ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

SURVEILLANCE REPORT

Annual epidemiological report

Food-and waterborne diseases and zoonoses

2014

www.ecdc.europa.eu

ECDC SURVEILLANCE REPORT

Annual epidemiological report 2014

Food- and waterborne diseases and zoonoses

This report of the European Centre for Disease Prevention and Control (ECDC) was coordinated by Catalin Albu, Bruno Ciancio and Taina Niskanen.

Contributing authors
Cornelius Bartels, Julien Beaute, Graham Fraser, Birgitta de Jong, Jaime Martinez Urtaza, Gordon Nichols, Taina Niskanen, Daniel Palm, Emmanuel Robesyn, Ettore Severi, Lara Tavoschi, Carmen Varela Santos, Ivo Van Walle, Eva Warns-Petit, Therese Westrell, Robert Whittaker.

Acknowledgements
The document was reviewed by Johanna Takkinen.

In order to facilitate more timely publication, this year's edition of the Annual Epidemiological Report is being first published a disease group at a time and will later be compiled into one comprehensive report. This report presents the epidemiological situation for food- and waterborne diseases and zoonoses as of 2012.

Suggested citation: European Centre for Disease Prevention and Control. Annual epidemiological report 2014 – food- and waterborne diseases and zoonoses. Stockholm: ECDC; 2014.

Stockholm, November 2014

Contents

Figures

Tables

Abbreviations

EFSA	European Food Safety Authority
EWRS	Early Warning and Response System
HAV	Hepatitis A virus
HUS	Haemolytic uremic syndrome
IHR	International Health Regulations
MLVA	Multiple-locus variable number tandem repeat analysis
OIE	World Organisation for Animal Health
PWUH	People who use heroin
STEC/VTEC	Shiga toxin/verocytotoxin -producing Escherichia coli
TESSy	The European Surveillance System
TTT	Threat tracking tool
vCJD	Variant Creutzfeldt-Jakob disease

Introduction

A note to the reader

The Annual Epidemiological Report 2014 gives an overview of the epidemiology of communicable diseases of public health significance in Europe, drawn from surveillance information on the 52 communicable diseases and health issues for which surveillance is mandatory in the European Union (EU) and European Economic Area (EEA) countries[i,ii,iii,iv].

In order to facilitate more timely publication, this year's edition of the Annual Epidemiological Report is being first published a disease group at a time and will later be compiled into one comprehensive report. This report presents the epidemiological situation for food- and waterborne diseases and zoonoses as of 2012 and describes the statistical and epidemiological methods used.

Produced annually, the report is intended for policymakers and health sector leaders, epidemiologists, scientists and the wider public. It is hoped that readers will find it a useful overview and reference to better understand the present situation in relation to communicable diseases in Europe. It should also usefully assist policymakers and health leaders in making evidence-based decisions to plan and improve programmes, services and interventions for preventing, managing and treating these diseases.

This year's edition of the report draws on surveillance data for 2012, submitted by Member States to the European Surveillance System. The report gives an outline description of the epidemiology for each disease, in a standard format, covering the years 2008–2012. In addition, updates from epidemic intelligence in relation to emerging public health threats for 2013 are given, by disease as relevant. Information on these is either directly reported to ECDC through Member State notifications on the Early Warning and Response System (EWRS), according to defined criteria[v], or found through active screening of various sources, including national epidemiological bulletins and international networks, and various additional formal and informal sources. In-depth reviews of the epidemiology of particular diseases (e.g. tuberculosis, HIV) or disease groups (e.g. food- and waterborne diseases) are published separately, sometimes in collaboration with other European agencies or the World Health Organization's Regional Office for Europe. These are referenced, for convenience, with the description of each disease. In addition, further information relating to most of the diseases reported here is available on the ECDC website health topics pages at http://ecdc.europa.eu/en/healthtopics.

The reader will appreciate that most surveillance systems capture only a proportion of the cases occurring in their countries. Some cases of disease remain undiagnosed ('under-ascertainment'), and some are diagnosed but not reported to public health authorities ('underreporting'). The pattern of this under-ascertainment and underreporting varies by disease and country, involving a complex mix of healthcare-seeking behaviour, access to health services, availability of diagnostic tests, reporting practices by doctors and others, and the operation of the surveillance system itself.

The direct comparison of disease rates between countries should therefore be undertaken with caution. The reader should be aware that in most cases, differences in case rates reflect not only differences in the occurrence of the disease, but also in systematic differences in health and surveillance systems as described here.

Each year, we observe improvements in the harmonisation of systems, definitions, protocols and data at Member State and EU levels. Nevertheless, data provided by the Member States continue to show a number of inconsistencies. In several situations, the quality and comparability of the data are not optimal, and more work is planned, in conjunction with Member States, to see how best to improve this situation.

---

[i] 2000/96/EC: Commission Decision of 22 December 1999 on the communicable diseases to be progressively covered by the Community network under Decision No 2119/98/EC of the European Parliament and of the Council. Official Journal, OJ L 28, 03.02.2000, p. 50–53.

[ii] 2003/534/EC: Commission Decision of 17 July 2003 amending Decision No 2119/98/EC of the European Parliament and of the Council and Decision 2000/96/EC as regards communicable diseases listed in those decisions and amending Decision 2002/253/EC as regards the case definitions for communicable diseases. Official Journal, OJ L 184, 23.07.2003, p. 35–39.

[iii] 2007/875/EC: Commission Decision of 18 December 2007 amending Decision No 2119/98/EC of the European Parliament and of the Council and Decision 2000/96/EC as regards communicable diseases listed in those decisions. Official Journal, OJ L 344, 28.12.2007, p. 48–49.

[iv] Commission Decision 2119/98/EC of the Parliament and of the Council of 24 September 1998 setting up a network for the epidemiological surveillance and control of communicable diseases in the Community. Official Journal, OJ L 268, 03/10/1998 p. 1-7.

[v] 2009/547/EC: Commission Decision of 10 July 2009 amending Decision No 2000/57/EC on the early warning and response system for the prevention and control of communicable diseases under the Decision No 2119/98/EC of the European Parliament and of the Council. Official Journal, OJ L 181, 14.07.2009 p. 57-60.

This report aims to be consistent with previously published ECDC surveillance reports for 2012 relating to specific diseases and disease groups. However, Member States update their data continually and a number have made specific corrections for this report, including corrections to data reported for earlier years. Accordingly, some minor differences will be seen when comparing the data in this report to previous Annual Epidemiological and disease-specific reports.

Description of methods

Data sources: indicator-based surveillance (disease cases)

All EU Member States and three EEA countries (Iceland, Liechtenstein and Norway) send information at least annually from their surveillance systems to ECDC relating to occurrences of cases of the 52 communicable diseases and health issues under mandatory EU-wide surveillance. Reports are sent according to case definitions established by the EU[i].

Data upload by Member States occurs continually throughout the year. In conjunction with annual ECDC reports for particular diseases or disease groups, and the consolidated annual report, ECDC issues 'data calls,' with specified end dates, to facilitate accurate and up-to-date submission of data for the previous calendar year.

The information submitted by Member States to ECDC is defined through a 'metadataset' for each disease under surveillance. The metadataset includes the case classification for the disease (particularly whether the case is confirmed or probable) according to official case definitions as determined by the European Commission. It also defines the information to be included with each case report. Most data are submitted as anonymised individual case data, but aggregated data are reported by some Member States for some diseases. Countries actively report zero cases for particular diseases, as applicable.

Data are uploaded and validated by the Member States using ECDC's online system for the collection of surveillance data, the European Surveillance System (TESSy). Member States' information specialists transform the data in their surveillance systems into an appropriate format before uploading to TESSy. System reports generated by TESSy allow Member States to review uploaded data and to make modifications where necessary. TESSy performs automatic validation and additional data validation is conducted by ECDC staff, in liaison with designated disease experts and epidemiologists in the Member States. Once the draft report is produced, it is sent to Member States' National Surveillance Coordinators for final validation. Any final corrections are uploaded to TESSy.

For each disease under surveillance, TESSy also holds a description of the key attributes of the surveillance systems for that disease in each Member State. This information is included in the report to aid the interpretation of surveillance data for each reported disease. Member States are asked to verify and update this information each year.

Data sources: event-based surveillance

The report also presents information relating to health threats identified by ECDC through epidemic intelligence activities, from formal and validated informal sources. These threats are documented and monitored by using a dedicated database, called the Threat Tracking Tool (TTT). Data analysed in this report are extracted from the TTT and the EWRS database. The analysis of monitored threats covers the period from the activation of the TTT in June 2005 until the end of 2013; EWRS entries are covered from January 2005 to the end of 2013.

The expression 'opening a threat' refers to the way ECDC assesses threats during its daily threat review meetings. ECDC experts evaluate potential threats and validate events that require further attention or action from ECDC, based on their relevance to public health or the safety of EU citizens. The following criteria are used to open a threat and further monitor an event:

- more than one Member State is affected
- a disease is new or unknown, even if there are no cases in the EU
- there is a request from a Member State or from a third party for ECDC to deploy a response team
- there is a request for ECDC to prepare a risk assessment of the situation
- there is a documented failure in an effective control measure (vaccination, treatment or diagnosis)
- there is a documented change in the clinical/epidemiological pattern of the disease, including changes in disease severity, the mode of transmission, etc.
- the event matches any of the criteria under the International Health Regulations (IHR) or EWRS.

[i] 2002/253/EC: Commission Decision of 19 March 2002 laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council. Official Journal, OJ L 86, 03.04.2002, p. 44–62.

Events are considered relevant to be reported to the EWRS if one or more of the criteria below are met. After the revised International Health Regulations (IHR) entered into force on 15 June 2007, the decision was amended, and criteria now include both IHR notifications and the need to exchange details following contact tracing[i].

The Commission Decision on serious cross-border threats to health[ii]; 'lays down rules on epidemiological surveillance, monitoring, early warning of, and combating serious cross border threats to health, including preparedness and response planning related to those activities, in order to coordinate and complement national policies'.

With reference to this Decision, the following criteria are applied for reporting to the EWRS:

- outbreaks of communicable diseases extending to more than one EU Member State
- spatial or temporal clustering of cases of a disease of a similar type if pathogenic agents are a possible cause and there is a risk of propagation between Member States within the Union
- spatial or temporal clustering of cases of disease of a similar type outside the EU if pathogenic agents are a possible cause and there is a risk of propagation to the Union
- the appearance or resurgence of a communicable disease or an infectious agent which may require timely coordinated EU action to contain it
- any IHR notification (also reported through EWRS)
- any event related to communicable diseases with a potential EU dimension necessitating contact tracing to identify infected persons or persons potentially in danger, which may involve the exchange of sensitive personal data of confirmed or suspected cases between concerned Member States.

Data analysis

General principles

All analyses are based on confirmed cases where possible. For some diseases, some Member States do not distinguish confirmed from other cases; in these situations, total case reports from these countries are used in the analyses and the country concerned is identified in a footnote to the summary table. For some diseases (e.g. tuberculosis, Legionnaires' disease), confirmed cases are defined on a specific basis, described in the relevant sections. For other diseases the reporting of only confirmed cases would result in a severe underestimation of the true disease burden, hence both probable and confirmed cases are reported. The 'month' variable used in the seasonality analyses is based on the date that the country chooses as its preferred date for reporting. This could be either date of onset of disease, date of diagnosis, date of notification, or some other date at the country's discretion.

Population data

Population data for the calculation of rates are obtained from Eurostat, the statistical office of the EU. Data for overall calculations are extracted from the Eurostat database 'Demographic balance and crude rates' (DEMO_PJAN). The population as of 1 January of each year is used. Totals per year and per country are available for all countries for 2012. For calculation of age- and gender-specific rates, the data are aggregated into the following age groups for the analyses: 0–4, 5–14, 15–24, 25–44, 45–64 and ≥65 years.

Presentation of analyses

The descriptive epidemiology for each disease is set out as a summary table by country and supplementary figures describing overall epidemiology at EU/EEA level. These include the trend for reported confirmed cases from 2007–12, age- and gender-specific rates, and occurrence by month ('seasonality'), if relevant. Additional graphs, figures and maps are used where necessary to illustrate other important aspects of the disease epidemiology in the EU and EEA.

Summary table

The summary table for each disease indicates whether the country data were reported from a surveillance system with national or lesser geographical area of coverage. The table also indicates what type of data the country submitted: case based ('C'), aggregated ('A') data or data submitted to a disease-specific network ('D').

This table presents an overview of the number and rates (including age-standardised rates) of confirmed cases or total cases depending on the disease reported by the Member States surveillance systems for the period 2008–12. The total number of reported cases (independent of case classification) for 2012 is also shown.

Confirmed case rates are given per 100 000 persons (the number of reported confirmed cases divided by the official Eurostat estimate of the population for that year multiplied by 100 000). Countries that made no report for

[i] Commission Decision of 10 July 2009 amending Decision No 2000/57/EC on the early warning and response system for the prevention and control of communicable diseases under the Decision No 2119/98/EC of the European Parliament and of the Council, in Official Journal of the European Union. 2009. p. L 181: 57-9.

[ii] Commission Decision 1082/2013/EU, of 5th November 2013 of the European Parliament and the Council of 22 October 2013 on serious cross-border threats to health.in Official Journal of the European Union 2013.p.L293:1-15.

a disease are excluded from the calculation for overall European rates for that disease. Country reports from systems with less than national coverage (e.g. where only some regions of the country report nationally) are also excluded from calculation of overall EU case rates.

Age-standardised rates (ASR) are calculated to facilitate comparisons between countries by adjusting for differences with respect to certain underlying population characteristics such as age. ASRs were calculated when the EU/EEA rate exceeds 1 per 100 000 population and are given per 100 000 persons.

ASRs were calculated using the direct method according to the following formula:

$$ASR = \frac{\sum_{i=1}^{6} (r_i p_i)}{\sum_{i=1}^{6} p_i}$$

where r_i is the specific rate for the age group i in the population being studied, and p_i is the population of age group i in the standard population.

The standard population considered in this report was based on the average population of the EU27 Member States for the period 2001–2010 (Table). This standard population was defined to reflect the current age structure of Europe.

Age group	Standard population
0–4	25 506 062
5–14	54 043 285
15–24	62 075 051
25–44	143 411 393
45–64	124 427 054
65+	81 889 316
Total	**491 352 161**

Aspects of descriptive epidemiology at EU/EEA level

The descriptive epidemiology for each disease for the EU and EEA region overall is described as follows:

Trends in reported number of confirmed cases. The number of confirmed cases by month, 2008–12, for the EU/EEA is presented as a figure. Countries with consistent reporting of cases or zero cases for the whole five-year period are included. The figure also shows a centred 12-month moving average to show the overall trend by smoothing seasonal and random variations.

Age- and gender-specific rates for confirmed cases. Age- and gender-specific rates for the EU/EEA Member States are presented and given per 100 000 persons. It should be noted that these analyses are based only on cases for which both age and gender were reported. For some diseases this can result in exclusion of a significant proportion of cases, and the overall EU and EEA rate will be underestimated. The denominator includes the sum of the populations within the respective age–gender groups, including countries which actively reported zero cases.

Seasonal distribution of cases. For diseases where reported occurrence varies by month, a figure showing the seasonality is presented. This shows the total number of confirmed cases reported for each month in 2012, compared with the maximum, minimum and average number of cases observed for each month for the period 2008–12. These analyses include only cases for which the month of reporting is given; for some diseases this can result in exclusion of significant numbers of cases.

It will be noted that for some diseases reported numbers are too small for some or all of the above analyses to be presented.

Data protection

The data received in TESSy from Member States are subject to Regulation (EC) No 45/2001 of the European Parliament and of the Council of 18 December 2000, providing for 'the protection of individuals with regard to the processing of personal data by the Community institutions and bodies, and on the free movement of such data.' High standards of data protection consistent with these requirements are applied, supervised by the ECDC Data Protection Officer. ECDC data protection arrangements are also under the review of the European Data Protection Supervisor.

Data are made available on request to other European Agencies, Institutions and approved researchers, under procedures in accordance with the above requirements, approved by the ECDC Management Board.

Food- and waterborne diseases and zoonoses

Anthrax

- Anthrax continues to be a rare disease in Europe with single cases reported yearly.
- The increase of cases in 2012 reflects the re-emergence of an outbreak among people who use heroin (PWUH), following consumption of heroin contaminated with anthrax spores.

Anthrax is a zoonotic disease caused by *Bacillus anthracis,* a gram positive and spore-forming bacterium. The spores are highly resistant to environmental factors and may stay inactive for decades. They can be found ubiquitously in soil all over the world wherefore mainly herbivores get infected. Many tropical and subtropical regions with a high density of livestock and presenting dry conditions alternating with flooding are seen as endemic areas.

Anthrax can be transmitted to humans by spores from deceased infected animals or products deriving from them, like hides. Depending on the type of transmission there are three 'classical' clinical presentations of the disease: cutaneous anthrax, gastro-intestinal anthrax and pulmonary anthrax.

In cutaneous anthrax the spores penetrate the skin through cuts or small lesions, causing a local inflammation of cutis and subcutis. Within days it develops into an indolent ulcer with central necrosis. Cutaneous anthrax is the most common form of the disease. The gastrointestinal form occurs after consumption of meat from an infected animal. The gastrointestinal symptoms are similar to food poisoning but these can worsen to severe abdominal pain, vomiting of blood and severe diarrhoea. Pulmonary anthrax occurs by inhalation of spores, which could happen e.g. by aerosolising of infectious liquids during slaughtering. Initial symptoms include respiratory and neurological disorders. They can rapidly deteriorate to a severe systemic infection including multi-organ failure syndrome. An extremely rare mode of transmission to humans is the exposure to aerosolised anthrax spores during accidental or intentional release of a biological weapon [2, 3]. It has to be highlighted, that no such incident has ever been confirmed in an EU/EEA country.

The increasing role of injection anthrax

During a major outbreak of anthrax in people who use heroin (PWUH) in 2009/2010, "injection anthrax" has been identified as an own clinical entity. The transmission mode consists of injecting heroin that is contaminated with anthrax spores. The typical presentation of injection anthrax is of serious soft tissue infection, coupled with extensive oedema, localised close to the injection site one to three days after heroin injection. Some cases have presented with signs of systemic infection, including signs of fever, raised white cell count and cardiovascular compromise. It is important to keep in mind that PWUH might also adopt alternative ways for administration of heroin, like smoking. Therefore some cases among PWUH might appear with a 'classical' clinical picture like gastrointestinal or respiratory anthrax [4].

Epidemiological situation in 2012

In 2012, 29 EU and EEA countries provided data on anthrax. Overall 20 sporadic cases of anthrax were reported: two from Bulgaria, two from Denmark, one from France, four from Germany, four from Greece, one from Spain and six from the United Kingdom (UK). Of these, 14 cases were confirmed (Table 1).

Among the confirmed cases, 13 cases concerned people who used heroin: two from Denmark, one from France, four from Germany and six from the UK. Of these 13 patients, five died which led to a case fatality rate of 38% among infected PWUH in 2012 [5].

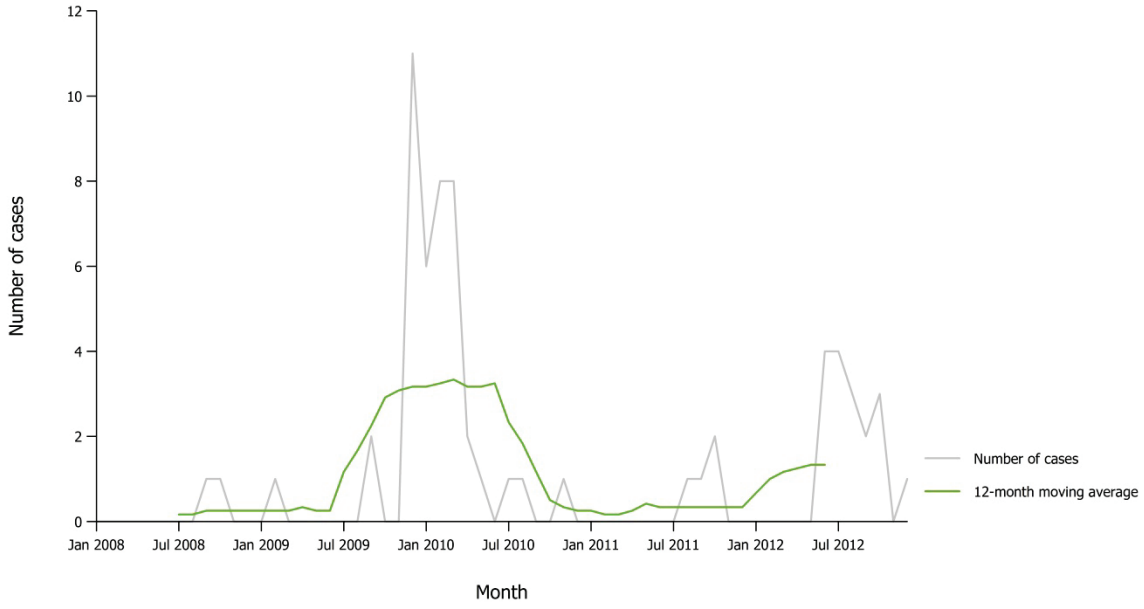
The overall occurrence of cases remained at a level of single cases reported annually without regional clusters (Figure 1).

Table 1. Number and rates of confirmed anthrax reported cases, EU/EEA, 2008–2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Belgium	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Bulgaria	Y	A	2	1	0.01	-	1	0.01	3	0.04	2	0.03	1	0.01
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	Y	C	2	2	0.04	0.04	0	0.00	0	0.00	0	0.00	0	0.00
Estonia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
France	Y	C	1	1	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Germany	Y	C	4	4	0.01	0.01	0	0.00	1	0.00	1	0.00	0	0.00
Greece	Y	C	4	0	0.00	0.03	2	0.02	0	0.00	1	0.01	0	0.00
Hungary	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ireland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Italy	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Latvia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Poland	Y	A	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Portugal	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Romania	Y	C	0	0	0.00	0.00	2	0.01	0	0.00	0	0.00	0	0.00
Slovakia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Spain	Y	C	1	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Sweden	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
United Kingdom	Y	C	6	6	0.01	0.01	0	0.00	28	0.05	10	0.02	1	0.00
EU Total	**-**	**-**	**20**	**14**	**0.00**	**0.00**	**5**	**0.00**	**32**	**0.01**	**14**	**0.00**	**2**	**0.00**
Iceland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
EU/EEA Total	**-**	**-**	**20**	**14**	**0.00**	**0.00**	**5**	**0.00**	**32**	**0.01**	**14**	**0.00**	**2**	**0.00**

ASR: Age-standardised rate
Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed anthrax reported cases by month, EU/EEA, 2008–2012

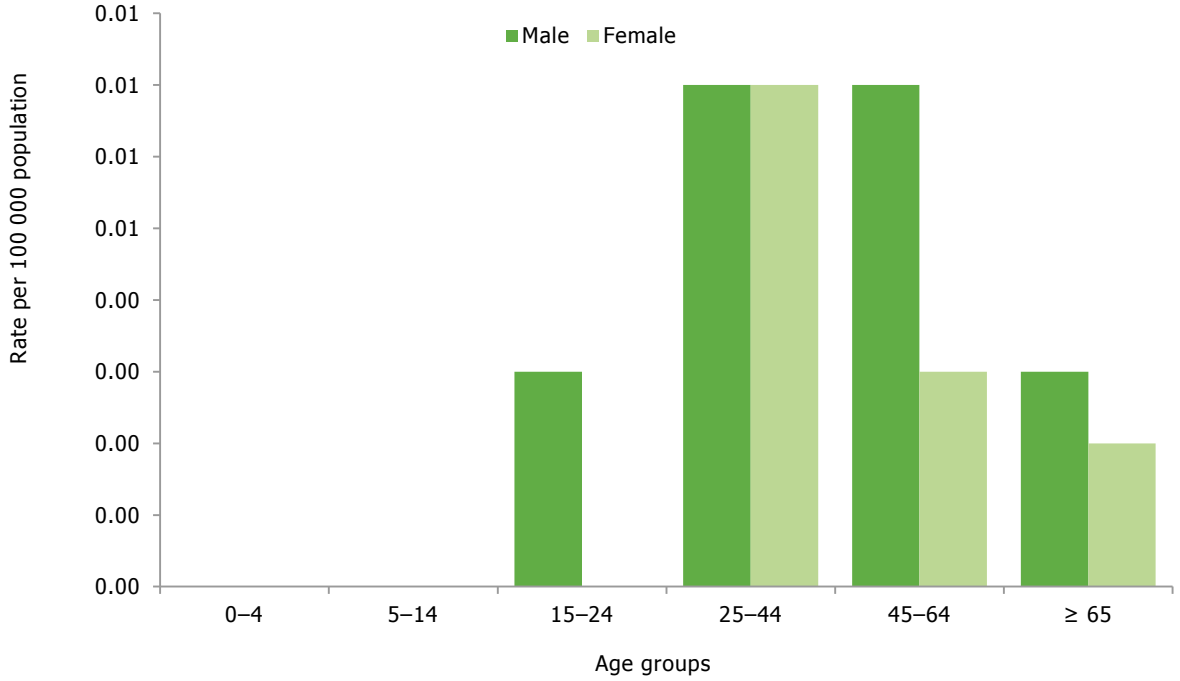


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Age and gender distribution

Among the 14 confirmed cases, six cases were reported females and seven cases males. For one case no gender information was reported. One case was in the age group 15–24 years, six cases belonged to the age group 25–44 years and five cases were in the age group 45–64 years. For one case no age information was provided.

Figure 2. Rates of confirmed anthrax reported cases by age and gender, EU/EEA, 2012



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

Updates from epidemic intelligence in 2013

In March 2013, two additional cases of anthrax among PWUH were reported from UK, both with fatal outcome. The media also reported two cases of cutaneous anthrax in Romania (June 2013) and Bulgaria (September 2013) respectively linked to contact with infected livestock.

Discussion

As in 2009/2010, injection anthrax was the prevalent presentation of anthrax in 2012 in Europe: within the 20 reported cases, 13 were linked to the consumption of contaminated heroin. The seven remaining cases were classical presentations of mainly cutaneous anthrax among people in close contact with infected livestock (e.g. during slaughtering) [5]. Injection anthrax follows a distinct route of transmission and also occurs in different settings than anthrax in a rural and close to livestock context. The 2009/2010 Scottish outbreak showed that injection anthrax might also appear in larger clusters. Therefore incidence-rate reporting should always clearly distinguish between classical manifestations of anthrax and injection anthrax.

New data from genotyping studies indicate, that the strain isolated from infected heroin users in 2012/2013 was not only identical to the strain isolated among 2009/2010 patients, but also linked to a single Norwegian case in 2000 when a patient died of anthrax following a subcutaneous injection of heroin [6, 7].

The source of contamination of the implicated heroin still remains unknown and therefore the outbreak is not effectively under control yet. The investigation is in particular hindered by the fact that up to now, no anthrax spores have been isolated from heroin samples. Considering this and the similarity of the strain probably circulating since 2000, further outbreaks of anthrax among people who use heroin are to be expected. These facts also hinting at contamination more likely taking place at the level of a single production site, where spores might appear periodically depending on climatic and environmental factors. More than 90% of opium and raw heroin are produced in remote areas in Afghanistan, which is an endemic region for *B. anthracis* [8]. The production process is normally under the most simple conditions, often outdoors and literally close to earth [9].

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y	Other
Estonia	EE-ANTH/CHOL/DIPH/MALA/SPOX/TRIC/TULA/TYPH	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y	Not specified/unknown
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Portugal	PT-ANTRAX	-	Co	-	C	-	Y	-	-	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-ANTHRAX	Cp	Co	A	C	Y	N	Y	Y	Y	EU-2012

References

1. World Health Organization: Anthrax in humans and animals. Fourth edition. 2008.
2. Meselson M, Guillemin J, Hugh-Jackson M, et al. The Sverdlovsk anthrax outbreak of 1979. Science. 1994;266(5188):1202–1208.
3. Inglesby TV, O'Toole T, Henderson DA, et al. Anthrax as a biological weapon, 2002: updated recommendations for management. JAMA 2002;287:2236-2252.
4. Health Protection Scotland: An Outbreak of Anthrax among Drug Users in Scotland, December 2009 to December 2010, a report on behalf of the National Anthrax Outbreak Control Team. 2011.
5. ECDC: Annual epidemiological report 2013, reporting on 2011 surveillance data and 2012 epidemic intelligence data.
6. Ringertz SH, Høiby EA, Jensenius M, Maehlen J, Caugant DA, Myklebust A et al.: Injectional anthrax in a heroin skin-popper. Lancet 2000; 356(9241): 1574-1575.
7. Grunow R, Klee SR, Beyer W, George M, Grunow D, Barduhn A, et al. Anthrax among heroin users in Europe possibly caused by same Bacillus anthracis strain since 2000. Euro Surveill. 2013;18:28.
8. United Nations Office on Drugs and Crime. World Drug Report. 2013. United Nations publication, Sales No. E.13.XI.6
9. Zerell U, Ahrens B, Gerz P. Documentation of a heroin manufacturing process in Afghanistan. Bull Narc. 2005;57:11–31

Botulism

- Botulism is a rare disease in the EU.
- 72 confirmed cases were reported in 2012 resulting in a rate of 0.01 per 100 000 population in the EU/EEA.
- The EU trend showed a decrease in 2012 (0.01 per 100 000 population) as compared with the previous period 2008–2011.
- The most affected population group were 0-4 year old females, with a notification rate of 0.09 per 100 000 population in 2012.

Botulism is a serious paralytic illness caused solely by the action of serologically distinct neurotoxins (BoNTs A-G) produced by the bacteria *Clostridium spp.* Virtually all known human cases have been caused by toxin types A, B, E, and more rarely F. In the vast majority of cases the toxin-producing organism is *Clostridium botulinum*. Contamination with neurotoxins has been described in foods and in association with improper canning (particularly home canning); inappropriate fermentation of meat/sausage, bean curd, and fish; and preservation of a variety of products under oil or conditions that promote an anaerobic environment. Intoxication due to contaminated food is the most common form of botulism. The disease may also occur due to colonisation of spores and subsequent growth of the bacteria within the intestine of children below one year of age (infant botulism), more rarely adults, or due to bacterial growth within wounds. Wound botulism is mainly diagnosed in injecting drug users (IDUs).

Botulism paralytic symptoms generally appear after an incubation period of 12–36 hours (up to several days).The paralysing effect of the toxin may result in a respiratory failure and require intensive-care treatment. If diagnosed early, administration of anti-toxin may block the circulating toxin in the blood. The disease may be fatal in five to 10% of the patients.

Epidemiological situation in 2012

In 2012, 102 cases of botulism were reported by 27 EU Member States, Norway and Iceland (Table 1). Of these, 72 were confirmed, which represents a decrease of 35.7% compared to 2011, when 112 confirmed cases were reported. As in the previous year, Italy, Poland and Romania accounted for more than half of all confirmed cases (61%).

The overall case rate in 2012 was 0.01 per 100 000 population, showing a decline as compared with a fluctuating rate of 0.02 -0.03 per 100 000 population in the previous four-year period 2008–2011 (Table 1, Figure 1) [1]. The overall trend in the number of reported cases also showed a decrease (Figure 1) with an average of less than six cases reported per month.

Table 1. Number and rates of confirmed botulism reported cases, EU/EEA, 2008–2012

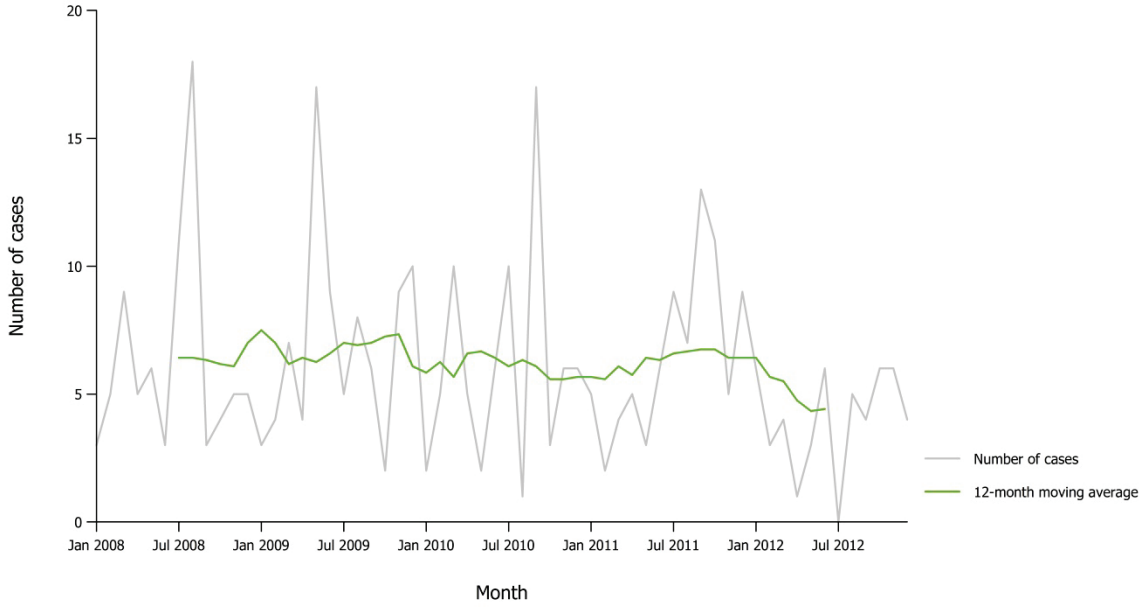
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	0.00	5	0.06	0	0.00	0	0.00	0	0.00
Belgium	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Bulgaria	Y	A	3	2	0.03	-	2	0.03	1	0.01	1	0.01	0	0.00
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	1	0.01	1	0.01
Denmark	Y	C	2	2	0.04	0.03	2	0.04	1	0.02	0	0.00	1	0.02
Estonia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0.00	2	0.04	0	0.00	0	0.00	0	0.00
France	Y	C	10	6	0.01	0.01	11	0.02	14	0.02	23	0.04	8	0.01
Germany	Y	C	0	0	0.00	0.00	7	0.01	3	0.00	5	0.01	10	0.01
Greece	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	1	0.01	0	0.00
Hungary	Y	C	4	4	0.04	0.04	5	0.05	3	0.03	3	0.03	1	0.01
Ireland	Y	C	0	0	0.00	0.00	1	0.02	0	0.00	0	0.00	5	0.11
Italy	Y	C	20	20	0.03	0.03	24	0.04	26	0.04	32	0.05	23	0.04
Latvia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	1	0.05
Lithuania	Y	C	1	1	0.03	0.03	3	0.10	2	0.06	0	0.00	2	0.06
Luxembourg	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	1	0.21
Malta	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	2	1	0.01	0.01	0	0.00	0	0.00	0	0.00	1	0.01
Poland	Y	C	22	9	0.02	0.02	21	0.06	22	0.06	15	0.04	22	0.06
Portugal	Y	C	2	0	0.00	0.02	1	0.01	0	0.00	3	0.03	4	0.04
Romania	Y	C	19	15	0.08	0.07	18	0.09	21	0.11	29	0.14	26	0.13
Slovakia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	2	2	0.10	0.10	0	0.00	2	0.10	0	0.00	0	0.00

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Spain	Y	C	9	5	0.01	0.01	7	0.02	4	0.01	6	0.01	5	0.01
Sweden	Y	C	2	2	0.02	0.02	0	0.00	0	0.00	0	0.00	0	0.00
United Kingdom	Y	C	4	3	0.01	0.00	6	0.01	3	0.01	13	0.02	1	0.00
EU Total	**-**	**-**	**102**	**72**	**0.01**	**0.01**	**115**	**0.02**	**102**	**0.02**	**132**	**0.03**	**112**	**0.02**
Iceland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	0.00	0	0.00	1	0.02	0	0.00	0	0.00
EU/EEA Total	**-**	**-**	**102**	**72**	**0.01**	**0.01**	**115**	**0.02**	**103**	**0.02**	**132**	**0.03**	**112**	**0.02**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed botulism reported cases by month, EU/EEA, 2008–2012



Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia and Sweden.

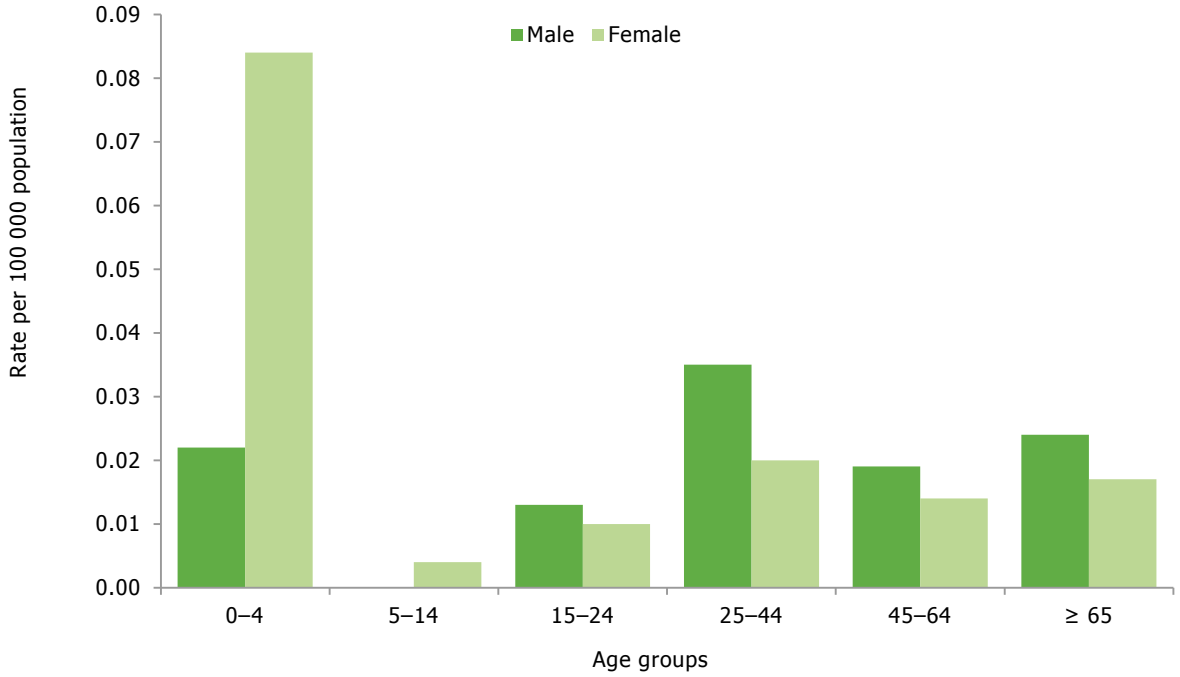
Age and gender distribution

Data on gender and age were available for all 72 confirmed cases. As in 2011, the highest number of cases (n =27) was reported for the age group 25–44 years [1]. The highest notification rate was for the age group 0–4 years old (0.05 per 100 000 population). The overall male-to-female ratio was 1.0 in 2012 but the case rate varied remarkably across the age groups (Figure 2). The highest notification rate was among females in the age group 0-4 years old (0.09 cases per 100 000) (Figure 2).

Out of all cases with known data on travel status (n=46), four cases (9%) were reported as imported.

Among all cases with known data, transmission (n=31), 30 (97%) was associated with food and the remaining one (3%) was suspected wound botulism in an IDU. Among the suspected food vehicles, canned food and pig meat accounted for 80% of the cases.

Figure 2. Rates of confirmed botulism reported cases by age and gender, EU/EEA, 2012

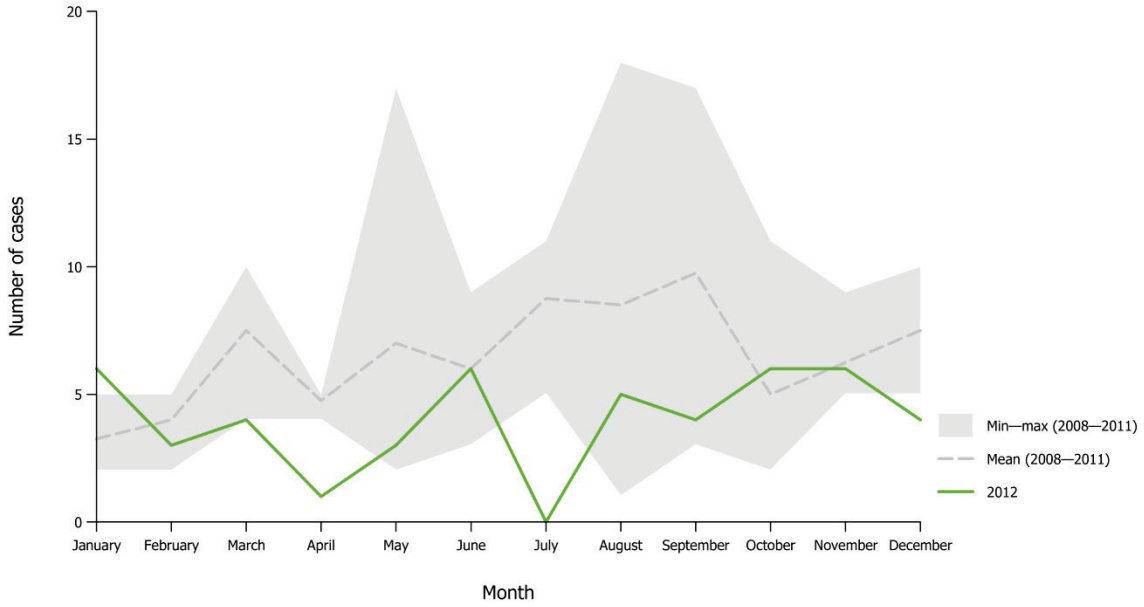


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

In 2012, the highest number of confirmed cases was reported in May/June with the lowest peak in July followed by a subsequent increase in reported cases throughout the autumn (Figure 3). As in previous years, botulism shows an increase in late summer/autumn although the month of the peaks varies largely between years (Figure 3).

Figure 3. Distribution of confirmed botulism reported cases by month in 2012 compared with 2008-2011 data, EU/EEA



Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia and Sweden.

Updates from epidemic intelligence in 2013

No major events where reported in 2013 in the EU/EEA area. Sporadic outbreaks related to food stuff were identified and investigated, such as one case of infant botulism reported from Norway in a five-month old baby who was hospitalised after consuming commercially prepared almond puree'.

Nevertheless, in August 2013 a large brand of whey protein concentrate based in New Zealand, announced possible contamination of infant formula and sport drinks with *Clostridium botulinum* [2]. The event had no consequences for the EU/EEA area, as the brand market is confined to Asia and Oceania.

Discussion

Compared with the previous four-year period, in 2012 the epidemiology of botulism in the EU showed a decline in the overall number of reported cases (35.7% reduction) and in the general population rate, with a halved rate of 0.01 per 100 000 population. The gender and age distribution seems to be stable with female aged 0–4 years old being the group with the highest notification rate (0.09 per 100 000 population). In 2012, no threats of botulism were identified by the routine ECDC epidemic intelligence activities in 2012. The recent reports of infant botulism and contamination of commercial food ingredients warrant continuous attention to safe food production.

The declining rate of botulism notification in the EU/EEA may be a sign of effective control measures implemented in the Member States. In consideration of the fact that various *Clostridium species* (*C. botulinum* and *C. butyricum*, *C. baratii, C. novyi)* may cause botulism in humans by producing different types of neurotoxins requiring specific antitoxins, it is advisable to evaluate their distribution and identify unique epidemiological features to enhance EU preparedness for treating botulinum intoxications.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y	Other
Estonia	EE-BOTULISM	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y	Not specified/unknown
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Portugal	PT-BOTULISM	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y	EU-2012

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-BOTULISM	Cp	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. European Centre for Disease Prevention and Control. Annual Epidemiological Report 2013. Reporting on 2011 surveillance data and 2012 epidemic intelligence data. 2014.
2. ProMED mail. Botulism - New Zealand: whey concentrate, risk, recall. Archive Number: 20130803.1861284. Available from: http://beta.promedmail.org/direct.php?id=20130803.1861284.

Brucellosis

- In 2012, 376 confirmed cases of brucellosis were reported, with overall rate of 0.08 cases per 100 000, showing a slightly decreasing trend when compared with the previous four years.
- Two thirds of the reported cases were males.
- Four countries together accounted for 73% of the total number of confirmed cases: Greece (123), Spain (62), Italy (53) and Portugal (37).

Brucellosis is a systemic infection caused by bacteria of the genus *Brucella*. Human infection is primarily an occupational risk for those working with infected animals or handling their tissues (e.g. farm workers, veterinarians, and abattoir or laboratory workers). Food-borne exposure is possible through ingestion of contaminated unpasteurised milk or dairy products but is less common due to the pasteurisation process, which kills the bacteria in milk.

Epidemiological situation in 2012

In 2012, 376 confirmed cases of brucellosis were reported by 27 EU and EEA countries (all except Denmark, Liechtenstein and Iceland). The overall rate was 0.08 cases per 100 000, lower than in 2011, when 483 confirmed cases were reported (Table 1). As in previous years, Greece, Spain, Italy and Portugal were the countries that reported a higher number of cases, accounting for 73% of all reported confirmed cases (Table 1). Reported human cases of brucellosis have followed a significant decreasing trend in Europe and EEA countries since 2008, which during the last two years is less obvious (Figure 1).

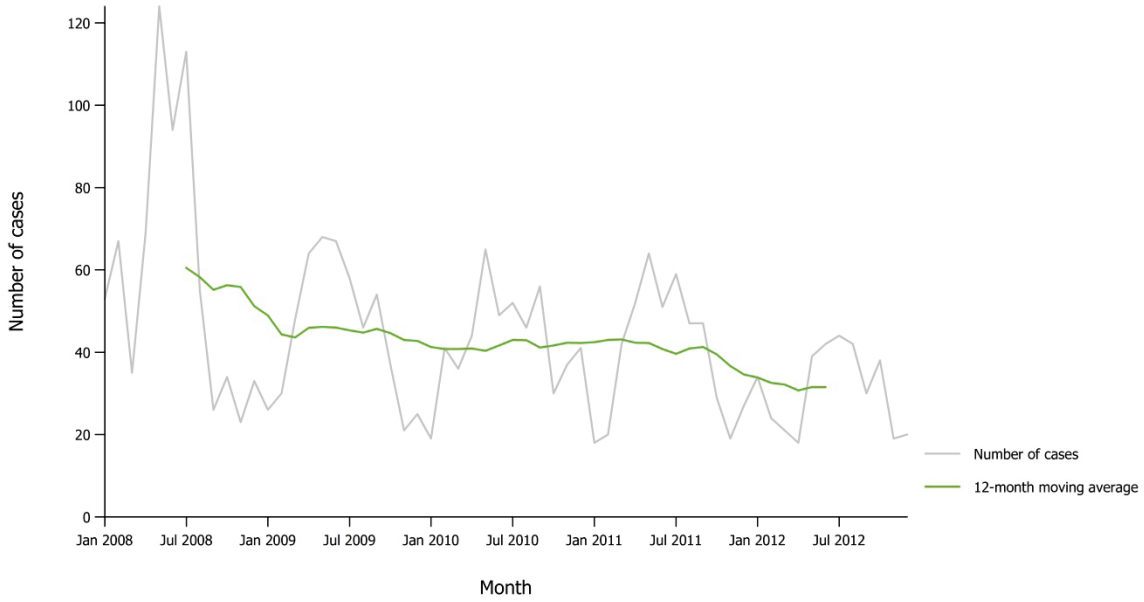
Table 1. Number and rates of confirmed brucellosis reported cases, EU/EEA, 2008–2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	3	2	0.02	0.03	5	0.06	3	0.04	2	0.02	5	0.06
Belgium	Y	C	4	4	0.04	0.04	5	0.05	0	0.00	1	0.01	1	0.01
Bulgaria	Y	A	1	1	0.01	0.01	2	0.03	2	0.03	3	0.04	8	0.11
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0.00	0	0.00	1	0.01	0	0.00	1	0.01
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	1	1	0.02	0.02	0	0.00	0	0.00	1	0.02	0	0.00
France	Y	C	32	28	0.04	0.04	21	0.03	20	0.03	19	0.03	21	0.03
Germany	Y	C	28	28	0.03	0.03	24	0.03	22	0.03	19	0.02	24	0.03
Greece	Y	C	123	123	1.11	1.09	98	0.88	97	0.87	106	0.95	304	2.72
Hungary	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ireland	Y	C	2	2	0.04	0.04	1	0.02	1	0.02	0	0.00	2	0.05
Italy	Y	C	53	53	0.09	0.09	166	0.27	171	0.28	167	0.28	163	0.27
Latvia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	1	0.03	0	0.00
Luxembourg	Y	C	0	0	0.00	0.00	1	0.20	1	0.20	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	3	3	0.02	0.02	1	0.01	6	0.04	3	0.02	3	0.02
Poland	Y	A	0	0	0.00	0.00	0	0.00	0	0.00	3	0.01	1	0.00
Portugal	Y	C	48	37	0.35	0.34	76	0.73	88	0.85	80	0.77	56	0.54
Romania	Y	C	0	0	0.00	0.00	1	0.01	2	0.01	3	0.02	2	0.01
Slovakia	Y	C	1	1	0.02	0.02	0	0.00	1	0.02	0	0.00	1	0.02
Slovenia	Y	C	0	0	0.00	0.00	1	0.05	0	0.00	2	0.10	2	0.10
Spain	Y	C	77	62	0.13	0.13	43	0.09	78	0.17	114	0.25	120	0.26
Sweden	Y	C	13	13	0.14	0.14	11	0.12	12	0.13	7	0.08	8	0.09
United Kingdom	Y	C	14	14	0.02	0.02	25	0.04	12	0.02	17	0.03	13	0.02
EU Total	**-**	**-**	**403**	**372**	**0.08**	**0.07**	**481**	**0.10**	**517**	**0.11**	**548**	**0.11**	**735**	**0.15**
Iceland	-	-	-	-	-	-	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Norway	Y	C	4	4	0.08	0.08	2	0.04	2	0.04	0	0.00	0	0.00
EU/EEA Total	**-**	**-**	**407**	**376**	**0.08**	**0.07**	**483**	**0.10**	**519**	**0.10**	**548**	**0.11**	**735**	**0.15**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed brucellosis reported cases by month, EU/EEA, 2008–2012



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

Age and gender distribution

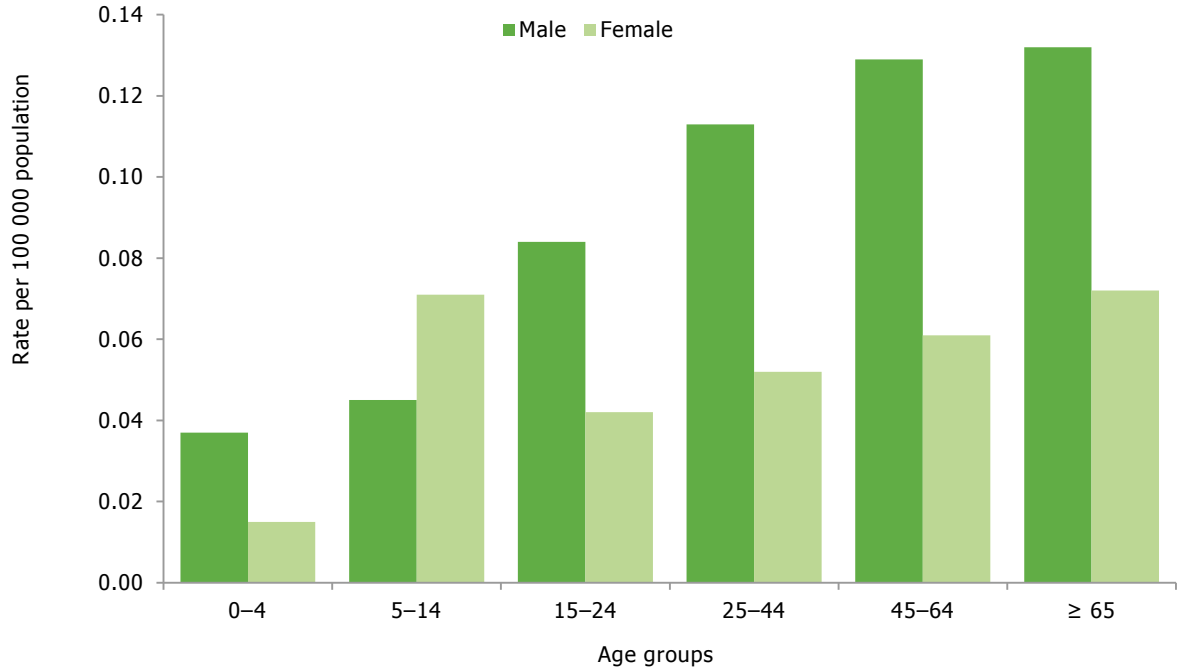
Data on gender and age were available for almost all confirmed cases. The male-to-female ratio was 2:1 in 2012.

Confirmed case rates were higher for males than for females, except for Finland, Germany, Italy and Sweden. France (85.7%), Germany (57.1%) and Sweden (92.3%) were among the countries with higher proportion of imported cases.

The majority (80%) of the cases were adults over 25 years. The notification rate is affected by age. Lowest rates were reported for the age group 0–4 years (0.02 cases per 100 000 population); for the age groups 5–14 years and 25–64 years the rate was 0.06 per 100 000 population; and for those in the age group 25–64, it reached 0.08. The highest notification rate was for those over 65 years (0.09 per 100 000 population). The highest confirmed case rate was reported for males in Greece (1.56 cases per 100 000 population).

Out of the 342 cases for which the travel information was available, 72 cases (19.1%) reported travel-related infection.

Figure 2. Rates of confirmed brucellosis reported cases by age and gender, EU/EEA, 2012

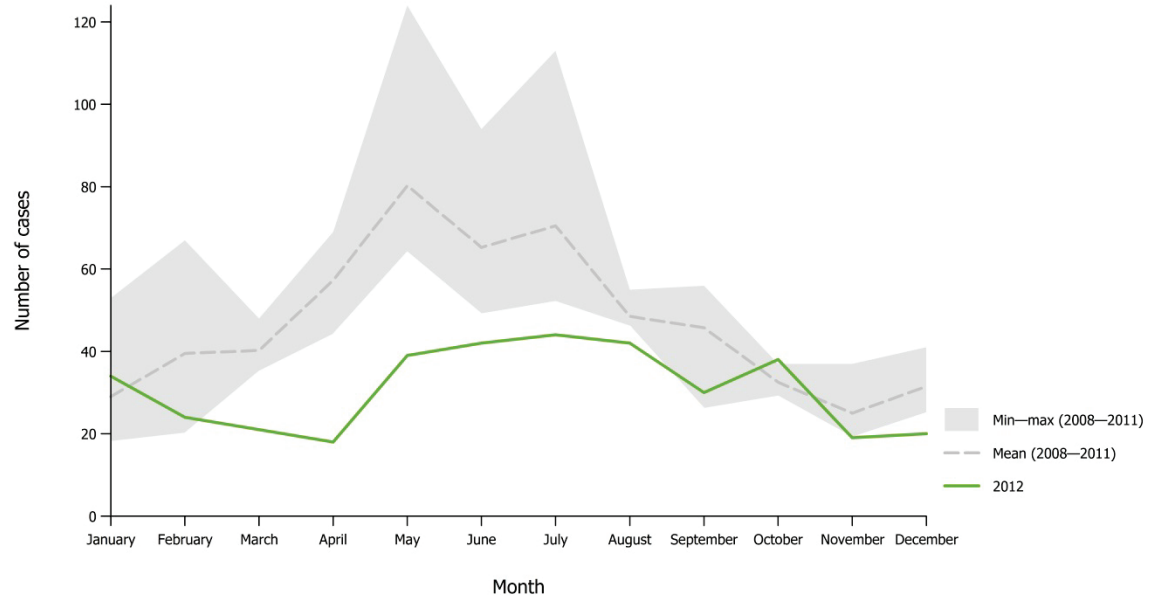


Source: Country reports from Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

In 2012, three case peaks were reported from May–August (41 to 44 confirmed cases/month), October (38 confirmed cases) and January (35 confirmed cases). This is somewhat consistent with the trend for 2008–2011 (Figure 3).

Figure 3. Distribution of confirmed brucellosis reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



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

Discussion

As a result of the Brucellosis eradication programmes, Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Latvia, Luxembourg, the Netherlands, Poland, Slovakia, Slovenia and Sweden, as well as Norway and Switzerland were Officially Brucellosis Free in 2012 in accordance with EU legislation (Decision 2012/204/EU[i]). The overall proportion of existing brucellosis-infected or positive cattle, sheep and goats herds in the EU has been decreasing to very low levels. In the non-Officially B. melitensis Free (non-ObmF) Member States, a slight decrease was observed in the proportion of existing sheep and goat herds infected with or positive to B. melitensis from 2010 (0.42%) to 2011 (0.36%) and 2012 (0.30%) [1]. As expected, the reported human cases come mainly from these non-ObmF Member States.

On the other hand, the use of Multiple-locus variable number tandem repeat analysis (MLVA) applied to human and animal strains has been successfully used by researchers to study the evolution and epidemiological linkage among them [2,3]. Phylogenetic analysis can play a key role in the investigation of brucellosis outbreaks and in understanding the transmission intra and inter-species. [2]

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Estonia	EE-BRUCELLOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Portugal	PT-BRUCELLOSIS	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-BRUCELLOSIS	O	Co	A	C	Y	N	Y	Y	Y	EU-2012

i Commission Implementing Decision 2012/204/EU of 19 April 2012 amending the Annexes to Decision 2003/467/EC as regards the declaration of Latvia as officially brucellosis-free Member State and of certain regions of Italy, Poland and Portugal as officially tuberculosis-free, brucellosis-free and enzootic-bovine-leukosis-free regions. OJ L 109, 21.4.2012, pp. 26-32.

References

1. European Food Safety Authority (EFSA), European Centre for Disease Prevention and Control (ECDC), 2013. The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2011; EFSA Journal 2013, 11(4):3129, 250 pp. doi:10.2903/j.efsa.2013.3129.
2. Garofolo G, Di Giannatale E, De Massis F, Zilli K, Ancora M, Cammà C et al. Investigating genetic diversity of *Brucella abortus* and *Brucella melitensis* in Italy with MLVA-16 Infection, Genetics and Evolution 2013 19 (59-70)
3. Ferreira AC, Chambel L, Tenreiro T, Cardoso R, Flor L, et al. (2012) MLVA16 Typing of Portuguese Human and Animal *Brucella melitensis* and *Brucella abortus* Isolates. PLoS ONE 7(8): e42514.

Campylobacteriosis

- *Campylobacter* cases increased in the five-year period between 2008 and 2011 but have decreased slightly in 2012.
- In 2012, the notification rate of campylobacteriosis was 68 cases per 100 000 population in the EU/EEA.
- Human campylobacteriosis was more common in children below five years, with the notification rate higher for males than females for all age groups in 2012.
- Campylobacteriosis presents regular seasonality with highest reported rates in June–August.

Campylobacteriosis is the most common bacterial cause of diarrhoeal disease, and the most common species associated with human infection are *Campylobacter jejuni*, *C. coli*, and *C. lari*. *Campylobacter fetus* subsp. *fetus* can cause bacteraemia but is not recorded separately in TESSy. The incubation period ranges from two to five days. Common clinical symptoms include watery, sometimes bloody diarrhoea, abdominal pain, fever, headache and nausea. In some cases, *Campylobacter* infection may trigger severe complications, including reactive arthritis and Guillain-Barré syndrome (acute, progressing paralysis). Thermophilic *Campylobacter* spp. are prevalent in food-producing animals, pets, wild birds, and in environmental water sources. Outbreaks occur, but most disease appears as sporadic cases and the main route of transmission is rarely identified. Outbreaks are associated with the ingestion of contaminated food (mainly chicken or unpasteurised milk) or water. Person-to-person transmission, although possible, is rare.

Epidemiological situation in 2012

In 2012, 217 261 confirmed cases of campylobacteriosis were reported by 25 EU and two EEA countries. Over the five years, four countries had the highest number of cases in 2010, 13 countries the highest in 2011 and seven had the highest in 2012. The confirmed cases from the United Kingdom (72 578), Germany (62 504) and the Czech Republic (18 287) represent 71% of all reported cases. The overall rate of 68.35 cases per 100 000 in the EU/EEA (range 0.4 to 174.1) was lower than in 2011 (Table 1). Confirmed cases reported by Belgium, France, Italy, the Netherlands and Spain were not included in the calculation of country-specific rates as their national systems do not cover the whole population. The countries with highest notification rates were the Czech Republic, the United Kingdom, Luxembourg and Slovakia with 174.1, 115.2, 110.7 and 105.5 cases per 100 000 population respectively (Table 1). At the EU level, the rate of human campylobacteriosis increased between 2007 and 2011 but has reduced slightly in 2012 (Figure 1). By country, cases increased in 2012 in seven EU countries (Bulgaria, Cyprus, Estonia, Latvia, Poland, Slovakia, and the United Kingdom), while it decreased in 13 countries [1].

Table 1. Number and rates of confirmed campylobacteriosis reported cases, EU/EEA, 2008–2012

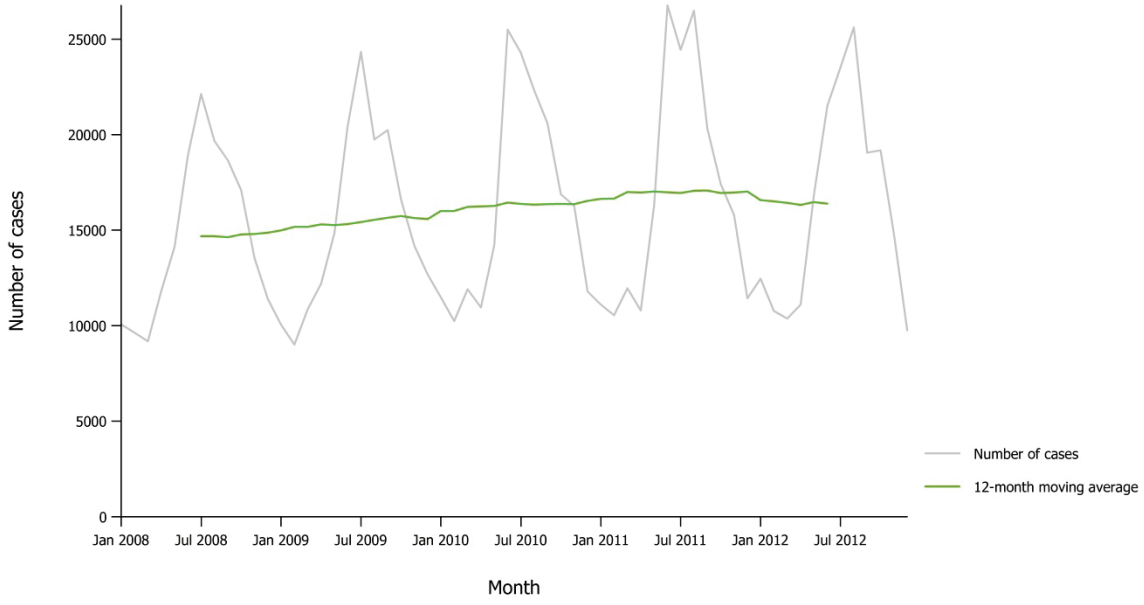
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	4 992	4 710	56.02	57.23	5129	61.03	4 404	52.58	4502	53.88	4280	51.45
Belgium	N	C	6 607	6 607	-	-	7 716	-	6 047	-	5 697	-	5 111	-
Bulgaria	Y	A	97	97	1.32	1.45	73	0.99	6	0.08	26	0.35	19	0.25
Cyprus	Y	C	68	68	7.89	7.81	62	7.38	55	6.72	37	4.64	23	2.96
Czech Republic	Y	C	18 412	18 287	174.08	177.15	18743	178.74	21 075	201.45	20 259	194.33	20 067	194.02
Denmark	Y	C	3 720	3 720	66.66	67.26	4060	73.01	4 037	72.94	3 353	60.84	3470	63.37
Estonia	Y	C	268	268	20.09	19.75	214	16.02	197	14.73	170	12.69	154	11.48
Finland	Y	C	4 251	4 251	78.70	81.29	4 267	79.38	3 944	73.70	4 050	76.04	4 453	84.01
France	N	C	5 081	5 079	-	-	5 538	-	4 324	-	3 956	-	3 424	-
Germany	Y	C	62 880	62 504	76.54	78.19	70 812	86.82	65 110	79.78	62 787	76.74	64 731	78.90
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	6 384	6 367	64.39	67.56	6 121	62.36	7 180	72.88	6 579	66.62	5 516	55.72
Ireland	Y	C	2 392	2 391	52.17	49.31	2 433	53.23	1 660	37.15	1 810	40.67	1 752	39.30
Italy	N	C	774	774	-	-	468	-	457	-	531	-	265	-
Latvia	Y	C	8	8	0.39	0.39	7	0.34	1	0.05	0	0.00	0	0.00
Lithuania	Y	C	917	917	30.53	31.76	1 124	36.83	1 095	34.85	812	25.51	762	23.72
Luxembourg	Y	C	581	581	110.70	109.58	704	137.54	600	119.51	523	105.98	439	90.79
Malta	Y	C	220	214	51.25	52.81	220	53.01	204	49.27	132	32.12	77	18.88
Netherlands	N	C	4 248	4 248	-	-	4 408	-	4 322	-	3 782	-	3 341	-
Poland	Y	C	431	431	1.12	1.10	354	0.92	367	0.96	359	0.94	270	0.71
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	92	92	0.46	0.46	149	0.75	175	0.87	254	1.26	2	-
Slovakia	Y	C	5 844	5 704	105.55	105.14	4 565	84.66	4 476	83.04	3813	70.85	3 064	57.00
Slovenia	Y	C	983	983	47.83	49.62	998	48.68	1 022	49.93	952	46.84	898	44.67
Spain	N	C	5 488	5 488	-	-	5 469	-	6 340	-	5 106	-	5 160	-

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Sweden	Y	C	7 901	7 901	83.32	84.39	8 214	87.24	8 001	85.66	7 178	77.55	7 692	83.76
United Kingdom	Y	C	72 578	72 578	115.21	113.95	72 150	115.34	70 298	113.25	65 043	105.61	55 609	90.97
EU Total	**-**	**-**	**215 217**	**214 268**	**68.57**	**68.30**	**223 998**	**71.77**	**215 397**	**69.63**	**201 711**	**65.64**	**190 579**	**67.26**
Iceland	Y	C	60	60	18.78	19.01	123	38.62	55	17.32	74	23.17	98	31.07
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	2	5.66
Norway	Y	C	2 933	2 933	58.83	59.15	3 005	61.07	2 682	55.21	2 848	59.34	2 875	60.69
EU/EEA Total	**-**	**-**	**218 210**	**217 261**	**68.35**	**68.06**	**227 126**	**71.54**	**218 134**	**69.33**	**204 633**	**65.48**	**193 554**	**67.09**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed campylobacteriosis reported cases by month, EU/EEA, 2008–2012

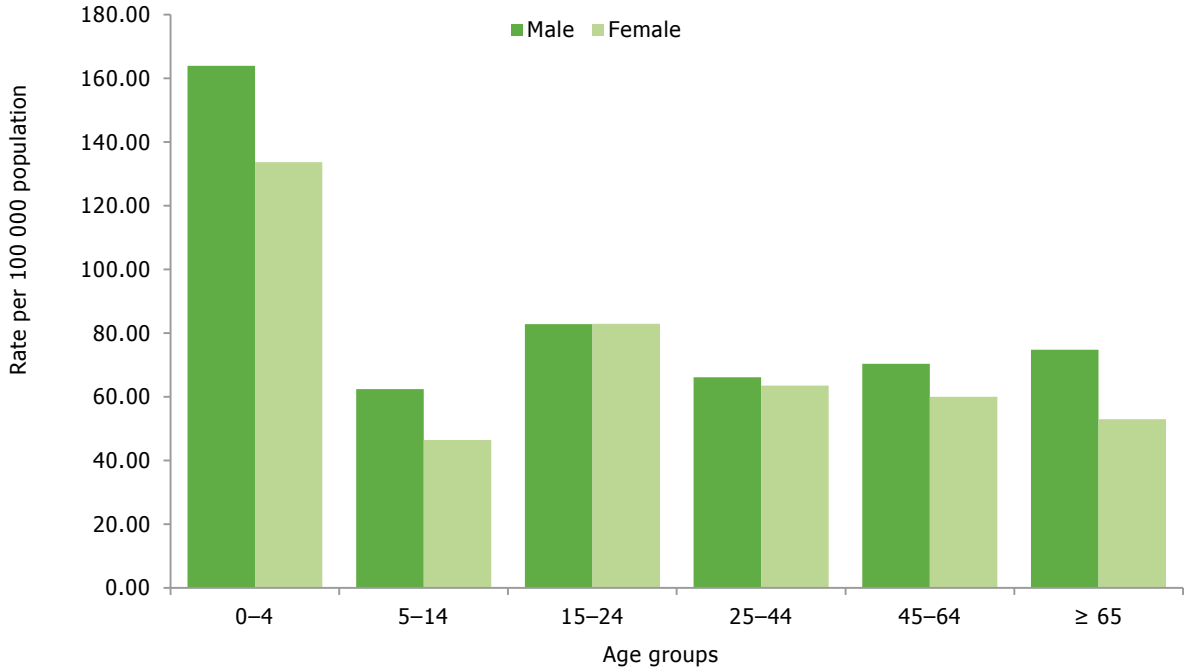


Source: Country reports from Austria, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Slovakia, Slovenia, Sweden and United Kingdom.

Age and gender distribution

Information on gender and age was provided for 216 755 confirmed cases in EU/EEA countries. The male-to-female ratio was 1.13:1 in 2012 (range by countries 1.03 to 1.62). The percentage of all cases that were under five years old averaged 12.8% for all countries (range 4.6 to 81.5), with EU/EEA rates of 145.5 per 100 000 per year in this age group (Figure 2). The highest reported rates of infection were in children below five years old in the Czech Republic, Slovakia, Hungary and Malta (924, 815, 508 and 414 respectively). The percentage of cases in people aged 60 or more years has increased between 2008 and 2012 in Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Lithuania, Netherlands, Norway, Slovenia, Spain, Sweden and the United Kingdom. Countries with the highest percentages of cases in people over 60 years are France (24.5%), Germany (24.7%), Netherlands (35.7%), Sweden (23.8%) and the United Kingdom (41.4%). In most age groups and most countries, male patients had higher rates of infection than female patients.

Figure 2. Rates of confirmed campylobacteriosis reported cases by age and gender, EU/EEA, 2012



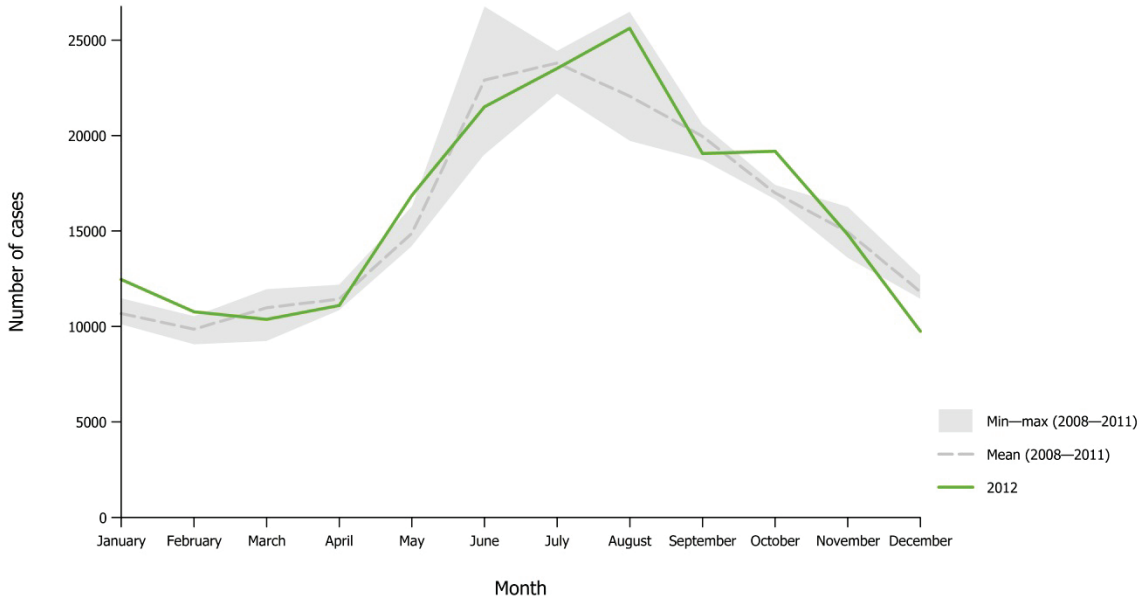
Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality and imported disease

In the EU, human cases of campylobacteriosis followed a constant marked seasonality during the period 2008-2012 with most cases reported during June–August (Figure 2). The highest rates of infection from people who had travelled abroad were in Finland (73%), Iceland (59%), Sweden (58%), Denmark (58%), and Norway (56%). These countries also had higher rates in adults as a majority of travellers are adults. The United Kingdom had higher rates of infection in older people compared to those in other EU/EEA countries.

There were 499 reported outbreaks, involving 1 845 cases, associated with *Campylobacter* from EU and EEA countries in 2012, and 200 of the patients were hospitalised. Only 27 of the outbreaks, involving 242 cases, had strong evidence for a causal association, with 20 patients hospitalised. The transmission vehicles most commonly implicated were chicken (44%) and unpasteurised milk (20%), and a variety of other meat products. The outbreak cases represent less than one percent of all reported *Campylobacter* cases in 2012 (1 845/217 261; 0.8%). *Campylobacter* outbreaks represented 9.3% of all reported food-borne outbreaks in 2012.

Figure 3. Distribution of confirmed campylobacteriosis reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



Source: Country reports from Austria, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Slovakia, Slovenia, Sweden and the United Kingdom.

Discussion

Human campylobacteriosis has remained the most commonly reported gastrointestinal disease in Europe since 2005 [1]. Handling, preparation and consumption of broiler meat has been estimated to account for 20%–41% of human campylobacteriosis cases [2, 3]. Roast chicken and salad were suspected sources in a school outbreak with 75 *C. jejuni* cases in Spain [4]. *Campylobacter* also has the potential to cause large waterborne outbreaks. In Belgium, 64 children at a youth camp became ill after using water from a local source contaminated by *C. jejuni*. Denmark reported a waterborne outbreak due to *C. jejuni* in a Danish town with over 400 cases recorded [5].

The sources of infection causing sporadic disease seem to derive from chicken, but the routes of transmission remain unclear, as do the drivers for increases in the elderly, the seasonality and the urban-rural differences (that are not accessible with this data) [6].

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y	Other
Estonia	EE-CAMPYLO	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	N	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-ENTERNET	V	Se	P	C	Y	N	N	N	-	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y	Not specified/unknown
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-LSI	V	Se	P	C	Y	N	N	N	N	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-CAMPYLOBACTERIOSIS	O	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. European Food Safety Authority (EFSA), European Centre for Disease Prevention and Control (ECDC). The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2012, EFSA Journal 2014; 12(2):3547
2. Tam, CC, Higgins C, Neal K, Rodrigues L, Millership S, O'Brien S. Chicken consumption and use of acid-suppressing medications as risk factors for Campylobacter enteritis, England. Emerg Infect Dis, 2009. 15(9): p. 1402-8.
3. EFSA Panel on Biological Hazards (2011) Scientific Opinion on Campylobacter in broiler meat production: control options and performance objectives and/or targets at different stages of the food chain. 9, 141
4. Calciati, E, Lafuente S, De Simó M, Balfagon P, Bartolomé R, Caylà J. 2012. A Campylobacter outbreak in a Barcelona school. Enferm Infect Microbiol Clin 30(5): 243-245.
5. Gubbels SM, Kuhn KG, Larsson JT, Adelhardt M, Engberg J, et al. 2012. A waterborne outbreak with a single clone of Campylobacter jejuni in the Danish town of Koge in May 2010. Scand J Infect Dis 44(8):586-594.
6. Nichols GL, Richardson JF, Sheppard SK, Lane C, Sarran C. Campylobacter epidemiology: a descriptive study reviewing 1 million cases in England and Wales between 1989 and 2011. BMJ Open 2012; 2(4).

Cholera

- In 2012, the number of reported cholera cases decreased substantially compared with 2011.
- All cholera cases that occurred in Europe between 2006 and 2012 were imported without specific age group dominance.
- The majority of cases were reported in October and November.
- The United Kingdom reported almost 70% of all the cholera cases.

Cholera is a highly infectious, acute enteric illness caused by *Vibrio cholerae* serogroups O1 or O139. The incubation period ranges from a few hours to five days. The clinical course is characterised by the onset of watery diarrhoea, nausea, vomiting, dehydration and acidosis, which without prompt rehydration can lead to renal failure and death. The main route of transmission is the ingestion of water or food contaminated with faeces. Cholera is endemic in many countries throughout Africa and Asia and cases detected in Europe are entirely related to travel to endemic countries.

Epidemiological situation in 2012

In 2012, 18 cases (all confirmed) of cholera were reported by four countries (Table 1). The United Kingdom reported 12 cases (66.7%), France reported four cases, and Austria and Sweden all reported one case each. No cases were reported in the remaining EU/EEA countries in 2012. All reported cases were related to travel.

Table 1. Numbers and rates of confirmed cholera reported cases, EU/EEA, 2008–2012

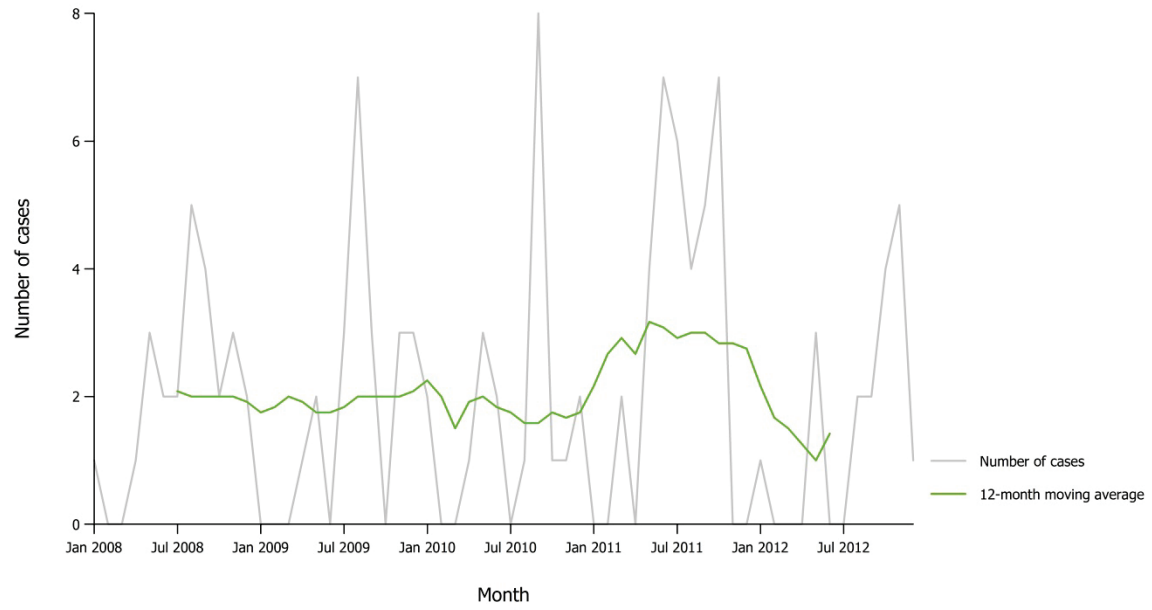
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	1	1	0.01	0.01	0	0.00	0	0.00	0	0.00	1	0.01
Belgium	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Bulgaria	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	Y	C	0	0	0.00	0.00	1	0.02	0	0.00	0	0.00	1	0.02
Estonia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
France	Y	C	4	4	0.01	0.01	1	0.00	1	0.00	1	0.00	2	0.00
Germany	Y	C	0	0	0.00	0.00	3	0.00	6	0.01	0	0.00	0	0.00
Greece	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Hungary	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ireland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Italy	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Latvia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0	0.00	0.00	2	0.01	0	0.00	0	0.00	5	0.03
Poland	Y	A	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Portugal	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Romania	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	1	0.01	0	0.00
Slovakia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Spain	Y	C	0	0	0.00	0.00	1	0.00	0	0.00	0	0.00	0	0.00
Sweden	Y	C	1	1	0.01	0.01	1	0.01	1	0.01	1	0.01	0	0.00
United Kingdom	Y	C	12	12	0.02	0.02	26	0.04	13	0.02	16	0.03	16	0.03
EU Total	**-**	**-**	**18**	**18**	**0.00**	**0.00**	**35**	**0.01**	**21**	**0.00**	**19**	**0.00**	**25**	**0.01**
Iceland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
EU/EEA Total	**-**	**-**	**18**	**18**	**0.00**	**0.00**	**35**	**0.01**	**21**	**0.00**	**19**	**0.00**	**25**	**0.01**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

The number of cases reported in 2012 represents a notable decrease compared with the number of infections detected in 2011 (Figure 1). The fall of cases can be attributed to the United Kingdom which reported 18 cases in 2012 compared with 35 cases reported in 2011. The number of cases in 2012 was at the same level with the cholera cases reported between 2008 and 2010.

Figure 1. Distribution of confirmed cholera reported cases by month, EU/EEA, 2008–2012

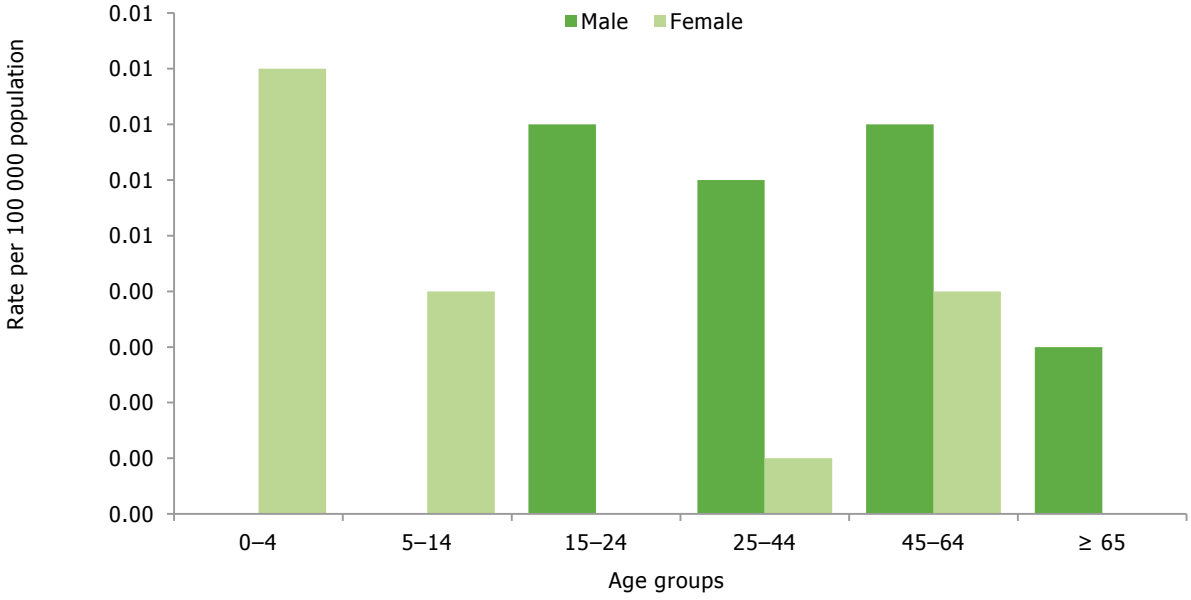


Source: Country reports from Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom.

Age and gender distribution

In 2012, information on age was available for all 18 confirmed cases. The majority of cases occurred among 45–64 and 25–44 year-old age groups, accounting for eight and five cases respectively. Male cases were double of that of female cases.

Figure 2. Rates of confirmed cholera reported cases by age and gender, EU/EEA, 2012

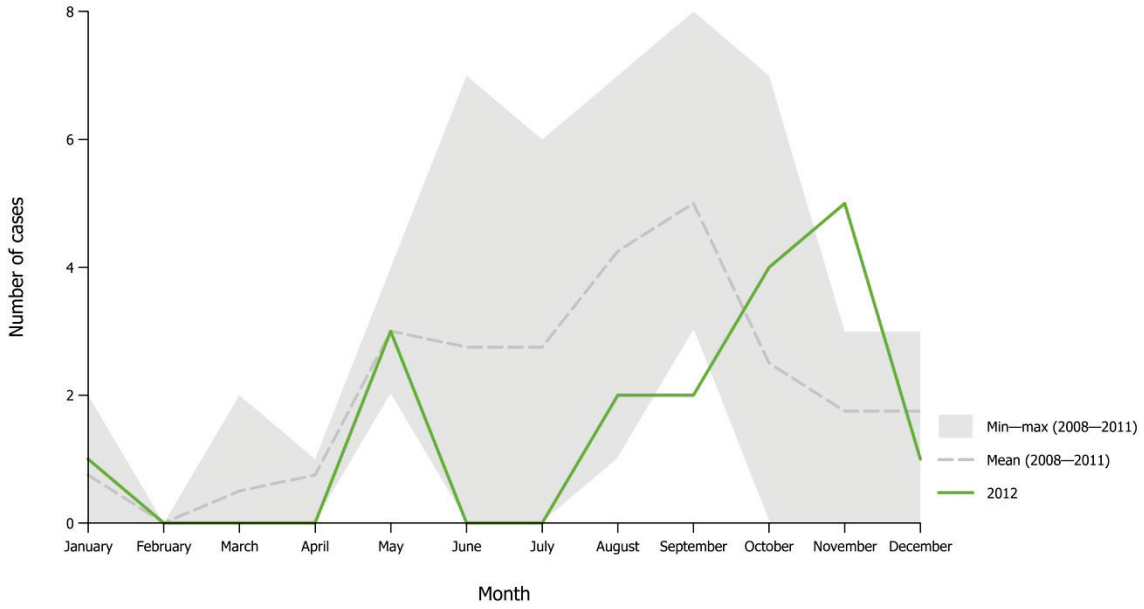


Source: Country reports from Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United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

Seasonality

In 2012, the seasonal pattern of reported cholera cases was different to that in previous years, with cases peaking in October and November (Figure 2.3.12).

Figure 3. Distribution of confirmed cholera reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



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

Discussion

Cholera is a sporadic, travel-associated disease in the EU/EEA. In 2012, a significant reduction in travel-related cholera cases was reported in the EU/EEA, with the United Kingdom experiencing the greatest fall in infections and yet reporting almost 70% of the total cases. The reduction in the number of cases also coincided with a change in their seasonal distribution.

Cholera outbreaks are common in several developing countries and cases showed a steady expansion across different regions of Africa and the Caribbean in 2011. There has been an on-going cholera outbreak in Haiti and the Dominican Republic since the beginning of 2011, a few months after the earthquake [1]. Cases of cholera were detected in 2012 in Cuban and Dominican Republic.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-FLA_FRA	Cp	Co	P	C	Y	Y	Y	Y	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y	Other
Estonia	EE-ANTH/CHOL/DIPH/MALA/SPOX/TRIC/TULA/TYPH	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y	Not specified/unknown
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Portugal	PT-CHOLERA	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-CHOLERA	O	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. Barzilay EJ, Schaad N, Magloire R, Mung KS, Boncy J, Dahourou GA, et al. Cholera surveillance during the Haiti epidemic – the first two years. N Engl J. Med 2013; 368:599-609.

2. Piarroux R, Barrais R, Fauchet B, Haus R, Piarroux M, Gaudar J, et al. Understanding the cholera epidemic, Haiti. Emerg Infect Dis 2013; 17(7): 1161-1168.

Cryptosporidiosis

- The number of cases reported has increased in several EU countries in 2012.
- Young children below five years of age are the group most at risk with case rates 13.8 and 10.5 per 100 000 population for males and females respectively.
- In the second half of 2012, several countries reported an unusual increase in case numbers but no common epidemiological link could be identified.
- The importance of cryptosporidiosis in developing countries suggests that increased testing and ascertainment are needed in EU/EEA countries.

Cryptosporidiosis is an acute diarrhoeal disease caused by the intracellular protozoan parasite *Cryptosporidium* spp. infecting the brush border of enterocytes in the small and large intestines. Human cryptosporidiosis is mostly caused by the species *C. hominis and C. parvum*, with minor species including *C. meleagridis, C. cuniculus, C. ubiquitum, C. viatorum, C. canis* and *C. felis*. The disease is self-limiting and treatment mainly supportive, but immune-compromised patients are at increased risk of developing a severe disease. Transmission is through the faecal-oral-route via contaminated water, soil or food products and the most common identified vehicles are contaminated drinking water and contaminated recreational water. Direct contact with positive animals, particularly calves, may also result in an infection. *Cryptosporidium* oocysts excreted in the faeces are robust and can survive in the environment for extended periods. The oocysts are resistant to chlorine at the concentrations normally used for treating drinking water and swimming pools. There are well documented large outbreaks of cryptosporidiosis caused by the contamination of drinking water. *Cryptosporidium* oocysts are sensitive to ultraviolet (UV) light treatment. Prevention is through proper treatment of drinking water and swimming pool water and ensuring hand washing of children following visits to animal farms.

Epidemiological situation in 2012

Cryptosporidium cases in 2012 were 68% higher than in 2011, with 9 591 cases reported. A majority of all cases (93%), were from only four countries, these being the United Kingdom (68%), Ireland (6%), Belgium (5%) and Germany (14%) (Table 1, Figure 1). The highest case rate was observed in Ireland (12 cases per 100 000) followed by the United Kingdom (10 cases per 100 000). The overall rate in EU and EEA countries was 3.15 cases per 100 000 population and there has been increased reporting in 2012 compared with 2011 from Spain (268%), Finland (127%), Belgium (103%), the United Kingdom (83%), Germany (48%), Ireland (35%) and Slovenia (20%). The confirmed cases reported by Belgium and Spain were not included in the calculation of the overall disease rate, as their national surveillance systems for cryptosporidiosis reporting do not cover the whole population.

Table 1. Number and rates of confirmed cryptosporidiosis reported cases, EU/EEA, 2008–2012

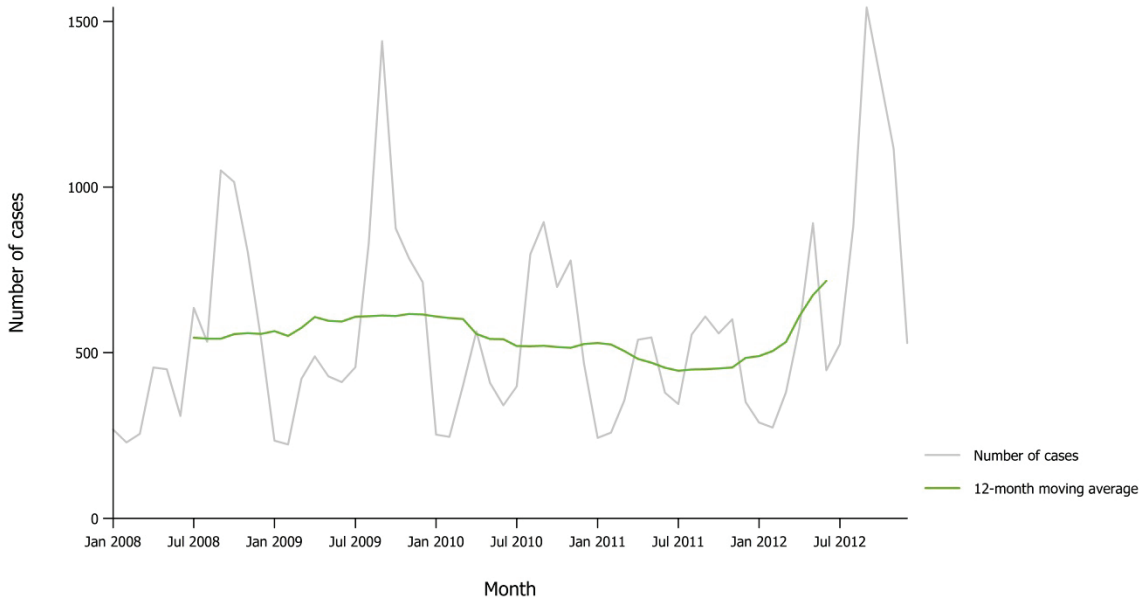
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	4	4	0.05	0.05	18	0.21	3	0.04	0	0.00	13	0.16
Belgium	N	C	495	495	-	-	244	-	275	-	470	-	397	-
Bulgaria	Y	A	4	4	0.06	0.06	0	0.00	1	0.01	1	0.01	0	0.00
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	4	4	0.04	0.04	0	0.00	1	0.01	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	50	50	0.93	0.97	22	0.41	19	0.36	11	0.21	11	0.21
France	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	Y	C	1 385	1 373	1.68	1.89	930	1.14	918	1.13	1 106	1.35	1 014	1.24
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	10	10	0.10	0.11	14	0.14	34	0.35	15	0.15	10	0.10
Ireland	Y	C	558	556	12.13	9.11	413	9.04	294	6.46	445	9.84	412	9.24
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	3	3	0.15	0.16	14	0.68	23	1.09	9	0.42	0	0.00
Lithuania	Y	C	1	1	0.03	0.04	1	0.03	2	0.06	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0.00	1	0.20	1	0.20	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0.00	0	0.00	1	0.24	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	A	2	2	0.01	0.00	1	0.00	0	0.00	5	0.01	1	0.00
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	0	0	0.00	0.00	0	0.00	8	0.04	8	0.04	0	0.00
Slovakia	Y	C	1	1	0.02	0.02	0	0.00	0	0.00	0	0.00	0	0.00

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Slovenia	Y	C	12	12	0.58	0.63	10	0.49	7	0.34	3	0.15	6	0.30
Spain	N	C	291	291	-	-	79	-	57	-	197	-	75	-
Sweden	Y	C	238	238	2.51	2.61	379	4.03	392	4.20	159	1.72	148	1.61
United Kingdom	Y	C	6 533	6 533	10.37	9.97	3571	5.71	4 569	7.37	5 587	9.07	4 941	8.08
EU Total	**-**	**-**	**9 591**	**9 577**	**3.20**	**3.85**	**5 697**	**1.96**	**6 605**	**2.30**	**8 016**	**2.69**	**7 028**	**2.41**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	4	4	0.08	0.08	-	-	-	-	-	-	-	-
EU/EEA Total	**-**	**-**	**9 595**	**9 581**	**3.15**	**3.76**	**5 697**	**1.96**	**6 605**	**2.30**	**8 016**	**2.69**	**7 028**	**2.41**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed cryptosporidiosis reported cases by month, EU/EEA, 2008–2012

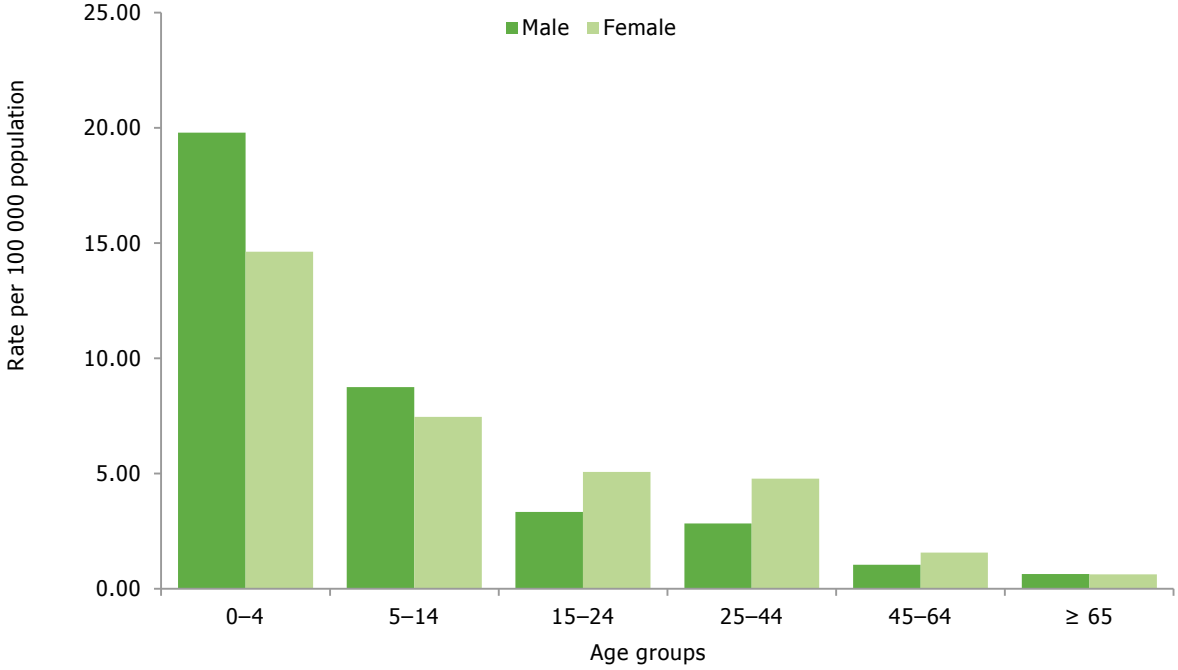


Source: Country reports from Cyprus, Czech Republic, Estonia, Finland, Germany, Hungary, Ireland, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

Age and gender distribution

Information on gender was provided for 9 520 confirmed cases in EU/EEA countries, with the male-to-female ratio ranging from 0.8 to 1.5 among the top seven countries with highest reported numbers of cases in 2012 (United Kingdom, Germany, Ireland, Belgium, Spain, Sweden, Finland). For these seven countries the percentage of cases in babies and children under five years ranged from 4% (Finland) to 72% (Spain). Information on age group and gender was provided for 9 538 confirmed cases in EU/EEA countries. The highest notification rates were reported for 0–4 year old children in Ireland (Figure 2): 98 cases per 100 000 for males, followed by 68.8 cases per 100 000 population for females.

Figure 2. Rates of confirmed cryptosporidiosis reported cases by age and gender, EU/EEA, 2012

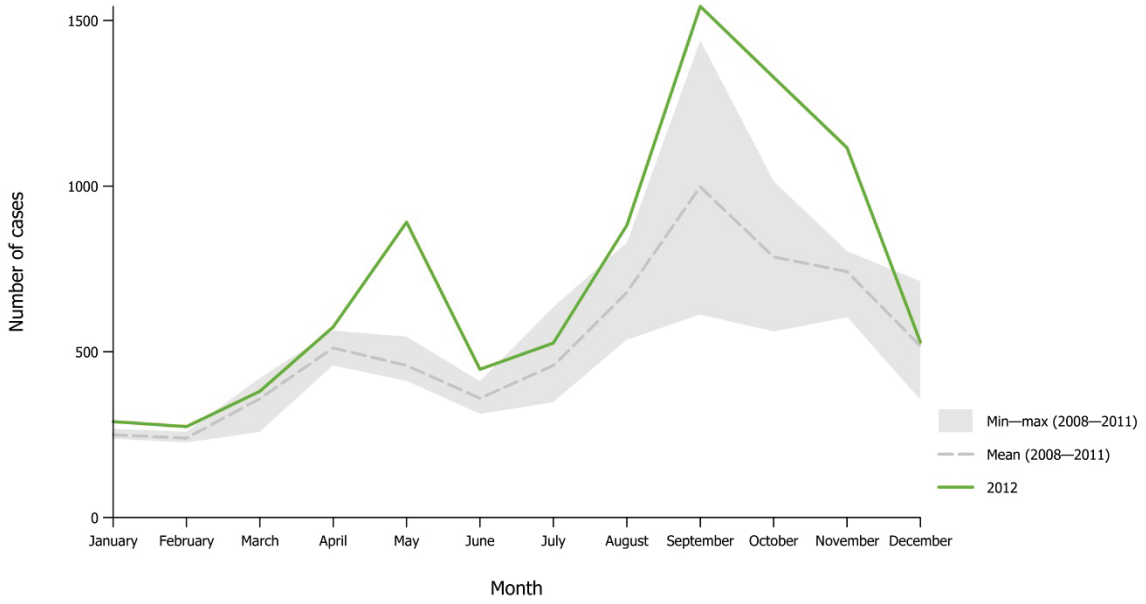


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Estonia, Finland, Germany, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality

The incidence of cryptosporidiosis followed a seasonal pattern in Europe in 2012 with a strong peak during late summer and autumn in six of the top seven countries reporting in 2012 (United Kingdom, Germany, Belgium, Spain, Sweden, Finland). Ireland had a strong spring peak, with no increase in the autumn, while the United Kingdom had a small spring peak and a large autumn one.

Figure 3. Distribution of confirmed cryptosporidiosis reported cases by month in 2012 compared with 2008–2012, EU/EEA



Source: Country reports from Cyprus, Czech Republic, Estonia, Finland, Germany, Hungary, Ireland, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

Discussion

Cryptosporidiosis is an important cause of acute diarrhoeal disease worldwide, and the burden of illness in childhood can be important [1]. Out of the 21 EU/EEA countries reporting data on cryptosporidiosis, seven countries reported zero cases, three countries reported just one case and only seven reported 50 or more cases. In addition, nine countries did not report data on cryptosporidiosis at all. It is therefore likely that cryptosporidiosis is underreported in most of the EU/EEA countries. The reason for this is most likely a lack of laboratory diagnosis of cryptosporidiosis in laboratories diagnosing diarrhoeal diseases. Although outbreaks caused by contamination of drinking water or recreational water may happen at any time of the year, without primary diagnostic testing of faecal samples through recognised methods these outbreaks are unlikely to be detected. The spring increase in the United Kingdom was related to a large outbreak of *C. parvum* gp60 subtype IIaA15G2R1 across several regions linked to loose leaf bagged salad (Figure 3). The higher number of cases than normal in the late summer/autumn in the United Kingdom, Germany and the Netherlands has been reported elsewhere [2]. In the United Kingdom *C. parvum* is more common in the spring and *C. hominis* in the autumn. An outbreak in Finland affecting 264 people in five different restaurants in four towns was thought to be have been caused by contaminated salad items through a trace-back exercise. Human activities, such as drinking untreated water, recreational water activities, and contact with farm animals, increase the risk of becoming infected with *Cryptosporidium.* There is a need to better understand the epidemiology of cryptosporidiosis in the EU/EEA through increased laboratory testing and speciation/sub-typing of isolates.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Reflab	V	O	P	C	Y	N	N	N	Y	EU-2008
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Estonia	EE-CRYPTOSPORIDIOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU case definition (legacy/deprecated)
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	A	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-CRYPTOSPORIDIOSIS	O	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. Kotloff KL, Nataro NP, Blackwelder WC, Nasrin D, Farag TH, Panchalingam S et al, Burden and aetiology of diarrhoeal disease in infants and young children in developing countries (the Global Enteric Multicenter Study, GEMS): a prospective, case-control study. Lancet 2013; 382: 209–22.

2. Fournet N et al. Simultaneous increase of Cryptosporidium infections in the Netherlands, the United Kingdom and Germany in late summer season, 2012. Euro Surveillance. 2013 Jan 10; 18(2). doi: pii: 20348.

Echinococcosis

- In 2012, the case rate of echinococcosis was 0.19 cases per 100 000 population in the EU and EEA.
- Bulgaria had the highest disease rate, 4.37 cases per 100 000 population, and accounted for 39% (320 confirmed cases) of the reported number of cases.
- While the rate of echinococcosis has been fairly stable in the last years, the number of cases reported with alveolar echinococcosis has increased, most likely reflecting the increasing spatial distribution of the parasite in animals.

Echinococcosis is an uncommon disease in the EU, caused by infections with the larval stage of *Echinococcus* tapeworms. Echinococcosis manifests in two forms depending on the causative species: alveolar echinococcosis (AE) is caused by *E. multilocularis* and cystic echinococcosis (CE) is caused by *E. granulosus*. Human infection occurs through ingestion of tapeworm eggs, most commonly through contact with infected dogs (*E. granulosus* particularly), foxes and raccoon dogs (*E. multilocularis* particularly) or their environment, which has become contaminated with egg-containing faeces. Incubation period ranges from five to 15 years and results in gradually developing potentially fatal tumour-like cysts mostly in the liver (cystic echinococcosis) or in the lungs (alveolar echinococcosis).

Epidemiological situation in 2012

In 2012, 25 EU and EEA countries reported 812 confirmed cases of human echinococcosis (Table 1). This is an increase of 3.6% compared with 2011. The overall EU/EEA case rate was 0.19 cases per 100 000 with the highest case rate observed in Bulgaria (4.37 cases per 100 000). The 12-month moving average of confirmed case numbers has been relatively stable in the last five year period with the exception of a decline in the second half of 2011 (Figure 1). Please note however that some of the countries with high case numbers are not included in the graph as they did not provide monthly data for the whole period. No fatalities due to echinococcosis were reported in 2012.

Table 1. Number and rates of confirmed echinococcosis reported cases, EU/EEA, 2008–2012

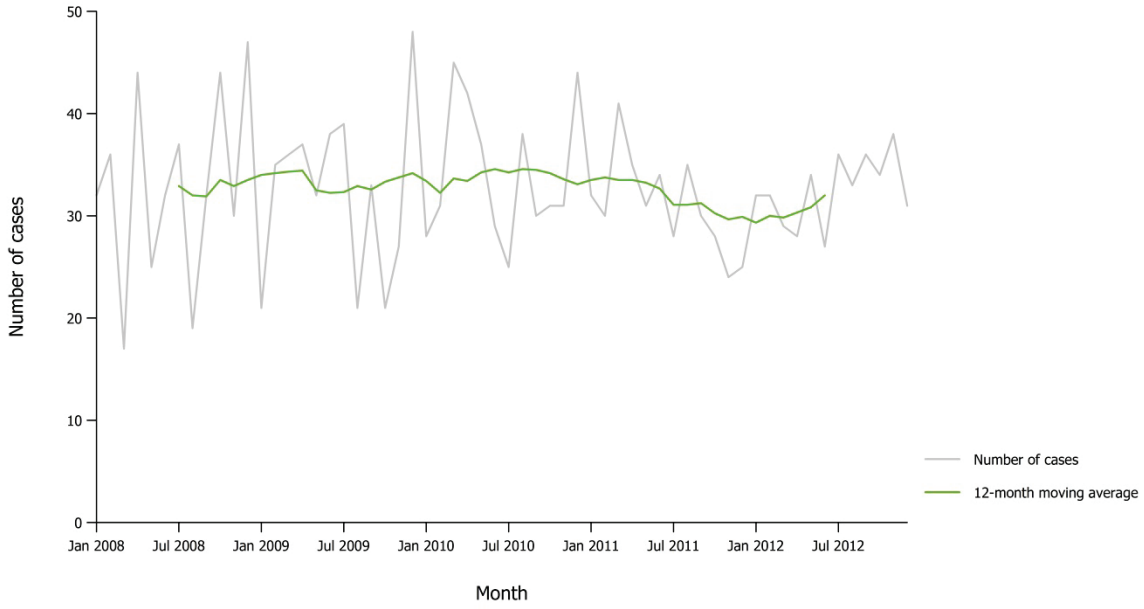
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	5	3	0.04	0.04	7	0.08	21	0.25	20	0.24	6	0.07
Belgium	Y	A	6	6	0.05	0.00	1	0.01	1	0.01	0	0.00	0	0.00
Bulgaria	Y	A	320	320	4.37	4.41	307	4.17	291	3.92	323	4.33	386	5.13
Cyprus	Y	C	0	0	0.00	0.00	2	0.24	0	0.00	1	0.13	1	0.13
Czech Republic	Y	C	0	0	0.00	0.00	0	0.00	5	0.05	1	0.01	2	0.02
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	3	3	0.23	0.21	0	0.00	0	0.00	0	0.00	1	0.08
Finland	Y	C	3	3	0.06	0.06	1	0.02	1	0.02	1	0.02	1	0.02
France	Y	C	49	49	0.08	0.07	45	0.07	33	0.05	27	0.04	14	0.02
Germany	Y	C	114	114	0.14	0.14	142	0.17	117	0.14	106	0.13	102	0.12
Greece	Y	C	21	21	0.19	0.15	17	0.15	11	0.10	22	0.20	28	0.25
Hungary	Y	C	6	6	0.06	0.06	11	0.11	9	0.09	8	0.08	7	0.07
Ireland	Y	C	0	0	0.00	0.00	0	0.00	1	0.02	1	0.02	2	0.05
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	8	8	0.39	0.38	10	0.48	14	0.66	15	0.69	21	0.96
Lithuania	Y	C	24	23	0.77	0.73	24	0.79	23	0.73	36	1.13	32	1.00
Luxembourg	Y	C	0	0	0.00	0.00	1	0.20	1	0.20	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	49	0.29	-	-	25	0.15	12	0.07

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Poland	Y	C	28	28	0.07	0.07	19	0.05	36	0.09	25	0.07	28	0.07
Portugal	Y	C	3	2	0.02	0.02	1	0.01	3	0.03	4	0.04	4	0.04
Romania	Y	C	98	96	0.48	0.48	53	0.27	55	0.27	42	0.21	119	0.58
Slovakia	Y	C	3	3	0.06	0.06	2	0.04	9	0.17	4	0.07	5	0.09
Slovenia	Y	C	6	6	0.29	0.29	8	0.39	8	0.39	9	0.44	7	0.35
Spain	Y	C	96	96	0.21	0.20	53	0.11	82	0.18	86	0.19	109	0.24
Sweden	Y	C	16	16	0.17	0.18	19	0.20	30	0.32	12	0.13	13	0.14
United Kingdom	Y	C	7	7	0.01	0.01	9	0.01	7	0.01	7	0.01	9	0.02
EU Total	**-**	**-**	**816**	**810**	**0.19**	**0.19**	**781**	**0.18**	**758**	**0.18**	**775**	**0.18**	**909**	**0.21**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Norway	Y	C	2	2	0.04	0.04	3	0.06	1	0.02	4	0.08	3	0.06
EU/EEA Total	**-**	**-**	**818**	**812**	**0.19**	**0.19**	**784**	**0.18**	**759**	**0.18**	**779**	**0.18**	**912**	**0.21**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed echinococcosis reported cases by month, EU/EEA, 2008–2012

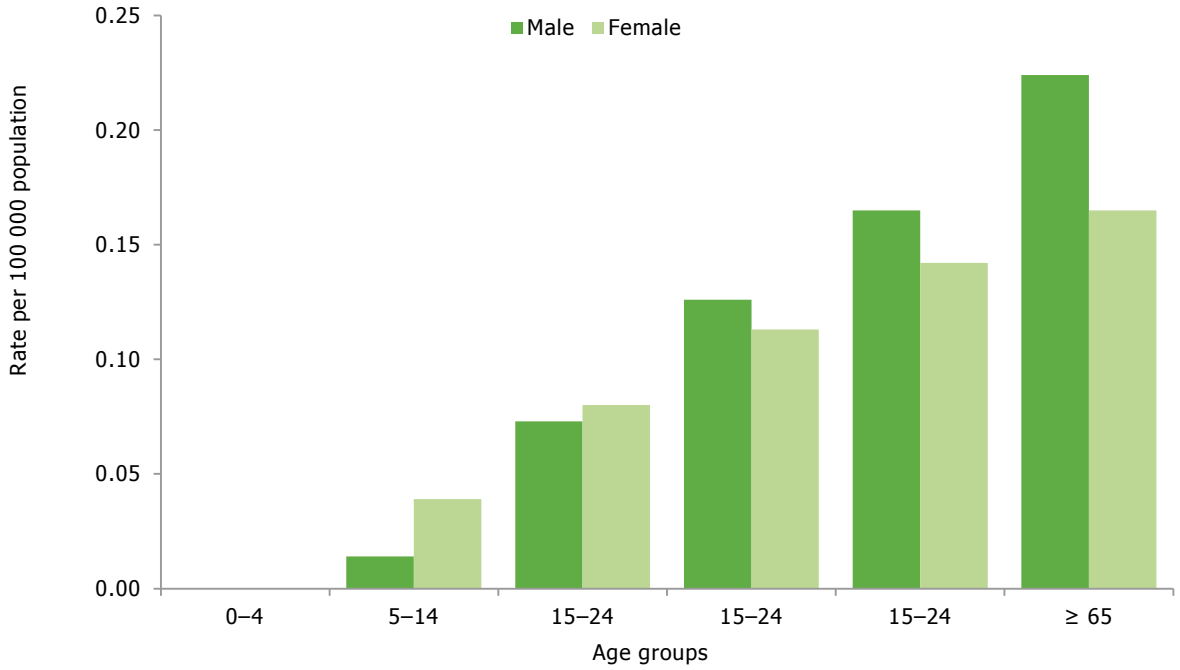


Source: Country reports from Austria, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Age and gender distribution

There were no major differences in echinococcosis case rates by gender as the male-to-female ratio was 0.98:1 in 2012. Information on both age and gender was provided for 481 confirmed cases (59%). The highest case rate was in males aged 65 years old and over (0.22 per 100 000) followed by females aged 65 years old and over (0.17 per 100 000) (Figure 2). The case rates were generally higher in males than in females for cases aged 25 years and older.

Figure 2. Rates of confirmed echinococcosis reported cases by age and gender, EU/EEA, 2012

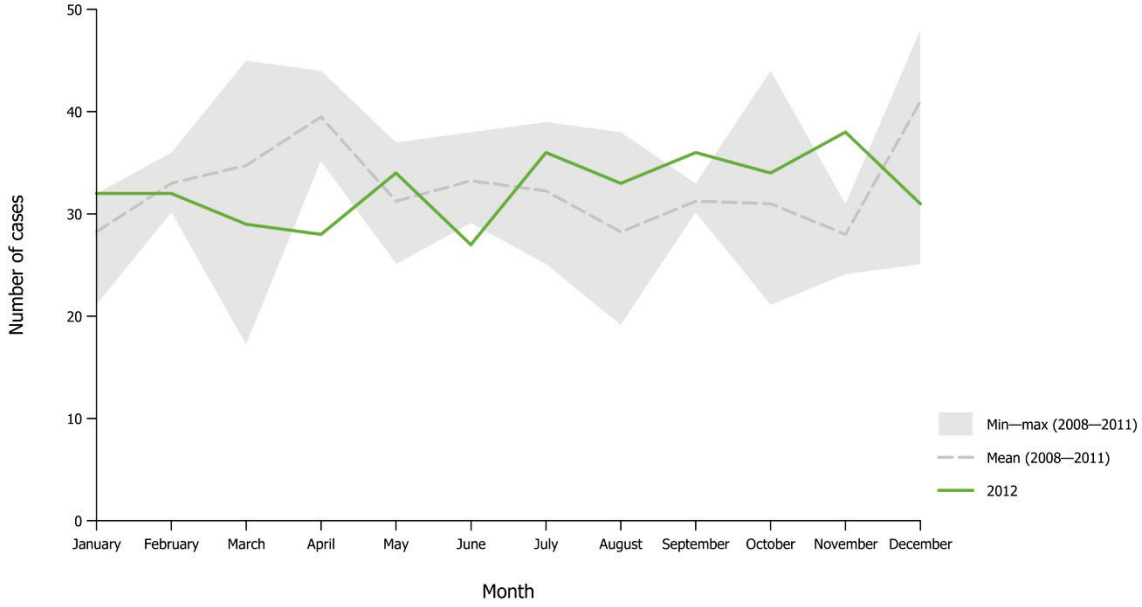


Source: Country reports from Austria, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

As to be expected for a disease with a very long incubation period, no seasonality could be observed for echinococcosis (Figure 3). Please note however that some of the countries with high case numbers are not included in the graph as they did not provide monthly data for the whole period.

Figure 3. Distribution of confirmed echinococcosis reported cases by month in 2012 compared with 2008–2011 data, EU/EEA

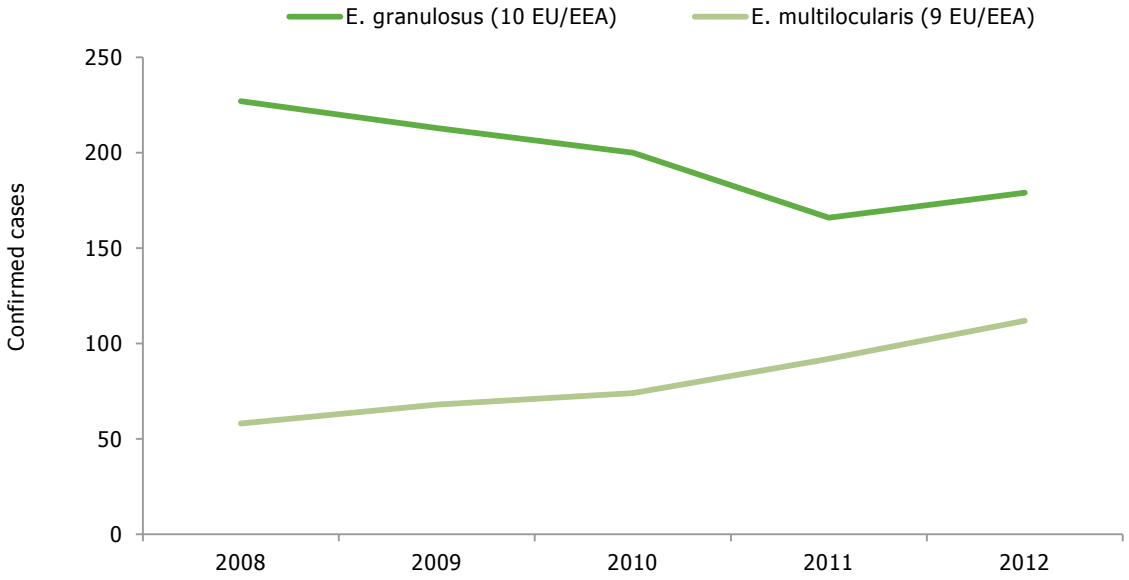


Source: Country reports from Austria, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Enhanced surveillance in 2012

Species information was available for 76% of the confirmed cases. Of these, 81% were *E. granulosus*, 18% *E. multilocularis* and 1% other *Echinococcus* species. Over the last five years, there was an increasing number of cases infected with *E. multilocularis* (alveolar echinococcosis) reported from the nine EU/EEA countries reporting this species throughout the five-year period (Figure 4), with almost the double the number of cases reported in 2012 compared with 2008. In contrast, a decreasing number of cases infected with *E. granulosus* (cystic echinococcosis) were reported during 2008–2011 followed by a slight increase in 2012 from the ten EU/EEA countries reporting this species throughout the five-year period (Figure 4).

Figure 4. Number of confirmed echinococcosis cases in selected EU/EEA countries, 2008–2012



Source: Country reports from countries reporting species for part of or all their cases throughout the period. For E. granulosus: Austria, Belgium, Estonia, Germany, Latvia, Lithuania, Norway, Poland, Slovakia and Spain.

For E. multilocularis: Austria, Belgium, Estonia, France, Germany, Latvia, Lithuania, Poland and Slovakia.

Discussion

Cases of echinococcosis are reported in most countries of the EU, though at low frequency, with the majority of cases being reported from a few countries. The highest population-based risk was noted in Bulgaria, where the notification rate in 2012 was 23 times higher than the overall EU/EEA case rate. The EU/EEA case rate has remained fairly constant in the last five years. As regards to age, the higher case rates observed in the elderly can be explained by the long incubation period of several years.

The observed increase in alveolar echinococcosis is worrisome as untreated the disease is often fatal. In a German case-control study, 65% of cases could be attributed to farming. Cases were also more likely than controls to have owned dogs, and particularly leaving the dog in the garden unattended or having dogs that killed game [1]. Similar results were reported from a French study where people living in a rural setting in AE-endemic areas were at highest risk followed by those gardening in a non-rural setting in AE-endemic areas [2]. Surveillance of *E. multilocularis* in foxes is important in order to assess the prevalence of this parasite in Europe, particularly as there is evidence that the distribution of *E. multilocularis* is increasing in Europe, with more endemic regions, higher fox density (also in urban areas) and also higher worm density per fox being reported [3-7]. Harmonised schemes for the monitoring and reporting of *Echinococcus* in animals and foodstuffs can be found in an external scientific report submitted to the European Food Safety Authority [8].

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Co	A	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Estonia	EE-ECHINOCOCCOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU Case Definition (legacy/deprecated)
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y	Not specified/unknown
France	FR-FRANCEECHINO	V	Co	P	C	Y	Y	Y	Y	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.3	Cp	Co	P	C	Y	N	N	N	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Portugal	PT-ECHINOCOCCOSIS	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	A	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-ECHINOCOCCOSIS	V	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. Kern K, Ammon A, Kron M, Sinn G, Sander S, Petersen LR, et al. Risk factors for alveolar echinococcosis in humans. Emerg Infect Dis. 2004; 10(12). Available from http://wwwnc.cdc.gov/eid/article/10/12/03-0773.htm.
2. Piarroux M, Piarroux R, Knapp J, Bardonnet K, Dumortier J, Watelet J, et al. Populations at risk for alveolar echinococcosis, France. Emerg Infect Dis. 2013; 19(5).
3. Enemark HL, Al-Sabi MN, Knapp J, Staahl M, Chríel M. Detection of a high-endemic focus of Echinococcus multilocularis in red foxes in southern Denmark, January 2013. Euro Surveillance. 2013; 18(10): pii=20420.
4. Osterman Lind E, Juremalm M, Christensson D, Widgren S, Hallgren G, Ågren EO et al. First detection of Echinococcus multilocularis in Sweden, February to March 2011. Euro Surveillance. 2011; 16(14): pii=19836.
5. Davidson RK, Romig T, Jenkins E, Tryland M and Robertson LJ. Review: The impact of globalisation on the distribution of *Echinococcus multilocularis.* Trends in Parasitology. 2012. 28(6):239-247.
6. Combes B, Comte S, Raton V, Raoul F, Boué F, Umhang G, Favier S, Dunoyer C, Woronoff N and Giraudoux P. Westward spread of Echinococcus multilocularis in foxes, France, 2005-2010. Emerging Infectious Diseases. 2012 Dec; 18(12):2059-62.
7. Takumi K, van der Giessen J, de Vries A, Chu M.L, Mulder J, Teunis, P. Evidence for an increasing presence of Echinococcus multilocularis in foxes in the Netherlands. International Journal for Parasitology. 2008; 38(5), 571-578.
8. European Food Safety Authority. 2010. Scientific report submitted to EFSA Development of harmonised schemes for the monitoring and reporting of Echinococcus in animals and foodstuffs in the European Union. Available on line: http://www.efsa.europa.eu/en/supporting/pub/36e.htm.

Giardiasis

- The rate of reported confirmed cases of giardiasis in EU and EEA countries has been relatively constant over the past five years.
- In 2012, the disease reporting rate of giardiasis was 5.43 cases per 100 000 population in the EU/EEA.
- Human giardiasis was most commonly diagnosed in children below five years, with the highest case rate for males, 11.6 per 100 000 population in 2012.

*Giardia lamblia (*synonym *G. duodenalis* or *G. intestinalis*) is a flagellated, cyst-producing intestinal parasite able to infect humans and animals. Giardiasis is the most common cause of parasitic diarrheal disease worldwide. Individuals become infected through ingesting contaminated food, soil, or water or by person-to-person transmission. *Giardia* cysts can survive for extended periods of time in the environment and a major reservoir of the parasite is contaminated surface water. Waterborne outbreaks due to inadequate treatment of drinking water are frequently reported and infants and children are at a particularly increased risk for infection. Infected individuals can remain asymptomatic or develop fatigue and bloating followed by acute or chronic diarrhoea that can lead to dehydration and malabsorption.

Epidemiological situation in 2012

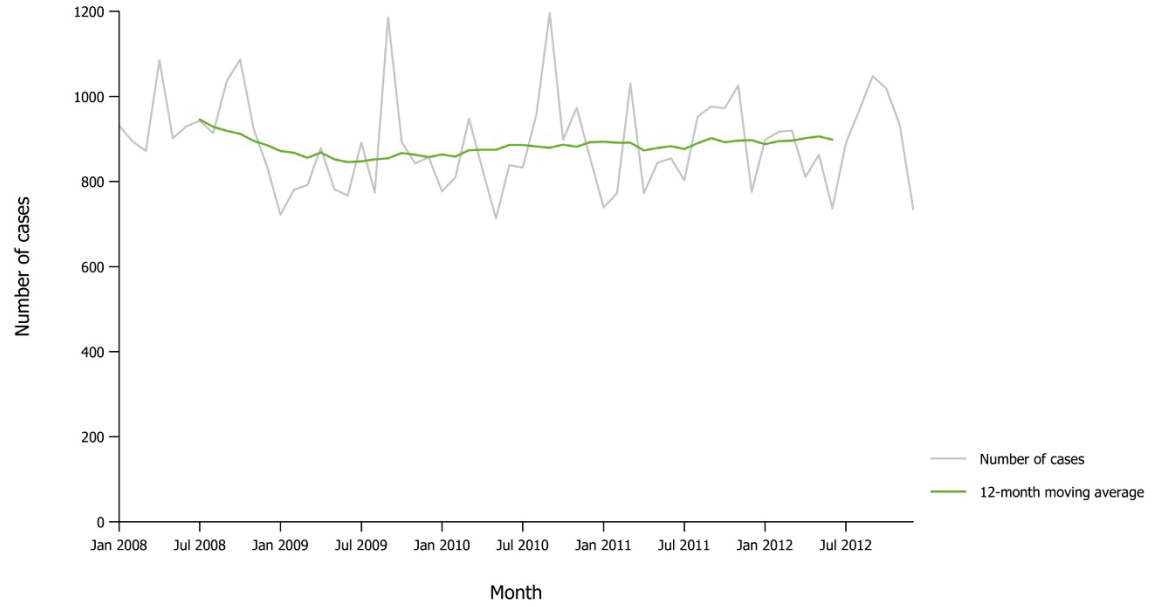
In 2012, a total of 16 368 confirmed cases of giardiasis were reported by 23 EU and EEA countries (Table 1). The highest rate of confirmed cases was observed in Bulgaria (21 per 100 000) followed by Estonia (19 per 100 000), Sweden (11 per 100 000) and Finland (7 per 100 000). The overall case rate in the EU and EEA countries was 5.43 cases per 100 000 population. It should be noted that the confirmed cases reported by Belgium, Spain and Romania were not included in the calculation of country-specific rates as their national surveillance systems for *Giardia* reporting did not cover the whole population. The disease rate of confirmed cases of giardiasis in EU and EEA countries has been relatively constant over the past five years (Figure 1).

Table 1. Number and rates of confirmed giardiasis reported cases, EU/EEA, 2008–2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	50	50	0.60	0.61	74	0.88	59	0.70	31	0.37	47	0.57
Belgium	N	C	1 244	1 244	-	-	1 383	-	1 212	-	1 218	-	1 213	-
Bulgaria	Y	A	1 560	1 560	21.29	24.19	1 959	26.58	2 234	30.10	2 096	28.07	2 141	28.48
Cyprus	Y	C	4	4	0.46	0.46	2	0.24	12	1.47	2	0.25	7	0.90
Czech Republic	Y	C	49	49	0.47	0.47	45	0.43	51	0.49	47	0.45	79	0.76
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	254	254	19.04	19.01	245	18.34	257	19.21	207	15.46	264	19.68
Finland	Y	C	394	394	7.30	7.49	404	7.52	373	6.97	378	7.10	427	8.06
France	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	Y	C	4 228	4 206	5.15	5.31	4 230	5.19	3 980	4.88	3 962	4.84	4 763	5.81
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	81	81	0.82	0.85	85	0.87	87	0.88	100	1.01	138	1.39
Ireland	Y	C	54	54	1.18	1.12	56	1.23	57	1.25	62	1.37	70	1.57
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	17	17	0.83	0.87	15	0.72	21	0.99	18	0.83	28	1.28
Lithuania	Y	C	13	13	0.43	0.46	8	0.26	18	0.57	13	0.41	15	0.47
Luxembourg	Y	C	2	2	0.38	0.36	0	0.00	0	0.00	2	0.41	1	0.21
Malta	Y	C	2	1	0.24	0.26	10	2.41	5	1.21	2	0.49	2	0.49
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	A	1 655	1 622	4.21	-	1 670	4.34	2 271	5.95	2 184	5.73	3 096	8.12
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	N	A	260	260	-	-	315	-	106	-	296	-	-	-
Slovakia	Y	C	243	243	4.50	4.44	162	3.00	169	3.14	139	2.58	125	2.33
Slovenia	Y	C	35	35	1.70	1.72	31	1.51	19	0.93	9	0.44	14	0.70
Spain	N	C	859	859	-	-	530	-	578	-	869	-	683	-
Sweden	Y	C	1 081	1 081	11.40	11.37	1 045	11.10	1 311	14.04	1 210	13.07	1 529	16.65
United Kingdom	Y	C	4 138	4 138	6.57	6.51	3 938	6.30	4 024	6.49	3 719	6.04	3 632	5.94
EU Total	**-**	**-**	**16 223**	**16 167**	**5.43**	**5.72**	**16 207**	**5.51**	**16 844**	**5.91**	**16 564**	**5.62**	**18 274**	**6.50**
Iceland	Y	C	22	22	6.88	6.60	34	10.68	24	7.56	27	8.45	33	10.46
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	179	179	3.59	3.51	234	4.76	262	5.39	308	6.42	270	5.70
EU/EEA Total	**-**	**-**	**16 424**	**16 368**	**5.39**	**5.67**	**16 475**	**5.50**	**17 130**	**5.90**	**16 899**	**5.63**	**18 577**	**6.49**

ASR: Age-standardised rate
Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed giardiasis reported cases by month, EU/EEA, 2008–2012

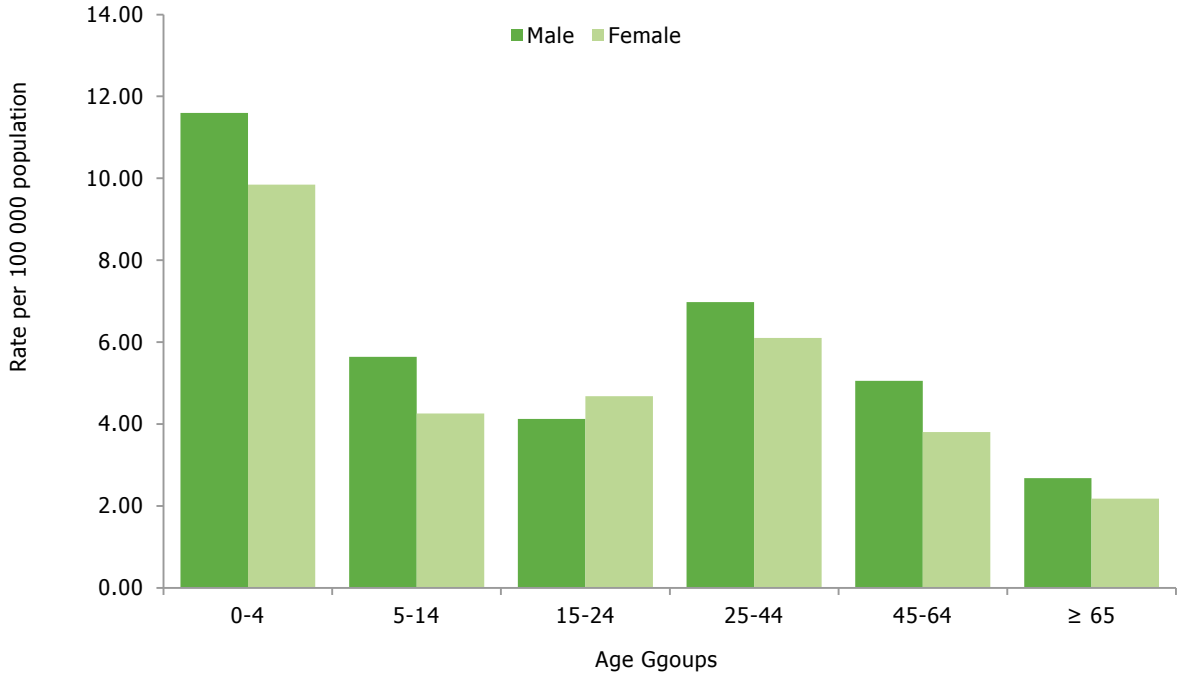


Source: Country reports from Cyprus, Czech Republic, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Malta, Norway, Slovakia, Slovenia, Sweden and the United Kingdom.

Age and gender distribution

Information on gender was provided for 14 373 confirmed cases in EU/EEA countries. In 2012, the male-to-female ratio was 1.19:1. Information on age groups and gender was reported for 12 779 confirmed cases. Similar to the previous years, the highest case rate was observed in the age group 0–4 years for both males and females. The highest notification rate was in 0–4 year old male children with 11.6 per 100 000, followed by 0–4 year old female children with 99.8 per 100 000 population (Figure 2). Of note is that Estonia and Bulgaria reported notification rates >160 per 100 000 in age group 0–4 year olds.

Figure 2. Rates of confirmed giardiasis reported cases by age and gender, EU/EEA, 2012

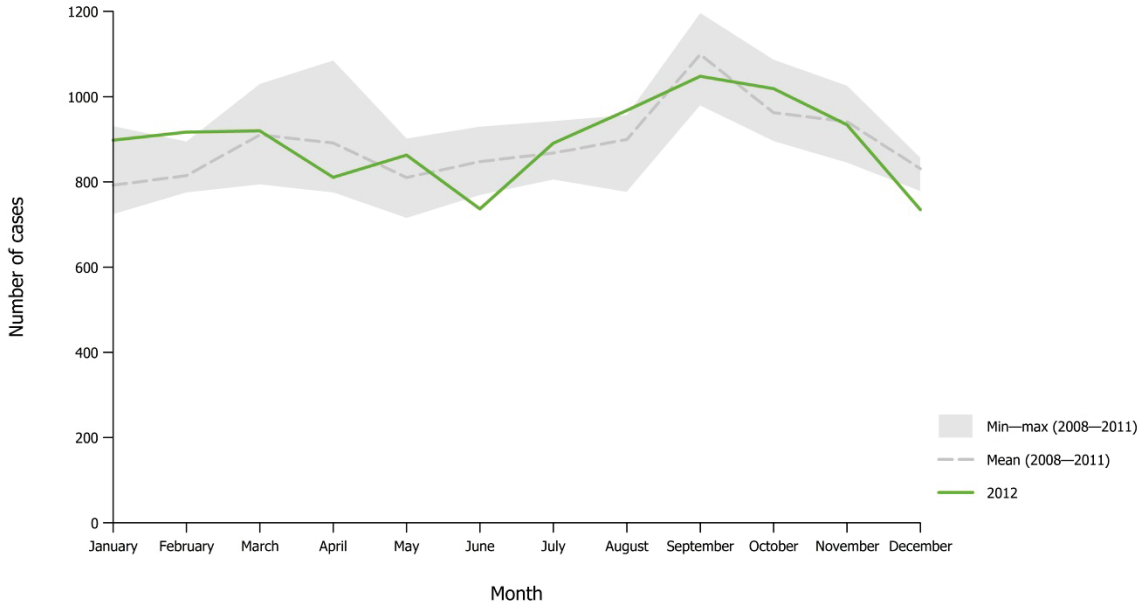


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

Data on seasonality were available for 14 434 reported cases from 22 countries. No strong seasonality was observed, however consistent with earlier years, a small increase of reported cases is observed in the autumn compared to the summer months June, July and August (Figure 3).

Figure 3. Distribution of confirmed giardiasis reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



Source: Country reports from Cyprus, Czech Republic, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Malta, Norway, Slovakia, Slovenia, Sweden and the United Kingdom.

Discussion

Cases of giardiasis were reported in 23 out of 31 EU/EEA countries. Out of these, three countries do not have surveillance systems covering the whole population and one potential high burden country is in the process of improving data completeness [1]. In order to clarify the epidemiology of giardiasis further, improvement of the national surveillance systems is needed. The case rate of reported confirmed cases of giardiasis in EU and EEA countries has been relatively constant over the past five years. In 2012, no outbreaks of giardiasis or related public health events relevant at an EU level were recorded and monitored by ECDC in 2012.

Surveillance systems overview

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				National Coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Reflab	V	O	P	C	Y	N	N	N	Y	EU-2008
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Estonia	EE-HBV/GIARDIASIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Se	P	A	N	Y	Y	N	N	EU-2008
Slovakia	SK-EPIS	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-GIARDIASIS	O	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. European Centre for Disease Prevention and Control. Annual epidemiological report - Reporting on 2011 surveillance data and 2012 epidemic intelligence data -2013; available online: http://www.ecdc.europa.eu/en/publications/Publications/annual-epidemiological-report-2013.pdf.

Hepatitis A

- The overall rate of confirmed hepatitis A cases was 2.60 per 100 000 population in 2012.
- The case rate of hepatitis A varies greatly across the EU/EEA; with the most affected region in the Eastern EU.
- The highest case rate in 2012 was observed in the age group 5–14 years: 5.45 per 100 000 population.
- Three major food-borne hepatitis A outbreaks were reported during 2013 in the EU/EEA. Frozen and fresh berries have been implicated as vehicle of the infection in all instances.

Hepatitis A is an acute infection of the liver caused by *hepatotropic picornavirus*. Humans are the main reservoir for the infection which is spread through the faecal-oral route and transmitted from person-to-person or indirectly via contaminated tap water or food. Common-source outbreaks are often associated with infected food handlers. Hepatitis A is usually a mild self-limiting disease but in rare cases may develop to a life-threatening acute liver failure. The signs and symptoms of the disease differ with the age of the patient. The infection in small children is usually asymptomatic; whereas in adults it manifests after two to six weeks incubation period with clinical symptoms such as jaundice, fever, dark urine, fatigue, and nausea. The infection leads to lifelong immunity. Hepatitis A occurs worldwide, although different virus genotypes have a distinctive distribution across the globe. The infection is effectively prevented by vaccination.

Epidemiological situation in 2012

In 2012, 13 156 confirmed cases of hepatitis A were reported by 29 EU and EEA countries, giving a rate of 2.60 cases per 100 000 inhabitants, slightly higher than 2.53 per 100 000 in 2011 (Table 1). The highest case rates were observed in Bulgaria (66.82 cases per 100 000), Romania (17.93 cases per 100 000), Estonia (4.72 cases per 100 000), Lithuania (3.76 cases per 100 000) and Hungary (3.35 cases per 100 000). All other countries reported a confirmed case rate below three per 100 000 inhabitants. The highest number of laboratory-confirmed cases were reported by Bulgaria (4 896), Romania (3 603), followed by France (1 096).

The confirmed case rate has been gradually decreasing from 2009, when it reached the peak of 3.52 per 100 000 in the EU/EEA, and stabilised in 2011 (Figure 1).

Information regarding provenance of the infection was available for 6 931 (52.7%) cases, which do not include cases from Bulgaria. Among those, 6 085 (87.8%) were reported as autochthonous whereas 846 (12.2%) cases were acquired while travelling abroad. Travel-related cases were reported by Austria (16, or 43.2%), Cyprus (1, or 50%), Denmark (29, or 53%), Estonia (3, or 4.8%), Finland (5, or 71.4%), France (363, or 36.5%), Germany (218, or 26.4%), Greece (8, or 11.4%), Hungary (10, or 3.0 %), Ireland (10, or 66.7%), Lithuania (4, or 7.8%), the Netherlands (46, or 42.6%), Poland (36, or 51.4%), Portugal (6, or 85.7%), Slovenia (5, or 62.5%), Sweden (52, or 60.5%) and Norway (25, or 73.5%).

The autochthonous cases were reported mainly by France (631, or 63.5%), Germany (609, or 73.6%), Hungary (321, or 97.0%), Romania (3 603, or 100%) and Spain (545, or 100%).

Table 1. Number and rates of confirmed hepatitis A reported cases, EU/EEA, 2008–2012

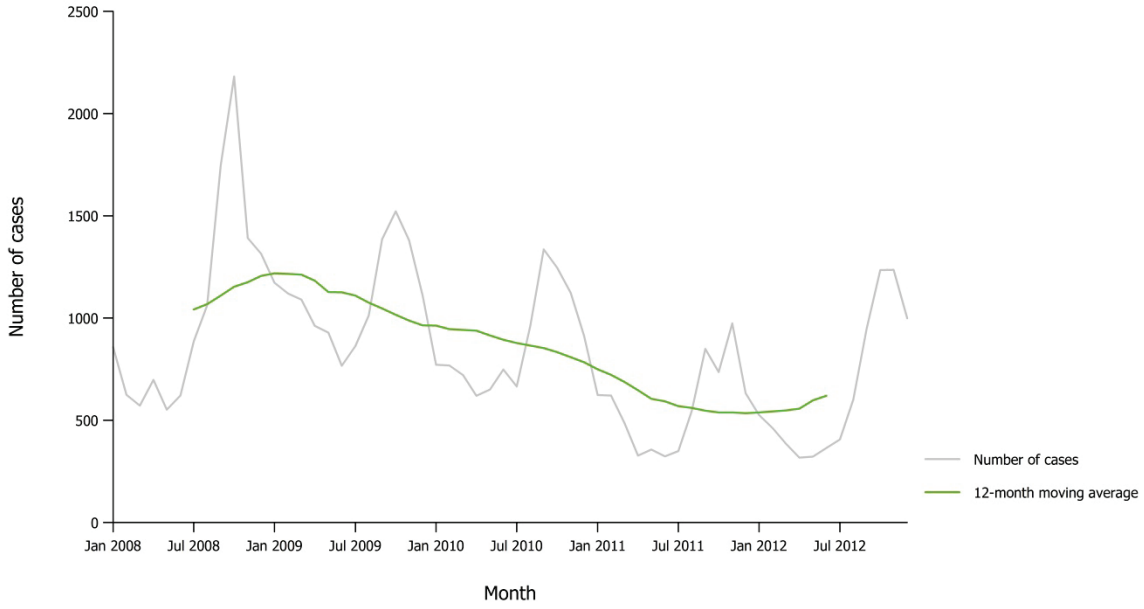
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	67	43	0.51	0.52	5	0.06	54	0.65	1	0.01	4	0.05
Belgium	N	C	147	147	-	-	167	-	137	-	130	-	365	-
Bulgaria	Y	A	4 919	4 896	66.82	-	5 587	75.81	2 350	31.66	1 064	14.25	907	12.06
Cyprus	Y	C	2	2	0.23	0.23	0	0.00	2	0.24	4	0.50	4	0.52
Czech Republic	Y	C	284	284	2.70	2.75	264	2.52	862	8.24	1 104	10.59	1 649	15.94
Denmark	Y	C	53	53	0.95	0.92	13	0.23	47	0.85	45	0.82	44	0.80
Estonia	Y	C	63	63	4.72	4.85	153	11.45	6	0.45	19	1.42	13	0.97
Finland	Y	C	8	8	0.15	0.15	14	0.26	14	0.26	22	0.41	22	0.42
France	Y	C	1 096	1096	1.68	1.63	1115	1.72	1 244	1.93	1547	2.41	1 204	1.88
Germany	Y	C	831	827	1.01	1.06	820	1.01	775	0.95	929	1.14	1 072	1.31
Greece	Y	C	74	74	0.67	0.70	41	0.37	58	0.52	86	0.77	120	1.07
Hungary	Y	C	331	331	3.35	3.35	0	0.00	202	2.05	107	1.08	168	1.70
Ireland	Y	C	30	28	0.61	0.55	18	0.39	40	0.90	49	1.10	41	0.92
Italy	Y	C	128	128	0.22	0.23	439	0.72	726	1.20	1580	2.63	1 350	2.26
Latvia	Y	C	11	11	0.54	0.55	49	2.36	292	13.77	2276	105.24	2 798	127.66
Lithuania	Y	C	113	113	3.76	3.85	17	0.56	10	0.32	16	0.50	20	0.62
Luxembourg	Y	C	2	2	0.38	0.41	0	0.00	2	0.40	5	1.01	3	0.62
Malta	Y	C	1	0	0.00	0.26	4	0.96	3	0.73	9	2.19	4	0.98
Netherlands	Y	C	112	112	0.67	0.66	115	0.69	252	1.52	154	0.93	87	0.53

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Poland	Y	C	71	70	0.18	0.18	64	0.17	153	0.40	644	1.69	189	0.50
Portugal	Y	C	10	10	0.10	0.09	12	0.12	10	0.10	27	0.26	21	0.20
Romania	Y	C	3 632	3 603	17.93	18.71	2581	12.95	3 493	17.43	3734	18.48	3 161	15.48
Slovakia	Y	C	125	124	2.29	2.24	400	7.42	1449	26.88	1447	26.89	729	13.56
Slovenia	Y	C	11	11	0.54	0.52	11	0.54	9	0.44	12	0.59	17	0.85
Spain	Y	C	590	557	1.19	1.24	463	0.99	740	1.59	1 808	3.91	1877	4.11
Sweden	Y	C	87	87	0.92	0.89	54	0.57	85	0.91	154	1.66	78	0.85
United Kingdom	Y	C	314	314	0.50	0.49	277	0.44	408	0.66	437	0.71	794	1.30
EU Total	**-**	**-**	**13 112**	**12 994**	**2.62**	**1.70**	**12 683**	**2.56**	**13 423**	**2.72**	**17 410**	**3.55**	**16 741**	**3.38**
Iceland	Y	C	4	4	1.25	1.19	1	0.31	2	0.63	3	0.94	1	0.32
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	40	40	0.80	0.80	22	0.45	46	0.95	40	0.83	49	1.03
EU/EEA Total	**-**	**-**	**13 156**	**13 038**	**2.60**	**1.69**	**12 706**	**2.53**	**13 471**	**2.70**	**17 453**	**3.52**	**16 791**	**3.35**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed hepatitis A reported cases by month, EU/EEA, 2008–2012

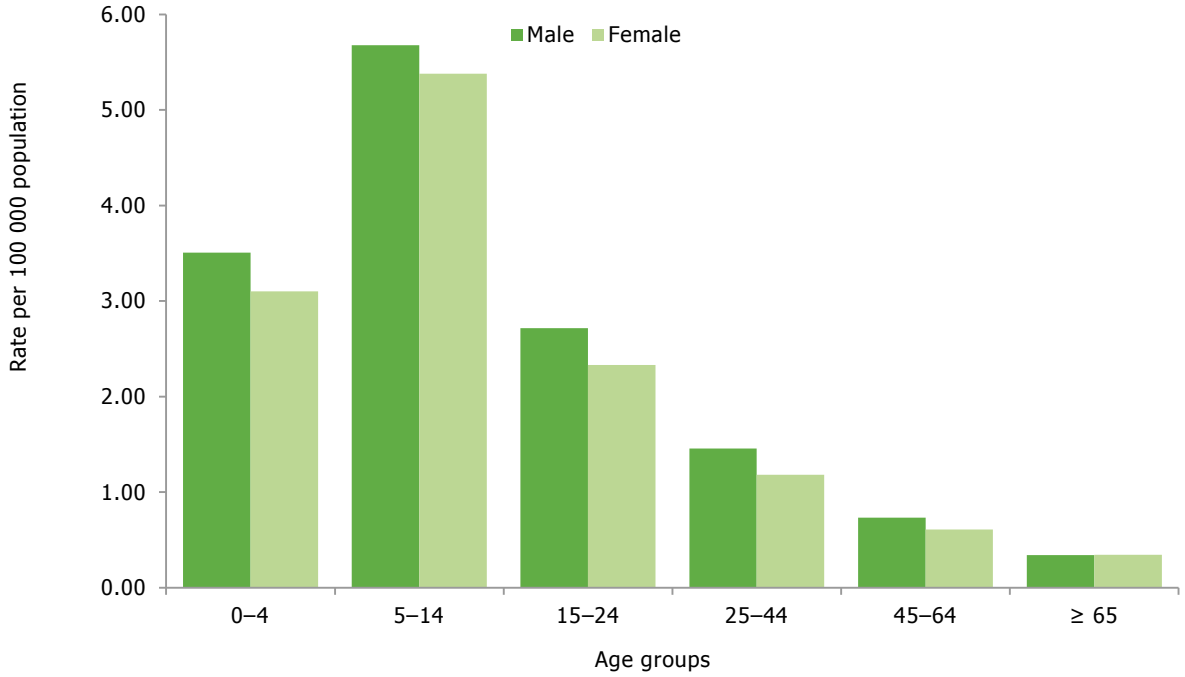


Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Malta, Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Age and gender distribution

Information regarding gender was available for 8 135 (61.8%) cases of which 4 348 (53.4%) were male and 3 787 (46.6%) were female (male-to-female ratio 1.15), similar to the previous reporting year. Among the 8 139 (61.9%) confirmed cases of hepatitis A reported in 2012 with available information on age, 862 (10.6%) belonged to the age group 0–4, 2 794 (34.3%) to the age group 5–14, 1 448 (17.8%) to the age group 15–24, 1 809 (22.2%) belonged to the age group 25–44 and 900 (11.1%) cases to the age group 45–64, while 326 (4.0%) cases were over 65 years. As in the previous reporting year, the highest case rate in 2012 was observed in the age group 5–14 years: 5.45 per 100 000 population. The highest gender specific case rates were observed in the same age group 5–14 years: 5.59 per 100 000 for males and 5.30 per 100 000 for females (Figure 2).

Figure 2. Rates of confirmed hepatitis A reported cases by age and gender, EU/EEA, 2012

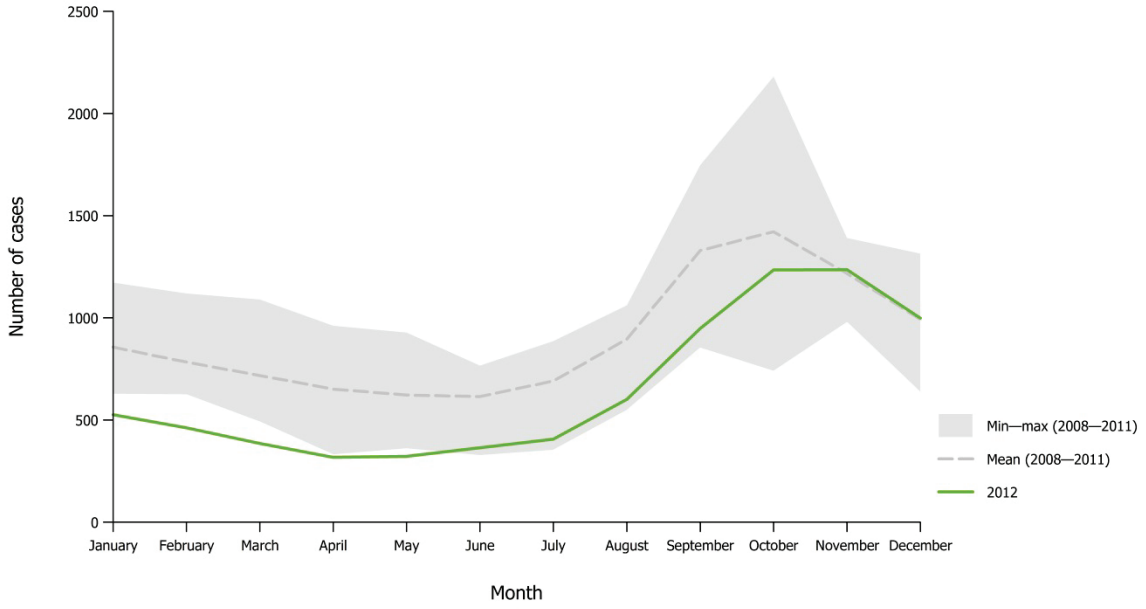


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

In 2012, hepatitis A infections presented an evident seasonality as in previous years. The peak was reached in the autumn months of October and November (Figure 3), with more than 1 200 confirmed cases per month.

Figure 3. Distribution of confirmed hepatitis A reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



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

Updates from epidemic intelligence in 2013

During 2013, three major hepatitis A virus (HAV) outbreaks were reported in the EU/EEA area. All three were multistate outbreaks linked to fresh and frozen berries as the vehicle of infection.

The first outbreak affected the Nordic countries in the period October 2012–August 2013, with a total of 106 non-travel related cases [1,2]. The outbreak was associated with two subtype 1B hepatitis A virus sequences with 1.7% difference, isolated in 42 and 17 confirmed cases, respectively. Combined evidence from the multi-country case-control studies and the food trace-back investigations identified frozen strawberries as probable vehicle of the infection, although HAV was not detected in the sampled berries [2].

A second HAV outbreak was reported among travellers returning from the Red Sea region in Egypt. Fourteen EU/EEA countries were involved with a total of 107 cases. The identification of the same HAV sequence in 20 cases from six of the affected countries confirmed a multinational outbreak linked to a persistent source of infection in Egypt. Combined evidence from the ECDC coordinated case-control study and the food trace-back studies identified fresh strawberries and mangoes as the probable vehicles of infection [3, 4].

Finally, an outbreak of hepatitis A (HAV) involving German, Polish and Dutch travellers returning from Northern Italy was reported in early 2013 with sixteen laboratory-confirmed cases. Italian authorities also reported an increase in HAV cases in 2013 at the national level and in the implicated area. In addition, Ireland reported ten cases whose isolates share a sequence identical to that of the Italian outbreak. Recently, the Netherlands has also reported autochthonous HAV cases with a similar virus type to Italy and Ireland. As the exposure of the cases occurred in Italy, Ireland, and the Netherlands, this suggests that cases have been exposed to the same contaminated vehicle of infection distributed in at least these three countries. Epidemiological, microbiological and environmental investigations indicate mixed frozen berries as the most likely vehicle of infection for these outbreaks [5,6].

In the period March–July 2013, another hepatitis A outbreak occurred in the United States (US). One hundred and sixty-two cases were reported as associated to the US multistate outbreak. The identified vehicle of infection was a frozen berry mix, promptly recalled from the market [7].

Discussion

The epidemiology of hepatitis A in EU and EEA continues to reflect that of countries with intermediate and low endemicity, as confirmed case rates vary largely between countries. Higher rates are reported from Bulgaria and Romania, followed by Estonia, Lithuania and Hungary. The age group distribution of cases is stable in 2012 and comparable with previous years, with the highest rate of hepatitis A infection in the 5–14 age group. The clinical presentation of hepatitis A in the younger age groups, where the disease is often asymptomatic, is to be considered and accounted for underestimation of cases. Seasonality in confirmed cases across the EU also shows a consistent pattern with reported cases peaking in the autumn months.

Although most of the confirmed cases were reported as autochthonous, in some countries, such as Denmark, Finland, Ireland, Poland, Portugal, Slovenia, Sweden and Norway, more than half of the reported cases were travel-related, suggesting the importance of a relatively large susceptible population in these countries and the need for re-enforcing HAV vaccination coverage before travelling.

Nevertheless HAV remains endemic in other countries in the EU/EEA area and in the European region at large. Two large outbreaks were reported this year, one in the Iskra village in the Plovdiv region in Bulgaria [8]; and, one in Bosnia-Herzegovina in a town close to the Croatian and Serbian border [9]. Both outbreaks have been investigated and the environmental evidence pointed at unregulated and/or frequently failing water supply and sewage system.

Overall the outbreaks reported in 2012 and 2013 depict an interesting epidemiological scenario in the EU/EEA. Poor water supply and lack of infrastructure are associated with virus spread in Eastern European countries and Balkan region. On the contrary, food-borne hepatitis A transmission has caused three independent multi-country outbreaks in the EU/EEA and one in the United States. In all four instances, frozen and fresh berries have been implicated as the vehicle of the infection, raising concerns on food safety and trade of berries within the EU/EEA, and beyond.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y	Other
Estonia	EE-HAV	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y	Not specified/unknown
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Portugal	PT-HEPATITISA	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-HEPATITISA	O	Co	P	C	Y	N	Y	N	Y	EU-2012

References

1. Gillesberg Lassen S, Soborg B, Midgley SE, Steens A, Vold L, Stene-Johansen K, et al. On-going multi-strain food-borne hepatitis A outbreak with frozen berries as suspected vehicle: Four Nordic countries affected, October 2012 to April 2013. Euro Surveillance. 2013; 18(17):8-13.
2. Nordic Outbreak Investigation Team C. Joint analysis by the Nordic countries of a hepatitis A outbreak, October 2012 to June 2013: frozen strawberries suspected. Euro Surveillance: bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2013; 18(27). PubMed PMID: 23870076. Epub 2013/07/23. eng.
3. E MacDonald AS, Stene-Johansen K, Gillesberg Lassen S , Midgley SE, Lawrence J, Crofts J, et al. Increase in hepatitis A in tourists from Denmark, England, Germany, the Netherlands, Norway and Sweden returning from Egypt, November 2012 to March 2013. Eurosurveillance. 2013. 25 April 2013. 18(17): pii=20468.
4. European Centre for Disease Prevention and Control. Rapid Risk Assessment: Outbreak of hepatitis A virus infection in travellers returning from Egypt. 2013:30 April 2013.
5. Rizzo C, Alfonsi V, Bruni R, Busani L, Ciccaglione AR, De Medici D, et al. On-going outbreak of hepatitis A in Italy: Preliminary report as of 31 May 2013. Eurosurveillance. 2013; 18(27).
6. European Centre for Disease Prevention and Control. Rapid Outbreak Assessment. Update: Outbreak of hepatitis A virus infection in Italy and Ireland. 2013 9 July 2013.
7. Center for Disease Control and Prevention. Multistate outbreak of hepatitis A virus infections linked to pomegranate seeds from Turkey2013 22 October 2013. Available from: http://www.cdc.gov/hepatitis/Outbreaks/2013/A1b-03-31/index.html.

8. Vatev N, Petrov A, Troyancheva M, Stoycheva M, Georgieva V. Clinical, epidemiological and laboratory characteristics of hepatitis A outbreak in the village of Iskra (Plovdiv Region), January - March 2012. Problems of Infectious and Parasitic Diseases. 2012; 40(1):29-32.
9. Dakic Z, Musa S. Hepatitis A outbreak in Bijeljina, Bosnia and Herzegovina, August 2012 - April 2013. Eurosurveillance. 2013; 18(21):20486.

Leptospirosis

- Leptospirosis remains a rare disease in Europe.
- The number of confirmed cases in most EU countries remains static.
- Infection is predominantly in adults with more men than women affected.
- Infections are sporadic and strongly seasonal with higher rates in summer and autumn.
- Infections can occur through occupational or recreational exposure.
- No outbreaks of leptospirosis were reported.

Leptospira spp. are spiral bacteria (spirochetes) that are maintained in nature by chronic renal infection of animals. Human leptospirosis is acquired from wild, agricultural, pest and household animals, usually through contact with urine from an ill or asymptomatic animal, or through water, vegetation or soil that is contaminated with animal urine or carcases. In developed countries, humans are usually regarded as accidental terminal hosts, whereas chronic renal excretion may be more common in some developing country settings [1]. Rats and dogs can play an important role in exposure through their persistent excretion [2]. Occupational exposure is important in farmers, fish workers, crop pickers and sewage workers, and recreational contact with contaminated water through fishing and water sports may pose risks. Most human disease presents as a self-limiting illness. The main clinical signs in leptospirosis include fever, shivering, diffuse myalgia, headaches, jaundice, conjunctival suffusion, rash, with around a tenth of cases suffering severe symptoms such as meningitis/meningoencephalitis, myocarditis or pericarditis, hepatomegaly, liver failure, renal failure and acute respiratory distress syndrome due to pulmonary bleeding.

Epidemiological situation in 2012

In 2012, 27 EU/ EEA countries provided data on the disease. National data was provided from all EU countries except Spain. Iceland, Liechtenstein and Norway did not report any data. Ten cases were reported as fatal. Reporting rate by country ranged from 0 (Cyprus) to 0.72 (Malta) cases per 100 000 population. Case rates per 100 000 were higher than in the previous four years in Malta (0.72) and Lithuania (0.67), while they were decreasing in Italy (0.01) and Romania (0.37). The relatively small number of cases reported by many countries can make interpretation of these trends in annual cases problematic. Confirmed cases of leptospirosis have declined overall in the 27 EU countries reporting data from 599 in 2008 to 489 in 2012, but the overall reduction can be attributed largely to Romania's reports reducing from 200 in 2008 to 74 in 2012.

Table 1. Number and rates of confirmed leptospirosis reported cases, EU/EEA, 2008–2012

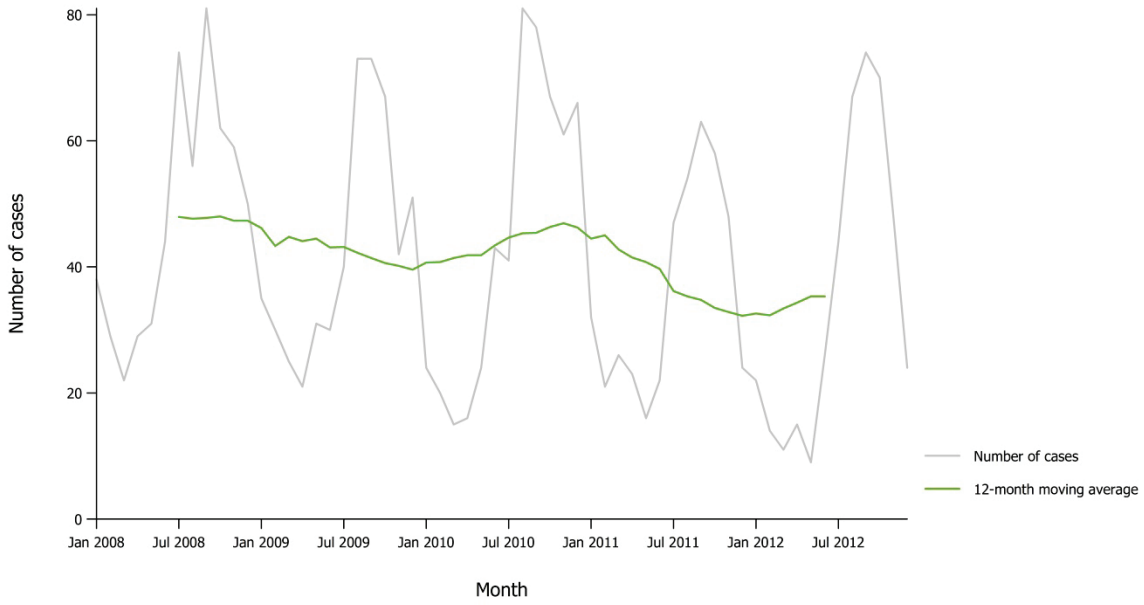
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	24	16	0.19	0.18	3	0.04	9	0.11	9	0.11	11	0.13
Belgium	Y	A	14	14	0.13	0.00	15	0.14	9	0.08	8	0.07	5	0.05
Bulgaria	Y	A	7	4	0.06	-	12	0.16	11	0.15	11	0.15	9	0.12
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	22	22	0.21	0.21	31	0.30	40	0.38	32	0.31	17	0.16
Denmark	Y	C	7	7	0.13	0.14	9	0.16	6	0.11	2	0.04	8	0.15
Estonia	Y	C	5	5	0.38	0.37	2	0.15	1	0.08	1	0.08	2	0.15
Finland	Y	C	2	2	0.04	0.04	8	0.15	0	0.00	12	0.23	8	0.15
France	Y	C	315	25	0.04	0.04	71	0.11	39	0.06	-	-	-	-
Germany	Y	C	85	85	0.10	0.10	50	0.06	70	0.09	92	0.11	66	0.08
Greece	Y	C	14	14	0.13	0.12	20	0.18	24	0.22	31	0.28	12	0.11
Hungary	Y	C	9	9	0.09	0.09	16	0.16	9	0.09	9	0.09	15	0.15
Ireland	Y	C	15	15	0.33	0.34	16	0.35	17	0.38	25	0.56	29	0.65
Italy	Y	C	7	7	0.01	0.01	43	0.07	33	0.06	38	0.06	40	0.07
Latvia	Y	C	4	1	0.05	0.05	6	0.29	2	0.09	5	0.23	3	0.14
Lithuania	Y	C	20	20	0.67	0.65	3	0.10	5	0.16	5	0.16	2	0.06
Luxembourg	Y	C	1	1	0.19	0.18	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	3	3	0.72	0.70	1	0.24	1	0.24	3	0.73	2	0.49
Netherlands	Y	C	48	48	0.29	0.28	29	0.17	30	0.18	25	0.15	37	0.23
Poland	Y	C	2	2	0.01	0.01	3	0.01	4	0.01	4	0.01	2	0.01
Portugal	Y	C	24	21	0.20	0.20	33	0.32	29	0.28	32	0.31	15	0.15
Romania	Y	C	77	74	0.37	0.36	98	0.49	181	0.90	128	0.63	200	0.98
Slovakia	Y	C	8	8	0.15	0.14	7	0.13	27	0.50	16	0.30	23	0.43
Slovenia	Y	C	4	4	0.20	0.19	9	0.44	9	0.44	2	0.10	6	0.30
Spain	N	C	0	0	-	-	4	-	0	-	0	-	5	-
Sweden	Y	C	4	4	0.04	0.04	4	0.04	4	0.04	4	0.04	6	0.07

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
United Kingdom	Y	C	78	78	0.12	0.13	52	0.08	42	0.07	53	0.09	76	0.12
EU Total	**-**	**-**	**799**	**489**	**0.11**	**0.11**	**545**	**0.12**	**602**	**0.13**	**547**	**0.14**	**599**	**0.15**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EU/EEA Total	**-**	**-**	**799**	**489**	**0.11**	**0.11**	**545**	**0.12**	**602**	**0.13**	**547**	**0.14**	**599**	**0.15**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed leptospirosis reported cases by month, EU/EEA, 2008–2012

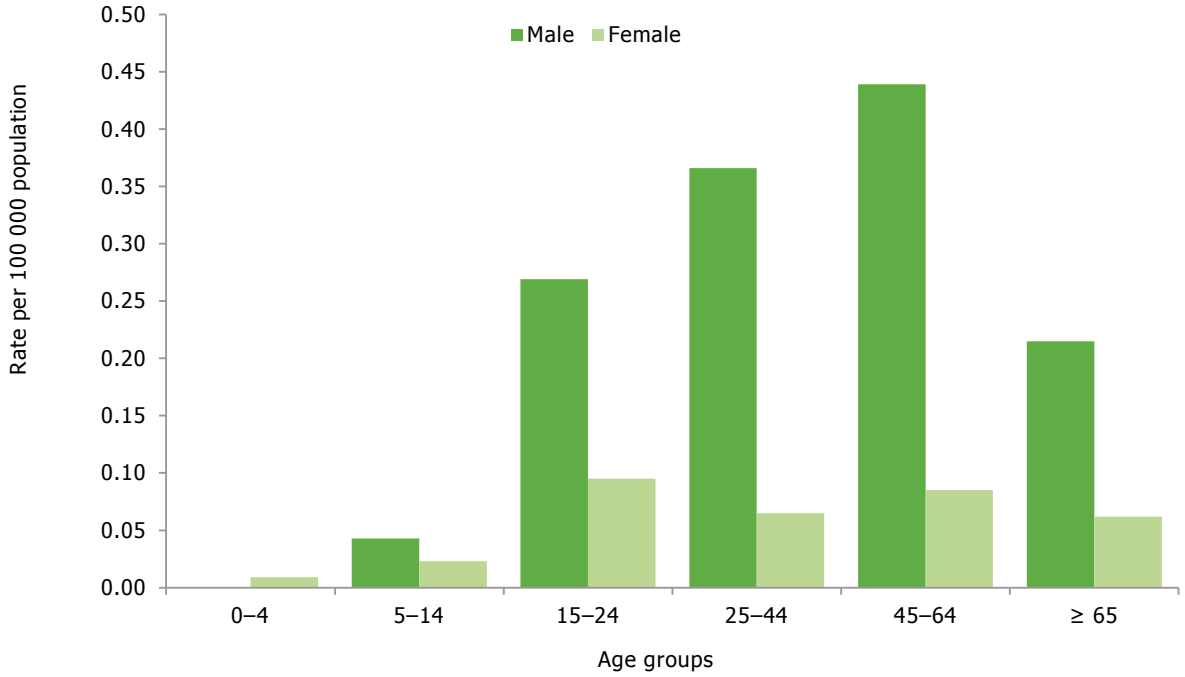


Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

Age and gender distribution

Leptospirosis is relatively rare in children under 15 years old and is much more common in men than women (male-to-female ratio of 3.7:1; Figure 2) and people of working age. Among the 489 confirmed cases of leptospirosis reported in 2012, one case was aged 0-4(0.2%), nine cases were aged 5–14 years old (1.8%), 60 in the age group 15–24 (12.3%), 158 belonged to the age group 25–44 (32.3%), 187 cases to the age group 45–64 (38.2%), while 56 cases were over 65 years (11.5%). The case rate ratios between male and female cases were 2:1 in children (0–14 years); 2.8:1 in ages 15–24; 3.9:1 in 25–44; 5.2:1 in 45 to 64, and 2.7:1 in people over 65 years (Figure 2).

Figure 2. Rates of confirmed leptospirosis reported cases by age and gender, EU/EEA, 2012

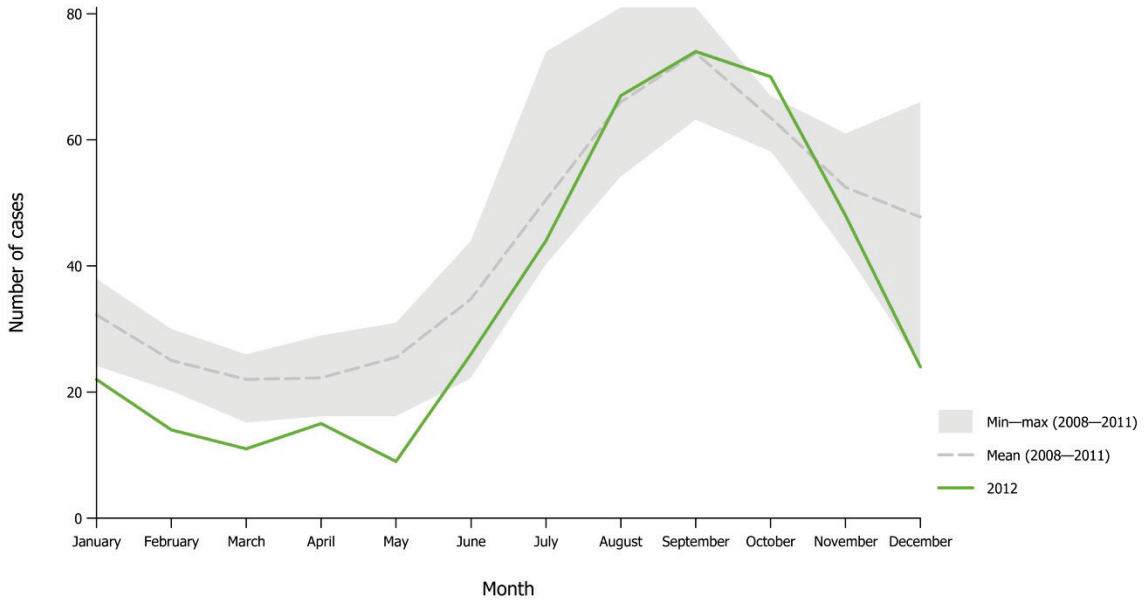


Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

In the six months between June and November there were 362/483 cases (75% of the total), with the highest occurrence in the three months between August and October (279/483; 58% of all cases) (Figure 3). The June to November seasonal increase was common to most reporting countries with cases during this period representing between 43% and 100% of all reported cases.

Figure 3. Distribution of confirmed leptospirosis reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

Discussion

Leptospirosis is a relatively uncommon disease and surveillance has occurred in some countries of Europe over more than half a century [3-11]. Information collected through TESSy shows that in 2012, most of the leptospirosis cases were diagnosed in men of a working age (24 to 64 years old), presumably reflecting disease in the predominance of cases in occupational risk groups, particularly farmers, people who do water-sports and people who have recently travelled abroad. The ten reported deaths may under-represent serious disease, as the completeness of mortality attribution is unclear. There were no outbreaks detected through the ECDC epidemic intelligence services. Most of the cases occurred during summer and autumn when occupational and recreational outdoor activities occur.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y	Other
Estonia	EE-LEPTOSPIROSIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
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	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Portugal	PT-LEPTOSPIROSIS	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-LEPTOSPIROSIS	O	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. Ganoza CA, Matthias MA, Saito M, Cespedes M, Gotuzzo E, Vinetz JM. Asymptomatic renal colonization of humans in the peruvian Amazon by Leptospira. PLoS neglected tropical diseases. 2010; 4(2):e612. PubMed PMID: 20186328. PubMed Central PMCID: 2826405.

2. Rojas P, Monahan AM, Schuller S, Miller IS, Markey BK, Nally JE. Detection and quantification of leptospires in urine of dogs: a maintenance host for the zoonotic disease leptospirosis. European journal of clinical microbiology & infectious diseases: official publication of the European Society of Clinical Microbiology. 2010 Oct; 29(10):1305-9. PubMed PMID: 20559675.

3. Baranton G, Postic D. Trends in leptospirosis epidemiology in France. Sixty-six years of passive serological surveillance from 1920 to 2003. International journal of infectious diseases: IJID: official publication of the International Society for Infectious Diseases. 2006 Mar; 10(2):162-70. PubMed PMID: 16298537.

4. Bakoss P, Machacova E, Jarekova J. Long-term trends in the epidemiology of human leptospirosis (Slovak Republic, 1954-2006). European journal of clinical microbiology & infectious diseases: official publication of the European Society of Clinical Microbiology. 2012 Sep; 31(9):2167-76. PubMed PMID: 22354522.

5. Ciceroni L, Stepan E, Pinto A, Pizzocaro P, Dettori G, Franzin L, et al. Epidemiological trend of human leptospirosis in Italy between 1994 and 1996. European journal of epidemiology. 2000 Jan; 16(1):79-86. PubMed PMID: 10780347.

6. Ciceroni L, Pinto A, Benedetti E, Pizzocaro P, Lupidi R, Cinco M, et al. Human leptospirosis in Italy, 1986-1993. European journal of epidemiology. 1995 Dec; 11(6):707-10. PubMed PMID: 8861858.

7. Czerwinski M, Sadkowska-Todys M. [Epidemiologic analysis of human Leptospirosis in Poland in 1995-2002. I. Clinical features and laboratory diagnosis]. Przeglad epidemiologiczny. 2004; 58(1):197-205.

8. Goris MG, Boer KR, Duarte TA, Kliffen SJ, Hartskeerl RA. Human leptospirosis trends, the Netherlands, 1925-2008. Emerging infectious diseases. 2013 Mar; 19(3):371-8. PubMed PMID: 23622144. PubMed Central PMCID: 3647640.

9. Christova I, Tasseva E, Manev H. Human leptospirosis in Bulgaria, 1989-2001: epidemiological, clinical, and serological features. Scandinavian journal of infectious diseases. 2003; 35(11-12):869-72. PubMed PMID: 14723364.

10. Peric L, Simasek D, Barbic J, Peric N, Prus V, Sisljagic V, et al. Human leptospirosis in eastern Croatia, 1969-2003: epidemiological, clinical, and serological features. Scandinavian journal of infectious diseases. 2005; 37(10):738-41. PubMed PMID: 16191892.

11. Holk K, Nielsen SV, Ronne T. Human leptospirosis in Denmark 1970-1996: an epidemiological and clinical study. Scandinavian journal of infectious diseases. 2000; 32(5):533-8. PubMed PMID: 11055660.

Listeriosis

- Listeriosis remains an uncommon disease in Europe.
- In 2012, the trend in the number of confirmed cases remained stable in the EU/EEA.
- The disease is mostly domestically acquired, and has a relatively high case-fatality ratio.
- A predominance of cases is detected among men and women over 65 years.

Listeriosis is caused by a Gram-positive bacterium *Listeria monocytogenes*, which is widely distributed in nature. It is commonly found in soil, decaying vegetation, and water. The infection is acquired through consumption of contaminated food. *L. monocytogenes* can be found in many food types, including vegetables, raw milk, and raw meat but the infection is most likely to occur after consumption of certain ready-to-eat foods like non-pasteurised milk products, meat and salmon products, where *Listeria* has been able to multiply during the cold-storage period. *L. monocytogenes* usually causes a mild febrile illness but severe and fatal systemic infections like meningitis, encephalitis or endocarditis may occur in immune-compromised persons. *L. monocytogenes* infection during pregnancy may lead to a spontaneous abortion and neonatal death. Listeriosis is endemic throughout the world.

Epidemiological situation in 2012

In 2012, 28 EU and EEA countries provided data on the disease. Liechtenstein and Portugal did not report any data. Overall, 1676 confirmed cases of listeriosis were reported, giving an overall case rate of 0.35 per 100 000 population (Table 1). The highest rates were observed in Finland (1.13 per 100 000) followed by Denmark with 0.90 per 100 000 inhabitants. Germany and France reported the highest numbers of confirmed cases, 412 and 348 respectively.

Among the 1 676 confirmed cases, 1 393 were reported being autochthonous, 19 related to travel while for 264 cases travel information was not known. The trend has been rather stable with slight annual fluctuation due to a seasonal peak in reporting of cases (Figure 1). Also among these 1 676 confirmed cases, 203 were reported as dead, 932 as alive and 531 where the outcome was unknown, corresponding to a minimum case-fatality ratio of 12.1%.

Table 1. Number and rates of confirmed listeriosis reported cases, EU/EEA, 2008–2012

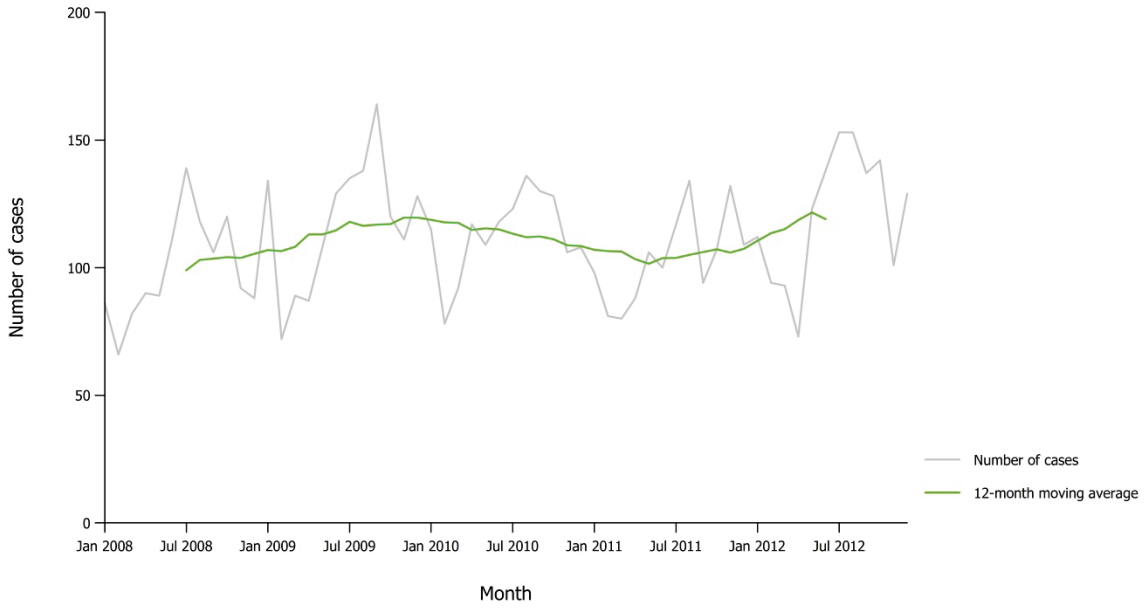
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	36	36	0.43	0.42	26	0.31	34	0.41	46	0.55	31	0.37
Belgium	Y	C	83	83	0.75	0.68	70	-	40	0.37	58	-	64	0.60
Bulgaria	Y	A	10	10	0.14	0.14	4	0.05	4	0.05	5	0.07	5	0.07
Cyprus	Y	C	1	1	0.12	0.15	2	0.24	1	0.12	0	0.00	0	0.00
Czech Republic	Y	C	32	32	0.31	0.30	35	0.33	26	0.25	32	0.31	37	0.36
Denmark	Y	C	50	50	0.90	0.87	49	0.88	62	1.12	97	1.76	51	0.93
Estonia	Y	C	3	3	0.23	0.21	3	0.23	5	0.37	3	0.22	8	0.60
Finland	Y	C	62	61	1.13	1.05	43	0.80	71	1.33	34	0.64	40	0.76
France	Y	C	348	348	0.53	0.53	282	0.43	312	0.48	328	0.51	276	0.43
Germany	Y	C	427	412	0.51	0.44	330	0.41	377	0.46	394	0.48	306	0.37
Greece	Y	C	11	11	0.10	0.09	10	0.09	10	0.09	4	0.04	1	0.01
Hungary	Y	C	13	13	0.13	0.13	11	0.11	20	0.20	16	0.16	19	0.19
Ireland	Y	C	11	11	0.24	0.29	7	0.15	10	0.22	10	0.23	13	0.29
Italy	N	C	36	36	-	-	129	0.21	157	0.26	109	0.18	118	0.20
Latvia	Y	C	6	6	0.29	0.28	7	0.34	7	0.33	4	0.19	5	0.23
Lithuania	Y	C	8	8	0.27	0.25	6	0.20	5	0.16	5	0.16	7	0.22
Luxembourg	Y	C	2	2	0.38	0.46	2	0.39	0	0.00	3	0.61	1	0.21
Malta	Y	C	1	1	0.24	0.22	2	0.48	1	0.24	0	0.00	0	0.00
Netherlands	Y	C	73	73	0.44	0.44	87	0.52	72	0.43	44	0.27	45	0.27
Poland	Y	C	54	54	0.14	0.14	62	0.16	59	0.16	32	0.08	33	0.09
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	11	11	0.06	0.05	1	0.01	6	0.03	6	0.03	0	0.00
Slovakia	Y	C	11	11	0.20	0.22	31	0.58	5	0.09	10	0.19	8	0.15

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Slovenia	Y	C	7	7	0.34	0.33	5	0.24	11	0.54	6	0.30	3	0.15
Spain	N	C	107	107	-	-	91	-	129	-	121	-	88	-
Sweden	Y	C	72	72	0.76	0.70	56	0.60	63	0.67	73	0.79	60	0.65
United Kingdom	Y	C	183	183	0.29	0.29	164	0.26	176	0.28	235	0.38	206	0.34
EU Total	**-**	**-**	**1 658**	**1 642**	**0.39**	**0.37**	**1 515**	**0.31**	**1 663**	**0.35**	**1 675**	**0.35**	**1 425**	**0.30**
Iceland	Y	C	4	4	1.25	1.65	2	0.63	1	0.32	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Norway	Y	C	30	30	0.60	0.63	21	0.43	22	0.45	31	0.65	34	0.72
EU/EEA Total	**-**	**-**	**1 692**	**1 676**	**0.39**	**0.38**	**1 538**	**0.31**	**1 686**	**0.35**	**1 706**	**0.35**	**1 459**	**0.31**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed listeriosis reported cases by month, EU/EEA, 2008–2012

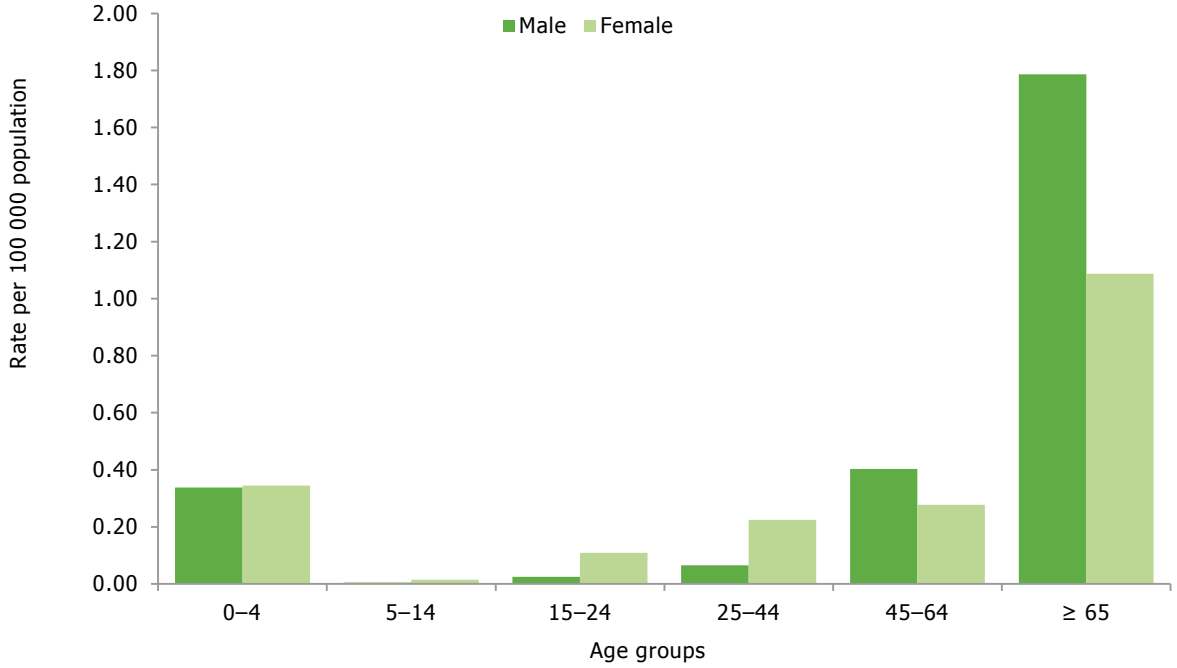


Source: Country reports from Austria, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

Age and gender distribution

Among the 1 676 confirmed cases of listeriosis reported in 2012, 998 (60%) were over 65 years old, 396 (24%) cases belonged to the age group 45–64, 154 (9%) to the age group 25–44, 31 (2%) cases belonged to the age group 15–24, four (0.2%) cases to the age group 5–14 and 78 (5%) to the age group 0–4 (age unknown for 15 cases). With regards to gender distribution, 873 were males and 797 were females (no data on gender for six cases) giving a male-to-female ratio 1.1:1. There is a predominance of higher case rates for both genders aged over 65 years (Figure 2).

Figure 2. Rates of confirmed listeriosis reported cases by age and gender, EU/EEA, 2012

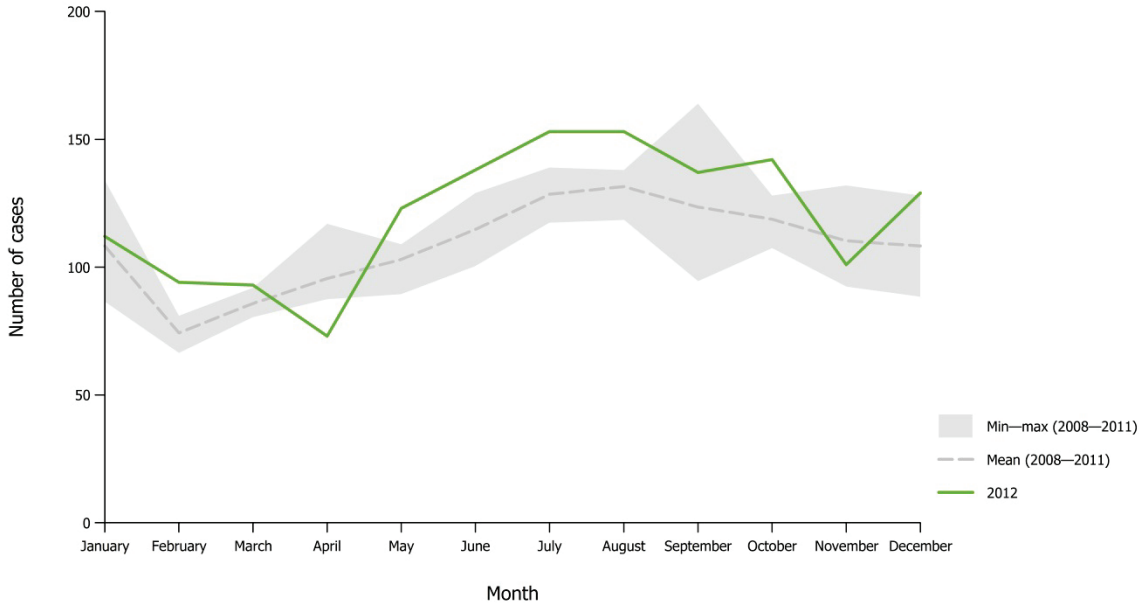


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

The seasonal trend for listeriosis in 2012 followed a slightly different pattern as in previous years. The lowest number of cases was noted around April instead of February, while the peak was more pronounced from May until October (Figure 3).

Figure 3. Distribution of confirmed listeriosis reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



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

Enhanced surveillance in 2012

Data on hospitalisation for listeriosis was collected in the case-based reporting in TESSy for the last three years. Fifteen Member States provided this information for all or the majority of their cases, representing 43% of all confirmed cases reported in the EU in 2012. On average, 90% of the cases were hospitalised and, in 10 Member States, this proportion was 100%. This is the highest hospitalisation of all zoonoses under EU surveillance and reflects the focus of surveillance on severe, systemic infections.

A total of five investigated food-borne outbreaks caused by *Listeria monocytogenes* were reported in 2012, resulting in 55 cases, 47 hospitalisations and nine deaths [1].

Discussion

Listeriosis is an uncommon but severe disease in Europe, affecting particularly elderly people or pregnant women. According to the collected data by TESSy, in 2012 all age groups were affected by the disease with a predominance of cases among persons over 65 years. Investigation of even a very small number of potentially linked cases can lead to successful control measures, although most cases are sporadic [2]. Due to the long incubation time, it is usually very hard to determine the likely source of infection. Molecular typing, as well as international sharing of information, also on food samples, is essential to increase the probability of detection of linked, clustered cases and successfully determining the likely source of infection [3].

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-LABNET_REFLAB	V	Co	P	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y	Other
Estonia	EE-LISTERIOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2002
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y	Not specified/unknown
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-LNS-Microbio	-	-	-	-	Y	N	Y	N	Y	Not specified/unknown
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-LISTERIOSIS	V	Co	A	C	Y	N	Y	Y	Y	Other

References

1. European Food Safety Authority, European Centre for Disease Prevention and Control. The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2012. EFSA Journal 2014; 2014.

2. de Castro V, Escudero J, Rodriguez J, Muniozguren N, Uribarri J, Saez D, et alListeriosis outbreak caused by Latin-style fresh cheese, Bizkaia, Spain, August 2012. Euro Surveill. 2012 Oct 18; 17(42). pii: 20298.

3. Yde M, Naranjo M, Mattheus W, Stragier P, Pochet B, Beulens K, et al.Usefulness of the European Epidemic intelligence Information System in the management of an outbreak of listeriosis, Belgium, 2011. Euro Surveillance. 2012 Sep 20; 17(38). pii: 20279.

Salmonellosis

Salmonellosis is the second most commonly reported gastrointestinal infection and an important cause of foodborne outbreaks in the EU/EEA.

- In 2012, the confirmed case rate of salmonellosis was 21.9 cases per 100 000 population in the EU/EEA.
- Salmonellosis rates continued to decrease with a significant five-year decreasing trend in the EU and decreasing trends in 17 EU/EEA countries. This decrease is mainly attributed to the implementation of successful veterinary control programmes, particularly in poultry.
- The reported case rate is highest in young children: 98.15 cases per 100 000 population in 2012, five times higher than in adults.
- In 2012, the five most commonly reported serotypes were *S.* Enteritidis, *S.* Typhimurium, monophasic *S.* Typhimurium, *S.* Infantis, and *S.* Stanley. The increase in *S.* Stanley was due to the multi-country outbreak related to turkey meat.

Infections by bacteria belonging to the genus *Salmonella* are one of the most common gastrointestinal illnesses reported in the EU/EEA. A range of wild and domesticated animals are reservoirs for *Salmonella* species, and humans are usually infected through ingesting contaminated, undercooked food. In addition to food, other exposures that have been linked to infections are travel, pet products and direct contact with live animals, also including exotic pets. Outbreaks occur frequently and they can have a multinational scope due to cross-border travelling as well as food and animal trade.

Epidemiological situation in 2012

In 2012, 92 438 confirmed salmonellosis cases were reported by 29 EU/EEA countries (Table 1). The overall confirmed case rate was 21.9 per 100 000 population. The highest confirmed case rates were reported in the Czech Republic (97.5 cases per 100 000 population) and Slovakia (85.6). Four countries reported fewer than 10 cases per 100 000 population: Greece, Ireland, Portugal and Romania.

Overall reported cases of salmonellosis have declined steadily for several years (Figure 1) with a statistically significant decline between 2008 and 2012 (linear regression, $p<0.001$). Seventeen EU/EEA countries had a significant ($p<0.05$) five-year decreasing trend in reported cases (Austria, Belgium, Cyprus, Denmark, Estonia, Finland, Germany, Greece, Iceland, Ireland, Lithuania, Norway, Portugal, Slovakia, Slovenia, Sweden and the United Kingdom). Significant increasing trends were observed in France and the Netherlands. The increasing trend in France could be explained by an increased proportion of *Salmonella* isolates sent to the national reference centre for *Salmonella* from 2008 and onwards. The increasing trend in the Netherlands could be explained by a very large outbreak of *S.* Thompson in 2012 with 866 confirmed cases [1].

Table 1. Number and rates of confirmed salmonellosis reported cases, EU/EEA, 2008-2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	1 778	1 773	21.09	21.75	1 432	17.04	2179	26.02	2 775	33.21	2 312	27.79
Belgium	N	C	3 101	3 101	-	-	3 177	-	3 169	-	3 113	-	3 831	-
Bulgaria	Y	A	839	839	11.45	12.37	924	12.54	1 154	15.55	1 247	16.70	1 516	20.17
Cyprus	Y	C	90	90	10.44	10.29	110	13.10	136	16.60	134	16.82	169	21.77
Czech Republic	Y	C	10 397	10 245	97.53	99.35	8 499	81.05	8 209	78.47	10 480	100.53	10 707	103.52
Denmark	Y	C	1 207	1 207	21.63	21.34	1 170	21.04	1 608	29.05	2 130	38.65	3 669	67.00
Estonia	Y	C	287	249	18.67	18.70	375	28.07	381	28.48	261	19.49	647	48.24
Finland	Y	C	2 199	2 199	40.71	41.55	2 098	39.03	2 421	45.24	2 327	43.69	3 127	59.00
France	Y	C	8 705	8 705	13.34	12.55	8 685	13.37	7 184	11.12	7 153	11.12	7 186	11.23
Germany	Y	C	20 848	20 493	25.10	26.55	23 982	29.40	24 833	30.43	31 395	38.37	42 885	52.27
Greece	Y	C	404	404	3.63	3.75	471	4.23	297	2.66	403	3.60	792	7.08
Hungary	Y	C	5 867	5 462	55.24	57.83	6 169	62.85	5 953	60.42	5873	59.47	6 637	67.05
Ireland	Y	C	315	309	6.74	6.24	311	6.80	349	7.81	335	7.53	447	10.03
Italy[1]	N	C	1 453	1 453	-	-	4 464	7.36	5305	8.79	5 715	9.52	6 662	11.17
Latvia	Y	C	556	547	26.75	27.52	995	47.96	877	41.36	795	36.76	1 229	56.08
Lithuania	Y	C	1 762	1 762	58.67	60.02	2 294	75.16	1 962	62.45	2063	64.80	3 308	102.98
Luxembourg	Y	C	136	136	25.91	25.35	125	24.42	211	42.03	162	32.83	153	31.64
Malta	Y	C	88	88	21.08	19.74	129	31.09	160	38.65	125	30.42	161	39.48
Netherlands	N	C	2 198	2 198	-	-	1 284	-	1447	-	1204	-	1627	-
Poland	Y	A	8 444	7 952	20.64	-	8 400	21.80	9 257	24.26	8 529	22.37	9 149	24.01
Portugal	Y	C	190	185	1.76	1.90	174	1.68	205	1.98	220	2.12	332	3.20
Romania	Y	C	775	698	3.47	3.52	989	4.96	1285	6.41	1105	5.47	624	3.06
Slovakia	Y	C	4 965	4 627	85.62	86.49	3 897	72.27	4 942	91.69	4182	77.70	6 849	127.40

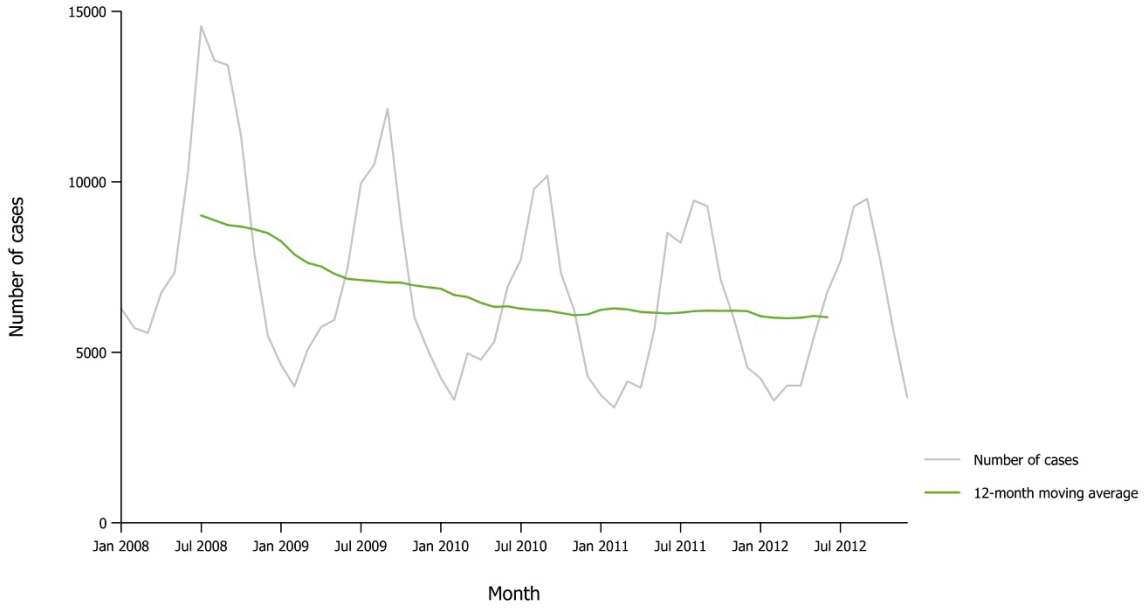
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Slovenia	Y	C	392	392	19.07	19.62	400	19.51	363	17.73	616	30.31	1 033	51.39
Spain	N	C	4 181	4 181	-	-	3 786	-	4 420	-	4 304	-	3 833	-
Sweden	Y	C	2 922	2 922	30.81	30.70	2 887	30.66	3 612	38.67	3 054	32.99	4 185	45.57
United Kingdom	Y	C	8 812	8 812	13.99	13.51	9 455	15.12	9 670	15.58	10 479	17.00	11 511	18.82
EU Total	**-**	**-**	**92 911**	**91 029**	**21.82**	**21.82**	**96 682**	**20.75**	**101 589**	**21.78**	**110 179**	**23.94**	**134 581**	**29.61**
Iceland	Y	C	38	38	11.89	12.23	45	14.13	34	10.70	35	10.96	134	42.48
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Norway	Y	C	1 371	1 371	27.50	27.22	1 290	26.22	1370	28.20	1 235	25.73	1 941	40.97
EU/EEA Total	**-**	**-**	**94 320**	**92 438**	**21.89**	**21.88**	**98 017**	**20.80**	**102 993**	**21.84**	**111 449**	**23.95**	**136 656**	**29.74**

ASR: Age-standardised rate

[1] Data from Italy for 2012 are provisional as not all regions had reported data at the time of report production.

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed salmonellosis reported cases by month, EU/EEA, 2008–2012

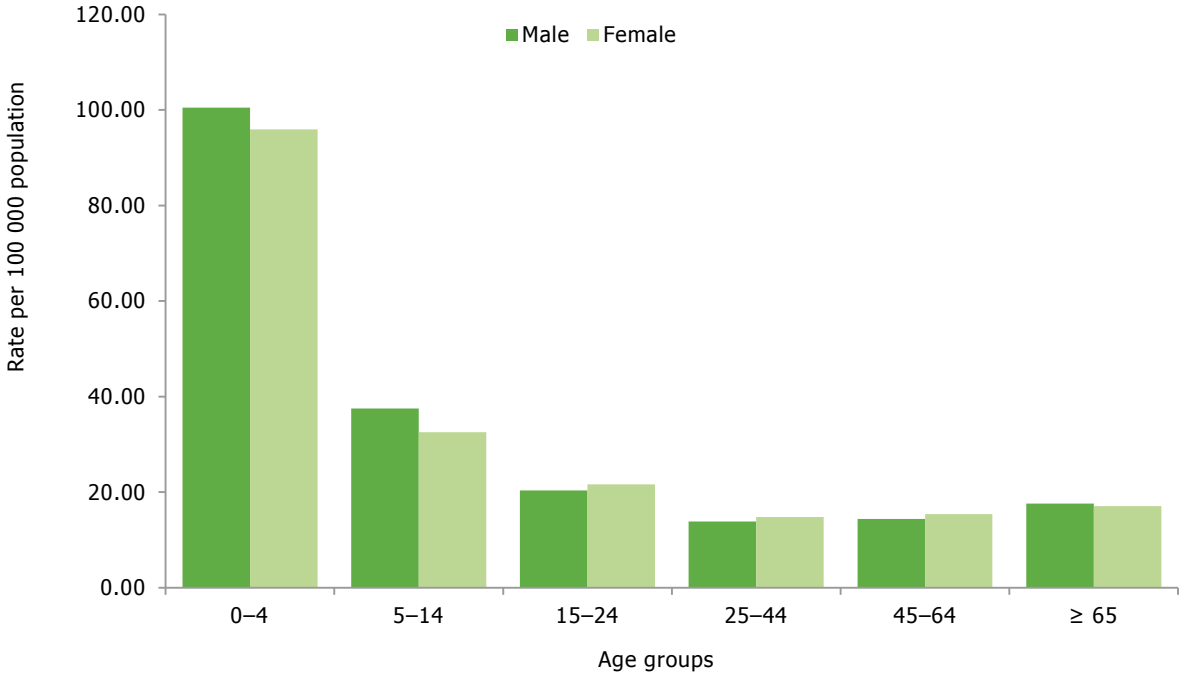


Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Lithuania, Luxembourg, Malta, Norway, Portugal, Slovakia, Slovenia, Sweden and United Kingdom.

Age and gender distribution

As in previous years, the age-specific confirmed case rate in 2012 was highest in young children, in particular in the 0–4-year-old age group: 98.15 per 100 000 population (Figure 2). The rate in young children was almost three times higher than in older children and about five times as high or more as in the other age groups. There were no differences in the overall rates between males and females (male-female ratio 1.0:1.0).

Figure 2. Rates of confirmed salmonellosis reported cases by age and gender, EU/EEA, 2012

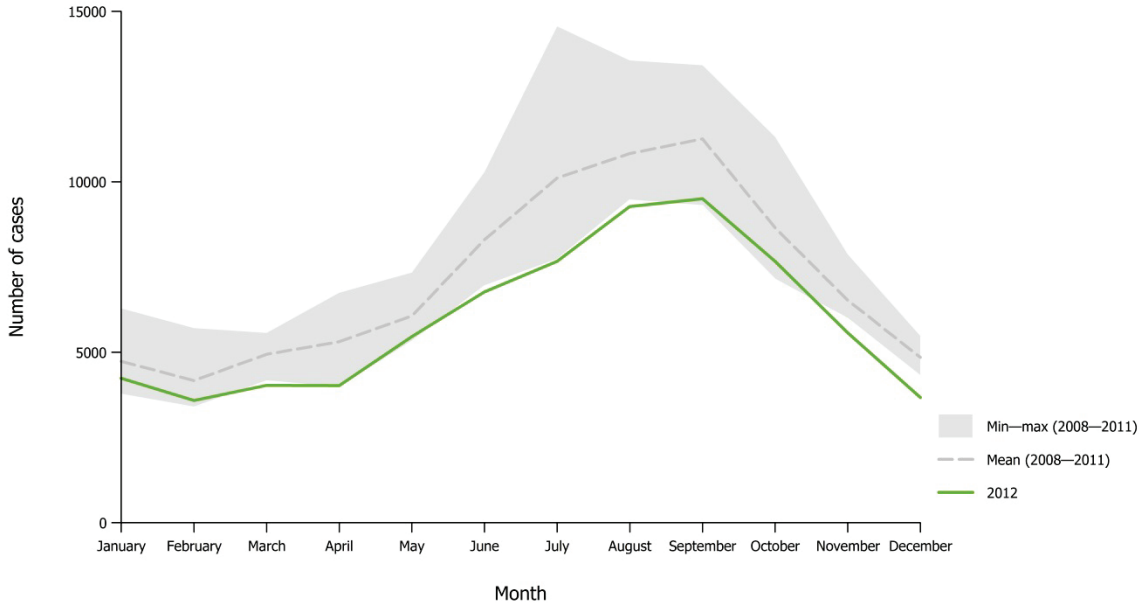


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality

There is a clear seasonal trend for reported salmonellosis cases (Figure 3), with rates increasing over the summer months, peaking in August and September, and then decreasing. Compared with the previous four years, the number of cases reported by month was generally lower in 2012.

Figure 3. Distribution of confirmed salmonellosis reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Lithuania, Luxembourg, Malta, Norway, Portugal, Slovakia, Slovenia, Sweden and United Kingdom.

Enhanced surveillance in 2012

The two most common *Salmonella* serotypes in 2012 in EU/EEA countries were *S.* Enteritidis and *S.* Typhimurium, accounting for 41% and 22% of all reported serotypes, respectively (Table 2). In 2012, the number of cases with *S.* Enteritidis decreased by 6% compared with 2011, while cases with *S.* Typhimurium decreased by 8%. The decrease in *S.* Typhimurium could however be explained by the introduction of a separate code in TESSy for reporting of monophasic *S.* Typhimurium 1, 4, [5], 12:i:- in 2010. When adding the monophasic *S.* Typhimurium to the other *S.* Typhimurium, there was instead a 3% increase in 2012 compared with 2011. New on the list of top ten serovar in 2012 were *S.* Thompson and *S.* Panama with 1 100 and 706 cases reported, respectively (Table 2). The majority of *S.* Thompson cases were reported by the Netherlands linked to an outbreak with smoked salmon as the suggested vehicle [1]. The increase in *S.* Panama cases were primarily focused in one German federal state from where an outbreak was reported and one Italian region [2].

Table 2. Number of *Salmonella* most frequently reported serotypes, EU/EEA, 2011–2012

Serotype	2012	Change 2011–2012
S. Enteritidis	34 019	-6%
S. Typhimurium	18 248	-8%
S. Typhimurium, monophasic 1,4,[5],12:i:-*	5 932	59%
S. Infantis	2 021	15%
S. Stanley	1 128	114%
S. Thompson	1 100	353%
S. Newport	777	-4%
S. Derby	735	3%
S. Panama	706	173%
S. Kentucky	651	12%

** A separate serotype code for S. Typhimurium, monophasic 1, 4, [5], 12:i:- was introduced in 2010; eleven countries reported cases with the new serotype code in 2012 compared with ten in 2011.*

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

Four multi-country outbreaks affecting several Member States were investigated in FWD EPIS in 2012 [3]. These were caused by *S.* Stanley associated with turkey meat, *S.* Thompson associated with smoked salmon, *S.* Newport associated with watermelons and monophasic *S.* Typhimurium phage type U323 from an unknown source. Of the foodborne outbreaks reported by Member States to the European Food Safety Authority (EFSA), *Salmonella* remained the most frequently detected causative agent in 2012 [2]. As many as 1 531 outbreaks were reported to be caused by this pathogen (28.5% of reported outbreaks including those with an unknown agent), accounting for almost 12 000 cases out of which 2 237 were hospitalised and ten cases fatal.

In 2012, 19% of confirmed cases in the EU/EEA with known importation status (n= 61 606) were reported to be associated to travel outside of the reporting country. The percentage of imported cases was highest in the Nordic countries of Finland, Sweden and Norway (around 80%), between 45–57% in Denmark, Iceland, Ireland and the UK, and in the remaining countries, *Salmonella* infections were mainly reported as domestically acquired.

Updates from epidemic intelligence in 2013

At the production of this report, only one multi-country outbreak due to *Salmonella* had been identified through the Epidemic intelligence Information System for Food- and Waterborne Diseases (EPIS-FWD), a platform for information exchange between Member States. These are summarised below.

Multi-country outbreak of non-travel-related Salmonella Stanley, 2011–2013

Between August 2011 and December 2012, 688 cases of non-travel-related *S.* Stanley infections were identified in ten EU countries (Hungary, Austria, Germany, Belgium, the United Kingdom, Czech Republic, Sweden, Italy, Slovak Republic, and Greece). The investigations, including the identical PFGE pattern in isolates from humans, animals, food, and animal feed implied that turkey meat was the primary source of the outbreak [4]. In July 2013, ECDC asked the Member States to provide an update of the situation. Between 1 January and 19 July 2013, 155 *S.* Stanley cases had been identified and 40% of them in Hungary. Although the monthly number of non-travel-related cases in 2013 had decreased compared with the peak of the outbreak in August 2012 it was still higher than what was seen prior to the start of the outbreak (during 2007–2011 the average number of cases was 9 per month). This indicated that *S.* Stanley was still circulating in the turkey-related food chain in some EU Member States.

Discussion

The rate of salmonellosis reported in young children is five times as high as among adults. This may be due to the higher proportion of symptomatic infections among the young, as well as an increased likelihood of parents bringing their children to the doctor and doctors requesting samples from small children.

The steady decrease in reported human salmonellosis cases at the EU/EEA level continued in 2012 and decreasing trends were also observed in seventeen EU/EEA countries. The decrease is thought to be attributed to the implementation of *Salmonella* control programmes in the poultry industry, particularly in laying hens and broilers [2]. The continuous decline in *S.* Enteritidis cases supports this observation as the serotype is most frequently found in poultry and eggs. An illustrative example is from the UK where the incidence of non-typhoidal salmonellosis rose by >170% between 1981 and 1991, driven primarily by an epidemic of *Salmonella* Enteritidis phage type 4, which peaked in 1993 [5]. Several measures were introduced to control the epidemic including legislation, food safety advice and an industry-led vaccination program in broiler-breeder and laying poultry flocks. Since then, the incidence of *S.*Enteritidis has been decreasing and the levels of *S.* Enteritidis PT4 have fallen to pre-epidemic levels in UK [5].

The annual number of reported *Salmonella* outbreaks within the EU has also decreased markedly during recent years [2]. From 2008 to 2012, the total number of *Salmonella* outbreaks decreased by 19%, from 1 888 to 1 531 outbreaks. *Salmonella* is however still the second most commonly reported zoonoses in humans and the most important cause of foodborne outbreaks with known source in the EU as it accounted for 28% of all outbreaks reported to EFSA. Eggs and egg products accounted for almost half of the *Salmonella* outbreaks with strong evidence reported to EFSA [2].

One large multinational *Salmonella* outbreak, due to *S.* Stanley, was detected in 2012 involving ten EU countries with almost 700 human cases reported from August 2011 to December 2012 and continuing in 2013. The outbreak related to the turkey-production chain and was difficult to pinpoint as it involved not only cross-border trade of meat but also cross-border trade of breeding animals. The fact that it took nine months from the first cases being detected in one Member State until the outbreak was identified at the EU level underlines the need to continuously strengthen timely detection, and for coordinated investigations and implementation of appropriate control measures across and in the Member States and at the European level. It also highlights the complexity of multi-country *Salmonella* outbreaks, and stresses the need for intensive collaboration between human, veterinary and food safety organisations and networks across Europe and beyond.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Se	A	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y	Other
Estonia	EE-SALMONELLOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Y	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y	Not specified/unknown
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-LSI	V	Se	P	C	Y	N	N	N	-	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Portugal	PT-SALMONELLOSIS	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-SALMONELLOSIS	O	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. Friesema IH, de Jong AE, Fitz James IA, Heck ME, van den Kerkhof JH, Notermans DW, et al. Outbreak of Salmonella Thompson in the Netherlands since July 2012. Euro Surveillance. 2012; 17(43): pii=20303.
2. European Food Safety Authority, European Centre for Disease Prevention and Control. The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2012. EFSA Journal 2014; 2014.
3. European Centre for Disease Prevention and Control. Annual Epidemiological Report 2013. Reporting on 2011 surveillance data and 2012 epidemic intelligence data. Stockholm: ECDC; 2013.
4. Kinross P, van Alphen L, Martinez Urtaza J, Struelens M, Takkinen J, Coulombier D et al. Multidisciplinary investigation of a multi-country outbreak of Salmonella Stanley infections associated with turkey meat in the EU, 2011-2012 (*submitted*).
5. O'Brien SJ. The "decline and fall" of non-typhoidal Salmonella in the United Kingdom. Clin Infect Dis. 2013 Mar; 56(5):705-10.

Shigellosis

- Shigellosis remains the fifth most commonly identified and reported enteric infection in the EU/EEA area.
- In 2012, the confirmed case rate for shigellosis was 1.6 per 100 000 population.
- Shigella is most common in children under five years of age, and very high rates in this age group are reported from some EU countries.
- Infection rates are seasonal, most common in late summer, and the majority of reported cases are travel-associated.
- Outbreaks are frequent, but no public health threats associated with Shigellosis were reported at the EU level during 2012.

Shigellosis is caused by bacteria of the genus *Shigella*. Although a relatively uncommon and mostly travel-related infection in the EU, it remains the fifth most frequently reported cause of enteric infection, and outbreaks occur frequently. Infections with some species may cause severe illness and death; most cases are less severe. Humans are the only significant reservoir. Transmission occurs by the faecal-oral route, either through person-to-person contact, including sexual contact, or through contaminated food or water.

Epidemiological situation in 2012

In 2012, 7 336 confirmed cases of *Shigella* infection were reported from 28 EU/EEA countries. The overall confirmed case rate was 1.6 per 100 000 population in 2012. The reporting of cases has remained relatively stable in the previous five years (Fig 1, Table 1).

Bulgaria (with 10.8 cases per 100 000) and Slovakia (with 9.9 cases per 100 000) continued to report the highest confirmed rates of the EU/EEA countries. Sweden, Norway, the Netherlands Luxembourg and the United Kingdom continued to report confirmed rates of around 3 per 100 000 (Table 1).

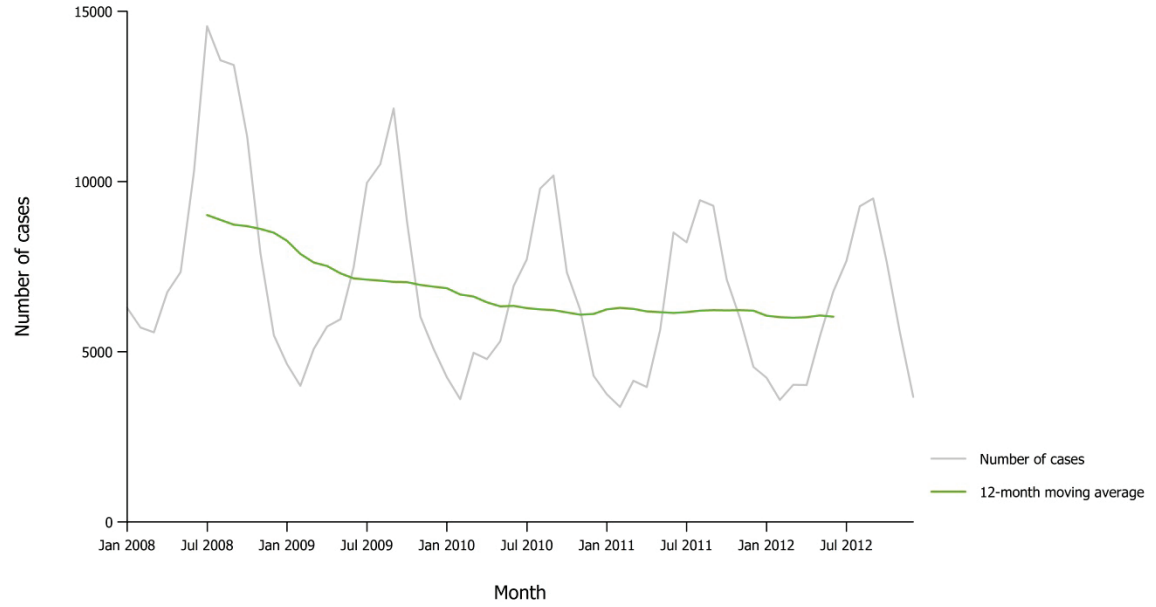
Table 1. Number and rates of confirmed shigellosis reported cases, EU/EEA, 2008–2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	58	57	0.68	0.69	36	0.43	98	1.17	80	0.96	120	1.44
Belgium	N	C	340	340	-	-	317	-	342	-	348	-	418	-
Bulgaria	Y	A	777	777	10.60	11.50	798	10.83	596	8.03	751	10.06	1 094	14.55
Cyprus	Y	C	0	0	0.00	0.00	2	0.24	0	0.00	2	0.25	1	0.13
Czech Republic	Y	C	266	266	2.53	2.64	157	1.50	387	3.70	177	1.70	227	2.20
Denmark	Y	C	105	105	1.88	1.90	91	1.64	91	1.64	106	1.92	90	1.64
Estonia	Y	C	34	34	2.55	2.63	22	1.65	46	3.44	52	3.88	69	5.15
Finland	Y	C	93	88	1.63	1.69	126	2.34	162	3.03	118	2.22	124	2.34
France	Y	C	686	686	1.05	1.06	641	0.99	774	1.20	1042	1.62	848	1.33
Germany	Y	C	526	518	0.63	0.66	664	0.81	697	0.85	617	0.75	575	0.70
Greece	Y	C	91	89	0.80	0.85	47	0.42	33	0.29	37	0.33	19	0.17
Hungary	Y	C	32	32	0.32	0.34	43	0.44	63	0.64	42	0.43	43	0.43
Ireland	Y	C	29	29	0.63	0.62	42	0.92	60	1.32	71	1.57	63	1.41
Italy	N	C	30	30	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	4	3	0.15	0.17	10	0.48	11	0.52	36	1.67	91	4.15
Lithuania	Y	C	52	52	1.73	1.81	40	1.31	42	1.34	37	1.16	81	2.52
Luxembourg	Y	C	14	14	2.67	2.62	16	3.13	22	4.38	18	3.65	9	1.86
Malta	Y	C	0	0	0.00	0.00	4	0.96	2	0.48	1	0.24	3	0.74
Netherlands	Y	C	708	674	4.03	4.04	550	3.30	523	3.16	438	2.66	343	2.09
Poland	Y	C	13	13	0.03	0.03	18	0.05	24	0.06	21	0.06	31	0.08
Portugal	Y	C	11	10	0.10	0.10	3	0.03	6	0.06	3	0.03	7	0.07
Romania	Y	C	354	354	1.76	1.82	371	1.86	293	1.46	414	2.05	371	1.82
Slovakia	Y	C	480	449	8.31	8.34	536	9.94	370	6.86	370	6.88	446	8.30
Slovenia	Y	C	26	25	1.22	1.24	18	0.88	31	1.51	42	2.07	44	2.19
Spain	Y	C	264	264	0.56	0.57	81	0.17	76	0.16	216	0.47	133	-
Sweden	Y	C	328	328	3.46	3.49	454	4.82	557	5.96	469	5.07	596	6.49
United Kingdom	Y	C	2 021	2 021	3.21	3.14	2 070	3.31	1 881	3.03	1 568	2.55	1 595	2.61
EU Total	**-**	**-**	**7 342**	**7 258**	**1.60**	**1.60**	**7 157**	**1.59**	**7 187**	**1.60**	**7 076**	**1.58**	**7 441**	**1.81**
Iceland	Y	C	1	1	0.31	0.32	1	0.31	2	0.63	2	0.63	3	0.95
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	77	77	1.54	1.57	163	3.31	132	2.72	153	3.19	134	2.83
EU/EEA Total	**-**	**-**	**7 420**	**7 336**	**1.60**	**1.59**	**7 321**	**1.61**	**7 321**	**1.61**	**7 231**	**1.59**	**7 578**	**1.83**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed shigellosis reported cases by month, EU/EEA, 2008–2012



Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Malta, Netherlands, Norway, Portugal, Slovakia, Slovenia, Sweden and the United Kingdom.

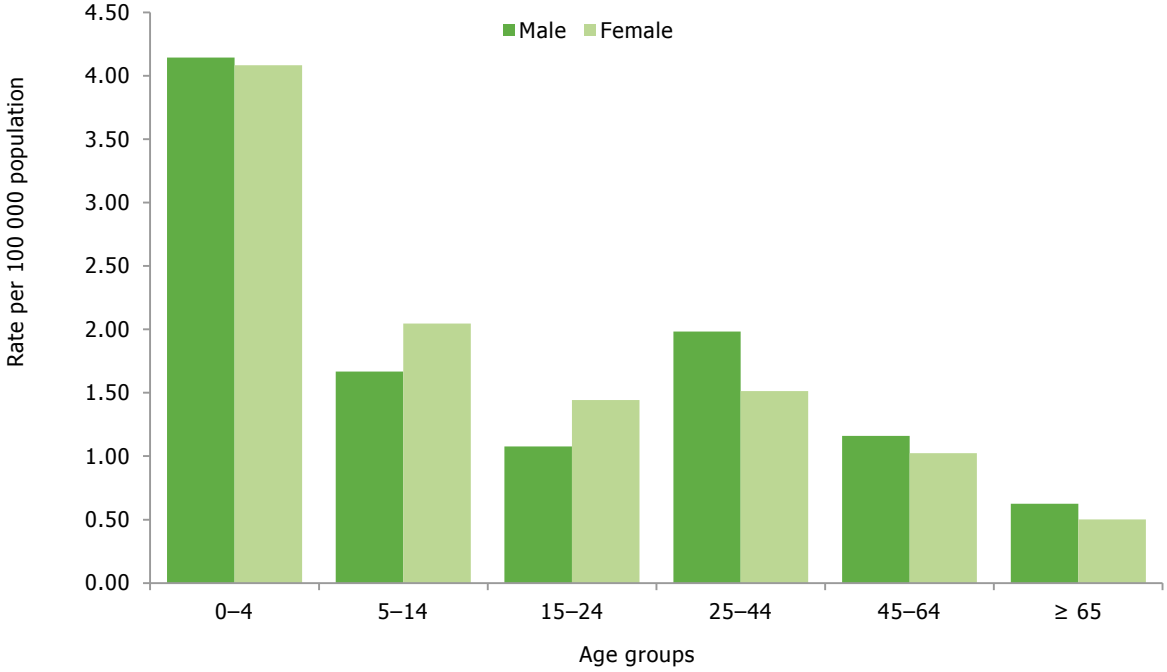
Age and gender distribution

The highest confirmed case rate in EU/EEA continues to be among children under five years of age; 5.5 cases per 100 000 population. However, shigellosis is reported across all age groups (Figure 2).

Bulgaria and Slovakia report particularly high case rates in the age group under five years: 99 and 81 per 100 000 respectively, with much lower case rates in older age groups.

There was no significant gender difference and the male-to-female ratio was 1:1.

Figure 2. Rates of confirmed shigellosis reported cases by age and gender, EU/EEA, 2012

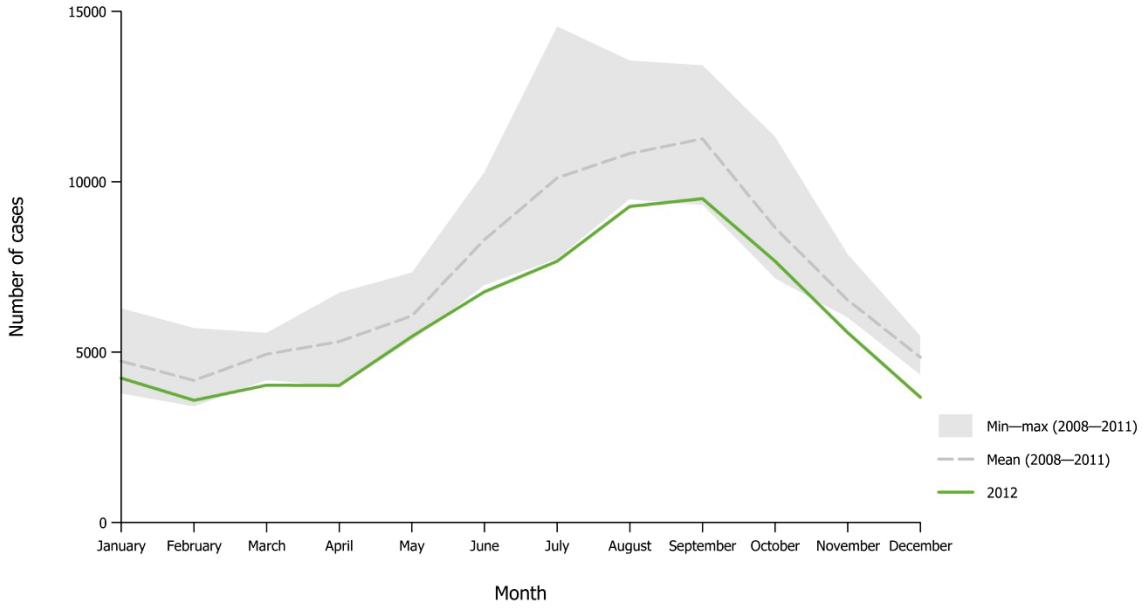


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

Reported shigellosis rate in the EU/EEA follows a seasonal pattern, with pronounced peaks in the late summer/early autumn. In 2012, the seasonal increase was typical of the 2008–2011 period but with an additional peak in November (Figure 3).

Figure 3. Distribution of confirmed shigellosis reported cases by month in 2012 compared with 2008–2011, EU/EEA



Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Malta, Netherlands, Norway, Portugal, Slovakia, Slovenia, Sweden and the United Kingdom.

Enhanced surveillance in 2012

Travel information was available for 48% (N=3 553) of confirmed cases and 63% of them were classified as imported. Countries most commonly identified with travel connection, where specified, were Egypt and India. Almost all cases reported in Slovakia (98.7%) and Hungary (100.0%), were indigenous cases. In contrast, Finland and Sweden reported a high proportion of cases related to foreign travel; 96.5% and 89.9% of reported cases respectively. The most common species, specified for 77.5% of confirmed cases, were *S. sonnei* (57.5%) and *S. flexneri* (35.9%).

Updates from epidemic intelligence in 2013

Two Shigella outbreaks were reported by France in 2013. Both were general outbreaks and resulted in 45 cases and five hospitalisations. There were no fatalities. Broiler meat was the food vehicle in one outbreak; in the second, mixed food was implicated as a contaminated food in a residential institution setting.

Discussion

Shigella infection, while relatively uncommon, remains of concern in some countries, and for some population groups within the EU/EEA. Bulgaria and Slovakia, in particular, continue to report high rates of infection, particularly among young children. The disease burden in these countries is predominantly due to indigenous cases, with few travel-related cases reported. In contrast, a number of countries, including Sweden and Finland, report cases predominantly associated with foreign travel. Some countries also report higher occurrence or outbreaks among particular risk groups; a continued outbreak of *S. sonnei* among men who have sex with men was reported from the United Kingdom [1] in 2012.

Shigellosis is not a zoonosis; humans are the only known reservoir. Prevention of infection and control of outbreaks relies on good personal and environmental hygiene practices to prevent faecal–oral transmission.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Se	A	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y	Other
Estonia	EE-PERTUSSIS/SHIGELLOSIS/SYPHILIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y	Not specified/unknown
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Y	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-ENTERNET	V	Se	P	C	Y	N	N	N	-	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y	Not specified/unknown
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Portugal	PT-SHIGELLOSIS	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-SHIGELLOSIS	O	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. Borg ML, Modi A, Tostmann A, Gobin M, Cartwright J, Quigley C, et al. On-going outbreak of Shigella flexneri serotype 3a in men who have sex with men in England and Wales, data from 2009-2011. Euro Surveillance. 2012 Mar 29; 17(13) pii: 20137.

Shiga toxin/verocytotoxin-producing *Escherichia coli* (STEC/VTEC) infection

- Shiga toxin/verocytotoxin-producing *Escherichia coli* (STEC/VTEC) infection increased in the EU/EEA in the five-year period 2008–2012.
- The number of reported confirmed STEC/VTEC cases was 5 748 and the overall notification rate was 1.5 cases per 100 000 population in the EU and EEA countries in 2012.
- In 2012, the confirmed STEC/VTEC cases decreased by 66% after the large STEC/VTEC O104:H4 outbreak in Germany in 2011, but increased by 36% compared with years 2009 and 2010.
- The highest notification rate was in children aged 0–4 years, 7.6 cases per 100 000 population in both genders.
- The most commonly reported O-serogroups were O157 and O26.
- 7 % (382) of the confirmed STEC/VTEC cases developed haemolytic uremic syndrome (HUS).

Human infection with Shiga toxin/verocytotoxin-producing *Escherichia coli* (STEC/VTEC) is characterised by an acute onset of diarrhoea, which may be bloody, and is often accompanied by mild fever and sometimes vomiting. The infection may lead to potentially fatal haemolytic uremic syndrome (HUS), affecting renal function and requiring hospital care. Infection is mainly acquired by consuming contaminated food, like undercooked contaminated beef or contaminated vegetables, or water, but person-to-person and direct transmissions from animals to humans may also occur. The main reservoirs for STEC/VTEC bacteria are ruminants like cattle, goats and sheep.

Epidemiological situation in 2012

In 2012, 5 748 confirmed cases of STEC/VTEC were reported by 28 EU and EEA countries. The overall notification rate was 1.5 cases per 100 000 in 2012 compared with 2.55 cases per 100 000 in 2011 (Table 1). The 1.65 times higher number of confirmed cases (n=9 536) notified in 2011 was due to a large nationwide outbreak of STEC/VTEC O104:H4 in Germany (1). Notification rate about 1.0 cases per 100 000 have been reported in previous years (2008-2010).

Germany, the United Kingdom and the Netherlands accounted for 69% of all confirmed cases whereas Ireland, the Netherlands, Sweden and Luxembourg reported highest notification rates 9.0, 6.3, 5.0 and 4.0 cases per 100 000 population, respectively in 2012. A marked reduction of confirmed cases by 71% and notification rate from 6.82 to 1.93 was seen in the Germany after the STEC/VTEC O104:H4 outbreak in 2011 (Table 1). Seven other countries notified decreasing number of cases compared with 2011, while increasing numbers were observed in 11 EU/EEA countries compared with 2011. The increase of STEC/VTEC cases in the Netherlands is mainly caused by more laboratories testing for all STEC/VTEC instead of STEC/VTEC O157 only. Reports of STEC/VTEC O157 cover the whole country as this is not achieved yet for STEC/VTEC non-O157 case reports. The trend of STEC/VTEC O157 shows a small increase in the Netherlands in 2011 and 2012.

There was an increasing EU trend for STEC/VTEC in 2008–2011. After removing the outbreak cases in year 2011, a statistically significant increasing EU trend could still be observed in 2008–2010 (2). An increasing number of confirmed STEC/VTEC cases were observed in 2012 in the EU/EEA countries compared to previous years (Table 1, Figure 1).

Table 1. Number and rates of confirmed STEC/VTEC reported cases, EU/EEA, 2008–2012

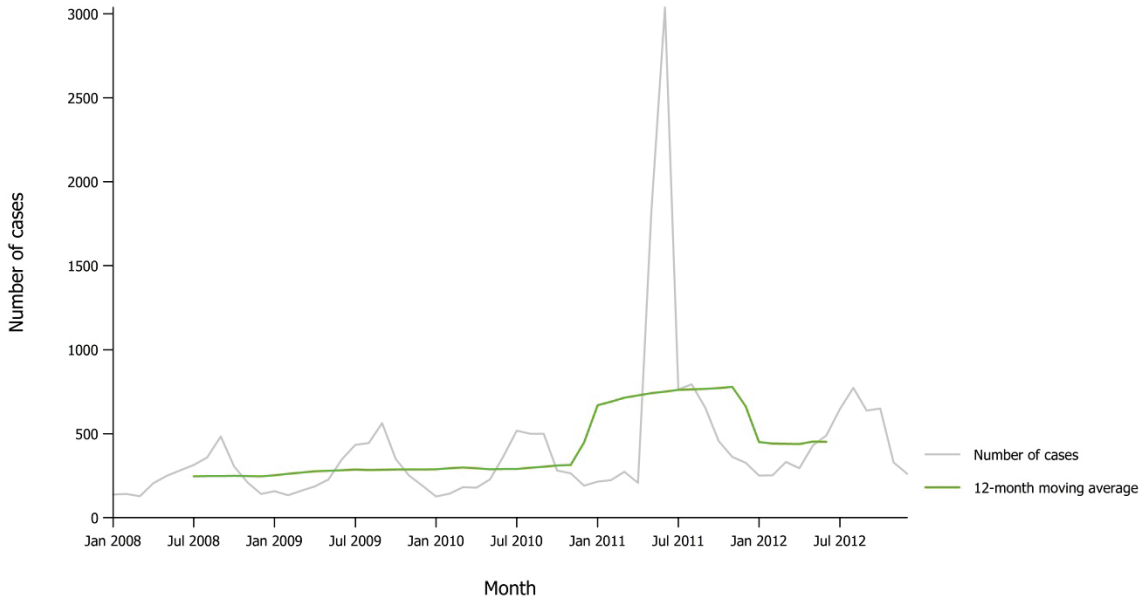
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	131	130	1.55	1.68	120	1.43	88	1.05	91	1.09	69	0.83
Belgium	N	C	105	105	-	-	100	-	84	-	96	-	103	-
Bulgaria	Y	A	0	0	0.00	0.00	1	0.01	0	0.00	0	0.00	0	0.00
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	2	0.26
Czech Republic	Y	C	9	9	0.09	0.09	7	0.07	-	-	-	-	-	-
Denmark	Y	C	214	193	3.46	3.35	215	3.87	178	3.22	160	2.90	161	2.94
Estonia	Y	C	3	3	0.23	0.24	4	0.30	5	0.37	4	0.30	3	0.22
Finland	Y	C	30	30	0.56	0.58	27	0.50	21	0.39	29	0.54	8	0.15
France	N	C	208	208	-	-	221	-	103	-	93	-	85	-
Germany	Y	C	1 587	1 573	1.93	2.07	5 558	6.82	955	1.17	887	1.08	876	1.07
Greece	Y	C	0	0	0.00	0.00	1	0.01	1	0.01	0	0.00	0	0.00
Hungary	Y	C	3	3	0.03	0.03	11	0.11	7	0.07	1	0.01	0	0.00
Ireland	Y	C	554	412	8.99	7.45	275	6.02	197	4.41	237	5.33	213	4.78
Italy	N	C	68	50	-	-	51	-	33	-	51	-	26	-
Latvia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Lithuania	Y	C	2	2	0.07	0.07	0	0.00	1	0.03	0	0.00	0	0.00
Luxembourg	Y	C	21	21	4.00	4.05	14	2.74	7	1.39	5	1.01	4	0.83
Malta	Y	C	1	1	0.24	0.27	2	0.48	1	0.24	8	1.95	8	1.96
Netherlands	Y	C	1 049	1 049	6.27	6.26	845	5.07	478	2.88	314	1.91	92	0.56
Poland	Y	C	5	3	0.01	0.01	5	0.01	4	0.01	0	0.00	2	0.01
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	1	1	0.01	0.01	2	0.01	2	0.01	0	0.00	4	-
Slovakia	Y	C	9	9	0.17	0.17	5	0.09	10	0.19	14	0.26	8	0.15
Slovenia	Y	C	29	29	1.41	1.40	25	1.22	20	0.98	12	0.59	7	0.35
Spain	Y	C	32	32	0.07	0.07	20	0.04	18	0.04	14	0.03	24	0.05
Sweden	Y	C	472	472	4.98	4.89	477	5.07	334	3.58	228	2.46	304	3.31
United Kingdom	Y	C	1 337	1 337	2.12	2.05	1501	2.40	1 110	1.79	1 336	2.17	1 164	1.90
EU Total	**-**	**-**	**5 870**	**5 672**	**1.50**	**1.50**	**9487**	**2.58**	**3 657**	**1.00**	**3 580**	**0.98**	**3 163**	**0.92**
Iceland	Y	C	1	1	0.31	0.34	2	0.63	2	0.63	8	2.51	4	1.27
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Norway	Y	C	75	75	1.50	1.37	47	0.96	52	1.07	108	2.25	22	0.46
EU/EEA Total	**-**	**-**	**5 946**	**5 748**	**1.50**	**1.50**	**9 536**	**2.55**	**3 711**	**1.01**	**3 696**	**1.00**	**3 189**	**0.91**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed STEC/VTEC reported cases by month, EU/EEA, 2008–2012

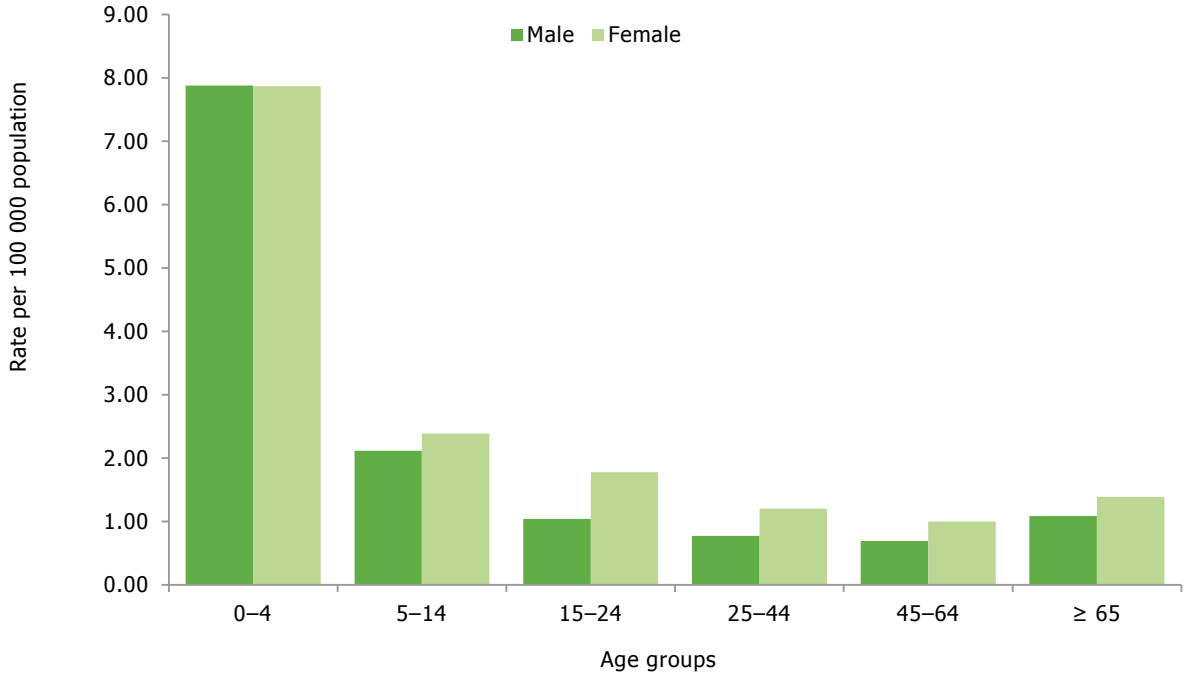


Source: Country reports from Austria, Bulgaria, Cyprus, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Slovakia, Slovenia, Sweden and the United Kingdom.

Age and gender distribution

The gender distribution of confirmed cases for which information was provided (n=5 727), was 44.0% males and 56.0% females in the 28 EU and EEA countries. The male-to-female ratio was 1:1.3 in 2012. The highest rate of confirmed cases and the highest notification rate (7.6 cases per 100 000 population) was reported in the age group 0–4 year for both genders. This is from 3.5 to 11.0 times higher than the notification rate reported in the older age groups. In all other age groups (≥ 5 years), higher notification rates were reported for females than males (Figure 2).

Figure 2. Rates of confirmed STEC/VTEC reported cases by age and gender, EU/EEA, 2012

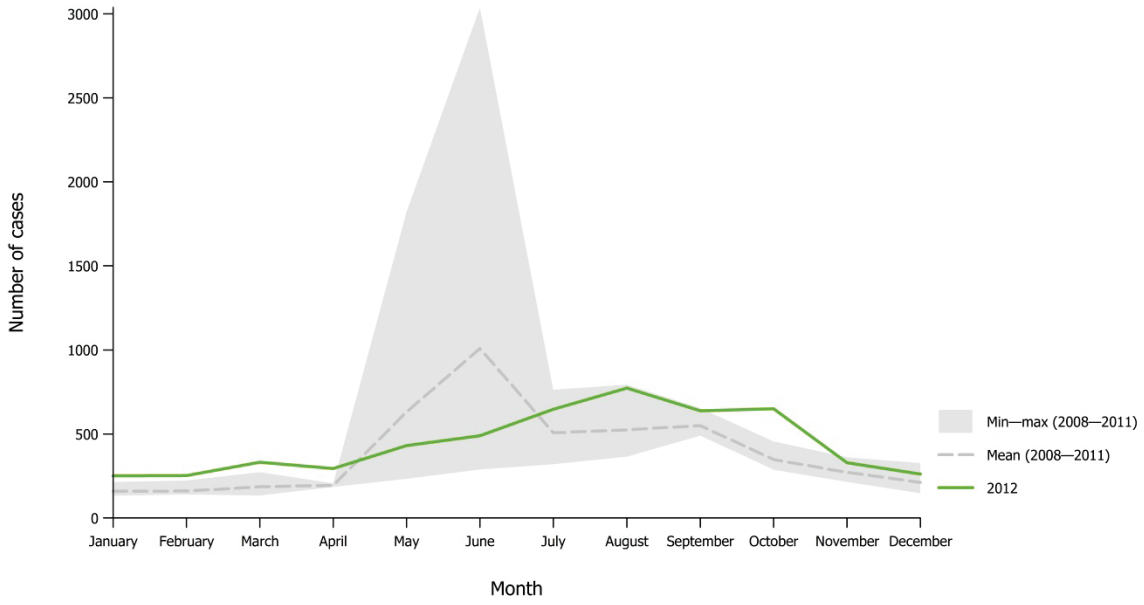


Source: Country reports from Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

There is a clear seasonality with an increase of infections in summer months between June and October (Figure 3). A dominant peak in May–June 2011 was due to the STEC/VTEC O104:H4 outbreak in Germany (Figure 1 and 3).

Figure 3. Distribution of confirmed STEC/VTEC reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



Source: Country reports from Austria, Bulgaria, Cyprus, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Slovakia, Slovenia, Sweden and the United Kingdom.

Enhanced surveillance in 2012

Complete serotype (O and H antigen) data were reported for 1 275 (22 %) STEC/VTEC cases whereas data on O serogroups were reported for 62% (3 559) of confirmed human infections in 2012. The most commonly reported O serogroups were O157 (34%) followed by O26 (7.3%). As in previous years, the United Kingdom and Ireland accounted for 75% of O157 -associated confirmed cases (Table 2). The serogroup STEC/VTEC O104 was detected in seven cases by five countries in 2012. The serotype STEC/VTEC O104:H4, which caused the large nationwide outbreak in Germany in 2011, was reported in one case from Belgium and in one case from the Netherlands in 2012 (data not shown).

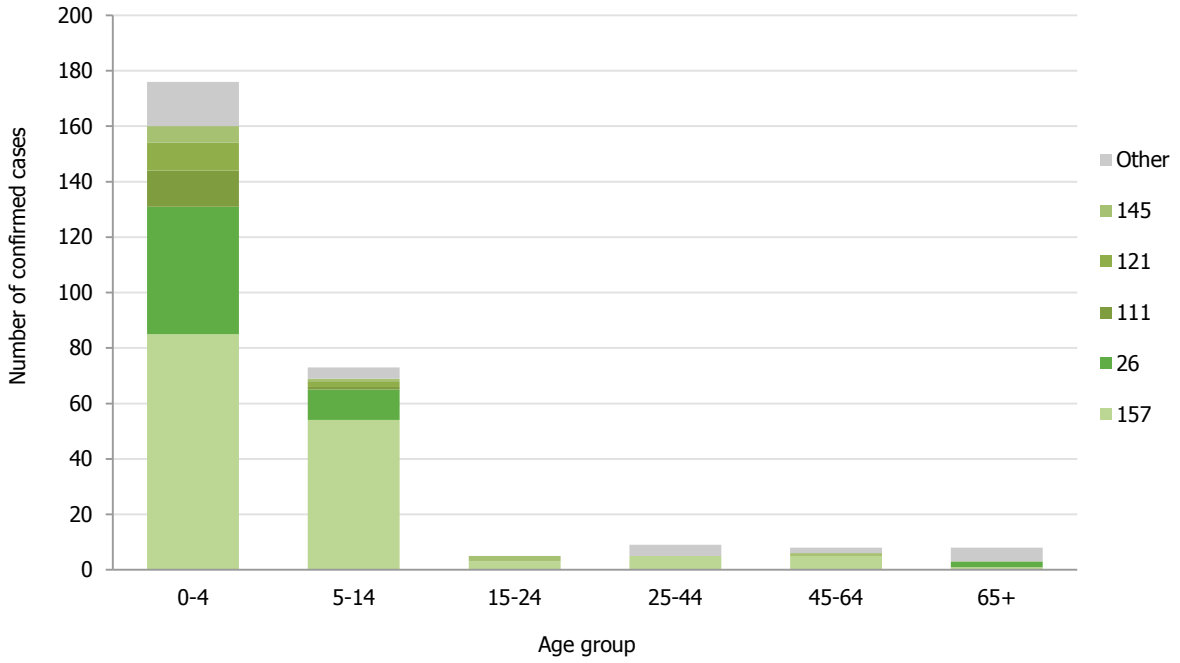
Table 2. Number of confirmed STEC/VTEC reported cases by most common O-serogroups, EU/EEA, 2012

Country	Serogroup										
	O157	O26	O91	O103	O145	O146	O111	O128	O113	NT	Other
Austria	17	23	0	7	9	1	5	1	4	19	23
Belgium	65	8	1	3	3	-	1	1	1	-	22
Czech Republic	5	4	-	-	-	-	-	-	-	-	-
Denmark	38	8	7	8	19	18	3	6	1	2	68
France	68	37	7	1	4	-	18	3	-	47	20
Germany	84	50	72	34	26	14	14	1	4	47	125
Hungary	1	-	1	-	-	-	-	-	-	1	-
Ireland	187	147	-	5	21	2	6	-	-	24	1
Italy	14	17	-	4	3	-	5	-	-	-	-
Lithuania	1	1	-	-	-	-	-	-	-	-	-
Luxembourg	-	2	-	1	-	-	-	1	-	-	1
Netherlands	89	29	30	9	9	10	2	1	3	30	74
Poland	1	-	-	-	-	-	-	-	-	-	-
Romania	-	1	-	-	-	-	-	-	-	-	-
Slovakia	-	-	-	-	-	-	-	-	-	9	-
Slovenia	5	2	-	3	-	1	-	-	1	5	5
Spain	24	1	-	-	-	-	3	-	-	-	3
Sweden	71	60	7	37	8	8	9	6	8	21	57
United Kingdom	1 277	21	-	4	2	2	-	-	2	-	9
EU Total	**1 947**	**411**	**125**	**116**	**104**	**56**	**66**	**20**	**24**	**205**	**408**
Iceland	1	-	-	-	-	-	-	-	-	-	-
Norway	12	6	5	17	8	2	-	-	-	21	4
EU/EEA Total	**1 960**	**417**	**130**	**133**	**112**	**58**	**66**	**20**	**24**	**226**	**412**

Source: Country reports from Austria, Belgium, Czech Republic, Denmark, France, Germany, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Haemolytic uremic syndrome (HUS) cases were reported in 15 EU/EEA countries. A total of 382 (6.6%) confirmed STEC/VTEC cases (n=5 746) developed HUS in 2012. Fifty-nine per cent of HUS cases (n=226) were reported in 0–4 year-old children with O157 and O26 as dominant serogroups followed by 5–14 year old children with O157 as a dominant serogroup (74%) (Figure 4). The fourth most common serogroup O121 caused HUS mainly (83%) in children below five years old. This serogroup has not been reported among the most common O-serogroups in HUS or non-HUS cases in previous years. In 2012, among non-HUS cases, the dominant O-serogroups were O157 and O26 and the top five serogroups included serogroup O103 instead of O121. Only three cases (3.8%) out of 79 with O-serogroup O103 developed HUS.

Figure 4. Number of confirmed STEC/VTEC HUS reported cases by age and most common O-serogroups, EU/EEA, 2012



Source: Country reports from Austria, Belgium, Czech Republic, France, Germany, Ireland, Italy, Netherlands, Norway, Poland, Spain, Sweden and the United Kingdom (N=279).

Discussion

In 2012, there were 5 746 confirmed human cases reported due to STEC/VTEC infection. This represents a marked decrease compared with the previous year with a large German outbreak caused by STEC/VTEC O104:H4, a rare E. coli pathotype, associated with the consumption of contaminated raw sprouts [1]. The EU/EEA notification rate about 1.0 cases per 100 000 population has been reported since 2007 until 2010. However, a year after the outbreak a 1.5 fold increase in the EU/EEA notification rate and an increasing trend was observed compared with previous years. This is most likely due to the increased public health interest and detection of the STEC/VTEC cases as a response to the 2011 outbreak. Several countries improved their surveillance system for detection and characterisation of VTEC/STEC and particularly of capacity to meet the requirements for STEC/VTEC O104:H4 epidemic case confirmation [3]. In 2012, improved preparedness for detection raised STEC/VTEC O104 among the 24 most commonly reported serogroups in the EU. Other rare serotype O111:H21 with similar pathogenic profile was associated in a household outbreak with an HUS case in Northern Ireland in 2012 [4].

In 2012, 10 EU countries reported 51 outbreaks from food and 10 waterborne outbreaks to EFSA, caused by pathogenic VTEC strains [2]. This represented 0.9% and 63% of all the reported food- and waterborne outbreaks in the EU. All 10 VTEC waterborne outbreaks were reported by Ireland and seven were reported to be linked to private water supplies or wells [2]. Most of the diagnosed and reported human STEC/VTEC strains and outbreaks were caused by serogroup O157, partly due to the preference of diagnostic methods to detect this particular serogroup. In animals and food, the serogroup O157 is mainly isolated from cattle and bovine meat. Denmark faced an outbreak of STEC/VTEC O157:H7 infections with a rare toxin gene subtype profile in 2012. A high proportion of HUS (8/13; 62%) among cases was reported. Epidemiological investigations suggested ground beef as the vehicle of the outbreak [5].

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Se	A	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y	Other
Estonia	EE-EHEC	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y	Not specified/unknown
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	N	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-VTEC	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-ENTERNET	V	Se	P	C	Y	N	N	N	-	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y	Not specified/unknown
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-ENTEROHAEMORHAGIC_ECOLI	Cp	Co	A	C	Y	Y	N	N	Y	Other
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-NRL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-ENTEROHAEMORHAGIC_ECOLI	O	Co	A	C	Y	N	Y	Y	Y	EU-2012

References

1. Frank C, Werber D, Cramer JP, Askar M, Faber M, an der Heiden M, et al. Epidemic profile of Shiga-toxin-producing Escherichia coli O104:H4 outbreak in Germany. N Engl J Med. 2011 Nov 10; 365(19):1771-80. PubMed PMID: 21696328. Epub 2011/06/24. eng.
2. European Food Safety Authority, European Centre for Disease Prevention and Control. The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2012. EFSA Journal 2014;12(2):3547
3. Rosin P, Niskanen T, Palm P, Struelens M, Takkinen J. Laboratory preparedness for detection and monitoring of Shiga toxin 2-producing Escherichia coli O104:H4 in the European Union/European Economic Area and response to the 2011 outbreak. Euro Surveillance. 2013; 18(25): pii=20508.
4. Dallman T, Smith G, O'Brien B, Chattaway M, Finlay D, Grant K, et al. Characterization of a verocytotoxin-producing enteroaggregative Escherichia coli serogroup O111:H21 strain associated with a household outbreak in Northern Ireland. JCM 2012; 12 (50) p. 4116–4119.
5. Soborg B, Lassen SG, Müller L, Jensen T, Ethelberg S, Mølbak K, et al. A verocytotoxin-producing E. coli outbreak with a surprisingly high risk of haemolytic uraemic syndrome, Denmark, September-October 2012. Euro Surveillance. 2013; 18(2): pii=20350.

Toxoplasmosis (congenital)

- Congenital toxoplasmosis is an uncommon disease in the EU/EEA with 40 cases reported by 19 EU countries in 2012.
- The surveillance of congenital toxoplasmosis is very heterogeneous in EU/EEA countries; it is therefore not possible to estimate the burden of congenital toxoplasmosis in Europe, and any comparison of rates between countries should be made with caution.

Toxoplasmosis is an infection with the protozoan parasite *Toxoplasma gondii*. Cats are the primary host for the parasite, and humans are infected by ingestion of the oocysts. Toxoplasmosis is usually a mild infection or causes no symptoms for most individuals, but infection in early pregnancy can result in stillbirth or congenital brain lesions (or lesions in other organs), particularly if the mother acquired her primary infection during the first trimester of pregnancy. Due to the change in the EU case definition for toxoplasmosis in 2008, only congenital cases are required to be reported from 2009 onwards. This section, therefore, reports only data from cases below one year of age.

Epidemiological situation in 2012

In 2012, 40 confirmed congenital toxoplasmosis cases were reported by 19 EU Member States. This represents a very substantial decrease compared with the 214 confirmed cases reported in 2011 (Figure 1). Only eight countries reported cases and eleven countries reported zero cases (Table 1). The overall EU confirmed case rate was 0.3 per 100 000 below one-year-olds age group. With 15 confirmed cases in males, and 22 in females, the male-to-female ratio was 0.68:1 in 2012. Despite a clustering of four cases in April, it is not possible to detect seasonality with the small numbers reported (Figure 2).

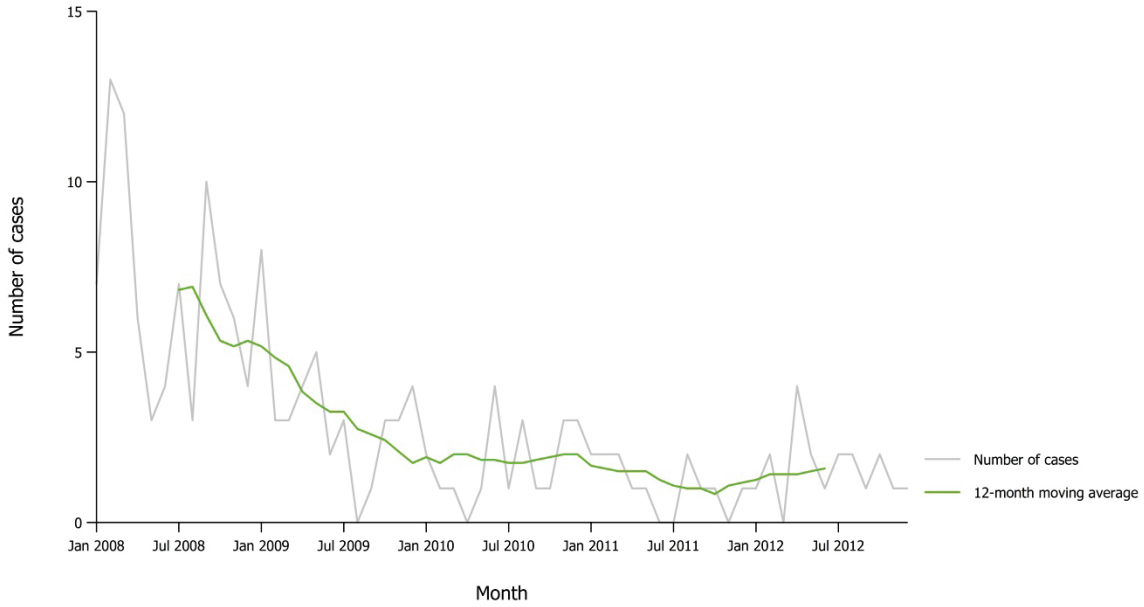
Table 1. Number and rates of confirmed congenital toxoplasmosis reported cases, EU/EEA, 2008–2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	0.00	0	0.00	1	1.32	1	1.30	0	0.00
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bulgaria	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	17	24.10	64	92.86
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	1	1	0.92	0.01	2	1.68	2	1.67	2	1.66	2	1.74
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
France	-	-	-	-	-	-	186	23.01	244	30.58	266	33.32	-	-
Germany	Y	C	20	20	3.02	0.03	14	2.06	14	2.11	-	-	-	-
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	0	0	0.00	0.00	0	0.00	1	1.05	3	3.09	1	1.04
Ireland	Y	C	1	1	1.35	0.01	1	1.34	1	1.33	0	0.00	2	2.79
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	1	1	5.38	0.05	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	1	1	3.31	0.04	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	1	1	17.12	0.18	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	10	10	2.58	0.03	3	0.73	7	1.68	3	0.73	8	2.07
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	2	0.91	0	0.00
Slovakia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	1	4.57	0	0.00
Spain	N	C	0	0	-	-	1	-	0	-	1	-	1	-
Sweden	-	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	Y	C	5	5	0.62	0.01	7	0.88	9	1.14	10	1.27	5	0.65
EU Total	**-**	**-**	**40**	**40**	**1.49**	**0.02**	**214**	**5.99**	**279**	**7.85**	**306**	**10.57**	**83**	**4.07**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EU/EEA Total	**-**	**-**	**40**	**40**	**1.49**	**0.02**	**214**	**5.99**	**279**	**7.85**	**306**	**10.57**	**83**	**4.06**

ASR: Age-standardised rate

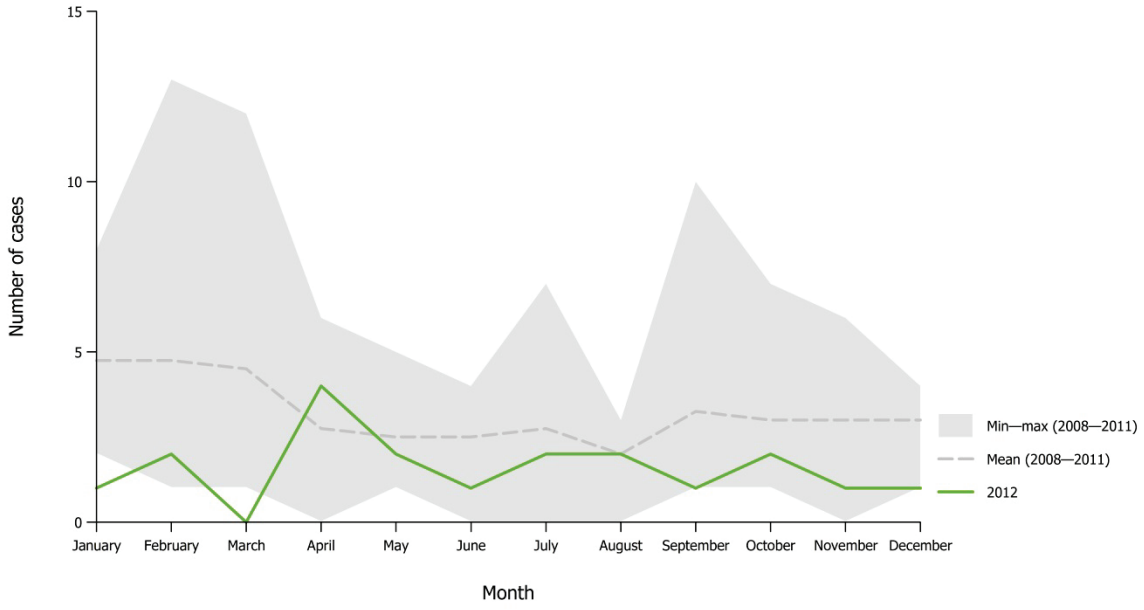
Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed congenital toxoplasmosis reported cases by month, EU/EEA, 2008–2012



Source: Country reports from Austria, Bulgaria, Cyprus, Czech Republic, Estonia, Finland, Hungary, Ireland, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia and the United Kingdom.

Figure 2. Distribution of confirmed congenital toxoplasmosis reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



Source: Country reports from Austria, Bulgaria, Cyprus, Czech Republic, Estonia, Finland, Hungary, Ireland, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia and the United Kingdom.

Discussion

Together with the already well-known transmission sources (e.g. stray cats or uncooked contaminated meat), the waterborne transmission is described as an emerging public health risk worldwide [1]. Standard disinfection processes, including UV radiation, are not always able to eliminate *Toxoplasma gondii* from drinking water [1,2].

The high decrease in the number of cases between 2011 (when 214 confirmed cases) and 2012 (with 40 confirmed cases) could be a surveillance artefact as France, which had reported the highest rate of congenital toxoplasmosis among EU countries in 2011, didn't report data in 2012.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Reflab	V	O	P	C	Y	N	N	N	Y	EU-2008
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Estonia	EE-TOXOPLASMOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	-	Other
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N	EU-2008
United Kingdom	UK-TOXOPLASMOSIS	V	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. Gallas-Lindemann C, Sotiriadou I, Mahmoodi MR, Karanis P. (2013). "Detection of Toxoplasma gondii oocysts in different water resources by Loop Mediated Isothermal Amplification (LAMP)." Acta Tropica 125(2): 231-236.

2. Karanis P, Aldeyarbi HM, Mirhashemi ME, Khalil KM. (2013). "The impact of the waterborne transmission of Toxoplasma gondii and analysis efforts for water detection: An overview and update." Environmental Science and Pollution Research 20(1): 86-99.

Trichinellosis

- Trichinellosis remains an uncommon disease in EU and EEA countries.
- In 2012, the confirmed case rate of trichinellosis was 0.06 cases per 100 000 population (301 confirmed cases), which is comparable with 2010 and 2011 and substantially lower than in 2008 and 2009.
- In 2012, almost 50% of cases were reported from Romania.

Trichinellosis is a disease caused by an infection with the intestinal nematode parasite *Trichinella,* most commonly the species *T. spiralis*. A wide range of animals act as hosts, like pigs (including wild boar), dogs, cats and horses. Infection in humans occurs by ingesting larvae-containing meat or blood from infected animals and low doses are associated with a considerable risk of infection [1]. Infection in humans is uncommon in the EU due to effective meat inspection control, but occurs in some countries, mostly associated with the consumption of wild boar meat.

Epidemiological situation in 2012

In 2012, 27 of the 31 EU and EEA countries reported a total of 378 trichinellosis cases, 301 of which were confirmed. In 16 countries no cases were reported (Table 1). The overall confirmed case rate in 2011 was 0.06 cases per 100 000, very similar to that observed in 2010 and 2011 and notably lower than in 2008 and 2009. This sustained decrease in case rate since 2009 (Figure 1) is mainly a result of significantly lower case numbers being reported from Bulgaria and Romania.

Four countries reported more confirmed cases in 2012 than in 2011. Romania accounted for 49.5% of total confirmed cases. Latvia had the highest case rate (2.01 cases per 100 000), although this was a decrease from 2.41 in 2011. Italy reported a five-fold increase in cases in 2012 with 33 cases reported compared with six in 2011. Nine food-borne outbreaks from seven Member States were reported in 2012, eight by Romania and one by Spain.

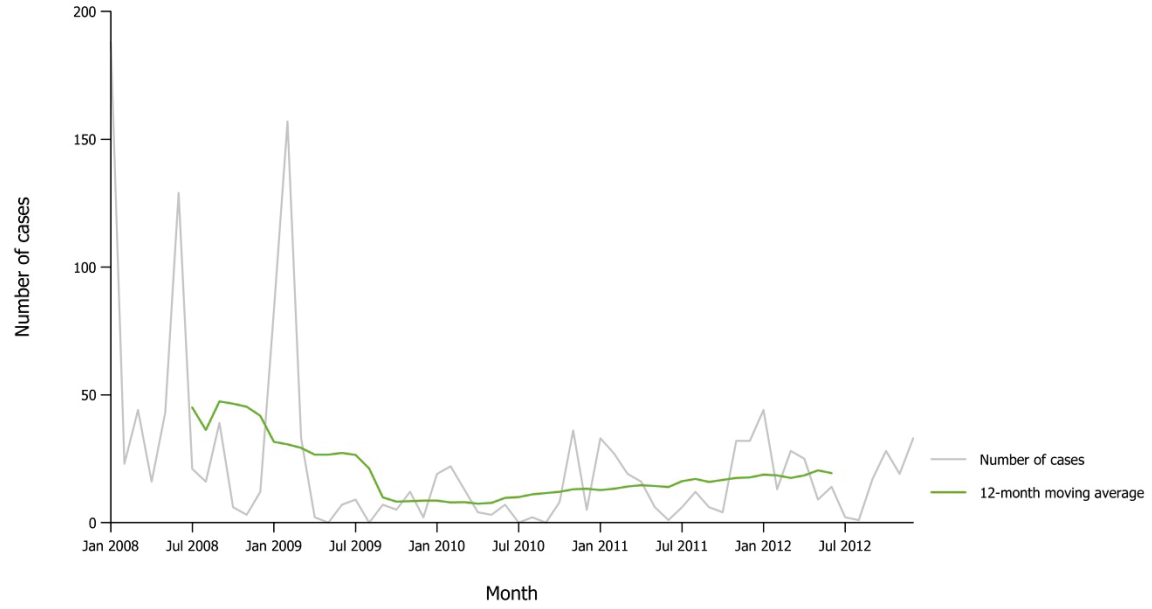
Table 1. Number and rates of confirmed trichinellosis reported cases, EU/EEA, 2008–2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	0.00	1	0.01	5	0.06	0	0.00	0	0.00
Belgium	N	C	0	0	-	-	0	-	3	-	0	0.00	5	-
Bulgaria	Y	A	30	30	0.41	0.41	27	0.37	14	0.19	407	5.45	67	0.89
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	1	1	0.01	0.01	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
France	Y	C	0	0	0.00	0.00	2	0.00	0	0.00	9	0.01	3	0.01
Germany	Y	C	2	2	0.00	0.00	3	0.00	3	0.00	1	0.00	1	0.00
Greece	Y	C	0	0	0.00	0.00	0	0.00	4	0.04	2	0.02	0	0.00
Hungary	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	9	0.09	5	0.05
Ireland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Italy	Y	C	33	33	0.05	0.00	6	0.01	0	0.00	1	0.00	0	0.00
Latvia	Y	C	45	41	2.01	2.01	50	2.41	9	0.42	9	0.42	4	0.18
Lithuania	Y	C	30	28	0.93	0.96	29	0.95	77	2.45	20	0.63	31	0.97
Luxembourg	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0	0.00	0.00	1	0.01	0	0.00	1	0.01	1	0.01
Poland	Y	C	1	1	0.00	0.00	10	0.03	14	0.04	18	0.05	4	0.01
Portugal	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Romania	Y	C	220	149	0.74	0.74	107	0.54	82	0.41	265	1.31	503	2.46
Slovakia	Y	C	5	5	0.09	0.09	13	0.24	2	0.04	0	0.00	18	0.34
Slovenia	Y	C	1	1	0.05	0.05	1	0.05	0	0.00	1	0.05	1	0.05
Spain	Y	C	10	10	0.02	0.02	18	0.04	10	0.02	7	0.02	27	0.06
Sweden	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
United Kingdom	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
EU Total	**-**	**-**	**378**	**301**	**0.06**	**0.06**	**268**	**0.06**	**223**	**0.05**	**750**	**0.15**	**670**	**0.14**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Norway	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
EU/EEA Total	**-**	**-**	**378**	**301**	**0.06**	**0.06**	**268**	**0.06**	**223**	**0.05**	**750**	**0.15**	**670**	**0.14**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed trichinellosis reported cases by month, EU/EEA, 2008–2012

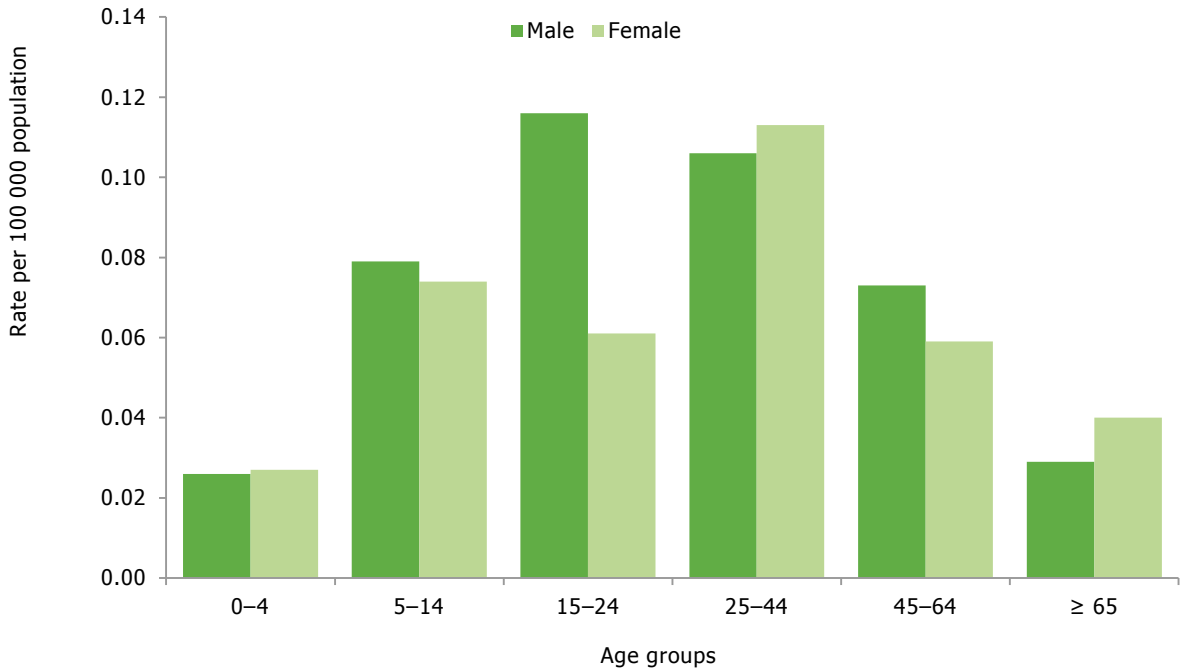


Source: Country reports from Austria, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

Age and gender distribution

The highest confirmed case rates were reported among young and middle-aged adults, with the highest rate in females aged 25–44 years (0.09 cases per 100 000) followed by men aged 15–24 years (0.08 cases per 100 000) (Figure 2).

Figure 2. Rates of confirmed trichinellosis reported cases by age and gender, EU/EEA, 2012

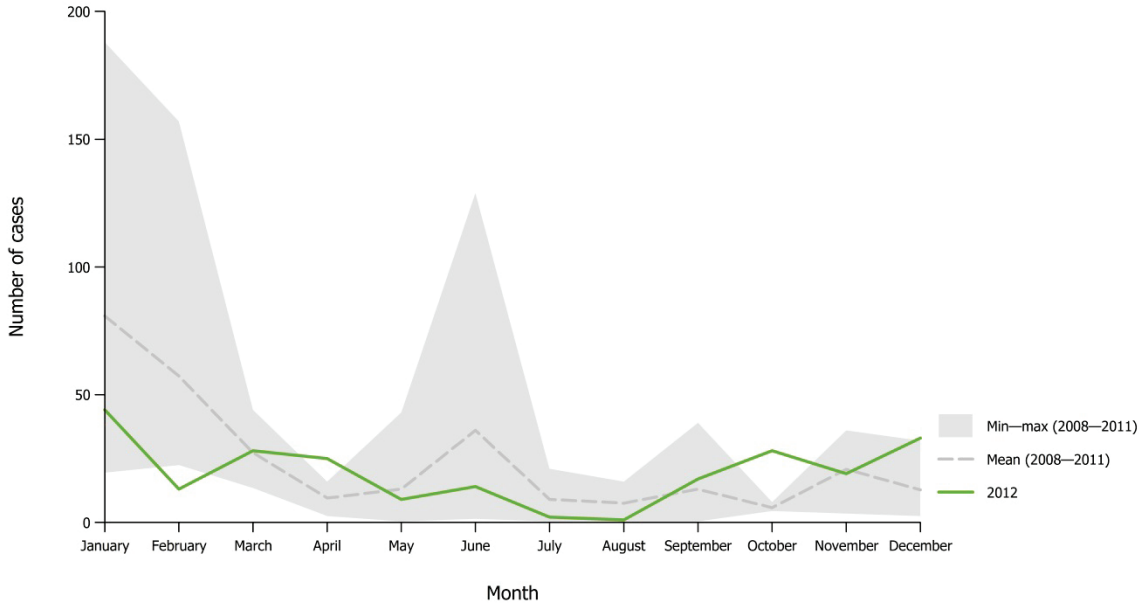


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

In previous years, a clear winter peak has been observed in January–February, followed by another peak in June. This trend was evident in 2012 with an additional increase in October (data from Bulgaria could not be included in the graph due to the Bulgarian reporting format) (Figure 3).

Figure 3. Distribution of confirmed trichinellosis reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



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

Discussion

Trichinellosis is an uncommon but serious human disease that is still present in the EU, with most cases reported from only a few Member States. Since 2010, the notification rate observed at the EU level has remained stable, although Romania continued to report significantly higher case numbers than other countries. While the number of confirmed cases of human trichinellosis infection has decreased markedly in Romania since 2009, it continues to be significant, accounting for 49.5% of all confirmed cases in the EU in 2011, and 50.0% of all confirmed cases since 2008.

Of the nine trichinellosis outbreaks reported by two Member States in 2012, eight were linked to the consumption of pig and wild-boar meat, and/or derived products, while the contributing factor in the other outbreak was unknown. Pig and wild boar meat and derived products remain the two most important sources of human trichinellosis infection in the EU. Raising pigs in backyards poses a risk of infection and most positive findings in pigs come from such non-controlled domestic settings. Unlike pigs, there is no sign of a decreasing trend of *Trichinella* in wildlife so it is vital to continue educating hunters on the risks of eating undercooked boar meat.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Se	A	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Estonia	EE-ANTH/CHOL/DIPH/MALA/SPOX/TRIC/TULA/TYPH	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Y	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Portugal	PT-TRICHINOSIS	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-TRICHINOSIS	V	Co	P	C	Y	N	Y	Y	Y	EU case definition (legacy/deprecated)

References

1. Teunis P.F, Koningstein M, Takumi K, van der Giessen J.W. "Human beings are highly susceptible to low doses of Trichinella spp." Epidemiological Infection. 2012; 140(2): 210-218.

Tularaemia

- 1 002 cases of tularaemia in humans were reported in the EU (991 confirmed) and the notification rate was 0.21 per 100 000 population.
- There was an overall increase by 37% in the number of reported confirmed cases compared with 2011.
- The highest rates were reported among middle-aged and older men.
- Sweden accounts for more than half of the reported cases in EU/EEA countries in 2012.

Tularaemia is a zoonosis caused by the bacteria *Francisella tularensis*. It is naturally infecting lagomorphs (rabbits and hare), small rodents and beavers. Many other mammals and several species of birds, amphibians and invertebrates can also be infected. Tularaemia is absent from the southern hemisphere and four types exist in the northern hemisphere. In Europe, only the less virulent subspecies *holarctica* (formerly type B) is present, mainly infecting hares and small rodents. It is transmitted through arthropods bites (ticks, mosquitoes), through direct contact with infected animals, through inhalation of contaminated dust, but also through ingestion of undercooked meat or contaminated water. In humans, the clinical form of tularaemia corresponds to the route of entry of the pathogen: infections from contact and inoculation lead to ulcers and regional lymphadenopathy, while alimentary infection results in an oropharyngeal/intestinal form and inhalation of infective material causes a pulmonary form. Treatment is straightforward with appropriate antibiotics, but prolonged convalescence and suppurative complications are common, often due to delayed diagnosis. The wide range of transmission modes is attributable to the enormous virulence of the agent and to its great tenacity at lower environmental temperatures. A live attenuated vaccine exists but is limited to persons at a high risk of exposure to virulent bacteria, and is not currently available in Europe.

Epidemiological situation in 2012

In 2012, 26 EU and EEA countries provided information on tularaemia in humans. A total of 1 002 cases of tularaemia in humans were reported in the EU (Table 1), of which 991 were confirmed. All reporting countries have a comprehensive surveillance system, but while reporting is compulsory in most countries, it is voluntary in Belgium and the United Kingdom. The disease is not notifiable in Denmark, the Netherlands, Portugal and Liechtenstein. Twenty countries used the EU case definition. Eleven Member States (Belgium, Bulgaria, Cyprus, Estonia, Greece, Ireland, Luxembourg, Malta, Romania, United Kingdom and Iceland) reported no human cases. The EU notification rate was 0.21 per 100 000 population. There was an overall 37% increase in the number of reported confirmed cases compared with 2011 (724 cases). The largest increase in reported cases (three times more) for 2012 was observed in the Finland, but case numbers were still nearly half the number reported in 2009 (405). As every year apart from 2009, case numbers were highest in Sweden (590 cases) and increased by 68.6% compared with 2011. The highest notification rate was accordingly observed in Sweden (6.22 per 100 000), followed by Finland (4.31) and Norway (1.00), and these three countries reported 88% of all cases.

Table 1. Number and rates of confirmed tularaemia reported cases, EU/EEA, 2008–2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	2	2	0.02	0.02	0	0.00	3	0.04	2	0.02	8	0.10
Belgium	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Bulgaria	Y	C	0	0	0.00	0.00	0	0.00	3	0.04	7	0.09	3	0.04
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	42	42	0.40	0.39	57	0.54	50	0.48	64	0.61	109	1.05
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0.00	2	0.15	0	0.00	0	0.00	1	0.08
Finland	Y	C	233	233	4.31	4.25	75	1.40	91	1.70	405	7.60	116	2.19
France	Y	C	15	5	0.01	0.01	16	0.03	22	0.03	16	0.03	104	0.16
Germany	Y	C	21	21	0.03	0.02	17	0.02	31	0.04	10	0.01	15	0.02
Greece	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Hungary	Y	C	18	18	0.18	0.17	15	0.15	126	1.28	38	0.39	25	0.25
Ireland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Italy	Y	C	2	2	0.00	0.00	0	0.00	1	0.00	2	0.00	43	0.07
Latvia	Y	C	6	6	0.29	0.35	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	3	3	0.10	0.10	0	0.00	1	0.03	1	0.03	2	0.06
Luxembourg	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	6	6	0.02	0.02	6	0.02	4	0.01	1	0.00	0	0.00
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	0	0	0.00	0.00	0	0.00	4	0.02	0	0.00	0	0.00

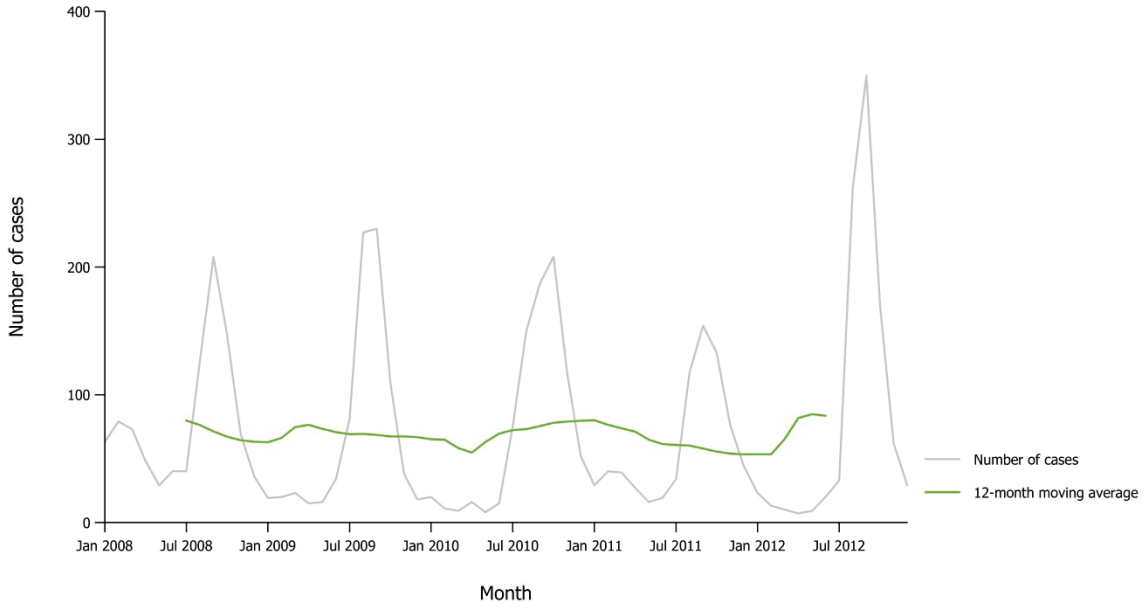
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Slovakia	Y	C	8	8	0.15	0.15	5	0.09	17	0.32	22	0.41	25	0.47
Slovenia	Y	C	4	4	0.20	0.19	0	0.00	0	0.00	1	0.05	2	0.10
Spain	Y	C	2	1	0.00	0.00	1	0.00	1	0.00	12	0.03	58	0.13
Sweden	Y	C	590	590	6.22	6.16	350	3.72	484	5.18	244	2.64	382	4.16
United Kingdom	Y	C	0	0	0.00	0.00	0	0.00	1	0.00	0	0.00	0	0.00
EU Total	**-**	**-**	**952**	**941**	**0.20**	**0.20**	**544**	**0.12**	**839**	**0.18**	**825**	**0.18**	**893**	**0.19**
Iceland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	50	50	1.00	1.01	180	3.66	33	0.68	13	0.27	66	1.39
EU/EEA Total	**-**	**-**	**1 002**	**991**	**0.21**	**0.20**	**724**	**0.15**	**872**	**0.19**	**838**	**0.18**	**959**	**0.21**

ASR: Age-standardised rate

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

There is no obvious EU trend in confirmed tularaemia cases between 2008 and 2011, but 2012 seems to mark a peak (Figure 1), attributed to increased case numbers mainly in Sweden and Finland.

Figure 1. Distribution of confirmed tularaemia reported cases by month, EU/EEA, 2008–2012

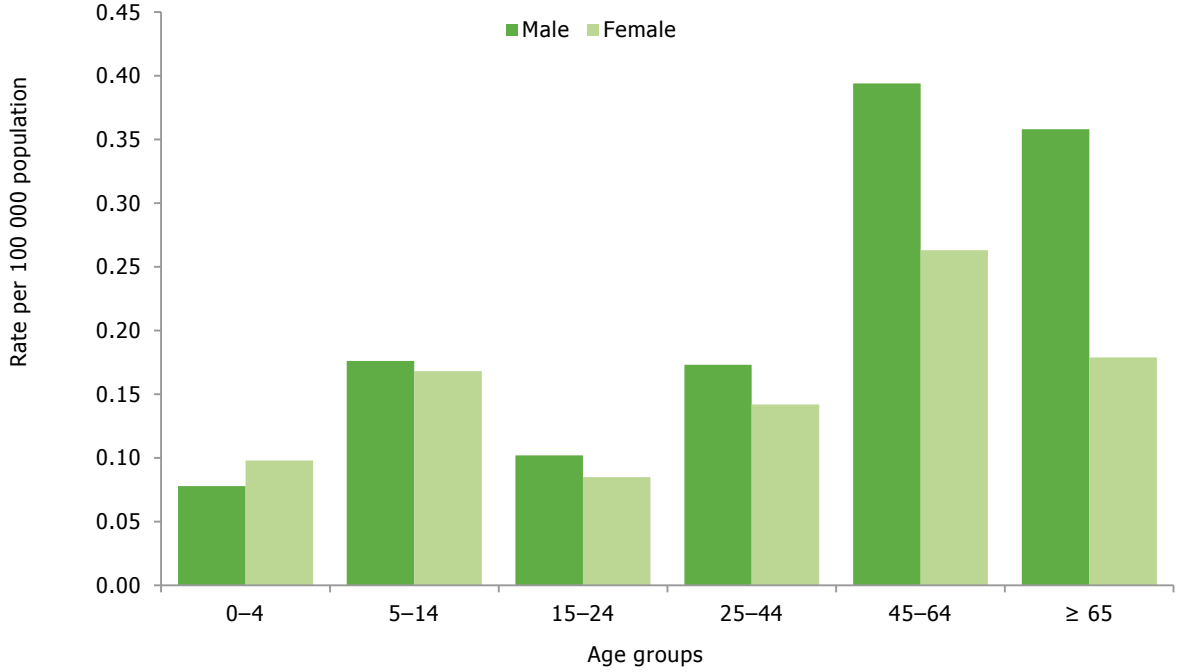


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Age and gender distribution

As in previous years, there was a higher proportion of males than females among cases (male-to-female ratio 1.40:1). The highest confirmed case rates were observed in the oldest age groups (45–64 year-olds and 65 years and older) with 0.32 and 0.26 cases per 100 000 respectively (Figure 2). Rates were also higher in 5–14 year-olds (0.17) than in 0–4 and 15–24 year-olds (0.09); which corresponds to increased rates in this age class in Latvia and Sweden and to a lesser extent in Norway, Finland and Poland; this feature was also observed in 2011 but not in 2010.

Figure 2. Rates of confirmed tularaemia reported cases by age and gender, EU/EEA, 2012

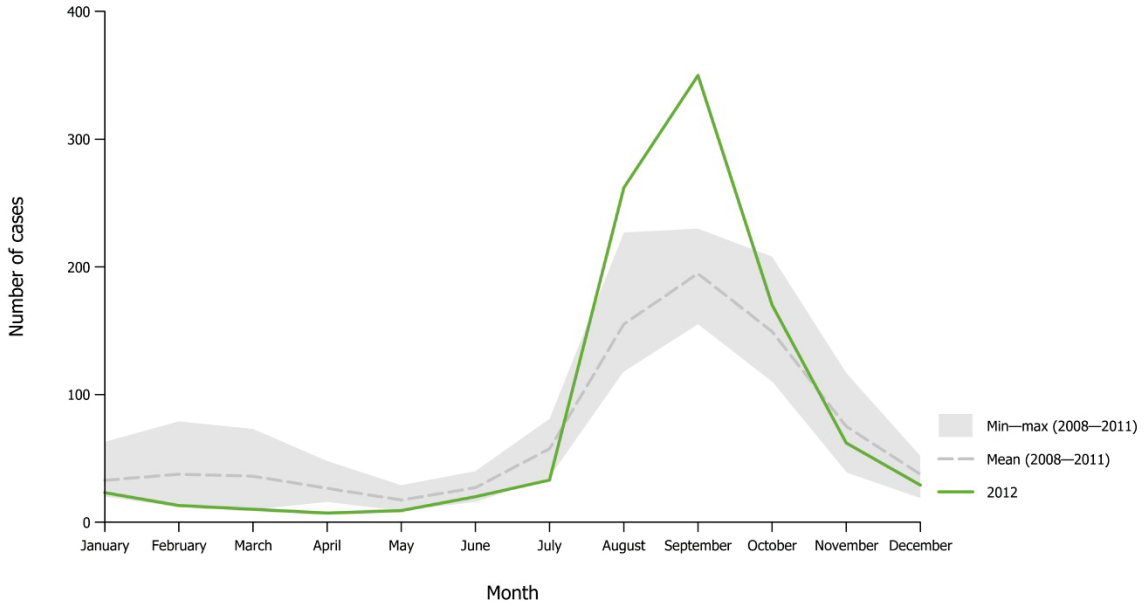


Source: Country reports from Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

Tularaemia has a clear seasonal pattern with most cases occurring between August and October, but some cases occurring also in the winter. In 2012, the peak was in September and the epidemiological curve coincided with the average, although being stronger (Figure 3); this was related to the large number of cases reported from Sweden and Finland for this month.

Figure 3. Distribution of confirmed tularaemia reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



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

Discussion

A strong seasonality in the number of tularaemia cases in humans between the years is a well-known phenomenon, but the reasons behind this remain unclear. It is likely that a range of factors interact, like variations in rodent and hare populations, insect vector density, and weather conditions. In Sweden - the country reporting the highest confirmed case rate - the main transmission route for tularaemia is through insect bites, and a high prevalence of mosquitoes in late summer has been shown to be a prerequisite for tularaemia outbreaks in endemic regions [1]. In France however, 41% of cases reported between 2002 and 2012 were exposed to hare and 19% reported tick bites [2]. Often there are also reports of visible mortality in rodents/hares associated with increased cases of tularaemia in humans [3-5], which probably indicates increased circulation of the disease in given areas. Tularaemia in wildlife (a hare) was reported to the World Organisation for Animal Health (OIE) by the Netherlands in September 2013 [6]; it had not been reported in this country since 1953. This event is however not considered as unexpected, since the disease is present in the surrounding countries such as Germany, France and Belgium.

Generally, people visiting nature in endemic areas should be informed about the disease and contamination risks and mitigation measures recommended.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Estonia	EE-ANTH/CHOL/DIPH/MALA/SPOX/TRIC/TULA/TYPH	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y	Not specified/unknown
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-TULARAEMIA	V	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. Ryden P, Bjork R, Schafer ML, Lundstrom JO, Petersen B, Lindblom A, et al. Outbreaks of tularaemia in a boreal forest region depend on mosquito prevalence. J Infect Dis. 2012 Jan 15; 205(2):297-304.
2. Mailles A, Vaillant V. [Bilan de 10 années de surveillance de la tularémie chez l'Homme en France]. Saint-Maurice: Institut de veille sanitaire; 2013. Available from: http://www.invs.sante.fr.
3. Larssen KW, Afset JE, Heier BT, Krogh T, Handeland K, Vikoren T, et al. Outbreak of tularaemia in central Norway, January to March 2011. Euro Surveillance. 2011; 16(13).
4. Penttinen P, Giesecke J. Outbreak of tularaemia in Sweden, July-August 2003. Euro Surveillance. 2003; 7(33): pii=2276.
5. Mailles A, Madani N, Maurin M, Garin-Bastuji B, Vaillant V. [Unexpected increase of human and animal tularemia cases during winter 2007/2008 in France: Emergence or short-lasting episode?]. Med Mal Infect. 2010 May; 40(5):279-84.
6. OIE, WAHID (World Animal Health Information Database), weekly disease information 2013; 26(36) [edited]. Available from: http://www.oie.int/wahis_2/public/wahid.php/Reviewreport/Review?page_refer=MapFullEventReport&reportid=14023.

Typhoid/paratyphoid fever

- In 2012, 948 confirmed cases of typhoid and paratyphoid fever were reported in the EU/EEA countries, representing an 21% decrease compared to 2011.
- As for the previous year, 90% of cases were imported, the majority from the Indian subcontinent.
- Reported case rates were highest among 25–44 year-olds in 2012.
- About 55% of reported cases were due to typhoid fever and 35% to Paratyphoid A fever.
- Between January and September 2013, 35 cases of paratyphoid A fever were reported among EU travellers returning from Cambodia.

Typhoid and paratyphoid fever are systemic bacterial diseases, which are caused by infection with *Salmonella enterica* serovars Typhi (typhoid fever), Paratyphi A, Paratyphi B or Paratyphi C (paratyphoid fever). Humans are the only reservoir of these bacteria and can be short- or long-term asymptomatic carriers. Transmission occurs by the faecal-oral route, through person-to-person contact, or contaminated water or food. The infection is uncommon in the EU/EEA, and most cases are reported in travellers returning from countries where the disease is endemic. The highest risk of typhoid and paratyphoid fever exists for travellers to Southern Asia [1, 2].

Epidemiological situation in 2012

In 2012, 948 confirmed cases (total 953) of human typhoid or paratyphoid infections were reported by 25 EU Member States, Iceland and Norway. This represented a 21% decrease compared with 2011. The reported confirmed case rate was 0.25 per 100 000 population (Table 1). Two Member States (Bulgaria and Poland) do not distinguish typhoid/paratyphoid fever cases from non-typhoidal salmonellosis, and their data cannot be included. The 2012 confirmed case rate was the lowest notification rate observed in the last five years (Figure 1). The highest confirmed case rate was reported by the United Kingdom (0.64 per 100 000 population), followed by the Netherlands (0.39 per 100 000 population), Ireland (0.31 per 100 000 population) and Sweden (0.30 per 100 000 population) in 2012.

Table 1. Number and rates of confirmed typhoid/paratyphoid fever reported cases, EU/EEA, 2008–2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	18	13	0.16	0.16	4	0.05	30	0.36	0	0.00	14	0.17
Belgium	N	C	29	29	-	-	50	-	72	-	104	-	61	-
Bulgaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyprus	Y	C	1	1	0.12	0.12	1	0.12	1	0.12	4	0.50	5	0.64
Czech Republic	Y	C	0	0	0.00	0.00	7	0.07	5	0.05	4	0.04	6	0.06
Denmark	Y	C	15	15	0.27	0.27	14	0.25	18	0.33	17	0.31	19	0.35
Estonia	Y	C	2	2	0.15	0.15	0	0.00	1	0.08	3	0.22	0	0.00
Finland	Y	C	5	5	0.09	0.10	9	0.17	16	0.30	9	0.17	13	0.25
France	Y	C	165	165	0.25	0.26	146	0.23	222	0.34	264	0.41	236	0.37
Germany	Y	C	101	101	0.12	0.14	114	0.14	128	0.16	141	0.17	179	0.22
Greece	Y	C	6	6	0.05	0.06	8	0.07	12	0.11	4	0.04	11	0.10
Hungary	Y	C	1	1	0.01	0.01	0	0.00	4	0.04	0	0.00	3	0.03
Ireland	Y	C	14	14	0.31	0.28	16	0.35	14	0.31	17	0.38	13	0.29
Italy[1]	N	C	35	35	-	-	125	0.21	144	0.24	120	0.20	123	0.21
Latvia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	-	-	0	0.00
Lithuania	Y	C	1	1	0.03	0.04	2	0.07	1	0.03	0	0.00	2	0.06
Luxembourg	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	1	0.21
Malta	Y	C	0	0	0.00	0.00	2	0.48	1	0.24	1	0.24	0	0.00
Netherlands	Y	C	65	65	0.39	0.40	56	0.34	72	0.43	48	0.29	66	0.40
Poland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Portugal	Y	C	14	14	0.13	0.14	14	0.14	16	0.15	34	0.33	21	0.20
Romania	Y	C	0	0	0.00	0.00	0	0.00	3	0.02	2	0.01	0	-

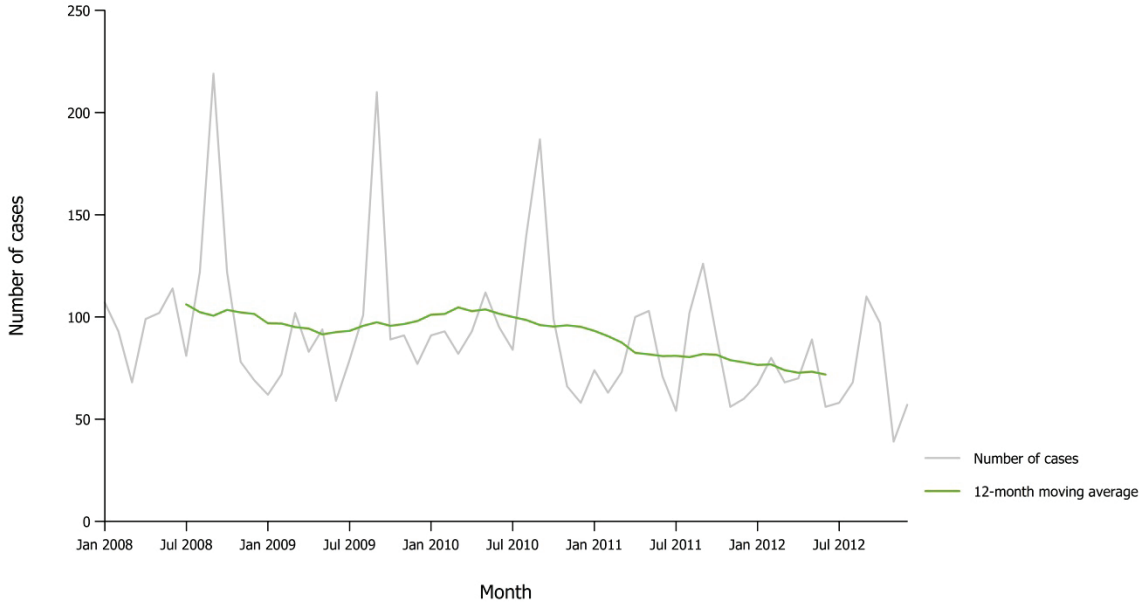
Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Slovakia	Y	C	7	7	0.13	0.14	2	0.04	6	0.11	2	0.04	0	0.00
Slovenia	Y	C	1	1	0.05	0.05	3	0.15	2	0.10	2	0.10	5	0.25
Spain	N	C	25	25	-	-	47	-	37	-	26	-	21	-
Sweden	Y	C	28	28	0.30	0.31	24	0.26	42	0.45	38	0.41	49	0.53
United Kingdom	Y	C	400	400	0.64	0.64	524	0.84	586	0.94	503	0.82	596	0.97
EU Total	**-**	**-**	**933**	**928**	**0.25**	**0.26**	**1 168**	**0.27**	**1 433**	**0.33**	**1 343**	**0.31**	**1 444**	**0.37**
Iceland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	2	0.63
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Norway	Y	C	20	20	0.40	0.40	26	0.53	34	0.70	28	0.58	33	0.70
EU/EEA Total	**-**	**-**	**953**	**948**	**0.25**	**0.26**	**1194**	**0.27**	**1 467**	**0.34**	**1 371**	**0.31**	**1 479**	**0.37**

ASR: Age-standardised rate

[1]Data from Italy for 2012 are provisional as not all regions had reported data at the time of report production.

Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed typhoid/paratyphoid fever reported cases by month, EU/EEA, 2008–2012

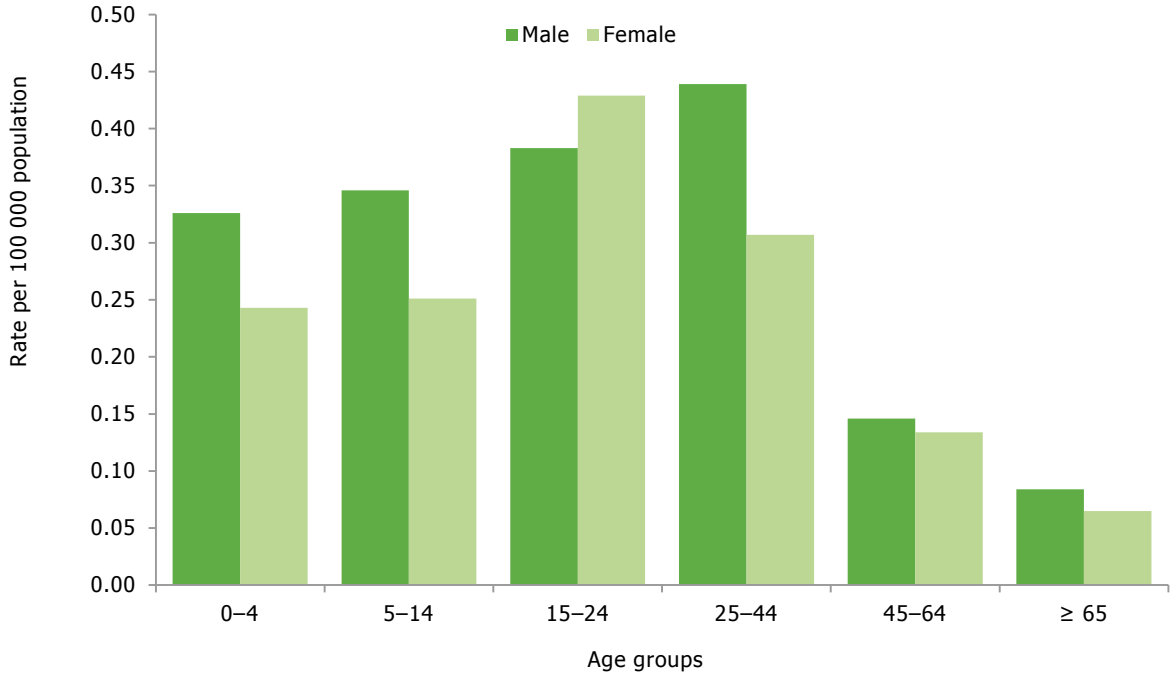


Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

Age and gender distribution

In 2012, as in previous years, typhoid/paratyphoid fever was more common in men than in women, with a male-to-female ratio of 1.2:1. The overall confirmed case rates for males and females were 0.28 and 0.22 per 100 000 population, respectively. The highest confirmed case rate (0.42 per 100 000 population) was reported in 15–24 year-old females followed by 25–44 year-old males (0.38 per 100 000) (Figure 2). As per previous years, the lowest rate was reported for ≥65 year-olds (0.07 per 100 000).

Figure 2. Rates of confirmed typhoid/paratyphoid fever reported cases by age and gender, EU/EEA, 2012

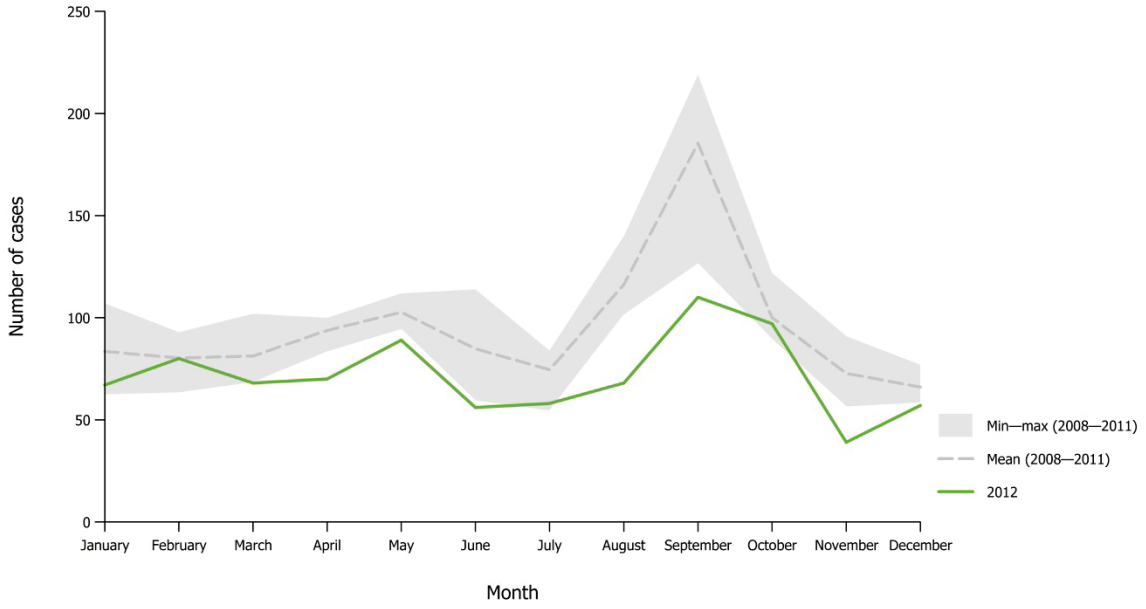


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Seasonality

The seasonality for typhoid and paratyphoid fever is similar, but less pronounced to that of the previous four years. In 2012 the September peak was less prominent than in previous years (Figure 3).

Figure 3. Distribution of confirmed typhoid/paratyphoid fever reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



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

Enhanced surveillance in 2012

As in previous years, a high proportion of case-patients (90% of 530 cases for which data on travel-association were available) reported to have travelled during the exposure period, with the United Kingdom reporting 50% of the cases associated to travel. The proportion of travel-associated cases reported by countries providing this information was always higher than 80%, except for Greece, Portugal and Slovakia where less than 35% of the cases were known to be travel-associated. More than three quarters of the travel-associated case patients reported travelling to India (202 cases), Pakistan (103 cases) and Bangladesh (33 cases) during the exposure period.

In 2012, 517 cases of typhoid fever and 336 of paratyphoid A fever were reported. The B, C and unspecified serotypes accounted for less than 10% of the cases (Table 2).

Table 2. Number of confirmed typhoid/paratyphoid fever reported cases by *Salmonella enterica* serotypes, EU/EEA, 2012

Serotype	Number of cases	Relative proportion
Typhi	517	54.6
Paratyphi A	336	35.5
Paratyphi B	75	7.9
Paratyphi C	8	0.8
Paratyphi (unspecified)	10	1.1
Total	946	

Source: Country reports from Austria, Belgium, Cyprus, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Slovakia and United Kingdom.

Updates from epidemic intelligence in 2013

Unusual increase of paratyphoid A fever among travellers returning from Cambodia.

Between March and September 2013, France, Germany, the Netherlands, Norway and the United Kingdom reported 31 cases of paratyphoid A fever in travellers returning from Cambodia. Only two cases were reported in EU/EEA travellers returning from Cambodia in 2012. Cases were reported during several months of 2013 and particularly in August. Investigations, both at single-country and at European level, could not identify any common exposures amongst the cases. Although more travellers may have been infected in Cambodia, the spread within the EU through secondary transmission was expected to be limited. Investigating authorities recommended alerting clinicians in travel clinics and in infectious diseases hospitals about the increase in the number of *S. paratyphi* A infections among travellers returning from Cambodia. It was also recommended to inform travellers to South-East Asia to apply preventive measures including good personal and food hygiene. France posted a message on the Early Warning and Response System about this event on 28 August 2013 [3, 4].

Discussion

Typhoid and paratyphoid fever continue to be uncommon infections in EU/EEA countries. Most cases (90%) are associated with travel during the exposure period, mostly to the Indian subcontinent [5-7]. The seasonal pattern, with a peak in cases in September, also reflects travelling during the holiday period, with disease reported after the return home. Although *S.*Typhi is much more common than *S.*Paratyphi in developed countries, the notification rate of *S.*Typhi and *S.*Paratyphi in Europeans is similar, probably thanks to the availability of *S.*Typhi vaccination [2]. The strong association with travel could also be behind the highest case notification rates in Europeans between 15 and 44 years of age. The high confirmed case rate reported in the UK could be attributed to residents with origin from Asia, and particularly the Indian subcontinent, with recent travel history to these areas, as described by Clark et al [6].

Surveillance systems overview

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				National Coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	V	Se	A	C	Y	N	N	N	Y	Not specified/unknown
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y	Other
Estonia	EE-SALMONELLOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Y	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y	Not specified/unknown
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Portugal	PT-SALMONELLOSIS	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-SALMONELLOSIS	O	Co	P	C	Y	N	Y	Y	Y	EU-2012

References

1. US Center for Disease Control and Prevention. CDC health information for international travel 2012. The yellow book. Atlanta: CDC; 2012. Available from: http://wwwnc.cdc.gov/travel/yellowbook/2012/chapter-3-infectious-diseases-related-to-travel/typhoid-and-paratyphoid-fever.htm.
2. Bradley A Connor, Eli Schwartz, Typhoid and paratyphoid fever in travellers, The Lancet Infectious Diseases, Volume 5, Issue 10, October 2005, Pages 623-628, ISSN 1473-3099,
3. Vlieghe E, Phe T, De Smet B, Veng CH, Kham C, Sar D, et al. Increase in Salmonella enterica serovar Paratyphi A infections in Phnom Penh, Cambodia, January 2011 to August 2013. Euro Surveillance. 2013; 18(39): pii=20592.
4. Tourdjman M, Le Hello S, Gossner C, Delmas G, Tubiana S, Fabre L, et al. Unusual increase in reported cases of Paratyphoid A fever among travellers returning from Cambodia, January to September 2013. Euro Surveillance. 2013; 18(39): pii=20594.
5. Hassing RJ, Menezes GA, van Pelt W, Petit PL, van Genderen PJ, Goessens WH. Analysis of mechanisms involved in reduced susceptibility to ciprofloxacin in Salmonella enteric serotypes Typhi and Paratyphi A isolates from travellers to Southeast Asia. Int J Antimicrob Agents 2011 Mar; 37(3):240-3.
6. Clark TW, Daneshvar C, Pareek M, Perera N, Stephenson I. Enteric fever in a UK regional infectious diseases unit: a 10 year retrospective review. J Infect 2010 Feb; 60(2):91-8.
7. Gil R, Alvarez JL, Gómez C, Alvaro A, Gil A. Epidemiology of typhoid and paratyphoid fever hospitalisations in Spain (1997-2005). Hum Vaccin 2009 Jun; 5(6):420-4.

Variant Creutzfeldt-Jakob disease (vCJD)

- Variant CJD is a rare but fatal neurodegenerative disease.
- One new case was reported in the EU and EEA countries in 2012.
- Continued surveillance of vCJD is crucial to monitor closely the gradual elimination of the disease and the impact of control measures that have been taken at EU level.

Variant Creutzfeldt-Jakob disease is a human prion disease that produces a fatal spongiform encephalopathy, which is manifested by a rapidly progressing dementia. Transmission to humans is associated to the consumption of meat products from infected cattle and has an incubation period of several years. The disease has become very rare due to the effective control measures that have been established at the EU level over ten years ago. Few human infections through blood transfusion have also been documented.

In 2012 the surveillance of vCJD was transferred to ECDC including all historical cases. Prospective reporting of all new incident probable cases is now done in TESSy.

Epidemiological situation in 2012

In 2012, there was one new probable vCJD case reported in France. The case, a 25 year-old female, is still alive. The case was not reported to be a blood donor or recipient of blood or blood products.

The overall mortality rate remains below 0.01 per 1 000 000 population in this long post-epidemic tail.

Discussion

The vCJD epidemic peaked in the EU in the period 1999–2004 and has now reached its tail. vCJD has become a very rare neurodegenerative disease in EU as a result of successful prevention and control measures implemented for animal feed at the EU level since 1989.

Nevertheless, the estimated prevalence of vCJD infection is considered to be substantially higher than the numbers of clinical cases suggest, posing a difficult dilemma for those involved in blood transfusion, tissue transplantation and cellular therapies [1-3]. A recent study conducted in the United Kingdom on prevalence of abnormal prion protein in human appendixes suggests a high prevalence of infection with abnormal PrP, indicating vCJD carrier status in the population. These findings have important implications for the management of blood and blood products and for the handling of surgical instruments [4]. There are additional concerns and uncertainties such as the increasing evidence that protein misfolding is central in the causation of a range of neurodegenerative disorders, including Alzheimer's disease and Parkinson's diseases [2, 5]. The amendment of the TSE regulation and partial lift of feed bans may also pose a risk in the long run, even more so considering recent studies on prion transmission in animal species previously considered to be not susceptible [6, 7]. In conclusion and given the long incubation period of vCJD, the need for close continued surveillance at the national and EU level remains.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-REFLAB	-	O	-	-	-	-	-	-	-	Not specified/unknown
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y	Other
Estonia	EE-CJD	Cp	Co	P	C	N	Y	Y	Y	Y	EU-2008
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Y	Other
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-Beaumont-vCJD	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-VCJD	Cp	Co	P	C	N	Y	N	N	Y	Not specified/unknown
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-VCJD	V	Co	A	C	Y	N	Y	Y	Y	Other

References

1. Brown P, Brandel JP, Sato T, Nakamura Y, MacKenzie J, Will RG, et al. Iatrogenic Creutzfeldt-Jakob disease, final assessment. Emerg Infect Dis. 2012; 18(6):901-7.
2. Head MW. Human prion diseases: Molecular, cellular and population biology. Neuropathology: official journal of the Japanese Society of Neuropathology. 2013; 33(3):221-36.
3. Roberts PL, Dalton J, Evans D, Harrison P, Li Z, Ternouth K, et al. Removal of TSE agent from plasma products manufactured in the United Kingdom. Vox Sang. 2013; 104(4):299-308.
4. Gill ON, Spencer Y, Richard-Loendt A, Kelly C, Dabaghian R, Boyes L, et al. Prevalent abnormal prion protein in human appendixes after bovine spongiform encephalopathy epizootic: large scale survey. BMJ (Clinical research ed). 2013; 347:f5675. PubMed PMID: 24129059. PubMed Central PMCID: PMC3805509. Epub 2013/10/17. eng.
5. Garske T, Ghani AC. Uncertainty in the tail of the variant Creutzfeldt-Jakob disease epidemic in the UK. PloS one. 2010; 5(12):e15626. PubMed PMID: 21203419. PubMed Central PMCID: PMC3009744. Epub 2011/01/05. eng.
6. Chianini F, Fernandez-Borges N, Vidal E, Gibbard L, Pintado B, De Castro J, et al. Rabbits are not resistant to prion infection. Proc Natl Acad Sci U S A. 2012; 109(13):5080-5.
7. Fernandez-Borges N, Chianini F, Vidal E, Gibbard L, Pintado B, De Castro J, et al. Shattering the myth of rabbit resistance to prion infection. Prion. 2012; 6:46.

Yersiniosis

- Yersiniosis decreased in the EU/EEA in the five-year period 2008–2012.
- 6 548 confirmed cases of human yersiniosis were reported in 2012 (decrease by 8% from the 7 062 cases reported in 2011).
- In 2012, the confirmed case rate of yersiniosis was 1.96 cases per 100 000 population in the EU and EEA countries.
- The highest rate of confirmed cases was observed in children 0–4 year old; 9.8 cases per 100 000 population, which is more than ten times higher than the respective rates in adults.

Enteric form of yersiniosis is caused by two pathogenic *Yersinia* species (*Y. enterocolitica* and *Y. pseudotuberculosis)*. These bacteria are a common cause of gastroenteritis (sometimes mimicking appendicitis) in a number of the EU and EEA countries. Pigs are an important reservoir for *Y. enterocolitica*, and many cases are considered to be related to the consumption of undercooked contaminated pork.

Epidemiological situation in 2012

In 2012, 6 548 confirmed cases of yersiniosis were reported by 25 EU and EEA countries with an overall confirmed case rate 1.96 per 100 000 population. As in previous years, Germany accounted for the highest proportion, 41% of all reported cases in the EU/EEA. Luxembourg, Finland and Lithuania were the countries with the highest confirmed case rates, 12.58 and 10.46 and 9.18 cases per 100 000 population respectively (Table 1).

A decreasing trend for confirmed cases of yersiniosis was observed during 2008–2012 in EU/EEA countries (Figure 1). Twelve countries (43%) notified decreasing number of cases compared with the previous year, while increasing numbers were observed in nine countries (32%).

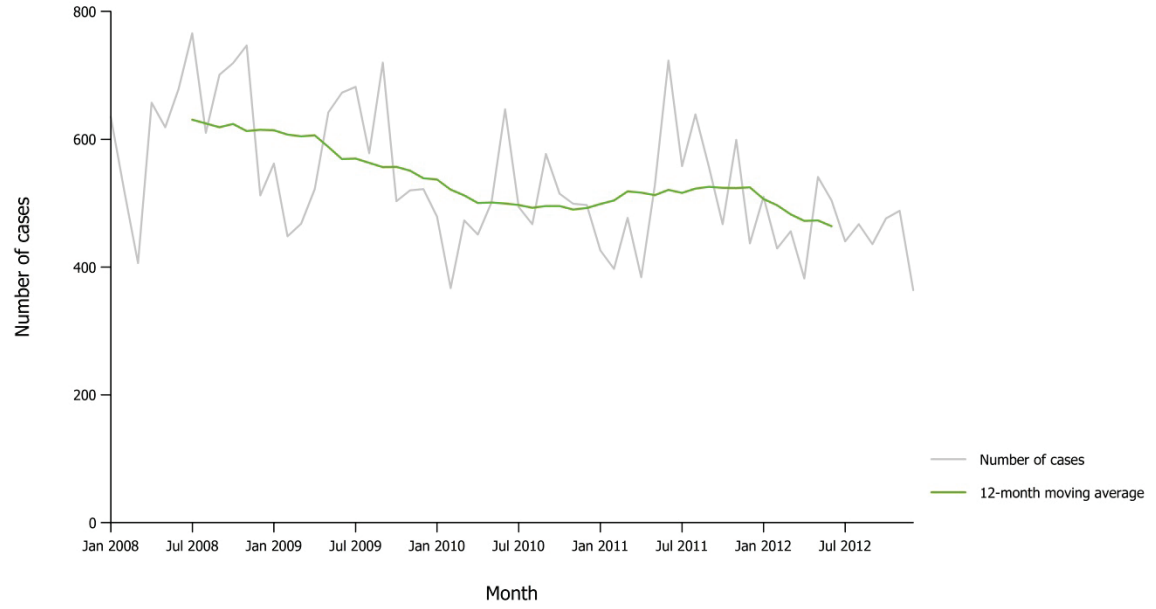
Y. enterocolitica was, as in previous years, the most common *Yersinia* species reported in human cases (96.5% of all confirmed cases in 2011) followed by *Y. pseudotuberculosis* in 1.9% of cases.

Table 1. Number and rates of confirmed yersiniosis reported cases, EU/EEA, 2008–2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Total cases	Confirmed Cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	142	130	1.55	1.61	119	1.42	84	1.00	140	1.68	93	1.12
Belgium	N	C	256	256	-	-	214	-	216	-	238	-	273	-
Bulgaria	Y	A	12	11	0.15	-	4	0.05	5	0.07	8	0.11	10	0.13
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	611	611	5.82	6.00	460	4.39	447	4.27	463	4.44	557	5.39
Denmark	Y	C	291	291	5.22	5.22	225	4.05	193	3.49	238	4.32	331	6.05
Estonia	Y	C	47	47	3.52	3.48	69	5.16	58	4.34	54	4.03	42	3.13
Finland	Y	C	565	565	10.46	10.49	554	10.31	522	9.75	633	11.88	608	11.47
France	N	A	462	462	-	-	294	-	238	-	208	-	213	-
Germany	Y	C	2 705	2 686	3.29	3.74	3 381	4.15	3346	4.10	3 731	4.56	4 352	5.31
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	53	53	0.54	0.55	93	0.95	87	0.88	51	0.52	40	0.40
Ireland	Y	C	2	2	0.04	0.04	6	0.13	3	0.07	3	0.07	3	0.07
Italy	N	C	14	14	-	-	15	-	15	-	11	-	-	-
Latvia	Y	C	29	28	1.37	1.51	28	1.35	23	1.09	45	2.08	50	2.28
Lithuania	Y	C	276	276	9.19	9.58	370	12.12	428	13.62	483	15.17	536	16.69
Luxembourg	Y	C	66	66	12.58	12.34	33	6.45	74	14.74	36	7.30	17	3.52
Malta	Y	C	0	0	0.00	0.00	0	0.00	1	0.24	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	201	201	0.52	0.52	235	0.61	205	0.54	288	0.76	214	0.56
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	26	26	0.13	0.13	47	0.24	27	0.14	5	0.03	9	0.04
Slovakia	Y	C	183	181	3.35	3.33	166	3.08	3	0.06	2	0.04	2	0.04
Slovenia	Y	C	22	22	1.07	1.16	16	0.78	16	0.78	27	1.33	31	1.54
Spain	N	C	220	220	-	-	264	-	325	-	291	-	315	-
Sweden	Y	C	303	303	3.20	3.10	350	3.72	281	3.01	397	4.29	546	5.95
United Kingdom	Y	C	54	54	0.09	0.07	59	0.09	55	0.09	61	0.10	48	0.08
EU Total	**-**	**-**	**6 540**	**6 505**	**1.98**	**2.06**	**7 002**	**2.23**	**6652**	**2.10**	**7 413**	**2.40**	**8 290**	**2.69**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Norway	Y	C	43	43	0.86	0.84	60	1.22	52	1.07	60	1.25	50	1.06
EU/EEA Total	**-**	**-**	**6 583**	**6 548**	**1.96**	**2.04**	**7062**	**2.21**	**6 704**	**2.09**	**7 473**	**2.38**	**8 340**	**2.67**

ASR: Age-standardised rate
Source: Country reports; Y: Yes; N: No; A: Aggregated data report; C: Case-based data report; –: No report; U: Unspecified.

Figure 1. Distribution of confirmed yersiniosis reported cases by month, EU/EEA, 2008–2012

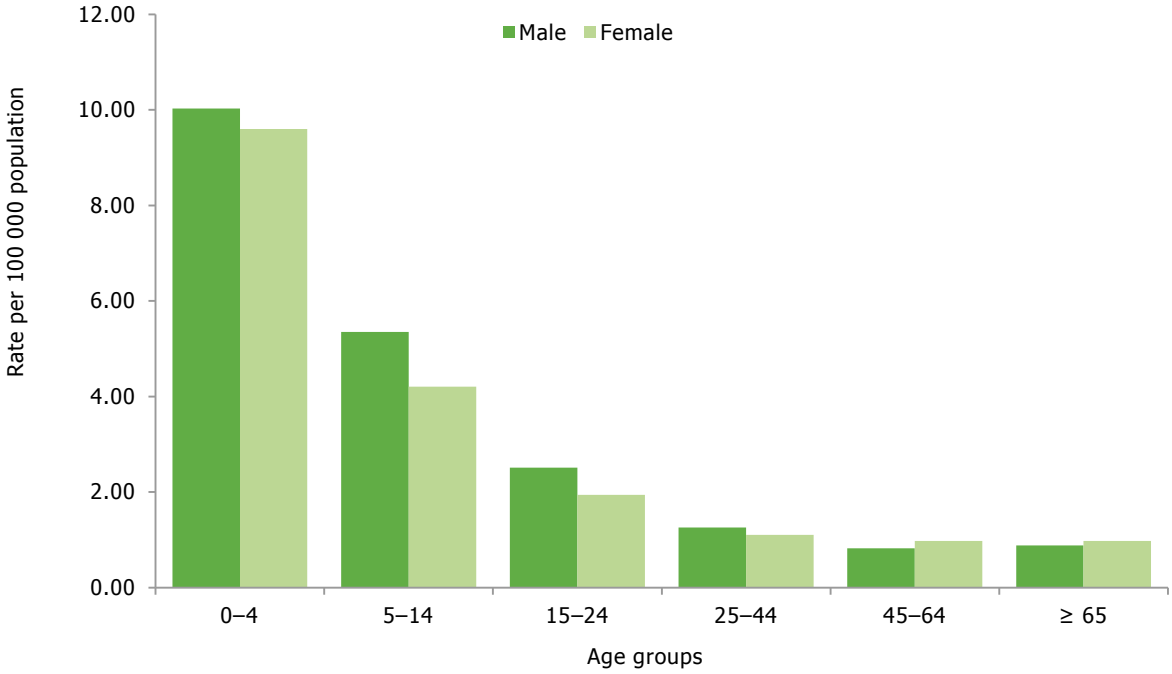


Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Slovakia, Slovenia, Sweden and United Kingdom.

Age and gender distribution

The gender distribution of confirmed cases for which information was provided (n=6 357), was 52.0 % for males and 48.0 % for females in the EU and EEA countries. The male-to-female ratio was 1.1:1 in 2012. Confirmed case rates were higher for males in comparison to females in the age group 0–24 years while remained similar for both genders in the older age groups (>=25 years). The highest confirmed case rates were detected in 0–4 year-old children, both in males (9.96 cases per 100 000) and females (9.56 cases per 100 000) (Figure 2).

Figure 2. Rates of confirmed yersiniosis reported cases by age and gender, EU/EEA, 2012

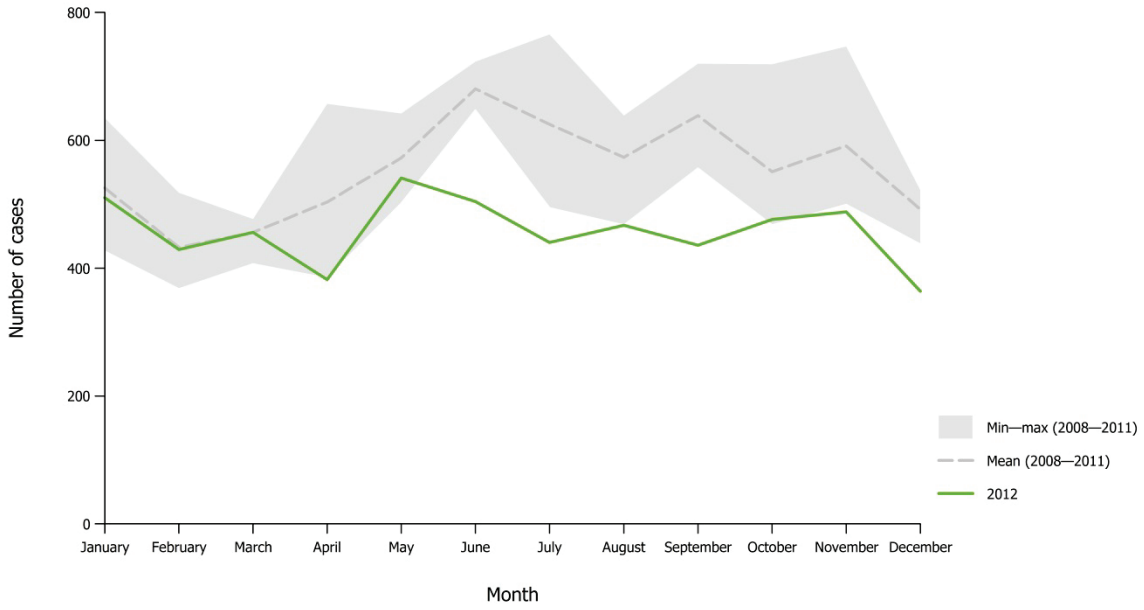


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality

Cases of yersiniosis were reported throughout the year with no marked seasonality in 2012 (Figure 3).

Figure 3. Distribution of confirmed yersiniosis reported cases by month in 2012 compared with 2008–2011 data, EU/EEA



Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Slovakia, Slovenia, Sweden and the United Kingdom.

Discussion

Human yersiniosis has showed a five-year decreasing trend in the EU since 2008. Yersiniosis is still the third most commonly reported bacterial zoonoses in humans and a commonly reported gastrointestinal disease in Europe. Yersinia is mainly found in pigs and pork, but may also be found in other foodstuffs and other animal species in the EU[1]. Pigs are considered the main reservoir of the bacterium as pigs regularly harbour the *Y. enterocolitica* serotypes which are pathogenic to humans. The most frequent route of transmission to humans is consumption of undercooked contaminated pork. Most of the yersiniosis cases are sporadic and outbreaks are rarely reported. In 2012, Member States reported in total 12 possible *Yersinia* outbreaks (1). This represents 0.2% of all the reported foodborne outbreaks in the EU and a 30% decrease in the number of *Yersinia* outbreaks compared with the previous year.

Surveillance systems overview

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	Other
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y	Other
Estonia	EE-YERSINIOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008

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				National coverage	Case definition used
						Laboratories	Physicians	Hospitals	Others		
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y	Not specified/unknown
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	N	Other
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y	Other
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-ENTERNET	V	Se	P	C	Y	N	N	N	-	Other
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y	Not specified/unknown
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y	EU-2008
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2012
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-YERSINOSIS	O	Co	P	C	Y	N	Y	Y	Y	Other

References

1. European Food Safety Authority (EFSA), European Centre for Disease Prevention and Control (ECDC). The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2012, EFSA Journal 2014; 12(2):3547.