2018 onwards. Most countries report case-based data except Belgium, Bulgaria, Greece and Romania which report aggregate data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The COVID-19 pandemic significantly impacted on the giardiasis surveillance data in 2020-2021. Countries have mentioned several factors resulting in lower case numbers, e.g. people avoiding to seek medical care for mild symptoms due to risk of exposure to COVID-19 in health care facilities, travel restrictions, limited capacity for diagnosis of mild diseases in health care, lack of medical personnel due to re-allocation to COVID-19 work etc. In Romania, the marked drop was due to that the seasonal surveillance of giardiasis in summer-autumn could not take place.

The completeness of some variables such as outcome or travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account limitations.

Reports published by ECDC on giardiasis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in TESSy retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2022 – Giardiasis:
https://www.ecdc.europa.eu/en/publications-data/giardiasis-annual-epidemiological-report-2022

Annex 1. Surveillance systems overview, 2023

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Belgium	BE-LABNET	V	Se	P	C	Y	N	.	.	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2008
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2008
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	EU-2012
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-Lab_Hospital	V	O	A	A	Y	N	Y	N	Other
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Italy	IT-NRS	CP	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	N	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Portugal	PT-GIAR	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Se	P	A	N	Y	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Leptospirosis

Last updated: 2 September 2024

Data retrieval from TESSy: 2 September 2024

Leptospirosis is a zoonotic disease caused by pathogenic spirochetes belonging to the genus *Leptospira*. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on leptospirosis reported by the EU/EEA countries. Cases are to be reported according to the 2018 EU case definition for leptospirosis[38]:

Clinical criteria

Any person with

— Fever;

OR at least two of the following eleven:

— Chills;

— Headache;

— Myalgia;

— Conjunctival suffusion;

— Haemorrhages into skin and mucous membranes;

— Rash;

— Jaundice;

— Myocarditis;

— Meningitis;

— Renal impairment;

— Respiratory symptoms such as haemoptysis.

Laboratory criteria

At least one of the following four:

— Isolation of *Leptospira interrogans* or any other pathogenic *Leptospira* spp. from a clinical specimen;

— Detection of *Leptospira interrogans* or any other pathogenic *Leptospira* spp. nucleic acid in a clinical specimen;

— Demonstration of *Leptospira interrogans* or any other pathogenic *Leptospira* spp. by immunofluorescence in a clinical specimen;

— *Leptospira interrogans* or any other pathogenic *Leptospira* spp. specific antibody response.

Epidemiological criteria

At least one of the following three epidemiological links:

— Animal-to-human transmission;

— Environmental exposure;

— Exposure to a common source.

Case classification

A. Possible case: NA

B. Probable case: Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case: Any person meeting the clinical and the laboratory criteria

[38] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(The note is the only difference between the 2018 EU case definition and the 2012 and 2008 EU case definitions.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators by age group for the calculation of notification rates were obtained from Eurostat[39]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed leptospirosis cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

For all other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;
- Transmission mode.

[39] Available from: Home - Eurostat (europa.eu)

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to TESSy for a given time period.

Data quality

EU/EEA countries reporting data on leptospirosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed leptospirosis cases are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%);
- Completeness transmission mode (%).

Interpretation

The results shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does the amount of samples tested.

The notification of leptospirosis is mandatory in 26 EU/EEA countries. In two countries, the notification is voluntary (France) or organised differently (Belgium). There is no surveillance system for leptospirosis in Liechtenstein and Norway. The surveillance systems for leptospirosis have full national coverage in all reporting countries except in Spain. No notification rate is calculated for Spain, as no estimated population coverage is provided. For 2020 and 2021, Spain has not received data from all regions and the case numbers for these years are therefore lower than could be expected. In Belgium, full national coverage was established in 2015 and rates before this date are not displayed. All reporting countries provide case-based data except Belgium and Bulgaria which report aggregate data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The COVID-19 pandemic significantly impacted on the leptospirosis surveillance data in 2020. Decrease of cases may be associated with changes in population behaviours (e.g., less travel), people avoiding to seek medical care for mild symptoms due to risk of exposure to COVID-19 in health care facilities, limited laboratory capacity due to reallocation of resources to SARS-CoV-2 and/or with more limited or impaired surveillance activities resulting from the COVID-19 pandemic.

The completeness of some variables such as outcome or travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not.

Reports published by ECDC on leptospirosis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in TESSy retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2022 – Leptospirosis:
https://www.ecdc.europa.eu/sites/default/files/documents/LEPT_AER_2022_Report.pdf

Beauté J, Innocenti F, Aristos Aristodimou A, Michaela Špačková M, Eves C, et al. Epidemiology of reported cases of leptospirosis in the EU/EEA, 2010 to 2021. Eurosurveillance 2024. Vol 29.
https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2024.29.7.2300266

Annex 1. Surveillance systems overview, 2023

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	O	Co	P	A	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2008
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Other
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	EU-2012
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Portugal	PT-LEPTOSPIROSIS	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Variant Creutzfeldt-Jakob disease (vCJD)

Last updated: 2 September 2024

Data retrieval from TESSy: 2 September 2024

Variant Creutzfeldt-Jakob disease (vCJD) is a relatively new and rare neurological disease, classified as a Transmissible Spongiform Encephalopathy. Causative agents of vCJD are prions which form aggregates in neurological tissue leading to progressive brain damage and characteristic signs and symptoms of the disease. For a more detailed description of the disease and its epidemiology, please click *here.*

Data

The Surveillance Atlas of Infectious Diseases displays data on vCJD reported by the EU/EEA countries. Cases are to be reported according to the 2018 EU case definition for CJD[40]:

Preconditions

— Any person with a progressive neuropsychiatric disorder with a duration of illness of at least six months

— Routine investigations do not suggest an alternative diagnosis

— No history of exposure to human pituitary hormones or human dura mater graft

— No evidence of a genetic form of transmissible spongiform encephalopathy

Clinical criteria

Any person with at least four of the following five:
— Early psychiatric symptoms (depression, anxiety, apathy, withdrawal, delusions)
— Persistent painful sensory symptoms (this includes both frank pain and/or dysaesthesia)

— Ataxia

— Myoclonus or chorea or dystonia

— Dementia

Diagnostic Criteria

Diagnostic criteria for case confirmation:

— Neuropathological confirmation: spongiform change and extensive prion protein deposition with florid

plaques throughout the cerebrum and cerebellum

Diagnostic criteria for a probable or a possible case:
— EEG does not show the typical appearance of sporadic CJD[41] in the early stages of the illness. (The typical appearance of the EEG in sporadic CJD consists of generalised periodic complexes at approximately one per second. These may occasionally be seen in the late stages of vCJD.)

— Bilateral pulvinar high signal on MRI brain scan

— A positive tonsil biopsy. (Tonsil biopsy is not recommended routinely nor in cases with EEG appearances typical of sporadic CJD, but may be useful in suspect cases in which the clinical features are compatible with vCJD and MRI does not show pulvinar high signal.)

Epidemiological Criteria

[40] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

[41] The typical appearance of the EEG in sporadic CJD consists of generalised periodic complexes at approximately one per second. These may occasionally be seen in the late stages of vCJD.

An epidemiological link by human to human transmission (e.g. blood transfusion).

Case classification

A. Possible case:

Any person fulfilling the preconditions

AND

— meeting the clinical criteria

AND
— a negative EEG for sporadic CJD

B. Probable case

Any person fulfilling the preconditions

AND

— meeting the clinical criteria

AND

— a negative EEG for sporadic CJD

AND

— a positive MRI brain scan

OR

— Any person fulfilling the preconditions

AND

— a positive tonsil biopsy

C. Confirmed case

Any person fulfilling the preconditions

AND

meeting the diagnostic criteria for case confirmation.

(There are no differences between the 2018 EU case definition and those of 2008 and 2012.)

Data collection and analysis

The clinical presentation and associated diagnostic criteria for vCJD are relatively unusual, and hence suspected cases are typically identified and reported to national surveillance centres in each Member State. It is common for such expert centres to offer diagnostic support and post mortem analysis. Ultimately, successful vCJD diagnosis requires the identification of patients as suspect CJD cases. Such cases can then be investigated further using prescribed diagnostic approaches as defined in the vCJD case definition in order to provide accurate differential diagnosis between vCJD and other more common forms of CJD (sporadic, iatrogenic, and familial).

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

For reasons stated above, the Surveillance Atlas indicators for vCJD cases are the number of confirmed and probable cases in combination;

The Surveillance Atlas indicators for confirmed and probable vCJD cases are:

1. Number of reported cases;

For these indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above).

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to TESSy for a given time period.

Data quality

The Surveillance Atlas indicators were calculated up to the end of 2023. EU/EEA countries reporting data on vCJD as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed and probable cases.

The Surveillance Atlas indicator for data quality of confirmed and probable vCJD is:

- Completeness age (%).

Interpretation

The notification of vCJD is mandatory in all EU/EEA countries except in Belgium where reporting is voluntary. No surveillance system exists for vCJD in Finland and Germany. The surveillance systems have full national coverage in all reporting countries. Most countries use the EU case definition while two countries (Denmark and Ireland[42]) use another definition. However, the results shown in the Surveillance Atlas should be interpreted carefully. In terms of diagnosis and reporting of vCJD, the initial case ascertainment of CJD as a potential cause of illness is a critical element. Subsequently a diagnostic constraint is the need to obtain appropriate tissue samples postmortem to determine characteristic neuropathology associated with vCJD. In many cases such tissue is not available, and in these situations, cases can only be classified as 'possible' or 'probable' based on the clinical and diagnostic criteria available. The cases reported here are restricted to 'confirmed' and 'probable' cases of vCJD; cases classified as 'possible' are not included. Countries which did not provide an official "zero reporting" for the entire year are represented with '.' in the Atlas.

Reports published by ECDC on vCJD

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in TESSy retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2021 – Variant Creutzfeldt-Jakob disease:
https://www.ecdc.europa.eu/sites/default/files/documents/AER-vCJD-2021.pdf

[42] Annex IV. Diagnostic criteria. In: Protocol for Reporting and Management of cases of Creutzfeldt Jakob Disease (CJD) and other Transmissible Spongiform Encephalopathies (TSEs) or of a person at increased risk of a TSE. Health Protection Surveillance Centre Ireland, 2019. Accessed 16 September 2020 from: https://www.hpsc.ie/a-z/other/cjd/guidance/Reporting%20and%20Management%20CJD%20TSEs%202019.pdf.

Risk assessment: The risk of variant Creutzfeldt-Jakob disease transmission via blood and plasma-derived medicinal products manufactured from donations obtained in the United Kingdom (3 August 2021):

The risk of variant Creutzfeldt-Jakob disease transmission via blood and plasma-derived medicinal products (europa.eu)

Annex 1. Surveillance systems overview, 2023

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	V	Co	P	C	N	Y	Y	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EU-2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2008
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Other
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
France	FR-NATIONAL_REFERENCE_CENTRES	Cp	Co	A	C	Y	Y	Y	Y	EU-2018
Greece	EL-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Ireland	IE-Beaumont-vCJD	Cp	Co	P	C	Y	Y	Y	N	Other
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Other
Italy	IT-CJD	Cp	Co	P	C	Y	Y	Y	N	EUCD
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Liechtenstein	LI-vCJD	Cp	Co	P	C	Y	Y	Y	.	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	EU-2008
Portugal	PT-TRANS_SPONGIFORM_ENCEPHALOPATHIES	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EUCD2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018

Yersiniosis

Last updated: 2 September 2024

Data retrieval from TESSy: 2 September 2024

Yersiniosis is a bacterial infection caused by zoonotic enteropathogenic species of *Yersinia enterocolitica* and *Y. pseudotuberculosis*. For a more detailed description of the disease and its epidemiology, please click *here*.

Data

The Surveillance Atlas of Infectious Diseases displays data on yersiniosis reported by the EU/EEA countries. Cases should be reported according to the 2018 EU case definition for enteritis due to *Yersinia enterocolitica* or *Yersinia pseudotuberculosis*[43]:

Clinical criteria

Any person with at least one of the following five:

— Fever;

— Diarrhoea;

— Vomiting

— Abdominal pain (pseudoappendicitis);

— Rectal tenesmus

Laboratory criteria

At least one of the following two:

— Isolation of human pathogenic *Yersinia enterocolitica* or *Yersinia pseudotuberculosis* from a clinical specimen

— Detection of *Y. enterocolitica* or *Y. pseudotuberculosis* virulence genes in a clinical specimen

Epidemiological criteria

At least one of the following four epidemiological links:

— Human to human transmission;

— Exposure to a common source;

— Animal to human transmission;

— Exposure to contaminated food/drinking water.

Case classification

A. Possible case NA

B. Probable case: Any person meeting the clinical criteria with an epidemiological link

C. Confirmed case: Any person meeting the clinical and the laboratory criteria

Note: If the national surveillance system is not capturing clinical symptoms, all laboratory-confirmed individuals should be reported as confirmed cases.

(Compared to the 2008 and 2012 EU case definitions, the 2018 EU case definition allows detection of virulence genes for laboratory confirmation and the note is also new.)

Data collection and analysis

Data are collected on an annual basis for the previous year. Countries can also update their data at any time. Before analysis, data are validated with nominated data providers in EU/EEA countries. Country population denominators

[43] Commission Implementing Decision 2018/945-EU of 22 June 2018 on the communicable diseases and related special health issues to be covered by epidemiological surveillance as well as relevant case definitions.

by age group for the calculation of notification rates were obtained from Eurostat[44]. Note that data published in the Surveillance Atlas might differ from figures in national reports due to different times of reporting, inclusion of cases by different case definitions and use of different denominators.

Indicators were displayed as "**–**" and not calculated for variables with more than 50% of cases with undocumented information (unknown or missing) for a given geographical resolution (e.g. country, EU/EEA) and time period. The age-standardised rate and the notification rate for domestic cases were calculated when age and travel history were known for at least 90% of cases.

Surveillance systems across the EU/EEA countries are heterogeneous and a surveillance systems overview is displayed in Annex 1.

Surveillance Atlas indicators

The Surveillance Atlas indicators for confirmed yersiniosis cases are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Age-standardised rate per 100 000 population;;
4. Number of hospitalised cases;
5. Proportion of hospitalised cases among confirmed cases with known history of hospitalisation (%);
6. Number of deaths derived from reporting of disease outcome;
7. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);
8. Notification rate for domestic cases per 100 000 population;
9. Proportion of travel-associated cases among confirmed cases with known travel history outside the reporting country (%);

a) Indicators for confirmed cases of *Y. enterocolitica* are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Number of deaths derived from reporting of disease outcome;
4. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);

b) Indicators for confirmed cases of *Y. pseudotuberculosis* are:

1. Number of reported cases;
2. Notification rate per 100 000 population;
3. Number of deaths derived from reporting of disease outcome;
4. Case fatality calculated as proportion of deaths among confirmed cases with known disease outcome (%);

For notification rate indicators, the data may be displayed in a bar chart as:

- Age-specific notification rate (for age groups 0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender-specific notification rate;

[44] Available from: Home - Eurostat (europa.eu)

For other indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Age groups (0-4, 5-14, 15-24, 25-44, 45-64, 65 years and above);
- Gender;
- Pathogen species;

In addition, for *Y. enterocolitica* indicators, the data may be displayed in a bar chart or a pie chart by proportion of:

- Bio-serotype.

Symbols used in the Surveillance Atlas table:

Symbol	Comment
–	Indicator is not calculated for a given geographical resolution and time period.
.	Missing data. Data are not reported to TESSy for a given time period.

Data quality

EU/EEA countries reporting data on yersiniosis as displayed in the Annex 1. For data quality, reporting completeness of variables used to calculate Surveillance Atlas indicators was analysed for reported, confirmed cases. For countries reporting data only in aggregated format, the analysis of data completeness is allowed only for data reported such as age and gender.

The Surveillance Atlas indicators for data quality of confirmed yersiniosis are:

- Completeness age (%);
- Completeness gender (%);
- Completeness disease outcome (%);
- Completeness travel-associated (%);
- Completeness hospitalisation (%).

Interpretation

The results shown in the Surveillance Atlas should be interpreted carefully. National surveillance systems differ from each other and so does case under-ascertainment between countries.

The notification of yersiniosis is mandatory in 24 EU/EEA countries. Four countries have voluntary notification (Belgium, France, Greece and Italy). No surveillance system exists in the Netherlands and Liechtenstein. The surveillance systems for yersiniosis have full national coverage except in France, Italy and Spain. No estimate for population coverage was provided for France and Italy, so notification rates were not calculated for these two countries. The coverage of the surveillance system in 2023 and in 2021-2022 is estimated to be 92% and 91%, respectively in in Spain. These proportions were used when calculating notification rates for these years. No estimate of population coverage in Spain was provided prior 2021, so notification rates were not calculated. In Belgium, full national coverage was established in 2015 and rates before this date are not displayed. Greece reports data on laboratory-confirmed cases collected from public hospitals from 2018 onwards. Most reporting countries provide case-based data except Bulgaria and Greece which report aggregate data. Aggregated reporting format was included to calculate numbers of cases and notification rates, as well as disease trends, age and gender distributions when this data was available.

The COVID-19 pandemic significantly impacted on the surveillance data for yersiniosis in 2020. Factors mentioned by countries resulting in lower case numbers were e.g. people avoiding seeking medical care for mild symptoms due to risk of exposure to COVID-19 in health care facilities, limited laboratory capacity due to reallocation of resources to SARS-CoV-2, fewer restaurant visits, increased hand washing, less travel due to travel restriction etc.

The completeness of some variables such as outcome or travel history varies between countries and years; some countries are able to collect and integrate this type of information from different sources, other countries are not. Even if overall data completeness is high for some variables, the reader should refrain from directly comparing countries without taking into account limitations.

Reports published by ECDC on yersiniosis

More information is available in ECDC reports. Note that later retrievals of data related to the same period may result in slightly different numbers as countries have the possibility to update data in TESSy retrospectively. Therefore, the data presented in the reports might slightly differ from the data presented in the Surveillance Atlas.

Annual epidemiological report for 2022 – Yersiniosis:
Annual epidemiological report 2022 - Yersiniosis (europa.eu)

EFSA and ECDC (European Food Safety Authority and European Centre for Disease Prevention and Control), 2023. The European Union One Health 2022 Zoonoses Report (December 2023):
https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2023.8442

Annex 1. Surveillance systems overview, 2023

Country	Data source	Compulsory (Cp), voluntary (V), other(O)	Comprehensive (Co), sentinel (Se), other(O)	Active (A), passive (P)	Case-based (C), aggregated (A)	Data reported by				Case definition used
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	EU-2018
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	EU-2018
Croatia	HR-CNIPH	Cp	Co	P	C	Y	Y	Y	Y	EUCD2012
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	EU-2008
Czechia	CZ-ISIN	Cp	Co	A	C	Y	Y	Y	N	EU-2008
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Other
Estonia	EE-NAKIS	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	EU-2012
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	N	Other
Greece	EL-Lab_Hospital	V	O	A	A	Y	N	Y	N	Other
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	EU-2012
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	.	.	EU-2018
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Italy	IT-ENTERNET	V	Se	P	C	Y	N	N	N	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	EU-2018
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	N	N	N	EU-2018
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	EU-2018
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Portugal	PT-YERS	Cp	Co	P	C	N	Y	N	N	EU-2018
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	EU-2018
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	EU-2018
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	EU-2018
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	EU-2018