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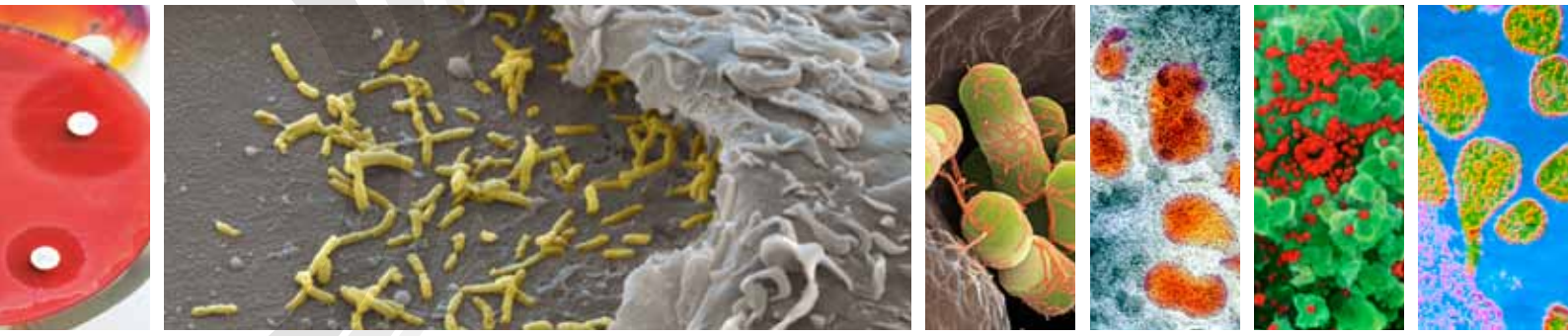
SURVEILLANCE REPORT



Annual epidemiological report

Emerging and vector-borne diseases

2014

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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 emerging and vector-borne diseases as of 2012.

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Stockholm, November 2014

Contents

Figures

Tables

Abbreviations

ASR	Age-standardised rate
CCHF	Crimean-Congo Haemorrhagic Fever
CFR	Case-fatality ratio
EWRS	Early Warning and Response System
IHR	International Health Regulations
TBE	Tick-borne encephalitis
TESSy	The European Surveillance System
TTT	Threat Tracking Tool
VHF	Viral haemorrhagic fevers
WNV	West Nile virus

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 emerging and vector-borne diseases 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.

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[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.

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.

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)

[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.

- 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.

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').

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[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.

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 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 (DPO). 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.

Emerging and vector-borne diseases

Malaria

- The confirmed case rate of malaria reported by EU and EEA countries remained stable, fluctuating around one per 100 000 population, with a slight reduction in 2012 compared with 2011 and 2010.
- 99% of cases (where origin is specified) were imported; these were reported by EU and EEA countries that have strong traditional ties with endemic areas. Greece still reported locally-acquired cases in 2012 but fewer compared with 2011.
- Local transmission remains possible in the EU and stresses the need for surveillance, preparedness and prevention, including the improvement of access of migrants to health services.

Malaria is caused by infection with a protozoon of the genus *Plasmodium*, transmitted through the bite of an infected *Anopheles* mosquito.

Epidemiological situation in 2012

In 2012, 5 161 confirmed cases of malaria were reported by 25 EU and one EEA countries in continental Europe; these did not include cases reported in overseas departments and territories. Eighty-five per cent of the cases were reported by five countries: France, United Kingdom, Germany, Spain and Belgium. Highest rates of confirmed cases were reported by the United Kingdom, Belgium, Ireland and Luxembourg (Table 1). No estimate for France is available as their surveillance system is not nationwide. Data were not available for Denmark, Italy, Iceland and Liechtenstein. Twenty countries used the EU case definition.

The overall confirmed case rate was 0.88 per 100 000 population in 2012. The individual country rates varied between 0.05 (Hungary and Poland) and 2.19 cases (United Kingdom) per 100 000 population. These figures are slightly lower than the ones observed in 2011. The number of confirmed malaria cases in the EU does not show a significant trend over the period 2008–2012 (Figure 1).

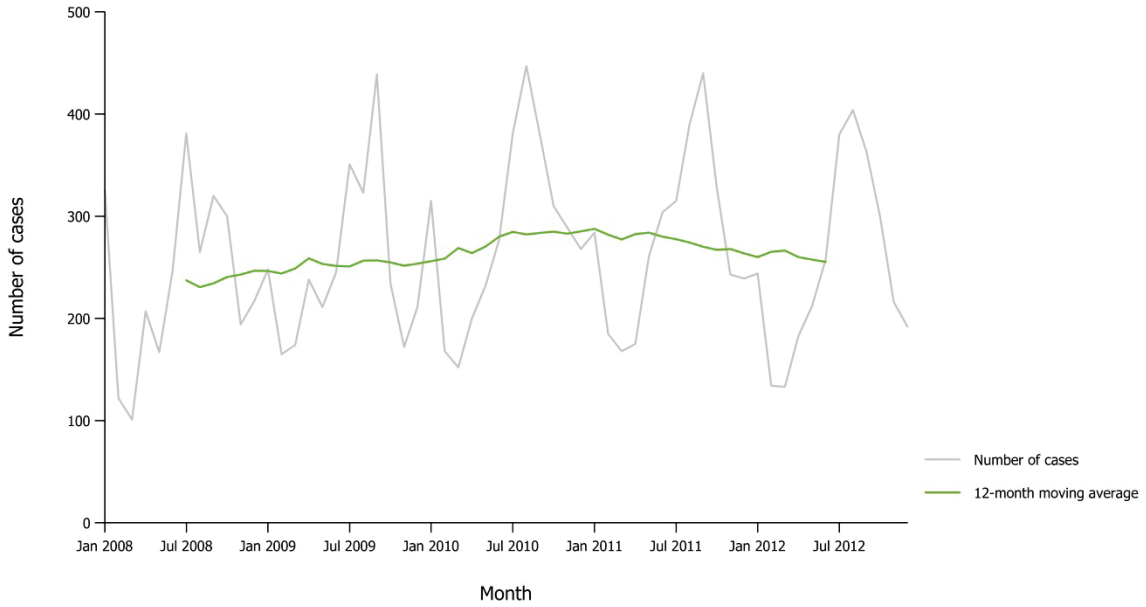
Most malaria cases were reported as imported – the definition of imported cases refers to cases imported to continental Europe. Twenty-six cases were reported as not-imported of which twenty-two were from Greece, three from Belgium and one from France. Eighteen of the twenty-two cases reported from Greece were attributed to the 2012 transmission season, whereas four cases were attributed to the previous transmission season. Two additional *Plasmodium vivax* cases were reported outside Greece, one in Albania and one in the USA, through the Greek annual epidemiological report. The one case reported from France was of *Plasmodium falciparum* malaria transmitted through red blood cell transfusion. The trace back investigations pointed at a regular male donor, who had resided in Benin until 2010. The donor had a negative pre-donation serological ELISA test. Presence of *Plasmodium falciparum* in the donor could be evidenced only by a positive PCR test (France, personal communication).

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

Country	2012					2011		2010		2009		2008	
	National data	Report type	Cases	Rate	ASR	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	28	0.33	0.34	7	0.08	48	0.57	44	0.53	57	0.69
Belgium	Y	C	206	1.86	1.93	184	-	166	-	144	1.34	181	-
Bulgaria	Y	A	16	0.22	0.21	8	0.11	5	0.07	8	0.11	0	0.00
Cyprus	Y	C	1	0.12	0.09	6	0.72	1	0.12	1	0.13	0	0.00
Czech Republic	Y	C	25	0.24	0.23	28	0.27	11	0.11	10	0.10	22	0.21
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	6	0.45	0.45	1	0.08	1	0.08	4	0.30	0	0.00
Finland	Y	C	46	0.85	0.90	33	0.61	33	0.62	34	0.64	42	0.79
France	N	C	1 851	-	-	1 891	-	2 439	-	2 199	-	2 246	3.51
Germany	Y	C	547	0.67	0.70	562	0.69	615	0.75	523	0.64	547	0.67
Greece	Y	C	95	0.85	0.90	92	0.83	45	0.40	51	0.46	39	0.35
Hungary	Y	C	5	0.05	0.05	10	0.10	5	0.05	8	0.08	5	0.05
Ireland	Y	C	65	1.42	1.38	61	1.34	82	1.84	90	2.02	82	1.84
Italy	-	-	-	-	-	-	-	662	1.10	651	1.08	586	0.98
Latvia	Y	C	3	0.15	0.15	4	0.19	5	0.24	6	0.28	2	0.09
Lithuania	Y	C	6	0.20	0.22	3	0.10	3	0.10	3	0.09	3	0.09
Luxembourg	Y	C	7	1.33	1.28	3	0.59	12	2.39	3	0.61	2	0.41
Malta	Y	C	2	0.48	0.26	1	0.24	0	0.00	1	0.24	3	0.74
Netherlands	Y	C	194	1.16	1.19	253	1.52	247	1.49	237	1.44	229	1.40
Poland	Y	C	21	0.05	0.05	14	0.04	35	0.09	22	0.06	22	0.06
Portugal	Y	C	71	0.67	0.68	67	0.65	50	0.48	44	0.42	42	0.41
Romania	Y	C	32	0.16	0.15	40	0.20	19	0.10	12	0.06	13	0.06
Slovakia	Y	C	6	0.11	0.10	1	0.02	2	0.04	0	0.00	2	0.04
Slovenia	Y	C	7	0.34	0.33	6	0.29	9	0.44	7	0.34	3	0.15
Spain	Y	C	421	0.90	0.88	405	0.87	351	0.76	356	0.77	290	0.64
Sweden	Y	C	85	0.90	0.95	95	1.01	115	1.23	81	0.88	91	0.99
United Kingdom	Y	C	1 378	2.19	2.21	1 677	2.68	1 761	2.84	1 495	2.43	1 371	2.24
EU Total	**-**	**-**	**5 124**	**0.88**	**0.89**	**5 452**	**0.94**	**6 722**	**0.99**	**6 034**	**0.90**	**5 880**	**1.19**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	37	0.74	0.75	30	0.61	37	0.76	34	0.71	32	0.68
EU/EEA Total	**-**	**-**	**5 161**	**0.88**	**0.89**	**5 482**	**0.94**	**6 759**	**0.98**	**6 068**	**0.89**	**5 912**	**1.18**

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 malaria reported cases by month, EU/EEA, 2008–2012**

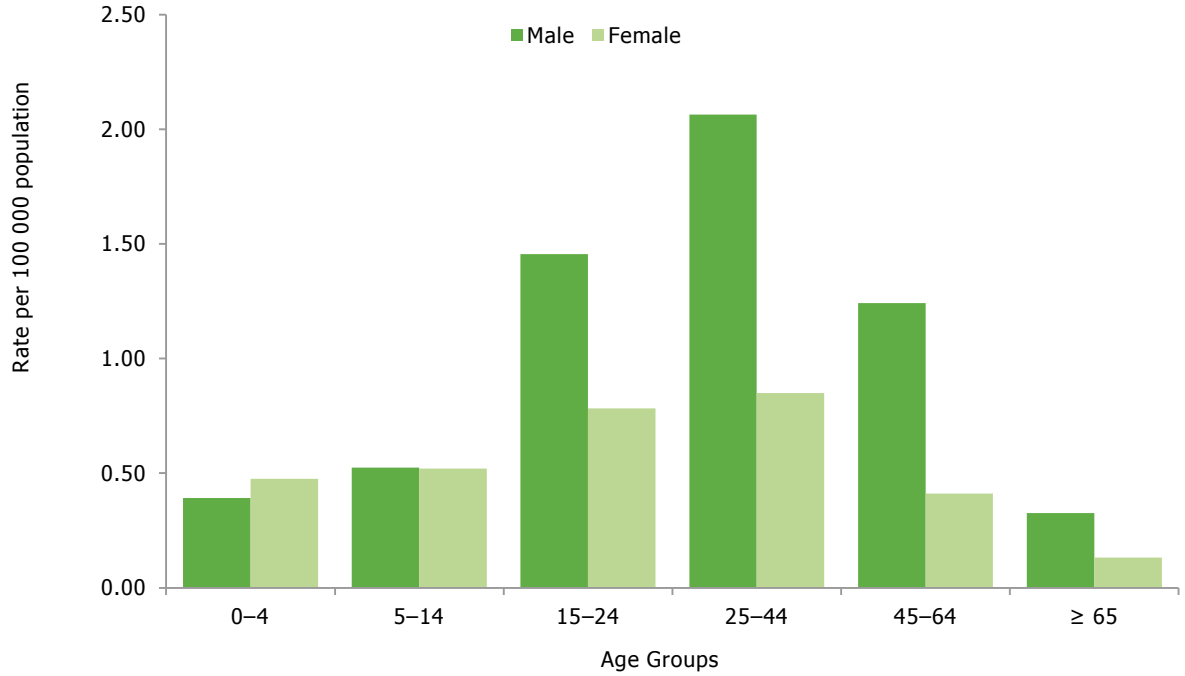


Source: Country reports from Austria, Bulgaria, Cyprus, Czech Republic, Estonia, Finland, Germany, Greece, Hungary, Ireland, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Age and gender distribution

The confirmed case rate of malaria was more than twice as high in males as in females (1.23 and 0.52 per 100 000 population respectively), giving a male-to-female ratio of 2.3:1. The age group 25–44 years had the highest rates (1.45 per 100 000 population; 2.06 in males and 0.85 in females) (Figure 2). This is consistent with the picture described in previous years and likely reflects population travel patterns rather than other risk factors.

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

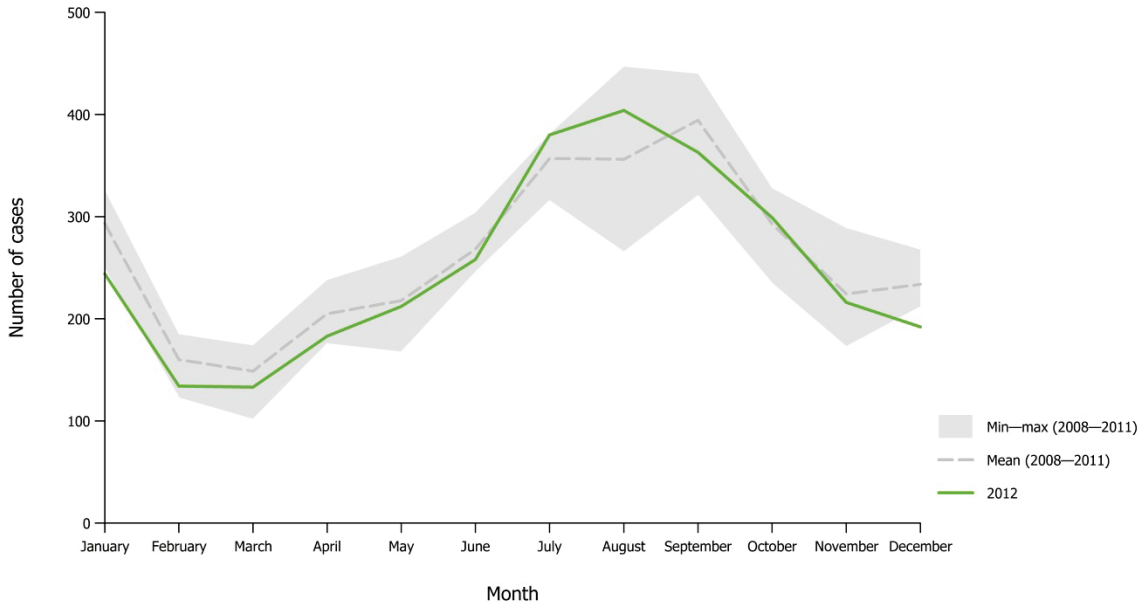


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality

Information on month of reporting was available for almost all cases (5 116 of the 5 161 confirmed cases). A clear seasonal trend in monthly reports was observed across all countries, with cases increasing during the summer holiday months (July–September) and peaking in August. A lower increase in January was observed, possibly related to the winter holiday period (Figure 3).

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



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

Updates from epidemic intelligence in 2013

Greece reported three autochthonous cases of *Plasmodium vivax* malaria on 16 November 2013. Two cases were reported from the municipality of Alexandroupolis (Regional Unit of Evros) and one case from the municipality of Sofades (Regional Unit of Karditsa). The cases had onset of symptoms in weeks 39 (23–29 September 2013), 43 (21–27 October 2013) and 44 (28 October–3 November 2013) respectively.

Discussion

The confirmed case rate of malaria reported by EU and EEA countries has remained stable over the last few years, fluctuating around one per 100 000 population per year, with a slight reduction in 2012 compared with 2011 and 2010. Nearly all (99%) of the reported cases were imported, and were notified by EU and EEA countries that have strong ties with endemic areas. The seasonality and age distribution most likely reflect travel patterns to malaria-endemic countries. Information on the reason for travel, i.e. holiday, visiting friends and relatives or business, was not available. Yet, travellers visiting friends and relatives in endemic countries constitute a significant group for malaria importation to the EU [1]. Outside continental Europe, some countries or territories are endemic for malaria (e.g. Mayotte and French Guiana) for which data are not collected through TESSy.

Autochthonous transmission of malaria has occasionally been reported over the last 10 years [2-4]. Greece reported for the fourth year autochthonous transmission of *Plasmodium vivax* malaria: local cases of malaria have occurred in Greece since 2009 with the highest number reported in 2011. In 2012 local malaria transmission still took place but fewer cases were reported, with the municipality of Evrotas as the most affected locality. In addition to the data available in this report, Italy reported two cases of probable autochthonous introduced malaria in 2009–2011 [5]. Likewise, in the Netherlands and France, malaria cases without recent travel history were reported recently [6, 7].

These reports indicate that local transmission of *Plasmodium falciparum* and *Plasmodium vivax* remains possible in the EU, though the transmission route is not always easily detected, and stresses the need for surveillance, preparedness and prevention within EU and EEA countries, including the improvement of access to health of migrants.

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-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-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	N	Other
Germany	DE-SURVNET@RKI-7.3	Cp	Co	P	C	Y	N	N	N	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	A/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
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-MALARIA	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-MALARIA	O	Co	A	C	Y	N	Y	Y	Y	EU-2012

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Plague (*Yersinia pestis* infection)

- There were no cases of indigenous plague reported in EU and EEA countries during 2012.

Plague, caused by the bacterium *Yersinia pestis*, is enzootic in wild rodents in central and eastern Asia, Africa, in the former Soviet Union and North America, and remains endemic in many natural foci around the world. Recent outbreaks have shown that plague may reoccur in areas that have long remained dormant. Humans can be infected through 1) the bite of an infected flea carried by a rodent or, rarely, other animals, 2) direct contact with contaminated tissues, or 3) in rare cases, inhalation of respiratory secretions from infected persons or animals [1]. Untreated plague, particularly the pneumonic form, is often fatal. While urban plague has been controlled in most of the world, it remains a public health problem in rural areas in many countries.

Epidemiological situation in 2012

No cases of plague were reported by 29 EU and EEA countries in 2012. Data were not available for Liechtenstein.

Discussion

Autochthonous plague has not occurred in Europe for several decades. Between 2000 and 2009, worldwide 21 725 persons were affected with 1 612 deaths, with a case-fatality rate of 7.4%. The African continent (especially Democratic Republic of Congo and Madagascar) represented more than 97% of infections during this period [2].

In other regions, recent outbreaks have shown that plague may reoccur in areas that have long remained dormant. More than fifty years after its last known occurrence, plague resurfaced in 2003 in a rural area south of Oran, Algeria [3], and cases occurred also in 2008 in the Laghouat area which was not previously known as a plague focus [4]. In Libya, the disease reoccurred near Tobruk in 2009, after 25 years without cases [5]. An even more recent epidemic was reported there in May 2011, for which the plague aetiology could not be confirmed due to political instability. Thus, neighbouring but independent plague foci coexist in Algeria and Libya. There is some evidence that these outbreaks were most likely caused by reactivation of organisms in local or regional foci believed to be dormant (Libya) or extinct (Algeria) for decades, rather than by recent importation of *Yersinia pestis* from distant foci. The outbreak in Libya was preceded by a particularly humid winter, which might have enhanced the enzootic cycle [6].

This further emphasises the need to take into consideration several social and environmental effects on infectious diseases that have a non-human reservoir.

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-VHF	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-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	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-PLAGUE	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-PLAGUE	O	Co	P	C	Y	N	Y	Y	Y	EU-2012

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Q fever

- 649 confirmed Q fever infections were reported in 2012 from 24 EU and EEA countries.
- A continued decrease was observed in the EU (-17%) compared with 2011.
- Small outbreaks still occur in Europe where areas with affected sheep and goat herds are considered at risk.

Q fever, or query fever, is a zoonotic disease caused by the bacterium *Coxiella burnetii*. Cattle, sheep and goats are the primary domestic animal reservoirs, and the bacteria are excreted in high numbers in birth products, and in milk, urine and faeces. The bacteria can survive for long periods in the environment and are very resistant to physical and chemical stress. Humans are considered accidental hosts. They are most often infected when inhaling contaminated dust. Infection by ingestion of contaminated milk is also possible.

Only about 40% of people infected with *C. burnetii* show clinical signs. Symptoms of acute Q fever may include fever, severe headache, muscle pain, discomfort, sore throat, chills, sweats, non-productive cough, nausea, vomiting, diarrhoea, abdominal pain and chest pain. The fever usually lasts for one to two weeks and may be followed by life-long immunity. Acute Q fever is fatal in less than 2% of cases. Chronic Q fever is uncommon, but may develop in persons with a previous history of acute Q fever. A serious complication of chronic Q fever is inflammation of the heart valves, and case-fatality rate even with appropriate treatment is about 11%.

Epidemiological situation in 2012

Twenty-six EU and EEA countries provided information on Q fever in humans. Belgium and Spain have a sentinel surveillance system which for Spain covers an estimated 25% of the population. The disease is not notifiable in Austria, Denmark, Italy and Liechtenstein. Twenty countries used the EU case definition. Nine countries (Estonia, Finland, Lithuania, Luxembourg, Malta, Poland, Slovakia, Iceland and Norway) reported no human cases. A total of 652 cases of Q fever in humans were reported in the EU and EEA (Table 1), of which 649 were confirmed. The EU notification rate was 0.15 per 100 000 population. There was an overall 17% decrease in the number of reported confirmed cases compared with 2011 (759 cases). The largest decrease in reported cases (72%) was observed in the United Kingdom but case numbers were small. Cases in the Netherlands continued to decrease (-21%) to 63 in 2012 compared with 2 354 in 2009. As in 2011, the highest case numbers were reported from Germany and France (198 and 168 respectively). The highest notification rate was however again observed in Cyprus even if case numbers were small (0.46 cases per 100 000 population).

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

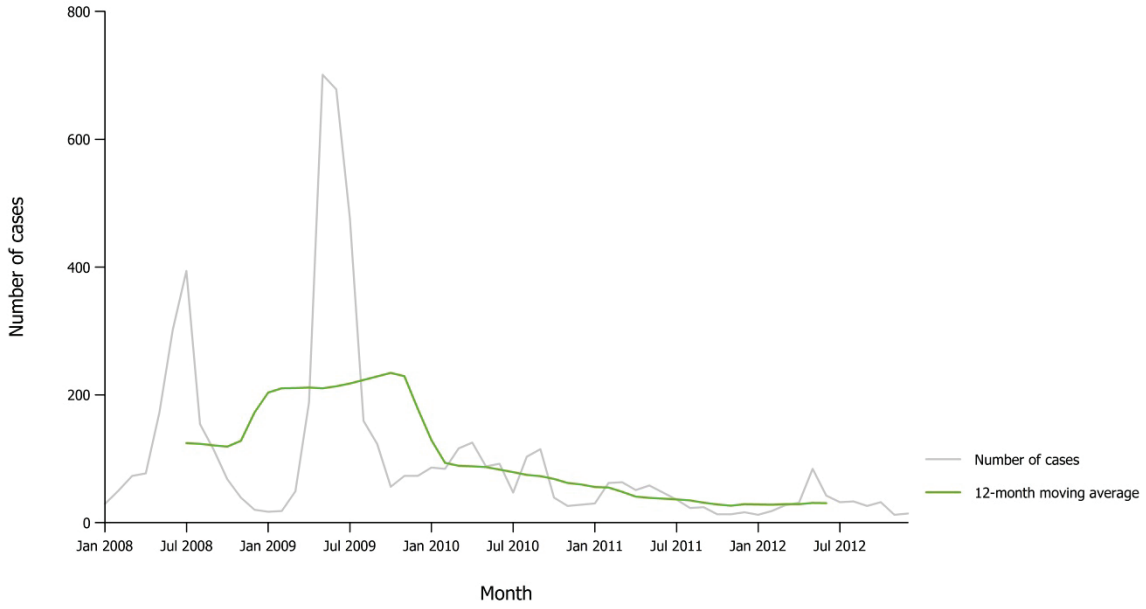
Country	2012				2011		2010		2009		2008	
	National data	Report type	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	-	-	-	-	-	-	-	-	-	-	-	-
Belgium	N	C	18	-	6	-	30	-	33	-	27	-
Bulgaria	Y	A	29	0.4	12	0.16	14	0.19	22	0.3	17	0.23
Cyprus	Y	C	4	0.46	5	0.6	4	0.49	2	0.25	31	3.99
Czech Republic	Y	C	1	0.01	1	0.01	0	0	0	0	0	0
Denmark	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0	0	0	0	0	0	0	0
Finland	Y	C	0	0	4	0.07	5	0.09	1	0.02	2	0.04
France	Y	C	168	0.26	228	0.35	286	0.44	-	-	-	-
Germany	Y	C	198	0.24	287	0.35	326	0.4	191	0.23	370	0.45
Greece	Y	C	11	0.1	3	0.03	1	0.01	3	0.03	3	0.03
Hungary	Y	C	36	0.36	36	0.37	68	0.69	19	0.19	11	0.11
Ireland	Y	C	5	0.11	4	0.09	9	0.2	17	0.38	10	0.22
Italy	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	1	0.05	1	0.05	2	0.09	0	0	1	0.05
Lithuania	Y	C	0	0	0	0	0	0	0	0	0	0
Luxembourg	Y	C	0	0	0	0	0	0	0	0	0	0
Malta	Y	C	0	0	0	0	0	0	0	0	0	0
Netherlands	Y	C	63	0.38	80	0.48	504	3.04	2 354	14.28	1 039	6.33
Poland	Y	A	0	0	0	0	0	0	3	0.01	4	0.01
Portugal	Y	C	26	0.25	5	0.05	13	0.13	14	0.14	12	0.12
Romania	Y	C	16	0.08	6	0.03	7	0.04	2	0.01	3	0.02
Slovakia	Y	C	0	0	0	0	0	0	0	0	0	0

Country	2012				2011		2010		2009		2008	
	National data	Report type	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Slovenia	Y	C	1	0.05	0	0	1	0.05	0	0	0	0
Spain	N	C	58	-	33	-	69	-	34	-	119	-
Sweden	Y	C	2	0.02	5	0.05	11	0.12	5	0.05	7	0.08
United Kingdom	Y	C	12	0.02	43	0.07	30	0.05	19	0.03	56	0.09
EU Total	-	-	649	0.15	759	0.2	1 380	0.35	2 719	0.88	1 712	0.52
Iceland	Y	C	0	0	0	0	0	0	0	0	0	0
Liechtenstein	-	-	-	-	-	-	-	-	-	-	0	0
Norway	Y	C	0	0	0	0	0	0	0	0	0	0
EU/EEA Total	-	-	649	0.15	759	0.19	1 380	0.34	2 719	0.86	1 712	0.51

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

There was a decreasing EU trend of confirmed Q fever cases in 2008–2012 (Figure 1). The peaks in 2008 and 2009 were attributed to the large outbreak which occurred in the Netherlands between 2007 and 2010 but which is now considered over. The specific epidemiology of Q fever during the outbreak was most likely related to intensive dairy goat farming experiencing Q fever-related abortion waves as early as 2005, in the proximity of densely populated areas in the south of the Netherlands. From 2007 to 2010, more than 4 000 human cases were notified [1].

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

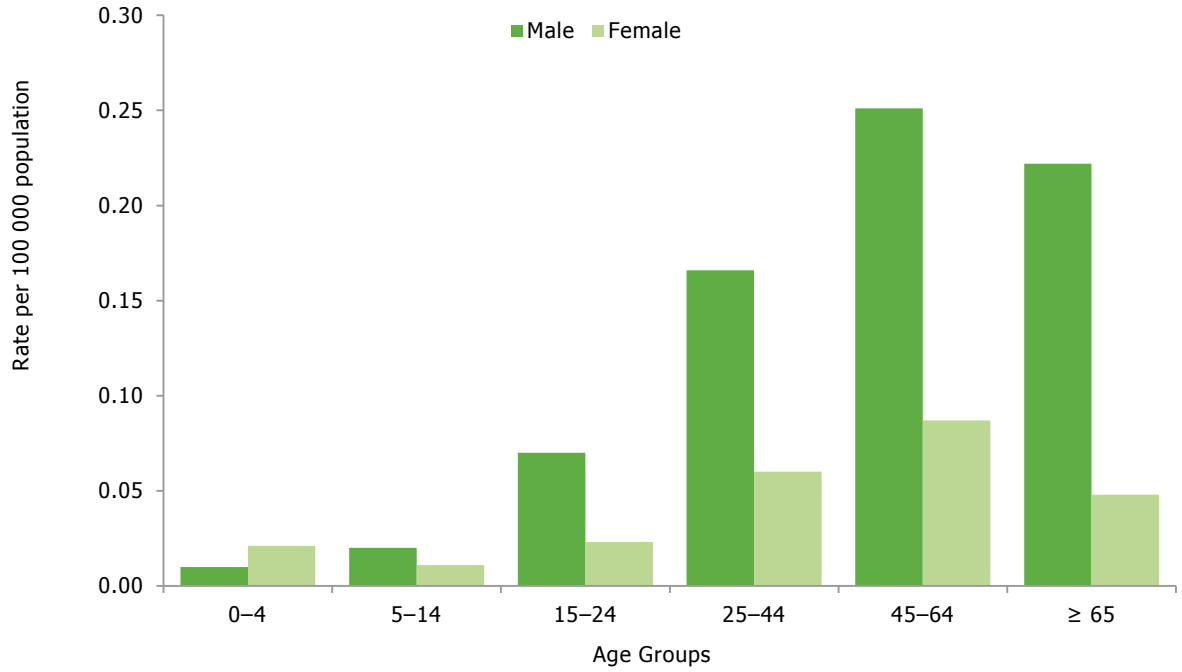


Source: Country reports from Cyprus, Czech Republic, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia and Sweden.

Age and gender distribution

In 2012, the overall rate of confirmed human Q fever cases was higher for men than women (0.23 and 0.08 per 100 000, respectively), the male-to-female ratio was 2.92:1 which is again notably higher than the year before (1.78:1). The highest notification rate was in the 45 to 64 year-old age group (0.25 cases per 100 000), followed by 25 to 44 year-olds for the females (0.08 cases per 100 000), but the over 65 year-olds for the males (0.27 cases per 100 000). Only 12 of the 649 cases, for which information was available, were reported among children under the age of 15 (1.9%, lower than in 2011) (Figure 2).

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

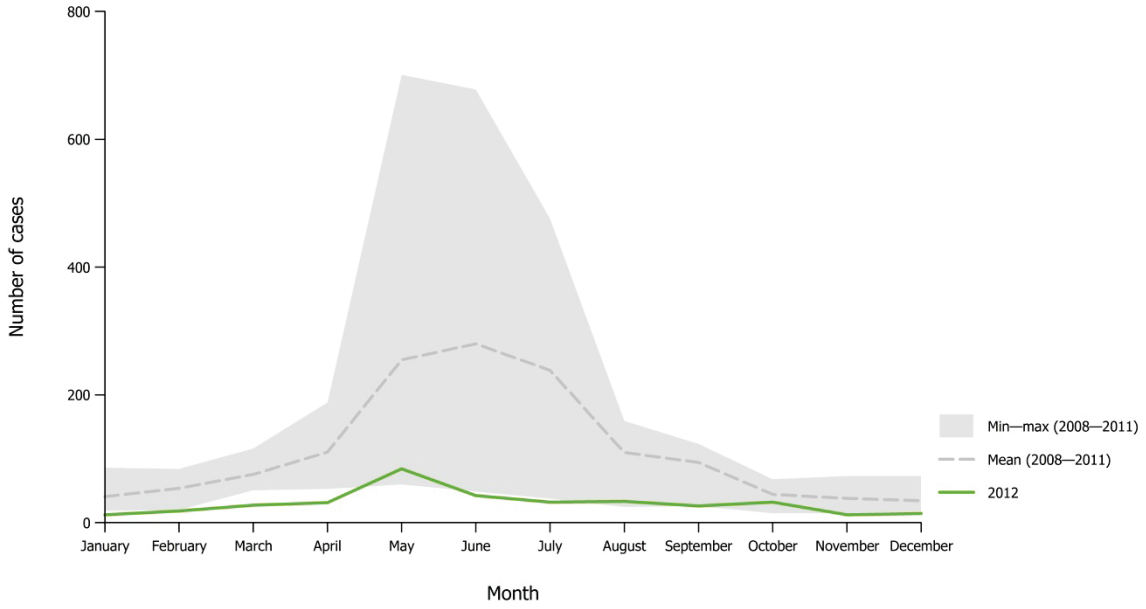


Source: Country reports from Belgium, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality

The average seasonal pattern observed for Q fever showed a slow rise in reported cases in March and April, probably associated with the start of the kidding (goats) and lambing (sheep) seasons. One main peak was seen between May and July, decreasing sharply until August, and lower levels are again observed after October (Figure 3). The curve for 2012 followed these general characteristics even if it was below the average range, which in turn was largely influenced by the outbreak in the Netherlands.

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



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

Enhanced surveillance in 2012

As expected, the large majority of cases in the EU were locally acquired. Only Belgium, Germany, the Netherlands and Sweden reported travel-associated cases, but apart from Sweden (two cases in total, both imported) they all represented less than 10% of the cases. Of the 21 travel-associated cases reported in total, nine were acquired within another EU country.

Decreasing trends in 2008–2012 by country were observed in the Netherlands and Spain. An increasing trend was observed in Hungary but the trend line was influenced by an outbreak which occurred in 2011. Many countries had too few cases to enable trend analysis.

One death due to Q fever was reported in Germany in 2012. This resulted in an EU case-fatality rate of 0.28 % among the 361 confirmed cases for which this information was reported (56.1 % of all confirmed cases).

Updates from epidemic intelligence in 2013

An outbreak was reported from Hungary (Baranya county, Southern Hungary) in June 2013, with 91 cases affected mainly by pneumonia [2].

Discussion

In 2012, the number of confirmed human cases of Q fever decreased by 17% compared with 2011, in line with previous decrease. France together with the Netherlands and Germany accounted for 65% of the total number of confirmed cases reported in 2012. A decreasing trend was noted in the Netherlands and Spain, while Hungary showed an increasing trend. Interestingly, an outbreak was reported from Hungary (Baranya county, Southern Hungary) in June 2013, with 91 cases affected mainly by pneumonia [2].

In animals, all the reporting 22 Member States but one found animals positive for *Coxiella burnetii*, which demonstrates that the pathogen is widely distributed in the EU. Positive findings were often made in cattle, sheep as well as goats. Very few clinically affected herds were however reported by the countries [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		
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-VHF	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
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	N	Y	Y	N	-	EU-2002
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
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-QFEVER	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-Q-FEVER	V	Co	P	C	Y	N	Y	Y	Y	EU-2012

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Smallpox

- There were no reports of smallpox or potential smallpox in EU and EEA countries (or worldwide) in 2012.

Smallpox is a systemic infectious disease, unique to humans, caused by either of two orthopoxvirus variants, *Variola major* and *Variola minor*. In 1980, the World Health Organization declared smallpox eradicated from the world.

Epidemiological situation in 2012

There were no reports of smallpox or potential smallpox in the EU and EEA countries (or worldwide) in 2012. Twenty eight EU and EEA countries reported, with the exception of Portugal and Liechtenstein.

Discussion

Mass smallpox vaccination campaigns have ceased after eradication. Hence the population that is immunologically naïve to orthopoxviruses has increased significantly. Therefore, smallpox viruses are considered one of the viruses with potential use as a biological weapon. Legitimately, the virus exists in only two WHO reference laboratories in the world. Any new case of smallpox would have to be the result of human accidental or deliberate release.

The World Health Assembly [1] held in May 2011 reaffirmed that the remaining stock of smallpox virus should be destroyed when crucial research on the virus has been completed. Determining a date for destruction of the remaining virus stocks will be discussed at the 67th World Health Assembly in 2014.

The disease clinically and immunologically most similar to smallpox is monkeypox, a zoonosis endemic to moist forested regions in West and Central Africa. Smallpox vaccine provided protection against both infections. The observation over a few years, of monkeypox cases in humans in the Democratic Republic of Congo (DRC) prompts the question of whether cessation of smallpox vaccination is driving the phenomenon [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-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-2002
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	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

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		
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
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-SMALLPOX	O	Co	A	C	Y	N	Y	Y	Y	EU-2012

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Tick-borne encephalitis

- Tick-borne encephalitis became notifiable at the EU level in 2012; 20 countries reported 2 560 cases in total.
- Age and gender distribution shows a clear predominance of cases in over 45 year olds and in males.
- Seasonality shows a clear peak during the summer months.

Tick-borne encephalitis (TBE) is caused by a *Flavivirus* which includes three subtypes: a European subtype in rural and forested areas of central, eastern and northern Europe, a far eastern subtype in far-eastern Russia and in forested regions of China and Japan, and a Siberian subtype endemic in the Ural region, Siberia and far-eastern Russia, and also in some areas in north-eastern Europe. Tick-borne encephalitis is a viral infectious disease that attacks the central nervous system and can result in long-term neurological symptoms and even death. Approximately two-thirds of human TBE virus infections are non-symptomatic. The European subtype is associated with milder disease, with mortality rates of 0.5–2%, and severe neurological sequels in up to 10% of patients. Competent reservoir hosts of TBE virus are mainly small rodents (voles, mice); the disease is transmitted by the bite of infected *Ixodes ricinus* or *Ixodes persulcatus* ticks. Humans may also acquire infection by consumption of infected unpasteurised dairy products. TBE virus infection can be prevented by avoiding tick bites and through vaccination.

Epidemiological situation in 2012

In 2012, TBE became a notifiable disease at the EU level. Twenty out of the 30 EU/EEA Member States reported information about the disease, of which three countries (Greece, Ireland and Spain) reported zero cases. Ten countries did not report (Bulgaria, Cyprus, Denmark, Italy, Luxembourg, Malta, the Netherlands, Portugal, Iceland and Liechtenstein). Ten countries used the EU 2012 case definition and in four countries the case definition is not specified.

The reporting is compulsory in 16 EU/EEA countries, on a voluntary basis in two countries and not specified in two countries. The surveillance system has a national coverage in 14 EU/EEA countries and is comprehensive in 17 countries. Reporting is case-based in 17 countries, and information is forwarded mostly by laboratories in 14 countries, and/or physicians in 14 countries, by hospitals in 11 countries and by other modes in three countries.

A total of 2 560 cases were reported in 2012. Confirmation of cases occurred for 2 106 cases (82.2%) and varied from 30% of the cases in two countries (30.4% in Slovakia or 31.4% in Latvia), 63.5% in Poland, 70.9% in Lithuania, 77.6% in Austria up to 100% in 10 countries.

The overall notification rate was 0.52 per 100 000. The highest notification rate was reported by Estonia (13.35 cases for 100 000), followed by Lithuania (11.69 cases for 100 000) and Slovenia (7.98 cases for 100 000); the Czech Republic, Latvia and Sweden had notification rates between 3 and 5.5 per 100 000. Low notification rates in countries with known TBE occurrence were reported by Austria, Finland and Poland (Table 1).

Table 1. Number and rates of TBE reported cases, EU/EEA, 2012

Country	2012					
	National data	Report type	Total cases	Confirmed cases	Rate	ASR*
Austria	Y	C	49	38	0.45	0.44
Belgium	Y	C	2	2	0.02	0.02
Bulgaria	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-
Czech Republic	Y	C	573	573	5.46	5.40
Denmark	-	-	-	-	-	-
Estonia	Y	C	178	178	13.35	13.42
Finland	Y	C	39	39	0.72	0.71
France	Y	C	1	1	0.00	0.00
Germany	Y	C	195	195	0.24	0.23
Greece	Y	C	0	0	0.00	0.00
Hungary	Y	C	44	42	0.43	0.42
Ireland	Y	C	0	0	0.00	0.00
Italy	-	-	-	-	-	-
Latvia	Y	C	229	72	3.52	3.49
Lithuania	Y	C	495	351	11.69	11.51
Luxembourg	-	-	-	-	-	-

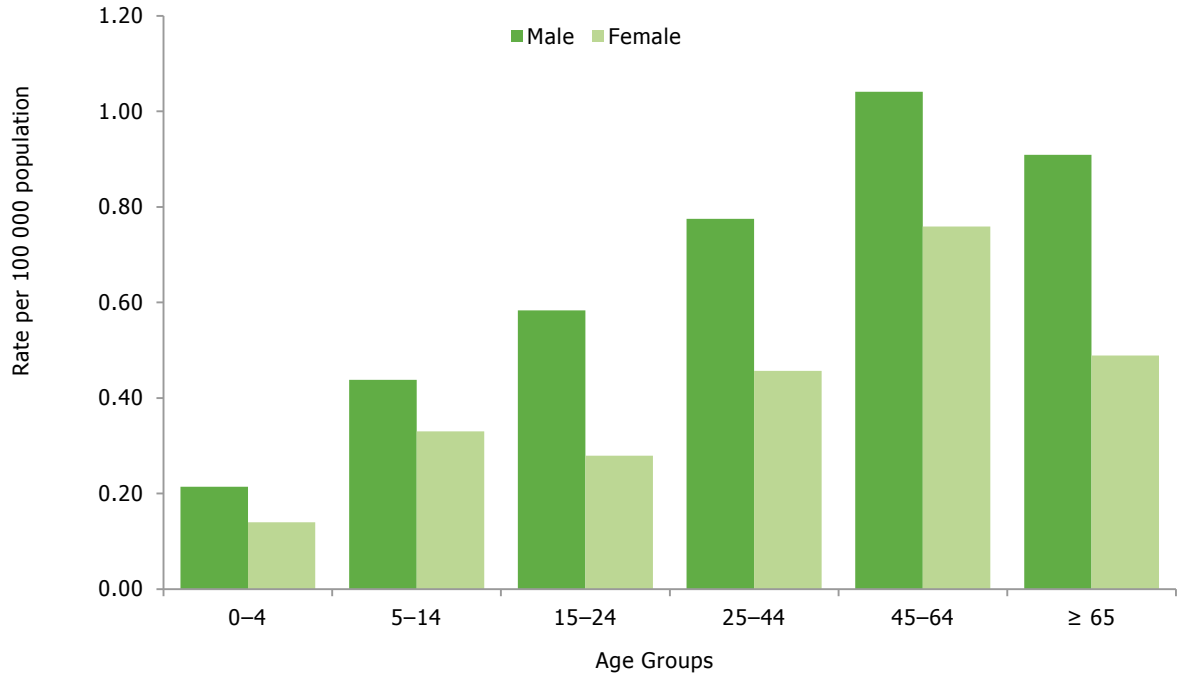
Country	2012					
	National data	Report type	Total cases	Confirmed cases	Rate	ASR*
Malta	-	-	-	-	-	-
Netherlands	-	-	-	-	-	-
Poland	Y	C	189	120	0.31	0.31
Portugal	-	-	-	-	-	-
Romania	Y	C	3	3	0.02	0.02
Slovakia	Y	C	102	31	0.57	0.59
Slovenia	Y	C	164	164	7.98	7.73
Spain	Y	C	0	0	0.00	0.00
Sweden	Y	C	287	287	3.03	3.04
United Kingdom	Y	C	3	3	0.01	0.01
EU Total	**-**	**-**	**2 553**	**2 099**	**0.53**	**0.52**
Iceland	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-
Norway	Y	C	7	7	0.14	0.14
EU/EEA Total	**-**	**-**	**2 560**	**2 106**	**0.52**	**0.51**

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

Age and gender distribution

Overall, 59.8% of cases were in males with an overall notification rate of 0.67 per 100 000 in males and 0.42 per 100 000 in females; the male-to-female ratio was 1.58:1. In 2012, the highest notification rate of confirmed TBE was in the 45 to 64 year-old age group (0.75 cases per 100 000), followed by the over 65 year-olds (0.58 cases per 100 000) (Figure 1).

Figure 1. Rates of confirmed TBE reported cases by age and gender, EU/EEA, 2012

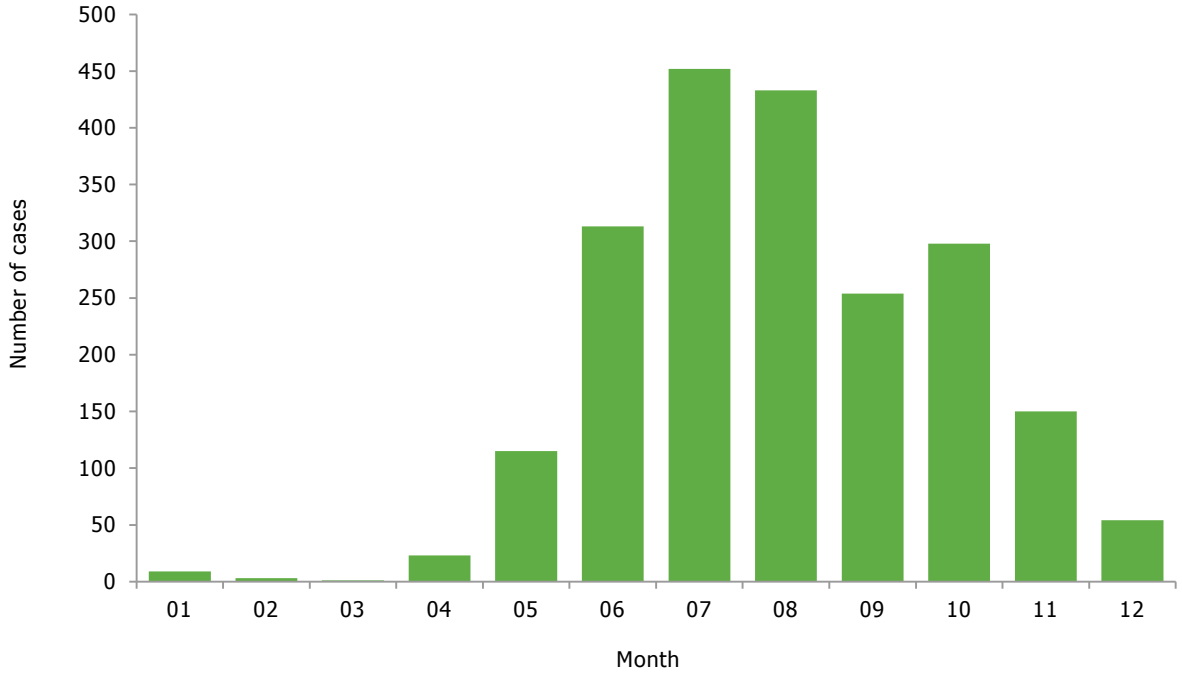


Source: Country reports from Austria, Belgium, Czech Republic, Estonia, Finland, France, Germany, Hungary, Ireland, Latvia, Lithuania, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality

Most of the cases were reported starting in April, peaking in July followed by a slow decrease with cases still reported in December and a few also in January (Figure 2). It is unclear if these dates reflect late reporting, diagnosis or onset. However, tick exposure and bite might occur even during the cold season, and even in Nordic countries.

Figure 2. Distribution of confirmed TBE reported cases by month, EU/EEA, 2012



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

Enhanced surveillance in 2012

In total, information on importation status was available for 1 967 cases of which 1.20% were imported; the United Kingdom and Belgium had only imported cases.

Eight cases out of 489 cases with information had a history of previous immunisation; five of these were reported by Austria, and two had received three or four vaccine doses while three cases had only received one.

Updates from epidemic intelligence in 2013

No threats related to TBE have been considered in 2013 for the EU/EEA.

Discussion

Tick-borne encephalitis has become a growing public health challenge in Europe and became notifiable in 2012 at the EU level. The number of human cases of TBE in all endemic regions of Europe has increased by almost 400% in the last 30 years; the risk areas have spread and new foci have been discovered [1, 2].

In the first year of reporting, 19 countries submitted data [3]. Case numbers compare roughly with data collected through a previous survey conducted by ECDC [1, 2]. Age and gender distribution shows a clear predominance of cases in over 45 year olds and in males, possibly due to higher susceptibility to more serious forms of the disease in elderly and to occupational outdoor exposure in males. Seasonality also compares to the previous survey and shows a clear peak during the summer months [1].

Ixodes ricinus ticks, the main vector species, are widely spread in Europe but tick-borne encephalitis infected ticks are found only in certain risk areas, and within these risk areas only a fraction of the ticks carry the virus (0.1–5%). The variation in geographical distribution of tick borne encephalitis infected ticks within regions and countries is such that the risk of infection can change dramatically from one area to another within short distances [4, 5].

Countries with increased risk of TBE include Austria, the Czech Republic, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia, and Sweden [1, 2].

In order to improve the overall knowledge of TBE at the EU level, countries susceptible to diagnose locally acquired TBE cases should be encouraged to report (e.g. in the Balkan region).

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-2012
Belgium	BE-REFLAB	-	-	-	-	-	-	-	-	-	Not specified/unknown
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	EU-2008
Estonia	EE-TBE	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2012
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	-	EU-2012
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y	Other
Greece	GR-TBE_Mandatory notification	Cp	Co	A	C	-	-	-	-	-	Not specified/unknown
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
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
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	-	-	-	-	-	-	-	-	-	Not specified/unknown
Romania	RO-RNSSy	Cp	O	P	-	-	-	-	-	-	Not specified/unknown
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	-	EU-2012
United Kingdom	UK-TBE	V	Co	A	C	Y	N	N	N	Y	EU-2012

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Viral haemorrhagic fevers

A number of diseases are included under the heading 'viral haemorrhagic fevers' (VHFs), with differences in type of virus, geographical distribution, incidence, reservoir, means of transmission and clinical symptoms. The common denominator is the possible emergence of a disease with general bleeding – often leading to death. Another common feature is the potential risk that such patients might pose to close contacts and to healthcare and laboratory personnel until a firm diagnosis is established. Fortunately, most of these viruses do not transmit easily (with the exception of yellow fever virus, chikungunya and dengue virus which are spread by infected mosquitoes).

Present in Europe are Hantaan and Puumula VHF, also called 'epidemic nephropathy' (transmitted through direct/indirect exposure to infected rodents) and Crimean–Congo VHF (transmitted through tick bites). Others are mainly seen as imported infections, such as Lassa fever (transmitted by rodents) and dengue haemorrhagic fever (transmitted through mosquito bites), Ebola and Marburg fever (monkey-associated). Yellow fever is described in a separate section.

Chikungunya fever

- There were 51 cases of chikungunya fever, of which 40 were confirmed, notified by 22 EU countries in 2012.
- Case numbers are slightly lower than in 2011 and much lower than in 2010 (179 cases).
- No cases of locally acquired chikungunya fever were reported in the EU in 2012.

Chikungunya is a viral disease caused by an Alphavirus from the *Togaviridae* family which is transmitted by *Aedes* mosquitoes to vertebrates. Chikungunya is present in sub-Saharan Africa, the Indian Ocean and in South-East Asia and the Pacific region. The most common clinical form associates fever, rash and strong arthralgia. Recovery is the usual outcome, but chronic arthritis is not rare. Diagnostic tests are available but there is no antiviral or licensed vaccine. The disease has been reportable at the EU level since 2008.

Epidemiological situation in 2012

In 2012, 51 cases of chikungunya fever, of which 40 were confirmed, were reported by 22 reporting EU and EEA countries (Table 1). No data were available from Bulgaria, Cyprus, Denmark, the Netherlands, Portugal, Iceland, Liechtenstein or Norway. Reporting is compulsory in most reporting countries, but voluntary in Belgium, Spain and the United Kingdom. The surveillance system has a comprehensive coverage apart from the United Kingdom where it is based on a sentinel system. Fourteen countries use the EU case definition which is a generic case definition for all viral haemorrhagic fevers. Cases were reported by seven countries: Belgium, France, Germany, Italy, Spain, Sweden and the United Kingdom. The highest rate (0.05 per 100 000 inhabitants) was again reported by Belgium, but as every year, case numbers were highest in the United Kingdom (21 cases in 2012). All cases were reported as being imported or of unknown origin, mostly from Asia (40% from India), but also from Africa. Case numbers are slightly lower than in 2011 (Figure 1).

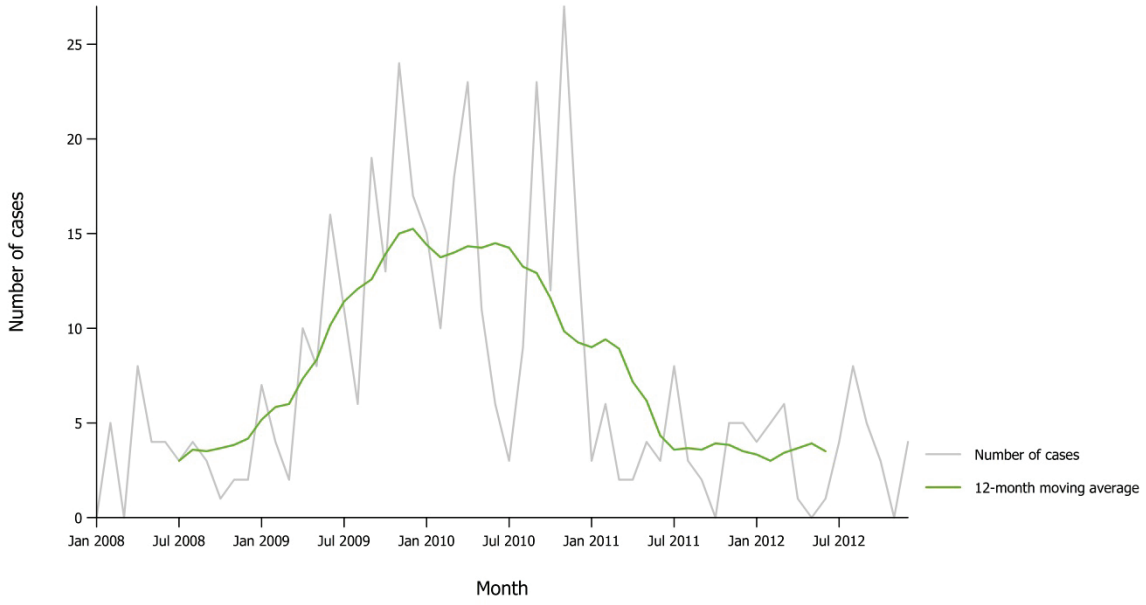
Table 1. Number and rates of chikungunya fever reported cases, EU/EEA, 2008–2012

Country	2012						2011		2010		2009		2008	
	National data	Report type	Cases	Rate	ASR*	Confirmed cases	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0.00	0.00	0	2	0.02	2	0.02	8	0.10	0	0.00
Belgium	Y	A	6	0.05	0.00	6	8	0.07	8	0.07	6	0.06	0	0.00
Bulgaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Czech Republic	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0.00	0.00	0	0	0.00	1	0.02	3	0.06	0	0.00
France	Y	C	6	0.01	0.01	6	12	0.02	44	0.07	13	0.02	1	0.00
Germany	Y	C	9	0.01	0.01	9	13	0.02	37	0.05	54	0.07	17	0.02
Greece	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Hungary	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Ireland	Y	C	0	0.00	0.00	0	0	0.00	1	0.02	0	0.00	0	0.00
Italy	Y	C	5	0.01	0.01	5	2	0.00	7	0.01	3	0.01	9	0.02
Latvia	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Country	2012						2011		2010		2009		2008	
	National data	Report type	Cases	Rate	ASR*	Confirmed cases	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Poland	Y	A	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Slovakia	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Spain	N	C	2	-	-	2	4	-	0	-	6	-	5	-
Sweden	Y	C	2	0.02	0.02	2	0	0.00	0	0.00	0	0.00	-	-
United Kingdom	Y	C	21	0.03	0.04	10	14	0.02	79	0.13	56	0.09	9	0.02
EU Total	**-**	**-**	**51**	**0.01**	**0.01**	**40**	**55**	**0.01**	**179**	**0.04**	**149**	**0.04**	**41**	**0.01**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EU/EEA Total	**-**	**-**	**51**	**0.01**	**0.01**	**40**	**55**	**0.01**	**179**	**0.04**	**149**	**0.04**	**41**	**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.

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

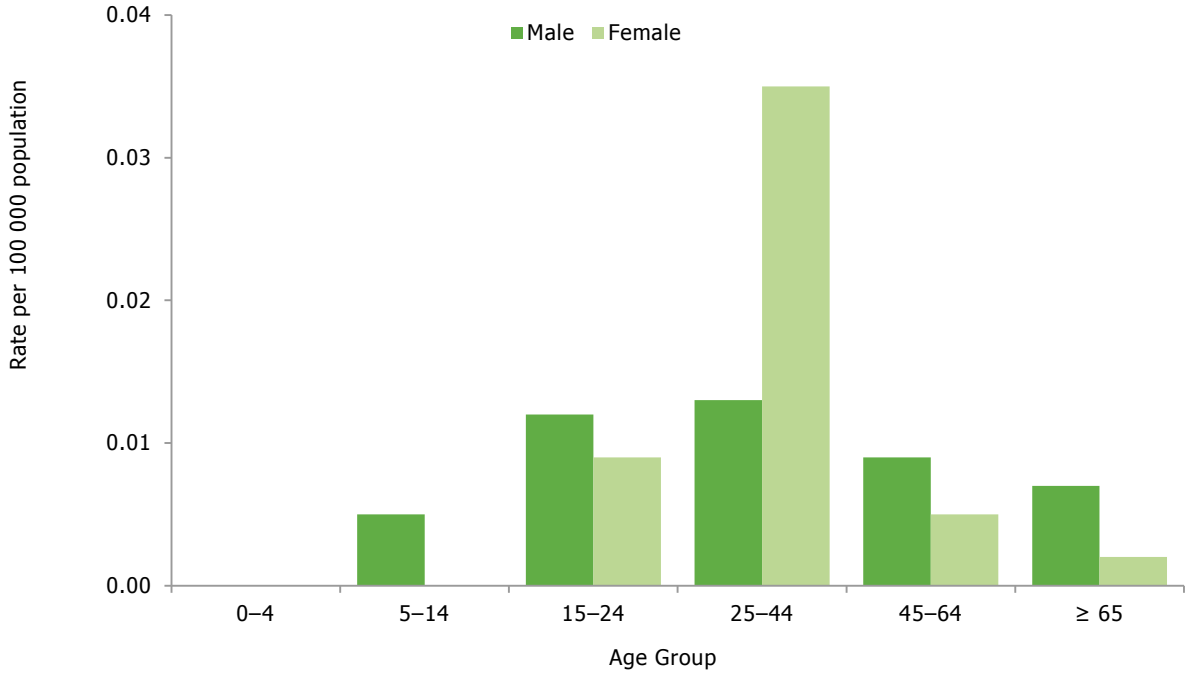


Source: Country reports from Austria, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia and United Kingdom.

Age and gender distribution

The reported rate of chikungunya cases is equal for females and for males (0.01 per 100 000). As opposed to 2011, case rates in 2012 are highest in the 25–44 year-old age group (0.02 cases per 100 000), especially in females (0.03 cases per 100 000) (Figure 2).

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

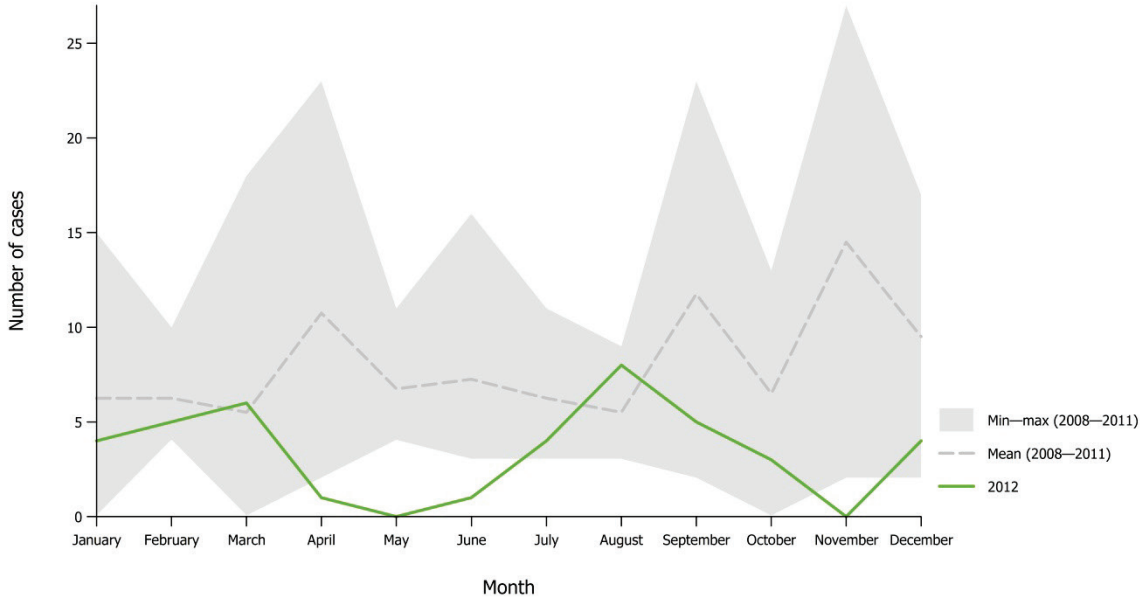


Source: Country reports from Austria, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality

In previous years, cases were mainly reported in April, September and November; in 2012 the peak was in March and August, but the seasonality is not obvious and cases occur throughout the year (Figure 3).

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



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

Updates from epidemic intelligence in 2013

ECDC monitors reports of chikungunya outbreaks worldwide through epidemic intelligence activities in order to identify significant changes in disease epidemiology. Chikungunya, a viral disease transmitted mainly by *Aedes albopictus* and *Aedes aegypti*, has the potential to be established in the EU, due to the presence of these vectors in southern parts of Europe.

No autochthonous cases were reported in 2013 in Europe.

Discussion

Reported case numbers of chikungunya are lower in 2012 than in 2011 and especially 2010 and 2009. Reported rates were highest among 25–44 year olds, which contrasts to previous years (45–64 year age group), but rates are very low and these findings should not be over interpreted. In addition, substantial under-diagnosis probably occurs in returning travellers [1]. Outside continental Europe, some European territories are endemic for chikungunya, but data are not collected through the European Surveillance System.

The first identified outbreak of chikungunya fever in a temperate climate (Italy) in 2007 demonstrated the potential of the *Aedes albopictus* mosquito to transmit the virus at EU latitudes [2]. In 2010, indigenous transmission was reported for the second time in Europe with the first two indigenous cases identified through enhanced surveillance in metropolitan France [3]. During 2011 and 2012 only imported cases of chikungunya were reported from EU and EEA countries.

Travel-related chikungunya in the EU might result in onward transmission from an imported viraemic patient in places where the vector is established and where conditions are suitable for transmission (as they are in many Mediterranean countries of the EU). Therefore, continued surveillance for chikungunya and its vectors is needed, as well as vigilance among health professionals [1, 4].

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
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	Other
Estonia	EE-VHF	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
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
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	N	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-NRL	V	Se	P	C	Y	N	N	N	N	EU-2008
Sweden	SE-SMINET	-	-	-	-	N	Y	N	N	-	EU-2012
United Kingdom	UK-CHIKUNGUYA	V	Co	A	C	Y	N	Y	Y	Y	Other

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Crimean-Congo haemorrhagic fever

- Five cases of Crimean-Congo haemorrhagic fever were reported in EU and EEA countries in 2012.

Crimean-Congo haemorrhagic fever (CCHF) is a tick-borne viral disease with symptoms such as high fever, muscle pain, dizziness, abnormal sensitivity to light, abdominal pain and vomiting. Later on, sharp mood swings may occur, and the patient may become confused and aggressive. CCHF virus is widespread and evidence for the virus has been found among ticks in Africa, Asia, the Middle East, and eastern and south-western Europe. In Europe, cases of human infection have been reported from Albania, Bulgaria, Greece, Kosovo, Serbia, Turkey, as well as Armenia, Kazakhstan, Federation of Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

Crimean-Congo haemorrhagic fever has the potential for human-to-human transmission and early detection of cases (clinically and in the laboratory) is essential for the implementation of timely appropriate protective measures and instigation of treatment [1].

Epidemiological situation in 2012

Data were reported from 26 EU/EEA countries, with the exception of Denmark, Finland, Germany, Portugal and Liechtenstein. Twenty EU countries refer to the EU case definition (which is generic for all viral haemorrhagic fever cases).

Two confirmed case and two probable cases of CCHF were reported in 2012 from Bulgaria, and one imported case was reported from the United Kingdom. These five cases (three males and two females) were notified in June, July and September. The imported male case occurred in the 25–44 year-old age group.

Discussion

Crimean-Congo haemorrhagic fever is endemic in the Balkan region and a few cases are reported on a regular basis from Bulgaria (four cases in 2011, six cases in 2010, eight cases in 2009, and 14 cases in 2008). In the wider European region, Turkey remains the most affected country. The current distribution of one major vector for Crimean-Congo haemorrhagic fever, the tick *Hyalomma marginatum*, has been displayed on the ECDC website since 2012, showing a wide distribution [2]. In October 2012, one imported (fatal) case of CCHF was diagnosed in the United Kingdom. The patient had travel history on commercial flights from Kabul, Afghanistan via Dubai to London, and had had fever and other symptoms for four days prior to hospitalisation, which led to extensive contact-tracing and follow-up [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-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
Estonia	EE-VHF	Cp	Co	P	C	Y	Y	Y	Y	Y	EU case definition (legacy/deprecated)
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	N	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-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	-	EU-2012
United Kingdom	UK-CRIMEAN-CONGO-HF	V	Co	A	C	Y	N	Y	Y	Y	Other

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Dengue fever

- A total of 1 207 cases of dengue fever were notified by EU and EEA countries in 2012.
- The number of reported dengue fever cases in 2012 was nearly twice the number reported in 2011 but still lower than in 2010.
- An outbreak of autochthonous dengue occurred between September 2012 and March 2013 in Madeira, with more than 2 168 reported cases.

Dengue is a mosquito-borne disease in humans, caused by a virus of the *Flavivirus* genus, *Flaviviridae* family. Dengue fever is transmitted through bites of *Aedes* mosquitoes and widely spread in Asia, the Pacific, the Americas and the Caribbean, and Africa. Dengue fever is one of the most prevalent vector-borne diseases in the world, affecting a revised estimate of 390 million people each year [1]. While most of the clinical cases present a febrile illness, severe forms including haemorrhagic fevers and shock with fatalities are reported. No specific treatment or vaccine exists for dengue, and general intensive care is often needed [2-3].

Epidemiological situation in 2012

In 2012, a total of 1 207 cases of dengue fever (1 118 of which were confirmed) were reported by 15 of 24 reporting EU and EEA countries. Data of the disease are not reported to TESSy from Bulgaria, Cyprus, Denmark, the Netherlands, Portugal and Liechtenstein. Reporting is compulsory for most countries apart for Belgium and the United Kingdom where it is voluntary. The surveillance is comprehensive in all reporting countries. Data for dengue reported within the EU are very heterogeneous as no specific case definition for dengue is available yet. Sixteen countries referred to the EU generic case definition for all viral haemorrhagic fevers. Some countries appear to have reported all diagnosed dengue cases including dengue fever cases and severe dengue cases; other countries reported only cases with haemorrhages and/or hospitalised cases. All cases for which the information was available (1 041) were reported as imported; 32 patients have been diagnosed in European countries with dengue infection after returning from Madeira in 2012. Overall, 78.8 % of cases were imported from the Asian continent and 10% from South-America.

About twice as many cases were reported in 2012 compared with 2011, but numbers remained lower than in 2010; cases roughly doubled in Belgium, Finland, France, Germany and Italy.

The overall case rate was 0.26 per 100 000 (0.13 per 100 000 in 2011). The individual country rates varied between 0.00 and 1.85 cases per 100 000 population. The higher rates reported by Sweden (1.85 per 100 000) and Finland (1.67 per 100 000) reflect travelling of these populations to destinations where dengue fever is endemic (Table 1 and Figure 1).

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

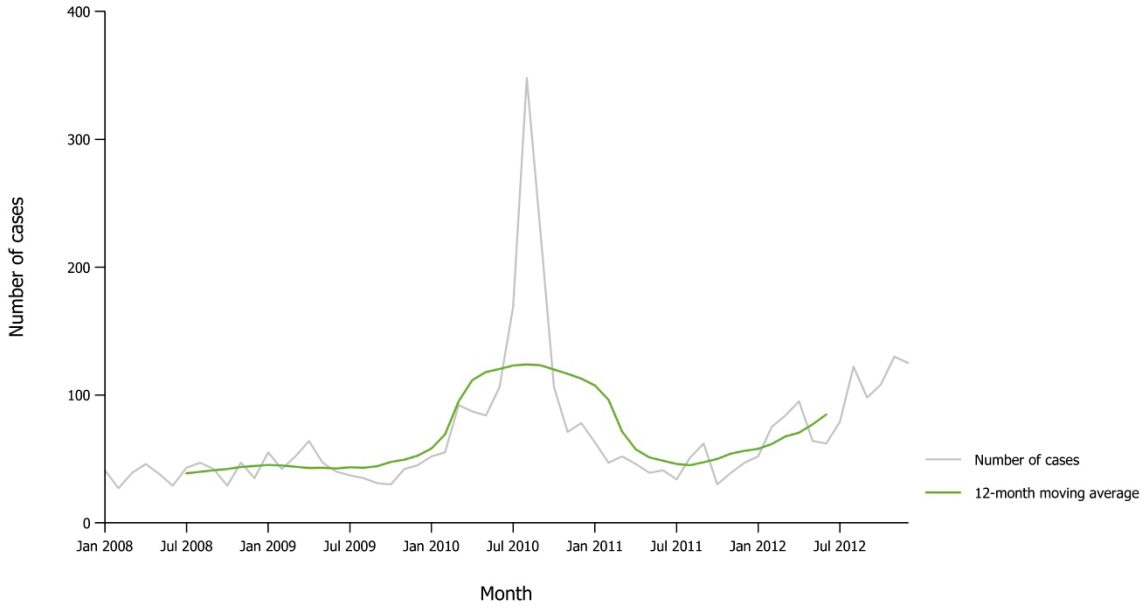
Country	2012						2011		2010		2009		2008	
	National data	Report type	Cases	Rate	ASR*	Confirmed cases	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	2	0.02	0.02	0	0	0.00	11	0.13	0	0.00	0	0.00
Belgium	Y	A	73	0.66	0.00	73	41	0.37	129	1.19	53	0.49	60	0.56
Bulgaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Czech Republic	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	90	1.67	1.68	90	45	0.84	50	0.93	35	0.66	35	0.66
France	Y	C	110	0.17	0.18	29	55	0.09	596	0.92	64	0.10	56	0.09
Germany	Y	C	615	0.75	0.79	615	288	0.35	595	0.73	298	0.36	273	0.33
Greece	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Hungary	Y	C	3	0.03	0.03	3	2	0.02	7	0.07	1	0.01	6	0.06
Ireland	Y	C	7	0.15	0.15	7	0	0.00	0	0.00	0	0.00	0	0.00
Italy	Y	C	74	0.12	0.13	74	44	0.07	51	0.09	10	0.02	12	0.02
Latvia	Y	C	7	0.34	0.37	7	2	0.10	8	0.38	1	0.05	0	0.00
Lithuania	Y	C	0	0.00	0.00	0	1	0.03	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0.00	0.00	0	1	0.20	2	0.40	0	0.00	0	0.00
Malta	Y	C	0	0.00	0.00	0	0	0.00	1	0.24	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	5	0.01	0.01	0	5	0.01	6	0.02	4	0.01	2	0.01
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	3	0.02	0.01	3	2	0.01	0	0.00	0	0.00	1	0.01
Slovakia	Y	C	3	0.06	0.05	3	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	10	0.49	0.49	9	8	0.39	8	0.39	4	0.20	6	0.30

Country	2012						2011		2010		2009		2008	
	National data	Report type	Cases	Rate	ASR*	Confirmed cases	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Spain	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	4	0.01	0	0.00
Sweden	Y	C	175	1.85	1.91	175	103	1.09	151	1.62	100	1.08	73	0.80
United Kingdom	Y	C	0	0.00	0.00	0	13	0.02	7	0.01	3	0.01	6	0.01
EU Total	**-**	**-**	**1 177**	**0.26**	**0.25**	**1 088**	**610**	**0.13**	**1622**	**0.35**	**577**	**0.13**	**530**	**0.12**
Iceland	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	30	0.60	0.61	30	-	-	-	-	-	-	-	-
EU/EEA Total	**-**	**-**	**1 207**	**0.26**	**0.25**	**1 118**	**610**	**0.13**	**1622**	**0.35**	**577**	**0.13**	**530**	**0.12**

**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 has been no homogenous trend in dengue case numbers in Europe since 2008 (Figure 1). However, the general trend in monthly case numbers appears to be increasing regularly since July 2011. A peak of cases was noted in summer 2010, particularly in August, reported especially from France.

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

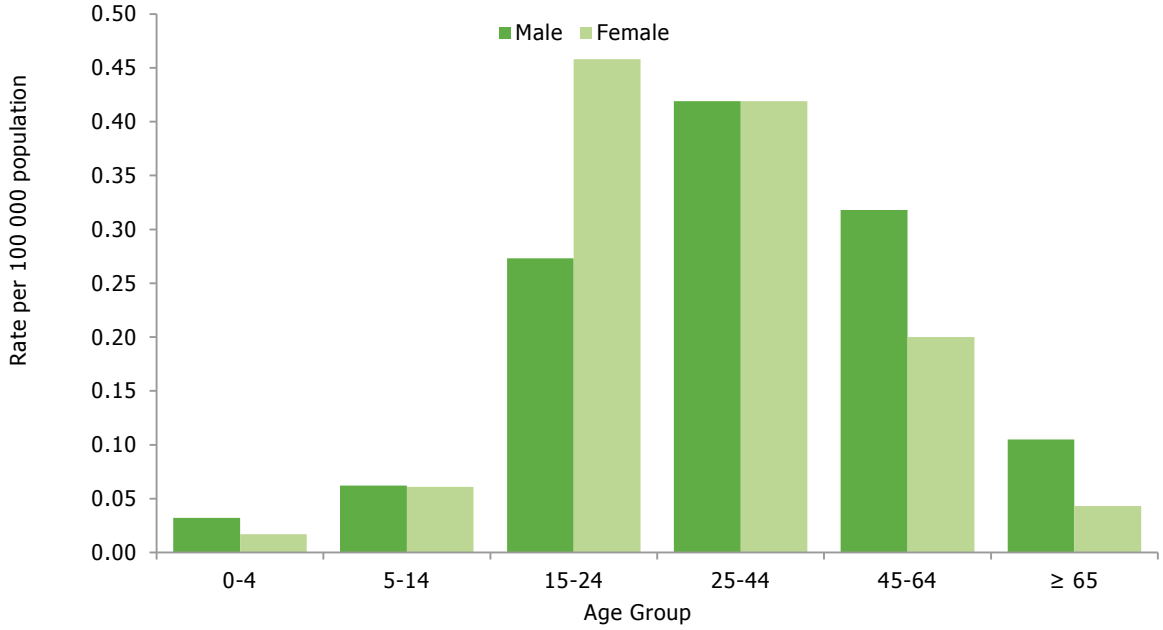


Source: Country reports from Austria, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Malta, Poland, Slovakia, Slovenia, Spain and Sweden.

Age and gender distribution

The case rate was similar in males (0.27 cases per 100 000) and females (0.23 per 100 000), with a male-to-female ratio of 1.14:1. In males, the age groups with the highest rates were the 25–44 and 45–64 year-olds (with 0.42 and 0.32 cases per 100 000, respectively), while in females highest rates were in the 15–24 and 25–44 year-olds (with 0.46 and 0.42 cases per 100 000, respectively) (Figure 2). The high burden on female 15–24 year-olds is comparable with the situation in 2010 (0.44).

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

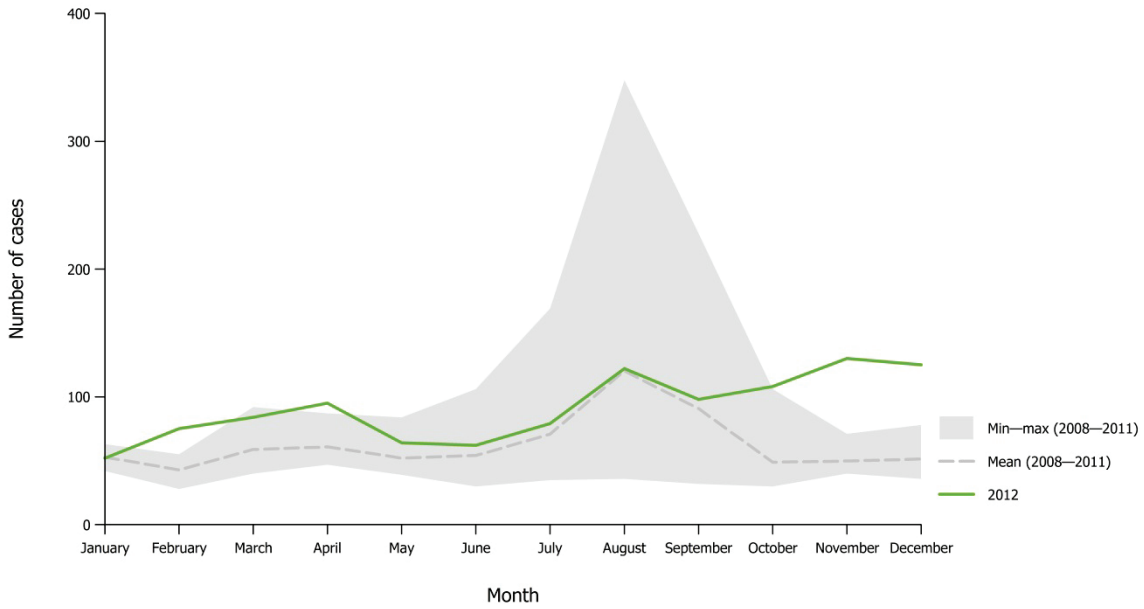


Source: Country reports from Austria, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality

A seasonal trend in monthly reports is observed across all countries, with cases increasing during the summer and autumn months (June–October), mainly peaking in August. In 2012 the curve had a different aspect with highest case numbers registered in November and December (Figure 3), and a rather steadily increasing case number throughout the year, which mainly reflected the cases reported by Germany. This general aspect however masks various situations in the different Member States: in Sweden and Finland most cases are reported in winter with a peak in April, while in France and Italy cases are reported mainly in summer with a peak in August.

Figure 3 Distribution of total dengue fever reported cases by month in 2012 compared with 2008–2012 data, EU/EEA countries



Source: Country reports from Austria, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Malta, Poland, Slovakia, Slovenia, Spain and Sweden.

Updates from epidemic intelligence in 2013

ECDC regularly monitors individual outbreaks, seasonal transmission patterns and inter-annual epidemic cycles of dengue in the world through epidemic intelligence activities in order to identify significant changes in disease epidemiology. Of particular concern is the potential for the establishment of dengue transmission in European countries where the competent vectors are present (*Aedes aegypti* in Madeira – Portugal and *Aedes albopictus* in southern Europe) [4].

There have been no reports of confirmed autochthonous dengue infections in continental Europe in 2012. However, between 26 September 2012 and 3 March 2013, Portugal reported a dengue outbreak for the first time (DENV-1) in Madeira with 2 168 cases among which 1 080 were confirmed. No severe clinical form or death was reported. The outbreak was mainly located in Funchal, and neighbouring areas notably Câmara de Lobos, São Martinho and Caniço. Phylogenetic studies showed that the virus was most probably introduced from South America (Venezuela, Colombia or northern Brazil) [5, 6, 7].

Cases have also been exported to other EU Member States: as of 3 February 2013, seventy-eight patients have been diagnosed in European countries with dengue infection after returning from Madeira Island. In addition, one autochtonous case was reported in southern France (Bouches-du-Rhône department colonised by *Aedes albopictus* since 2010) in October 2013 [8].

Worldwide, continuously high activity was reported in Latin America, and increasing numbers of cases were reported from across Central America and the Caribbean.

Discussion

Travel-related dengue fever in the EU reflects the evolution of dengue situation in tropical regions where the disease is endemic; the situation returned to a lower level after 2010 [9]. However, the end of 2012 was again marked by an increase likely related to an overall re-increase of dengue activities in tropical areas.

In places where the Aedes vectors are established and where conditions are suitable for transmission (like in many Mediterranean countries of the EU), imported viraemic patients could lead to locally acquired cases. Increased surveillance of dengue and its *Aedes* vectors is needed, as well as vigilance among health professionals.

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	A	Y	N	N	N	Y	Not specified/unknown
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	Other
Estonia	EE-VHF	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
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	-	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	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	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		
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	Y	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-DENGUE	V	Co	A	C	Y	N	Y	Y	Y	Other

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Ebola and Marburg fevers

- There were no cases of Ebola or Marburg viral haemorrhagic fever infections reported in EU and EEA countries during 2012.

Ebola and Marburg haemorrhagic fevers are caused by the Ebola and Marburg viruses, respectively, both belonging to the Filoviridae family. Both are rare diseases, but have the potential to cause high case-fatality rates. Transmission of the viruses occurs from person to person through close contact with blood or bodily fluids, but also through contact with infected animals (monkeys, chimpanzees, forest antelopes, bats, or other animals). Clinical illness starts as a flu-like syndrome, rapidly evolving to severe disease with bleedings. No treatment or vaccine is available for either disease.

Epidemiological situation in 2012

No cases of Ebola or Marburg viral haemorrhagic fever infections were reported in the EU in 2012.

Data were obtained from 28 EU/EEA countries with the exception of Bulgaria, Portugal, and Liechtenstein. The surveillance is compulsory in 25 EU countries; coverage is comprehensive, mostly passive, and case-based data are reported at the national level. Seventeen EU countries refer to the EU case definition (which is generic for all VHFs).

Discussion

Filoviruses are endemic in Central Africa and several outbreaks were reported in 2012 caused by different viruses: the Marburg virus, Sudan Ebolavirus and Bundibugyo Ebolavirus which are commonly associated with large haemorrhagic fever outbreaks in Africa with a high case-fatality ratio (25–90 %).

In Uganda, an outbreak caused by Sudan Ebolavirus was reported in Kibaale district in August 2012, with 24 cases (11 confirmed/13 probable) and 17 deaths (case-fatality ratio (CFR) 70.8%), and an outbreak caused by Marburg virus was reported in Kampala and Luweero districts in October 2012 with 14 cases including seven deaths (CFR 50%) [1-4].

In the Democratic Republic of Congo, one outbreak caused by Ebola subtype Bundibugyo virus with 52 cases (35 laboratory-confirmed cases) and 25 fatalities including three healthcare workers was reported in August–October 2012 in Haut-Uélé district in Province Orientale [5].

Updates from epidemic intelligence in 2013

In 2013, there was no report of outbreaks of Ebola or Marburg viral infections (as of 10 November 2013). Surveillance of viral haemorrhagic fevers has been enhanced in several African countries [4, 6]. Guidelines for contact-tracing cases of Ebola or Marburg haemorrhagic fever on aeroplanes have been developed by ECDC [7].

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
Cyprus	CY-NOTIFIED_DISEASES	-	-	-	-	-	-	-	-	-	Not specified/unknown
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	Other
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y	Other
Estonia	EE-VHF	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-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

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		
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	-	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	N	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-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	-	EU-2012
United Kingdom	UK-FILOVIRUS	V	Co	A	C	Y	N	Y	Y	Y	Other

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Hantavirus infections

- In 2012, 4 440 cases of hantavirus infections were reported from 24 countries; 51.7% more than reported in 2011 (2 926 cases) but comparable with case numbers reported in 2010 (4 200 cases).
- Of the diseases that have potential haemorrhagic features, it is the most commonly reported disease in the EU and EEA region.

Hantavirus infections cause haemorrhagic fever with renal syndrome in Eurasia, and hantavirus pulmonary syndrome in the Americas. Humans are usually infected by inhalation of dusts contaminated by infectious rodent excreta (i.e. faeces or urine).

In Europe, haemorrhagic fever with renal syndrome is caused by different viruses, mostly Puumala virus carried by bank voles and Dobrava-Belgrade virus carried by yellow-necked mice. Cases related to Seoul virus, which is carried by rats (*Rattus* sp.), have been also notified in France and United Kingdom in 2012. Pet rats have been shown as a source of infection for humans.

Outbreaks appear related to favourable environmental conditions regarding food supplies with an increase of rodent carrier populations enhancing the risk of human population exposure to the virus.

Hantavirus infections are widely distributed across Europe, with the exception of some Mediterranean countries.

Epidemiological situation in 2012

In 2012, 4 440 cases (4 371 confirmed) were reported in the EU from 24 EU/EEA countries (four countries reported no cases: Lithuania, Malta, Netherlands and Spain). Data were not available from Cyprus, Denmark, Italy, Portugal, Iceland and Liechtenstein. This constitutes a 51.7% increase from 2011 when 2 926 cases (2 904 confirmed cases) were recorded, but only a 5.7% increase from 2010 (4 200 cases recorded, 4 196 confirmed).

The reporting is voluntary in three countries and compulsory in 19 countries, mostly passive and case based, reported by laboratories; the coverage is at the national level and 14 countries used the EU case definition.

Most of the cases (91.5%) were reported from four countries (Germany, Finland, Austria and Slovenia), with Germany reporting 63.6% and Finland 18.9% of the cases.

The overall case rate (from 19 EU/EEA countries reporting cases) was 1.03 per 100 000 population, higher than the rate reported in 2011, 0.66 per 100 000 population (from 16 countries), or in 2009 (0.65) (from 18 countries) and close to the rate recorded in 2010 (1.14) (from 17 EU/EEA countries reporting cases) and less than the peak in 2008 (1.24) (from 16 EU/EEA countries reporting cases).

The rate rose up to 8.86 in Slovenia (versus 0.83 in 2011), 4.38 in Luxembourg (versus no cases in 2011), 3.46 in Germany (versus 0.37 in 2011), 2.61 in Austria (versus 0.43 in 2011) and decreased in some countries (i.e. 15.57 in Finland versus 34.12 in 2011, Sweden 0.51 versus 3.73 in 2011). Belgium also registered a reduction in case numbers of 67%. Finland, Sweden and Norway reported the lowest rate since 2008.

Information about the source of infection was not available. Forty two cases of hantavirus infection were identified as imported cases (32 in Germany, four in Austria, two in Norway, one each in Sweden, Estonia, Czech Republic and Ireland). However, for 24.3 % of the cases for which information was available the status was unknown.

Table 1. Number and rates of hantavirus reported infections, EU/EEA, 2008–2012

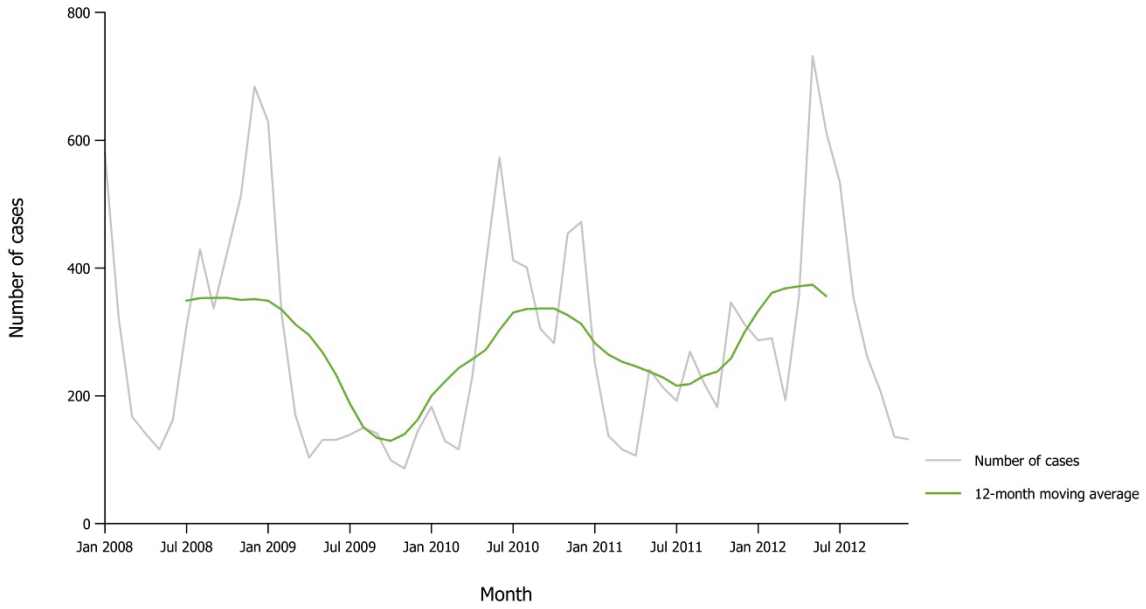
Country	2012						2011		2010		2009		2008	
	National data	Report type	Cases	Rate	ASR*	Confirmed cases	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	219	2.61	2.58	152	36	0.43	31	0.37	29	0.35	1	0.01
Belgium	Y	C	62	0.56	0.56	62	190	-	212	-	187	-	336	-
Bulgaria	Y	A	3	0.04	0.04	3	3	0.04	3	0.04	5	0.07	4	0.05
Cyprus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Czech Republic	Y	C	9	0.09	0.09	9	9	0.09	8	0.08	6	0.06	-	-
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	19	1.43	1.44	19	12	0.90	5	0.37	17	1.27	11	0.82
Finland	Y	C	841	15.57	15.55	841	1 834	34.12	1 443	26.97	1927	36.18	3 259	61.49
France	Y	C	164	0.25	0.26	164	101	0.16	-	-	-	-	-	-
Germany	Y	C	2 822	3.46	3.47	2 821	305	0.37	2 016	2.47	181	0.22	243	0.30
Greece	Y	C	1	0.01	0.01	1	3	0.03	1	0.01	2	0.02	2	0.02
Hungary	Y	C	8	0.08	0.08	8	7	0.07	11	0.11	11	0.11	3	0.03
Ireland	Y	C	1	0.02	0.02	1	0	0.00	0	0.00	0	0.00	0	0.00
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	12	0.59	0.58	12	4	0.19	4	0.19	1	0.05	1	0.05
Lithuania	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00

Country	2012						2011		2010		2009		2008	
	National data	Report type	Cases	Rate	ASR*	Confirmed cases	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Luxembourg	Y	C	23	4.38	4.33	23	0	0.00	0	0.00	1	0.20	0	0.00
Malta	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	8	0.05	0	0.00
Poland	Y	C	3	0.01	0.01	2	8	0.02	6	0.02	5	0.01	7	0.02
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	3	0.02	0.01	3	4	0.02	4	0.02	9	0.05	4	0.02
Slovakia	Y	C	6	0.11	0.10	6	3	0.06	1	0.02	3	0.06	1	0.02
Slovenia	Y	C	182	8.86	8.52	182	17	0.83	17	0.83	5	0.25	45	2.24
Spain	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	2	0.00
Sweden	Y	C	48	0.51	0.49	48	351	3.73	416	4.45	53	0.57	569	6.20
United Kingdom	Y	C	1	0.00	0.00	1	0	0.00	1	0.00	0	0.00	0	0.00
EU Total	**-**	**-**	**4 427**	**1.04**	**1.04**	**4 358**	**2 887**	**0.65**	**4 179**	**1.15**	**2 450**	**0.65**	**4 488**	**1.24**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	13	0.26	0.27	13	39	0.79	21	0.43	21	0.44	50	1.06
EU/EEA Total	**-**	**-**	**4 440**	**1.03**	**1.03**	**4 371**	**2 926**	**0.66**	**4 200**	**1.14**	**2 471**	**0.65**	**4 538**	**1.24**

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

No obvious trend can be seen from Figure 1. There seem to be peaks in case numbers every two years (2008, 2010, 2012), but this global impression masks different scenarios in different countries.

Figure 1. Distribution of hantavirus reported infections by month, EU/EEA, 2008–2012



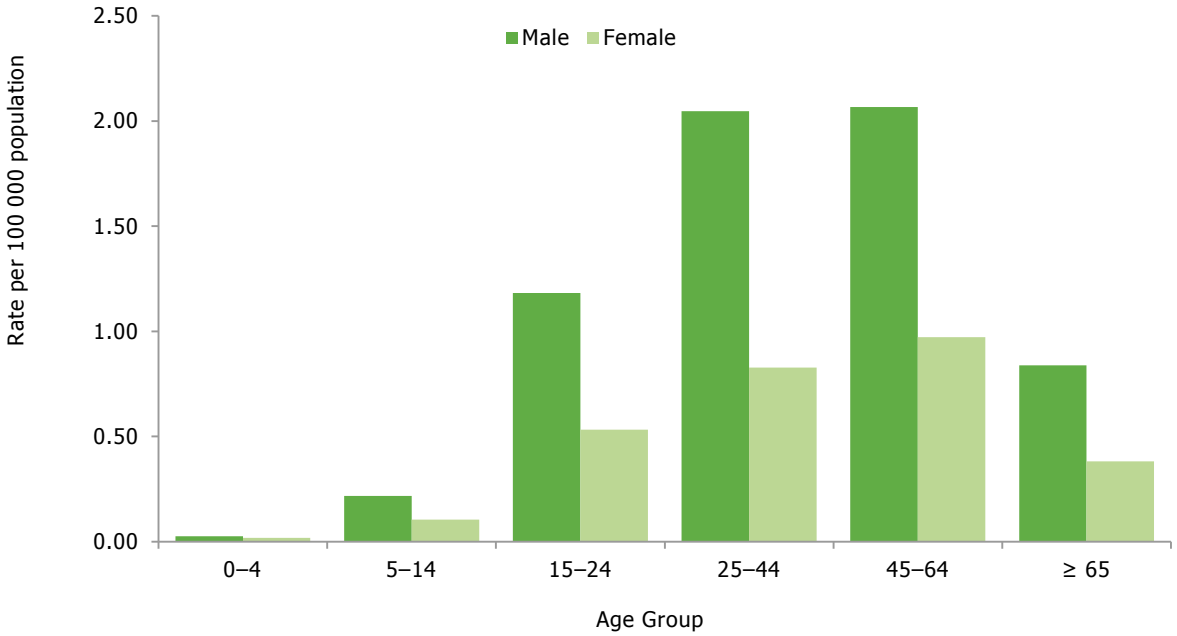
Source: Country reports from Austria, Bulgaria, Estonia, Finland, Germany, Greece, Hungary, Ireland, Lithuania, Malta, Netherlands, Norway, Poland, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Age and gender distribution

Hantavirus infections are predominantly reported in adults, with 78.5 % of cases in the age groups 25–44 and 45–64 years. A few cases are reported in children (1.8 % of the cases) with a confirmed case rate of 0.02 per 100 000 in the 0–4 year age group and 0.16 per 100 000 population for the 5–14 year-olds.

The highest incidence was observed in the 45–64 year old group (1.51 per 100 000 population), followed by 25–44 year-olds (1.44 per 100 000 population). The incidence is higher among males (1.45 per 100 000 population) than females (0.63 per 100 000 population) and the male-to female ratio is 2.29:1. It is the highest male-to female ratio since 2008 (Figure 2).

Figure 2. Rates of hantavirus reported infections by age and gender, EU/EEA, 2012



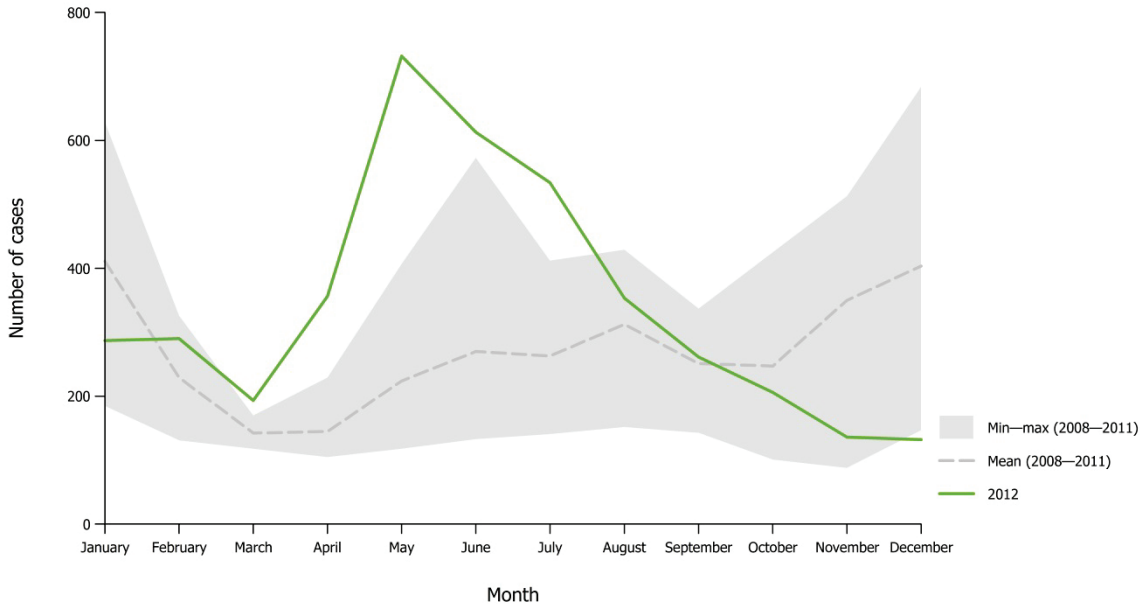
Source: Country reports from Austria, Belgium, Bulgaria, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality

For 2012, cases were reported all year round with an increase in April–August (63% of the cases reported during these five months) peaking in May–July (45% of the cases during these three months). There was an important decrease in the last trimester reaching the 2009 low level of activity in December 2012.

On average, the lowest numbers of cases were reported from February to April. Since 2008 the seasonality shows large variations: peaks occurred in winter in 2008 and 2009 in Nordic countries and in summer in other countries for example in 2010 and 2012.

Figure 3. Distribution of hantavirus reported infections by month in 2012 compared with 2008-2012 data, EU/EEA



Source: Country reports from Austria, Bulgaria, Estonia, Finland, Germany, Greece, Hungary, Ireland, Lithuania, Malta, Netherlands, Norway, Poland, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Discussion

There seems to be large regional differences in the incidence, and the disease is particularly prevalent in Northern Europe (Finland). There are at present no indicators stating whether there is a real increase in hantavirus cases in Europe. Germany experienced another important outbreak in 2012 [1] following low activity in 2011 and an outbreak in 2010. Slovenia reported the highest incidence. Fluctuations in hantavirus epidemiology appear to be driven by changing landscape attributes and climatic parameters allowing increased food availability for rodents, and prolonged virus survival [2]. Another aetiological agent responsible for haemorrhagic fever with renal syndrome is Seoul virus carried by brown rats (*Rattus norvegicus*), which are ubiquitous. Only a few human cases related to Seoul infection have been reported, mostly in Asia. First identification of Seoul virus infection was reported in France in 2012 [3]. Pet rats have also been demonstrated as carriers of Seoul virus and directly linked to one human infection in the United Kingdom. [4-5].

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	-	Co	-	-	-	-	-	-	-	Not specified/unknown
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y	EU-2008
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	Other
Estonia	EE-VHF	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
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	-	Other
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
Ireland	IE-NVRL	V	Co	P	C	Y	N	N	N	Y	Not specified/unknown
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	N	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	Other
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-HANTAVIRUS	V	Co	A	C	Y	N	Y	Y	Y	Other

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Lassa fever (Arenavirus)

- There were no cases of Lassa fever or other arenaviral hemorrhagic fever infections reported in EU and EEA countries during 2012

Lassa fever is an acute viral illness that occurs in West Africa from Guinea to Nigeria. The viral aetiology of the disease was identified in 1969 and the name refers to the place where the cases originated from in Nigeria. The reservoir of Lassa virus is a rodent known as the multimammate rat of the *Mastomys* genus.

Humans become infected through contact with the excreta of infected rats. While about 80% of the infections present no symptoms, the remaining patients develop severe multi-system disease and up to 15% of the hospitalised cases may die. Lassa fever is also associated with occasional epidemics (including nosocomial transmission) during which the case–fatality rate can reach 50%. Early treatment with the antiviral drug ribavirin is effective, and infection is prevented by practising good hygiene.

Epidemiological situation in 2012

No cases of arenavirus infections (Lassa, Machupo, Guanarito, Junin) were reported in the EU in 2012.

Data were obtained from 24 EU/EEA countries. The surveillance is compulsory in 21 EU countries, mostly passive; data reporting is case-based, at the national level. Fourteen EU countries refer to the EU case definition (which is generic for all viral haemorrhagic fevers).

Discussion

Among the arenavirus infections, Lassa fever is the most important disease. It is endemic in several countries in West Africa [1]. In 2011, cases of Lassa fever were identified for the first time in Ghana [2]. In 2012, 1 723 suspected Lassa fever cases including 112 deaths (case-fatality ratio 6.5%) were reported in several states in Nigeria including several fatalities among medical staff[3, 4]. In South America, Venezuela reported an outbreak of Guanarito infection in 2012 [5]; also several cases of Machupo infection were identified in Bolivia and some cases of Junin infection in Argentina. The last imported case of Lassa fever in Europe was reported in the United Kingdom in 2009 [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-FLA_FRA	Cp	Co	P	C	Y	Y	Y	Y	Y	Not specified/unknown
Cyprus	CY-NOTIFIED_DISEASES	-	-	-	-	-	-	-	-	-	Not specified/unknown
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	Other
Estonia	EE-VHF	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-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
Ireland	IE-NVRL	Cp	Co	P	C	Y	Y	Y	N	Y	Not specified/unknown
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	N	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-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	-	EU-2012
United Kingdom	UK-ARENAVIRUSES	V	Co	A	C	Y	N	Y	Y	Y	Other

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Rift Valley Fever

- Two imported cases were reported in the EU and EEA countries during 2012.

Rift Valley fever is an acute viral febrile haemorrhagic disease that affects primarily ruminants in Africa and in the Saudi Arabian peninsula (such as cattle, buffalo, sheep, goats). The disease is caused by a virus from the *Phlebovirus* genus; it occurs in humans in most countries of sub-Saharan Africa up to South Africa, Madagascar, Saudi Arabia and Yemen. Humans may become infected by mosquito bites and through direct or indirect contact with the blood or organs of infected animals. While most human cases are relatively mild (influenza-like illness), a small percentage of patients develop a much more severe form of the disease, with haemorrhagic manifestations, hepatitis and neurological disorders.

Epidemiological situation in 2012

Two imported cases (including one confirmed case) of Rift valley fever were reported in the EU from 20 EU/EEA countries (except Austria, Bulgaria, Cyprus, Denmark, Finland, Ireland, Netherlands, Portugal, Iceland and Liechtenstein who did not report). The surveillance is compulsory in 13 EU countries, mostly passive, data collection is case based, and at the national level. Ten EU/EEA countries refer to the EU case definition (which is generic for all viral haemorrhagic fevers).

The confirmed case was a 53 year-old female reported in April 2012 in France and the probable case was a 54 year-old male notified in October in the United Kingdom. Places of origin of infection of these cases were not reported.

Discussion

Mauritania experienced outbreaks in 2012 with human cases and fatalities [1]. Epizootics occurred there also in 2013, as well as in Senegal, but with no human cases reported.

Rift valley fever is a notifiable disease to the World Organisation for Animal Health (OIE) [2]. Animal movements may contribute to viral spread, threatening countries in the Mediterranean basin and Europe where competent vectors are present [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		
Belgium	BE-FLA_FRA	Cp	Co	P	C	Y	Y	Y	Y	Y	Not specified/unknown
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y	Other
Estonia	EE-VHF	Cp	Co	P	C	Y	Y	Y	Y	Y	EU case definition (legacy/deprecated)
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
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	N	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL-NATIONAL_SURVEILLANCE	-	-	-	-	-	-	-	-	-	Not specified/unknown
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

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		
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	-	EU-2012
United Kingdom	UK-RIFT VALLEY FEVER	V	Co	A	C	Y	N	Y	Y	Y	Other

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West Nile fever

- In 2012, 232 cases of West Nile fever were reported across EU and EEA countries.
- Bulgaria reported autochthonous cases for the first time since 2008.
- In countries with previous case reports, the number of cases was higher in 2012 than in 2011.
- In 2013, the number of cases again increased in previously affected countries, except Greece.
- The implementation of blood donation screening permitted the detection of positive blood donors in Italy and Greece in 2013.

West Nile fever is a disease caused by an arthropod-borne virus (genus *Flavivirus*) whose reservoirs are wild birds and mosquitoes (mainly *Culex* mosquitoes). Transmission to humans occurs primarily through mosquito bites. West Nile fever is endemic in the south-east of Europe. The disease is notifiable at the EU level.

Epidemiological situation in 2012

In 2012, 24 EU/EEA countries reported 232 cases of West Nile fever (119 cases were confirmed), as per the EU case definition (Table 1). Cases were reported from Belgium, Bulgaria, France, Greece, Hungary, Italy, Romania and Sweden. No data were reported from Denmark, Iceland, Germany, Liechtenstein and Portugal. Reporting is compulsory and surveillance comprehensive in most countries, but reporting is voluntary in Austria, Belgium, France and United Kingdom, and the surveillance based on a sentinel system in Belgium and France.

Belgium, France and Sweden reported only imported cases. In addition, two imported case were also reported in Greece.

The overall rate of autochthonous cases was 0.07 per 100 000 population. Of the countries that reported autochthonous cases, the highest case rate was observed in Greece (1.46 per 100 000) and the lowest in Italy (0.05 per 100 000). In Bulgaria, Hungary and Romania the rates were 0.06, 0.17 and 0.08 per 100 000 population, respectively.

There was a large increase in the number of reported autochthonous cases compared with 2011. However, the figures are lower in 2012 than in 2010, showing an irregular trend over time (Figure 1).

In 2012, twenty two cases were reported to have died of West Nile disease: 18 in Greece, two in Italy, one in Romania and an imported case in Belgium (for 30 cases the outcome was unknown). All but one fatality were over 65 years.

Table 1. Number and rates of West Nile fever reported cases, EU/EEA, 2008–2012

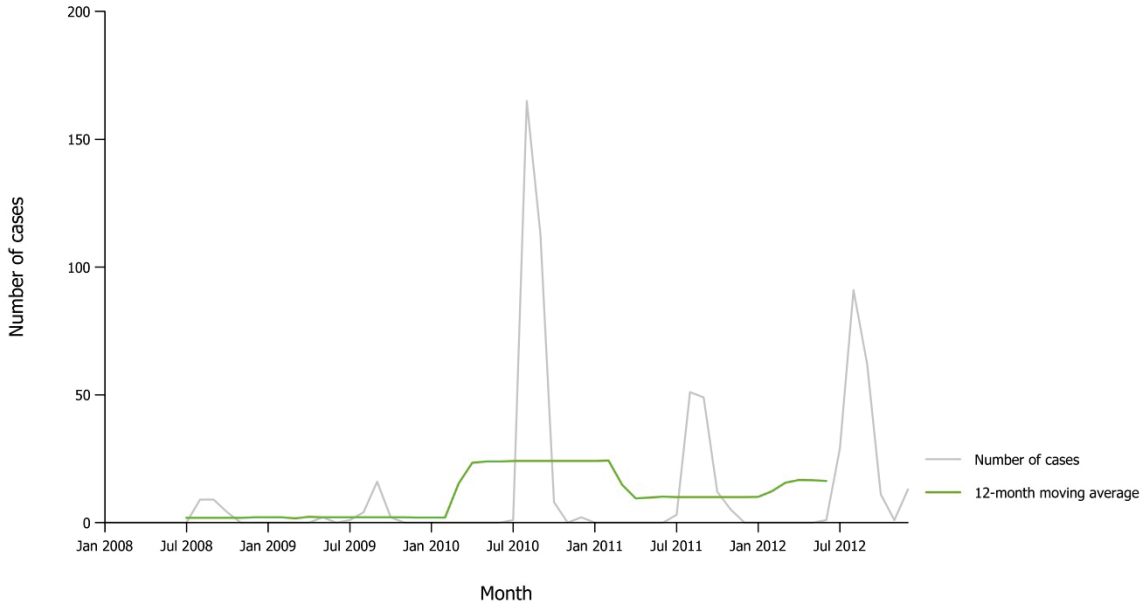
Country	2012						2011		2010		2009		2008	
	National data	Report type	Cases	Rate	ASR*	Confirmed cases	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Belgium	N	C	2	-	-	2	0	-	0	-	0	-	0	-
Bulgaria	Y	A	4	0.06	0.07	4	-	-	-	-	-	-	0	0.00
Cyprus	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
France	N	C	3	-	-	3	1	-	3	-	1	-	0	-
Germany	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	162	1.46	1.34	50	100	0.90	262	2.32	0	0.00	0	0.00
Hungary	Y	C	17	0.17	0.17	17	4	0.04	19	0.19	7	0.07	19	0.19
Ireland	Y	C	0	0.00	0.00	0	1	0.02	0	0.00	0	0.00	0	0.00
Italy	Y	C	28	0.05	0.0	28	14	0.02	5	0.01	18	0.03	3	0.01
Latvia	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0.00	0.00	0	1	0.01	1	0.01	0	0.00	0	0.00
Poland	Y	A	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	15	0.08	0.07	14	11	0.06	57	0.28	2	0.01	2	0.01
Slovakia	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
Spain	Y	C	0	0.00	0.00	0	0	0.00	2	0.00	0	0.00	0	0.00

Country	2012						2011		2010		2009		2008	
	National data	Report type	Cases	Rate	ASR*	Confirmed cases	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Sweden	Y	C	1	0.01	0.01	1	0	0.00	0	0.00	0	0.00	0	0.00
United Kingdom	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
EU Total	**-**	**-**	**232**	**0.07**	**0.07**	**119**	**132**	**0.04**	**349**	**0.11**	**28**	**0.01**	**24**	**0.01**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0.00	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00
EU/EEA Total	**-**	**-**	**232**	**0.07**	**0.07**	**119**	**132**	**0.04**	**349**	**0.11**	**28**	**0.01**	**24**	**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.

Figure 1. Distribution of West Nile fever reported cases by month, EU/EEA, 2008–2012

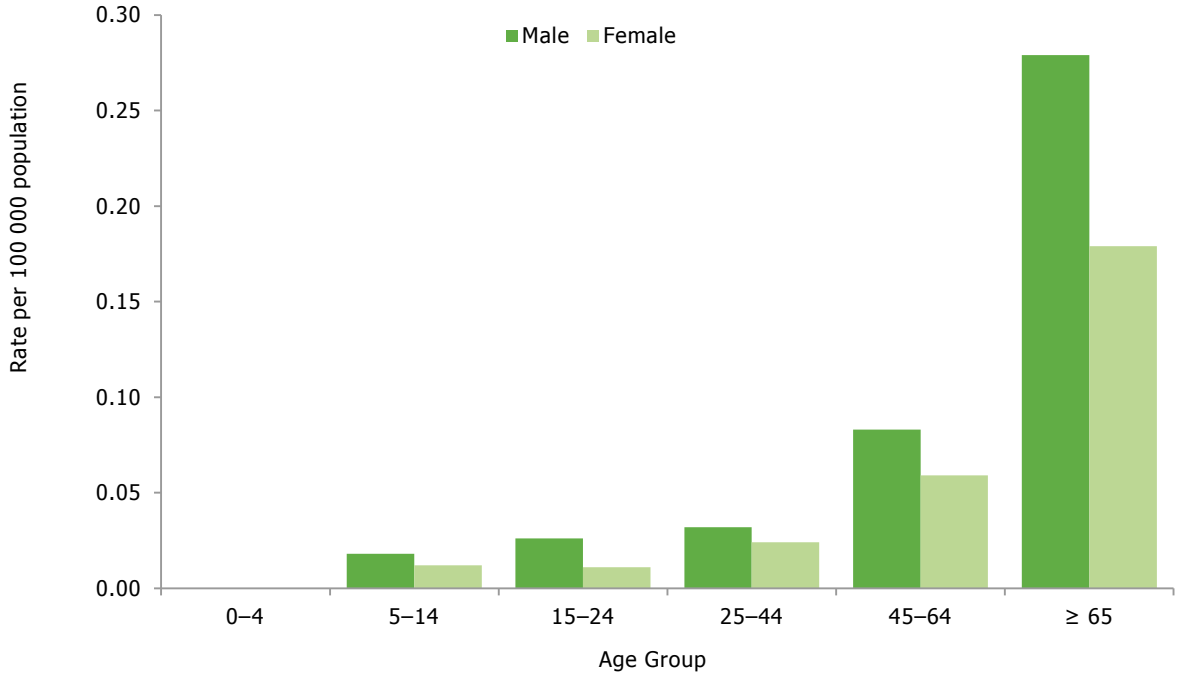


Country reports from Austria, Cyprus, Czech Republic, Estonia, Finland, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Age and gender distribution

The overall rate of West Nile fever cases was slightly higher for men than for women (0.08 and 0.06 per 100 000, respectively), the male-to-female ratio was 1.2:1. As for the previous years, the highest notification rate was reported in the ≥ 65 year-old age group (0.22 cases per 100 000), followed by 45–64 year-olds (0.07 cases per 100 000). Only eight cases (3.5 %) were reported among children under the age of 15 (Figure 2).

Figure 2. Rates of West Nile fever reported cases by age and gender, EU/EEA, 2012

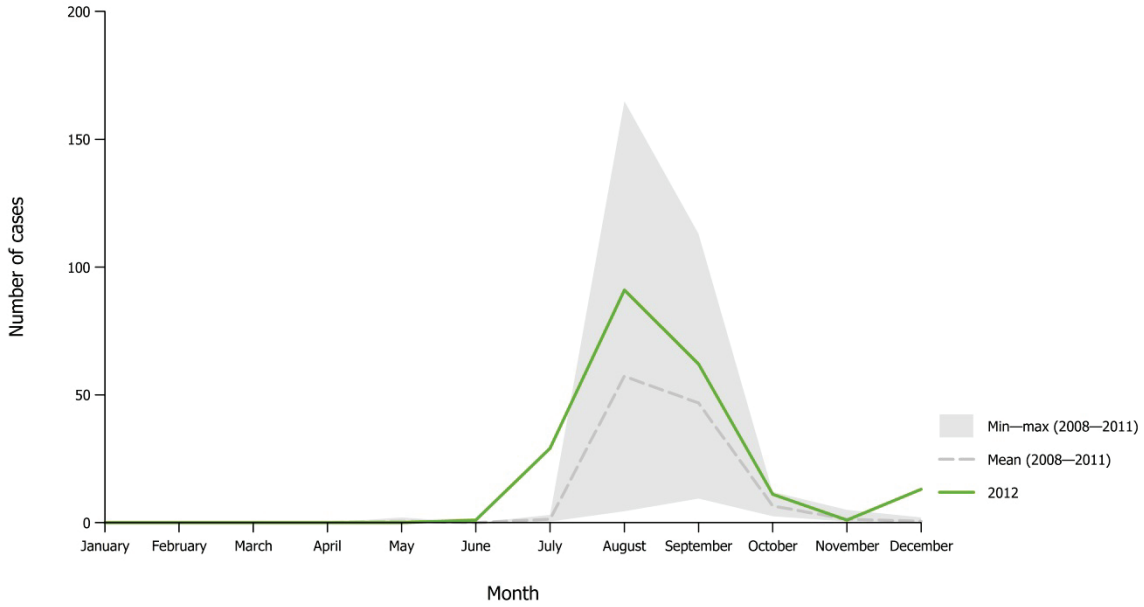


Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Seasonality

As in previous years, most of the West Nile fever cases (170) were reported in August and September. However, the overall period of reporting was longer than in 2011, with cases already reported in May (and a higher number of cases reported in July) and cases reported until December 2012 (Figure 3).

Figure 3. Distribution of West Nile fever reported cases by month in 2012 compared with 2008–2012 data, EU/EEA



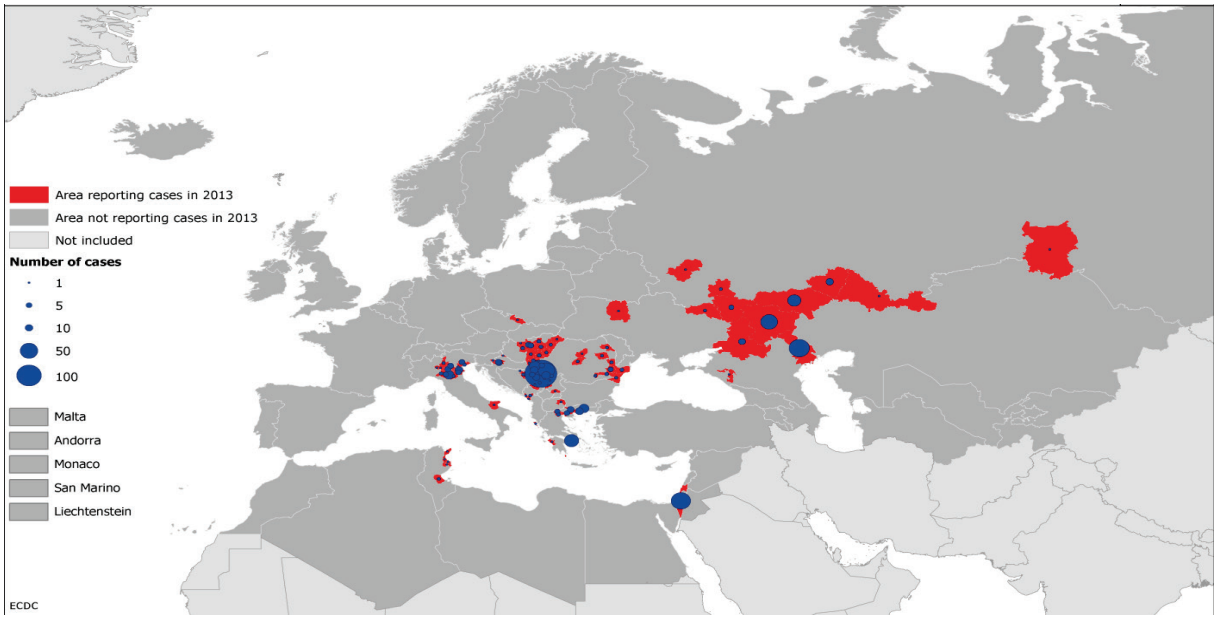
Source: Country reports from Austria, Cyprus, Czech Republic, Estonia, Finland, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Updates from epidemic intelligence in 2013

Between June and November 2013, ECDC monitored the West Nile fever situation during the transmission season in the EU Member States and bordering countries. As of 6 November 2013 (end of season declared by ECDC), 226 autochthonous cases were detected in the EU and 557 in neighbouring countries.

In the EU, countries that have been affected since 2010 have also reported autochthonous cases in 2013: Greece (86), Italy (69), Romania (24) and Hungary (31). In Greece, 51 cases with neuro-invasive infection were detected as well as 35 cases with non neuro-invasive infection, including one case detected through screening of donors' blood. In Italy, 39 cases with neuro-invasive infection and 30 cases of non neuro-invasive infection were detected. The latter cases, despite not being reportable at the national level, were included in the figures for Italy, as they fulfil the criteria of the EU case definition of West Nile fever [1]. In addition, Croatia, who joined the EU in July 2013, reported 16 autochthonous cases. Among countries bordering the EU, affected countries included Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Israel, Montenegro, Russia, Serbia, Tunisia and Ukraine (Figure 4).

Figure 4. Number of West Nile fever reported cases, EU/EEA and neighbouring countries, transmission season 2013



Last update: 05/06/2014

A detailed overview for both the EU and neighbouring countries, including the regional level, is published on the ECDC website [2] with an epidemiological update summarising the West Nile fever season and the last weekly update of the ECDC West Nile map.

Discussion

The disease was first recognised in Europe in the 1960s [3] and re-appeared in 1996, when a large outbreak occurred in Romania [4]. Viruses of lineage 1 were the first identified in Europe but viruses of lineage 2 have also been reported in Europe since 2003 in birds [5] and more recently also in humans [6]. As large populations live in the affected areas, West Nile virus has been recognised as a public health concern in Europe.

In 2012, the number of human cases of West Nile fever was higher than in 2011 and, with the exception of Greece, the figures in 2013 confirm this increase.

The affected EU countries have been reporting cases for several consecutive years and the figures have steadily increased in Italy. Indeed, the affected areas in the north of Italy are some of the most populated. However, provinces in the south of Italy were also afffected in 2012 (Matera) and in 2013 (Foggia) and thus most of the regions should be considered at risk of West Nile transmission. In Greece, cases were reported in 2013 for the fourth consecutive year. Since 2011, the capital, Athens, was also affected, more heavily in 2012 and 2013, whereas new affected areas were recorded each year.

In Romania, cases were reported from counties located in the south-eastern part and the centre of the country, as well as from the capital, Bucharest. In Hungary, cases were reported across the country as in 2012.

In Croatia, it is the second year that cases were reported. In addition, this year, the capital, Zagreb, was affected.

In all affected countries, except Italy, cases were also reported in the capitals, creating a huge concern about safety of blood donation and risk of blood shortage. In addition, the geographic distribution of cases in each country has expanded to new areas both in 2012 and 2013.

In Greece, cases were reported in 2013 for the fourth consecutive year. Since 2011, the capital, Athens, was also affected, more heavily in 2012 and 2013, whereas new affected areas were recorded each year.

Finally, even though no cases were reported from Spain in 2012 and 2013, several outbreaks were reported in horses that affected repeatedly the provinces of Sevilla and Huelva in the south of the country [7]. These provinces are also close to the border of Portugal. Thus the risk of West Nile virus transmission to humans in both countries cannot be excluded.

As for 2011, the increase of case reports in 2012 and 2013 can be partly explained by the substantial efforts made to strengthen the level of detection in the affected countries or in newly affected countries, as soon as the first cases were identified. Health professionals (including blood safety authorities) were alerted at the beginning of the season, as were the stakeholders involved in animal and entomological surveillance.

In Italy, special surveillance for West Nile fever was implemented in all areas previously affected. The systematic nucleic acid screening of tissue and organ donations was also enhanced there in 2013 and carried out between 15 July and 30 November [8].

In Greece, in 2012, the detection of first case infected through blood transfusion immediately triggered the implementation of safety measures to prevent West Nile virus transmission through blood donation. More generally, since the detection of West Nile cases in Greece in 2010, enhanced surveillance of West Nile is implemented for both human and animal infection and measures for the protection of blood safety are implemented in the affected areas during the transmission period. These measures include blood donor deferral, blood screening for WNV-RNA and haemovigilance procedures. The presence of lineages 1 and 2 West Nile viruses in Europe still needs to be monitored in order to better estimate the risk of spread in already affected and in naive areas of Europe [9].

In Greece enhanced surveillance was implemented for WNV human and animal infection. During the WNV transmission periods, measures for the protection of blood safety against WNV infection were implemented in the affected areas, including blood donor deferral, blood screening for WNV-RNA and haemovigilance procedures.

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-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-VHF	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
France	FR-WEST_NILE_VIRUS	V	Se	A	C	Y	Y	Y	Y	Y	EU case definition (legacy/deprecated)
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	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

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		
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-WEST_NILE_FEVER	V	Co	A	C	Y	N	Y	Y	Y	Other

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Yellow fever

- There were no cases of yellow fever reported in EU and EEA countries during 2012.

Yellow fever is a viral infection present in some tropical areas in Africa and in South America, where it may cause large outbreaks. The virus is transmitted by mosquitoes which act as an important reservoir. Monkeys and humans act as amplifying hosts in the sylvatic yellow fever and the urban-yellow fever cycles. Most of the infections in humans are asymptomatic or resulting in a mild illness. However severe cases with high fever and red eyes, accompanied by signs of liver and kidney failure and bleedings (primarily intestinal) may occur with a case-fatality rate up to 50%. No specific therapy is available. The infection can be prevented by immunisation with a live attenuated vaccine.

Epidemiological situation in 2012

No cases of yellow fever have been reported in the EU in 2012.

Data were obtained from 29 EU/EEA countries with the exception of Liechtenstein. The surveillance is compulsory in 28 EU/EEA countries, comprehensive, mostly passive, data reporting is case-based and at the national level. Twenty EU countries refer to the EU case definition.

Discussion

In 2012, several outbreaks were reported in Africa including a large outbreak in Sudan (847 cases from September to December), and another in Chad and one isolated case in Republic of the Congo. In South America several cases were reported in 2012 in Peru, Bolivia, and Ecuador [1, 2].

In 2013 in Africa, outbreaks were reported in Ethiopia, Cameroon, Republic Democratic of Congo and Sudan. Large immunisation campaigns have been initiated in the affected areas [3].

A safe and highly effective live attenuated vaccine which provides immunity to 95% of vaccinated persons for at least 10 years is available. Travellers in endemic countries might get a vaccine prophylaxis registered on card (validity: 10 years) [4].

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-VHF	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-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

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		
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-YELLOW_FEVER	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	Y	Y	Y	N	Y	EU-2008
Sweden	SE-SMINET	Cp	Co	P	C	N	Y	N	N	Y	EU-2012
United Kingdom	UK-YELLOW_FEVER	O	Co	P	C	Y	N	Y	Y	Y	Other

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