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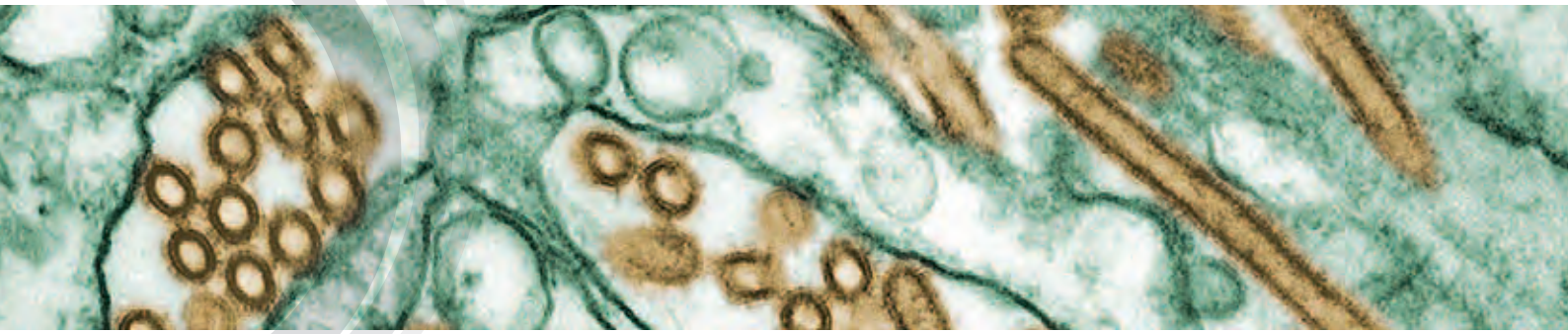
SURVEILLANCE REPORT



Annual epidemiological report

Reporting on 2010 surveillance data and 2011 epidemic intelligence data

2012

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Foreword

This report analyses surveillance data on the key infectious diseases reported in the 27 EU Member States and three European Economic Area countries: Liechtenstein, Iceland and Norway. It is a unique collection of high-quality European data that can help policy makers and public health professionals better understand their adversaries in the battle against infectious diseases.

Comparability of data between countries is not always perfect: there are still significant differences between the countries' surveillance systems. But it has improved steadily since ECDC's first Annual Epidemiological Report was published in 2007. For example, we now have standard European case definitions for all the key diseases covered in this report. There has also been a process of convergence on the public health microbiology tests underlying the data, as ECDC and its partners continue to invest in strengthening laboratory cooperation.

Our success in doing this has been a team effort. ECDC's partners in the European Commission have played a central role in putting the EU case definitions in place and have worked together with us to strengthen laboratory cooperation. The technical expertise of ECDC's Advisory Forum and the guidance of its Management Board have also been of critical importance. Ultimately, though, we rely on the support and cooperation of the dedicated professionals who report and compile the national surveillance data. This report should be seen as a tribute to their hard work. Whether it succeeds in being a good tribute depends, in large part, on how useful the report is for these health professionals and their national policy makers.

So how useful is ECDC's Annual Epidemiological Report? The range of diseases it covers is large. The report already provides data and analysis on more than 50 different diseases and special health issues, and this is set to expand now that tick-borne encephalitis has been added to the list of diseases under EU-wide surveillance.

But what about the timeliness of the data? ECDC's first Annual Epidemiological Report was published in 2007 and presented EU-wide data from 2005. This Annual Epidemiological Report presents surveillance data from 2010, together with updates from epidemic intelligence in 2011. Is this time lag acceptable in our quest for high-quality data with which to guide EU and national-level disease prevention and control programmes? In many EU countries, national surveillance data are available with a time lag of a year, or even less. We need to think about the extent to which EU data, with their longer time lag, are of value in guiding programmes in these countries.

In my job as Director of ECDC, I spend a lot of time talking to experts and managers from the different national public health institutes across the EU. I know that nearly all of our national partners have had their budgets cut, as indeed has ECDC. Everyone is being asked to do the same work with fewer resources. All of us are forced to review our priorities and ask tough questions about the value of our different activities.

In 2013, ECDC's Management Board will approve a Strategic Multi-annual Programme for the period 2014–2020. Dr Denis Coulombier, Head of ECDC's Surveillance and Response Support Unit, is working with our national surveillance focal points on a new long-term vision for EU-level surveillance linked to this new Programme. This involves examining the costs and benefits of our different surveillance activities.

I am convinced there are ways in which we can use new technologies to increase the efficiency and added value of EU-level surveillance. To some extent, it should be possible to do this within existing resources. But we may also need to revisit some fundamental questions concerning the EU surveillance system, such as:

- Do we really need case-based data, reported via ECDC's TESSy database, on all the diseases we currently cover?
- Should ECDC and its national partners prioritise more among the diseases – devoting more effort to some, and maybe less to others? For example, could we consider simpler, less labour-intensive reporting systems for some diseases?
- How much of the data and analysis in this report can really be described as 'information for public health action'?
- Could we increase the impact of our EU level data and analysis if we speeded up the reporting system? What might this cost?
- What are the trade-offs we need to consider between data quality, speed and cost?
- And in the digital world of the 21st century, is a traditional annual report such as this the right way for us to publish our data?

I hope that readers of this report will be among the people who contribute to this debate on the future of EU level surveillance. You are well placed to tell us what we can do better – and also what we should keep the same.

Marc Sprenger
Director

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List of abbreviations and acronyms

AFP	Acute flaccid paralysis
AIDS	Acquired immune deficiency syndrome
AMR	Antimicrobial resistance
ARI	Acute respiratory infection
ATC	Anatomical therapeutical chemical classification
CABG	Coronary artery bypass graft
CCHF	Crimean–Congo haemorrhagic fever
CHOL	Cholecystectomy
CJD	Creutzfeldt–Jakob disease
COLO	Colon surgery
CRI	Congenital rubella infection
CSEC	Caesarean section
CT	Contact tracing
DDD	Defined daily dose
DSN	Dedicated Surveillance Network
EARS-Net	European Antimicrobial Resistance Surveillance Network
ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EFSA	European Food Safety Authority
EFTA	European Free Trade Association
ELDSNet	European Legionnaire's Disease Surveillance Network
EMA	European Medicines Agency
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
EPIET	European Programme on Intervention Epidemiology Training
EPIS	Epidemic Intelligence Information System
ESAC	European Surveillance of Antimicrobial Consumption
EU	European Union
Euro-GASP	European Gonococcal Antimicrobial Susceptibility Surveillance Programme
EUROPOL	European Police Office
EuroTB	Surveillance of Tuberculosis in Europe
EUVAC.NET	Surveillance Community Network for Vaccine-Preventable Infectious Diseases
EVD	Emerging and vector-borne diseases
EWGLINET	European Working Group on *Legionella* Infections
EWRS	Early Warning and Response System
FWD	Food- and waterborne diseases
HAI	Healthcare-associated infections
HELICS	Hospitals in Europe Link for Infection Control through Surveillance
Hib	*Haemophilus influenzae* type b
HIV	Human immunodeficiency virus
HPAI	Highly pathogenic avian influenza
HPRO	Hip prosthesis
HUS	Haemolytic uremic syndrome
ICU	Intensive care units
IDU	Injecting drug users
IHR	International Health Regulations
ILI	Influenza-like illness
IPD	Invasive pneumococcal disease
KPRO	Knee prosthesis
LAM	Laminectomy
LB	Lyme borreliosis
LGV	Lymphogranuloma venereum
LPAI	Low pathogenic avian influenza
MDR	Multidrug resistance
MMR	Measles-mumps-rubella vaccine
MRSA	Meticillin-resistant *Staphylococcus aureus*
MSM	Men who have sex with men

RASFF	Rapid Alert System for Food and Feed
RRA	Rapid risk assessments
RVF	Rift Valley fever
SARI	Severe acute respiratory infection
SARS	Severe acute respiratory syndrome
SARS-CoV	SARS-associated corona virus
SSI	Surgical site infection
STEC	Shigatoxin-producing *Escherichia coli*
STI	Sexually transmitted infection
TALD	Travel-associated Legionnaires' disease
TB	Tuberculosis
TBE	Tick-borne encephalitis
TESSy	The European Surveillance System
TOM	Treatment outcome monitoring
TTT	Threat Tracking Tool
UI	Urgent inquiries
vCJD	Variant Creutzfeldt–Jakob disease
VHF	Viral haemorrhagic fevers
VPD	Vaccine-preventable disease
VTEC	Verocytotoxin-producing *Escherichia coli*
WHO	World Health Organization
WNV	West Nile virus
XDR	Extensively drug resistant

Country codes

AT Austria
BE Belgium
BG Bulgaria
CY Cyprus
CZ Czech Republic
DE Germany
DK Denmark
EE Estonia
EL Greece
ES Spain
FI Finland
FR France
HU Hungary
IE Ireland
IS Iceland
IT Italy
LT Lithuania
LU Luxembourg
LV Latvia
MT Malta
NL The Netherlands
NO Norway
PL Poland
PT Portugal
RO Romania
SE Sweden
SI Slovenia
SK Slovakia
UK United Kingdom

Summary

Summary

This report presents the analysis of surveillance data reported for 2010 by the 27 EU Member States and three EEA countries as well as an analysis of communicable disease threats detected in 2011. It is intended primarily for policymakers, health service leaders, epidemiologists and researchers, and also for the wider public. It aims to provide an overview of the epidemiological situation in the European Union relating to communicable diseases of public health importance. The report also indicates areas where a continued or increased public health response may be required in order to decrease the burden of these diseases.

Although the quality and comparability of data reported to European level continues to improve, the reader is still cautioned against making direct comparisons of the presented data between countries. Health and surveillance systems differ widely, and the relationship between reported case rates and actual occurrence varies between countries for many diseases.

Respiratory tract infections

The winter of 2010–11 was the first influenza season after the pandemic of 2009. The pandemic virus (influenza A(H1N1)pdm09) continued to circulate widely and was the dominant type A virus in Europe, co-circulating with an increasing proportion of type B viruses at the end of the season. Similar to the last interpandemic period (1970 to 2008), the 2010–11 season showed a clear west-to-east progression of the national epidemics, which facilitated producing the annual seasonal risk assessment.

Nine countries reported hospitalised laboratory-confirmed influenza cases: 91.4% were infected by type A and 8.6% by type B. The vast majority of sub-typed influenza A viruses (99.2%) were A(H1)pdm09 viruses. In patients with available information, 27.5% of hospitalised patients had no underlying conditions. As during the pandemic season (2009–10), young and middle aged adults infected with the pandemic strain often required intensive care, putting the health systems of some countries under pressure, despite an overall influenza circulation of mild intensity.

The circulating viruses showed very little antigenic drift during 2010–11 and remained well matched to the seasonal influenza vaccine, with moderate observed vaccine effectiveness. Unlike before the pandemic, there was little observed of resistance to oseltamivir in the circulating A(H1N1) viruses, and no resistance to zanamivir was detected.

Avian influenza epidemiology in the EU/EEA countries in 2010 was unremarkable; three outbreaks of highly pathogenic avian influenza (HPAI) and 13 of low pathogenic avian influenza (LPAI) were detected. No human cases of avian influenza were reported in Europe.

One consistent lesson from reviews of the European pandemic influenza experience is the need to strengthen routine seasonal influenza surveillance in hospitals and its coordination at European level. Systems for surveillance that are working well can be adapted for pandemic situations; they cannot readily be developed de novo during a public health emergency. There is a continuing need to increase influenza vaccine uptake and to improve surveillance for development of resistance to antiviral drugs. Surveillance systems for influenza in animals, particularly in poultry and pigs, need to be further developed.

Tuberculosis

Tuberculosis (TB) remains a common infection causing an important disease burden, with more than 70 000 cases still notified annually in EU/EEA countries. The reported overall TB rate continues to decline at about 4% per year. The epidemiology continues to be characterised by both high-incidence countries reporting a steady decline in rates, and low-incidence countries reporting increasing numbers of cases in individuals born outside the reporting country. The proportion of reported TB cases with HIV co-infection (6%) continues to decline. The rate of bacteriologically confirmed cases (61%) and successfully treated cases (79%) remain below European targets. The proportion of multidrug-resistant tuberculosis (MDR TB) cases in 2010 was 4.6% and thus slightly lower than 2009. However, an increased number of these cases were characterised as extensively drug-resistant TB (13%).

The timeliness and completeness of case detection remains a priority, with a particular need to increase the early detection and treatment of multidrug-resistant cases. The sensitivity and quality of TB surveillance systems need continuing improvement, including better linkage between laboratory and physician reporting. TB is more prevalent among disadvantaged and marginalised groups, including migrants, the homeless, poor people in inner cities, prisoners, people infected with HIV, and drug users; more attention needs to be given to surveillance, early detection and effective treatment of TB among these groups.

HIV, sexually transmitted infections, hepatitis B and C

HIV infection remains one of the major public health problems in EU/EEA countries. The total number of new cases has stabilised at around 28 000 cases annually, although the epidemiology in population risk groups differs between countries. Men who have sex with men comprised the largest group of cases (38%), followed by those who acquired the virus through heterosexual contact in Europe (24%), and injecting drug users (4%). Mother-to-child transmission, nosocomial infection, transfusion or other blood products accounted for one per cent of cases.

Cases in men who have sex with men have increased by 39% between 2004 and 2010; cases acquired by heterosexual transmission have remained relatively stable, while cases in the other risk groups have continued to

decline. However, both Greece and Romania reported large increases in HIV among injecting drug users in 2011. The number of AIDS diagnoses reported annually decreased by one half between 2004 and 2010. The number of persons living with HIV is continuously increasing, reflecting improvements in access to treatment and care.

Chlamydia is the most frequently reported sexually transmitted infection in EU/EEA countries, with over 340000 cases reported in 2010. Reported rates have more than doubled over the past 10 years, reflecting in part measures taken by Member States to improve diagnosis and reporting of the infection, including active case finding. Comprehensive control programmes, targeted particularly at teenagers and young adults, are needed to reduce the burden of this infection in Europe. Reported rates for gonorrhoea and syphilis are relatively stable, but rates and trends vary greatly by country. Increasing resistance to the antibiotics currently used for gonorrhoea treatment is an emerging public health issue. Several countries report large increases in syphilis rates associated with cases among men who have sex with men.

Surveillance for Hepatitis B and C in the EU is undergoing revision, with enhanced European surveillance introduced in 2010; the trends in epidemiology are therefore tentative.

Food- and waterborne diseases

Campylobacter infections are the most frequently reported gastrointestinal infections in EU/EEA countries. Reported rates are increasing; most cases are sporadic, with high seasonal peaks in summer, but multinational outbreaks are infrequent. Poultry meat is considered the most important food-borne source, explaining about 20–30% of human *Campylobacter* cases.

Salmonella infection remained the second most commonly identified gastrointestinal disease across the EU. The reported incidence of *Salmonella* infection has been declining steadily since 2004, partly due to EU control programmes in poultry farms. However, *Salmonella* continues to be the source of many outbreaks, both within and between countries: four multinational outbreaks were identified in 2011.

Parasitic diseases such as cryptosporidiosis and giardiasis, are relatively common causes of gastrointestinal infection in Europe, but are subject to underdiagnosis and underreporting. They are often associated with failure of water supply treatment, illustrated by the large *Cryptosporidium* outbreak in Östersund in Sweden in 2010–11.

Legionnaires' disease case rates increased by 17% in 2010. It is also likely an underreported disease in several Member States. Over 800 travel-associated cases were reported, and one hundred clusters of travel-related cases detected. Half of these cases would most likely not have been detected without European-level, real-time surveillance.

The largest reported outbreak of Shiga toxin-producing *Escherichia coli* infection (STEC) occurred in Germany in 2011, due to a novel type of STEC O104:H4, and was related to the consumption of contaminated sprouts. The outbreak highlights the need for control measures to ensure microbial safety of raw food and careful food hygiene in handling ready-to-eat food. It also emphasises the need for rapid and efficient communication between health and food safety authorities, both within and between countries. The more usual STEC strains continued to cause many outbreaks across Europe.

A number of gastrointestinal infections are common only in certain countries and regions within the EU. Brucellosis was reported mainly from Portugal, Spain and Greece, associated primarily with goat farming activities; most trichinellosis cases were reported from Bulgaria, Romania and Lithuania, which may be associated with consumption of meat from domestically reared pigs and wild boar; most echinococcosis cases were reported from Bulgaria. Yersiniosis is declining, but case rates remain relatively high in Nordic countries, Germany, the Czech Republic and Slovakia; infection is often associated with pork consumption. Hepatitis A case rates remain relatively high in Latvia, the Czech Republic, Slovakia, Romania and Bulgaria. Typhoid and paratyphoid fever, as well as cholera are uncommon diseases in EU/EEA countries, reflecting patterns of travel to countries where these diseases are endemic.

Emerging and vector borne diseases

Vector-borne diseases remain a significant burden for Member States, partly through infected travellers returning from countries where some of these diseases are endemic, in particular malaria, dengue fever and chikungunya. Malaria rates remain stable, while reported rates for dengue fever and chikungunya are increasing. There is also an apparently increasing risk in some EU countries of locally acquiring these diseases previously only considered to be imported.

Spain, Belgium and Greece reported indigenous cases of malaria in 2010, and a malaria outbreak occurred in Greece in 2011. Two indigenous cases of dengue fever and two of chikungunya were reported from France in 2010. West Nile fever re-emerged in Greece in 2010 and is becoming more established in south-eastern Member States and in neighbouring countries, where it must now be considered as endemic, with 200 confirmed EU cases reported in 2010. Some of this increase is due to improved surveillance.

Q fever case rates continue to decline, primarily due to the resolution (2011) of the national outbreak in the Netherlands. Because of its non-specific clinical features, Q fever is an underdiagnosed disease; it is also not reported by some countries. Hantavirus infections remain the most commonly reported of the viral haemorrhagic fevers, with the highest rates reported from Finland. Other forms of viral haemorrhagic fever were

reported rarely (as sporadic imported cases), or not at all. No cases of plague, smallpox, SARS or yellow fever were reported by Member States in 2010 or 2011.

Coordinated and enhanced human, veterinary, entomological and environmental surveillance is needed in all Member States at risk of these diseases, together with the development of effective countermeasures.

Vaccine-preventable diseases

Measles epidemiology in the EU continues to deteriorate. In 2010, a national outbreak in Bulgaria accounted for the majority of confirmed cases; in 2011, large increases in cases and outbreaks were reported by several EU countries. The commitment to eliminate indigenous measles and rubella was renewed for 2015, but will not be achieved unless effective interventions to increase vaccine coverage are achieved by several Member States.

Most other vaccine-preventable diseases continued to show either a declining or stable trend in reported incidence of confirmed cases. Among the primary vaccine schedule diseases, diphtheria cases remain rare, confined to a few cases in four countries. Isolated tetanus cases were reported from a few countries; Italy was an exception with 57 cases reported. No cases of polio were reported in 2010.

Invasive bacterial diseases (*Neisseria meningiditis* and *Haemophilus influenzae*) remained uncommon and stable in trend, reflecting gains from previous vaccine introduction. Meningococcal case fatality and disability rates continue to be substantial. There appear to be no significant shifts in serotype due to vaccine introduction. Invasive pneumococcal disease is somewhat more frequently reported, but surveillance systems for this disease are heterogeneous and not universal across Europe.

Mumps case rates appear to be declining from the reported peak in 2010. Confirmed rubella case rates again decreased in 2010, but the burden of disease is hard to assess due to variations in surveillance systems and reporting, and particularly low rates of laboratory confirmation. Pertussis remains a relatively common and underdiagnosed infection. Increasing numbers of cases are reported among older children, adolescents, and adults, pointing at a risk of infection for vulnerable younger children.

Antimicrobial resistance and healthcare-associated infections

Antimicrobial resistance in Europe continues to increase, especially in Gram-negative pathogens, while the situation appears more stable for Gram-positive pathogens. The recent increase in antimicrobial resistance observed in *Escherichia coli* and *Klebsiella pneumoniae* continued in 2010, associated in particular with occurrence of extended-spectrum β-lactamase (ESBL)-producing, and multidrug-resistant, strains. In contrast, the percentage of meticillin-resistant *Staphylococcus aureus* (MRSA) appears stable and is decreasing in some countries. However, MRSA remains a public health priority, as the percentage of MRSA remains high in several countries, especially in southern Europe.

In recent years there has been increasing occurrence and spread in Europe of *Enterobacteriaceae* (including *E. coli* and *K. pneumoniae*) that are resistant to carbapenems. Few antibiotics are available for treatment of infections caused by these organisms. New variants of these carbapenemase-producing *Enterobacteriaceae* (CPE) are also being seen more frequently, causing both local outbreaks and country-wide epidemics in healthcare facilities in several European countries, with several examples of cross-border transfer and secondary transmission in healthcare facilities. ECDC issued several risk assessments relating to CPE in 2011.

In order to assess and follow-up the disease burden relating to healthcare-associated infections (HAI) across Europe, ECDC developed protocols for repeated point prevalence surveys (PPS) of HAI and antimicrobial use in acute-care hospitals and long-term care facilities. The hospital protocol was piloted in 2010 and found a prevalence of HAI of 7.1% in 66 hospitals from 23 countries. A first EU-wide point prevalence survey in long-term care facilities estimated that at least 2.6 million cases of HAI occur annually in long-term care facilities, in addition to ECDC's earlier estimate of 4.1 million patients acquiring an HAI in acute-care hospitals. The sustained decrease of the incidence of surgical site infections following hip prosthesis surgery since 2004 confirmed the importance of surveillance as a tool for prevention of HAI in hospitals.

The median consumption of antibacterials ('antibiotics') for systemic use in the community (i.e. outside hospitals) was 18.3 defined daily doses (DDD) per 1000 inhabitants per day, ranging from 11.1 (Estonia) to 39.4 (Greece). Consumption of antibacterials in the hospital sector ranged from 1.1 (the Netherlands) to 3.0 (Latvia) DDD per 1000 inhabitants per day.

The public health problem of antimicrobial resistance requires international cooperation as well as increased efforts at national level. Continued progress is needed on prudent use of antibiotics in community and hospital settings, and for the implementation of improved integrated programmes for the prevention and control of antibiotic-resistant bacteria and HAI. Participation of hospitals in the European surveillance network can add additional impetus to hospital-based surveillance programmes.

Surveillance challenges

A number of diseases remain particularly liable to underdiagnosis and underreporting, complicating efforts to

understand their burden and develop appropriate public health interventions. These include parasitic diarrhoeal diseases, such as giardiasis and cryptosporidiosis, for which laboratory diagnostic services are not routinely available in a number of Member States. Meanwhile, some diseases are still not being routinely reported (or under surveillance) by some Member States. These include several that are responsible for a considerable burden of infection, ranging from campylobacteriosis and pertussis to gonorrhoea and malaria. For other diseases, reporting cases according to the agreed EU case definitions remains a significant challenge for some Member States.

Event surveillance at national and European level continues to be a critical means for the rapid detection and control of communicable diseases in the EU. ECDC continues to develop its epidemic intelligence and threat assessment tools and procedures. The rapid and appropriate use of EWRS and dedicated information networks by Member States remains a cornerstone of this activity (see Chapter 3).

1 Introduction

1.1 A note to the reader

The Annual Epidemiological Report 2012 gives an overview of the epidemiology of communicable diseases of public health significance in Europe, drawn from surveillance information on the 47 communicable diseases and two health issues for which surveillance is mandatory in the European Union (EU) and European Economic Area (EEA) countries[i,ii].

This surveillance report is produced annually and is intended for policymakers and health sector leaders, epidemiologists, scientists and the wider public. It is hoped that readers will find this compilation a useful one-volume 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 2010, submitted by Member States to the European Surveillance System as well as data and reports produced by dedicated surveillance networks (DSNs) not at that time integrated into ECDC.

The report gives an outline descriptive of the epidemiology for each disease, in a standard format, covering the years 2006–2010. In addition, updates from epidemic intelligence in relation to emerging public health threats for 2011 are given, by disease as relevant, and in a dedicated section (Chapter 3). 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[iii], 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, being a complex mix of healthcare-seeking behaviour, access to health services, availability of diagnostic tests, reporting practices by doctors and others, and the operation of the surveillance system itself.

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

Each Annual Report continues to evidence the 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 ideal, 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 2010 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. ECDC is working with Member States to harmonise surveillance processes in order to minimise these differences in future.

1.2 Structure of the report

This report is set out as follows:

- The *Summary* gives a brief overview of the main findings from the disease-specific chapters.
- *Chapter 1* outlines the methods used for receiving, validating and analysing surveillance data from the 27 EU Member States and three EEA countries, including discussion of the value and limitations of the present surveillance information.
- *Chapter 2* gives an overview of the epidemiological situation in 2010 for each of the 47 communicable diseases and two health issues under mandatory surveillance within the EU, with updates from epidemic intelligence for 2011 as relevant.
- *Chapter 3* gives an overview of the threats monitored through epidemic intelligence during 2011, with emphasis on some threats of particular interest either because of their public health importance or unusual or new epidemiological patterns.

i Commission Decisions 2000/96/EC, 2003/534/EC and 2007/875/EC.

ii 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. 1998, Official Journal of the European Union. p. L 268.

iii 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.

1.3 Description of methods

Data sources: indicator 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 occurrence of cases of the 47 communicable diseases and two health issues under mandatory EU-wide surveillance[I]. Reports are sent according to case definitions established by the EU[IV].

Data upload by Member States occurs continually throughout the year. In conjunction with annual ECDC reports for particular diseases or disease groups, and this overall 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 case definitions for the diseases as determined by the Commission[IV]. It also defines the information items to be included with each case report. Most data is submitted as anonymised individual case data, but aggregated data is 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. Automatic validation by the TESSy system and additional data validation are conducted by ECDC staff, in liaison with designated disease experts and epidemiologists in 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.

For the present report, data were drawn from:

- data submitted in response to data calls by ECDC Disease Programmes for annual reports on the enhanced surveillance of specific diseases/disease groups; and
- data from European disease networks not integrated into ECDC in 2010: this included data relating to variant Creutzfeldt–Jakob disease (EuroCJD), diphtheria (DIPNET), measles, mumps, pertussis and rubella (EUVAC.NET), and data on antimicrobial use in the EU (ESAC).

For all other diseases, a data call was issued specifically for this report. During this data call, Member States could also upload updated data for diseases that had been previously reported to either ECDC or EUVAC.NET.

Data sources: event surveillance

Chapter 3 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 TTT in June 2005 until the end of 2011; EWRS entries are covered from January 2005 up to year-end 2011.

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 threat assessment of the situation.
- There is a documented failure in an effective control measure (vaccination, treatment or diagnosis).
- There is a documented change in the clinical/epidemiological pattern of the disease, including changes in disease severity, the way 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 has been amended, and criteria now include both IHR

iv Commission Decision 2002/253/EC.

notifications and the need to exchange details following contact tracing[v].

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. 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 is obtained from Eurostat[vi]. Data for overall calculations are extracted from the Eurostat database 'Demographic balance and crude rates' (DEMO_GIND). The population as of 1 January of each year is used. Totals per year and per country are available for all countries for 2010. 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.

v 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.

vi Eurostat is the statistical office of the European Union.

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 2006–10, age- and gender-specific rates, and occurrence by month ('seasonality'), if relevant. Additional graphs, figures and maps are used where necessary to illustrate other important aspects of the disease epidemiology in the EU and EEA.

Summary table

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

This table presents an overview of the number and rates (crude and age-standardised) of confirmed cases reported by the Member States surveillance systems for the period 2006–10. The total number of reported cases (independent of case classification) for 2010 is also shown.

Confirmed case rates ('crude rates') are given per 100 000 persons (the number of reported confirmed cases divided by the official 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 are also given where the EU/EEA rate exceeds 1/100 000 population. Crude rates can be misleading if comparisons are made across countries which differ with respect to certain underlying population characteristics such as age. Age-standardised rates (ASR) are calculated to facilitate comparisons between countries.

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 age-group specific rate for 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 27 Members

States structure for the period 2000–2010 (Table). This standard population was defined to reflect the current age structure of Europe.

Table. Standard population by age

Age group	Standard population
<5	25 511 619
05–14	54 360 128
15–24	62 554 451
25–44	143 870 299
45–64	123 751 489
≥65	81 297 013
Total	**491 344 999**

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, 2006–10, for the EU/EEA is presented as a figure. The figure also shows a centred 12-month moving average to show the overall trend without the effect of seasonal fluctuations.
- **Age- and gender-specific rates for confirmed cases.** Age- and gender-specific rates for the EU/EEA Member States are presented (as the rates 'per 100 000'). 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 an underestimate. 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 2010, compared with the maximum and minimum case numbers observed for each month for the period 2006–09. 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 is 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.

2 Epidemiology of communicable diseases in Europe, 2010

This chapter is sub-divided into the following main disease groups:

2.1 Respiratory tract infections
Seasonal/pandemic influenza and human infection with animal influenza viruses, tuberculosis.

2.2 STI, including HIV and blood-borne viruses
Chlamydia trachomatis infection, gonorrhoea, hepatitis B, hepatitis C, HIV and syphilis.

2.3 Food- and waterborne diseases and zoonoses
Anthrax, botulism, brucellosis, campylobacteriosis, cholera, cryptosporidiosis, echinococcosis, infection with VTEC/STEC, giardiasis, hepatitis A, Legionnaires' disease, leptospirosis, listeriosis, salmonellosis, shigellosis, toxoplasmosis, trichinellosis, tularaemia, typhoid/paratyphoid, variant Creutzfeldt–Jakob disease and yersiniosis.

2.4 Emerging and vector-borne diseases
Malaria, plague, Q fever, SARS, smallpox, viral haemorrhagic fevers (including hantavirus, Crimean–Congo haemorrhagic fever, dengue fever, Rift Valley fever, Marburg and Ebola virus, Lassa fever and chikungunya), West Nile fever and yellow fever.

2.5 Vaccine-preventable diseases
Diphtheria, invasive *haemophilus influenzae* disease, invasive meningococcal disease, invasive pneumococcal disease, measles, mumps, pertussis, poliomyelitis, rabies, rubella and tetanus.

2.6 Antimicrobial resistant pathogens and healthcare-associated infections
Antimicrobial resistance, antimicrobial use and healthcare-associated infections.

For more general information about each communicable disease please refer to *Health Topics A–Z* on the ECDC website at www.ecdc.europa.eu.

An alphabetical list of diseases and special health issues is given overleaf, for ease of reference.

Alphabetical list of diseases and special health issues

2.1 Respiratory tract infections

Influenza

- The 2010–11 influenza season in Europe was epidemiologically important as it was the first after the 2009 pandemic and could therefore be expected to give some indication of the characteristics of the new interpandemic (seasonal) influenza.
- The season began in early December 2010 and was largely over by the end of March 2011. The west-to-east progression was similar to the one seen in a number of earlier seasons and the pandemic.
- Influenza A(H1N1)pdm09 was by far the most commonly detected virus, with influenza type B co-circulating throughout most of the season.
- Children featured commonly among those presenting to primary care. The A(H1N1)pdm09 virus affected the same age groups and produced the same pattern of clinical severity as during the pandemic. Adults under 65 years of age accounted for most cases of severe disease diagnosed and reported with influenza. Most of them had underlying medical conditions, although a significant number of cases did not. This was in contrast to the last interpandemic period when most severe and fatal cases occurred in people aged 65 years and older with underlying conditions.
- A few countries, notably Greece, Ireland and the UK, reported a winter period that was more severe in terms of pressure on some hospitals (and especially intensive care units) than during the 2009–10 pandemic winter.
- More than 95% of viruses detected in Europe were antigenically similar to those included in the seasonal trivalent influenza vaccine. Observed adjusted vaccine effectiveness was 56% (95% CI 34–71%) overall in the target groups for seasonal immunisation.
- Antiviral resistance to oseltamivir in influenza A(H1N1)pdm09 was rare, and most cases of resistance were reported in people with severe conditions on antiviral therapy. However, some cases of resistance were associated with the H275Y substitution in the virus neuraminidase and had no history of exposure to antiviral medications, indicating low-level community transmission of resistant viruses.

Influenza is an acute respiratory disease caused by human influenza viruses. While most cases recover quickly, regular seasonal epidemics of influenza in Europe bring about substantial amounts of severe illness and deaths, particularly among older persons and those with underlying medical conditions. In addition, the large amount of milder and more moderate disease results in substantial social and economic burdens and pressure on health services.

Type A viruses cause the most severe disease and are associated with epidemics and pandemics, but B viruses also contribute to the annual epidemics. Continuing changes in the genetic makeup of influenza viruses lead to the development of virus strains that escape prior human immunity and consequently are more effective in causing epidemics. Occasionally, novel strains develop to which many humans have little or no immunity, and worldwide pandemics occur, as happened last in 2009–10.

Epidemiological situation (week 40/2010–week 20/2011)

Substantial transmission of influenza in the 2010–11 season in Europe started around week 50/2010 when four countries reported medium intensity. It lasted for a median of 10 weeks (range 2–13) in each affected country; the season ended around week 13/2011, after which no country reported medium or higher intensity (Figure 2.1.1).

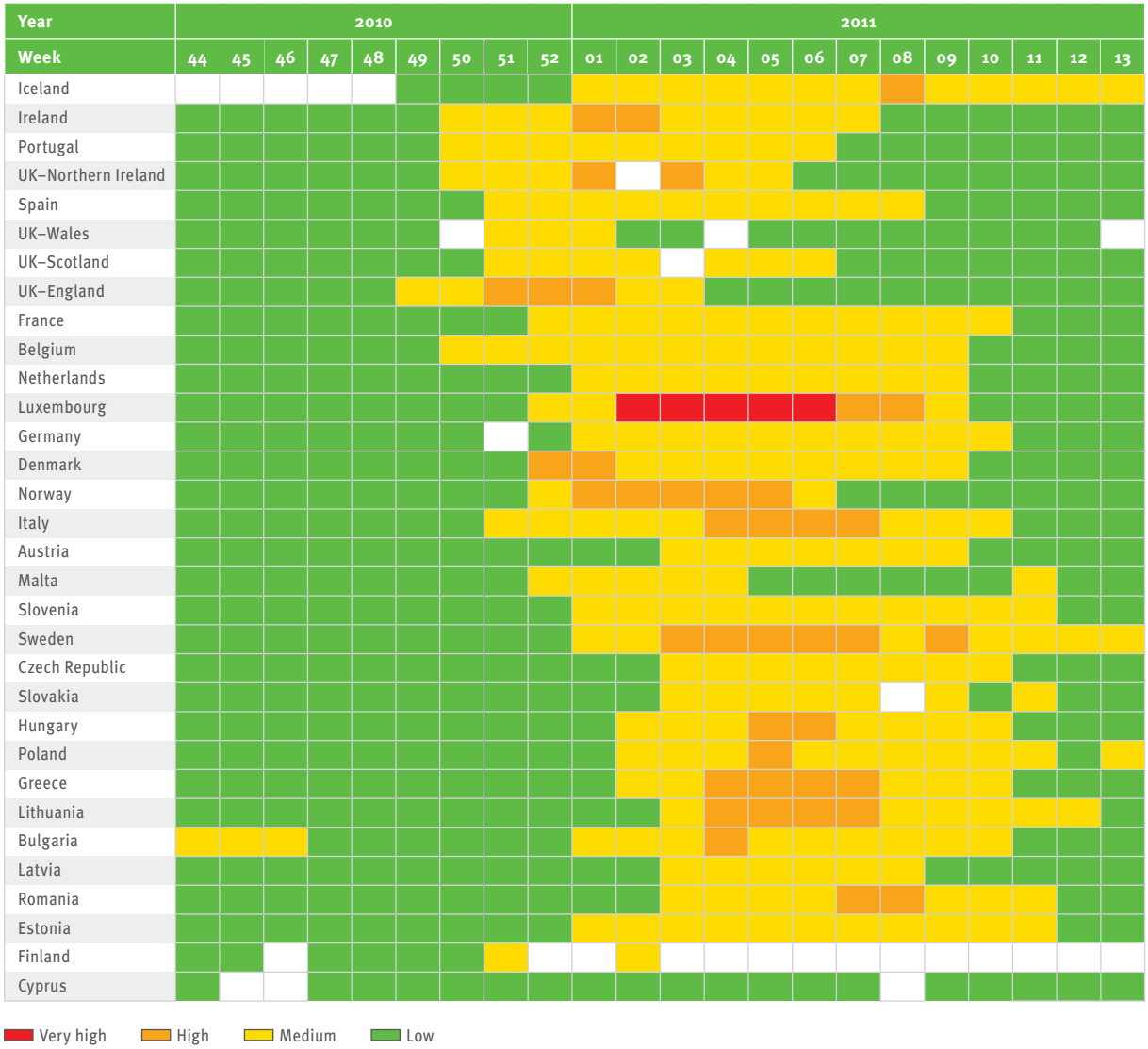
As with many previous influenza seasons in Europe, and during the 2009–10 pandemic, there was a progression of national epidemics from west to east during the 2010–11 season (Figure 2.1.1)[1,2]. Of the 28 countries uploading weekly clinical influenza data during 2010–11, only one country reported very high intensity, in contrast to nine countries during the previous pandemic year (2009–10).

High intensity was reported by 14 countries. ECDC published an early risk assessment in January 2011[3].

Age group-specific ILI and/or ARI rates among those seeking care were reported by 22 countries. In 20 of them, the group with the most reported infections was children under 15 years of age. In Austria and Norway, 15–64-year-olds were the most affected among care seekers.

In Hungary, Romania, Slovenia and the UK (England), the rates of reported ILI and/or ARI cases among people seeking care was higher during the 2010–11 season than during the previous (pandemic) season 2009–10. In Bulgaria, the Czech Republic, France, Ireland, Latvia and Slovakia, the rate of ILI and/or ARI was very similar to that in 2009–10, although the peak occurred around 10 weeks later.

Figure 2.1.1. Intensity of influenza activity in the European Union, Iceland and Norway during the 2010–11 season, by country (arranged in descending order of longitude) and week of reporting



Virological surveillance

The 2010–11 season was dominated in Europe by the pandemic influenza A(H1N1)pdm09 viruses. Physicians providing sentinel data collected 35 267 respiratory specimens, of which 14 030 (39.8%) tested positive for influenza virus. A total of 8 365 (59.6%) were type A, and 5 665 (40.4%) were type B, which is a relatively high proportion (Figure 2.1.2). In Norway and Sweden more than 60% of the detected viruses were type B. Of the 7 672 sentinel type A viruses which were subtyped, 7 445 (97.0%) were the pandemic strain influenza A(H1)pdm09 viruses and 227 (3.0%) were A(H3N2). The weekly percentage of sentinel samples testing positive for influenza peaked at around 50% between weeks 51/2010 and 06/2011 (Figure 2.1.2). In addition, of 43 358 non-sentinel specimens found to be positive, 29 462 (68.0%) were type A; 98.8% of the 19 321 A viruses subtyped were the pandemic strain.

A total of 4 535 influenza viruses were characterised antigenically (Figure 2.1.3), mostly as A/California/7/2009 (H1N1)-like or B/Brisbane/60/2008-like (Victoria lineage). Overall, there was a good vaccine match with 95.9% of the characterised viruses being antigenically similar to those included in the seasonal trivalent influenza vaccine[4]. Observed adjusted vaccine effectiveness was 56% (95% CI 34–71%) overall in the target groups for seasonal immunisation as measured by the I-MOVE consortium. By virus type, the effectiveness was 59% (95% CI 32–75) against A(H1N1) and 63% (95% CI 31–81) against influenza B[21].

Antiviral resistance

Antiviral resistance data was reported by 21 countries (Table 2.1.1). One hundred and eleven (3.2%) of 3 431 influenza A(H1N1)pdm09 viruses tested were resistant to oseltamivir, but all viruses tested remained sensitive to zanamivir. All oseltamivir-resistant viruses carried the NA H275Y substitution. Of 58 patients infected with resistant viruses and for whom information about possible exposure to antivirals was available, 17 (29.3%) had not been treated with oseltamivir.

Figure 2.1.2. Distribution of sentinel samples positive for influenza, by week and type, weeks 40/2010–20/2011, EU/EEA (29 countries)

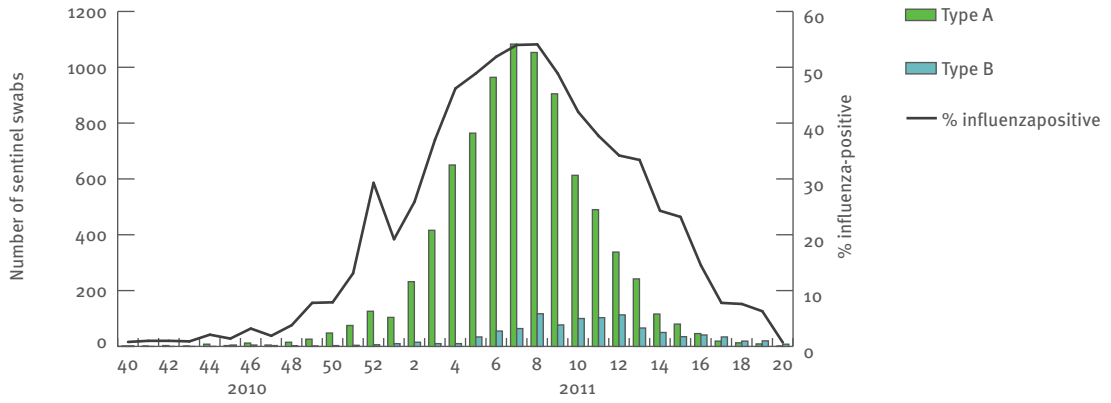


Figure 2.1.3. Distribution of sentinel and non-sentinel influenza virus isolates by antigenic characterisation, weeks 40/2010–20/2011, EU/EEA countries

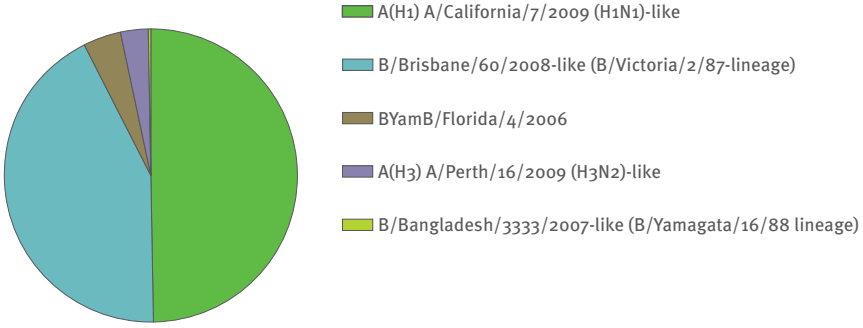


Table 2.1.1. Antiviral resistance by influenza virus type and subtype, week 40/2010–20/2011, EU/EEA countries

Virus type and subtype	Resistance to neuraminidase inhibitors				Resistance to M2 inhibitors	
	Oseltamivir		Zanamivir			
	n tested	n resistant (%)	n tested	n resistant (%)	n tested	n resistant (%)
A(H3N2)	90	0	88	0	43	43 (100)
A(H1N1)	0	0	0	0	0	0
A(H1N1)pdm09	3431	111 (3.2)	3420	0	261	261 (100)
B	460	0	447	0		

Surveillance of hospitalised laboratory-confirmed influenza

After the 2009 pandemic started and following a rapid consultation with national representatives it was agreed that Member States would be asked to report severe acute respiratory cases (SARI, severe acute respiratory infection). The clinical case definition used for the reporting of SARI cases was as below, i.e. without laboratory confirmation:

- Sudden onset of fever over 38 °C, and
- cough or sore throat in the absence of any other diagnosis, and
- shortness of breath or difficulty breathing, and
- requiring hospital admission.

A number of countries chose to report only laboratory-confirmed influenza cases. In the 2010–11 season, ten countries reported 5072 cases which met the SARI case definition. Of these cases, 486 (9.6%) had a fatal outcome. Of the 3690 influenza laboratory-confirmed cases, 3374 (91.4%) were due to type A and 316 (8.6%) were type B. Of the 2971 influenza A viruses subtyped, 2948 (99.2%) were A(H1N1)pdm09 and 23 (0.8%) were A(H3N2).

The distribution of influenza-related SARI cases by age peaked in infants younger than one year and in patients aged 50–59 years, whereas the case fatality ratio increased with age (Figure 2.1.4) and showed a very strong correlation (R=0.99).

An analysis of 2271 laboratory-confirmed cases of influenza infections found that the median age of in-patients infected by A(H1N1)pdm09 virus admitted to hospital care (excluding patients needing intensive care) was 41 years (interquartile range (IQR) 20–58), compared with 48 years (IQR 33–57) for patients admitted to intensive care units (ICU). The male/female ratio was 1.2 for patients who did not need intensive care, compared with 1.3 for the patients needing intensive care. The vast majority of fatal cases (88.2%) occurred in patients with at least one underlying condition (n=225) resulting in a case fatality ratio (CFR) of 20.9%, while the proportion of deaths in patients without underlying conditions (n=30) was 11.8% (v2=38.29, P<0.001), resulting in a CFR of 7.4%.

The risk groups for severe A(H1N1)pdm09 influenza were similar to the pandemic and unlike those identified during the preceding seasonal influenza. Fatal cases or cases requiring intensive care were more often young and middle-aged adults than would have been expected prior to 2009. During the 2010–11 season, older people (people over 65 years of age) were less likely to be infected, but when infected they were more likely to have a serious outcome. Of 1483 severe cases with information on underlying conditions, 72% had at least one recognised risk factor for severe disease, the most common being chronic respiratory disease or asthma. Vaccination status was reported for 1464 cases, 12442 (85 %) of whom had not been vaccinated against influenza during the season.

Influenza-related deaths and general excess mortality

The pilot study euroMOMO which monitors all-cause mortality in a number of European countries reported that no overall rise in mortality was obvious in any age group during the 2010–11 season[5]. But in the same season, substantial numbers of influenza-related severe

Table 2.1.2. Influenza-related risk assessments, 2011

Date of publication	Title	Topic
25 January 2011	ECDC risk assessment: Seasonal influenza 2010–2011 in Europe (EU/EEA countries)	Interim risk assessment of the influenza season 2010–11 in Europe
1 September 2011	Rapid risk assessment: Potential resurgence of highly pathogenic H5N1 avian influenza	Possible resurgence of highly pathogenic avian influenza A(H5N1) viruses
6 September 2011	Rapid risk assessment: Oseltamivir-resistant influenza A(H1N1)2009 cluster in Australia	Evaluation of the possibility of this cluster becoming widespread and potentially affecting Europe
15 September 2011	Rapid risk assessment: A(H5N1) highly pathogenic avian influenza in Egypt – implications for human health in Europe	Evaluation of the implications of HPAI A(H5N1) viruses from Egypt potentially spreading into Europe
29 November 2011	Swine-origin triple reassortant influenza A(H3N2) viruses in North America	New viruses in America and their implications for Europe
13 December 2011	Swine-origin triple reassortant influenza A(H3N2) viruses in North America	Update of the previous RA (published on 29 November 2011)

cases and deaths were reported in several countries, notably in Ireland, Greece and the UK, and to a lesser extent in Ireland, Denmark and France[3,6,7]. Because of the lack of severe influenza disease surveillance across Europe it was unclear whether this was the case elsewhere; the lack of anecdotal reports suggested it was not[8].

Updates from epidemic intelligence in 2011

In 2011, ECDC produced six influenza-related risk assessments. These are outlined in the Table above.

Swine influenza A(H3N2)v in humans in the USA

In 2011, ten cases of children infected with swine-origin triple-reassortant influenza A(H3N2) virus were detected in four US states[9]. The virus was found to include a genetic component of the pandemic 2009 virus, and human-to-human transmission was considered probable. In a risk assessment published in November 2011, ECDC concluded that these viruses are known to be found in pigs in North America, but have not been found in pigs in EU/EEA countries[9]. However, surveillance for influenza in pigs is weak in both North America and Europe, and surveillance for infections in humans in close contact with pigs is notably weak in Europe[10]. Hence, all statements on the epidemiology of swine influenza must be treated with caution. Most of the ten US cases experienced only mild disease. Those hospitalised had underlying conditions and all patients recovered completely, partially due to the fact that these viruses are susceptible to neuraminidase inhibitors (oseltamivir and zanamivir).

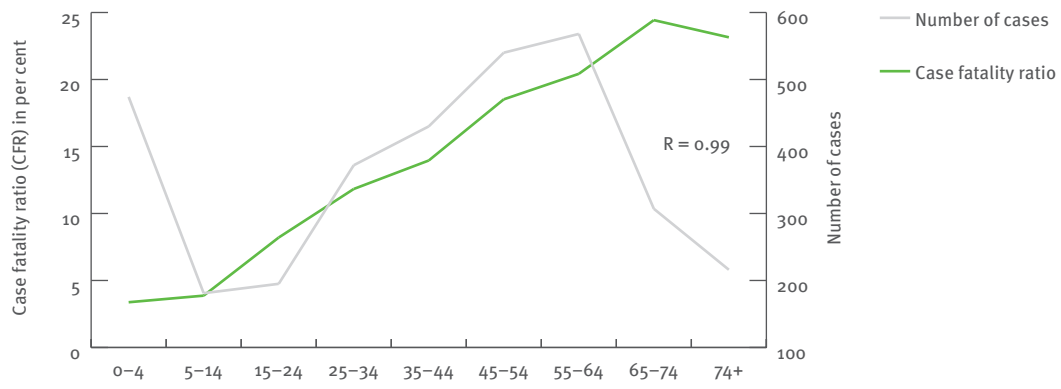
However, the current A(H3N2) component of seasonal influenza vaccines is unlikely to provide protection. Virological studies in Europe utilising GISAID indicated that older people are likely to be protected due to exposure to earlier viruses and vaccines[11]. Unlike in March 2009 (the start of the pandemic), there were no reports of any unexplained influenza infections elsewhere in the Americas. Overall, the immediate direct threat to human health in Europe was considered low[9]. A need to ensure that these infections could be detected through diagnostic testing in European national influenza laboratories was noted, and in silico testing was undertaken by ECDC with the Community Network Reference Laboratory[12]. Following a virological risk assessment, US authorities took the first steps towards vaccine development[13].

There are strong public health arguments for more active virological surveillance aimed at droves of pigs in Europe (and North America), including active surveillance of infections in humans that are in direct or indirect contact with pigs. Equally justified are more formal approaches to assessing emerging influenza viruses for their pandemic potential, and ECDC concluded that such virological risk assessments should continue to be developed, for example through the EFSA-supported Flurisk project[7-12].

Oseltamivir-resistant cluster of A(H1N1)pdm09 in Australia

A cluster of patients infected with oseltamivir-resistant influenza A(H1N1)pdm09 virus was detected in the Hunter New England region of New South Wales, Australia, between June and August 2011. In September 2011, ECDC published a risk assessment stating that viruses from 25 of 184 (14%) A(H1N1)pdm09 cases exhibited highly reduced oseltamivir sensitivity due to the H275Y substitution in the neuraminidase. The cases had no known oseltamivir exposure and individuals were not immunosuppressed, but they were closely linked geographically[14]. Virological links were established at a later point in time[14]. Samples from cluster cases do not currently exhibit any resistance to zanamivir. At the time, the risk of the cluster becoming more widespread and having public health implications was considered low[14]. However, the treatment options for influenza patients would have to be re-considered at the first signs of a further spread, while constant antiviral resistance monitoring remains vital, both in Europe and globally[15].

Figure 2.1.4. Distribution of influenza-related SARI cases and case-fatality ratio by age group, week 40/2010–20/2011, EU/EEA countries



Narcolepsy with cataplexy associated with use of the adjuvanted A(H1N1)pdm09 vaccine Pandemrix in some European countries

In September 2010, Sweden and Finland reported (through EU alerting systems) an unusual number of cases of narcolepsy (often with cataplexy). These were in young children aged four to 18, among whom the condition is hardly ever seen until the late teenage years. There also seemed to be an association with the children having received the adjuvanted A(H1N1)pdm09 vaccine Pandemrix. The vaccine was stopped being used after the pandemic, yet in 2011 intensive epidemiological investigations continued in a number of countries. The first analyses were published by Finland and Sweden, confirming a strong statistical association (see interim report of the Finnish national narcolepsy task force[22] and the preliminary results of cohort study conducted by the Swedish Medicinal Product Agency[23]. On a precautionary basis and working with Member States, academic groups, the European Medicines Agency, and the Brighton Collaboration, ECDC had already established prospective monitoring of vaccine safety (the VAESCO programme) and was prepared to look for adverse effects following vaccination. The findings in 2011 were reassuring; for example, no association was found between pandemic vaccines and Guillain-Barré syndrome[24]. In 2011, VAESCO was also asked by ECDC to study narcolepsy.

Discussion

In the first post-pandemic influenza season, influenza A(H1N1)pdm09 continued to circulate widely and was the dominant type A virus. However, in contrast to the pattern observed during the pandemic[2], the virus co-circulated with B viruses, which persisted throughout the season to become predominant at the European level after week 6/2011. The timing of virus circulation returned to the pattern observed during the previous interpandemic period (1977–2008) with only limited out-of-season community transmission reported in temperate countries across the northern hemisphere. However, the association between severe disease and age was similar to that observed in the pandemic and different from the 1977–2008 period[2]. Influenza A(H1N1) pdm09 continued to cause disease mainly among young and middle-aged adults, in some pregnant women, and the majority of people with underlying conditions[6,7,16]. The burden of severe disease in adults over the age of 65 years was less than previously reported[2], probably partly because of the very limited circulation of influenza A(H3N2) virus. It had already been observed in the pandemic that the burden of severe disease had shifted to younger age groups because people aged 65 years and older had possessed some immunity to A(H1N1)pdm09 due to earlier exposure to similar viruses[16]. However, older people who had become infected with A(H1N1) pdm09 during the pandemic had been more likely to experience severe disease[2]. This pattern was repeated in the 2010–11 season, thus recommending influenza immunisation to this age group continues to be justified.

A few countries that dealt with a large number of severe cases reported considerable impact on hospital services and pressure on intensive care services in particular. In fact, severe cases admitted to intensive care were the first indicator that the season was beginning[16]. This was most notable in the UK, but also occurred in Ireland, Denmark, France and later Greece, whereas it was not observed in other countries with ICU surveillance, such as the Netherlands[3].

All three circulating viruses demonstrated very little antigenic drift during 2010 and 2011 and remained closely related to the three strains contained in the seasonal influenza vaccine. All but a very small percentage of viruses tested remain sensitive to neuraminidase inhibitors. Most resistant viruses were reported in cases who received antiviral therapy. Nevertheless, some cases of resistance were associated with the H275Y mutation and had no history of exposure to antiviral medications, indicating some community transmission of a resistant virus[14,15]. This re-emphasises the need to continue vaccinating and promptly treat patients with antivirals who are at high risk of developing severe disease. Risk groups include both senior citizens and children (noting that very young children under six months do not benefit from immunisation), those with chronic conditions, and pregnant women[2,3,5,6,16-19].

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Avian influenza and other animal influenzas

- No human infections were reported in the EU/EEA countries with highly pathogenic A(H5N1); there were no reports of human infections with other avian influenzas.
- Highly pathogenic A(H5N1) viruses still remain a significant public health threat for Europe.

Introduction

Wild birds, along with some other animals such as pigs, are reservoirs of animal influenza (AI) viruses. Wild aquatic birds are considered to be the original natural reservoir for most influenza viruses[1]. These viruses are constantly changing through mutation and viral recombination. Occasionally the viruses infect humans and very occasionally they are the source of pandemic viruses[2].

Highly pathogenic avian influenza (HPAI) in poultry

In March 2010, two outbreaks of HPAI of the A(H5N1) subtype were reported in Tulcea county, Romania. The last outbreak caused by the HPAI A(H5N1) virus in the EU occurred in a small mixed poultry holding near Leipzig, Germany. During 2010, no outbreak of HPAI of a subtype different from the A(H5N1) subtype was reported[3]. In 2011, no outbreaks of HPAI in poultry or captive birds were detected in Europe. The detection of HPAI outbreaks in birds in Egypt prompted the publication of two ECDC risk assessments in September 2011.

Highly pathogenic avian influenza A(H5N1) in wild birds

In 2010, only one positive case of HPAI A(H5N1) was detected in March in a buzzard found dead at the Black Sea coast in Varna county, Bulgaria. The last positive finding for that virus had been in 2009 in a wild mallard shot during hunting in the German state of Bavaria. In 2011, no wild bird was found positive for HPAI A(H5N1) or for any other HPAI subtype.

Low pathogenic avian influenza (LPAI) in poultry

In 2010, a total of 13 outbreaks of LPAI in poultry occurred in four Member States: Denmark, Germany, Italy and the Netherlands.

Denmark confirmed two outbreaks in March in breeding mallard ducks in the regions of Zealand and Funen. In one poultry holding, the LPAI virus was identified as A(H7N1) subtype, and in the second holding only the HA subtype could be determined as A(H7).

Germany confirmed one outbreak of the A(H5N2) subtype in November in a mixed poultry holding in Parchim in the German state of Mecklenburg-Western Pomerania.

Italy reported nine LPAI outbreaks from six regions (Emilia Romagna, Friuli-Venezia Giulia, Lombardy, Tuscany, Umbria and Veneto). With the exception of one commercial layer holding, all outbreaks occurred in rural or dealer farms that kept poultry of different species. Three outbreaks were caused by avian influenza of the A(H5) subtype and six by A(H7) subtypes. Where the A(H7N3) subtype was identified, it showed close similarity to those A(H7N3) viruses that have been detected in Italy since 2007. Italy has now adopted national measures on additional testing and imposed movement restrictions for poultry.

The Netherlands confirmed LPAI of the subtype A(H7N4) in a commercial free-range layer farm in Deurne, North Brabant[3].

In 2011, a total of 56 LPAI outbreaks were reported from four Member States, but none of these prompted ECDC to produce a formal risk assessment.

Although low pathogenic avian and other animal influenzas have infected humans, they only rarely cause disease, which is almost always mild[4].

Other animal influenzas

True swine influenzas (influenza adapted to pigs) of the Eurasian types are endemic in domestic pigs in many parts of Europe. This disease is not reportable and epidemiologic reporting relies on research findings[5,6]. Surveillance for swine influenzas in humans seems to be considerably stronger in the United States than in Europe, though the viruses in North America are quite different and arguably more dangerous than those in Europe[3,4,7]. In 2011, several cases of swine influenza in humans associated with self-limiting illness in the United States prompted the publication of two ECDC risk assessments in November and December (see above: 'Updates from epidemic intelligence in 2011').

Discussion

Since 1996, strains of highly pathogenic influenza viruses type A(H5N1) have become established in bird populations, which, unusual among animal influenzas, have led to some sporadic cases and a few clusters of human infection and deaths[8]. This particular group of influenza A viruses only occasionally infect humans, and person-to-person transmission is even less common. However, the infections that have been reported indicate high pathogenicity. Highly pathogenic A(H5N1) avian

influenza viruses remain a concern for human health in Europe because of the following characteristics[9,10]:

- Highly pathogenic A(H5N1) avian influenza viruses are still highly pathogenic for humans.
- They can cause a persistent zoonotic infection among birds with which humans are in close contact.
- They continue to evolve.
- There is a risk of genetic recombination with influenza viruses that are better adapted to, and transmissible among, humans.
- Laboratory-modified A(H5N1) viruses have been found to be more transmissible in animal models[11].

Since the start of the epidemic of HPAI A(H5N1) in 2003, no human deaths caused by the virus have occurred in Europe. Preventive measures include early detection systems in poultry holdings, routine surveillance for avian influenza in poultry and wild birds, and bio-security measures at farm level. Additional control measures include the establishment of additional buffer zones with movement restrictions for affected poultry, and control and hygienic measures on poultry holdings when those are at risk of becoming infected due to the disease detected in wild birds.

Extensive information regarding avian influenza A(H5N1) cases and outbreaks in humans and its public health implications has been published by ECDC, although in the Centre's view there is now a need to look for clusters of human cases and sporadic cases in countries where A(H5N1) is not known to be entrenched in poultry. Isolated cases of human infection in Cambodia, China, Egypt, Indonesia or Vietnam should no longer be remarkable, although they still need to be monitored to detect changes in their epidemiology and clinical picture[9,10].

Avian influenza during 2010 in Europe was unremarkable with only two outbreaks of HPAI in poultry and one in wild birds. A total of 13 outbreaks of LPAI in poultry were reported. No cases of avian influenza in humans were reported during this period[4].

In most instances, reports of avian influenza in birds are a result of passive surveillance activities. Hence these infections are likely to be underreported. Further, they reveal only a small proportion of the pool of avian influenza viruses co-existing with other influenza viruses in different animal species and humans. Preventing the entry of these pathogens into Europe is not possible as they are carried over long distances by asymptomatic wild (aquatic) birds, both during migration and through trade (legal and illicit).

Future activities – at least in EU countries and through initiatives sponsored by the European Commission (Directorate-General for Research and Innovation) – could include the conversion of the current passive surveillance system into an active system of routine monitoring of animal influenza, including influenza in pigs[12,13,14].

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Tuberculosis

- In 2010, 29 EU/EEA countries reported 73996 tuberculosis (TB) cases with an overall notification rate of 14.6 per 100000 population (range: 4.3 in Greece to 98.2 cases per 100000 in Romania); 44964 (60.8%) of these cases were confirmed by culture (8.9 per 100000).
- Overall, the rate was 4.4% lower than that for 2009, showing a net downward trend in 22 countries between 2006 and 2010.
- The highest culture-confirmed case rates were reported by Romania (58.2 per 100000 population), Lithuania (40.9), Latvia (32.6), Estonia (19.3), Bulgaria (16.8) and Portugal (15.4).
- In 2010, 25.1% of TB cases were of foreign origin: 28.6% of these cases were from Asia (outside the WHO European Region), 21.7% from Africa, 8.8% from other EU/EEA countries, 8.8% from non-EU/EEA European countries, and 26.5% from other or unknown countries.
- Multidrug-resistance (MDR) remained most frequent in the Baltic states (12.2%–24.4%) and Romania (9.4%). Other countries reported lower overall levels of MDR (0%–8.5%); generally, MDR was more common in cases of foreign origin.
- 17 countries reported drug susceptibility testing results for second-line anti TB drugs. In these countries, 13.2% of MDR TB cases were also extensively drug resistant (XDR).
- Twenty-four countries reported treatment outcome monitoring (TOM) data for culture-confirmed pulmonary TB cases reported in 2009. Among previously untreated, culture-confirmed pulmonary TB cases, 78.8% had a successful outcome. Successful outcomes among previously treated pulmonary TB cases (55.1%) and among all culture-confirmed MDR-TB cases at 24 months (30.1%) were much lower.

Tuberculosis (TB) is an infectious disease caused by the bacterium *Mycobacterium tuberculosis*. It typically affects the lungs (pulmonary TB), but can affect other sites as well (extrapulmonary TB). The disease is spread through droplet transmission when people who are sick with pulmonary TB expel bacteria, for example by coughing. In general, a relatively small proportion of people infected with *Mycobacterium tuberculosis* will go on to develop TB disease; however, the probability of developing TB is much higher among people with impaired immunity, such as in untreated HIV infection.

Epidemiological situation in 2010

In 2010, 73996 TB cases (possible, probable and confirmed[i]) were reported by 27 European Union countries, Iceland and Norway (Table 2.1.3), showing a decrease of 5685 cases compared with 2009. Over 76% of cases occurred in the seven countries reporting 3000 cases or more each (France, Germany, Italy, Poland, Romania, Spain and the United Kingdom).

The overall TB rate in 2010 was 14.6 per 100000 population. Rates higher than 20 per 100000 were reported by Romania (98.2), Lithuania (58.2), Latvia (41.5), Bulgaria (35.0), Portugal (24.7) and Estonia (24.5).

The overall rate was 7.1% lower than 2009, reflecting a net decrease in 22 countries when compared with 2009. The overall average annual decrease between 2006 and 2010 was 4.4%.

Age and gender distribution

Among the new TB cases and relapses reported in 2010, 80% more males than females (male/female ratio: 1.8) were affected. This gender imbalance was largely restricted to those aged 25 years and older and was observed in every country except Iceland. In Estonia, Greece and Lithuania this imbalance was very pronounced, with male-to-female ratios of up to 2.7. Overall, it was more marked among cases (2:1) than among cases of foreign origin (1.5:1).

As in the year before, most new TB cases in 2010 occurred in the age groups of 25–44 and 45–64 years, which together accounted for 60% of all new cases. Overall, 12% of TB cases were among adolescents and young adults between 15 and 24 years of age; the age-specific proportions for this age group exceeded 20% in Iceland, Norway and Sweden. TB cases reported among adults between 25 and 44 years of age were markedly over-represented in Cyprus, Iceland, Malta, Norway, Sweden and the United Kingdom, accounting for 46–65% of new TB cases. Cases older than 64 years (18% overall) were particularly frequent in the Czech Republic, Finland and Slovenia (>30%).

In 2010, four per cent of TB cases were notified in children under 15 years, representing a rate of 3.8 per 100000 that has steadily declined from 4.5 in 2006. Country-specific paediatric rates were highest in those five EU Member States that are included in WHO Europe's 18 high-priority TB countries, reaching 25.3

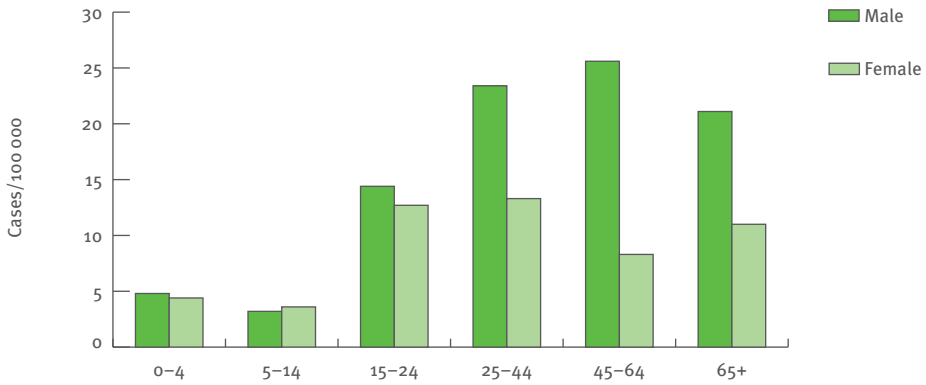
i A notified TB case is reported according to the case definition as defined by the EU Commission: cases are divided into 'possible' (based on clinical criteria only), 'probable' (additional detection of acid-fast bacilli (AFB) in sputum, *M. tuberculosis* in nucleic acid, or granulomata in histology) and 'confirmed' (by culture or by detection of both positive AFB in sputum and *M. tuberculosis* in nucleic acid).

Table 2.1.3. Number and rate of reported tuberculosis cases (possible, probable and confirmed) in EU/EEA countries, 2006–10

Country	National coverage	Report type	2010									2008		2007	
			Total cases and rate		Confirmed cases and rates			Total cases and rate		Total cases and rate		Total cases and rate		Total cases and rate	
			Cases	Rate	Cases	Rate	Age standardised rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	688	8.2	478	5.7	5.7	698	8.4	817	9.8	874	10.6	906	11.0
Belgium	Y	C	1115	10.3	867	8	8.1	994	9.2	990	9.3	1020	9.6	1117	10.6
Bulgaria	Y	C	2649	35	1174	15.5	15.1	2910	38.3	3150	41.2	3038	39.6	3232	41.9
Cyprus	Y	C	61	7.6	42	5.2	4.5	55	6.9	50	6.3	42	5.4	37	4.8
Czech Republic	Y	C	678	6.5	435	4.1	4.2	695	6.6	864	8.3	846	8.2	951	9.3
Denmark	Y	C	359	6.5	285	5.1	5.4	337	6.1	376	6.9	391	7.2	387	7.1
Estonia	Y	C	329	24.6	259	19.3	19.5	411	30.7	444	33.1	491	36.6	460	34.2
Finland	Y	C	327	6.1	257	4.8	4.7	417	7.8	344	6.5	348	6.6	297	5.7
France	Y	C	5116	7.9	2386	3.7	3.7	5276	8.2	5758	9	5574	8.8	5323	8.4
Germany	Y	C	4330	5.3	4330	5.3	5.1	4419	5.4	4519	5.5	5000	6.1	5378	6.5
Greece	Y	C	489	4.3	489	4.3	4.2	594	5.3	670	6	645	5.8	681	6.1
Hungary	Y	C	1741	17.7	623	6.2	6.1	1407	14	1619	16.1	1685	16.7	1859	18.4
Ireland	Y	C	427	9.6	270	6	6.4	479	10.8	468	10.6	480	11.1	463	11.0
Italy	Y	C	3249	5.4	3249	5.4	5.3	4244	7.1	4418	7.4	4525	7.7	4503	7.7
Latvia	Y	C	934	41.5	732	32.6	32.3	978	43.2	1070	47.1	1255	55.0	1328	57.9
Lithuania	Y	C	1938	58.2	1363	40.9	40.9	2081	62.1	2250	66.8	2408	71.1	2559	75.2
Luxembourg	Y	C	29	5.8	20	4	4	27	5.5	28	5.8	39	8.2	33	7.0
Malta	Y	C	32	7.8	16	3.9	3.8	44	10.6	53	12.9	38	9.3	30	7.4
Netherlands	Y	C	1073	6.5	788	4.8	5	1157	7	1015	6.2	998	6.1	1031	6.3
Poland	Y	C	7509	19.7	4756	12.5	12.6	8236	21.6	8080	21.2	8614	22.6	8587	22.5
Portugal	Y	C	2626	25.1	1602	15.1	14.8	2871	27	3002	28.3	3139	29.6	3456	32.7
Romania	Y	C	21078	98.2	12492	58.2	57.4	23164	107.7	24680	114.6	24837	115.2	26600	123.1
Slovakia	Y	C	439	8.1	234	4.3	4.6	506	9.3	633	11.7	682	12.6	730	13.5
Slovenia	Y	C	172	8.4	155	7.6	7.4	188	9.3	213	10.6	218	10.8	215	10.7
Spain	Y	C	7089	15.4	3991	8.7	8.4	7592	16.6	8216	18.1	7768	17.5	8029	18.3
Sweden	Y	C	675	7.2	526	5.6	5.9	617	6.7	546	5.9	482	5.3	497	5.5
United Kingdom	Y	C	8483	13.7	4908	7.9	8.1	8917	14.5	8606	14.1	8329	13.7	8363	13.8
EU total			**73635**	**14.7**	**46727**	**9.3**	**11.2**	**79314**	**15.9**	**82879**	**16.7**	**83766**	**16.9**	**87052**	**17.7**
Iceland	Y	C	22	6.9	19	6	6.2	9	2.8	6	1.9	14	4.6	13	4.3
Norway	Y	C	339	7	275	5.7	5.9	358	7.5	313	6.6	302	6.5	290	6.2
Total			**73996**	**14.6**	**47021**	**9.3**	**10.9**	**79681**	**15.8**	**83198**	**16.5**	**84082**	**16.8**	**87355**	**17.5**

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

Figure 2.1.5. Rates of tuberculosis cases, by age and gender, 28 EU/EEA countries, 2010 (n=73727)



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

per 100 000 in 2010. No country showed any consistent change in the five-year trend in paediatric rates. The ratio of notification rates in children versus adults in 2010 was 0.2 (unchanged since 2001). Country-specific 10-year trends for this ratio were mostly inconclusive, but clearly increasing in Bulgaria, Italy and Sweden, and decreasing in Denmark.

Previous treatment, site and culture confirmation

In 2010, 79.0% of the reported cases were previously untreated, with a wide variation between countries (range: 52–100%). This proportion has not changed markedly in the past years; however, the total number of new cases has decreased progressively, which is probably the main reason for the decline observed in notification rates of TB in EU/EEA countries.

Of 73 996 reported cases, 57 661 (77.9%) suffered from pulmonary TB (6.2% of which were accompanied by extrapulmonary manifestations) and 16 123 (21.8%) from extrapulmonary TB. In Malta, the Netherlands, Norway and the United Kingdom, extrapulmonary TB alone accounted for more than 40% of all cases.

Of the cases reported in 2010, 60.8% were culture-confirmed, but the level differed widely across countries (range: 35.8%–100.0%, Figure 2.1.6) and data were not complete for four countries (i.e. <50% of cases culture-confirmed). The overall proportion has remained stable for the last five years.

Species identification showed *M. tuberculosis* in 80.3% of culture-positive cases in the 26 reporting countries; *M. bovis* (0.3%) was reported by ten countries and *M. africanum* (0.1%) by eight countries. For 19.3% of culture-positive cases, no information on species identification was provided.

Origin of TB cases

In 2010, 18 601 (25.1%) of 73 996 reported TB cases were of foreign origin (i.e. not born or not having citizenship in the reporting country[ii]). However, in 12 Member States, cases of foreign origin accounted for the majority of cases, reaching 85.3 in Norway and 85.8% in Sweden. From 2001 to 2010, most Member States observed a decrease in cases of national origin, with the exception of Spain, which saw an increase due to a substantial decrease in cases of unknown origin. Eleven Member States experienced rising trends of cases of foreign origin, while ten Member States reported stable trends. Only Belgium, Denmark, Estonia, Germany, Luxembourg and Slovenia registered a decline in cases of foreign origin between 2001 and 2010.

ii The geographic origin of a TB case is classified according to place of birth (born in the country/foreign-born, reported by 24 countries) or, if unavailable, citizenship (citizen/non-citizen, five countries).

Tuberculosis and HIV infection

In 2010, 12 EU/EEA Member States reported case-based HIV serostatus information to ECDC's TESSy database; an additional three reported aggregated data to TME, WHO's global TB database and data management system. Overall, the proportion of reported HIV-seropositive TB cases was 6.0% in EU/EEA countries, a slight decrease compared with 2008 (8.2%) and 2009 (7.3%).

Due to differences in testing policies and data collection, the completeness of data varied. Eleven countries reported complete[iii] data in 2010. Among these countries, the proportion of TB/HIV co-infected cases was highest in Portugal (13.3%), Malta (11.5%), Estonia (11.5%), Latvia (9.5%) and Spain (9.4%). At the other end of the scale, the proportion of co-infected cases ranged between 0% and 6.8% (Belgium, Bulgaria, Iceland, Luxembourg, Slovakia and Slovenia).

Multidrug-resistant tuberculosis

Data on anti-TB drug-resistance surveillance (DRS) in 2010 were made available by 29 countries, 28 of which have national coverage. Data from 20 of the 28 countries which reported culture and DRS data (or provided drug susceptibility testing results as part of a national case-linked dataset) were considered complete[iv] for 2010. Aggregated national data were reported from France and Italy, while Spain reported aggregated data with partial coverage.

Cases resistant to one or more first-line anti-TB drugs were reported by all 28 reporting countries. Overall, the proportion of cases with multi-drug resistant TB (MDR TB) was 4.6%, with the Baltic states and Romania reporting the highest proportions (12.7%–24.4% and 9.4%, respectively) (Table 2.1.4). Seventeen countries reported data on extensively drug-resistant TB (XDR TB) for 2010, with a total of 108 XDR TB cases. The same group of countries also reported a rise in MDR cases from 8.2% in 2009 to 13.2% in 2010. Estonia, Latvia, Lithuania and Romania had the highest numbers of XDR cases in 2009 (12, 13, 50 and 20 cases, respectively).

Treatment outcome

Of the 27 922 new culture-confirmed pulmonary TB cases notified in 2009, 22 010 (78.8%) had a successful treatment outcome by 2010, 1852 (6.6%) died, 581 (2.1%) were labelled treatment failures, 1613 (5.8%) had defaulted, 602 (2.2%) were still on treatment in 2010, and 1264 (4.5%) had been transferred or their outcome was unknown. With values under 60%, Cyprus, Denmark, Estonia and Hungary reported the lowest proportions of cases with successful treatment. In Cyprus and Denmark, this was due to exceptionally high proportions

iii Data considered complete if HIV status is known for 50% or more of all reported TB cases.

iv Complete national coverage or culture results available for 90% of all cases and 50% of all cases were culture-positive, 75% with drug susceptibility testing (DST) results, while EQA results show a 95% match.

of transfers and unknown outcomes; in Estonia the main reason was a high case-fatality rate and the number of cases still on treatment. Hungary reported the highest treatment failure ratio in the EU/EEA.

From 2005 to 2009, the overall annual treatment success rate of new culture-confirmed pulmonary TB cases remained stable at just below 80%. Country-specific five-year trends increased in seven Member States, decreased in eight, and were inconclusive in the remainder. Among previously treated cases, the overall success rate (53.2%) was lower than among new cases.

Of 359 new culture-confirmed pulmonary MDR-TB cases reported in 2008, 49.3% had a successful treatment outcome, 13.1% died, 13.9% failed treatment, 12.0% defaulted, and 9.7% were still on treatment.

Discussion

The rate of reported TB in the EU/EEA continues to decline, with country-specific rates falling fastest in the five high-priority countries. Despite recent progress, Romania, Bulgaria and the Baltic countries still have reported rates several times higher than those in the low-incidence countries. Consistently increasing five-year trends are seen only in Cyprus and Sweden, where they appear to be mainly driven by cases of foreign origin (born outside of the reporting country), although total reported rates in both countries remain well under 10 per 100 000. As in previous years, the data reflect the heterogeneity of TB in the EU/EEA with two epidemiologically distinct groups of countries, namely:

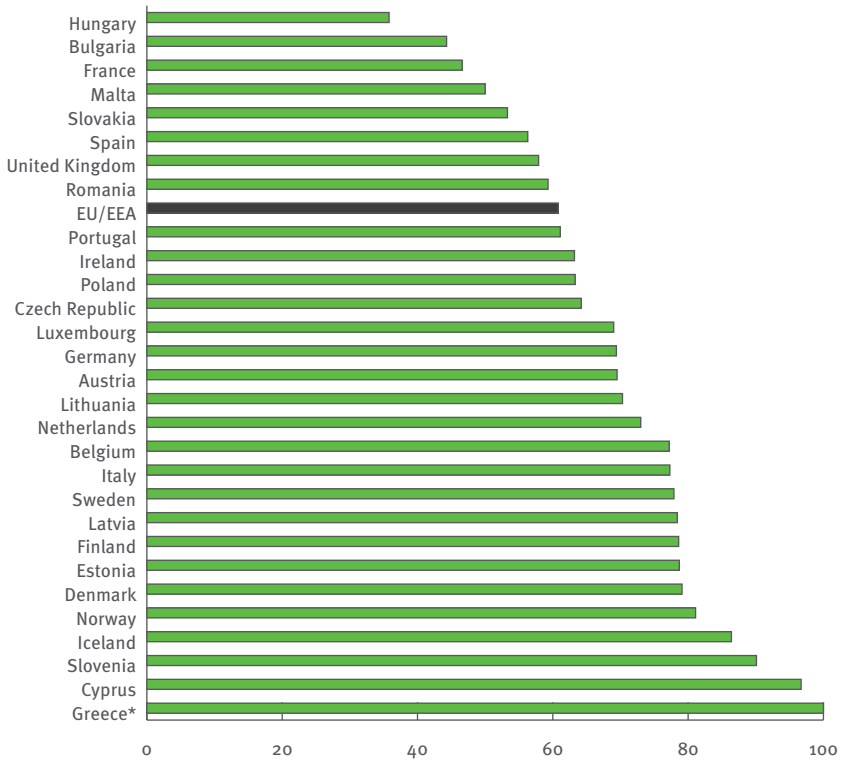
- low-incidence countries[v] with an increase of reported cases in the foreign-born population; and
- countries with relatively high notification rates *and* a high proportion of MDR TB cases, but with declining overall TB rates.

Despite a long history of TB surveillance in Europe, the scope of data reporting varies due to differences in national surveillance systems and laws. Of 29 EU/EEA countries reporting to TESSy, 29 provided data on previous treatment (diagnosis), 26 on anti-TB drug susceptibility testing, 24 on outcome for cases notified in 2009, and 15 on MDR TB outcome for cases notified in 2008. Further limitations included missing data for some districts in some countries and low availability of DST data for others. Although the quality and comparability of reported data has improved considerably in recent years, the reader should be careful when making direct comparisons across countries.

Assessing the quality and sensitivity of TB surveillance systems (i.e. their ability to capture all cases) should become a priority. In addition, standardised approaches

v The current approach of subdividing countries in 'low' versus 'intermittent/high incidence' is based on the published Monitoring Framework that uses 20 cases per 100 000 population as a threshold between the two categories.

Figure 2.1.6. Proportion of culture-positive cases among all notified TB cases in EU/EEA countries, 2010



* Country reported only culture-positive cases.

that are easily adaptable to meet the needs of the various countries should be developed. This should include linking laboratory and epidemiological registers through case-based reporting.

In order to achieve optimal detection of infectious cases as well as early identification of drug-resistant cases, a higher proportion of cases need to be bacteriologically confirmed. Culture confirmation of specimens and identification of *M. tuberculosis* is the most accurate method of confirming active tuberculosis; this approach also meets the criteria for a confirmed case of TB as defined by the EU case definition. From a programmatic perspective, reaching a bacteriological target (80%) among new pulmonary TB cases is of key importance in ensuring rapid detection and treatment (following DST) for MDR/XDR TB cases. Member States should evaluate the extent to which the underachievement in culture-confirmation targets reflects sub-optimal practice in testing by culture, or in the reporting of bacteriological results.

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Table 2.1.4. Number and percentage of multidrug-resistant and extensively drug-resistant tuberculosis cases reported in EU/EEA countries, 2010

Country	Culture positive cases with FLD DST*	Multidrug resistant TB		Total multidrug resistant TB with SLD DST**		Extensively drug resistant TB	
	N	N	%	N	%	N	%***
Austria	472	15	3.2	15	100.0	1	6.7
Belgium	825	19	2.3	19	100.0	2	10.5
Bulgaria	966	56	5.8	-	-	-	-
Cyprus	37	0	0.0	0	-	0	-
Czech Republic	420	9	2.1	4	44.4	1	25.0
Denmark	281	2	0.7	2	100.0	0	0.0
Estonia	258	63	24.4	61	96.8	12	19.7
Finland	247	6	2.4	-	-	-	-
France	1473	23	1.6	-	-	-	-
Germany	2670	48	1.8	-	-	-	-
Greece	169	2	1.2	2	100.0	0	0.0
Hungary	570	19	3.3	18	94.7	2	11.1
Ireland	257	2	0.8	-	-	-	-
Italy	2597	87	3.4	10	11.5	0	0.0
Latvia	715	87	12.2	86	98.9	13	15.1
Lithuania	1363	310	22.7	309	99.7	50	16.2
Luxembourg	20	0	0.0	-	-	-	-
Malta	16	1	6.3	1	100.0	0	0.0
Netherlands	783	11	1.4	-	-	-	-
Poland	3706	30	0.8	12	40.0	1	8.3
Portugal	1225	19	1.6	-	-	-	-
Romania	5349	502	9.4	165	32.9	20	12.1
Slovakia	234	1	0.4	1	100.0	0	0.0
Slovenia	155	0	0.0	-	-	-	-
Spain	1416	49	3.5	49	100.0	3	6.1
Sweden	524	18	3.4	-	-	-	-
United Kingdom	4603	60	1.3	57	95.0	3	5.3
EU total	**31351**	**1439**	**4.6**	**811**	**56.4**	**108**	**13.3**
Iceland	19	0	0.0	0	-	0	-
Norway	274	8	2.9	8	100.0	0	0.0
Total	**31644**	**1447**	**4.6**	**819**	**56.6**	**108**	**(13.2)**

* FLD DST – drug susceptibility testing for first-line drugs.
** SLD DST – drug susceptibility testing for second-line drugs.
*** Percentages calculated from cases with second-line drugs susceptibility testing (SLD DST).

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-TUBERKULOSEGESETZ	Cp	Co	A	C	Y	Y	Y	Y	Y
Belgium	BE-TUBERCULOSIS	Cp	Co	A	C	Y	Y	N	N	-
Bulgaria	BG-MOH	Cp	Co	A	C	Y	N	Y	N	-
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-TUBERCULOSIS	Cp	Co	A	C	Y	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-TBC	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-TUBERCULOSIS	Cp	Co	P	C	Y	Y	N	N	Y
Iceland	IS-TUBERCULOSIS	Cp	Co	A	C	Y	Y	Y	N	Y
Ireland	IE-TB	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-TB	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-TB_REGISTER	-	-	-	-	-	-	-	-	-
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-NTR	Cp	Co	P	C	Y	Y	N	N	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL_CR	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-TUBERCULOSIS	Cp	Co	P	C	N	Y	N	Y	Y
Romania	RO-NTBSy	Cp	Co	P	C	N	Y	N	Y	Y
Slovakia	SK-NRT	Cp	Co	-	C	Y	Y	Y	N	Y
Slovenia	SI-TUBERCULOSIS	Cp	Co	A	C	Y	Y	N	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SweTBReg	Cp	Co	P	C	Y	Y	Y	N	Y
United Kingdom	UK-TUBERCULOSIS	Cp	Co	A	C	Y	N	Y	Y	Y

2.2 Sexually transmitted infections, including HIV and blood-borne viruses

Chlamydia trachomatis infection

- Chlamydia is the most frequently reported sexually transmitted infection and reportable disease in Europe. In 2010, 344 491 cases of chlamydia were reported in 24 EU/EEA Member States; a rate of 186 per 100 000 population. The true incidence of chlamydia is likely to be higher as this infection is liable to underreporting or asymptomatic disease.
- Three quarters of all chlamydia cases were reported in young persons. The notification rate among those between 15 and 24 years of age is 821 per 100 000 population; young women are affected more often than young men.
- Compared with the previous years, the overall trend appears to have reached a plateau in 2010. However, this has to be interpreted with caution as it most likely reflects changes in screening and testing practices in a number of countries. The overall reporting rate among countries that reported consistently increased by 134%, from 143 per 100 000 population in 2000 to 334 per 100 000 population in 2010.

Infection with the bacterium *Chlamydia trachomatis* is the most frequently reported sexually transmitted infection in Europe. Most infections are asymptomatic, and complications include pelvic inflammatory disease, reduced fertility, and infertility in women.

Epidemiological situation in 2010

In 2010, 24 of the EU/EEA Member States reported 344 491 cases (186 per 100 000 population). Almost 95% of *Chlamydia trachomatis* infections were reported by six countries (United Kingdom, Sweden, Denmark, Norway, Finland and the Netherlands). The highest confirmed case rates were reported by Iceland (691 per 100 000), Denmark (505 per 100 000), Norway (464 per 100 000) and Sweden (386 per 100 000) (Table 2.2.1).

Overall, the incidence of reported confirmed cases increased by 41% between 2006 and 2010 in EU/EEA countries. This apparent increase is, however, most likely due to improved case detection in a number of countries, primarily through screening and testing activities. For example, the United Kingdom has been reporting chlamydia cases from community-based test settings together with data from STI clinics since 2008, which, to a certain degree, explains the increase in reported cases.

National surveillance systems for STIs (chlamydia, gonorrhoea and syphilis) feature a blend of voluntary, sentinel or selected laboratory systems, and frequently do not represent true national coverage. Comparison between countries is also made difficult by differences in the reporting systems, the diagnostic methods used, the amount of testing and screening for chlamydia, and the proportion of underreporting.

The availability of a screening programme in dedicated STI services or targeted at (sub)groups of the population, e.g. pregnant women, may significantly affect the reported number of *Chlamydia trachomatis* infections. This means that the true incidence and prevalence is likely to be higher than the rates reported here.

Age and gender distribution

Data on age were available for 336 680 of the reported confirmed cases (98% of all cases). The age category 20–24 years is the largest (42%), followed by the category 15–19 years (33%). Three quarters of the cases for which data on age were available were reported in the age group 15–24 years (253 669 cases), which also had the highest age-specific rate (821 per 100 000). The overall notification rate for this age group has continuously increased in recent years. This could be due to increased testing activities and screening programmes specifically targeted at young people (and young women in particular).

Information on gender was available for 343 280 cases. Gender was reported as unknown for 2 141 cases (0.6%). Some 140 563 cases were reported in males and 202 717 in females, with rates of 145 and 203 per 100 000 population, respectively, which results in a male-to-female rate ratio of 0.69:1. It should be noted that there is a known ascertainment bias due to the higher index of suspicion and more screening opportunities for young women.

Transmission category

Data on transmission category were not available for 56% of the chlamydia cases (n=192 004). The high proportion of missing data for transmission category is mainly due to countries that have a high number of reported cases (Denmark, Norway and Finland) but do not report transmission category. Information on transmission is available for 153 417 cases (from ten countries); 94.9% of these transmissions were reported among heterosexuals, while 4.96% of the reported cases were in men who have sex with men (MSM).

Lymphogranuloma venereum

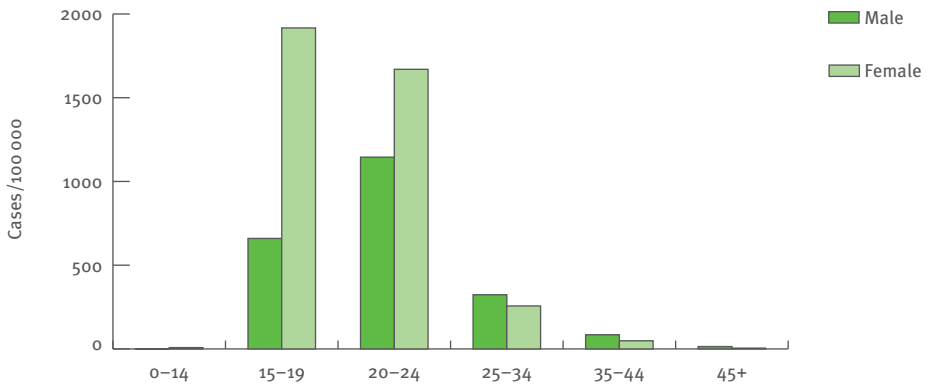
Lymphogranuloma venereum (LGV) is a systemic sexually transmitted disease caused by a variety of the bacterium *Chlamydia trachomatis*. It rarely occurs in the western world[1]. However, in recent years outbreaks have been reported from several European countries, predominantly among HIV-positive men who have sex with men[2]. Between 2000 and 2010, 1942 cases of LGV were reported from six countries: United Kingdom (1 367 cases), Netherlands (479), Denmark (47 cases), Belgium (36), Ireland (13) and the Czech Republic (1). Five countries reported a total of 503 confirmed LGV cases in 2010: the United Kingdom (428 cases), the Netherlands (66), Belgium (7), the Czech Republic (1) and Ireland (1). From those with known information on mode of transmission, 98% were diagnosed in MSM. In 2010, the United Kingdom reported 2.8 times as many cases as in 2009 (428 and 155 cases, respectively). This increase, which was not mirrored by other reporting Member States, has led to a doubling of the number of reported cases in the EU/EEA[3].

Table 2.2.1. Number and rate of reported confirmed *Chlamydia* infection cases in EU/EEA countries, 2006–10

Country	2010				2009		2008		2007		2006	
	National coverage	Report type	Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population	
			Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	N	C	1085	-	597	-	742	-	822	-	-	-
Belgium	Y	C	3310	-	2942	-	2601	-	2480	-	2060	-
Bulgaria	Y	A	49	0.6	-	-	-	-	-	-	-	-
Cyprus	Y	C	3	0.4	4	0.5	1	0.1	0	0	6	0.8
Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-
Denmark	Y	C	27950	505	29825	541.1	29116	531.7	25795	473.6	24866	458.2
Estonia	Y	C	1686	125.8	2003	149.4	2206	164.5	2536	188.9	2529	188.1
Finland	Y	C	12825	239.7	13317	250	13873	261.7	13968	264.7	13878	264.1
France	-	-	-	-	-	-	-	-	-	-	-	-
Germany	-	-	-	-	-	-	-	-	-	-	-	-
Greece	N	A	657	5.8	327	2.9	71	0.6	-	-	-	-
Hungary	Y	A	710	-	711	-	754	-	699	-	598	-
Ireland	Y	A	5188	116.1	5777	129.8	6290	142.9	5023	116.5	3144	74.7
Italy	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	976	43.4	1142	50.5	750	33	716	31.4	820	35.7
Lithuania	Y	C	367	11	326	9.7	403	12	403	11.9	556	16.3
Luxembourg	Y	C	2	0.4	0	0	4	0.4	0	0	1	0
Malta	Y	C	129	31.2	67	16.2	108	26.3	70	17.2	43	10.6
Netherlands	Y	C	11374	-	9788	-	9355	-	7821	-	7140	-
Poland	Y	A	539	1.4	908	2.4	695	1.8	627	1.6	612	1.6
Portugal	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	97	0.5	91	0.4	127	0.6	115	0.5	238	1.1
Slovakia	Y	C	186	3.4	228	4.2	105	1.9	78	1.4	61	1.1
Slovenia	Y	C	176	8.6	135	6.6	120	6	198	9.8	146	7.3
Spain	N	C	947	-	846	-	402	-	223	-	139	-
Sweden	Y	C	36010	385.5	37771	408.1	42784	465.9	45865	503.3	32533	359.6
United Kingdom	Y	A	215501	347.5	214228	347.8	203475	332.5	123629	203.4	115257	190.8
EU total	**-**	**-**	**319767**	**177.5**	**321033**	**177.3**	**313982**	**174**	**231068**	**137.4**	**204627**	**121.5**
Iceland	Y	C	2197	691.7	2271	711.1	1834	581.4	1814	589.6	1728	576.2
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	22527	463.7	22754	474.1	23488	495.8	22847	488.1	21259	458.1
Total	**-**	**-**	**344491**	**186.3**	**346058**	**186.3**	**339304**	**183.3**	**255729**	**148.2**	**227614**	**131.8**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report.
Data year given according to 'date of diagnosis' variable. Case numbers might differ from those reported in national bulletins due to different date variables.

Figure 2.2.1. Rates of reported confirmed *Chlamydia* infection cases, by age and gender, in EU/EEA countries, 2010



Source: Country reports from Belgium, Cyprus, Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Luxembourg, Malta, Norway, Romania, Slovakia, Slovenia, Sweden, United Kingdom.

Discussion

In many European countries, the incidence rates of chlamydia have increased substantially over the past 10 years. However, in a number of European countries *Chlamydia trachomatis* infection is still not a notifiable disease. The distribution of chlamydia across countries appears to be very heterogeneous, with rates varying from below 1 to more than 600 cases per 100 000 population. Almost 95% of cases are reported from six countries. However, this is likely to reflect the considerable variation in screening, diagnostic and surveillance practices across EU countries. High rates of 200/100 000 or more are reported by countries in the western and northern parts of the EU/EEA. Reported rates in central and eastern parts of the EU/EEA are much lower, at 30 or less per 100 000 population. The Baltic countries, with the exception of Estonia, have similarly low rates.

Chlamydia mainly affects young people between 15 and 24 years of age: three quarters of the infections are reported to be within this age group. Infections do not appear to be restricted to a particular risk group and predominantly affect young people, especially young women in the 15–19 years age group who show rates as high as 1917 per 100 000. The interpretation of both gender and age distribution needs to be done cautiously as data are strongly associated with current testing and screening practices, which are often targeted at teenagers and young adults.

In order to control the disease burden caused by *Chlamydia trachomatis* infection in Europe, comprehensive control programmes should be targeted to reach the most-at-risk populations, i.e. teenagers and young adults. Control programmes are crucial for early detection and treatment of all infected individuals and their sexual partners.

Only a few countries have reported confirmed cases of LGV. A substantial increase in LGV cases was observed in the United Kingdom in 2010.

Note: The coordination of the European network on STI surveillance was transferred to ECDC on 1 January 2009. More details on the epidemiology and trends of chlamydia can be found in ECDC's surveillance report on 1990–2010 data[4].

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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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-STISentinella	V	Se	A	C	Y	N	N	N	N
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Bulgaria	BG-STI	Cp	Co	P	A	-	-	-	-	-
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y
Estonia	EE-HCV/CHLAMYDIA	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
Greece	GR-NOTIFIABLE_DISEASES	-	O	P	A	Y	N	Y	N	N
Hungary	HU-STD SURVEILLANCE	Cp	Se	P	A	N	Y	N	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-AGGR_STI	Cp	Co	P	A	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-STI	V	Se	P	C	N	Y	N	N	Y
Norway	NO-MSIS_CHLAMYDIA)	Cp	Co	A	A	Y	N	N	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	A	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SPOSUR	Cp	Co	P	C	N	Y	N	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	N	N	N	Y
United Kingdom	UK-GUM-COM	O	Co	P	A	N	N	N	Y	Y

Gonorrhoea

- In 2010, a total of 31983 cases of gonorrhoea were reported by 28 EU/EEA countries, giving a rate of 10.4 per 100 000 population.
- More than a quarter of gonorrhoea infections are reported among men who have sex with men (MSM). More than 40% of all gonorrhoea cases were reported in people below 25 years of age.
- The overall rate has decreased by 5% between 2006 and 2010; however, a consistent pattern cannot be observed across countries, and a number of countries reported increasing rates.
- Between 2009 and 2010, the European Gonococcal Antimicrobial Surveillance Programme (Euro-GASP) reported decreased susceptibility of tested isolates to cefixime (9% of isolates in 2010, up from 5% in 2009). This is extremely concerning as cefixime and ceftriaxone are recommended therapy for gonorrhoea across Europe.

Gonorrhoea is a sexually transmitted infection caused by the bacterium *Neisseria gonorrhoeae*. It is the second most commonly reported bacterial STI in Europe.

Epidemiological situation in 2010

In 2010, 31983 cases of gonorrhoea were reported in 28 EU and EEA countries, resulting in a notification rate of 10.4 per 100 000 population (Table 2.2.2). No data were available from Germany or Liechtenstein. Almost 60% of all notified gonorrhoea cases were reported from the United Kingdom. The overall trend in notifications shows a five per cent decrease between 2006 and 2010. There are significantly different trends between countries, however, with the number of reported gonorrhoea cases decreasing in 10 countries but increasing in 12.

There is a wide variation in rates of reported cases, ranging from less than 1.5 per 100 000 in Luxembourg to 0.8 per 100 000 in Poland and Portugal to more than 15 per 100 000 in Latvia, and the United Kingdom.

National surveillance systems for STIs are heterogeneous, with a mixture of voluntary or mandatory reporting, sentinel or national coverage, clinical or laboratory reporting. Major variations in surveillance systems across countries in terms of coverage, completeness and representativeness make comparisons between countries difficult.

Age and gender distribution

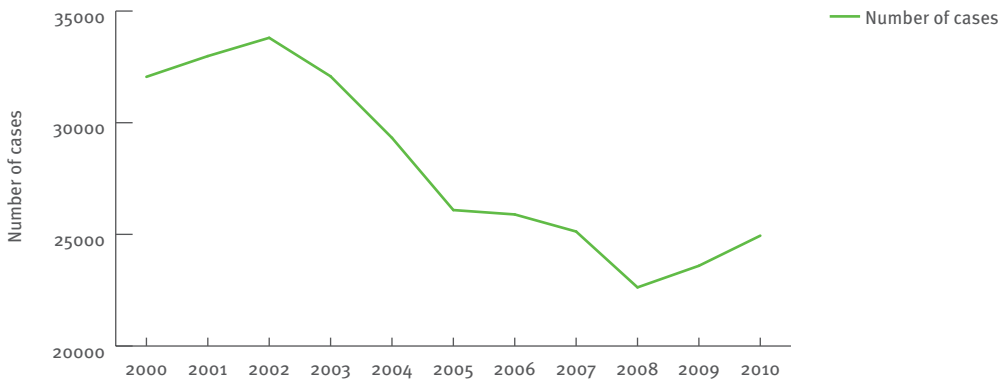
Data on age was available for 91% of all cases. The age category 25–34 years is the largest, accounting for 32% of cases, immediately followed by the category 20–24 years, with 28%. The age group 15–24 years accounted for 43% of all cases for which information on age was available. Age-specific rates of reported cases are highest among 20–24-year-olds (31 per 100 000 population). The age distribution has changed minimally since 2000; there has been, however, an increase in the proportion of cases reported in the 35–44 and 45+ age groups. Age-specific rates are still low in these groups.

Information on gender was available for 29 983 cases. Men account for 71% of all gonorrhoea cases (21 714 cases), with an overall rate of 17.1 per 100 000, compared with 6.4 per 100 000 among women (8 222 cases). The male-to-female ratio was 2.5:1 and ranged from 0.4:1 in Austria to 12.2:1 in Italy. Only Austria and Estonia reported a ratio below 1.0:1.

Transmission category

In 2010, information on transmission category was available for 15 countries (Austria, Czech Republic, Denmark,

Figure 2.2.2. Number of reported confirmed gonorrhoea cases in EU/EEA countries, 2000–10



Source: Country reports from Bulgaria, Czech Republic, Denmark, Estonia, Greece, Iceland, Ireland, Italy, Latvia, Portugal, Romania, Spain, Sweden, United Kingdom.

Estonia, France, Greece, Latvia, Lithuania, Malta, Netherlands, Norway, Romania, Slovenia, Sweden and United Kingdom), representing 80% of all reported gonorrhoea cases. The transmission category was unknown for 9% of the cases; transmission category was indicated as heterosexual in 61% of the cases, and as men who have sex with men (MSM) in 29% of the cases. Of all male cases diagnosed in 2010, 34% were reported in MSM (n=7 432).

Gonococcal antimicrobial resistance in 2010

In 2010, the number of EU/EEA Member States participating in the European Gonococcal Antimicrobial Surveillance Programme (Euro-GASP) increased from 17 to 21. Participating countries submitted 110 consecutive gonococcal isolates. Susceptibility testing was performed (by E-test or agar dilution) for the following therapeutically relevant antimicrobials: cefixime, ceftriaxone, ciprofloxacin, azithromycin, spectinomycin and gentamicin. A total of 1766 isolates were collected and tested. The majority of gonococci (83%) were collected from men. The age of the patients ranged from less than one year to 76 years, with a median of 29 years; 34% of patients were younger than 25 years. Results from the gonococcal antimicrobial resistance external quality assurance (EQA) scheme showed high comparability between centres. This suggests that surveillance results, with respect to gonococcal antimicrobial susceptibility, can be used with confidence and are comparable.

Euro-GASP identified a significant increase in the proportion of tested isolates that have decreased susceptibility to cefixime (4% in 2009 and 9% in 2010, using a cut-off of >0.125 mg/L). Isolates with this phenotype were detected in 17 countries, seven more than in the previous year. Figure 2.2.4 displays the geographical distribution of these isolates.

Discussion

There are no consistent overall EU trends for syphilis. In addition, interpretation is restricted by several factors, e.g. differences in reporting systems, reporting behaviour and probable underreporting. There also appear to be diverging trends in epidemiology in different

Table 2.2.2. Number and rate of reported gonorrhoea cases in EU/EEA countries, 2006–10

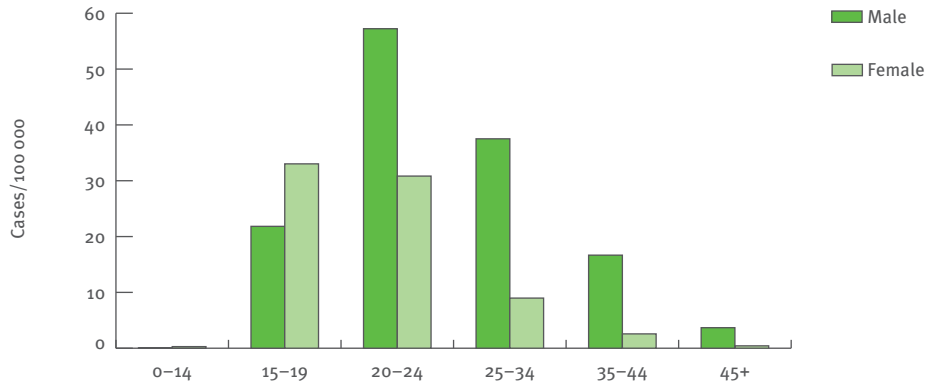
Country	2010				2009		2008		2007		2006	
	National coverage	Report type	Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population	
			Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	N	C	339	-	143	-	263	-	131	-	171	-
Belgium*	Y	C	752	-	734	-	718	-	585	-	535	-
Bulgaria	Y	A	116	1.5	191	2.5	178	2.3	149	1.9	165	2.1
Cyprus*	Y	C	23	-	7	-	2	-	5	-	8	-
Czech Republic	Y	C	744	7.1	716	6.8	809	7.8	1108	10.8	1087	10.6
Denmark	Y	C	482	8.7	563	10.2	409	7.5	352	6.5	414	7.6
Estonia	Y	C	108	8.1	126	9.4	146	10.9	176	13.1	280	20.8
Finland	Y	C	255	4.8	237	4.4	198	3.7	192	3.6	231	4.4
France*	N	C	463	-	394	-	236	-	217	-	196	-
Germany	-	-	-	-	-	-	-	-	-	-	-	-
Greece	N	A	312	2.8	164	1.5	208	1.9	201	1.8	190	1.7
Hungary*	Y	A	1170	-	872	-	892	-	1041	-	916	-
Ireland	Y	A	614	13.7	433	9.7	444	10.1	417	9.7	431	10.2
Italy*	Y	C	251	-	213	-	154	-	152	-	258	-
Latvia	Y	C	343	15.3	433	19.1	500	22	670	29.4	746	32.5
Lithuania	Y	C	315	9.5	391	11.7	533	15.8	471	13.9	437	12.8
Luxembourg	Y	C	3	0.6	6	1.2	18	3.7	1	0.2	4	0.9
Malta	Y	C	47	11.4	62	15	50	12.2	52	12.8	33	8.1
Netherlands*	Y	C	2815	-	2426	-	1969	-	1830	-	1778	-
Poland	Y	A	301	0.8	402	1.1	285	0.7	330	0.9	395	1
Portugal	Y	C	89	0.8	114	1.1	67	0.6	74	0.7	53	0.5
Romania	Y	C	479	2.2	622	2.9	631	2.9	815	3.8	1348	6.2
Slovakia	Y	C	125	2.3	172	3.2	152	2.8	81	1.5	66	1.2
Slovenia	Y	C	44	2.1	30	1.5	40	2	42	2.1	34	1.7
Spain	Y	A	1944	4.2	1954	4.3	1897	4.2	1698	3.8	1423	3.3
Sweden	Y	C	840	9	610	6.6	722	7.9	642	7	657	7.3
United Kingdom	Y	A	18580	30	17400	28.2	16451	26.9	18631	30.7	18801	31.1
EU total	**-**	**-**	**31554**	**10.4**	**29415**	**10**	**27972**	**9.7**	**30063**	**10.7**	**30657**	**11**
Iceland	Y	C	18	5.7	47	14.7	25	7.9	24	7.8	31	10.3
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	411	8.5	269	5.6	301	6.4	238	5.1	236	5.1
Total	**-**	**-**	**31983**	**10.4**	**29731**	**9.9**	**28298**	**9.6**	**30325**	**10.6**	**30924**	**10.9**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report.
* Countries with sentinel systems (rates not calculated).

countries. Data presented here must be interpreted with caution because the proportion of gonorrhoea cases that is actually diagnosed and reported is likely to differ considerably between countries.

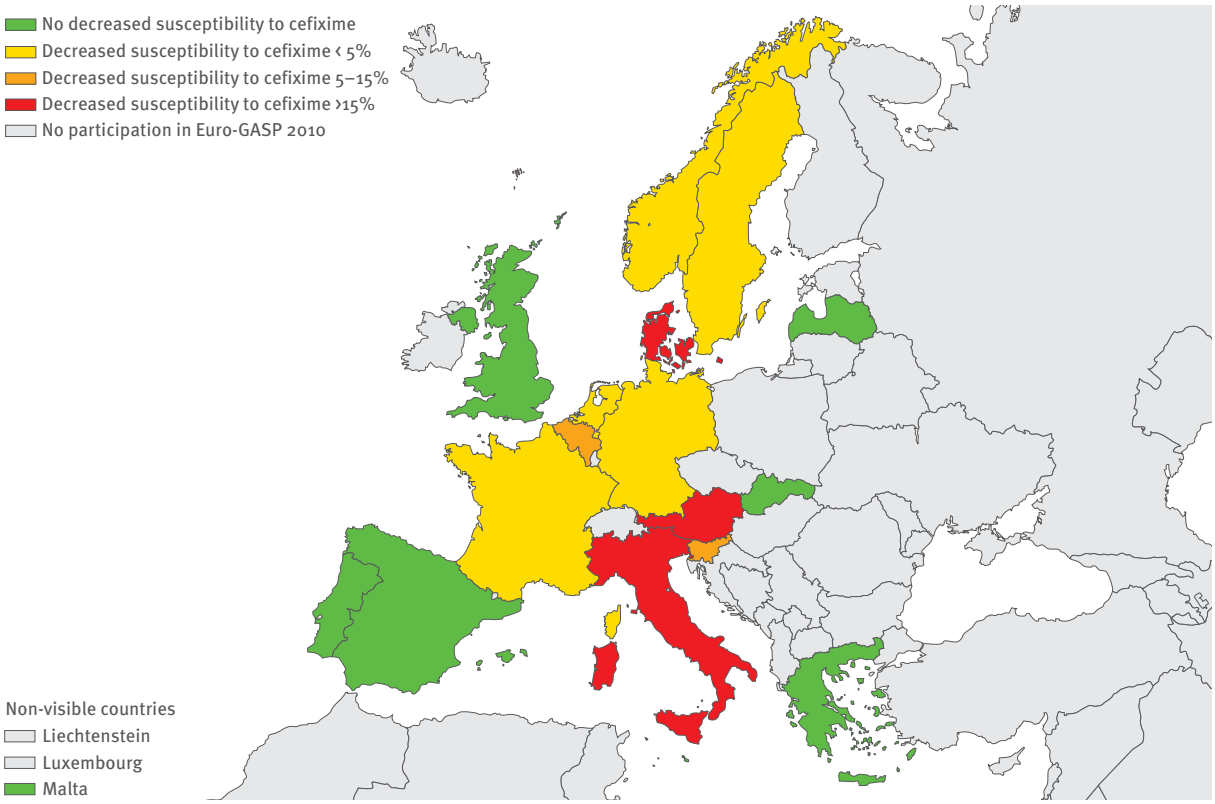
Decreased susceptibility to cefixime is extremely concerning because it is a recommended therapy for gonorrhoea across Europe, as is ceftriaxone. The continual upward drift in the MIC for ceftriaxone in the European gonococcal population therefore needs to be monitored carefully. Loss of cefixime as an oral treatment option across Europe may have major cost and compliance implications if parenterally administered ceftriaxone becomes the only viable option. The European antibiotic resistance sentinel surveillance of *Neisseria gonorrhoeae* is essential to inform treatment guidelines, thereby preventing onward transmission and reducing patient morbidity.

Figure 2.2.3. Rates of reported confirmed gonorrhoea infection cases, by age and gender, EU/EEA countries, 2010



Source: Country reports from Belgium, Czech Republic, Denmark, Estonia, Finland, Greece, Iceland, Latvia, Lithuania, Luxembourg, Malta, Norway, Portugal, Romania, Slovakia, Slovenia, Sweden, United Kingdom.

Figure 2.2.4. Gonococcal antimicrobial susceptibility surveillance in EU/EEA countries participating in Euro-GASP, 2010



Note: The coordination of the European network on STI surveillance was transferred to ECDC on 1 January 2009. More details on the epidemiology and trends of gonorrhoea can be found in the surveillance report on 1990–2010 data[1]. More details on Euro-GASP can be found in the 2010 annual report[2].

References

1. European Centre for Disease Prevention and Control. Sexually transmitted infections in Europe, 1990–2010. Stockholm: ECDC; 2012.
2. European Centre for Disease Prevention and Control. Gonococcal antimicrobial susceptibility surveillance in Europe, 2010. Stockholm: ECDC; 2012.

Surveillance systems overview

Country	Data source	Compulsory (Cp)/ voluntary (V)/other (O)	Comprehensive (Co)/ sentinel (Se)/other (O)	Active (A)/passive (P)	Case based (C)/ aggregated (A)	Data reported by				National coverage
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-STISentinella	V	Se	A	C	Y	N	N	N	N
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Bulgaria	BG-STI	Cp	Co	P	A	-	-	Y	Y	-
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-STD	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-STI_CLINICAL	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-GONOCOCC	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-STI	V	Se	A	C	Y	Y	Y	Y	N
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	A	Y	Y	Y	N	N
Hungary	HU-STD SURVEILLANCE	Cp	Se	P	A	N	Y	N	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-AGGR_STI	Cp	Co	P	A	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-STI	V	Se	P	C	N	Y	N	N	Y
Norway	NO-MSIS_B	Cp	Co	P	C	Y	Y	Y	-	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-GONOCOCCAL	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	A	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SPOSUR	Cp	Co	P	C	N	Y	N	N	Y
Spain	ES-STATUTORY_DISEASES_STI_AGGR	Cp	Co	P	A	N	Y	N	N	-
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-GUM	Cp	Co	P	A	N	N	N	Y	Y
United Kingdom	UK-LAB	O	Co	P	A	Y	N	N	N	N

Hepatitis B virus infection

- In 2010, 14 745 cases of hepatitis B virus infection were reported by 27 EU/EEA Member States, a rate of 3.43 per 100 000 population.
- The most affected age group are those between 25 and 34 years old, who account for 33.2% of the total number of cases. The incidence rate is 8.79 cases per 100 000 population in males and 7.42 cases per 100 000 in females.
- Trends over time are difficult to interpret, particularly when looking at the changes in case definitions and reporting practices in several countries during this period.
- In 2011, ECDC started to implement EU-wide enhanced surveillance with a revised case definition which distinguishes acute and chronic infections.
- Comparing hepatitis B data between countries is complex due to the differences in surveillance systems and in particular variations in the case definitions used. In addition, the variation in immunisation and screening programmes between countries should be taken into consideration.

Hepatitis B is a bloodborne virus that is associated with substantial morbidity and mortality. Acute infection is often asymptomatic, particularly in children, but may be associated with an acute hepatitis and can result in chronic infection which can lead to cirrhosis of the liver, end stage liver disease and liver cancer. Globally perinatal transmission is the most common route of infection but transmission patterns have been shifting due to the widespread rollout of vaccination programmes. In most European countries, transmission of hepatitis B infection is through sexual contact and injecting drug use.

Epidemiological situation in 2010

In 2010, 27 EU and EEA Member States reported a total of 14 745 cases of hepatitis B virus infection (no data from Belgium, Italy and Liechtenstein), a rate of 3.43 per 100 000 population (Table 2.2.3). The data for 2010 represent all confirmed cases, with the exception of Poland, where a third of the reported cases were unconfirmed. Data prior to 2010 include non-confirmed cases for a number of countries which relates to difficulties in providing data that comply with the new case definitions and in distinguishing between acute and chronic disease cases.

Drawing comparisons across Europe is difficult because of the heterogeneity in case definitions and reporting systems. Seventeen countries were able to provide data in 2010 using the revised case definition (EU 2012), as agreed by the network and prior to the formal publication of the revised definition[i]. Five of these 17 countries submitted only data on acute cases as only acute infections are notifiable nationally. Countries which provided data according to previous EU case definitions (EU 2008 and EU 2002) included only acute hepatitis B cases. Germany and Denmark provided data based on their national case definitions, including both acute and chronic cases. In addition, several countries adopted the new and revised case definition between 2007 and 2010, further complicating the interpretation of data.

In 2010, the highest total rates and numbers were observed in countries submitting data that were in compliance with the revised case definition, including data on both acute and chronic cases. The lowest total number of cases were reported by Cyprus with only seven cases (0.87 cases per 100 000) in 2010; the lowest overall rate was observed in France (0.13 per 100 000). Both countries submitted data only on acute infections.

In general, the numbers and rates of chronic infections were considerably higher than acute infections. Figures varied widely between countries. In 2010, the notification rate among acute cases ranged from 0.13 cases per 100 000 in France to 2.32 per 100 000 in the Czech Republic. Numbers and rates for chronic cases in 2010 showed considerably greater variation, with rates ranging from 1.71 per 100 000 in Slovenia to 15.19 per 100 000 in Norway. The number of chronic cases in 2010 ranged from 16 cases in Malta to 4264 in the United Kingdom.

Age and gender distribution

In 2010, 8386 of all reported cases were in males (3.87 per 100 000) and 5683 cases in females (2.50 per 100 000). This corresponds to a male-to-female rate ratio of 1.5:1.

One third of all hepatitis B cases reported were in the 25–34 age group (33.2% of the total). The highest rates in both males and females were in this age group: 8.79 per 100 000 population in males and 7.42 per 100 000 in females. Age distribution among reported cases of acute and chronic infections was similar but chronic cases had a slightly younger age profile: 57.4% of all chronic cases were under 35 years of age, compared with 43.9% of the acute cases (see Figure 2.2.5).

i Decision No 2012/506/EU: Commission Implementing Decision of 8 August 2012 amending Decision 2002/253/EC laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council (notified under document C (2012) 5538).

Discussion

One of the aims of enhanced surveillance for both hepatitis B and C is to allow for the reporting and differentiation of acute and chronic stages of the infection and to determine the main routes of transmission as well as the determinants of disease. The EU 2002 and EU 2008 case definitions for hepatitis B were limited to acute cases. However, a study of EU/EEA national surveillance systems conducted by ECDC in 2010 found major differences among national reporting systems, with some only reporting acute cases while others report a combination of acute and chronic cases. A revised case definition for hepatitis B was developed to capture cases which fall in either stages of the infection (or where the stage is unknown) to provide a more accurate assessment of the epidemiological situation.

In 2011, enhanced surveillance of hepatitis B and C was implemented through a first round of data collection which also included historical data from 2006 to 2010.

The interpretation of hepatitis B data is complicated by the different approaches taken by the various national surveillance systems. Reporting practices vary markedly by country, with several countries collecting data on acute cases only. The figures reported for chronic cases are driven by testing practices known to vary considerably across the EU. It is likely that the variations between countries also reflect the differences in local testing as well as underlying epidemiological differences between countries.

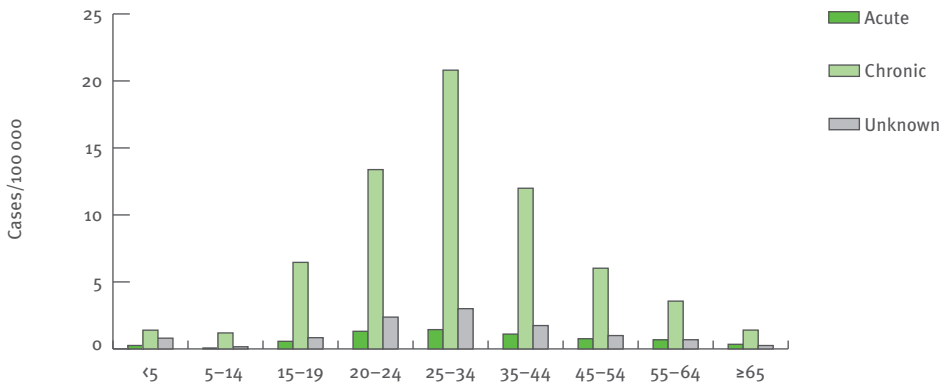
Migration seems to be a key factor responsible for the high numbers of chronic hepatitis B in many countries (e.g. Sweden, United Kingdom). A full analysis of data relating to migration will be presented in an upcoming report that will reflect the use of enhanced surveillance of hepatitis B and C. The report will also address the issue of comparability of EU data and provide a situational analysis – a tentative step towards the harmonisation of HBV surveillance across Europe.

Table 2.2.3. Number and rate of reported hepatitis B cases in EU/EEA countries, 2007–10

Country	2010									2009		2008		2007	
	Case definition for 2010 data	Total		Acute		Chronic		Unknown		Total		Total		Total	
		Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	EU 2008	136	1.62	135	1.61		-	1	0.01	45	0.54	43	0.52	86	1.04
Belgium	-	-	-	-	-	-	-	-	-	129	1.2	122	1.14	138	1.3
Bulgaria*	EU 2002	387	5.12	-	-	-	-	-	-	504	6.63	624	8.17	753	9.81
Cyprus**	EU 2008	7	0.87	-	-	-	-	-	-	7	0.88	7	0.89	13	1.67
Czech Republic	EU 2012	244	2.32	244	2.32	-	-	-	-	247	2.36	304	2.92	304	2.95
Denmark	National	170	3.07	28	0.51	142	2.57	-	-	180	3.27	204	3.73	287	5.27
Estonia	EU 2012	55	4.1	23	1.72	32	2.39	-	-	60	4.48	75	5.59	78	5.81
Finland	EU 2012	284	5.31	38	0.71	246	4.60	-	-	360	6.76	318	6	231	4.38
France***	EU 2012	86	0.13	86	0.13	-	-	-		94	0.15	130	0.2	141	0.22
Germany	National	755	0.92	651	0.80	-	-	104	0.13	743	0.91	820	1	1003	1.22
Greece	EU 2008	35	0.31	35	0.31	-	-	-	-	52	0.46	80	0.71	82	0.73
Hungary	EU 2012	60	0.6	60	0.60	-	-	-	-	67	0.67	88	0.88	80	0.79
Ireland	EU 2012	642	14.37	48	1.07	555	12.42	39	0.87	795	17.87	896	20.36	840	19.48
Italy	-	-	-	-	-	-	-	-	-	710	1.18	788	1.32	1162	1.97
Latvia	EU 2012	297	13.21	-	-	-	-	297	13.21	433	19.15	558	24.57	579	25.38
Lithuania	EU 2012	71	2.13	71	2.13	-	-	-	-	58	1.73	90	2.67	84	2.48
Luxembourg*	National	18	3.59	-	-	-	-	-	-	19	3.85	21	4.34	14	2.94
Malta	EU 2012	20	4.83	4	0.97	16	3.86		-	22	5.32	4	0.97	3	0.74
Netherlands	EU 2012	1572	9.48	165	1.00	1388	8.37	19	0.11	594	3.6	234	1.43	273	1.67
Poland	EU 2008	128	0.34	128	0.34	-	-	-	-	199	0.52	262	0.69	364	0.95
Portugal	EU 2012	16	0.15	-	-	-	-	16	0.15	67	0.63	53	0.5	64	0.6
Romania	EU 2012	486	2.26	486	2.26	-	-	-	-	586	2.73	710	3.3	928	4.3
Slovakia	EU 2012	208	3.83	111	2.05	97	1.79	-	-	230	4.25	185	3.43	152	2.82
Slovenia	EU 2008	42	2.05	7	0.34	35	1.71	-	-	43	2.12	54	2.69	40	1.99
Spain*	EU 2008	662	1.44	-	-	-	-	-	-	710	1.55	758	1.67	645	1.45
Sweden	EU 2012	1534	16.42	123	1.32	1339	14.34	72	0.77	1474	15.92	1472	16.03	1405	15.42
United Kingdom**	EU 2012	6036	10.74	361	0.64	4264	7.59	1411	2.51	6241	11.1	5639	10.03	5544	9.86
EU total	-	**13951**	**3.29**	**2804**	**0.79**	**8114**	**7.60**	**1959**	**1.03**	**14669**	**2.97**	**14539**	**2.95**	**15293**	**3.12**
Iceland	EU 2012	29	9.13	2	0.63	-	-	27	8.5	23	7.2	61	19.34	47	15.28
Liechtenstein	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Norway	EU 2012	765	15.75	27	0.56	738	15.19	-	-	890	18.54	782	16.51	628	13.42
Total	-	**14745**	**3.43**	**2833**	**0.78**	**8852**	**7.93**	**1986**	**1.05**	**15582**	**3.12**	**15382**	**3.09**	**15968**	**3.22**

Source: Country reports and Eurostat data for all populations except UK. UK data: Office for National Statistics; mid-2008 population figures are used across all years, excluding the population for Scotland. Due to the significant differences in surveillance systems between countries and over time, comparisons between individual Member States and over time should be drawn with caution. Data year given according to 'date of diagnosis' variable. Case numbers might differ from those reported in national bulletins due to different date variables.
* Data submitted using previous record type version with no classification of data by disease status.
** Excludes data from Scotland.
*** Underreporting of cases occurs in many countries and was estimated to be as high as 51% in France in 2005.

Figure 2.2.5. Rates of reported confirmed hepatitis B cases, by age and disease status, EU/EEA countries, 2010



Source: Country reports from Austria, Denmark, Finland, Germany, Greece, Hungary, Ireland, Latvia, Norway, Romania, Slovakia, Slovenia, Sweden, United Kingdom.

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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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-HBV/GIARDIASIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-HEPATITISB	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-HEPATITISB	O	Co	P	C	Y	N	Y	N	Y

Hepatitis C virus infection

- In 2011, ECDC started to implement EU-wide enhanced surveillance with a revised case definition which distinguishes acute and chronic infections.
- In 2010, 26 678 cases of hepatitis C were reported by 26 EU/EEA Member States, with an overall rate of 6.93 per 100 000 population.
- The most affected age group are those between 25 and 34 years of age, who account for 14.3% of the total number of cases. This corresponds to a rate of 21.5 cases per 100 000 in males and 10.3 cases per 100 000 in females.
- Interpretation of the data between countries is complex due to the differences in surveillance systems and the different case definitions used. In addition to these differences, the variations in testing practices between countries should be taken into consideration.

Hepatitis C is a bloodborne virus associated with substantial morbidity and mortality. Infection with the virus results in an acute phase which is asymptomatic for the majority of individuals. Some of those infected with the virus will naturally clear the virus from their body. However, in around 80% of cases, acute infection progresses to chronic infection, which may lead to cirrhosis and liver cancer. In Europe, injecting drug use is a major transmission route for hepatitis C virus infections. Sexual transmission is generally a much less common route of transmission, although recent outbreaks have occurred among HIV-infected men who have sex with men in several European cities.

Epidemiological situation in 2010

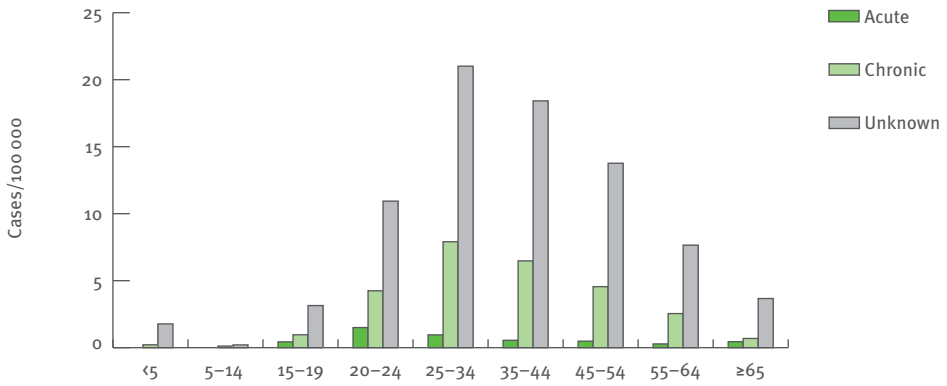
In 2010, 26 678 cases of hepatitis C virus (HCV) infection were reported by 26 EU and EEA Member States (Belgium, France, Liechtenstein and Spain did not report); this corresponds to a rate of 6.93 per 100 000 population (Table 2.2.4). This overall rate shows no obvious trend between 2007 and 2010. All cases reported from countries in 2010 were confirmed. Data prior to 2010 include non-confirmed cases for several countries, which relates to difficulties in providing data that met the new case definitions and problems in distinguishing between acute and chronic disease.

Comparison of figures across Europe is difficult on account of the heterogeneity in case definitions and reporting systems. Fourteen countries were able to submit data for 2010 using the revised case definition (EU 2012), as agreed by the network and prior to the formal publication of the revised definition[i]. However, as with hepatitis B, some countries were unable to upload acute and chronic cases of infection as only acute cases were notifiable nationally. Also, several countries adopted the new and revised case definition between 2007 and 2010, further complicating the interpretation of data.

In 2010, the highest total rates and numbers were observed in countries submitting data according to the revised case definition and including data on both acute and chronic cases (although many of these cases were classified as unknown). Greece and Hungary each reported only 11 cases in total during 2010, with overall

i Decision No 2012/506/EU: Commission Implementing Decision of 8 August 2012 amending Decision 2002/253/EC laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council (notified under document C (2012) 5538).

Figure 2.2.6. Rates of reported confirmed hepatitis C cases, by age and disease status, EU/EEA countries, 2010



Source: Country reports from Austria, Denmark, Finland, Germany, Greece, Hungary, Ireland, Latvia, Norway, Romania, Slovakia, Slovenia, Sweden, United Kingdom.

rates of 0.10 and 0.11 cases per 100 000, respectively. Both countries only reported acute cases because only acute hepatitis is notifiable in these countries.

The numbers and rates of chronic infections were generally higher than for acute infections. The rates for acute disease show considerably less variation between countries than the rates for chronic disease. Many countries were not able to classify cases according to the criteria and classified cases as 'unknown'. The large variation in the 'unknown' cases between countries reflects the heterogeneity in the type of cases classified by countries as 'unknown'.

Age and gender distribution

In 2010, 16 134 of the reported cases were in males (9.73 per 100 000) and 8 289 cases in females (4.79 per 100 000). This corresponds to a male-to-female rate ratio of 2.0:1. With the exception of the 5–14 age group, the notification rates were higher in males than females for every age group.

Just over a half of all the hepatitis C cases reported were aged between 25 and 44 (54.3% of cases). The notification rate was highest for both males and females in the 25–34 age group at 21.5 per 100 000 in males and 10.3 per 100 000 in females. The age distribution by disease status shows that reported cases of acute infection have a slightly younger profile than reported cases of chronic infection, with 55.1% of acute cases aged under 35 years compared with 41.8% of chronic cases (see Figure 2.2.6).

Discussion

One of the aims of enhanced surveillance for both hepatitis B and C is to allow for the reporting and differentiation of acute and chronic stages of the infection and to determine the main routes of transmission as well as the determinants of disease. The previous case definition (EU 2002) for hepatitis C only captured acute cases, and although the EU 2008 definition captured both acute and chronic cases, it did not allow for any differentiation. However, a study of EU/EEA national surveillance systems conducted by ECDC in 2010 found major differences among national reporting systems. While most

Table 2.2.4. Number and rate of reported hepatitis C cases in EU/EEA countries, 2007–10

Country	2010									2009		2008		2007	
	Case definition for 2010 data	Total		Acute		Chronic		Unknown		Total		Total		Total	
		Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	EU 2008	243	2.90	234	2.79	-	-	9	0.11	277	3.32	271	3.26	301	3.63
Belgium	-	-	-	-	-	-	-	-	-	34	0.32	43	0.4	434	4.1
Bulgaria*	EU 2008	58	0.77	-	-	-	-	-	-	93	1.22	89	1.16	98	1.28
Cyprus*	EU 2008	26	3.24	-	-	-	-	-	-	33	4.14	2	0.25	9	1.16
Czech Republic	EU2008	709	6.75	-	-	-	-	709	6.75	836	7.99	974	9.38	1004	9.76
Denmark	National	313	5.66	6	0.11	301	5.44	6	0.11	295	5.35	320	5.84	415	7.62
Estonia	EU 2012	273	20.37	34	2.54	239	17.83	-	-	227	16.94	200	14.91	185	13.78
Finland	EU 2012	1146	21.41	-	-	-	-	1146	21.41	1050	19.71	1142	21.55	1165	22.08
France	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	EU 2012	5220	6.38	-	-	-	-	5220	6.38	5412	6.6	6217	7.56	6855	8.33
Greece	EU 2008	11	0.10	-	-	-	-	11	0.10	10	0.09	18	0.16	20	0.18
Hungary	EU 2012	11	0.11	11	0.11	-	-	-	-	31	0.31	33	0.33	22	0.22
Ireland	EU 2012	1233	27.60	5	0.11	62	1.39	1166	26.10	1242	27.91	1501	34.1	1544	35.8
Italy	National	158	0.26	-	-	-	-	158	0.26	215	0.36	266	0.45	308	0.52
Latvia	EU 2012	1030	45.81	-	-	-	-	1030	45.81	1314	58.11	1490	65.61	1718	75.31
Lithuania	EU 2012	41	1.23	41	1.23	-	-	-	-	47	1.40	43	1.28	46	1.36
Luxembourg*	National	73	14.54	-	-	-	-	-	-	55	11.14	58	11.99	58	12.18
Malta	EU 2012	15	3.62	-	-	-	-	15	3.62	26	6.29	1	0.24	1	0.25
Netherlands	EU 2008	27	0.16	27	0.16	-	-	-	-	50	0.3	48	0.29	63	0.39
Poland	EU 2008	1965	5.15	-	-	1965	5.15	-	-	1939	5.08	2353	6.17	2753	7.22
Portugal	National	39	0.37	-	-	-	-	39	0.37	85	0.8	46	0.43	57	0.54
Romania	EU 2012	76	0.35	-	-	-	-	76	0.35	66	0.31	101	0.47	166	0.77
Slovakia	EU 2012	230	4.24	32	0.59	198	3.65	-	-	318	5.88	332	6.15	331	6.14
Slovenia	EU2008	87	4.25	9	0.44	78	3.81	-	-	111	5.46	82	4.08	110	5.47
Spain	-	-	-	-	-	-	-	-	-	-	-	129	0.28	214	0.48
Sweden	EU 2012	1899	20.33	89	0.95	778	8.33	1032	11.05	2173	23.48	2474	26.94	2047	22.46
United Kingdom	EU 2012	9952	16.21	-	-	1502	2.42	8450	13.62	10708	17.38	10298	16.83	9494	15.62
EU total	**-**	**24835**	**6.54**	**488**	**0.73**	**5123**	**3.99**	**19067**	**6.62**	**26647**	**6.84**	**28531**	**6.58**	**29418**	**6.82**
Iceland	EU 2012	59	18.58	-	-	-	-	59	18.58	103	32.25	93	29.48	81	26.33
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	EU 2012	1784	36.72	-	-	-	-	1784	36.72	2292	47.76	3334	70.38	338	7.22
Total	**-**	**26678**	**6.93**	**488**	**0.73**	**5123**	**3.99**	**20910**	**6.99**	**29042**	**7.36**	**31958**	**7.28**	**29837**	**6.83**

Source: Country reports and Eurostat data for all population data. Due to the significant differences in surveillance systems between countries, comparisons between individual Member States and over time should be drawn with caution. Data year given according to 'date of diagnosis' variable. Case numbers might differ from those reported in national bulletins due to different date variables.
* Data submitted use previous version of record type; classification of data by disease status not possible.

countries reported data for both acute and chronic cases of hepatitis C, some only collected information on acute cases. The current EU case definition for hepatitis C is based on the EU 2008 definition and includes an additional laboratory test (antigen test).

In 2011, enhanced surveillance of hepatitis B and C was implemented through a first round of data collection which included data from 2006 to 2010. The interpretation of data is complicated by differences in the national surveillance systems (e.g. the use of different case definitions) although this is less of an issue with hepatitis C than hepatitis B. As with hepatitis B, reporting practices vary between countries, with several countries only reporting data on acute hepatitis because only acute hepatitis cases are notifiable. Acute cases are difficult to identify and serological classification is not straightforward. Chronic infection may not present with any symptoms for many years, which implies that the reported numbers are driven by testing practices that vary considerably across the EU. It is likely that the variations between countries also reflect the differences in local testing as well as underlying epidemiological differences between countries.

An upcoming surveillance report on hepatitis B and C will address the issue of comparability of EU data and provide a situational analysis – a tentative step towards the harmonisation of HBV surveillance across Europe.

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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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-HCV/CHLAMYDIA	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	A	N	Y	Y	N	Y
Portugal	PT-HEPATITISC	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-HEPATITISC	O	Co	A	C	Y	N	Y	N	Y

HIV/AIDS

- HIV infection remains of major public health importance in EU/EEA countries, characterised by continuously rising case numbers. By contrast, the overall number of diagnosed AIDS cases has continued to decline, although in some eastern EU countries the number of AIDS cases continues to increase.
- In 2010, 27116 diagnosed cases of HIV infection were reported in 28 EU/EEA Member States, a rate of 5.7 per 100000 population. This provisional number is likely to rise due to the delay in reporting of HIV diagnoses.
- The highest proportion of the total number of HIV cases in Europe was reported among men who have sex with men (38%), followed by individuals infected by heterosexual contact (24%) and injecting drug use (4%).
- Among the 28 EU/EEA countries that have consistently reported HIV data since 2004, the rate of reported cases is stable, ranging from 6.5 per 100000 (2004) to 5.7 per 100000 (2010). When adjusted for reporting delay, the rate increases to 6.2 per 100000 (2010).

Human immunodeficiency virus (HIV) is a retrovirus which causes acquired immunodeficiency syndrome (AIDS), characterised as progressive failure of the immune system, leaving the human body vulnerable to life-threatening opportunistic infections and cancers. The modes of transmission include unprotected sexual intercourse, sharing of needles and syringes for injecting drugs, mother-to-child transmission, transfusion of contaminated blood or its products.

Epidemiological situation in 2010

In the EU/EEA, 27116 HIV cases were diagnosed in 2010 and reported by 28 of 30 countries (no data from Austria or Liechtenstein); this corresponds to a rate of 5.7 per 100000 population (Table 2.2.5). The countries with the highest rates of HIV cases in 2010 were Estonia (27.8, 372 cases), Latvia (12.2, 274 cases), Belgium (11.0, 1196 cases) and the United Kingdom (10.7, 6654 cases). The lowest rates were reported by Romania (0.7, 152 cases) and Slovakia (0.5, 28 cases).

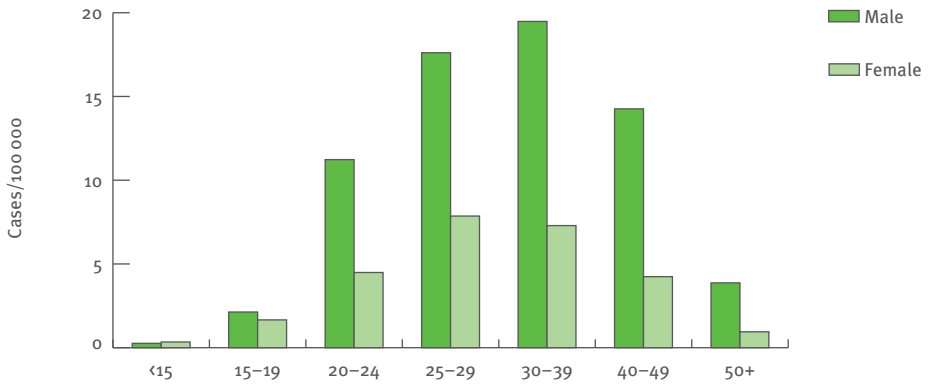
Among the 28 EU/EEA countries that have consistently reported HIV data since 2004, the rate of newly diagnosed cases of HIV per 100000 population has been stable over time, ranging from 6.5 per 100000 in 2004 (27439 cases) to 5.7 per 100000 (27116 cases) in 2010. It should be noted that that the number of HIV diagnoses reported in recent years was significantly affected by reporting delays. Since 2004, rates of diagnosed cases of HIV have more than tripled in Bulgaria and Iceland and increased by more than 50% in the Czech Republic, Finland, Hungary and Slovakia; rates have decreased by more than 20% in Estonia, Luxembourg and Romania.

Age and gender distribution

In 2010, 19839 HIV cases were reported in men (74%) and 7119 in women (26%), a rate of 8.6 and 2.9 per 100000, respectively. The overall male-to-female ratio was 2.8. The ratio was highest in Hungary (15.7) and Slovakia (8.3). The male-to-female ratio was higher than five in the Czech Republic, Slovenia, Malta, Greece, the Netherlands and Germany.

In the subgroup with information on age, 11% per cent of HIV infections diagnosed in 2010 were reported in 15–24-year-old individuals; data on age and gender were

Figure 2.2.7. Number of newly diagnosed cases of HIV infection, by age and gender, EU/EEA countries, 2010



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

available for 26 506 cases (97.87%). One third of the newly diagnosed cases of HIV infection were reported in the age group 30–39 years, irrespective of gender. On average, men were older at the time of HIV diagnosis than women (Figure 2.2.7).

Transmission category

Data on transmission mode indicate that men who have sex with men (MSM) account for 38% of all reported HIV infections, followed by heterosexual contacts (24%) if cases from countries with generalised HIV epidemics are excluded. Injecting drug use accounted for only 4% of the reported HIV infections in 2010. Transmission mode was reported as 'unknown' for 4 993 cases (18%). One per cent of reported HIV cases included mother-to-child transmission, nosocomial infection, and transfusion of blood or blood products.

Since 2004, 26 EU/EEA countries have consistently reported data on transmission mode. When adjusted for reporting delay, it appears that all transmission modes are affected consistently and adjustment resulted in a 4–10% increase. Adjusted trends by transmission mode and in total (EU/EEA) are presented in Figure 2.2.8.

- The number of HIV cases among MSM has increased by 39%, from 7 285 cases in 2004 to 10 104 in 2010.
- The number of heterosexually acquired cases (excluding cases originating from countries with generalised HIV epidemics) remained stable between 2004 (around 6 200 cases) and 2010 (7 000). The number of cases originating from countries with a generalised HIV epidemic decreased by 41%, from 7 671 in 2004 to 4 520, in 2010.
- The number of HIV cases among injecting drug users has declined by 44%, from 1 987 in 2004 to 1 116 in 2010.
- The number of HIV cases transmitted from mother to child decreased by 26%, from 321 in 2004 to 239 in 2010; cases caused by nosocomial transmission decreased by 20% (from 25 in 2004 to 20 in 2010); transmission by blood transfusion decreased by 25% (from 91 cases in 2004 to 69 in 2010).
- It is a cause for concern that the number of cases with unknown risk factors has increased by 30%, from 3 145 in 2004 to 4 104 in 2010.

Table 2.2.5. Number and rate of newly diagnosed HIV infections in EU/EEA countries, 2004–10

Country	2010		2009		2008		2007		2006		2005		2004	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Belgium	1196	11.0	1135	10.6	1095	10.3	1069	10.1	1016	9.7	1069	10.2	1002	9.6
Bulgaria	163	2.2	171	2.2	123	1.6	126	1.6	91	1.2	83	1.1	50	0.6
Cyprus	41	5.1	38	4.8	37	4.7	46	5.9	35	4.6	43	5.7	25	3.4
Czech Republic	180	1.7	156	1.5	148	1.4	121	1.2	91	0.9	90	0.9	72	0.7
Denmark	275	5.0	236	4.3	285	5.2	306	5.6	245	4.5	264	4.9	306	5.7
Estonia	372	27.8	411	30.7	545	40.6	633	47.2	668	49.7	621	46.1	743	55
Finland	190	3.6	181	3.4	149	2.8	190	3.6	191	3.6	143	2.7	122	
France	3952	6.1	5388	8.4	5737	9	5655	8.9	5674	9	5974	9.5	5754	9.2
Germany	2918	3.6	2885	3.5	2850	3.5	2800	3.4	2666	3.2	2508	3	2224	2.7
Greece	531	4.7	572	5.1	592	5.3	546	4.9	488	4.4	536	4.8	490	4.4
Hungary	182	1.8	140	1.4	145	1.4	119	1.2	81	0.8	106	1	75	0.7
Iceland	24	7.6	15	4.7	10	3.2	13	4.2	11	3.7	8	2.7	4	1.4
Ireland	330	7.4	395	8.9	405	9.2	391	9.1	353	8.4	326	7.9	358	8.9
Italy*	2884	5.9	2588	6.0	2038	6.7	1960	6.5	1805	7.8	1496	7.7	1667	8.7
Latvia	274	12.2	275	12.2	358	15.8	350	15.3	299	13	299	13	323	13.9
Lithuania	153	4.6	180	5.4	95	2.8	106	3.1	100	2.9	120	3.5	135	3.9
Luxembourg	44	8.8	51	10.3	51	10.5	42	8.8	48	10.2	49	10.6	61	13.4
Malta	17	4.1	19	4.6	28	6.8	14	3.4	24	5.9	15	3.7	15	3.8
Netherlands	995	6.0	1105	6.7	1218	7.4	1189	7.3	1079	6.6	1193	7.3	1144	7
Norway	258	5.3	282	5.9	299	6.3	248	5.3	276	5.9	219	4.8	251	5.5
Poland	927	2.4	960	2.5	854	2.2	812	2.1	816	2.1	699	1.8	675	1.8
Portugal	952	8.9	1569	14.8	1820	17.1	1791	16.9	1843	17.4	1787	17	1960	18.7
Romania	152	0.7	159	0.7	185	0.9	191	0.9	221	1	238	1.1	304	1.4
Slovakia	28	0.5	53	1.0	53	1	39	0.7	27	0.5	21	0.4	15	0.3
Slovenia	35	1.7	48	2.4	48	2.4	37	1.8	33	1.6	38	1.9	24	1.2
Spain*	2907	8.9	2947	9.0	2865	10.2	2389	9.8	1731	9.7	1518	9.1	1533	9.4
Sweden	482	5.2	404	4.4	383	4.2	458	5	373	4.1	374	4.2	415	4.6
United Kingdom	6654	10.7	6621	10.7	7233	11.8	7324	12	7451	12.3	7840	13.1	7692	12.9
Total	**27116**	**5.7****	**28984**	**6.2**	**29649**	**6.6**	**28965**	**6.5**	**27736**	**6.5**	**27677**	**6.6**	**27439**	**6.5**

Source: Country reports
Note: Levels of underreporting of cases vary significantly between countries; conclusions from comparisons between countries should be drawn with caution.
* Sub-national reporting, rate calculated based on sub-national coverage.
** Rate of 6.2 per 100 000 when adjusted for reporting delay.

AIDS diagnoses

In 2010, 4 666 cases of AIDS were diagnosed in 28 EU/EEA countries (no data from Sweden or Liechtenstein), a rate of 0.9 cases per 100 000 population. The highest rates were reported by Latvia (5.5), Portugal (3.3), Spain (2.0) and Estonia (1.9). In the EU/EEA, a 49% decrease was observed between 2004 (1.9, 9 171 cases) and 2010 (0.9, 4 666); these numbers are unadjusted for reporting delay and underreporting. Despite this overall decrease, an increase was reported in Bulgaria, the Czech Republic, Finland, Hungary, Latvia, Lithuania and Malta.

HIV among injecting drug users in Greece and Romania, 2011

An increase in the number of HIV infections was reported among injecting drug users (IDUs) in Greece[1]. In 2006–2010, between nine and 16 cases were reported annually among IDUs, representing 2–3% of the total number of HIV infections. During 2011, HIV increased sharply among IDUs, with a total of 241 cases, a 15-fold increase compared with previous years[2]. Prevalence studies have also detected a steep increase of HIV among IDUs in 2011, mostly in Athens[3].

In November 2011, the Romanian authorities reported a substantial increase in the number of HIV infections among IDUs in 2011. HIV infections among IDUs increased to 62 cases in the first nine months of 2011[4], a steep increase from fewer than ten reported cases annually between 2007 and 2009.

The reported increase of cases was thought to be associated with changes in injecting risk patterns, low and decreasing coverage of preventive services and deteriorating financial resources[4].

Other EU/EEA countries reported no changes in the number of HIV infections or HIV prevalence in IDUs; however, six countries reported increases in HIV, injecting risk indicators or low coverage of prevention services[4].

Discussion

Surveillance data suggest that the HIV epidemic is evolving with diverse transmission patterns across countries. The number of people living with HIV and AIDS is steadily increasing; HIV/AIDS continues to be an important public health problem. HIV is concentrated in key populations at higher risk, such as MSM, migrant populations and IDU[5].

In 2010, the highest proportion of HIV cases was diagnosed in MSM. Despite the decreasing number of HIV infections among IDUs, the recent outbreaks in Greece and Romania demonstrate the importance of provision of adequate and appropriate harm reduction services, including preventive measures.

The high number of heterosexually acquired HIV infections also suggests a need for targeted public health action as almost a third of these cases are diagnosed in individuals originating from countries with generalised HIV epidemics.

Enhanced surveillance for HIV in Europe is essential to inform the national and international public health response to the HIV epidemic.

References

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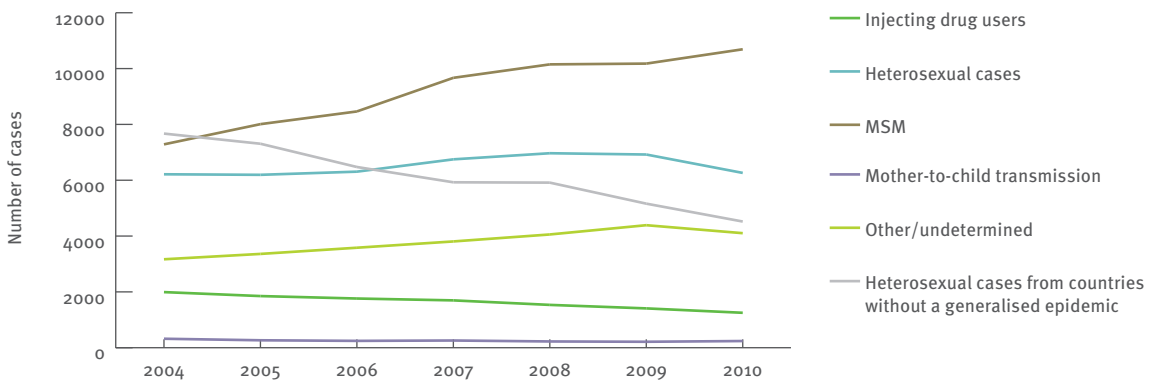
5. European Centre for Disease Prevention and Control; WHO Regional Office for Europe. HIV/AIDS surveillance in Europe 2010. Stockholm: ECDC; 2011.

Figure 2.2.8. Number of newly diagnosed cases of HIV infection (adjusted for reporting delay), by transmission mode, origin and year, EU/EEA countries, 2004–10



Note: Austria, Estonia and Poland not included.

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
						Laboratories	Physicians	Hospitals	Others	
Belgium	BE-HIV/AIDS	V	Co	A	C	Y	Y	Y	N	Y
Bulgaria	BG-HIV	Cp	Co	P	C	Y	N	N	N	Y
Cyprus	CY-HIV/AIDS	Cp	Co	A	C	N	N	N	Y	Y
Czech Republic	CZ-HIV/AIDS	Cp	Co	A	C	Y	Y	Y	N	Y
Denmark	DK-HIV	Cp	Co	P	C	Y	Y	N	N	Y
Estonia	EE-HIV	Cp	Co	P	C	Y	Y	Y	N	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MNOID-HIV	Cp	Co	P	C	Y	Y	Y	N	Y
Germany	DE-SURVNET@RKI7.3-HIV	Cp	Co	P	C	Y	Y	Y	N	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-HIV/AIDS	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-HIV/AIDS	V	Co	P	C	Y	Y	Y	N	Y
Italy	IT-COA-ISS	Cp	Se	P	C	Y	N	Y	-	N
Latvia	LV-HIV/AIDS	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-AIDS_CENTRE	Cp	Co	P	C	Y	Y	N	N	-
Luxembourg	LU-HIV	V	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	-
Netherlands	NL-HIV/AIDS	V	Co	P	C	N	Y	Y	N	Y
Norway	NO-MSIS_B	Cp	Co	P	C	Y	Y	Y	N	-
Poland	PL-HIV	Cp	Co	P	C	Y	Y	N	N	-
Portugal	PT-HIV/AIDS	Cp	Co	P	C	Y	Y	N	N	Y
Romania	RO-RSS	Cp	Co	P	C	N	Y	Y	N	-
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-HIVSUR-HIV	Cp	Co	P	C	N	Y	N	N	Y
Spain	ES-HIV	Cp	Co	P	C	Y	Y	N	N	N
Sweden	SE-SweHIVReg	Cp	Co	P	C	Y	Y	Y	N	Y
United Kingdom	UK-HIV	V	Co	A	C	Y	Y	Y	Y	Y

Syphilis

- In 2010, 17 884 syphilis cases were reported from 29 EU/EEA Member States, resulting in an overall rate of 4.4 per 100 000 population.
- Syphilis was reported three times more frequently in men than in women, a rate of 6.6 and 1.8 per 100 000 population, respectively. Half (55%) of all syphilis cases with information on transmission category were reported in MSM.
- One sixth of all syphilis cases in 2010 (17%) were reported in young people between 15 and 24 years of age; the majority of the cases were reported among people older than 25 years.
- The overall rate has decreased from 8.4 per 100 000 population in 2000 to 4.4 in 2010. This is mainly due to a substantial decrease of cases in a number of countries that reported very high rates of syphilis in the past decade. In other countries, dramatic increases were noted; the male-to-female ratio indicates that this may be due to recent increases of syphilis among MSM.
- In 2010, 59 congenital syphilis cases were reported by 21 countries, a rate of 2.5 per 100 000 live births. The trend of reported congenital syphilis cases has remained stable over the years, however it is suspected that there is considerable underreporting.

Syphilis is a sexually transmitted infection caused by the spirochaeta *Treponema pallidum*. It is the third most frequently reported sexually transmitted disease in the EU after chlamydia and gonorrhoea.

Epidemiological situation in 2010

In 2010, 17 884 syphilis cases were reported by 29 EU/EEA Member States, resulting in a reported case rate of 4.4 per 100 000 population (Table 2.2.6). Almost 60% of all cases were reported by four countries (Germany, United Kingdom, Spain and Romania).

Between 2006 and 2010, the number of reported cases increased in 18 countries and decreased in 11 countries, resulting in an overall decrease of 13% (Table 2.2.6). This is mainly due to a substantial decrease of cases in a number of countries that have reported very high rates of syphilis in the past. The largest decrease was observed in Estonia, Latvia and Romania. The highest increase (by more than 100%) was observed in the Czech Republic, Denmark, Slovakia, Slovenia, Austria and Malta.

There is a wide variation in notification rates, with the lowest (below three per 100 000) being reported in Norway, Poland, Greece, Ireland, Sweden, Slovenia, Portugal, Iceland and Luxembourg, and the highest in Lithuania (10.4 per 100 000 population), Romania (8.3) and Denmark (7.5).

Age and gender distribution

Information on gender was available for 14 901 cases of syphilis, of which 11 770 were reported in males and 3 131 in females, with rates of 6.6 and 1.8 per 100 000 population, respectively. The highest rates for men were reported by Lithuania (13.6 per 100 000) and Denmark (13.2), while the highest rates for women were reported by Romania (8.3) and Lithuania (7.6). Overall, the male-to-female ratio was 3.7:1, with marked differences between countries. Ratios above 10 were reported by France, Norway, Germany and the Netherlands. A male-to-female ratio below one was reported by Austria. Romania, Estonia, Bulgaria and Slovakia reported an almost equal number of syphilis cases in men and women.

In 2010, information on age was available for 13 860 cases. The age categories 25–34 (31% of all reported cases) and 35–44 years (28% of cases) had the largest number of cases.

The majority of cases in 2010 (59%) were reported in the age groups 25–34 years (31% of cases, 6.1 cases per 100 000 population) and 35–44 years (28% of cases, 4.8 per 100 000). Only 17% of cases are reported in the 15–24 years age group (Figure 2.2.9).

Transmission category

In 2010, information on transmission category was available for 16 countries, corresponding to 36% of the syphilis cases (n=6 398). Of these cases, transmission category was reported as unknown (11%), heterosexual (34%), or MSM (55%). The male-to-female ratio indicates that the rate increase in a number of countries in the past decade may be due to increases of syphilis among men who have sex with men.

Congenital syphilis

In 2010, 21 EU/EEA countries reported data on congenital syphilis: seven countries reported zero cases; 14 countries reported a total of 59 cases, all of which were confirmed. The majority of cases were reported from Poland (18 cases), Portugal (11 cases), Italy (eight cases) and Romania (six cases). The number of cases reported in 2010 decreased by 40% compared with 2009. This is mainly because Bulgaria, which reported 30% of all cases in 2009, did not report congenital syphilis in 2010. The rate per 100 000 live births is 2.5, with the highest rates being reported by Portugal (10.9 per 100 000), Estonia (6.3), Lithuania (5.6) and Poland (4.4). It must

be noted that many countries do not report congenital syphilis cases: it is quite likely that the true incidence is underestimated.

Discussion

During the last 10 years, rates of reported syphilis cases have increased in a number of European countries. Increases have occurred predominantly among men who have sex with men, but outbreaks have also been recorded among other sub-groups including commercial sex workers and their clients, migrant communities, and among heterosexual adults.

In some central and eastern European countries, high rates of syphilis have been observed since the early 1990s and these were thought to be due to behaviour, socioeconomic, and health systems changes in this region during this period. A decrease in incidence was then observed in the following years, likely due to changes in healthcare systems, diagnostic capacity, and case reporting.

There is no consistent overall trend and interpretation is hampered by several factors, including differences in reporting systems, reporting behaviour, and probable underreporting. The overall EU trend of reduced case reports masks diverging trends in a number of countries where cases have increased. Data presented here must be interpreted with caution because the proportion of syphilis cases that is actually diagnosed and reported is likely to differ considerably between countries.

It should be noted that nine countries did not report congenital syphilis cases in 2010; it is also quite likely that many diagnoses were not reported, so true prevalence is probably underestimated. The availability of an antenatal screening programme for syphilis in pregnant women will heavily affect the number of prevented congenital cases; however, there are no data on the effectiveness of national screening programmes.

Note: The coordination of the European network on STI surveillance was transferred to ECDC on 1 January 2009.

Table 2.2.6. Number and rate of reported syphilis cases† in EU/EEA countries, 2006–10

Country	2010				2009		2008		2007		2006	
	National coverage	Report type	Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population		Reported cases and rate per 100 000 population	
			Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	N	C	59	-	62	-	61	-	58	-	25	-
Belgium*	Y	C	502	-	486	-	480	-	403	-	288	-
Bulgaria	Y	A	460	6.1	420	5.5	419	5.5	440	5.7	490	6.3
Cyprus*	Y	C	20	-	15	-	14	-	10	-	13	-
Czech Republic	Y	C	459	4.4	697	6.7	342	3.3	205	2	75	0.7
Denmark	Y	C	413	7.5	255	4.6	151	2.8	92	1.7	77	1.4
Estonia	Y	C	67	5	57	4.3	71	5.3	78	5.8	125	9.3
Finland	Y	C	200	3.7	194	3.6	211	4	185	3.5	127	2.4
France*	N	C	600	-	534	-	563	-	599	-	478	-
Germany	Y	C	3028	3.7	2730	3.3	3187	3.9	3277	4	3161	3.8
Greece	N	A	241	2.1	259	2.3	155	1.4	197	1.8	141	1.3
Hungary*	Y	A	504	-	489	-	549	-	393	-	559	-
Ireland	Y	C	94	2.1	96	2.2	119	2.7	62	1.4	133	3.2
Italy*	Y	C	640	-	916	-	923	-	1001	-	935	-
Latvia	Y	C	122	5.4	175	7.7	236	10.4	305	13.4	483	21
Lithuania	Y	C	345	10.4	326	9.7	326	9.7	275	8.1	336	9.9
Luxembourg	Y	C	13	2.6	13	2.6	12	2.5	14	2.9	10	2.1
Malta	Y	C	25	6.1	16	3.9	19	4.6	11	2.7	13	3.2
Netherlands*	Y	C	695	-	711	-	792	-	657	-	806	-
Poland	Y	A	914	2.4	1255	3.3	929	2.4	847	2.2	933	2.4
Portugal	Y	C	179	1.7	150	1.4	98	0.9	112	1.1	124	1.2
Romania	Y	C	1792	8.3	3252	15.1	4006	18.6	4245	19.7	5661	26.2
Slovakia	Y	C	333	6.1	294	5.4	228	4.2	152	2.8	89	1.7
Slovenia	Y	C	40	2	47	2.3	63	3.1	31	1.5	16	0.8
Spain	Y	A	2909	6.3	2496	5.4	2545	5.6	1936	4.4	1711	3.9
Sweden	Y	C	196	2.1	182	2	166	1.8	237	2.6	167	1.8
United Kingdom	Y	A	2911	4.7	3215	5.2	3309	5.4	3561	5.9	3486	5.8
EU total	**-**	**-**	**17761**	**4.5**	**19342**	**4.9**	**19974**	**5.1**	**19383**	**5**	**20462**	**5.3**
Iceland	Y	C	5	1.6	0	0	2	0.6	1	0.3	4	1.3
Liechtenstein	-	-		-		-		-		-		-
Norway	Y	C	118	2.4	76	1.6	56	1.2	61	1.3	67	1.4
Total	**-**	**-**	**17884**	**4.4**	**19418**	**4.9**	**20032**	**5**	**19445**	**4.9**	**20533**	**5.3**

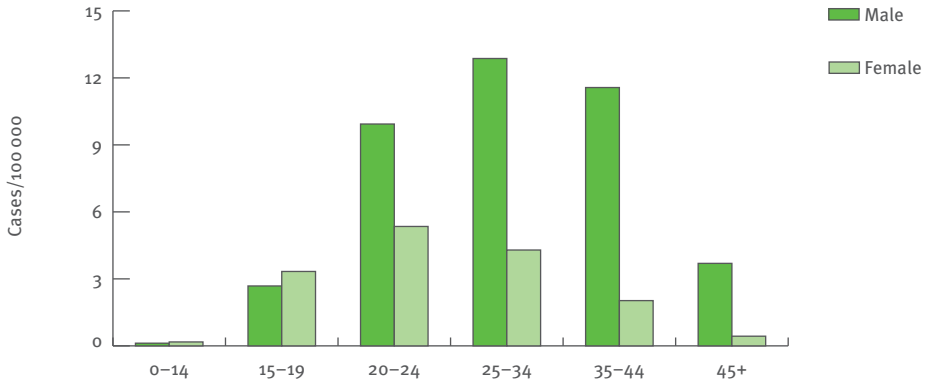
* Countries with sentinel systems (rates not calculated)
† Excluding congenital syphilis
Data year given according to 'date of diagnosis' variable. Case numbers might differ from those reported in national bulletins due to different date variables.

More details on the epidemiology and trends of syphilis and congenital syphilis can be found in ECDC's surveillance report on 1990–2010 data[1].

References

1. European Centre for Disease Prevention and Control. Sexually transmitted infections in Europe, 1990–2010. Stockholm: ECDC; 2012.

Figure 2.2.9. Rates of reported confirmed syphilis infection cases, by age and gender, EU/EEA countries, 2010



Source: Country reports from Belgium, Czech Republic, Denmark, Estonia, Finland, Greece, Iceland, Latvia, Lithuania, Luxembourg, Malta, Norway, Portugal, Romania, Slovakia, Slovenia, Sweden, United Kingdom.

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-STISentinella	V	Se	A	C	Y	N	N	N	N
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Bulgaria	BG-STI	Cp	Co	P	A	-	-	Y	Y	-
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-STD	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-STI_CLINICAL	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-PERTUSSIS/SHIGELLOSIS/SYPHILIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-STI	V	Se	A	C	Y	Y	Y	Y	N
Germany	DE-SURVNET@RKI-7.3	Cp	Co	P	C	Y	N	N	N	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	O	P	A	Y	Y	Y	Y	N
Hungary	HU-STD SURVEILLANCE	Cp	Se	P	A	N	Y	N	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-SYPHILIS	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-STI	V	Se	P	C	N	Y	N	N	Y
Norway	NO-MSIS_B	Cp	Co	P	C	Y	Y	Y	-	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-SYPHILIS	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	A	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SPOSUR	Cp	Co	P	C	N	Y	N	N	Y
Spain	ES-STATUTORY_DISEASES_STI_AGGR	Cp	Co	P	A	N	Y	N	N	-
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-GUM	Cp	Co	P	A	N	N	N	Y	Y
United Kingdom	UK-LAB	O	Co	P	A	Y	N	N	N	N

2.3 Food- and waterborne diseases and zoonoses

Anthrax

- Anthrax remains a very rare disease in Europe. Sporadic cases are reported each year, mainly related to occupational exposure.
- The increase in cases in 2010 reflects an outbreak that occurred among injecting drug users in the United Kingdom and Germany.

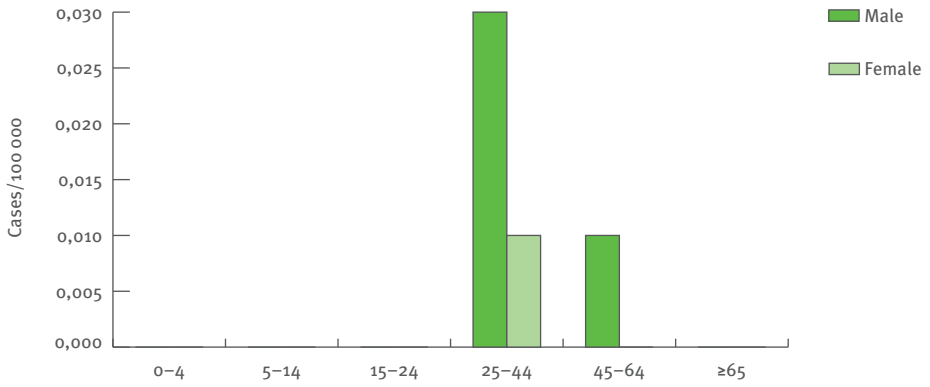
Anthrax is an infectious disease, caused by the bacterium *Bacillus anthracis*. It is an environmental microorganism which is capable of forming spores that can remain dormant in soil for many years. There are three forms of the disease: cutaneous, digestive and respiratory. The cutaneous form is the most common and occurs when spores of *Bacillus anthracis* are introduced into the skin through an abrasion or cut. The gastrointestinal form occurs after eating meat from an infected animal. The symptoms are similar to food poisoning and can be severe. Pulmonary anthrax occurs by inhalation of the spores. Initial symptoms are similar to those of a common cold, but this can rapidly progress to severe breathing difficulties and fatal shock.

Anthrax still occurs naturally in both animals and humans in many parts of the world, including Asia, southern Europe, sub-Saharan Africa and parts of Australia. In Europe, sporadic cases are reported every year, mainly due to occupational exposure to infected animals or their products.

Epidemiological situation in 2010

In 2010, 25 EU/EEA countries provided data on anthrax (Denmark, Iceland, Italy and Liechtenstein did not report). Overall, 32 cases of anthrax were reported; 28 from the United Kingdom, three from Bulgaria and one from Germany. In 2009, 14 cases were reported (Table 2.3.1)[1]. The overall rate of confirmed cases was 0.01 per 100 000. With regard to gender distribution of cases with known data, 21 cases were male and eight female (male to female ratio: 2.6:1) (Figure 2.3.1). Most of the cases (27 of 32) belonged to the age group 25–44 years, four cases were in the age group 45–64 years and one case was over 65 years.

Figure 2.3.1. Rates of reported confirmed anthrax cases, by age and gender, EU/EEA countries, 2010



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

Discussion

There are only very few reported anthrax cases every year, and no conclusion regarding trends can be made. The increase in reported cases in Germany and in the United Kingdom reflected the outbreak among heroin users in Scotland, England and Germany, which occurred in 2009 and lasted until the end of December 2010[4].

Updates from epidemic intelligence 2011

No substantive threats related to anthrax were detected.

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Table 2.3.1. Number and rate of reported confirmed anthrax cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Belgium	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Bulgaria	Y	A	3	3	0.04	2	0.03	1	0.01	1	0.01	1	0.01
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
France	Y	A	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Germany	Y	C	1	1	0.00	1	0.00	0	0.00	0	0.00	0	0.00
Greece	Y	C	0	0	0.00	1	0.01	0	0.00	0	0.00	1	0.01
Hungary	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ireland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Italy	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Poland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Portugal	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Romania	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.01	1	0.01
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Spain	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.00	2	0.01
Sweden	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
United Kingdom	Y	C	39	28	0.05	10	0.02	1	0.00	0	0.00	1	0.00
EU total	**-**	**-**	**43**	**32**	**0.01**	**14**	**0.00**	**2**	**0.00**	**3**	**0.00**	**6**	**0.00**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	**-**	**-**	**43**	**32**	**0.01**	**14**	**0.00**	**2**	**0.00**	**3**	**0.00**	**6**	**0.00**

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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-ANTH/CHOL/DIPH/MALA/SPOX/ TRIC/TULA/TYPH	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	-
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-ANTRAX	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-ANTHRAX	Cp	Co	A	C	Y	N	Y	Y	Y

Botulism

- The overall notification rate of confirmed botulism cases was 0.02 per 100 000 population in EU/EEA countries in 2010.
- The EU trend has been stable during 2006–10, with the confirmed case rate ranging between 0.02 and 0.03 cases per 100 000 population.
- Botulism remains an uncommon disease in the EU, typically causing small household outbreaks.
- The most affected age group in 2010 was 0–4-year-old males, with a notification rate of 0.04 cases per 100 000 population.
- In 2011, four events related to botulism were identified in the EU: one each in Denmark, Finland, France, and the United Kingdom.

Botulism is a serious paralytic illness caused by a nerve toxin produced by the spore-forming bacterium *Clostridium botulinum*. The disease may develop after eating food containing the toxin; also, toxin is produced when spores turn into living bacterial cells, e.g. in wounds or the intestines of young children.

Food botulism is the dominant form of the disease, and neurologic symptoms may result from consumption of toxin-containing food. The symptoms may be very severe, resulting in the paralysis of breathing muscles, which requires intensive care support. The intoxication is fatal in about 5–10% of patients.

Epidemiological situation in 2010

In 2010, 133 cases of botulism were reported by 29 EU and EEA countries (all except Liechtenstein) (Table 2.3.2). Of these 133 cases, 104 were confirmed, which represents a decrease by 21% compared with 2009, when 132 confirmed cases were reported[5].

The overall EU and EEA notification rate was 0.02 cases per 100 000. The number of confirmed cases has been fairly stable over the period 2006–10 (Figure 2.3.2).

Poland, Romania, Italy and France accounted for 80% of all the confirmed cases. Eight of the 14 confirmed cases reported by France belonged to an outbreak linked to the consumption of tapenade.

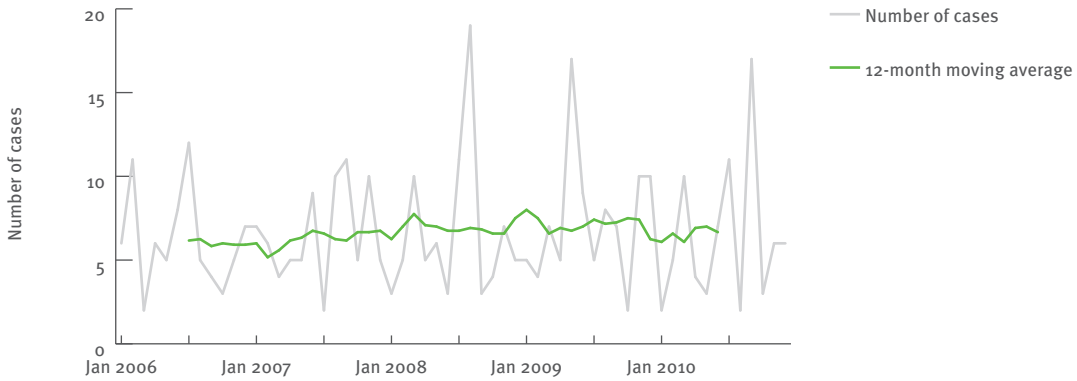
Age and gender distribution

Data on gender and age was available for 103 cases. The highest number of cases (n=32) was reported for the age group 25–44 years. The notification rate was two times higher among males than among females in all age groups. The male-to-female ratio was 2:1 in 2010. The highest notification rate was among males in the 0–4-year-old age group (0.04 cases per 100 000). Information on travel association was available for 77 cases. Of these, only one case in Slovenia was notified as imported.

Seasonality

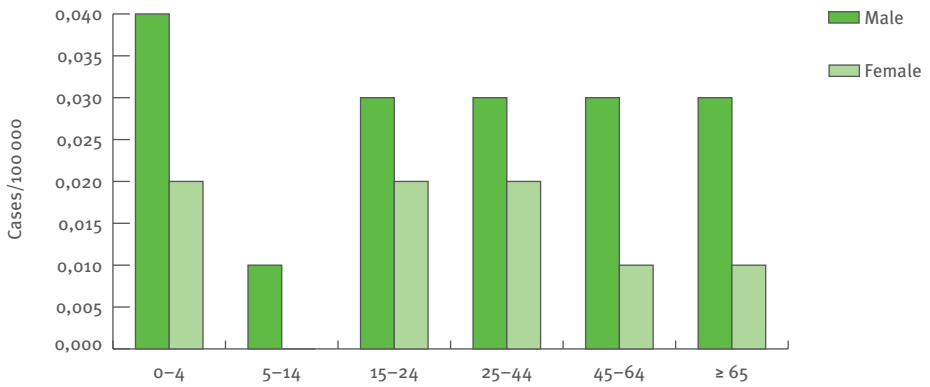
In 2010, the highest number of confirmed cases (17) was reported in September (Figure 2.3.4). Eight of these

Figure 2.3.2. Trend and number of reported confirmed botulism cases in EU/EEA countries, 2006–10



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

Figure 2.3.3. Rates of reported confirmed botulism cases, by age and gender, EU/EEA countries, 2010



Source: Country reports from all EU/EEA countries except Bulgaria and Liechtenstein.

Table 2.3.2. Number and rate of reported confirmed botulism cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	5	0.06
Belgium	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Bulgaria	Y	A	1	1	0.01	1	0.01	0	0.00	0	0.00	8	0.10
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	1	0.01	1	0.01	-	-	0	0.00
Denmark	Y	C	1	1	0.02	0	0.00	1	0.02	0	0.00	0	0.00
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	1	1	0.02	0	0.00	0	0.00	0	0.00	-	-
France	Y	C	24	14	0.02	23	0.04	8	0.01	10	0.02	4	0.01
Germany	Y	C	4	3	0.00	5	0.01	10	0.01	9	0.01	7	0.01
Greece	Y	C	0	0	0.00	1	0.01	0	0.00	1	0.01	1	0.01
Hungary	Y	C	3	3	0.03	3	0.03	1	0.01	5	0.05	6	0.06
Ireland	Y	C	0	0	0.00	0	0.00	5	0.11	0	0.00	1	0.02
Italy	Y	C	26	26	0.04	32	0.05	23	0.04	16	0.03	12	0.02
Latvia	Y	C	0	0	0.00	0	0.00	1	0.04	0	0.00	0	0.00
Lithuania	Y	C	4	2	0.06	0	0.00	2	0.06	4	0.12	-	-
Luxembourg	Y	C	0	0	0.00	0	0.00	1	0.21	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0	0.00	0	0.00	1	0.01	1	0.01	1	0.01
Poland	Y	C	32	22	0.06	15	0.04	22	0.06	24	0.06	22	0.06
Portugal	Y	C	0	0	0.00	3	0.03	4	0.04	10	0.09	9	0.09
Romania	Y	C	23	21	0.10	29	0.14	26	0.12	31	0.14	14	0.07
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	2	2	0.10	0	0.00	0	0.00	0	0.00	0	0.00
Spain	Y	C	8	4	0.01	6	0.01	5	0.01	4	0.01	2	0.01
Sweden	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	2	0.02
United Kingdom	Y	C	3	3	0.01	13	0.02	1	0.00	14	0.02	10	0.02
EU total	**-**	**-**	**132**	**103**	**0.02**	**132**	**0.03**	**112**	**0.02**	**129**	**0.03**	**104**	**0.02**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	1	1	0.02	0	0.00	0	0.00	0	0.00	0	0.00
Total	**-**	**-**	**133**	**104**	**0.02**	**132**	**0.03**	**112**	**0.02**	**129**	**0.03**	**104**	**0.02**

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

cases related to an outbreak in France. Considering the distribution of cases in 2010 and in previous years, there is no seasonality.

Updates from epidemic intelligence in 2011

Four events or public health threats related to botulism were detected in four countries in 2011, one each in Denmark, Finland, France, and the United Kingdom (Scotland).

In July 2011, Denmark reported a case of botulism in a 16-year-old boy that was hospitalised after he consumed tofu and vegetarian pâté. In September 2011, France identified two clusters of *Clostridium botulinum* involving nine cases[1].

The first cluster was detected in the district of Vaucluse in southern France: six adult cases of botulism occurred after a meal for eight people which took place on 1 September 2011. Five cases had symptom onset on 2 and 3 September; all five developed respiratory failure. Botulinum toxin type A was identified in the serum of four of the five patients. One additional suspected case who attended the same family event developed neurological symptoms (double vision, ptosis and difficulty in swallowing) seven days after the dinner. The second cluster was detected in the district of Somme in northern France, where three adult cases occurred. Two of them developed respiratory failure after a meal for six people that took place on 3 September. The cases had symptom onset on 4 and 5 September. Botulinum toxin type A was identified in the serum of one of the three patients.

Tapenade, a sandwich spread made primarily with ground olives and almonds, was identified as the vehicle in both situations. The brand name and the implicated batch were identified. It was locally produced in Vaucluse and distributed to four French districts in southern France (Bouches-du-Rhône, Drôme, Var et Vaucluse). Botulinum toxin type A was identified in leftover tapenade that was probably responsible for the cluster in the south of France. The family affected in the northern part of the country had been on holiday in the Var district in late July 2011, where they had purchased the tapenade. Further analysis identified additional products from the same producer which tested positive for botulinum toxin A. An investigation of the production site revealed that the sterilisation process was insufficient to have a detrimental effect on *Clostridium* spores.

On 21 October 2011, the National Public Health Institute of Finland (THL) notified two clinical botulism cases from the same household in Helsinki; onset of symptoms was reported in mid-October[2]. One of the two patients died. Both persons had consumed olives stuffed with almonds. Botulism toxin was detected in the tinned olives originating from Italy and consumed by the patients. The product was recalled from the market, and Finland notified all relevant food safety authorities through RASFF.

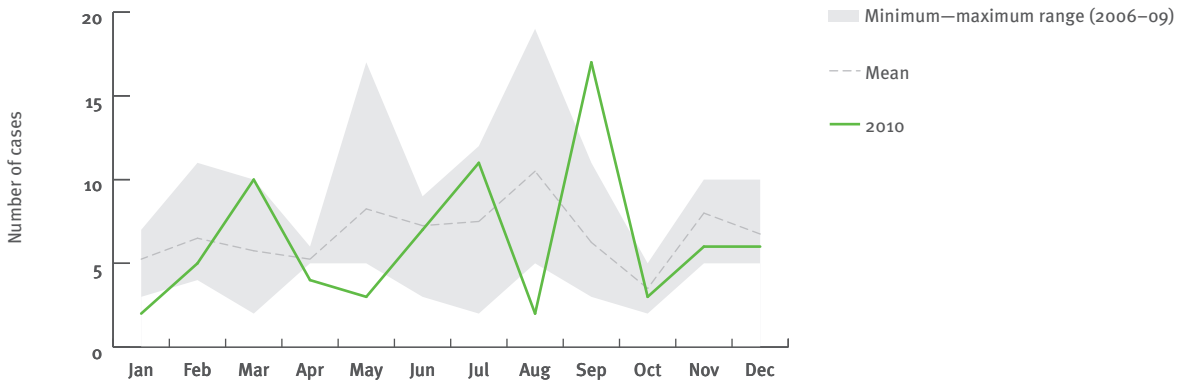
In November 2011, an outbreak of foodborne botulism occurred in Scotland, affecting three children in the same family, after consumption of a meal made with korma sauce[3]. The sauce tested positive for *Clostridium botulinum* type A toxin. The sauce was a commercially prepared food product distributed in the United Kingdom and Ireland. No other cases were linked to the outbreak.

Discussion

Compared with previous years, the epidemiology of botulism in the EU appears stable, with sporadic clusters and small household outbreaks with between 0.02 and 0.03 cases per 100 000 population.

The identification of clusters of botulism related to food items which are commercially distributed to other EU countries shows the importance of food safety quality programmes and food inspections, as well as the relevance of alert systems such as RASFF or EWRS[4].

Figure 2.3.4. Seasonal distribution of reported confirmed cases of botulism in EU/EEA countries, 2006–10



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

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6. European Centre for Disease Prevention and Control. Annual Epidemiological Report 2011. Reporting on 2009 surveillance data and 2010 epidemic intelligence data. Stockholm: ECDC; 2011.

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-BOTULISM	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-BOTULISM	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-BOTULISM	Cp	Co	P	C	Y	N	Y	Y	Y

Brucellosis

- In 2010, the rate of reported confirmed cases of brucellosis was 0.07 cases per 100 000 population.
- Reported human cases of brucellosis have followed a decreasing trend in EU/EEA countries in 2006–10.
- Brucellosis was most commonly reported in males 25 years and older in 2010 (79% of all confirmed cases).

Brucellosis is a systemic infection caused by bacteria of the genus *Brucella*. Human infection is primarily an occupational risk for those working with infected animals or their tissues (e.g. farm workers, veterinarians, abattoir workers).

Epidemiological situation in 2010

In 2010, 358 confirmed cases of brucellosis were reported by 28 of the 30 EU/EEA countries. Denmark and Liechtenstein did not report any cases. The overall notification rate for confirmed cases was 0.07 cases per 100 000 population; the rate decreased slightly from 2009 (0.08 cases per 100 000 population) (Table 2.3.3).

Reported human cases of brucellosis have followed a decreasing trend in EU/EEA countries in the period 2006–10 (Figure 2.3.5, Table 2.3.3).

Table 2.3.3. Number and rate of reported confirmed brucellosis cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	3	3	0.04	2	0.02	5	0.06	0	0.00	1	0.01
Belgium	Y	C	0	0	0.00	1	0.01	1	0.01	3	0.03	2	0.02
Bulgaria	Y	A	2	2	0.03	3	0.04	8	0.11	9	0.12	3	0.04
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	1	1	0.01	0	0.00	1	0.01	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	1	0.02	0	0.00	2	0.04	0	0.00
France	Y	C	20	20	0.03	19	0.03	21	0.03	14	0.02	24	0.04
Germany	Y	C	22	22	0.03	19	0.02	24	0.03	21	0.03	37	0.05
Greece	Y	C	97	97	0.86	106	0.94	304	2.71	101	0.90	121	1.09
Hungary	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.01	-	-
Ireland	Y	C	1	1	0.02	0	0.00	2	0.05	7	0.16	4	0.10
Italy	Y	C	10	10	0.02	23	0.04	163	0.27	179	0.30	456	0.78
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	1	0.03	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	1	1	0.20	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	6	6	0.04	3	0.02	3	0.02	2	0.01	6	0.04
Poland	Y	C	0	0	0.00	3	0.01	1	0.00	1	0.00	0	0.00
Portugal	Y	C	88	88	0.83	80	0.75	56	0.53	74	0.70	76	0.72
Romania	Y	C	2	2	0.01	3	0.01	2	0.01	2	0.01	1	0.01
Slovakia	Y	C	1	1	0.02	0	0.00	1	0.02	0	0.00	0	0.00
Slovenia	Y	C	0	0	0.00	2	0.10	2	0.10	1	0.05	0	0.00
Spain	Y	C	103	78	0.17	114	0.25	120	0.27	201	0.45	196	0.45
Sweden	Y	C	12	12	0.13	7	0.08	8	0.09	8	0.09	4	0.04
United Kingdom	Y	C	12	12	0.02	17	0.03	13	0.02	13	0.02	20	0.03
EU total	**-**	**-**	**381**	**356**	**0.07**	**404**	**0.08**	**735**	**0.15**	**639**	**0.13**	**951**	**0.20**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	0	0.00	0	0.00	-	-
Norway	Y	C	2	2	0.04	0	0.00	0	0.00	0	0.00	3	0.07
Total	**-**	**-**	**383**	**358**	**0.07**	**404**	**0.08**	**735**	**0.15**	**639**	**0.13**	**954**	**0.20**

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

Greece, Spain and Portugal accounted for the majority (80%) of confirmed reported cases, as in previous years (Table 2.3.3).

Age and gender distribution

Data on gender and age was available for 356 cases. In 2010, brucellosis affected twice as many males as females. The male-to-female ratio was 2.24:1. The notification rate for confirmed cases was higher for males compared with females in each age group. The highest notification rate was for males in Greece (1.27 cases per 100 000 population), followed by males in Portugal (1.07 per 100 000). The highest rate was reported for the age group 45–64 years (0.09 cases per 100 000 population).

Of the 257 cases for which data on importation status was available, 25% were considered to have been acquired abroad (outside of the reporting country).

Seasonality

In previous years, the number of reported cases usually peaked in May. In 2010, seasonality was not very apparent, with fewer cases reported throughout the year (Figure 2.3.7).

Discussion

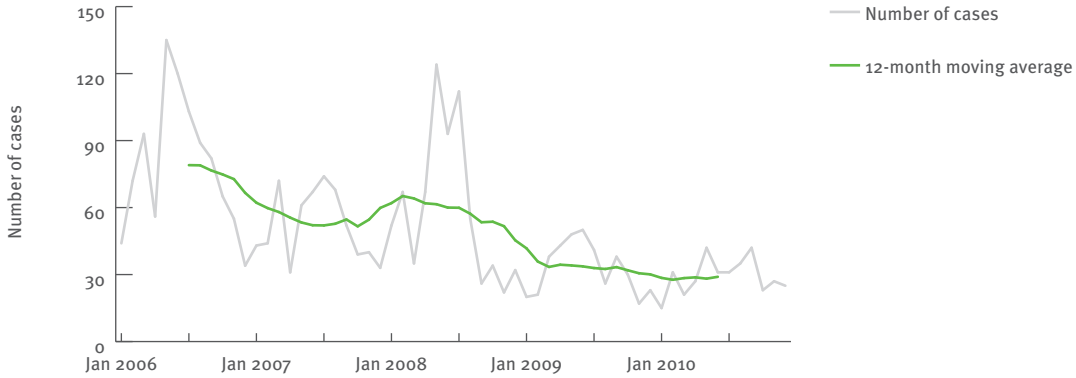
The decreasing trend in reported numbers of human brucellosis in Europe between 2006 and 2010 may be related to a significant decrease of infection in domestic small ruminants, which are the main reservoir for *Brucella melitensis* and *Brucella abortus*, the two major causative agents of human brucellosis. This is principally the result of specific veterinary programmes targeted for the eradication, control and monitoring of specific animal diseases and zoonoses in Europe[1]. Since there is no vaccine available for humans, prevention of human brucellosis relies on prevention and the control of infection in the animal reservoir[2].

In Greece, brucellosis is the leading cause of illness and death among all reported foodborne diseases and still constitutes a serious public health problem. The disease is most common in rural areas; risk factors are occupational contact with animals and consumption of unpasteurised milk and milk products[3,4,5].

References

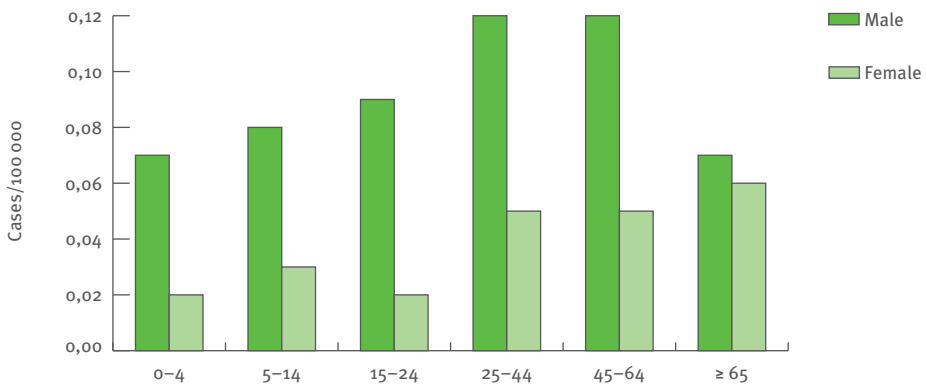
1. European Food Safety Authority; European Centre for Disease Prevention and Control. The Community summary report – Trends and sources of zoonoses and zoonotic agents and food-borne outbreaks in 2009. EFSA Journal 2011;9(3):2090.

Figure 2.3.5. Trend and number of reported confirmed brucellosis cases in EU/EEA countries, 2006–10



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

Figure 2.3.6. Rates of reported confirmed brucellosis cases, by age and gender, EU/EEA countries, 2010



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

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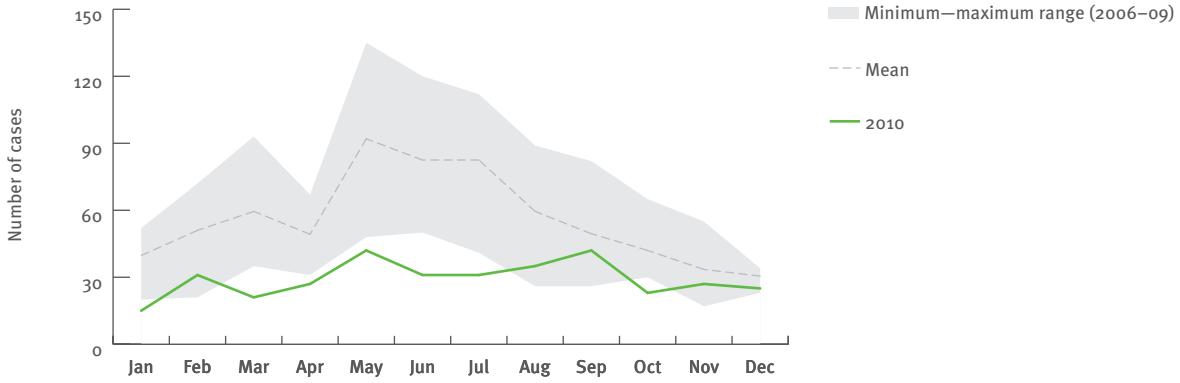
Figure 2.3.7. Seasonal distribution of reported confirmed brucellosis cases in EU/EEA countries, 2006–10



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

Surveillance systems overview

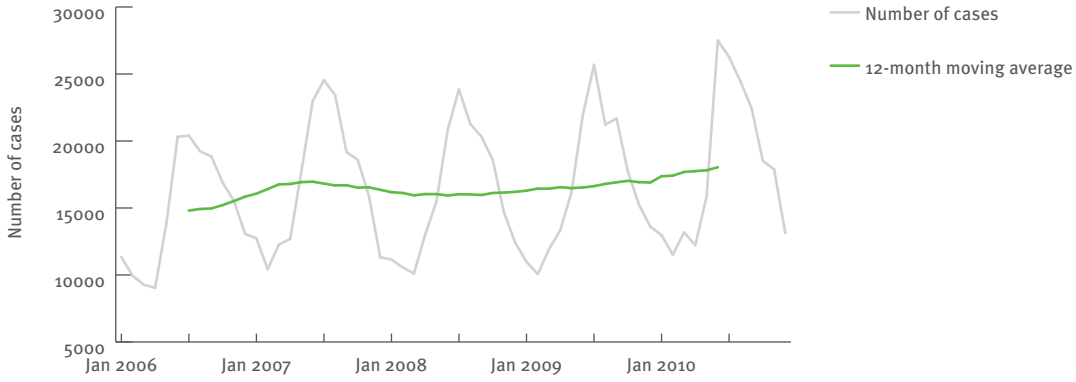
Country	Data source	Compulsory (Cp)/ voluntary (V)/other (O)	Comprehensive (Co)/ sentinel (Se)/other (O)	Active (A)/passive (P)	Case based (C)/ aggregated (A)	Data reported by				National coverage
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-BRUCELLOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-BRUCELLOSIS	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-BRUCELLOSIS	O	Co	A	C	Y	N	Y	Y	Y

Campylobacteriosis

- The rate of reported human campylobacteriosis cases increased between 2006 and 2010.
- Campylobacteriosis remains the most commonly identified gastrointestinal disease in the EU/EEA; it is reported about twice as often as salmonellosis.
- In 2010, the crude notification rate of campylobacteriosis in the EU was 56.95 cases per 100 000 population.
- Human campylobacteriosis was most common in children below five years, with a reported rate of 155 per 100 000 population for boys aged 0–4 years.
- Campylobacteriosis shows a marked seasonality, with the highest reported rates in summer (June to August).

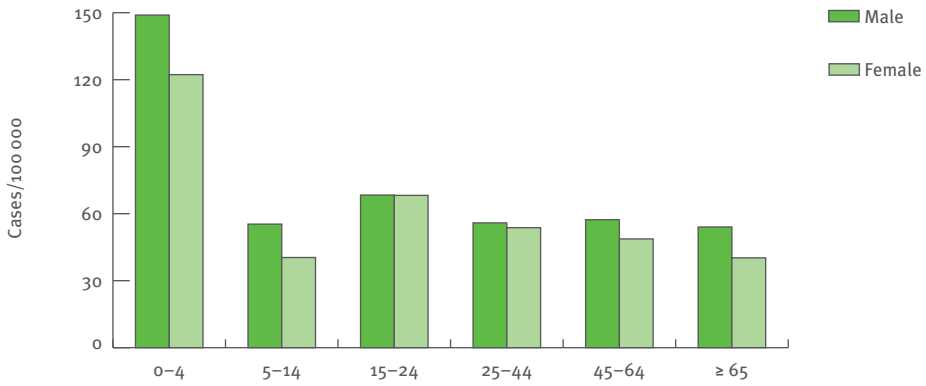
Campylobacteriosis is an enteric disease caused mainly by thermophilic *Campylobacter* spp. The most common species associated with human compylobacterisis are *C. jejuni*, *C. coli*, and *C. lari*. The incubation period varies from two to five days. Common clinical symptoms include watery, sometimes bloody diarrhoea, abdominal pain, fever, headache and nausea. In some cases, *Campylobacter* infection may trigger severe illnesses such as reactive arthritis and the Guillain-Barré syndrome, which manifests as acute, progressing paralysis. Thermophilic *Campylobacter* spp. are prevalent in food-producing animals, pets, wild birds, and in environmental water sources. The main route of transmission is by ingestion of contaminated food or water. Person-to-person transmission, although possible, is rare.

Figure 2.3.8. Trend and number of reported confirmed campylobacteriosis cases in EU/EEA countries, 2006–10



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

Figure 2.3.9. Rates of reported confirmed campylobacteriosis cases, by age and gender, EU/EEA countries, 2010



Source: Country reports from all EU/EEA countries except Bulgaria, Greece and Portugal.

Epidemiological situation in 2010

In 2010, a total of 218 963 confirmed cases of campylobacteriosis were reported by 27 EU/EEA countries. The overall crude notification rate in the EU/EEA was 56.89 cases per 100 000, an increase of 4.25 cases per 100 000 compared with 2009 (Table 2.3.4). However, it should be noted that confirmed cases reported by France, the Netherlands and Spain were not included in the calculation of confirmed case rates as these countries' surveillance systems do not cover the whole population.

The countries with the highest notification rates were the Czech Republic, followed by the United Kingdom, with 200.58 and 113.34 cases per 100 000 population, respectively (Table 2.3.4).

Age and gender distribution

Information on gender and age was provided for 217 682 confirmed cases. Similarly to previous years, the male-to-female ratio was 1.12:1 in 2010. The highest notification rate (155.54 per 100 000) was reported in 0–4-year-old male children, representing an increase of 11.2 per 100 000 compared with the same age group in 2009 (144.34 per 100 000) (Figure 2.3.9).

Seasonality

The rate of reported human campylobacteriosis cases increased between 2006 and 2010 (Figure 2.3.10). In the EU, human cases of campylobacteriosis followed a marked seasonality during the period 2006–10, with most cases reported during the summer (June to August, Figure 2.3.10).

Enhanced surveillance

Data on *Campylobacter* species were available from the 2010 European summary report on zoonoses and zoonotic agents[1]. The most frequently reported *Campylobacter* species in 2010 was *Campylobacter jejuni* (35.7%), followed by *C. coli* (2.3%), *C. lari* (0.22%) and *C. upsaliensis* (0.01%). As in previous years, a high

Table 2.3.4. Number and rate of reported confirmed campylobacteriosis cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Age standardised rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	4 404	4 404	52.58	53.46	1 516	18.14	4 280	51.45	5 822	70.29	5 020	60.82
Belgium	Y	C	6 047	6 047	55.79	54.54	5 697	52.98	5 111	47.92	5 895	55.69	5 771	54.90
Bulgaria	Y	A	6	6	0.08	0.00	26	0.34	19	0.25	38	0.50	75	0.97
Cyprus	Y	C	55	55	6.85	6.88	37	4.64	23	2.91	17	2.18	2	0.26
Czech Republic	Y	C	21 164	21 075	200.58	205.84	20 259	193.54	20 067	193.30	24 137	234.63	22 571	220.18
Denmark	Y	C	4 037	4 037	72.94	73.93	3 353	60.84	3 470	63.37	3 868	71.01	3 239	59.68
Estonia	Y	C	197	197	14.70	14.55	170	12.68	154	11.49	114	8.49	124	9.22
Finland	Y	C	3 944	3 944	73.70	76.20	4 050	76.04	4 453	84.01	4 107	77.83	3 439	65.44
France	N	C	4 324	4 324	-	-	3 956	-	3 424	-	3 058	-	2 675	-
Germany	Y	C	65 713	65 110	79.59	81.61	62 787	76.57	64 731	78.73	66 107	80.31	52 035	63.12
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	7 201	7 180	71.70	74.66	6 579	65.59	5 516	54.91	5 809	57.71	6 807	67.55
Ireland	Y	C	1 662	1 660	37.15	34.73	1 810	40.67	1 752	39.81	1 885	43.71	1 812	43.06
Italy	Y	C	457	457	0.76	0.80	531	0.88	265	0.44	676	1.14	801	1.36
Latvia	Y	C	1	1	0.04	0.04	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	1 095	1 095	32.89	34.34	812	24.24	762	22.64	564	16.66	624	18.34
Luxembourg	Y	C	600	600	119.51	117.35	523	105.98	439	90.74	345	72.45	285	60.76
Malta	Y	C	204	204	49.23	50.26	132	31.91	77	18.77	91	22.31	54	13.33
Netherlands	N	C	4 322	3 983	-	-	3 739	-	3 341	-	3 289	-	3 186	19.51
Poland	Y	C	375	367	0.96	0.98	359	0.94	270	0.71	192	0.50	156	0.41
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	179	175	0.82	0.84	254	1.18	2	-	0	0.00	-	-
Slovakia	Y	C	4 578	4 476	82.51	82.82	3 813	70.45	3 064	56.73	3 380	62.67	2 728	50.62
Slovenia	Y	C	1 022	1 022	49.93	52.09	952	46.84	898	44.67	1 127	56.06	-	-
Spain	N	C	6 340	6 340	-	-	5 106	-	5 160	-	5 331	-	5 883	-
Sweden	Y	C	8 001	8 001	85.66	86.50	7 178	77.55	7 692	83.76	7 106	77.97	6 078	67.18
United Kingdom	Y	C	70 298	70 298	113.34	113.11	65 043	105.60	55 609	90.88	57 849	95.18	52 543	86.98
EU total	**-**	**-**	**216 226**	**215 058**	**56.95**	**57.11**	**198 682**	**52.94**	**190 579**	**54.36**	**200 807**	**54.19**	**175 908**	**49.09**
Iceland	Y	C	55	55	17.32	18.08	74	23.17	98	31.07	93	30.23	117	39.01
Liechtenstein	-	-	-	-	-	-	-	-	2	5.66	0	0.00	-	-
Norway	Y	C	2 682	2 682	55.21	55.58	2 848	59.34	2 875	60.69	2 836	60.58	2 588	55.77
Total	**-**	**-**	**218 963**	**217 795**	**56.89**	**57.03**	**201 604**	**53.00**	**193 554**	**54.43**	**203 736**	**54.24**	**178 613**	**49.17**

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

proportion of confirmed cases (51.8%) were not characterised at species level or the species was unknown.

Discussion

Human campylobacteriosis is the most commonly reported gastrointestinal disease in Europe, reported about twice as frequently as salmonellosis[1].

Although many cases are sporadic, outbreaks are frequently reported. In 2010, 470 foodborne outbreaks associated with *Campylobacter* were reported by 19 Member States, affecting over 1700 persons, of whom 132 were hospitalised[1]. In 27 reported foodborne outbreaks with strong evidence, broiler meat was the most commonly implicated vehicle. The handling, preparation and consumption of poultry broiler meat has been estimated to be responsible for 20–30% of human cases[2].

Campylobacter has also the potential to cause large waterborne outbreaks. In 2010, Denmark reported a waterborne outbreak due to *Campylobacter jejuni* in a Danish town, with over 400 cases recorded among 20 000 residents[3].

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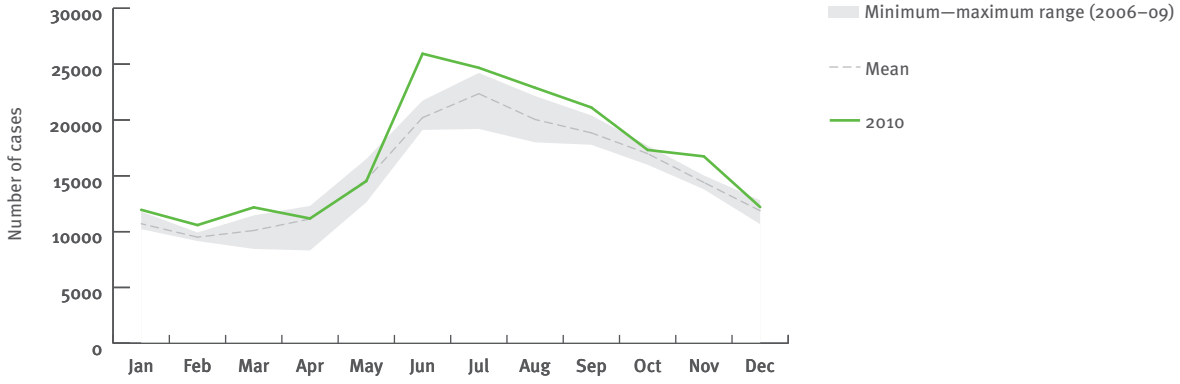
Figure 2.3.10. Seasonal distribution of reported confirmed cases of campylobacteriosis in EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y
Estonia	EE-CAMPYLO	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	N
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-ENTERNET	V	Se	P	C	Y	N	N	N	-
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-LSI	V	Se	P	C	Y	N	N	N	N
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-CAMPYLOBACTERIOSIS	O	Co	P	C	Y	N	Y	Y	Y

Cholera

- Cholera remains a rare disease in the EU/EEA; all cholera cases reported in from 2006–10 were imported.
- Cholera cases were reported most frequently in the 0–4-year-old age group.
- The majority of cases were reported in September 2010.

Cholera is a very infectious acute bacterial disease caused by *Vibrio cholerae* serogroups O1 and O139. The incubation period varies from a few hours to five days. The clinical course is characterised by the onset of watery diarrhoea, nausea, vomiting, dehydration, acidosis, followed by renal failure and death. The main route of transmission is the ingestion of faecal-contaminated water or food. Currently, cholera is endemic in many countries in Africa and Asia.

Epidemiological situation in 2010

In 2010, 26 (21 confirmed) cases of cholera were reported by four countries (Table 2.3.5). The United Kingdom reported 13 cases and Germany six, while France, Slovenia and Sweden reported one each. Denmark, Iceland, Liechtenstein and Norway did not report.

Table 2.3.5. Number and rate of reported confirmed cholera cases reported in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	0	0.00	1	0.01	0	0.00	0	0.00
Belgium	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Bulgaria	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	Y	C	0	0	0.00	0	0.00	1	0.02	0	0.00	-	-
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0	0.00	1	0.02	0	0.00	1	0.02
France	Y	C	6	1	0.00	1	0.00	2	0.00	4	0.01	2	-
Germany	Y	C	6	6	0.01	0	0.00	0	0.00	2	0.00	1	0.00
Greece	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Hungary	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ireland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Italy	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0	0.00	0	0.00	5	0.03	3	0.02	3	0.02
Poland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Portugal	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Romania	Y	C	0	0	0.00	1	0.01	0	0.00	0	0.00	0	0.00
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	A	0	0	0.00	0	0.00	0	0.00	1	0.05	0	0.00
Spain	Y	C	0	0	0.00	0	0.00	0	0.00	2	0.00	0	0.00
Sweden	Y	C	1	1	0.01	1	0.01	0	0.00	0	0.00	1	0.01
United Kingdom	Y	C	13	13	0.02	16	0.03	16	0.03	4	0.01	1	0.00
EU total	**-**	**-**	**26**	**21**	**0.00**	**19**	**0.00**	**26**	**0.01**	**16**	**0.00**	**9**	**0.00**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.02	1	0.02
Total	**-**	**-**	**26**	**21**	**0.00**	**19**	**0.00**	**26**	**0.01**	**17**	**0.00**	**10**	**0.00**

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

Age and gender distribution

Information on age was available for all 21 confirmed cases in 2010. The majority of cases (7) occurred among the 0–4-year-old age group. The male-to-female ratio was 1.33. The highest number of cases (8) was reported in September 2010. All reported cases were imported.

Seasonality

Case numbers are small, but there is an apparent trend for increased case reporting in late summer, possibly due to the reporting of cases acquired abroad during summer vacations.

Discussion

Cholera is a rare, sporadic, travel-associated disease in the EU. In 2010, most of the cholera cases were reported by the United Kingdom. All of them were imported and occurred among non-vaccinated people.

Cholera outbreaks are not unusual in developing world countries; in 2010 and 2011 outbreaks were reported in several African countries, the Middle East, and southern Asia. A cholera outbreak in Haiti and the Dominican Republic began in mid-October 2010, ten months after the earthquake on 12 January[1-4].

References

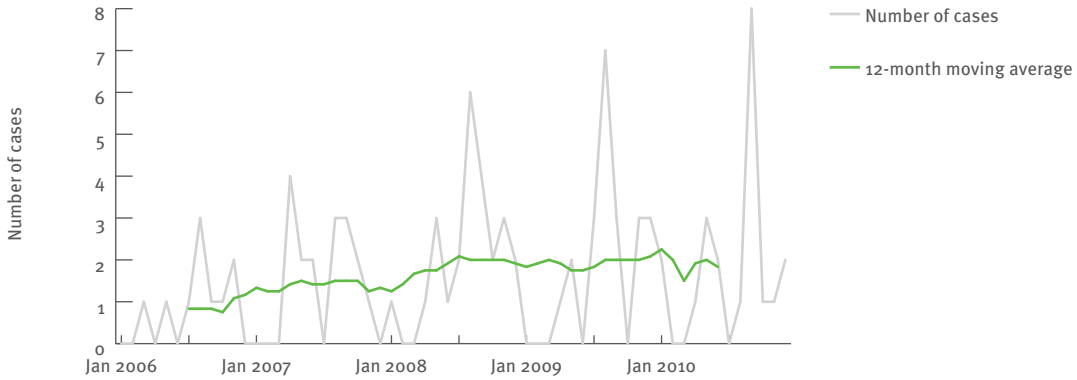
1 Centers for Disease Control and Prevention (CDC). Update: outbreak of cholera – Haiti, 2010. MMWR Morb Mortal Wkly Rep. 2010 Dec 10;59(48):1586-90.

2 Chin CS, Sorenson J, Harris JB, Robins WP, Charles RC, Jean-Charles RR, et al. The origin of the Haitian cholera outbreak strain. N Engl J Med. 2011 Jan 6;364(1):33-42.

3 United Nations Office for the Coordination of Humanitarian Affairs (OCHA). Haiti – Cholera Situation Report 30 – 28 Decembre 2010. Port-au-Prince: United Nations Office for the Coordination of Humanitarian Affairs (OCHA Haiti); 2010. Available from: http://reliefweb.int/report/haiti/haiti-cholera-situation-report-30-28-december-2010

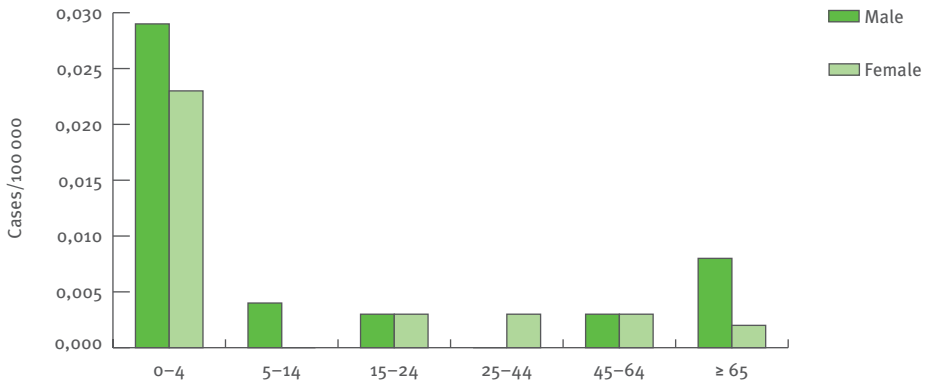
4 Haus-Cheymol R, Theodose R, Quilici ML, Chevallier G, Liautaud B, Ktari F, et al. A cluster of acute diarrhea suspected to be cholera in French travelers in Haiti, December 2010. J Travel Med. 2012 May-Jun;19(3):189-91.

Figure 2.3.11. Trend and number of reported confirmed cholera cases in EU/EEA countries, 2006–10



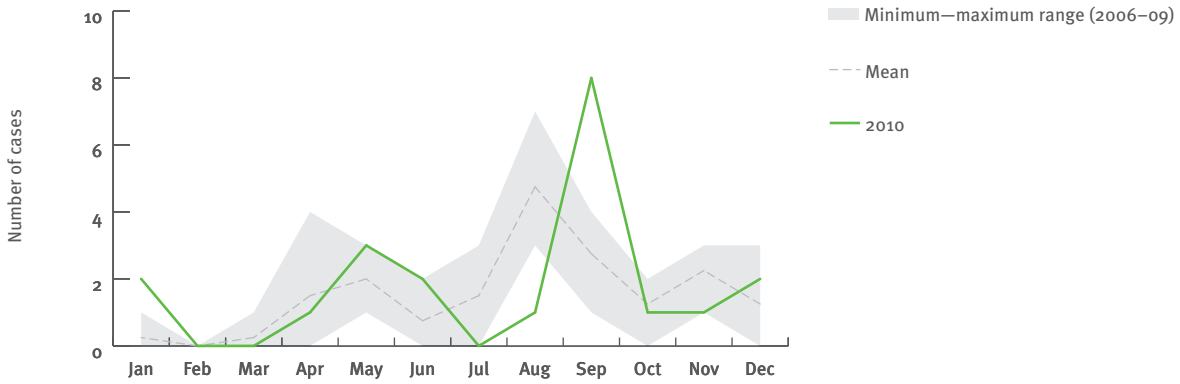
Source: Country reports from Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.3.12. Rates of reported confirmed cholera cases, by age and gender, EU/EEA countries, 2010



Source: Country reports from all EU/EEA countries except Bulgaria, Greece and Portugal.

Figure 2.3.13. Seasonal distribution of reported confirmed cases of cholera in EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-FLA_FRA	Cp	Co	P	C	Y	Y	Y	Y	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-ANTH/CHOL/DIPH/MALA/SPOX/ TRIC/TULA/TYPH	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-CHOLERA	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-CHOLERA	O	Co	P	C	Y	N	Y	Y	Y

Cryptosporidiosis

- The number of reported cryptosporidiosis cases remained stable in Europe in 2010 (2.3 cases per 100 000 population).
- The highest rates for reported cases were in young children (0–4 years of age): 12.2 cases per 100 000 population.
- Underreporting of *Cryptosporidium* infections in Europe is likely to be substantial, due to differences in surveillance systems and diagnostic practices across countries; several countries do not presently report cryptosporidiosis cases.
- Infections follow a seasonal pattern with peak transmission during late summer and early autumn, probably related to behavioural risk factors at this time of year.
- Cryptosporidium has the potential to cause very large outbreaks when the parasite infects communal reticulated water supplies, as illustrated by the 2010–11 outbreak in Sweden with more than 20 000 symptomatic cases.

Cryptosporidiosis is an infection of the small intestine caused by intracellular protozoan parasites of the genus *Cryptosporidium*. The parasite is a common cause of acute diarrhoeal disease worldwide and has the potential to cause large outbreaks through the contamination of communal water supplies. The acute disease is normally self-limiting and treatment is mainly supportive. Young children, and in particular immunocompromised patients, may experience more severe disease, and cryptosporidiosis is a common cause of persistent diarrhoea in AIDS patients[1].

Transmission is through the faecal-oral route, predominantly via contaminated water and soil. The most common vehicles are drinking water, fresh agricultural produce and recreational water. Direct human-to-human transmission can occur when people handle infected faeces, usually from toddlers, and through sexual activities. *Cryptosporidium* do not multiply outside of the gut of its host but the low infective dose and the oocyst's ability to survive for several months in the environment facilitate large and prolonged outbreaks. The oocysts are resistant to chlorine at concentrations normally used for treating drinking water and there are well-documented large outbreaks of cryptosporidiosis as a result of contamination at the source of reticulated water supplies[2].

Epidemiological situation in 2010

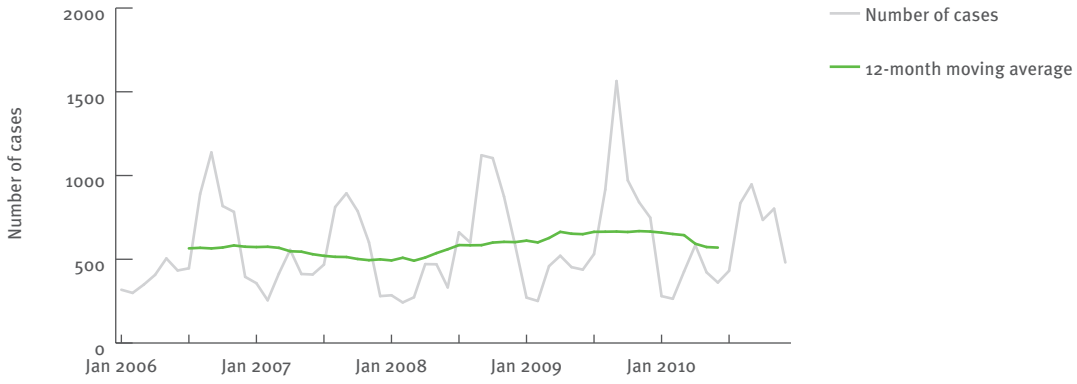
In 2010, 6 605 confirmed cases of cryptosporidiosis were reported by 21 EU/EEA countries. Four countries reported zero cases and nine countries did not report.

The overall rate of confirmed cases in the 20 countries which have cryptosporidiosis surveillance systems with national coverage was 2.29 per 100 000 population.

The highest rate of confirmed cases was reported by the United Kingdom (7.37 per 100 000), followed by Ireland (6.58 per 100 000) and Sweden (4.20 per 100 000).

Reported rates in 2010, although the lowest since 2006 when ECDC's TESSy database system started to record data, remain in the same range as the annual rates reported between 2006 and 2009 (Table 2.3.6, Figure 2.3.14).

Figure 2.3.14. Trend and number of reported confirmed cryptosporidiosis cases in EU/EEA countries, 2006–10



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

Age and gender distribution

Data on age was available for 6605 (99.8%) of cases. As in previous years, the highest confirmed case rate was in the 0–4-years-age group (12.19 per 100000), followed by the 5–14-years age group (5.05 per 100000) (Figure 2.3.15). The male-to-female ratio was 0.9 (2.21 cf. 2.45 per 100000; n=6546).

Seasonality

Notifications of cryptosporidiosis follows a seasonal pattern in Europe (Figure 2.3.16), with a peak during late summer and autumn when the rate roughly quadruples compared with the number of cases reported during the winter months. Arguably, the risk of exposure to *C. parvum* is increased by seasonal exposure patterns (e.g. ingestion of untreated water, recreational water activities, contact with farm animals). Large outbreaks are usually caused by contamination of reticulated water by either *C. parvum* or *C. hominis* and occur throughout the year. The 2010 notification rate was largely within the expected seasonal and year-to-year variation (Figures 2.3.14 and 2.3.16).

Discussion

Cryptosporidiosis is believed to be underreported in the EU, due both to the self-limiting nature of the disease and low ascertainment rates. There is no clear trend in the number of cryptosporidiosis cases reported by the 15 countries which contributed data since 2006, as illustrated by the 12-month moving average in Figure 2.3.14. Twenty-one countries reported *Cryptosporidium* infections to the TESSy database system, revealing pronounced differences in incidence rates. Four countries reported zero cases, five countries reported only one or two cases each, and nine countries did not notify *Cryptosporidium* cases. The differences in incidence across Europe are likely to reflect differences in national surveillance systems and diagnostic practices. Until these become more uniform and stable it will be difficult to draw conclusions regarding trends and burden of disease[3].

Table 2.3.6. Number and rate of reported confirmed cryptosporidiosis cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100000 population			Confirmed cases and notification rate per 100000 population		Confirmed cases and notification rate per 100000 population		Confirmed cases and notification rate per 100000 population		Confirmed cases and notification rate per 100000 population	
				Cases	Rate	Age standardised rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	3	3	0.04	0.04	0	0.00	13	0.16	9	0.11	14	0.17
Belgium	Y	C	275	275	2.54	2.48	470	4.37	397	3.72	259	2.45	402	3.82
Bulgaria	Y	A	1	1	0.01	0.00	1	0.01	0	0.00	0	0.00	4	0.05
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	1	1	0.01	0.01	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	19	19	0.36	0.38	11	0.21	11	0.21	11	0.21	6	0.11
France	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	Y	C	934	918	1.12	1.25	1106	1.35	1014	1.23	1459	1.77	1204	1.46
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	34	34	0.34	0.36	15	0.15	10	0.10	6	0.06	0	0.00
Ireland	Y	C	294	294	6.58	4.92	445	10.00	412	9.36	611	14.17	366	8.70
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	23	23	1.02	1.03	9	0.40	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	2	2	0.06	0.06	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	1	1	0.20	0.18	0	0.00	0	0.00	0	0.00	2	0.43
Malta	Y	C	1	1	0.24	0.26	0	0.00	0	0.00	0	0.00	1	0.25
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	0	0	0.00	0.00	5	0.01	1	0.00	0	0.00	0	0.00
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	8	8	0.04	0.04	8	0.04	0	0.00	-	-	-	-
Slovakia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	7	7	0.34	0.37	3	0.15	6	0.30	1	0.05	9	0.45
Spain	N	C	57	57	-	-	197	-	75	-	136	-	262	-
Sweden	Y	C	392	392	4.20	4.24	159	1.72	148	1.61	110	1.21	103	1.14
United Kingdom	Y	C	4569	4569	7.37	7.07	5587	9.07	4941	8.08	3653	6.01	4428	7.33
EU total	**-**	**-**	**6621**	**6605**	**2.29**	**2.34**	**8016**	**2.74**	**7028**	**2.44**	**6255**	**2.33**	**6801**	**2.49**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**6621**	**6605**	**2.29**	**2.34**	**8016**	**2.74**	**7028**	**2.44**	**6255**	**2.33**	**6801**	**2.49**

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

Surveillance and diagnostic practices for *Cryptosporidium* are important for water safety and the detection of waterborne outbreaks. The largest outbreak of cryptosporidiosis in Sweden to date occurred 2010–2011 when *C. hominis* contaminated the source of reticulated drinking water for the town of Östersund. A total of 186 confirmed cases was reported, while a web-based questionnaire estimated the actual number of symptomatic infections in the exposed population at more than 20 000[4].

References

1. Hunter PR, Nichols G. Epidemiology and clinical features of *Cryptosporidium* infection in immunocompromised patients. Clin Microbiol Rev. 2002;15(1):45-54.
2. Leitch GJ, He Q. Cryptosporidiosis – an overview. J Biomed Res. 2012 Jan;25(1):1-16. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3368497/
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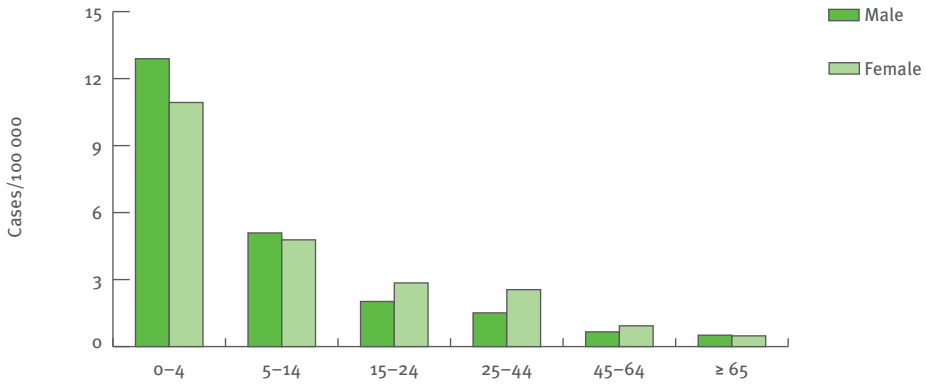
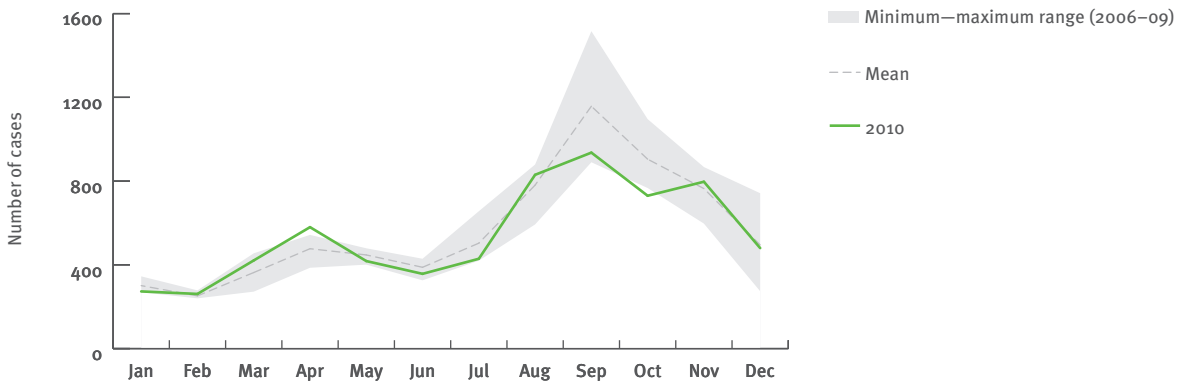
4. Smittskyddsinstitutet. *Cryptosporidium* i Östersund: Smittskyddsinstitutets arbete med det dricksvattenburna utbrottet i Östersund 2010–2011. Solna: Smittskyddsinstitutet; 2011. Available from: http://www.smittskyddsinstitutet.se/upload/Publikationer/Cryptosporidium-i-Ostersund-2011-15-4.pdf

Figure 2.3.15. Rates of reported confirmed cryptosporidiosis cases, by age and gender, EU/EEA countries, 2006–10



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

Figure 2.3.16. Seasonal distribution of reported confirmed cryptosporidiosis cases in EU/EEA countries, 2006–10



Source: Country reports from Belgium, Cyprus, Czech Republic, Estonia, Germany, Hungary, Ireland, Lithuania, Malta, Slovakia, Slovenia, Sweden, United Kingdom.

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Reflab	V	O	P	C	Y	N	N	N	Y
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-CRYPTOSPORIDIOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	A	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-CRYPTOSPORIDIOSIS	O	Co	P	C	Y	N	Y	Y	Y

Echinococcosis (hydatid disease)

- In 2010, the notification rate of echinococcosis in the EU was 0.18 cases per 100 000 population.
- The notification rate of echinococcosis in the EU remained unchanged in 2010.
- Bulgaria had the highest notification rate (3.85 cases per 100 000 population), accounting for 291 confirmed cases, 39% of the total number reported.

Echinococcosis (hydatid disease) is an uncommon disease in the EU, caused by infections with the larval stage of *Echinococcus* tapeworms. Human infection occurs through ingestion of tapeworm eggs, most commonly through contact with an infected dog or contaminated environment.

Epidemiological situation in 2010

In 2010, a total of 738 confirmed cases of human echinococcosis were reported by 22 of the 30 EU/EEA countries. The number of reported confirmed cases (738) decreased by 4.8% in 2010 (2009: 775 cases). The overall rate of reported confirmed cases has remained stable at around 0.18 cases per 100 000 for the period 2006–10 (Table 2.3.7, Figure 2.3.17).

Four countries (Bulgaria, Germany, Spain and Romania) accounted for 72.5% of all confirmed cases reported in 2010. Bulgaria had the highest confirmed case rate (3.85 cases per 100 000 population), more than 20 times the EU average (Table 2.3.7).

Age and gender distribution

Information on age and gender was provided for 446 confirmed cases. The male-female ratio in 2010 was 0.78:1. The highest notification rate was in 45–64-year-old females (0.16 per 100 000), followed by 65-year-old or older males (0.16 per 100 000) (Figure 2.3.18).

Enhanced surveillance

The 2010 EFSA/ECDC report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks[1] provides information on the distribution of cases per species. *E. granulosus* represented 69.1% of the confirmed cases, while *E. multilocularis* accounted for 9.3%. *Echinococcus* species were unknown in 21.6% of the cases.

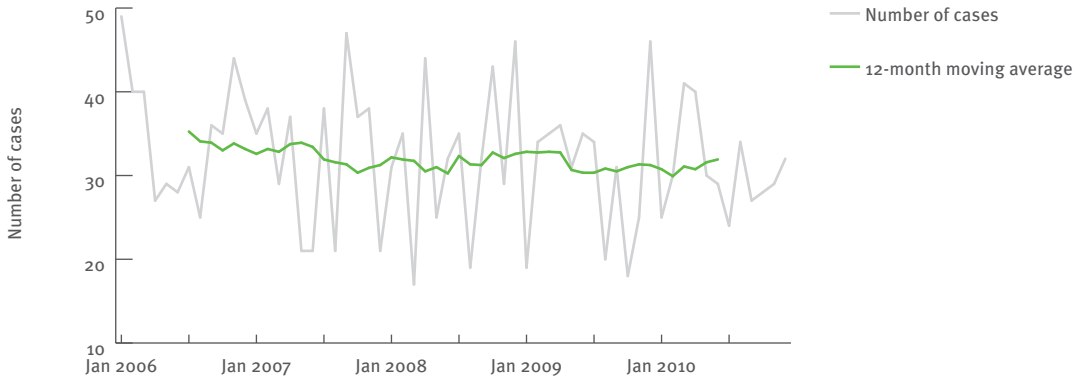
Discussion

Cases of echinococcosis are rare in the EU, but most countries still report cases. Rates of reported cases remained constant at the EU level in 2010, showing a slight decreasing trend between 2006 and 2009. The long incubation period could explain the higher notification rates in the oldest age groups. Control measures in animals, such as the Commission Delegated Regulation 1152/2011 of 14 July 2011 are likely to contribute to maintaining low rates in animal reservoirs in the future[2].

References

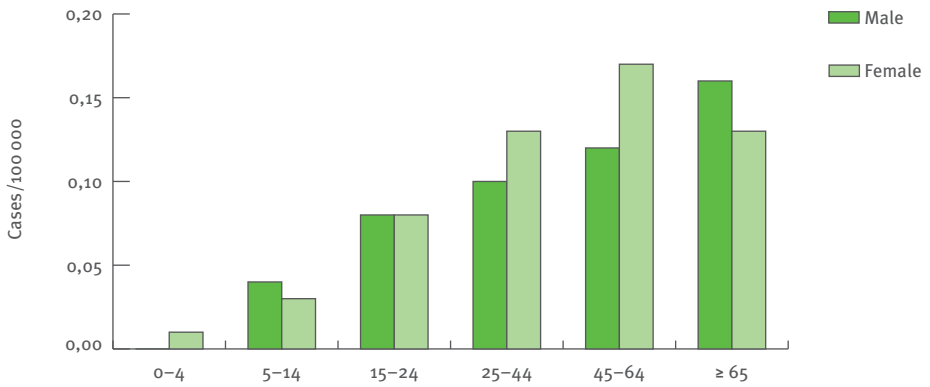
1. European Food Safety Authority, European Centre for Disease Prevention and Control. The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2010. EFSA Journal 2012; 10(3):2597.
2. European Commission, Commission Delegated Regulation No 1152/2011 of 14 July 2011 supplementing Regulation (EC) No 998/2003 of the European Parliament and of the Council as regards preventive health measures for the control of *Echinococcus multilocularis* infection in dogs.

Figure 2.3.17. Trend and number of reported confirmed cases of echinococcosis in EU/EEA countries, 2006–10



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

Figure 2.3.18. Rates of reported confirmed echinococcosis cases, by age and gender, EU/EEA countries, 2010



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

Table 2.3.7. Number and rate of reported confirmed echinococcosis cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	21	21	0.25	20	0.24	6	0.07	16	0.19	26	0.32
Belgium	Y	A	1	1	0.01	0	0.00	0	0.00	1	0.01	6	0.06
Bulgaria	Y	A	291	291	3.85	323	4.25	386	5.05	461	6.00	485	6.28
Cyprus	Y	C	0	0	0.00	1	0.13	1	0.13	4	0.51	6	0.78
Czech Republic	Y	C	5	5	0.05	1	0.01	2	0.02	3	0.03	2	0.02
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00	1	0.08	2	0.15	0	0.00
Finland	Y	C	1	1	0.02	1	0.02	1	0.02	1	0.02	0	0.00
France	Y	C	14	14	0.02	27	0.04	14	0.02	25	0.04	16	0.03
Germany	Y	C	117	117	0.14	106	0.13	102	0.12	89	0.11	124	0.15
Greece	Y	C	11	11	0.10	22	0.20	28	0.25	10	0.09	5	0.05
Hungary	Y	C	9	9	0.09	8	0.08	7	0.07	8	0.08	6	0.06
Ireland	Y	C	1	1	0.02	1	0.02	2	0.05	0	0.00	0	0.00
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	14	14	0.62	15	0.66	21	0.93	12	0.53	22	0.96
Lithuania	Y	C	23	23	0.69	36	1.08	32	0.95	12	0.36	15	0.44
Luxembourg	Y	C	1	1	0.20	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	25	0.15	12	0.07	6	0.04	31	0.19
Poland	Y	C	34	34	0.09	25	0.07	28	0.07	40	0.11	65	0.17
Portugal	Y	C	3	3	0.03	4	0.04	4	0.04	10	0.09	9	0.09
Romania	Y	C	128	55	0.26	42	0.20	119	0.55	99	0.46	-	-
Slovakia	Y	C	9	9	0.17	4	0.07	5	0.09	4	0.07	6	0.11
Slovenia	Y	C	8	8	0.39	9	0.44	7	0.35	1	0.05	3	0.15
Spain	Y	C	82	82	0.18	86	0.19	109	0.24	131	0.30	123	0.28
Sweden	Y	C	30	30	0.32	12	0.13	13	0.14	24	0.26	7	0.08
United Kingdom	Y	C	7	7	0.01	7	0.01	9	0.02	7	0.01	14	0.02
EU total	**-**	**-**	**810**	**737**	**0.18**	**775**	**0.18**	**909**	**0.21**	**966**	**0.22**	**971**	**0.24**
Iceland	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Liechtenstein	-	-	-	-	-	-	-	0	0.00	0	0.00	-	-
Norway	Y	C	1	1	0.02	0	0.00	2	0.04	0	0.00	0	0.00
Total	**-**	**-**	**811**	**738**	**0.17**	**775**	**0.18**	**911**	**0.21**	**966**	**0.22**	**971**	**0.24**

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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-ECHINOCOCCOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-FRANCEECHINO	V	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.3	Cp	Co	P	C	Y	N	N	N	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-ECHINOCOCCOSIS	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	A	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-ECHINOCOCCOSIS	V	Co	P	C	Y	N	Y	Y	Y

Vero/shiga toxin-producing *Escherichia coli* (VTEC/STEC) infection

- Reported rates of human cases of VTEC infection have followed a significant increasing four-year trend in EU/EEA countries since 2006.
- In 2010, the notification rate of VTEC in EU/EEA countries was 0.96 cases per 100 000 population.
- Cases were reported most frequently in male children aged 0–4 years: 10.7 cases per 100 000 population.
- In 2010, 230 cases of haemolytic-uraemic syndrome were reported.

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

Table 2.3.8. Number and rate of reported confirmed VTEC/STEC cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Age standardised rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	88	88	1.05	1.13	91	1.09	69	0.83	82	0.99	41	0.50
Belgium	Y	C	84	84	0.78	0.74	96	0.89	103	0.97	47	0.44	0	0.00
Bulgaria	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	2	0.25	0	0.00	0	0.00
Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Denmark	Y	C	192	178	3.22	3.09	160	2.90	161	2.94	156	2.86	146	2.69
Estonia	Y	C	5	5	0.37	0.35	4	0.30	3	0.22	3	0.22	8	0.60
Finland	Y	C	21	21	0.39	0.39	29	0.54	8	0.15	12	0.23	0	0.00
France	N	C	103	103	-	-	93	-	85	-	58	-	0	0.00
Germany	Y	C	968	955	1.17	1.30	887	1.08	876	1.07	870	1.06	1236	1.50
Greece	Y	C	1	1	0.01	0.01	0	0.00	0	0.00	2	0.02	1	0.01
Hungary	Y	C	7	7	0.07	0.07	1	0.01	0	0.00	1	0.01	3	0.03
Ireland	Y	C	199	197	4.41	3.76	237	5.33	213	4.84	115	2.67	153	3.64
Italy	Y	C	41	33	0.06	0.06	51	0.09	26	0.04	27	0.05	0	0.00
Latvia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	1	1	0.03	0.03	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	7	7	1.39	1.32	5	1.01	4	0.83	1	0.21	2	0.43
Malta	Y	C	1	1	0.24	0.26	8	1.93	8	1.95	4	0.98	5	1.24
Netherlands	Y	C	478	478	2.88	2.89	314	1.91	92	0.56	88	0.54	42	0.26
Poland	Y	C	4	3	0.01	0.01	0	0.00	3	0.01	2	0.01	4	0.01
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	2	2	0.01	0.01	0	0.00	4	-	0	0.00	-	-
Slovakia	Y	C	10	10	0.18	0.19	14	0.26	8	0.15	6	0.11	8	0.15
Slovenia	Y	C	20	20	0.98	1.00	12	0.59	7	0.35	4	0.20	34	1.70
Spain	N	C	18	18	-	-	14	-	24	-	19	-	13	-
Sweden	Y	C	334	334	3.58	3.51	228	2.46	304	3.31	262	2.88	265	2.93
United Kingdom	Y	C	1110	1110	1.79	1.73	1339	2.17	1164	1.90	1149	1.89	1301	2.15
EU total	**-**	**-**	**3694**	**3656**	**0.96**	**0.97**	**3583**	**0.94**	**3164**	**0.88**	**2908**	**0.77**	**3262**	**0.80**
Iceland	Y	C	2	2	0.63	0.60	8	2.51	4	1.27	13	4.23	1	0.33
Liechtenstein	-	-	-	-	-	-	-	-	0	0.00	-	-	-	-
Norway	Y	C	52	52	1.07	0.98	108	2.25	22	0.46	26	0.56	50	1.08
Total	**-**	**-**	**3748**	**3710**	**0.96**	**0.97**	**3699**	**0.96**	**3190**	**0.88**	**2947**	**0.77**	**3313**	**0.80**

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

Epidemiological situation in 2010

In 2010, 3710 confirmed cases of VTEC/STEC were reported by 27 EU/EEA countries. The overall notification rate was 0.96 cases per 100 000, the same level as reported in 2009 (Table 2.3.8).

In 2010, the United Kingdom, Germany, and the Netherlands accounted for 68.7% of all confirmed cases, whereas Ireland, Sweden and Denmark reported the highest notification rates: 4.41, 3.58, and 3.22 per 100 000 population, respectively. A marked increase in the number of confirmed cases between 2009 and 2010 was reported by the Netherlands (54.9%) and Sweden (46.5%), whereas the United Kingdom reported a reduction of 17.1% in the number of confirmed cases (Table 2.3.8).

The rate of reported confirmed VTEC/STEC cases showed a steadily increasing trend between 2007 and 2009, but remained stable in 2010 (Figure 2.3.19).

Age and gender distribution

Twenty-seven EU/EEA countries provided data on gender; 12% more females were affected than males, which corresponds to a female-to-male ratio of 1.12:1. The highest rate of confirmed cases was reported in 0–4-year-old males (6.08 cases per 100 000 population). The reported rates in children under five years of age were four to 11 times higher than in other age groups (Figure 2.3.20).

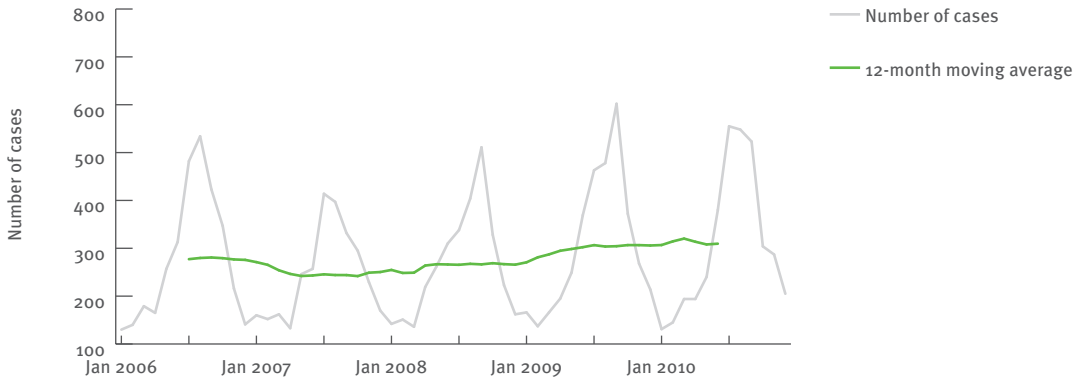
Seasonality

Reported cases of VTEC/STEC show a distinct seasonality, with a sharp increase in reported numbers in the middle of the summer (Figure 2.3.21).

Enhanced surveillance

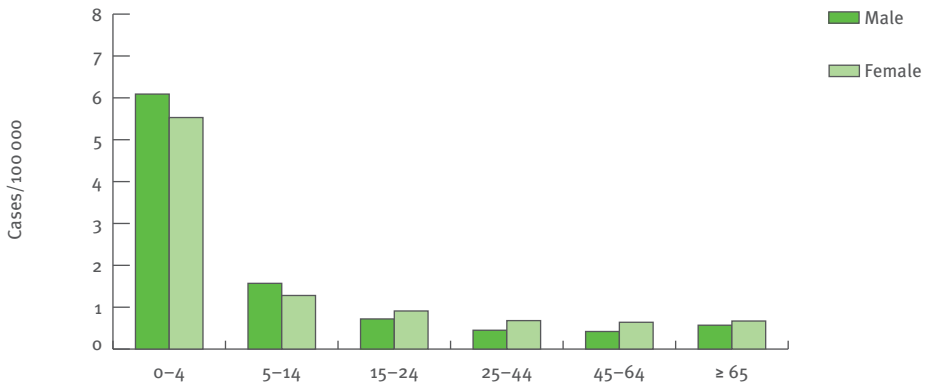
Serotype data was reported for 1288 (32%) VTEC cases, whereas data on the O serogroup were reported for 68% of confirmed human infections in 2010. Almost half of the reported O serogroups were O157 (40.7%). The

Figure 2.3.19. Trend and number of reported confirmed VTEC/STEC cases in EU/EEA countries, 2006–10



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

Figure 2.3.20. Rates of reported confirmed VTEC/STEC cases, by age and gender, EU/EEA countries, 2010



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

United Kingdom accounted for 70.4% of O157-associated confirmed cases (Table 2.3.9). The second most commonly reported serogroup was VTEC/STEC O26, representing 11% of all serogrouped strains.

Of particular public health interest in 2011 was the serotype VTEC/STEC O104:H4, which caused a large outbreak in Germany. In 2010, serogroup O104 was reported by two countries. One case occurred in Austria in a 58-year-old female who developed HUS; the serotype O104:H21 was different from the German outbreak strain. Another case, for which only serogroup information (O104) was known, was reported by Sweden in a 45-year-old female who had travelled to Tunisia. In addition, one confirmed case of STEC/VTEC O104:H4 was reported to the ECDC Epidemic Intelligence Information System (EPIS) by Finland as a travel-associated case who returned from Egypt at the end of 2010.

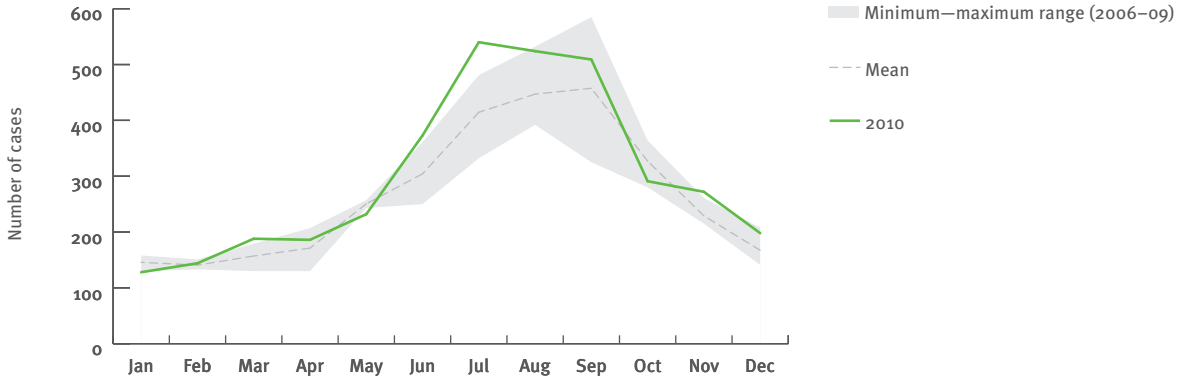
Occurrence of haemolytic-uraemic syndrome

Data on haemolytic-uraemic syndrome (HUS) were reported by 13 EU/EEA countries. A total of 230 confirmed VTEC/STEC cases developed haemolytic-uraemic syndrome. Sixty-six per cent of HUS cases (n=152) were reported in 0–4-year-old children (age unknown for one HUS case), with O157 and O26 as the dominant serogroups (Figure 2.3.22). Among non-HUS cases, the top-five O serogroups that were reported included also O91 and O103. None of the 50 cases with serogroup O91 developed HUS, and only one out of 82 cases with serogroup O103 developed HUS.

Updates from epidemic intelligence in 2011

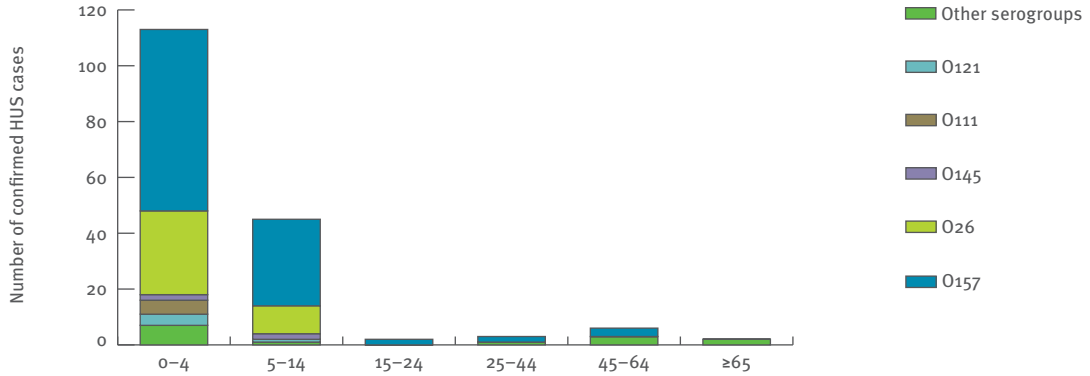
On 22 May 2011, German public health authorities issued an EU-wide alert on a sudden increase of HUS cases in adults, particularly in women. The affected persons rapidly developed severe symptoms, which in some cases led to death. The ensuing information exchange between the countries and within the European FWD network identified international travel groups that were linked to the outbreak, resulting in intensive epidemiological and microbiological investigations in Germany and in the EU[1]. International microbiological investigations quickly identified an emerging and rarely reported

Figure 2.3.21. Seasonal distribution of reported confirmed VTEC/STEC cases in EU/EEA countries, 2006–10



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

Figure 2.3.22. Number of reported confirmed VTEC/STEC HUS cases, by age and O serogroup, 2010



Source: Austria, Belgium, Denmark, France, Germany, Italy, Ireland, Netherlands, Norway, Poland, Slovenia, Sweden, United Kingdom (n=171).

strain of STEC O104:H4, which combined virulence factors typical for both STEC and enteroaggregative *E. coli* (EAggEC)[2].

The German outbreak was traced back to a sprout farm in Lower Saxony. On 10 June 2011, German health authorities issued a health alert on sprout consumption. On 28 June, France reported 15 cases of HUS or bloody diarrhoea in a group of people who attended an event in Begles on 8 June 2011[3]. Investigations suggested that the vehicle of transmission was also sprouts. The STEC O104:H4 strain isolated from five patients showed genetic and virulence characteristics that were similar to the German outbreak strain.

The French outbreak enabled investigators to narrow down fenugreek seeds as the common link between both outbreaks. An international trace-back investigation suggested a specific batch of fenugreek seeds imported from Egypt as the most likely source of the outbreaks[4]. By 27 July, 3910 probable and confirmed STEC cases were reported, including 46 deaths in EU/EEA countries. Despite intensive sampling and investigation of seeds and sprouts in Germany and France, the outbreak strain could not be isolated in food[5].

In June 2011, French public health authorities reported a cluster of eight children with HUS and confirmed serogroup O157 in six of the children. An epidemiological investigation suggested a link to frozen beef burgers purchased in local supermarkets. Seven of the infected children confirmed that they had eaten the suspected hamburgers; a subsequent microbiological investigation showed that the STEC strain in the frozen hamburger meat was indistinguishable from the human strains identified earlier.

Discussion

With 845 HUS cases, the German outbreak was by far the largest HUS outbreak ever reported. It affected predominantly adults (88%); 68% of all cases were in women (68%)[6]. The causative agent appeared to be a rare and novel pathotype, most likely the result of horizontal gene transfer between two different types of pathogenic *E. coli* strains with distinct reservoirs (animals and humans)[5,7].

Sprouts were identified as a source of the outbreak, highlighting the risks related to raw and ready-to-eat food products, some of which have become popular health food items in Europe. Secondary transmission from person-to-person remains low but transmission from person-to-food shows the potential and well-known risk of food contamination by an infected food handler[5,8].

The HUS outbreak showed the importance of rapid communication channels between public health and food safety authorities within and between the countries[9,10].

Table 2.3.9. Most commonly reported O serogroups in confirmed VTEC/STEC cases in the EU/EEA, 2010

Country	Serogroup										
	O157	O26	O103	O145	O91	O63	O111	O128	O146	Other	Not typed or unknown
Austria	11	16	9	3	0	0	6	0	1	31	11
Belgium	51	6	1	4	0	4	2	1	0	14	1
Denmark	25	14	24	6	6	1	3	9	9	73	5
Estonia	0	0	0	0	0	0	0	0	0	0	5
Finland	1	0	0	0	0	0	0	0	0	0	20
France	39	16	0	0	0	0	3	4	0	4	37
Germany	63	58	33	16	37	0	13	6	12	72	645
Greece	0	0	0	0	0	0	0	0	0	1	0
Hungary	3	1	0	0	0	0	0	1	0	0	2
Ireland	117	66	0	4	0	0	2	1	0	4	3
Italy	9	12	0	1	0	0	2	0	0	0	9
Lithuania	1	0	0	0	0	0	0	0	0	0	0
Luxembourg	2	1	1	0	2	0	0	1	0	0	0
Malta	1	0	0	0	0	0	0	0	0	0	0
Netherlands	40	17	9	12	9	37	3	2	4	65	280
Poland	2	0	0	0	0	0	1	0	0	0	0
Romania	1	1	0	0	0	0	0	0	0	0	0
Slovakia	0	0	0	0	0	0	0	0	0	0	10
Slovenia	2	6	1	0	0	0	2	1	0	1	7
Spain	17	0	0	0	0	0	0	0	0	1	0
Sweden	53	26	12	13	3	0	4	3	2	39	179
United Kingdom	1064	18	0	2	0	0	0	0	0	3	23
EU total	**1502**	**258**	**90**	**61**	**57**	**42**	**41**	**29**	**28**	**308**	**1237**
Iceland	2	0	0	0	0	0	0	0	0	0	0
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	8	7	11	4	2	0	1	1	0	7	9
Total	**1512**	**265**	**101**	**65**	**59**	**42**	**42**	**30**	**28**	**315**	**1246**

It also stresses the value of HUS-based surveillance that can detect STEC outbreaks[11]. In outbreak situations, the rapid reporting of correctly diagnosed cases with additional information on sufficiently characterised STEC strains (e.g. molecular typing) is crucial.

The majority of diagnosed and reported human STEC strains and outbreaks are connected to serogroup O157; this is partly due to the preference of certain diagnostic methods to detect this particular serogroup. In animals and food, serogroup O157 is mainly isolated from cattle and bovine meat[12].

In 2010, 12 EU countries reported 75 foodborne outbreaks caused by STEC strains[12]. The largest verified foodborne outbreak was reported by Romania in 2010. The outbreak occurred after a picnic and affected 72 people, 32 of which were hospitalised. The reported food vehicle was red meat products[12].

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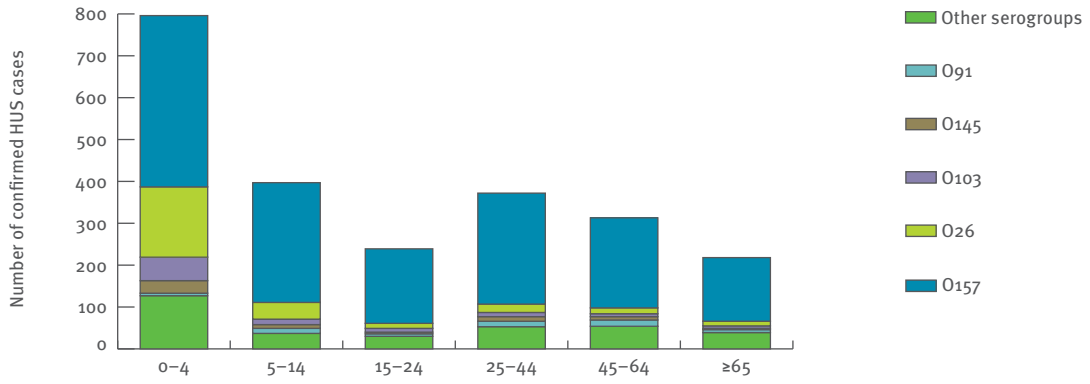
Figure 2.3.23. Number of VTEC/STEC non-HUS cases, by age and O serogroup, 2010



Source: Austria, Belgium, Denmark, France, Germany, Italy, Ireland, Netherlands, Norway, Poland, Slovenia, Sweden, United Kingdom (n=2335).

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y
Estonia	EE-EHEC	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	N
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-VTEC	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-ENTERNET	V	Se	P	C	Y	N	N	N	-
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-LABORATORY	Cp	Co	P	C	Y	N	N	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-ENTEROHAEMORHAGIC_ECOLI	Cp	Co	A	C	Y	Y	N	N	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-NRL	V	Se	P	C	Y	Y	Y	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-ENTEROHAEMORHAGIC_ECOLI	O	Co	A	C	Y	N	Y	Y	Y

Giardiasis

- The number of reported human giardiasis cases has been relatively consistent over the last years throughout the EU/EEA.
- Giardiasis remains the third most frequently reported gastrointestinal disease in the EU/EEA; the reported rate in 2010 was 5.68 cases per 100 000.
- Human giardiasis was more common in children 0–4 years old; the notification rate is highest for males: 16.3 cases per 100 000 population (2010).

Giardia intestinalis (also known as *Giardia lamblia* or *Giardia duodenalis*) is the causative agent of giardiasis, one of the most commonly found parasitic infections worldwide. Globally, the number of new infections annually has been estimated at 280 million[1]. Cysts survive well in the environment, and their ingestion through contaminated food or water, or via human-to-human contact are the dominant routes of transmission. Outbreaks as a consequence of malfunction or inadequate water treatment or hygienic standards are common.

Table 2.3.10. Number and rate of reported confirmed giardiasis cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Age standardised rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	59	59	0.70	0.73	31	0.37	47	0.57	66	0.80	84	1.02
Belgium	Y	C	1212	1212	11.18	10.82	1218	11.33	1213	11.37	1081	10.21	1238	11.78
Bulgaria	Y	A	2234	2234	29.54	0.00	2096	27.56	2141	28.02	0	0.00	2212	28.66
Cyprus	Y	C	12	12	1.49	1.48	2	0.25	7	0.89	4	0.51	6	0.78
Czech Republic	Y	C	51	51	0.49	0.49	47	0.45	79	0.76	90	0.88	141	1.38
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	257	257	19.18	19.48	207	15.44	264	19.69	418	31.14	469	34.88
Finland	Y	C	373	373	6.97	7.11	378	7.10	427	8.06	294	5.57	272	5.18
France	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	Y	C	3994	3980	4.87	5.06	3962	4.83	4763	5.79	3651	4.44	3661	4.44
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	87	87	0.87	0.89	100	1.00	138	1.37	86	0.85	31	0.31
Ireland	Y	C	57	57	1.28	1.19	62	1.39	70	1.59	62	1.44	65	1.55
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	21	21	0.93	0.93	18	0.80	28	1.23	34	1.49	9	0.39
Lithuania	Y	C	20	18	0.54	0.59	13	0.39	15	0.45	23	0.68	17	0.50
Luxembourg	Y	C	0	0	0.00	0.00	2	0.41	1	0.21	0	0.00	0	0.00
Malta	Y	C	5	5	1.21	1.29	2	0.48	2	0.49	10	2.45	11	2.72
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	A	2350	2271	5.95	0.00	2184	5.73	3096	8.12	2981	7.82	2875	7.54
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	A	106	106	0.49	0.09	296	1.38	-	-	-	-	-	-
Slovakia	Y	C	169	169	3.12	3.10	139	2.57	125	2.31	122	2.26	93	1.73
Slovenia	Y	C	19	19	0.93	0.92	9	0.44	14	0.70	17	0.85	-	-
Spain	N	C	578	578	-	-	869	-	683	-	904	-	909	-
Sweden	Y	C	1311	1311	14.04	14.02	1210	13.07	1529	16.65	1413	15.51	1282	14.17
United Kingdom	Y	C	4024	4024	6.49	6.44	3719	6.04	3632	5.94	3257	5.36	3167	5.24
EU total	**-**	**-**	**16939**	**16844**	**5.69**	**5.71**	**16564**	**5.50**	**18274**	**6.68**	**14513**	**5.18**	**16542**	**6.00**
Iceland	Y	C	24	24	7.56	6.99	27	8.45	33	10.46	46	14.95	39	13.01
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	262	262	5.39	5.15	308	6.42	270	5.70	290	6.20	294	6.34
Total	**-**	**-**	**17225**	**17130**	**5.68**	**5.70**	**16899**	**5.51**	**18577**	**6.66**	**14849**	**5.21**	**16875**	**6.02**

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

Epidemiological situation in 2010

In 2010, a total of 17130 confirmed cases of giardiasis were reported by 23 EU/EEA countries (Table 2.3.10). The overall crude rate was 5.68 cases per 100000 population.

The highest case rates were reported from Bulgaria (29.54 per 100000), followed by Estonia (19.18 per 100000), Sweden (14.04 per 100000) and Belgium (11.18 per 100000). Romania replaced its reporting source with information form a seasonal sentinel surveillance scheme; previously reported high case numbers were withdrawn.

Figure 2.3.24 shows the reported rate of giardiasis in EU/EEA countries between 2006 and 2010. The reported rate has been relatively consistent over recent years.

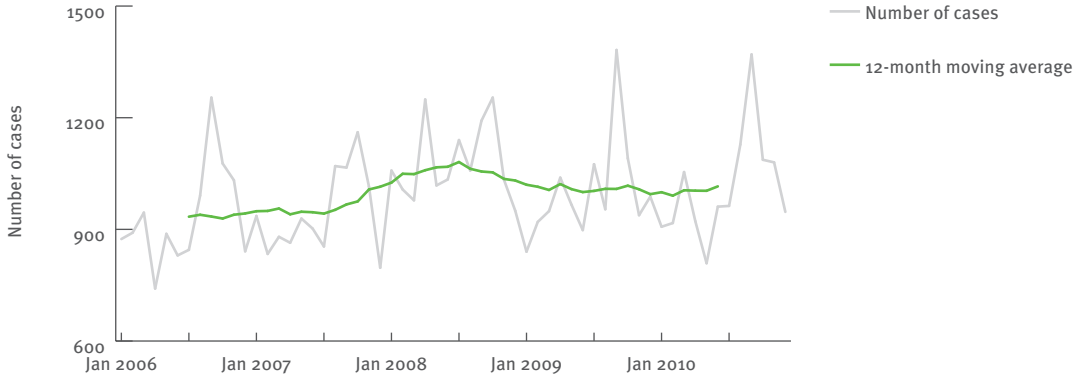
Age and gender distribution

Information on gender and age was provided for 12350 confirmed cases in EU/EEA countries. The male-to-female ratio was 1.22:1 in 2010. As in previous years, the highest notification rate was observed in the age group 0–4 years for both males and females The highest notification rate was in 0–4-year-old male children with 16.3 per 100000, followed by 0–4-year-old female children with 14.2 per 100000 population (Figure 2.3.25).

Seasonality

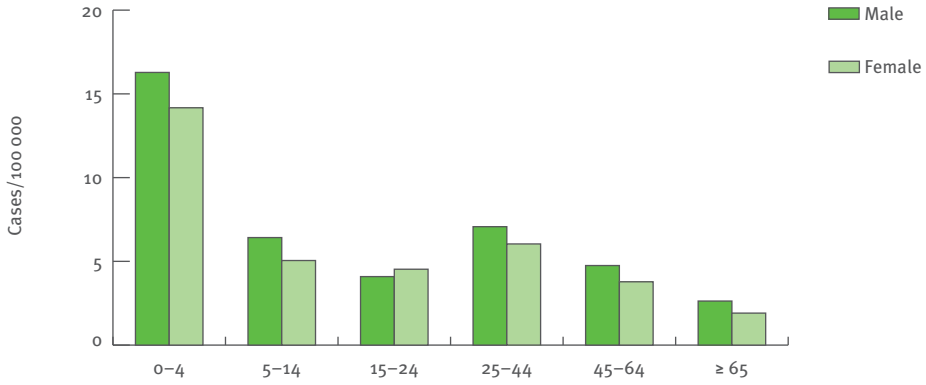
Data on seasonality for 2010 was available for 12534 reported cases from 19 countries. Cases occur all year round, although a slight increase has consistently been observed in the autumn months. Figure 2.3.26 shows the seasonality of reported cases between 2006 and 2010.

Figure 2.3.24. Trend and number of reported confirmed giardiasis cases in EU/EEA countries, 2006–10



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

Figure 2.3.25. Rates of reported confirmed giardiasis cases, by age and gender, EU/EEA countries, 2010



Source: Country reports from all EU/EEA countries except Bulgaria, Denmark, France, Greece, Italy, Netherlands, Poland, Portugal, Romania and Liechtenstein.

Discussion

Giardiasis is the third most commonly reported gastrointestinal infection in the EU/EEA. Overall reported rates have been relatively stable over the last five years.

The surveillance systems for giardiasis still show a variety of designs, from voluntary, sentinel to compulsory and comprehensive. Consequently, the reported rates vary widely between countries. It is likely that the total number of 17 225 reported cases from EU/EAA Member States for 2010 represents a particularly substantial underestimation of the true number of cases.

References

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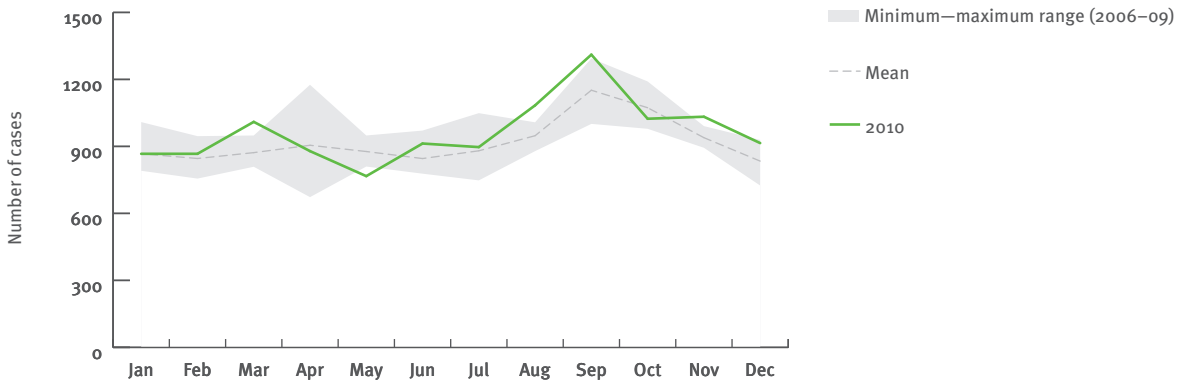
Figure 2.3.26. Seasonal distribution of reported confirmed giardiasis cases in EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Reflab	V	O	P	C	Y	N	N	N	Y
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-HBV/GIARDIASIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	A	N	Y	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	P	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-GIARDIASIS	O	Co	P	C	Y	N	Y	Y	Y

Hepatitis A

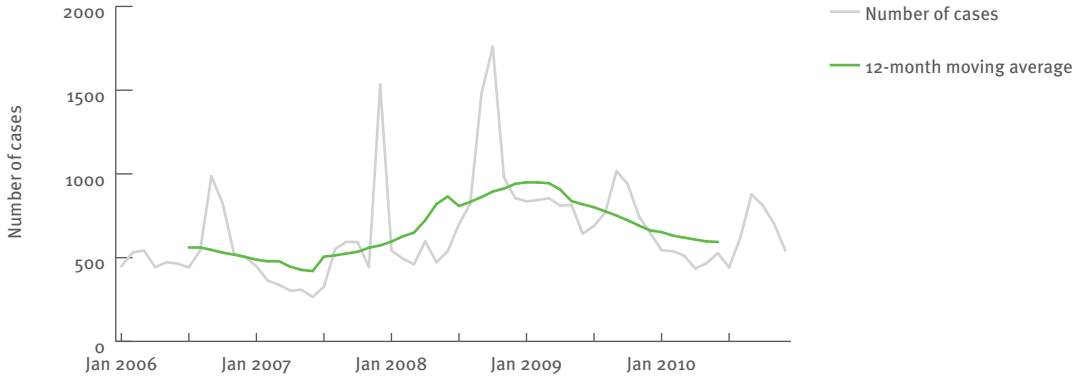
- The overall reported rate of confirmed hepatitis A cases in 2010 was 2.63 per 100 000 population, making it the fourth most frequently reported gastrointestinal infection in the EU/EEA.
- Reported rates for the EU/EEA have declined by 32% during 2006–10.
- The most affected age groups continue to be children between five and 14 years of age, although infection in children under five is likely to be underreported as the disease in this age group is frequently asymptomatic.

The hepatitis A virus remains a relatively common source of gastrointestinal illness in some areas of the EU/EEA. Humans are the only reservoir, and transmission is from person to person by the faecal-oral route in a variety of settings. Outbreaks can be prolonged and difficult to control.

Epidemiological situation in 2010

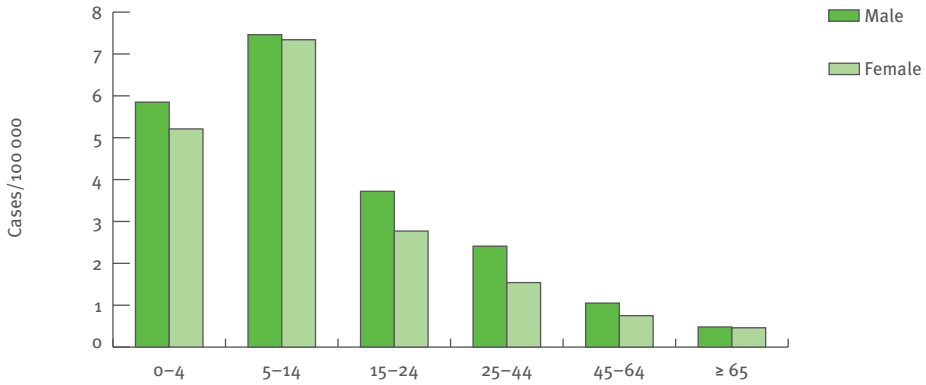
In 2010, all EU/EEA countries with the exception of Liechtenstein reported on hepatitis A cases. A total of 13 611 cases were reported, of which 13 325 were confirmed (Table 2.3.11). The overall EU/EEA rate was 2.63 per 100 000, down from 3.94 per 100 000 in 2006. The epidemiology of hepatitis A at the EU level has been characterised by sharp peaks in reported numbers as a consequence of outbreaks, and no overall trend is observable in reporting throughout the period. Part of the present decline in reported incidence reflects the resolution of the national outbreak in Latvia during 2008–09 (Figure 2.3.27).

Figure 2.3.27. Trend and number of reported confirmed hepatitis A cases in EU/EEA countries, 2006–10



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

Figure 2.3.28. Rates of reported confirmed hepatitis A cases, by age and gender, EU/EEA countries, 2010



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

The highest reported confirmed case rates were from Bulgaria (31.07 per 100 000), Slovakia (26.71 per 100 000), Romania (16.28 per 100 000), Latvia (12.99 per 100 000) and the Czech Republic (8.20 per 100 000).

Importation status was reported by 23 EU/EEA countries, for 3 655 (27.4%) of all reported cases. Of these, 77.6% were reported as acquired in the country of reporting, with the remainder imported from other countries. Indigenous acquisition of hepatitis A infection was reported for the majority of cases by Latvia (100%), Spain (100%), Greece (96.5%), France (70.2%), the Netherlands (66.9%) and Germany (64.7%). For other countries the division between indigenous and imported cases was more balanced, namely Ireland (58.1%), Austria (45.2%) and Denmark (39.1%).

In May and November 2009, Australia experienced two outbreaks of hepatitis A infection likely associated with the consumption of semi-dried tomatoes[1]. This event was communicated to EU countries on both occasions through the Food- and Waterborne Diseases and Zoonoses (FWD) network coordinated at ECDC. Between December 2009 and February 2010, the Netherlands reported 13 primary cases and four secondary cases infected with a hepatitis A virus genotype 1B strain, which was similar to the one identified in the Australian outbreaks[2,3]. Analytical epidemiological studies in this outbreak indicated semi-dried tomatoes in oil as the most likely source of infection[2,3].

Between November 2009 and February 2010, France reported 49 confirmed cases of hepatitis A virus infection of genotype 1B. These and an additional 10 probable cases were found to be associated with the consumption of semi-dried tomatoes imported from Turkey[4]. The viral strain was similar, but genetically distinct from the strains identified in the outbreaks in Australia and the Netherlands[4].

Another outbreak reported from London highlighted the risk of person-to-person transmission of hepatitis A

Table 2.3.11. Number and rate of hepatitis A cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Age standardised rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	54	54	0.65	0.65	1	0.01	4	0.05	5	0.06	1	0.01
Belgium	Y	C	137	137	1.26	1.26	130	1.21	365	3.42	209	1.98	225	2.14
Bulgaria	Y	A	2350	2350	31.07	0.00	1064	13.99	907	11.87	2790	36.33	7266	94.13
Cyprus	Y	C	2	2	0.25	0.23	4	0.50	4	0.51	4	0.51	3	0.39
Czech Republic	Y	C	862	862	8.20	8.69	1104	10.55	1649	15.89	126	1.23	131	1.28
Denmark	Y	C	47	47	0.85	0.82	45	0.82	44	0.80	306	5.62	42	0.77
Estonia	Y	C	6	6	0.45	0.45	19	1.42	13	0.97	10	0.75	5	0.37
Finland	Y	C	14	14	0.26	0.28	22	0.41	22	0.42	15	0.28	26	0.50
France	Y	C	1244	1244	1.92	1.90	1547	2.40	1204	1.88	1010	1.59	1336	2.11
Germany	Y	C	788	775	0.95	0.99	929	1.13	1072	1.30	936	1.14	1226	1.49
Greece	Y	C	58	58	0.51	0.55	86	0.76	120	1.07	286	2.56	123	1.11
Hungary	Y	C	207	202	2.02	2.07	107	1.07	168	1.67	251	2.49	286	2.84
Ireland	Y	C	43	40	0.90	0.83	49	1.10	41	0.93	29	0.67	38	0.90
Italy	Y	C	580	580	0.96	1.02	1500	2.50	1350	2.26	1159	1.96	890	1.52
Latvia	Y	C	297	292	12.99	13.57	2276	100.65	2798	123.21	15	0.66	47	2.05
Lithuania	Y	C	16	10	0.30	0.30	16	0.48	20	0.59	23	0.68	99	2.91
Luxembourg	Y	C	2	2	0.40	0.39	5	1.01	3	0.62	1	0.21	3	0.64
Malta	Y	C	3	3	0.72	0.73	9	2.18	4	0.98	3	0.74	7	1.73
Netherlands	Y	C	252	252	1.52	1.51	154	0.93	87	0.53	165	1.01	262	1.60
Poland	Y	A	155	153	0.40	0.00	644	1.69	189	0.50	36	0.09	105	0.28
Portugal	Y	C	12	10	0.09	0.09	27	0.25	21	0.20	17	0.16	40	0.38
Romania	Y	C	3502	3493	16.28	16.72	3734	17.37	3161	14.68	4982	23.10	5351	24.76
Slovakia	Y	C	1453	1449	26.71	26.55	1447	26.74	729	13.50	383	7.10	461	8.55
Slovenia	Y	C	9	9	0.44	0.43	12	0.59	17	0.85	15	0.75	10	0.50
Spain	Y	C	977	740	1.61	1.60	1808	3.95	1877	4.15	698	1.57	1079	2.47
Sweden	Y	C	85	85	0.91	0.90	154	1.66	78	0.85	68	0.75	80	0.88
United Kingdom	Y	C	408	408	0.66	0.65	437	0.71	794	1.30	377	0.62	417	0.69
EU total	**-**	**-**	**13563**	**13277**	**2.65**	**2.92**	**17330**	**3.47**	**16741**	**3.36**	**13919**	**2.81**	**19559**	**3.97**
Iceland	Y	C	2	2	0.63	0.59	3	0.94	1	0.32	2	0.65	2	0.67
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	46	46	0.95	0.91	40	0.83	49	1.03	29	0.62	41	0.88
Total	**-**	**-**	**13611**	**13325**	**2.63**	**2.90**	**17373**	**3.44**	**16791**	**3.34**	**13950**	**2.79**	**19602**	**3.94**

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

virus in populations with low immunity or low vaccination coverage for the disease. A cluster of five hepatitis A cases was identified in July and August 2010 in an orthodox Jewish community[5]. Two of the five cases had travelled to Israel in June 2010 and attended the same event. The three additional cases were secondary contacts of the two primary cases. Control measures implemented after the identification of all five cases included contact tracing and vaccination of 104 family contacts and over 300 school contacts[5].

Age and gender distribution

Data on age groups was available for 28 EU/EEA countries. The highest confirmed case rate occurred in children of 5–14 years of age (9.11 per 100 000 population), followed by children under five years of age (7.36 per 100 000 population) (Figure 2.3.28). The age distribution in 2010 was similar to the one reported in 2007–09. Data on gender distribution were available for 13 206 confirmed cases. The male-to-female ratio was 1.25:1, with an overall confirmed case rate of 3.21 per 100 000 in men and 2.45 per 100 000 in women.

Seasonality

Cases are reported all year round with a peak in September/October (Figure 2.3.29). A peak at the beginning of autumn may reflect indigenous transmission when infected persons return from visiting endemic areas during their summer holidays and are seeding events for new local clusters.

Updates from epidemic intelligence 2011

In 2011, hepatitis A was identified on two occasions as a possible public health threat to the EU. Between 4 August and 31 December 2011, an outbreak – likely caused by person-to-person transmission – was reported from Viljandi county, Estonia, where a total of 135 confirmed cases of hepatitis A (genotype 1 B) were reported[6]. Hepatitis A incidence in Estonia has been continuously decreasing from 68 per 100 000 population in 1998 to 0.4 per 100 000 in 2010. The second event involved two clusters of hepatitis A cases identified in the United Kingdom (England, seven cases) and in the Netherlands (seven cases) between July and December 2011[7,8].

The cases from England and the Netherlands were infected with hepatitis A virus (HAV) genotype 1B. Strains from both clusters were genetically similar; they were also similar to HAV strains implicated in similar outbreaks in the Netherlands, France and Australia in 2010[2-4]. Epidemiological investigations showed that the consumption of semi-dried tomatoes was the likely source of exposure in both clusters. However, food safety authorities in both countries neither identified a particular brand or common source of the tomatoes, nor were they able to establish a link between the tomatoes sold in England and those in the Netherlands[7,8].

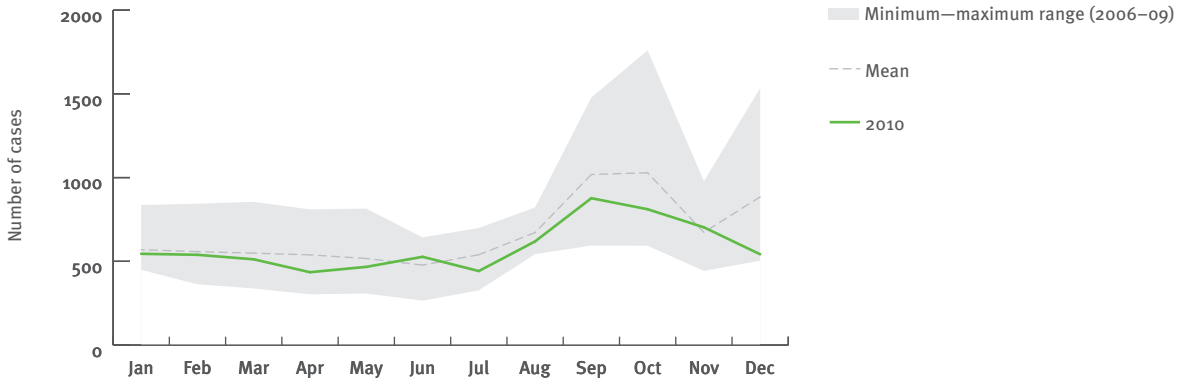
Discussion

Hepatitis A virus infection continues to be a common source of gastrointestinal disease in the EU. The epidemiology continues to reflect the wide variation in endemicity of infection across the EU, in addition to differences in health services. The epidemiology of infection continues to reflect that of countries of intermediate, and low endemicity, as reported case rates vary widely between countries. Higher rates are reported from Bulgaria, the Czech and Slovak Republics, Romania, and Latvia. The age distribution of cases in 2010 and before may reflect underreporting of hepatitis A infection in young children, where the disease is often asymptomatic.

Imported cases are an important component of disease burden for several countries.

In recent years, outbreaks were reported in specific population groups (e.g. the Roma population, men who have sex with men, and intravenous drug users) as well as in the general population. Outbreaks of hepatitis A in 2010 and 2011, associated with the consumption of semi-dried tomatoes, highlight the threat of foodborne transmission and warrant continued efforts to trace back the origin of contaminated food. However, the outbreak in Estonia in 2011, as well as the outbreak among

Figure 2.3.29. Seasonal distribution of reported confirmed cases of hepatitis A in EU/EEA countries, 2006–10



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

an orthodox Jewish community in London, demonstrate that person-to-person transmission is also a likely source of infection, particularly in populations where immunity is low or decreasing.

Seasonality in confirmed case rates across the EU show a peak at the beginning of autumn, which may reflect transmission occurring when infected persons return from visiting endemic areas during summer holidays, and these become seeding events for new indigenous cases and clusters of infection.

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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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-HAV	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-HEPATITISA	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-HEPATITISA	O	Co	P	C	Y	N	Y	N	Y

Legionnaires' disease

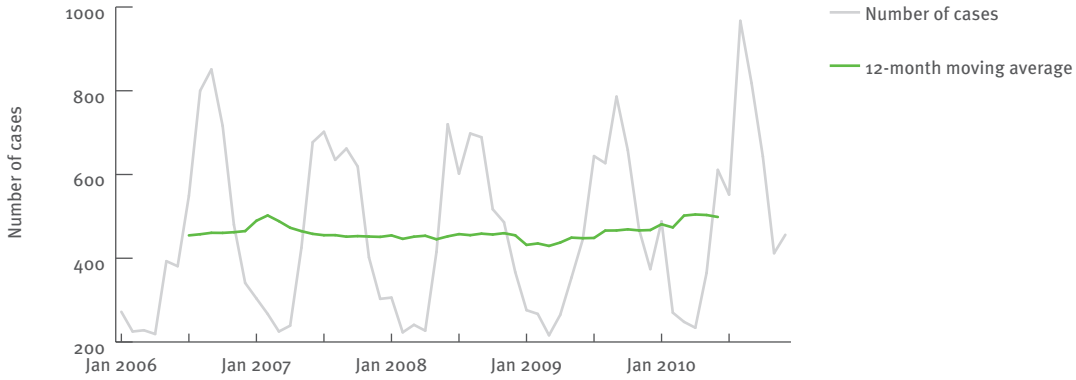
- Legionnaires' disease remains an uncommon, mainly sporadic infection with low confirmed case rates in EU/EEA countries (1.16 per 100 000 population), despite a 17% increase between 2009 and 2010.
- In 2011, two outbreaks were reported: one in Italy (17 cases) and one in Greece (15 cases).
- The majority of cases were reported by a small number of countries: France, Italy and Spain accounted for 62% of all cases. Under-ascertainment remains a particular issue in south-eastern Member States.
- Regular checks for *Legionella* combined with appropriate control measures in man-made water systems may prevent a significant number of Legionnaires' disease cases.

Legionnaires' disease is a multisystem disease involving pneumonia due to gram-negative bacteria (Legionella spp.) which are found in freshwater environments around the world[1]. Humans are infected by inhalation of aerosols containing *Legionella*. The infection can be fatal and outbreaks from a common environmental source can occur. Cases of Legionnaires' disease are mainly reported in persons in older age groups, especially in males.

Epidemiological situation in 2010

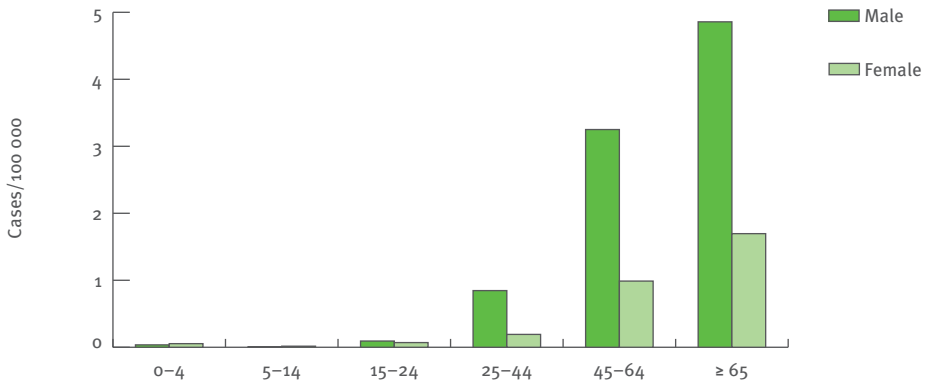
In 2010, 6 299 confirmed and probable[2] cases were reported by 29 countries. France, Italy and Spain accounted for 62% of all cases (Table 2.3.12). The overall rate of confirmed cases was 1.16 per 100 000 population in 2010, significantly higher than in the previous year[3]. This increase was mainly driven by a relatively small number of countries reporting the majority of cases, notably France, Germany and the Netherlands. The

Figure 2.3.30. Trend and number of reported confirmed and probable Legionnaires' disease cases in EU/EEA countries, 2006–10



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

Figure 2.3.31. Rates of reported confirmed and probable cases of Legionnaires' disease, by age and gender, EU/EEA countries, 2010



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

number of reported cases has been fairly stable over the past five years. Most cases in 2010 were community acquired (71%), 20% were travel associated, 8% were associated with healthcare facilities, and one per cent was associated with other settings. Of 4 339 cases with a known outcome, 438 were reported to have died, giving a case fatality ratio (CFR) of 10%.

Distribution by age and gender

In 2010, people aged 65 years and older accounted for 2 652 (42%) of 6 283 cases with known age. The male-to-female ratio was 2.8:1. The rates increased with age, from <0.1 per 100 000 in those under 25 years of age to 2.9 in persons aged 65 years and above (4.6 per 100 000 in males and 1.6 in females) (Figure 2.3.31).

Seasonality

As in previous years, distribution of cases by month of onset showed a peak in August, with 60% of all cases reported during the warm season (from June to October) (Figure 2.3.32).

Enhanced surveillance

In addition to the retrospective surveillance of Legionnaires' disease, the European Legionnaires' Disease Surveillance Network (ELDSNet) conducts daily surveillance of travel-associated cases. In 2010, 864 travel-associated cases were reported, which was very similar to the number of cases reported in previous years[4]. A total of 100 new travel-associated clusters[i] were notified in 2010, 44 of which included cases from two or more countries and would therefore probably not have been detected without ELDSNet surveillance. *Legionella* was found in 61 environmental investigations following cluster cases. Of 100 accommodation

i A cluster is defined as two or more cases who stayed at the same public accommodation site in the two to 10 days before onset of illness and whose onsets were within the same two-year period.

Table 2.3.12. Number and rate of reported confirmed and probable cases of Legionnaires' disease in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Age standardised rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	80	76	0.91	0.87	83	0.99	97	1.17	101	1.22	64	0.78
Belgium	Y	C	89	89	0.82	0.79	64	0.60	0	0.00	77	0.73	131	1.25
Bulgaria	Y	C	1	1	0.01	0.01	2	0.03	1	0.01	0	0.00	1	0.01
Cyprus	Y	C	2	2	0.25	0.32	3	0.38	9	1.14	1	0.13	1	0.13
Czech Republic	Y	C	38	28	0.27	0.26	11	0.11	13	0.13	17	0.17	13	0.13
Denmark	Y	C	133	99	1.79	1.75	100	1.81	103	1.88	106	1.95	85	1.57
Estonia	Y	C	0	0	0.00	0.00	6	0.45	7	0.52	3	0.22	4	0.30
Finland	Y	C	24	10	0.19	0.17	8	0.15	5	0.09	13	0.25	7	0.13
France	Y	C	1540	1508	2.33	2.32	1181	1.84	1205	1.88	1337	2.10	1386	2.19
Germany	Y	C	688	550	0.67	0.59	378	0.46	406	0.49	392	0.48	363	0.44
Greece	Y	C	9	9	0.08	0.07	15	0.13	26	0.23	22	0.20	30	0.27
Hungary	Y	C	60	19	0.19	0.19	14	0.14	20	0.20	11	0.11	6	0.06
Ireland	Y	C	11	11	0.25	0.31	7	0.16	9	0.20	14	0.33	11	0.26
Italy	Y	C	1232	1182	1.96	1.74	1159	1.93	1144	1.92	906	1.53	903	1.54
Latvia	Y	C	6	6	0.27	0.26	3	0.13	5	0.22	2	0.09	1	0.04
Lithuania	Y	C	1	1	0.03	0.03	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	10	10	1.99	2.02	5	1.01	4	0.83	5	1.05	9	1.92
Malta	Y	C	6	6	1.45	1.33	5	1.21	2	0.49	14	3.43	2	0.49
Netherlands	Y	C	466	412	2.49	2.47	214	1.30	309	1.88	300	1.83	418	2.56
Poland	Y	C	36	6	0.02	0.02	4	0.01	6	0.02	0	0.00	0	0.00
Portugal	Y	C	128	125	1.18	1.13	93	0.88	91	0.86	78	0.74	89	0.84
Romania	Y	C	1	1	0.01	0.00	1	0.01	1	0.01	0	0.00	-	-
Slovakia	Y	C	4	4	0.07	0.07	1	0.02	5	0.09	2	0.04	2	0.04
Slovenia	Y	C	58	50	2.44	2.31	61	3.00	44	2.19	32	1.59	-	-
Spain	Y	C	1150	1142	2.48	2.43	1205	2.63	1220	2.69	1123	2.53	1328	3.04
Sweden	Y	C	100	87	0.93	0.88	114	1.23	153	1.67	127	1.39	77	0.85
United Kingdom	Y	C	376	367	0.59	0.59	372	0.60	394	0.64	486	0.80	581	0.96
EU total	**-**	**-**	**6249**	**5801**	**1.16**	**1.20**	**5109**	**1.02**	**5279**	**1.06**	**5169**	**1.04**	**5512**	**1.17**
Iceland	Y	C	2	2	0.63	0.87	6	1.88	2	0.63	4	1.30	1	0.33
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	48	43	0.89	0.91	32	0.67	35	0.74	33	0.71	26	0.56
Total	**-**	**-**	**6299**	**5846**	**1.16**	**1.20**	**5147**	**1.02**	**5316**	**1.06**	**5206**	**1.04**	**5539**	**1.17**

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

sites associated with clusters, five were published on the ECDC website because of unsatisfactory or uncertain control measures.

Updates from epidemic intelligence 2011

In 2011, ECDC monitored seven threats related to Legionnaires' disease, three of which were notified through the Early Warning and Response System (EWRS), including two outbreaks in EU/EEA countries.

An outbreak of Legionnaires' disease was associated with travel to the town of Lazise, Veneto, Italy, in July and August 2011[5,6]. A total of 17 cases originating from five EU countries were reported.

A second outbreak reported through ELDSNet was associated with travel to Corfu, Greece, in September and October 2011. Of 15 cases reported, 14 were British residents. The source could not be ascertained and the typing of the strains revealed that this was not a point-source outbreak.

Discussion

With a significant increase in 2010, the confirmed case rate for Legionnaires' disease in the EU/EEA in 2010 nearly returned to the peak level reached in 2006. The increase was mainly driven by a small number of countries which reported the majority of cases. Reported rates remain particularly low in a number of south-eastern European countries, such as Bulgaria, Greece and Romania, where climate conditions are conducive to the growth of *Legionella*. Rates of confirmed cases in those countries are expected to increase with the use of state-of-the-art diagnostic tests and improved reporting of cases. Additional factors such as global warming, the proliferation of man-made water systems and an aging population could also lead to an overall rise in the number of Legionnaires' disease cases. Regular checks for *Legionella* combined with appropriate control measures in man-made water systems may prevent a significant number of cases[7].

In 2010, the number of notified travel-associated Legionnaires' disease cases was comparable to the number of cases reported in previous years. Near real-time surveillance at the European level has proved its usefulness, with 44% of clusters unlikely to have been detected without ELDSNet. The detection and follow-up of two major outbreaks in 2011 also benefited from this network.

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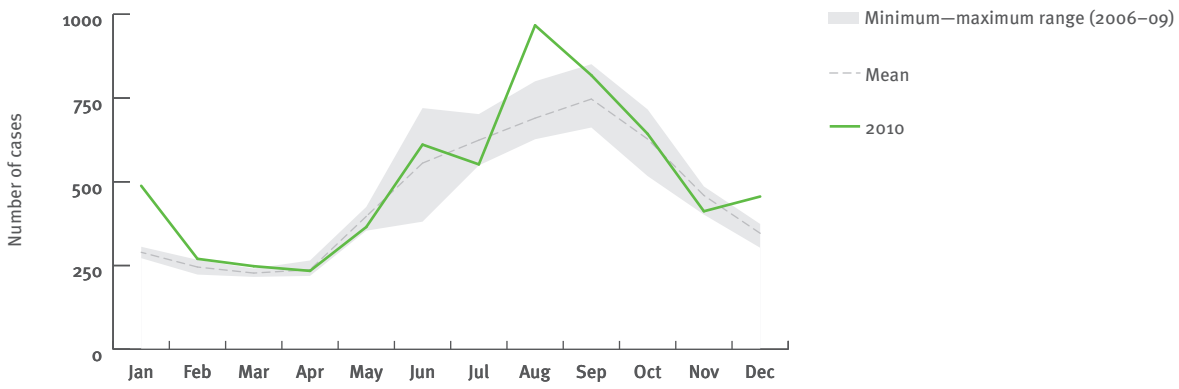
Figure 2.3.32. Seasonal distribution of reported confirmed and probable cases of Legionnaires' disease, in EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-FLA_FRA_LABNET_REFLAB	Cp	O	A	C	Y	Y	Y	-	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-LEGIONELLOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-LEGIONELLOSIS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-LEGIONELLOSIS	Cp	Co	P	C	Y	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	N	N	N	Y
United Kingdom	UK-LEGIONELLOSIS	O	Co	A	C	Y	N	Y	Y	Y

Leptospirosis

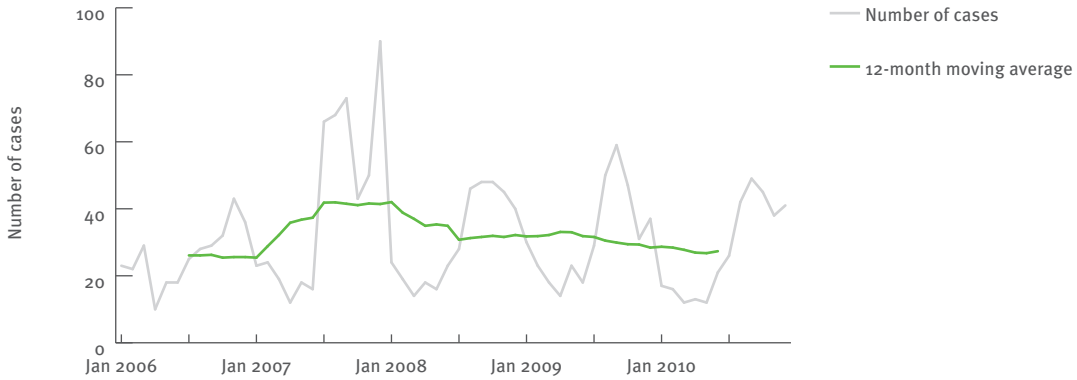
- Leptospirosis is an uncommon disease in EU/EEA countries. The reported rate of confirmed cases in 2010 was 0.13 per 100 000 population, similar to the reported rates in 2006–09.
- Most cases are attributed to occupational exposure in adult males; a small number of cases are associated with water-related recreational activities.

Leptospirosis is a zoonotic infectious disease caused by spirochetes of the genus *Leptospira*, an environmental microorganism maintained in nature by chronic renal infection of carrier animals. Human infection occurs either by direct contact with infected animal urine, infected animal tissues, or by indirect exposure to *Leptospira* through damp soil or water. Most cases are asymptomatic. The disease presents either as a self-limited systemic illness (90 per cent of all cases) or as a severe, potentially fatal disease with renal failure, liver failure and pneumonitis.

Epidemiological situation in 2010

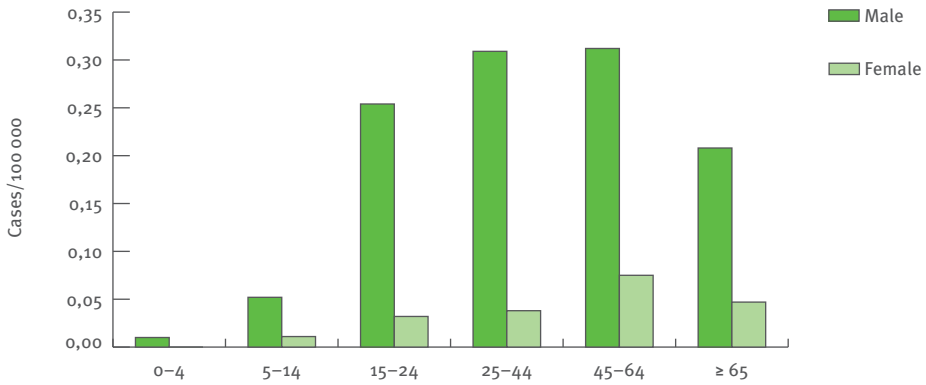
Leptospirosis is endemic throughout the world except in polar regions. In 2010, 25 EU/EEA countries provided data on the disease. Denmark, Iceland, Italy, Liechtenstein and Norway did not provide any data. Overall, 588 confirmed cases of Leptospirosis were reported, resulting in an overall case rate of 0.13 per 100 000 population (Table 2.3.13). The highest rates were observed in Romania (0.84 per 100 000 population); all other countries reported less than 0.60 cases per 100 000 population. Romania (181) and Germany (70) reported the highest number of confirmed cases.

Figure 2.3.33. Trend and number of reported confirmed leptospirosis cases, EU/EEA countries, 2006–10



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

Figure 2.3.34. Rates of reported confirmed leptospirosis cases, by age and gender, EU/EEA countries, 2010



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

Of the 588 reported confirmed cases, 335 were autochthonous, 48 were imported, and 70 were of unknown origin. Imported cases were reported by Austria (1), Germany (13), Ireland (1), the Netherlands (15), Slovenia (1) and the United Kingdom (17).

Age and gender distribution

Of the 588 confirmed cases of Leptospirosis reported in 2010, most belonged to the age group 25–44 years, followed by the age groups 45–64 years, ≥65 years, and 15–24 years of age. Most cases were male, resulting in a male-to-female ratio of 5.4:1; Figure 2.3.34).

Seasonality

The seasonal trend of leptospirosis remained unchanged, although it was less pronounced in 2010. The number of cases started to increase in July, a peak was observed in August and September, and cases started to decline in October (Figure 2.3.35).

Discussion

Leptospirosis remains an uncommon disease in Europe. Most cases are attributed to occupational exposure in adult males; and a small number of cases are associated with water-related recreational activities. According to EPIS enquiries and EWRS notifications, no outbreaks of leptospirosis were detected in 2010.

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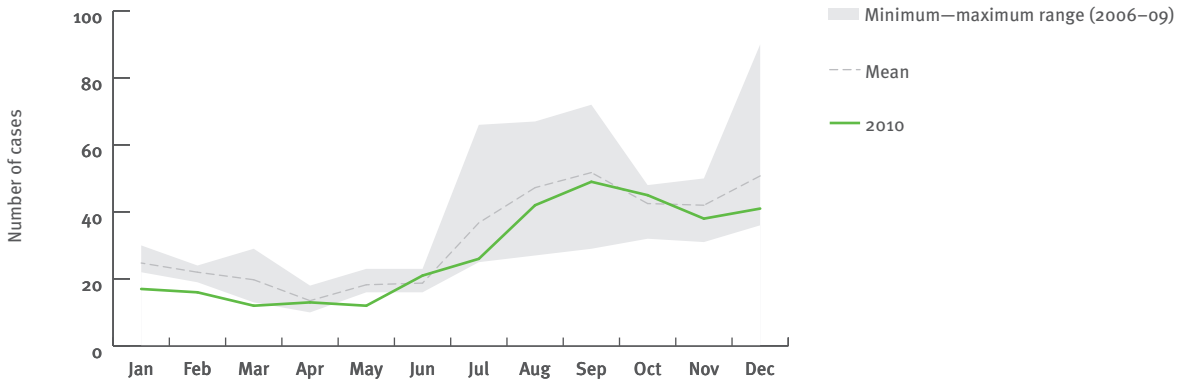
Table 2.3.13. Number and rate of reported confirmed leptospirosis cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	9	9	0.11	9	0.11	11	0.13	9	0.11	8	0.10
Belgium	Y	A	9	9	0.08	8	0.07	5	0.05	8	0.08	21	0.20
Bulgaria	Y	A	11	11	0.15	11	0.15	9	0.12	16	0.21	20	0.26
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	41	40	0.38	32	0.31	17	0.16	24	0.23	18	0.18
Denmark	Y	C	6	6	0.11	2	0.04	8	0.15	8	0.15	5	0.09
Estonia	Y	C	1	1	0.08	1	0.08	2	0.15	2	0.15	6	0.45
Finland	Y	C	0	0	0.00	12	0.23	8	0.15	2	0.04	5	0.10
France	Y	C	278	39	0.06	-	-	-	-	-	-	-	-
Germany	Y	C	70	70	0.09	92	0.11	66	0.08	165	0.20	46	0.06
Greece	Y	C	24	24	0.21	31	0.28	12	0.11	13	0.12	16	0.14
Hungary	Y	C	9	9	0.09	9	0.09	15	0.15	31	0.31	27	0.27
Ireland	Y	C	17	17	0.38	25	0.56	29	0.66	22	0.51	18	0.43
Italy	Y	C	19	19	0.03	36	0.06	40	0.07	45	0.08	22	0.04
Latvia	Y	C	2	2	0.09	5	0.22	3	0.13	2	0.09	5	0.22
Lithuania	Y	C	5	5	0.15	5	0.15	2	0.06	6	0.18	5	0.15
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	1	1	0.24	3	0.73	2	0.49	1	0.25	1	0.25
Netherlands	Y	C	30	30	0.18	25	0.15	37	0.23	37	0.23	23	0.14
Poland	Y	C	4	4	0.01	4	0.01	2	0.01	7	0.02	3	0.01
Portugal	Y	C	29	29	0.27	32	0.30	15	0.14	38	0.36	35	0.33
Romania	Y	C	181	181	0.84	128	0.60	200	0.93	296	1.37	386	1.79
Slovakia	Y	C	27	27	0.50	16	0.30	23	0.43	17	0.32	22	0.41
Slovenia	Y	C	9	9	0.44	2	0.10	6	0.30	7	0.35	5	0.25
Spain	N	C	0	0	-	0	-	5	-	3	-	3	-
Sweden	Y	C	4	4	0.04	4	0.04	6	0.07	1	0.01	2	0.02
United Kingdom	Y	C	42	42	0.07	53	0.09	76	0.12	81	0.13	56	0.09
EU total	**-**	**-**	**828**	**588**	**0.13**	**545**	**0.14**	**599**	**0.15**	**841**	**0.22**	**758**	**0.20**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**828**	**588**	**0.13**	**545**	**0.14**	**599**	**0.15**	**841**	**0.22**	**758**	**0.20**

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

Figure 2.3.35. Seasonal distribution of reported confirmed cases of leptospirosis in EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-LEPTOSPIROSIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	-
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-LEPTOSPIROSIS	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-LEPTOSPIROSIS	O	Co	P	C	Y	N	Y	Y	Y

Listeriosis

- Listeriosis is an uncommon disease in the EU/EEA (confirmed case rate: 0.33 per 100 000 population).
- Reported case rates have remained stable during 2006–10.

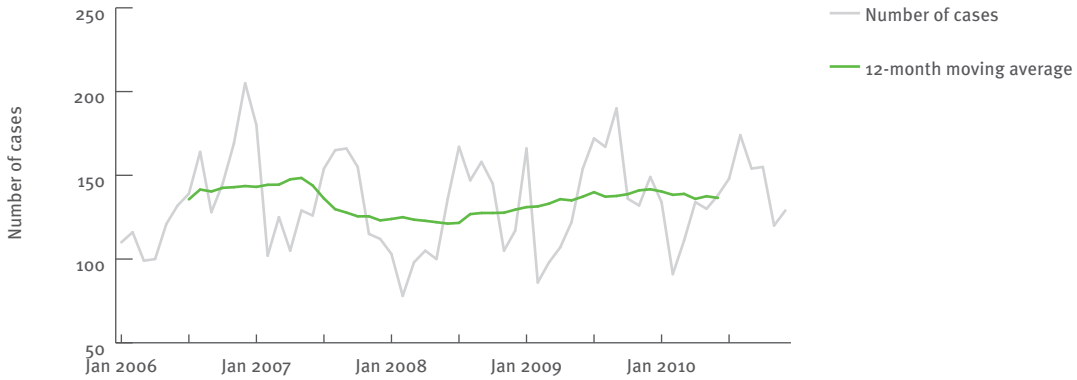
Listeriosis is caused by the small sporulating bacterium *Listeria monocytogenes*, which is commonly found in soil, decaying vegetation, water, and as part of the faecal flora of many mammals. Foods such as vegetables, milk, cheese and raw meat, including chicken and fresh frozen beef, may be contaminated with *Listeria*. *Listeria* can cause illnesses of varying severity: infection during pregnancy may cause spontaneous abortion, stillbirth, or neonatal death. It may also cause serious neurological, gastrointestinal or cardiac illnesses in immunosuppressed persons, e.g. endocarditis, listeriosis of the central nervous system, and febrile gastroenteritis.

Epidemiological situation in 2010

In 2010, 28 EU/EEA countries provided reports (Liechtenstein and Portugal did not report). Overall, 1624 confirmed cases of listeriosis were reported, giving an overall case rate of 0.33 per 100 000 (Table 2.3.14). The rate of reported cases appeared stable during 2006–10 (Figure 2.3.36).

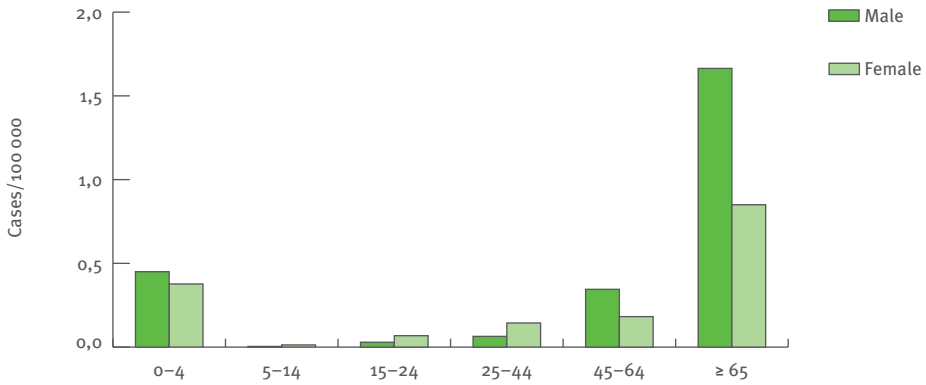
The highest rates of infection were observed in Finland (1.33 per 100 000 population), Denmark (1.12 per 100 000), followed by Sweden with 0.67 per 100 000 population. All other countries reported less than 0.60 cases per 100 000 population. Germany (377) and France (312) reported the highest number of confirmed cases.

Figure 2.3.36. Trend and number of reported confirmed cases of listeriosis in EU/EEA countries, 2006–10



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

Figure 2.3.37. Rates of reported confirmed listeriosis cases, by age and gender, EU/EEA countries, 2010



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

Of the 1629 reported confirmed cases, 1329 were indigenous, 22 were acquired in a country other than the reporting country, and for 278 cases the place of acquisition was unknown. Imported cases were reported by France (2), Germany (2), Greece (1) Ireland (1), the Netherlands (5), Norway (1), Sweden (2) and the United Kingdom (8).

Age and gender distribution

Reported rates of listeriosis cases were highest in the age group 65 years of age and above, followed by young children (0–4 years). The overall male-to-female ratio was 1.2:1. There was a predominance of male cases in the age groups 45–64 and 65 and above. The highest number of cases among women was reported for the age group 25–44 (Figure 2.3.37).

Seasonality

Listeriosis cases are reported throughout the year; more cases are reported in late summer/early autumn.

Discussion

Listeriosis is an uncommon disease in Europe that may cause serious illness in pregnant women and older persons with weaker immunity. The occurrence of listeriosis may be reduced by application of consistently good hygiene standards during food manufacture and handling.

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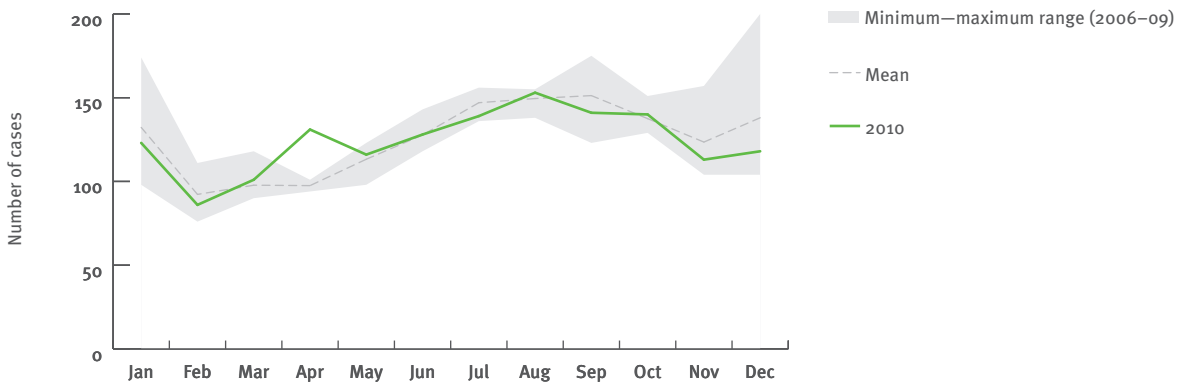
Table 2.3.14. Number and rate of reported confirmed listeriosis cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	34	34	0.41	46	0.55	31	0.37	20	0.24	10	0.12
Belgium	Y	C	40	40	0.37	58	0.54	64	0.60	57	0.54	67	0.64
Bulgaria	Y	A	4	4	0.05	5	0.07	5	0.07	11	0.14	6	0.08
Cyprus	Y	C	1	1	0.13	0	0.00	0	0.00	0	0.00	1	0.13
Czech Republic	Y	C	26	26	0.25	32	0.31	37	0.36	51	0.50	78	0.76
Denmark	Y	C	62	62	1.12	97	1.76	51	0.93	58	1.07	56	1.03
Estonia	Y	C	5	5	0.37	3	0.22	8	0.60	3	0.22	1	0.07
Finland	Y	C	71	71	1.33	34	0.64	40	0.76	40	0.76	46	0.88
France	Y	C	312	312	0.48	328	0.51	276	0.43	319	0.50	290	0.46
Germany	Y	C	390	377	0.46	394	0.48	306	0.37	356	0.43	508	0.62
Greece	Y	C	10	10	0.09	4	0.04	1	0.01	10	0.09	7	0.06
Hungary	Y	C	20	20	0.20	16	0.16	19	0.19	9	0.09	14	0.14
Ireland	Y	C	10	10	0.22	10	0.23	13	0.30	21	0.49	7	0.17
Italy	Y	C	95	95	0.16	88	0.15	118	0.20	89	0.15	59	0.10
Latvia	Y	C	7	7	0.31	4	0.18	5	0.22	5	0.22	2	0.09
Lithuania	Y	C	5	5	0.15	5	0.15	7	0.21	4	0.12	4	0.12
Luxembourg	Y	C	0	0	0.00	3	0.61	1	0.21	6	1.26	4	0.85
Malta	Y	C	1	1	0.24	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	72	72	0.43	44	0.27	45	0.27	68	0.42	64	0.39
Poland	Y	C	59	59	0.16	32	0.08	33	0.09	43	0.11	28	0.07
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	6	6	0.03	6	0.03	0	0.00	0	0.00	-	-
Slovakia	Y	C	5	5	0.09	10	0.19	8	0.15	9	0.17	12	0.22
Slovenia	Y	C	11	11	0.54	6	0.30	3	0.15	4	0.20	7	0.35
Spain	N	C	129	129	-	121	-	88	-	82	-	79	-
Sweden	Y	C	63	63	0.67	73	0.79	60	0.65	56	0.61	42	0.46
United Kingdom	Y	C	176	176	0.28	235	0.38	206	0.34	260	0.43	209	0.35
EU total	**-**	**-**	**1614**	**1601**	**0.33**	**1654**	**0.35**	**1425**	**0.30**	**1581**	**0.34**	**1601**	**0.37**
Iceland	Y	C	1	1	0.32	0	0.00	0	0.00	4	1.30	0	0.00
Liechtenstein	-	-	-	-	-	-	-	0	0.00	0	0.00	-	-
Norway	Y	C	22	22	0.45	31	0.65	34	0.72	49	1.05	27	0.58
Total	**-**	**-**	**1637**	**1624**	**0.33**	**1685**	**0.35**	**1459**	**0.31**	**1634**	**0.35**	**1628**	**0.37**

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

Figure 2.3.38. Seasonal distribution of reported confirmed cases of listeriosis in EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y
Estonia	EE-LISTERIOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-LNS-Microbio	-	-	-	-	Y	N	Y	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	-	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-LISTERIOSIS	V	Co	A	C	Y	N	Y	Y	Y

Salmonellosis

- Salmonellosis continues to be the second most commonly reported gastrointestinal infection and an important cause of foodborne outbreaks in the EU/EEA.
- In 2010, the confirmed case rate of salmonellosis in the EU/EEA was 21.31 cases per 100 000 population.
- Salmonellosis rates showed a significant five-year decreasing trend in the EU in 2006–10; this decrease is mainly attributed to the implementation of successful veterinary control programmes, particularly in poultry.
- The reported case rate is highest in young children: 101.5 cases per 100 000 population (2010), five times higher than in adults.
- In 2010, the five most common serotypes were *S.* Enteritiditis, *S.* Typihimurium, *S.* Infantis, monophasic *S.* Typhimurium and *S.* Newport.
- In 2011, four multinational foodborne *Salmonella* outbreaks were reported in the EU/EEA. In one of the outbreaks (*S.* Newport) the vehicle of the infection was vegetables (sprouts), one outbreak was travel related (*S.* Heidelberg). During the last three years, an unusual increase of *S.* Goldcoast cases has been reported by several Member States.

Infections by bacteria belonging to the genus *Salmonella* continue to be one of the most common gastrointestinal illnesses reported in the EU/EEA. A range of wild and domesticated animals are reservoirs for *Salmonella* species, and humans are usually infected through ingesting contaminated, undercooked food. In addition to food, other transmissions that have been linked to outbreaks are travel, pet products and live animals. Outbreaks occur frequently and they often have a multinational scope due to cross-border travelling and food and animal trade.

Epidemiological situation in 2010

In 2010, a total of 102 323 confirmed salmonellosis cases were reported by 29 EU/EEA countries (Table 2.3.15). The overall confirmed case rate was 21.31 per 100 000 population.

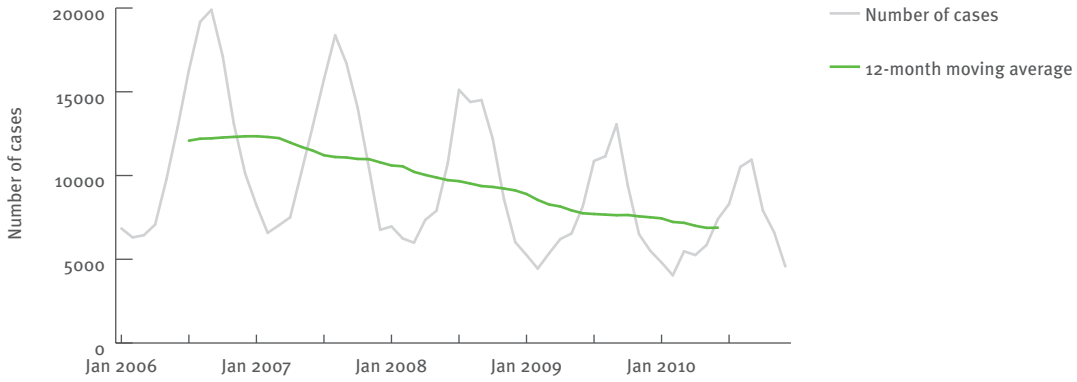
The highest confirmed case rate was reported in Slovakia (91.10 cases per 100 000 population). The Czech Republic (78.13) and Hungary (59.45) reported the second and the third highest confirmed rates. Five countries reported fewer than 10 cases per 100 000 population: Greece, Ireland, Italy, Portugal and Romania.

Overall reported case rates have declined steadily between 2006 and 2010 (Figure 2.3.39, Table 2.3.15). Fourteen EU countries had a statistically significant ($p<0.001$) five-year decreasing trend in reported cases (Austria, Belgium, the Czech Republic, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Poland, Portugal, Slovakia, Slovenia and the United Kingdom), while an increasing trend was seen in Malta and Romania[1].

Age and gender distribution

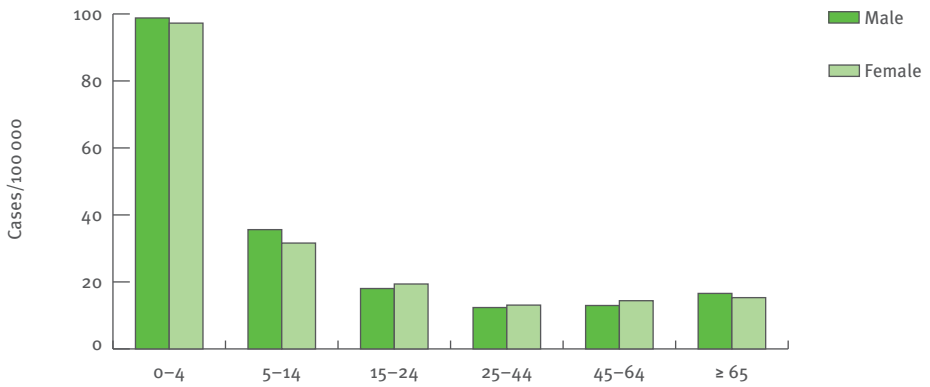
As in previous years, the age-specific confirmed case rate in 2010 was highest in young children, in particular in the 0–4-year-old age group: 102.5 per 100 000 population (Figure 2.3.40). The rate in young children was almost three times higher than in older children and more than five times as high as in the other age groups. This may be due to the higher proportion of symptomatic infections among the young, as well as an increased likelihood for doctors to take samples from small children.

Figure 2.3.39. Trend and number of reported confirmed cases of salmonellosis in EU/EEA countries, 2006–10



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

Figure 2.3.40. Rates of reported confirmed salmonellosis cases, by age and gender, EU/EEA countries, 2010



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

Table 2.3.15. Number and rate of reported confirmed salmonellosis cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Age standardised rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	2179	2179	26.02	26.45	2775	33.21	2312	27.79	3386	40.88	4787	57.99
Belgium	Y	C	3169	3169	29.24	27.32	3113	28.95	3831	35.92	3930	37.13	3630	34.53
Bulgaria	Y	A	1218	1154	15.26	0.00	1247	16.39	1516	19.84	1136	14.79	1056	13.68
Cyprus	Y	C	137	136	16.93	16.28	134	16.82	169	21.41	158	20.29	99	12.92
Czech Republic	Y	C	8456	8209	78.13	80.64	10480	100.12	10707	103.14	17655	171.62	24186	235.94
Denmark	Y	C	1608	1608	29.05	28.57	2130	38.65	3669	67.00	1648	30.26	1662	30.62
Estonia	Y	C	414	381	28.43	28.69	261	19.47	647	48.25	428	31.88	453	33.69
Finland	Y	C	2422	2422	45.26	45.93	2329	43.73	3126	58.98	2738	51.89	2575	49.00
France	Y	C	7184	7184	11.10	10.37	7153	11.11	7186	11.23	5313	8.35	6008	9.50
Germany	Y	C	25306	24833	30.36	32.04	31395	38.29	42885	52.16	55399	67.30	52575	63.78
Greece	Y	C	297	297	2.63	2.71	403	3.58	792	7.06	706	6.32	890	8.00
Hungary	Y	C	6246	5953	59.45	61.86	5873	58.55	6637	66.07	6578	65.35	9389	93.18
Ireland	Y	C	356	349	7.81	7.50	335	7.53	447	10.16	440	10.20	420	9.98
Italy	Y	C	2730	2730	4.52	4.69	4156	6.92	6662	11.17	6731	11.38	6272	10.68
Latvia	Y	C	951	877	39.01	41.25	795	35.16	1229	54.12	619	27.13	781	34.04
Lithuania	Y	C	1962	1962	58.94	60.69	2063	61.58	3308	98.27	2270	67.06	-	-
Luxembourg	Y	C	211	211	42.03	41.16	162	32.83	153	31.63	163	34.23	308	65.66
Malta	Y	C	160	160	38.61	37.37	125	30.22	161	39.24	85	20.84	63	15.56
Netherlands	N	C	1447	1447	-	-	1205	-	1627	-	1224	-	1667	10.21
Poland	Y	A	9732	9257	24.25	0.00	8529	22.37	9149	24.00	11155	29.26	12502	32.77
Portugal	Y	C	207	205	1.93	2.03	220	2.07	332	3.13	438	4.13	387	3.66
Romania	Y	C	1291	1285	5.99	5.98	1105	5.14	1107	5.14	1011	4.69	645	2.99
Slovakia	Y	C	5171	4942	91.10	93.15	4182	77.27	6849	126.81	8367	155.13	8191	151.99
Slovenia	Y	C	363	363	17.73	18.49	616	30.31	1033	51.39	1336	66.46	-	-
Spain	N	C	4420	4420	-	-	4304	-	3833	-	3842	-	5117	-
Sweden	Y	C	3612	3612	38.67	38.60	3054	32.99	4185	45.57	3930	43.12	4056	44.83
United Kingdom	Y	C	9670	9670	15.59	15.16	10479	17.01	11511	18.81	13557	22.31	14124	23.38
EU total	**-**	**-**	**100919**	**99015**	**21.24**	**21.04**	**108623**	**23.58**	**135063**	**29.73**	**154243**	**34.34**	**161843**	**35.30**
Iceland	Y	C	34	34	10.70	10.69	35	10.96	134	42.48	93	30.23	116	38.68
Liechtenstein	-	-	-	-	-	-	-	-	0	0.00	1	2.84	-	-
Norway	Y	C	1370	1370	28.20	28.06	1235	25.73	1941	40.97	1649	35.23	1813	39.07
Total	**-**	**-**	**102323**	**100419**	**21.31**	**21.10**	**109893**	**23.59**	**137138**	**29.85**	**155986**	**34.34**	**163772**	**35.34**

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

There were no differences in the overall rates between males and females.

Seasonality

There is a clear seasonal trend for reported salmonellosis cases (Figure 2.3.41), with rates increasing over the summer months, peaking in August and September, and then decreasing sharply. The seasonal variation is more prominent for *S.* Enteritidis than for *S.* Typhimurium[1].

Enhanced surveillance

The two most common *Salmonella* serotypes in 2010 in the EU/EEA countries were *S.* Enteritidis and *S.* Typhimurium, accounting for 45% and 22% of all reported serotypes, respectively (Table 2.3.16). In 2010, the number of cases with *S.* Enteritidis decreased by 18% compared to 2009, while cases with *S.* Typhimurium decreased by 9%. Monophasic *S.* Typhimurium was the fourth most common serotype in 2010. 2010 also marked the first year of harmonised data reporting for this particular serotype.

Table 2.3.16. *Salmonella* serotypes most frequently reported from EU and EEA countries and percentage change, 2009–10

Serotype	2009	2010	Percentage change
Enteritidis	53382	43563	-18%
Typhimurium	23759	21671	-9%
Infantis	1616	1776	10%
S. Typhimurium, monophasic[1,4,5,12:i:-]*	-	1407	-
Newport	760	831	9%
Kentucky	460	780	70%
Virchow	736	685	-7%
Derby	671	665	-1%
Mbandaka	207	470	127%
Agona	385	444	15%

Source: Country reports from Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.
* A separate serotype code for *S.* Typhimurium, monophasic[1,4,5,12:i:-] was introduced in 2010; six countries reported cases with the new serotype code.

In 2010, the percentage of imported cases in the EU was 18% of all confirmed cases with known importation status (n=100701). The percentage of imported cases was highest in the Nordic countries of Finland, Sweden and Norway (over 80%), followed by Iceland (over 60%), whereas *Salmonella* infections seem to be mainly domestically acquired in the majority of the remaining countries. Of the imported cases, other EU/EEA countries were mentioned as the probable country of infection in 19% of cases where this information was available (n=10921).

Updates from epidemic intelligence 2011

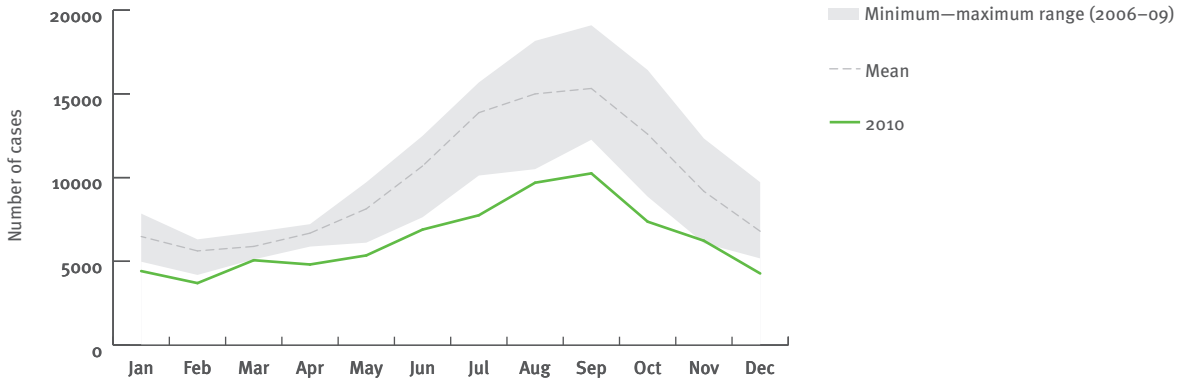
During 2011, *Salmonella* was the most common agent associated with the urgent inquiries (UIs) in the Epidemic Information System (EPIS), a platform for information exchange between Member States (67%; for information on other UIs regarding *Salmonella* spp. see below). Four outbreaks caused by *S.* Poona, *S.* Heidelberg, *S.* Goldcoast and *S.* Newport, were classified as multinational and affected several Member States.

Salmonella Poona in Norway, Sweden and Spain

On 16 December 2010, Norway issued an urgent inquiry to the Food- and Waterborne Diseases and Zoonoses (FWD) network regarding an unusual increase in national *S.* Poona cases. The majority of cases were reported in adult women, and cases were geographically spread around the country. Sweden (between August and mid-December 2010) and Spain (December 2009 to September 2010) also reported cases of the same serotype.

The cases in Sweden were mainly adult women. Isolates from Norway showed pulsed field gel electrophoresis (PFGE) profiles similar to the cases in Sweden, but different from the isolates from Spain. No common source of contamination was identified in these countries; suspected food items included exotic nuts and chicken meat.

Figure 2.3.41. Seasonal distribution of reported confirmed cases of salmonellosis, EU/EEA countries, 2006–10



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

In Spain, six different PFGE profiles were identified. In 2010 (from January to December), 31 confirmed cases of *S.* Poona with the same PFGE pattern were detected. From January to 29 March 2011, 146 confirmed cases were detected. Most infections were in children under one year of age (86% (152/177)) and 81% were 0–6-month olds. The case control study showed a strong association between the cases and powdered infant formula. *S.* Poona with an identical PFGE pattern to the cases was found in an open can of powdered infant formula, and *Salmonella* was also found in an unopened can of powdered infant formula in a specific batch. This batch, distributed only in Spain, was recalled from the market at the beginning of February. By the end of 2011, the investigation was still ongoing as new cases kept cropping up.

Travel-related multistate *Salmonella* Heidelberg outbreak

Ireland reported six confirmed cases of *S.* Heidelberg after a flight from Tanzania (via Amsterdam) landed in Ireland on 6 July 2011. Investigations pointed to common exposure aboard the aircraft, implicating either the airline's in-flight meals or food or water bought locally in Tanzania and consumed during the flight. After Ireland's report of six cases, the Netherlands and Norway reported another five confirmed *S.* Heidelberg cases from the same flight. PFGE analysis of the confirmed cases in Ireland showed an identical profile to the Irish cases. Investigations to identify a common exposure could not determine the source.

Other Member States were informed through EWRS and EPIS, but no other countries noted an unusual increase in cases of *S.* Heidelberg associated with travel to Tanzania.

Increased number of *Salmonella* Goldcoast cases in Italy and Hungary

Italy reported an increase of isolates of *S.* Goldcoast from June to August 2011. Preliminary information from seven patients showed a surprisingly high proportion of hospitalisation (86%), which might be due to the fact that hospitalised patients are subject to more frequent sampling than outpatients. The majority of cases were reported in young males in northern Italy. No common vehicle was identified as a source of the infections.

Between October 2010 and July 2011, Hungary reported 33 *S.* Goldcoast cases, with 14 cases linked to two small outbreaks. In both outbreaks the consumption of locally produced pork products was the main route for infection. The Netherlands reported two cases in August 2011. The patients consumed cheese and salami bought in Italy. No other Member States noted an increase in cases of *S.* Goldcoast.

Salmonella Newport outbreak from mung bean sprouts in the Netherlands and Germany

The Netherlands reported an observed increase in the number of *S.* Newport cases through EPIS. These cases were reported in different regions of the country from mid-October to mid-November 2011. Germany reported a similar increase in cases of *S.* Newport, with 88 cases in the same time period in several federal states. In both countries, most of the cases were adults.

Joint investigations were coordinated between Germany and the Netherlands. All isolates recovered from the cases in the two countries presented indistinguishable PFGE patterns and a similar antibiogram. A common food source – sprouts from the Netherlands that were also distributed in Germany – was suspected. Both affected countries conducted an analytical epidemiological study to investigate the possible association between *S.* Newport infection and mung bean sprout consumption. In the Netherlands, most of the interviewed cases had eaten sprouts; in Germany, 12 of 14 interviewed cases responded positively. Comparison of the human isolates and an isolate from mung bean sprouts showed an indistinguishable PFGE pattern. Based on the epidemiological and microbiological evidence, the cause of the outbreak was most likely mung bean sprouts produced in a Dutch food processing facility.

Discussion

The steady decrease in reported human salmonellosis cases at the EU/EEA level continued in 2010. This statistically significant decreasing trend has been observed during the last five years[1]. The decrease is mostly attributed to the implementation of *Salmonella* control programmes in the poultry industry since 2007, particularly in laying hens and broilers. The continuous decline for the fifth consecutive year, especially in *S.* Enteritidis cases, supports this observation because this serotype is most often reported in poultry and eggs. Salmonellosis, however, continued to have a high confirmed case rate in EU/EEA countries (21.31 per 100 000 population). In 2010, salmonellosis was the second most commonly reported zoonoses in humans, following campylobacteriosis[1].

Since 2007, the number of *Salmonella* outbreaks in the EU has been decreasing[1]. This reduction is in synch with the general decline in notified salmonellosis cases observed in EU countries. Particularly, egg-related outbreaks continued to decline. However, the majority of *Salmonella* outbreaks are still related to eggs and egg products[1]. Despite this marked reduction, *Salmonella* is still the most important cause of foodborne outbreaks in the EU. In 2010, *Salmonella* was responsible for 30.5% of all outbreaks reported to EFSA. Of 1604 reported *Salmonella* outbreaks, 342 were strong-evidence outbreaks, with a total of 5 220 salmonellosis cases[1]. In 2011, most urgent inquiries on EPIS were related to *Salmonella* infections (32 outbreaks; 67%).

S. Enteritidis and *S.* Typhimurium continued to be the most frequently reported *Salmonella* serovars in human cases. The reporting of *S.* Typhimurium cases has decreased, but not to the same extent as *S.* Enteritidis. The changes in the human top-10 serovars between 2010 and 2009 show that *S.* Kentucky (mostly associated with

broilers) has increased in proportion, and *S.* Agona and *S.* Mbandaka (detected in poultry and cattle) gained ground in 2010, while monophasic *S.* Typhimurium[1,4,5,12:i:-] moved into fourth place on the list of the 10 most commonly reported serotypes. Monophasic *Salmonella* Typhimurium has been detected in different sources, particularly in pigs and pork products.

A nationwide increase of *S.* Enterica serotype 4,12:i:- (also a monophasic form of *S.* Typhimurium) cases was reported in France in May 2010. Epidemiological investigations identified one or more contaminated batches of dried pork sausage as a source of infection[2]. In October 2010, a severe *S.* Enterica serotype 4,5,12:i:- outbreak occurred in schools in France. This is the largest *Salmonella* foodborne outbreak ever documented in a school setting in France with over 550 cases[3]. Beef burger meat served in schools was identified as the cause of the outbreak. Germany reported three monophasic *S.* Typhimurium foodborne outbreaks involving 45 human cases with 10 hospitalisations and one death in 2010. In one outbreak the food vehicle was pork, whereas buffet meals were the vehicles in the two other outbreaks[1]. In Germany, *S.* Enterica serotype 4,5,12:i:– (monophasic *S.* Typhimurium) strains isolated from pig, pork, and human have been shown to be highly related along the food chain[4]. The BIOHAZ Panel of the European Food Safety Agency (EFSA) concluded in its recent opinion that monophasic *S.* Typhimurium appears to be of increasing importance in several Member States[5].

Among the multinational outbreaks, *S.* Goldcoast cases continued to increase in some countries in 2011. Similar extensive outbreaks of *S.* Goldcoast cases involved six Member States in 2009–10[6]. The epidemiological investigation suggested the consumption of a variety of pork products as the main route for infections in 2011. Another large multinational outbreak with over 100 *S.* Newport cases in two Member States was identified in 2011. The source of the infections was confirmed to be bean sprouts produced in one country and exported to another. Sprouts have been regularly reported to cause foodborne *Salmonella* outbreaks. In 2010, the United Kingdom reported a *S.* Bareilly outbreak in which the implicated food was bean sprouts[7]. In this outbreak, 241 cases were confirmed, 32 of which were hospitalised and one person died. The bean sprouts were not intended for consumption without heat treatment and were reported as being imported from outside the EU.

Multinational *Salmonella* outbreaks underline the need to continuously strengthen coordinated investigations and control measures across the Member States, at the European level, and between human, veterinary and food safety organisations and networks. It is necessary to rapidly detect dispersed multinational clusters as well as to investigate if and how the various *Salmonella* strains found in Member States (and world-wide) are related.

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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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y
Estonia	EE-SALMONELLOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-LSI	V	Se	P	C	Y	N	N	N	N
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-SALMONELLOSIS	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-SALMONELLOSIS	O	Co	P	C	Y	N	Y	Y	Y

Shigellosis

- In 2010, the confirmed case rate of shigellosis in Europe was 1.64 cases per 100 000 population.
- Shigellosis continues to be prevalent in children under five years of age.
- Travel-associated cases, predominantly related to travel to regions outside of the EU/EEA, were more frequently reported than indigenous cases.

Shigellosis is caused by bacteria of the genus *Shigella*; it is a relatively uncommon infection in the EU. Infections may cause severe illness and death, and outbreaks occur. Humans are the only significant reservoir. Transmission occurs by the faecal-oral route, either through person-to-person contact, or through contaminated food or water.

Epidemiological situation in 2010

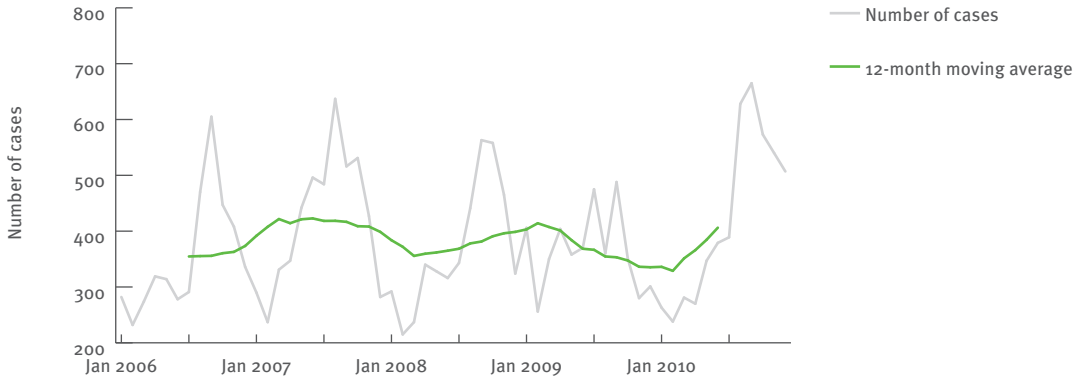
In 2010, 7 312 confirmed shigellosis cases were reported in 28 EU/EEA countries. Shigellosis remains a relatively uncommon infection; the overall EU/EEA confirmed case rate was 1.64 cases per 100 000 population in 2010. The number of cases has remained stable during the period 2006–10 (Table 2.3.17, Figure 2.3.42).

Bulgaria reported the highest confirmed case rate with 7.88 cases per 100 000 population, followed by Slovakia with 6.82, and Sweden with 5.96 cases per 100 000 population (Table 2.3.17).

Age and gender distribution

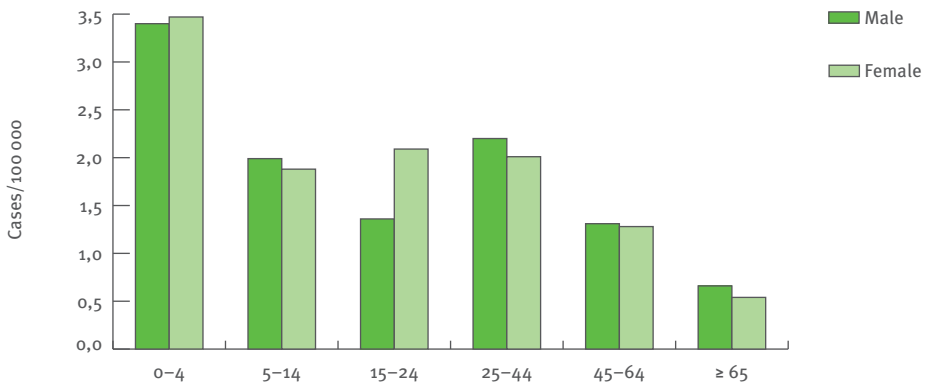
As in previous years, the highest confirmed case rate in the EU/EEA was among children under five years of age, with 3.5 cases per 100 000 population. However,

Figure 2.3.42. Trend and number of reported confirmed cases of shigellosis in EU/EEA countries, 2006–10



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

Figure 2.3.43. Rates of reported confirmed shigellosis cases, by age and gender, EU/EEA countries, 2010



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

shigellosis is reported relatively frequently across all age groups, except the elderly (Figure 2.3.43).

Slovakia reported the highest confirmed case rate (66 cases per 100 000 population) in the 0–4-year age group. The second highest rate of confirmed cases in the EU/EEA was reported in the 25–44-year age group (2.1 cases per 100 000), with several countries reporting the highest rate of shigellosis in this age group.

There was a slightly higher rate of confirmed cases reported in men (1.7 cases per 100 000 population) than in women (1.6 cases per 100 000); the male-to-female ratio was 1.05:1 (Figure 2.3.43).

Seasonality

Shigellosis cases in the EU/EEA normally follow a seasonal pattern, with most cases reported in late summer/early autumn. In 2010, the peak in September was higher and declined less rapidly than in 2006–09 among the countries reporting for the whole period (Figure 2.3.44).

Enhanced surveillance

Seventeen countries provided information on travel association for 3 604 cases. Of those, 2 523 (70%) were reported as imported (acquired in other than the reporting country), compared with 1 081 indigenous infections (30%). The proportion of indigenous infections decreased compared with 2009 (38%), when more countries reported on the importation status of their cases.

The most probable country of infection was reported for 2004 of the imported cases; of these, 96% were associated with travel to non-EU/EEA countries. The highest number of cases was linked to travel to Egypt (641) and India (356).

Table 2.3.17. Number and rate of reported confirmed shigellosis cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Age standardised rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	98	98	1.17	1.20	80	0.96	120	1.44	136	1.64	77	0.93
Belgium	Y	C	342	342	3.16	3.13	348	3.24	418	3.92	330	3.12	-	-
Bulgaria	Y	A	597	596	7.88	0.00	751	9.87	1094	14.32	1072	13.96	879	11.39
Cyprus	Y	C	0	0	0.00	0.00	2	0.25	1	0.13	0	0.00	2	0.26
Czech Republic	Y	C	450	387	3.68	3.86	177	1.69	227	2.19	331	3.22	276	2.69
Denmark	Y	C	91	91	1.64	1.68	106	1.92	90	1.64	-	-	-	-
Estonia	Y	C	46	46	3.43	3.45	52	3.88	69	5.15	114	8.49	53	3.94
Finland	Y	C	162	162	3.03	3.07	118	2.22	124	2.34	112	2.12	74	1.41
France	Y	C	774	774	1.20	1.18	1042	1.62	848	1.33	827	1.30	-	-
Germany	Y	C	731	697	0.85	0.90	617	0.75	575	0.70	867	1.05	814	0.99
Greece	Y	C	33	33	0.29	0.31	37	0.33	19	0.17	49	0.44	26	0.23
Hungary	Y	C	63	63	0.63	0.65	42	0.42	43	0.43	62	0.62	73	0.72
Ireland	Y	C	60	60	1.34	1.27	71	1.60	63	1.43	43	1.00	53	1.26
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	11	11	0.49	0.52	36	1.59	91	4.01	73	3.20	73	3.18
Lithuania	Y	C	42	42	1.26	1.25	37	1.11	81	2.41	150	4.43	203	5.97
Luxembourg	Y	C	13	13	2.59	2.49	18	3.65	9	1.86	8	1.68	13	2.77
Malta	Y	C	2	2	0.48	0.48	1	0.24	3	0.73	0	0.00	0	0.00
Netherlands	Y	C	551	523	3.16	3.17	438	2.66	343	2.09	359	2.20	248	1.52
Poland	Y	A	30	24	0.06	0.00	21	0.06	31	0.08	53	0.14	30	0.08
Portugal	Y	C	6	6	0.06	0.06	3	0.03	7	0.07	12	0.11	1	0.01
Romania	Y	C	293	293	1.37	1.39	414	1.93	371	1.72	733	3.40	559	2.59
Slovakia	Y	C	392	370	6.82	6.94	370	6.84	446	8.26	525	9.73	436	8.09
Slovenia	Y	C	31	31	1.51	1.55	42	2.07	44	2.19	39	1.94	36	1.80
Spain[a]	Y	C	76	76	0.17	0.16	216	0.47	133	-	119	-	148	-
Sweden	Y	C	557	557	5.96	6.04	469	5.07	596	6.49	470	5.16	429	4.74
United Kingdom	Y	C	1881	1881	3.03	3.01	1568	2.55	1595	2.61	1746	2.87	1425	2.36
EU total	**-**	**-**	**7332**	**7178**	**1.63**	**1.66**	**7076**	**1.61**	**7441**	**1.86[b]**	**8230**	**2.10[b]**	**5928**	**1.86[b]**
Iceland	Y	C	2	2	0.63	0.66	2	0.63	3	0.95	2	0.65	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	132	132	2.72	2.68	153	3.19	134	2.83	148	3.16	138	2.97
Total	**-**	**-**	**7466**	**7312**	**1.64**	**1.67**	**7231**	**1.63**	**7578**	**1.87[b]**	**8380**	**2.11[b]**	**6066**	**1.87[b]**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; —: No report; U: Unspecified.
(a) Surveillance system changed to full national coverage in 2009; earlier data covered only an estimated 25% of the population. (b) Excluding Spanish data.

Species information was provided for 5533 confirmed cases (76%). The most common species were *S. sonnei* (59%) and *S. flexneri* (33%), but also *S. boydii* (5%) and *S. dysenteriae* (3%) were reported. Serotype information was provided for 1241 of the 1848 *S. flexneri* cases (*S. sonnei* does not have any serotypes). The most common *S. flexneri* serotypes were 2a (29%) and 3a (19%).

Update from epidemic intelligence 2011

In 2011, the United Kingdom reported an outbreak of *S. flexneri* serotype 3a, with cases mostly among men who sex with men; however, on further investigation it appeared that the outbreak had already started in 2009[1].

Discussion

As in previous years, the highest confirmed case rate was recorded in children under five years of age. Although most cases were related to travel outside of Europe, one third of *Shigella* cases were indigenous.

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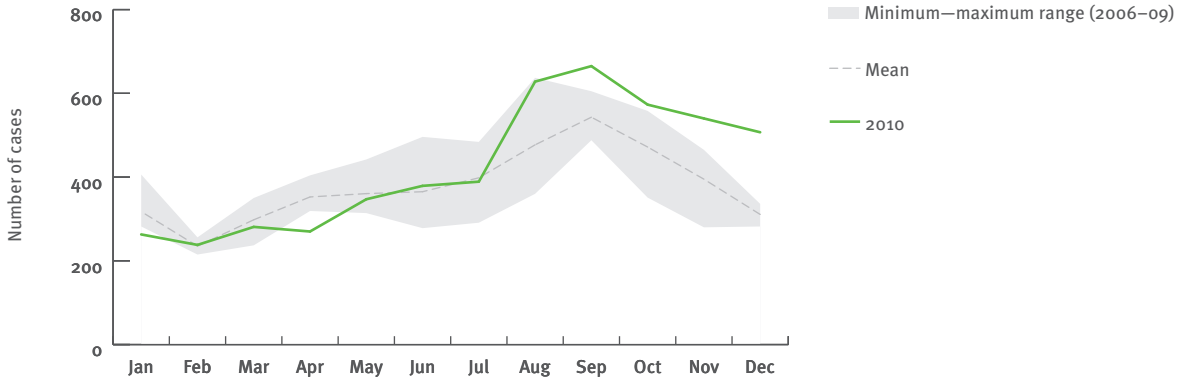
Figure 2.3.44. Seasonal distribution of reported confirmed cases of shigellosis, EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	-	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-PERTUSSIS/SHIGELLOSIS/SYPHILIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Y
Germany	DE-SURVNET@RwKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-SHIGELLOSIS	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	N	N	N	Y
United Kingdom	UK-SHIGELLOSIS	O	Co	P	C	Y	N	Y	Y	Y

Toxoplasmosis (congenital)

- Congenital toxoplasmosis is an uncommon disease in the EU/EEA; in 2010, 279 cases were reported by 20 EU countries.
- The surveillance of congenital toxoplasmosis is very heterogeneous in EU/EEA countries; it is therefore not possible to estimate the burden of this disease in Europe, and any comparison of rates between countries should be made with caution.

Toxoplasmosis is an infection with the protozoan parasite *Toxoplasma gondii*. Cats are the primary host for the parasite, and humans are infected by ingestion of the oocysts. Toxoplasmosis is mild or without symptoms for most individuals, but infection in early pregnancy can result in stillbirth or congenital brain lesions (or lesions in other organs), particularly if the mother acquired her primary infection during the first trimester of pregnancy. Due to the change in the EU case definition for toxoplasmosis in 2008, only congenital cases are required to be reported from 2009 onwards. This section, therefore, reports only data from cases under one year of age.

Epidemiological situation in 2010

In 2010, 279 confirmed congenital toxoplasmosis cases were reported by 20 EU Member States. France accounted for 87% of the reported cases. Thirteen countries reported zero cases (Table 2.3.18). The highest

Table 2.3.18. Number and rate of reported confirmed congenital toxoplasmosis cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	1	1	1.32	1	1.30	0	0.00	1	1.29	-	-
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	-
Bulgaria	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	2	2	1.69	2	1.67	2	1.75	1	0.95	2	1.95
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0	0.00	0	0.00	1	1.70	0	0.00
France	Y	C	244	244	29.74	266	32.27	-	-	-	-	-	-
Germany	Y	C	14	14	2.11	-	-	-	-	-	-	-	-
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	1	1	1.05	3	3.09	1	1.04	0	0.00	1	1.04
Ireland	Y	C	1	1	1.36	0	0.00	2	2.84	2	3.11	6	9.82
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	7	7	1.68	3	0.73	8	2.07	8	2.15	7	1.93
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	0	0	0.00	2	0.91	0	0.00	0	0.00	-	-
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00	2	3.73	1	1.85
Slovenia	Y	C	0	0	0.00	1	4.57	0	0.00	2	10.46	2	11.00
Spain[a]	N	C	0	0	-	1	-	1	-	0	-	1	-
Sweden	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
United Kingdom	Y	C	9	9	1.14	10	1.27	5	0.65	3	0.40	0	0.00
EU total	**-**	**-**	**279**	**279**	**7.54[b]**	**289**	**9.52[b]**	**19**	**0.85[b]**	**20**	**0.96[b]**	**20**	**1.10[b]**
Iceland	-	-	-	-	-	-	-	0	0.00	0	0.00	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**279**	**279**	**7.54[b]**	**289**	**9.52[b]**	**19**	**0.84[b]**	**20**	**0.96[b]**	**20**	**1.10[b]**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified.
(a) Surveillance system based on sentinel voluntary reporting (25% of the population covered). (b) Excluding Spanish data.

confirmed case rate was reported by France (29.74 per 100 000 <1-year-olds), followed by Germany, the Czech Republic and Poland (2.11, 1.69 and 1.68 cases per 100 000 <1-year-olds). Except for France, most countries only reported very few cases.

The overall EU confirmed case rate was 7.54 per 100 000 <1-year-olds. This is lower than in 2009 (9.52 per 100 000 <1-year-olds) when Germany did not report numbers (Germany starting sharing data in 2010), but significantly higher than in 2006–08 (France started to report in 2009).

Gender distribution

Data on gender were available for 240 of the confirmed cases. Of these, 132 cases were male and 108 were female, giving a male-to-female ratio of 1.2:1.

Discussion

Congenital toxoplasmosis can result in very severe outcomes. Providing targeted information for pregnant women with risk factors for toxoplasmosis infection is therefore crucial to avoid severe complications in the foetus.

The utility of surveillance for toxoplasmosis is debated because the disease is often asymptomatic and the effect of prenatal treatment for congenital toxoplasmosis is uncertain[1,2]. The surveillance of the disease differs in European countries, making it difficult to compare disease rates. Several countries have no surveillance at all, some focus on severe cases in all ages, and a few have surveillance targeted at congenital toxoplasmosis[1,3].

An example of the latter is the French surveillance system, which includes the screening of pregnant women (with follow-up during pregnancy of those that are not immune in order to detect seroconversion) and laboratory reporting of congenital toxoplasmosis cases detected during this process[4]. This systematic surveillance is likely the main explanation why France reports the highest rate of congenital toxoplasmosis among EU countries.

In the USA, congenital toxoplasmosis cases appear to be much more severe than in France. While roughly 90% of children with congenital toxoplasmosis in France are free of lesions at birth, 84% of children in two American cohorts with congenital toxoplasmosis followed over 15 years showed severe clinical signs[5,6]. It is proposed that the difference could largely be explained by the type of *T. gondii* causing the infection. While around 95% of human and animal strains in France are of type II, 64% of the strains examined by McLeod et al. (2012) were of another type ('non-exclusively type II strains'). These atypical strains are more likely to cause severe damage than type II strains[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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Reflab	V	O	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-TOXOPLASMOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	-
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	-
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-TOXOPLASMOSIS	V	Co	P	C	Y	N	Y	Y	Y

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Trichinellosis

- Trichinellosis remains an uncommon disease in the EU/EEA. In 2010, the confirmed case rate of trichinellosis was 0.05 cases per 100 000 population (223 confirmed cases), substantially lower than in 2009 (0.15 cases per 100 000 population).
- The majority of cases was reported from only a few countries. In 2010, most cases were reported from Romania and Lithuania.
- A large proportion of cases could be linked to foodborne outbreaks.

Trichinellosis is a disease caused by infection with the intestinal nematode *Trichinella*, most commonly of the species *T. spiralis*. A wide range of animals act as hosts, for example pigs (including wild boar), dogs, cats and horses. Infection in humans occurs through ingesting the larvae by, for example, eating undercooked meat of infected animals. The infection is uncommon in the EU, but occurs more frequently in some countries, where it is often associated with the consumption of wild boar.

Epidemiological situation in 2010

In 2010, 394 cases of human trichinellosis were reported by 27 of the 30 EU/EEA countries (Table 2.3.19). A total of 223 cases were confirmed. Sixteen countries reported zero cases.

Table 2.3.19. Number and rate of reported confirmed trichinellosis cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	5	5	0.06	0	0.00	0	0.00	0	0.00	1	0.01
Belgium	Y	A	3	3	0.03	0	0.00	5	0.05	3	0.03	0	0.00
Bulgaria	Y	A	16	14	0.19	407	5.35	67	0.88	62	0.81	180	2.33
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
France	Y	C	0	0	0.00	9	0.01	3	0.01	1	0.00	10	0.02
Germany	Y	C	3	3	0.00	1	0.00	1	0.00	10	0.01	22	0.03
Greece	Y	C	4	4	0.04	2	0.02	0	0.00	0	0.00	0	0.00
Hungary	Y	C	0	0	0.00	9	0.09	5	0.05	2	0.02	0	0.00
Ireland	Y	C	0	0	0.00	0	0.00	0	0.00	2	0.05	0	0.00
Italy	Y	C	0	0	0.00	1	0.00	0	0.00	1	0.00	1	0.00
Latvia	Y	C	9	9	0.40	9	0.40	4	0.18	4	0.18	11	0.48
Lithuania	Y	C	77	77	2.31	20	0.60	31	0.92	8	0.24	20	0.59
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0	0.00	1	0.01	1	0.01	0	0.00	0	0.00
Poland	Y	C	51	14	0.04	18	0.05	4	0.01	217	0.57	89	0.23
Portugal	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Romania	Y	C	214	82	0.38	265	1.23	503	2.34	432	2.00	350	1.62
Slovakia	Y	C	2	2	0.04	0	0.00	18	0.33	8	0.15	5	0.09
Slovenia	Y	C	0	0	0.00	1	0.05	1	0.05	0	0.00	1	0.05
Spain	Y	C	10	10	0.02	7	0.02	27	0.06	36	0.08	18	0.04
Sweden	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.01	0	0.00
United Kingdom	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
EU total	**-**	**-**	**394**	**223**	**0.05**	**750**	**0.15**	**670**	**0.14**	**787**	**0.16**	**708**	**0.14**
Iceland	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Liechtenstein	-	-	-	-	-	-	-	0	0.00	-	-	-	-
Norway	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	**-**	**-**	**394**	**223**	**0.05**	**750**	**0.15**	**670**	**0.14**	**787**	**0.16**	**708**	**0.14**

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

The overall confirmed case rate was 0.05 cases per 100 000, which is a substantial decline compared to 2009 when the rate was 0.15 cases per 100 000 population. This is mainly a result of a significantly lower number of cases reported by Bulgaria and Romania. In Romania, the number of outbreaks decreased substantially in 2010 (182 confirmed cases[1]) compared with 2009 (265 cases[2]), while the outbreak situation for Bulgaria is unknown.

Lithuania reported the largest increase in cases between 2009 and 2010 (from 20 to 77 cases) as well as the highest case rate in 2010 (2.31 cases per 100 000 population). All Lithuanian cases were linked to six foodborne outbreaks[1].

Age and gender

The highest confirmed case rates were reported among young and middle-aged adults, with the highest rate among 15–24-year-old males (0.060 cases per 100 000 population) and among women in the 15–24- and 25–44-year-old age group (both 0.053 cases per 100 000) (Figure 2.3.46).

Seasonality

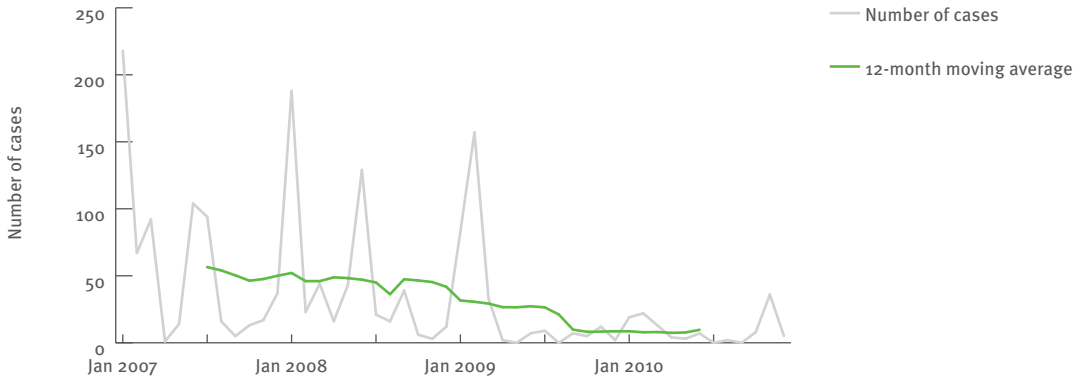
In previous years, a clear winter peak could be observed in January–February, followed by a second smaller peak in June (Figure 2.3.47). This seasonal pattern was not evident in 2010, when only a smaller peak in November was observed. (Data from Bulgaria could not be included in the graph due to the Bulgarian reporting format.)

Discussion

Trichinellosis is an uncommon but serious human disease that is still present in the EU, with most cases reported from only a few Member States. Many of the reported cases are linked to outbreaks, e.g. 47 of 51 cases reported by Poland, 145 of 214 cases reported by Romania, and all cases reported by Lithuania[1]. The dominance of outbreaks may contribute to the relatively low proportion of confirmed cases (57%) compared to other diseases, because it is common practice in outbreaks to laboratory confirm only a few cases while the rest of the cases are verified through epidemiological linkage.

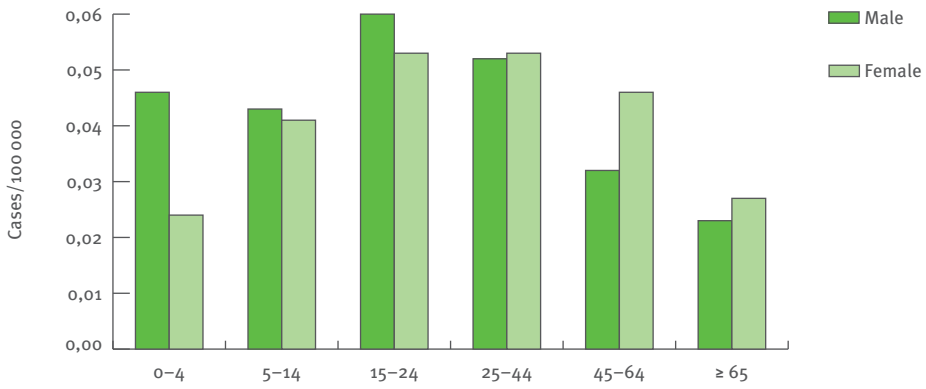
Of the thirteen trichinellosis outbreaks reported to EFSA in 2010, four were linked to wild boar meat and nine to

Figure 2.3.45. Trend and number of reported confirmed trichinellosis cases in EU/EEA countries, 2007–10



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

Figure 2.3.46. Rates of reported confirmed trichinellosis cases, by age and gender, EU/EEA countries, 2010



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

the consumption of pig meat and related products[1]. Of the six outbreaks with sufficient information on origin, all meat came from backyard rearing. Backyard rearing of pigs and hunting of wild boars for private consumption obviously poses a risk in that the meat often bypasses veterinary inspection for *Trichinella*[3].

The seasonal pattern observed for trichinellosis is dominated by the large proportion of cases reported from Romania; as mentioned earlier, the Bulgarian data could not be included in the seasonal graph. Neghina (2010) describes some of the cultural traditions in Romania – primarily related to the slaughtering of pigs from December to February – which can explain the seasonal pattern observed in Romania and other countries with similar traditions[3].

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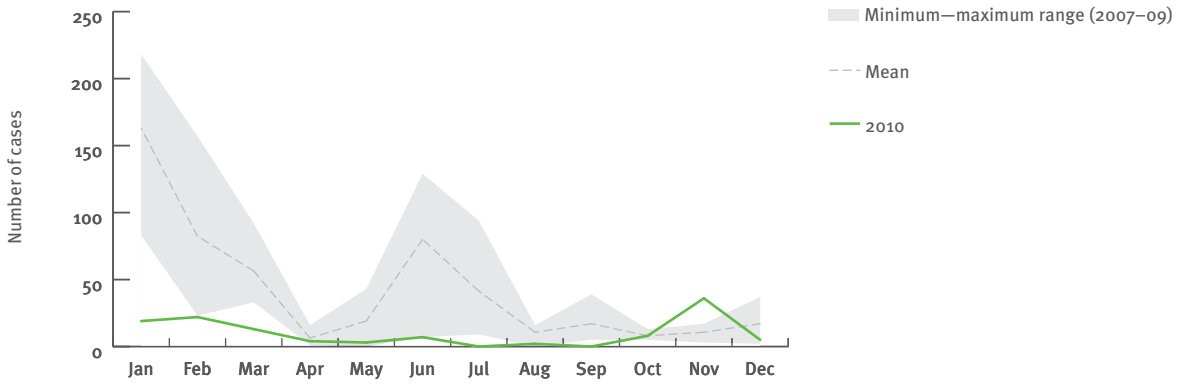
Figure 2.3.47. Seasonal distribution of reported confirmed cases of trichinellosis in EU/EEA countries, 2007–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-ANTH/CHOL/DIPH/MALA/SPOX/ TRIC/TULA/TYPH	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-TRICHINOSIS	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-TRICHINOSIS	V	Co	P	C	Y	N	Y	Y	Y

Tularaemia

- Tularaemia is an uncommon disease in the EU.
- The confirmed case rate of tularaemia has remained stable between 2006 and 2010.
- The highest rates were reported among older males.
- Sweden accounts for more than half of the reported cases in EU/EEA countries.

Tularaemia is a disease caused by infection with the bacterium *Francisella tularensis*. It is a relatively uncommon disease in the EU. Many wild animals host the bacterium, and transmission to humans is usually through the bite of an infected tick or mosquito. The disease can occasionally be fatal if untreated, but this is rare in Europe, thanks to readily available antibiotic treatment.

Epidemiological situation in 2010

In 2010, 872 confirmed cases (891 in total) of tularaemia were reported from 26 countries (Table 2.3.20). The EU/EEA confirmed case rate was 0.18 per 100 000 population, similar to the previous four years.

Sweden reported the highest confirmed case rate (5.18 per 100 000 population), followed by Finland (1.70) and Hungary (1.26).

Table 2.3.20. Number and rate of reported confirmed tularaemia cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	3	3	0.04	2	0.02	8	0.10	4	0.05	6	0.07
Belgium	Y	C	0	0	0.00	0	0.00	0	0.00	-	-	0	0.00
Bulgaria	Y	A	3	3	0.04	7	0.09	3	0.04	3	0.04	14	0.18
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	50	50	0.48	64	0.61	109	1.05	51	0.50	79	0.77
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00	1	0.08	2	0.15	0	0.00
Finland	Y	C	91	91	1.70	405	7.60	116	2.19	403	7.64	475	9.04
France	Y	C	41	22	0.03	16	0.03	104	0.16	48	0.08	24	0.04
Germany	Y	C	31	31	0.04	10	0.01	15	0.02	20	0.02	1	0.00
Greece	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Hungary	Y	C	126	126	1.26	38	0.38	25	0.25	20	0.20	139	1.38
Ireland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Italy	Y	C	1	1	0.00	2	0.00	43	0.07	0	0.00	2	0.00
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	1	1	0.03	1	0.03	2	0.06	1	0.03	2	0.06
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	4	4	0.01	1	0.00	0	0.00	1	0.00	0	0.00
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	4	4	0.02	0	0.00	0	0.00	0	0.00	0	0.00
Slovakia	Y	C	17	17	0.31	22	0.41	25	0.46	11	0.20	49	0.91
Slovenia	Y	C	0	0	0.00	1	0.05	2	0.10	1	0.05	1	0.05
Spain	Y	C	1	1	0.00	12	0.03	58	0.13	493	1.11	1	0.00
Sweden	Y	C	484	484	5.18	244	2.64	382	4.16	174	1.91	241	2.66
United Kingdom	Y	C	1	1	0.00	0	0.00	0	0.00	0	0.00	0	0.00
EU total	**-**	**-**	**858**	**839**	**0.18**	**825**	**0.18**	**893**	**0.19**	**1232**	**0.27**	**1034**	**0.22**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	33	33	0.68	13	0.27	66	1.39	49	1.05	11	0.24
Total	**-**	**-**	**891**	**872**	**0.18**	**838**	**0.18**	**959**	**0.20**	**1281**	**0.28**	**1045**	**0.22**

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

Age and gender distribution

As in previous years, data show a higher proportion of males than females among cases (male-to-female ratio 1.86:1). The highest confirmed case rates were observed in the oldest age groups (45–64-year-olds and 65 years and older) for males and in 45–64-year-olds for females (Figure 2.3.49).

Seasonality

Tularaemia has a clear seasonal pattern with most cases occurring in summer and early autumn. In 2010, the peak was in October, two months later than observed during 2006–09 (Figure 2.3.50); this is related to the high number of cases reported from Sweden for October.

Discussion

Since the reservoir of tularaemia is hares and small rodents, the incidence in humans has been observed to fluctuate with the fluctuating numbers of animals, which is often cyclic. In Sweden – the country reporting the highest confirmed case rate – the main transmission route for tularaemia is through the bite of mosquitoes, and a high prevalence of mosquitoes in late summer has been shown to be a prerequisite for tularaemia outbreaks in endemic regions[2]. *F. tularensis* has also been found to persist in natural waters and sediments in endemic areas in Sweden, also during non-outbreak years[3]. Several waterborne outbreaks were reported after the consumption of untreated natural spring water, e.g. in Turkey, from where some cases were imported to the EU[4,5,6].

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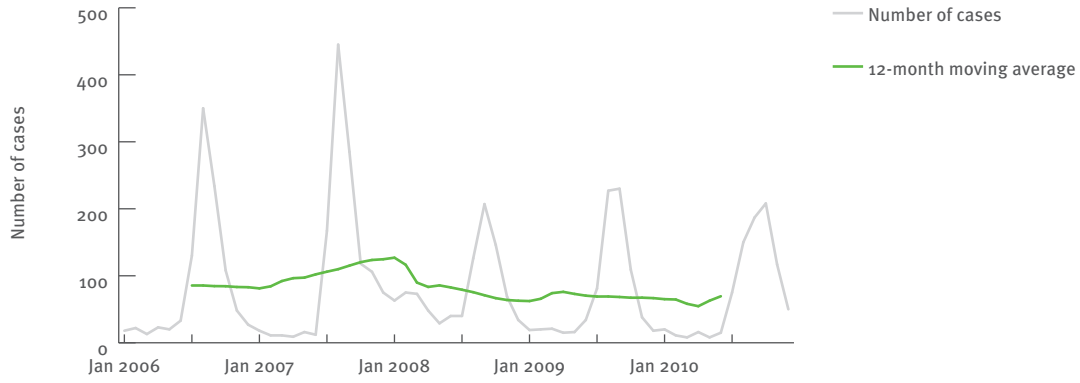
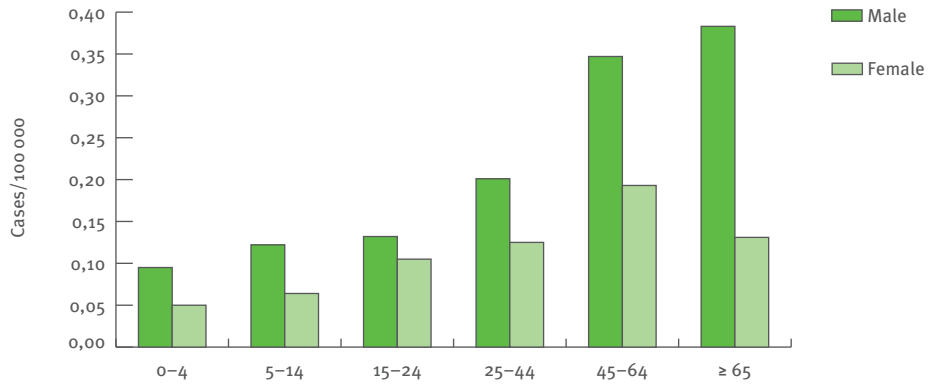
Figure 2.3.48. Trend and number of reported confirmed cases of tularaemia in EU/EEA countries, 2006–10



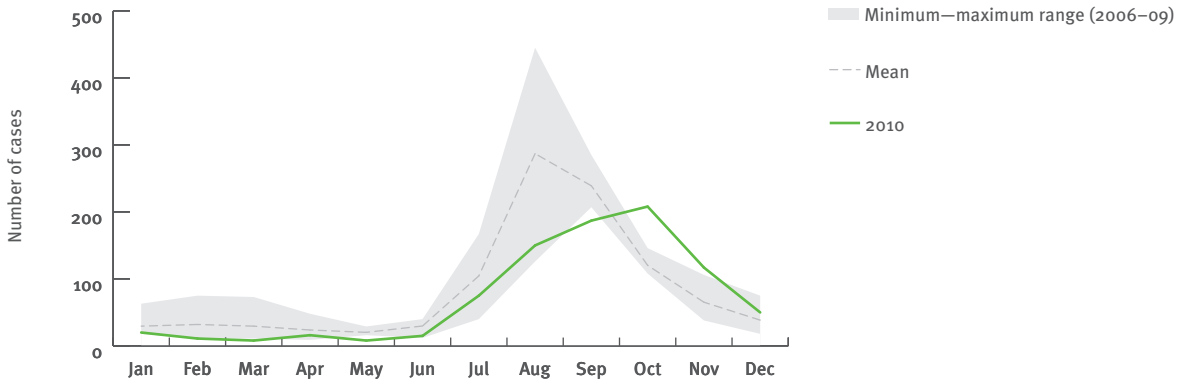
Source: Country reports from Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.3.49. Rates of reported confirmed tularaemia cases, by age and gender, EU/EEA countries, 2010



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

Figure 2.3.50. Seasonal distribution of reported confirmed cases of tularaemia in EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-ANTH/CHOL/DIPH/MALA/SPOX/ TRIC/TULA/TYPH	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-TULARAEMIA	V	Co	P	C	Y	N	Y	Y	Y

Typhoid/paratyphoid fever

- In 2010, 1417 cases of typhoid and paratyphoid fever were reported in the EU/EEA.
- 84% of cases were imported, the majority from India and Pakistan.
- Reported case rates were highest among young children under the age of five and 15–24-year-olds.
- *Salmonella* Paratyphi A was the most commonly identified serotype in cases of paratyphoid fever.

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

Epidemiological situation in 2010

In 2010, 1417 confirmed cases (total 1417) of human typhoid or paratyphoid cases were reported by 25 EU Member States, and Iceland and Norway. The reported confirmed case rate was 0.31 per 100 000 population (Table 2.3.21). Two Member States (Bulgaria and Poland) do not distinguish typhoid/paratyphoid fever cases from 'salmonellosis', and their data cannot be included here. The confirmed case rates have been stable over the

Table 2.3.21. Number and rate of reported confirmed typhoid and paratyphoid cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	30	30	0.36	0	0.00	14	0.17	0	0.00	0	0.00
Belgium	Y	C	72	72	0.66	104	0.97	61	0.57	43	0.41	-	-
Bulgaria	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Cyprus	Y	C	1	1	0.13	4	0.50	5	0.63	1	0.13	0	0.00
Czech Republic	Y	C	5	5	0.05	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	Y	C	18	18	0.33	17	0.31	19	0.35	14	0.26	0	0.00
Estonia	Y	C	1	1	0.08	3	0.22	0	0.00	2	0.15	1	0.07
Finland	Y	C	17	17	0.32	9	0.17	6	0.11	20	0.38	10	0.19
France	Y	C	222	222	0.34	264	0.41	236	0.37	167	0.26	165	0.26
Germany	Y	C	128	128	0.16	141	0.17	179	0.22	0	0.00	148	0.18
Greece	Y	C	12	12	0.11	4	0.04	11	0.10	18	0.16	15	0.14
Hungary	Y	C	4	4	0.04	0	0.00	3	0.03	0	0.00	2	0.02
Ireland	Y	C	14	14	0.31	17	0.38	13	0.30	12	0.28	9	0.21
Italy	Y	C	127	127	0.21	116	0.19	120	0.20	182	0.31	219	0.37
Latvia	Y	C	0	0	0.00	-	-	0	0.00	1	0.04	0	0.00
Lithuania	Y	C	1	1	0.03	0	0.00	2	0.06	-	-	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00	1	0.21	0	0.00	0	0.00
Malta	Y	C	1	1	0.24	1	0.24	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	72	72	0.43	48	0.29	66	0.40	55	0.34	57	0.35
Poland	-	-	-	-	-	-	-	-	-	-	-	5	0.01
Portugal	Y	C	16	16	0.15	34	0.32	21	0.20	44	0.42	41	0.39
Romania	Y	C	3	3	0.01	2	0.01	3	0.01	5	0.02	15	0.07
Slovakia	Y	C	6	6	0.11	2	0.04	0	0.00	1	0.02	3	0.06
Slovenia	Y	C	2	2	0.10	2	0.10	5	0.25	10	0.50	5	0.25
Spain	Y	C	37	37	0.08	26	0.06	21	0.05	33	0.07	44	0.10
Sweden	Y	C	42	42	0.45	38	0.41	49	0.53	47	0.52	55	0.61
United Kingdom	Y	C	586	586	0.95	503	0.82	596	0.97	20	0.03	547	0.91
EU total	**-**	**-**	**1417**	**1417**	**0.31**	**1335**	**0.30**	**1431**	**0.32**	**675**	**0.15**	**1341**	**0.28**
Iceland	Y	C	0	0	0.00	0	0.00	2	0.63	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	0	0.00	0	0.00	-	-
Norway	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	36	0.78
Total	**-**	**-**	**1417**	**1417**	**0.31**	**1335**	**0.29**	**1433**	**0.31**	**675**	**0.15**	**1377**	**0.28**

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

last five years (Figure 2.3.51), except for 2007 when the number of cases was markedly lower, most likely due to a change in the reporting procedure for the European Surveillance System (TESSy): cases of typhoid and paratyphoid were reported as 'salmonellosis'.

The highest confirmed case rate in 2010 was reported by the United Kingdom (0.95 per 100 000 population), followed by Belgium (0.66 per 100 000).

Age and gender distribution

In 2010, the highest confirmed case rate (0.57 per 100 000 population) was reported in young children under five years of age, followed by 15–24-year-olds (0.55 per 100 000) (Figure 2.3.52). The lowest rate was reported for ≥65-year-olds (0.06 per 100 000). In 2010, typhoid/paratyphoid fever was slightly more common in men than in women. The overall confirmed case rates for males and females were 0.34 and 0.26 per 100 000 population, respectively, and the male-to-female ratio was 1.32:1 (based on 1374 cases for which information on gender was provided). In all age groups, female case rates were lower than male rates.

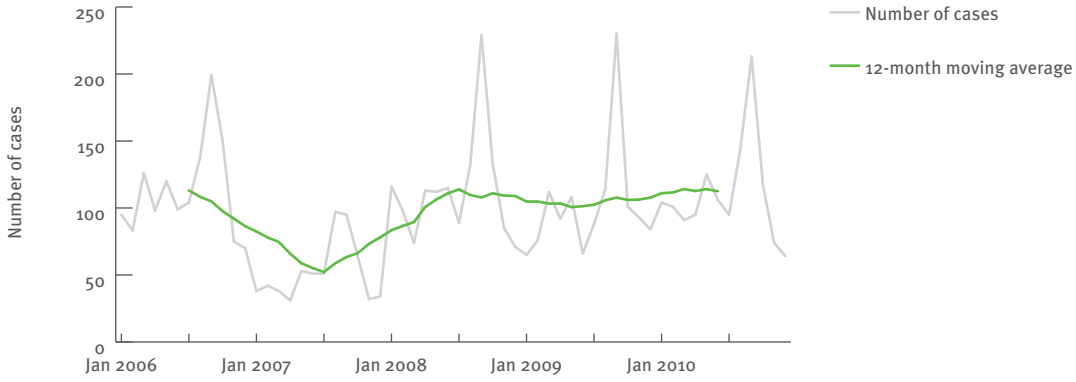
Seasonality

The seasonality for typhoid and paratyphoid fever followed that of the previous four years, with a clear peak in September (Figure 2.3.53). This is most likely related to travelling abroad, especially to high risk countries, with disease onset and disease report after the return home.

Enhanced surveillance

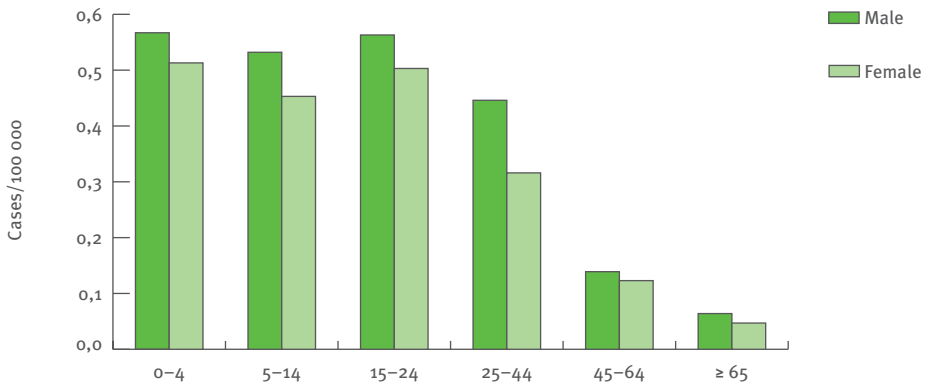
As in previous years, a high proportion of cases (86% of 732 cases for which data on importation status were available) were imported. The proportion of imported cases varied between 33% and 100% in the countries which provided this information. In Spain, all cases were reported as domestically acquired. Non-EU countries were reported as the most probable country of infection in 99% of imported cases; the three countries most frequently cited were India (256 cases), Pakistan (102) and Bangladesh (74).

Figure 2.3.51. Trend and number of reported confirmed typhoid and paratyphoid fever cases in EU/EEA countries, 2006–10



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

Figure 2.3.52. Rates of reported confirmed typhoid and paratyphoid fever cases, by age and gender, EU/EEA countries, 2010



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

In 2010, 735 cases of typhoid fever and 552 of paratyphoid fever were reported. The most common serotype of paratyphoid fever was *S.* Paratyphi A (Table 2.3.22).

Table 2.3.22. *Salmonella* enterica serotypes of typhoid and paratyphoid cases reported in EU/EEA countries*, 2010

Serotype	Number of cases
Typhi	735
Paratyphi A	357
Paratyphi B	130
Paratyphi C	4
Paratyphi (unspecified)	61
Total	**1287**

* Countries reporting serotype data are Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Discussion

Typhoid and paratyphoid fever continue to be uncommon, imported infections in EU/EEA countries: most cases (more than 85%) are imported, and the disease is strongly associated with travel to endemic areas outside the EU[2,3,4].

The confirmed case rate is highest in children under five years of age and 15–24-year-olds. High incidence rates in these age groups are most likely due to inadequate hand hygiene and the consumption of infected food items.

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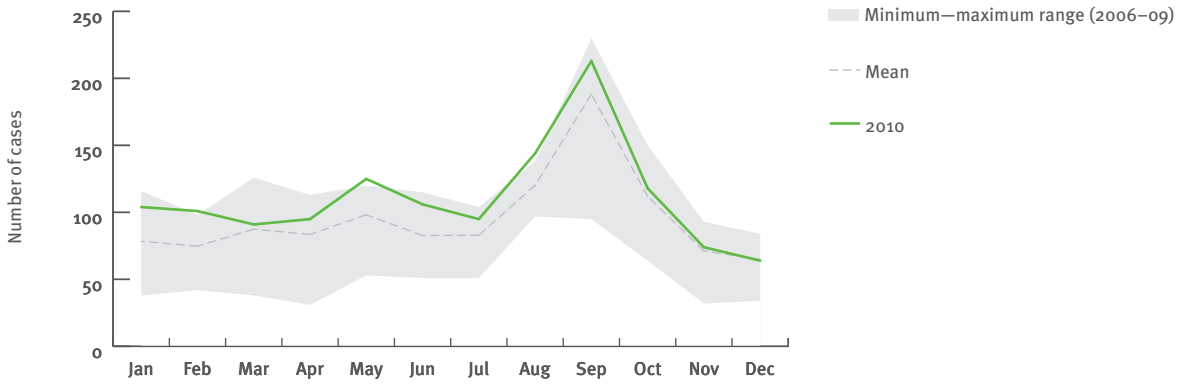
Figure 2.3.53. Seasonal distribution of reported confirmed typhoid and paratyphoid cases in EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y
Estonia	EE-SALMONELLOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-LSI	V	Se	P	C	Y	N	N	N	N
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-SALMONELLOSIS	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-SALMONELLOSIS	O	Co	P	C	Y	N	Y	Y	Y

Variant Creutzfeldt–Jakob disease

- Variant Creutzfeldt–Jakob disease (vCJD) is a rare but fatal disease.
- Since the peak in number of reported cases (and deaths) in 2000, the number of deaths from vCJD in the EU continues to decline.
- Continued surveillance of vCJD is crucial to the close monitoring of the gradual elimination of the disease and the impact of control measures that have been taken at EU level.
- Surveillance is important in order to increase the knowledge about the disease and to potentially prevent transmission routes other than foodborne.

Variant Creutzfeldt–Jakob disease is a human prion disease that produces a fatal spongiform encephalopathy, which is manifested by a rapidly progressing dementia, often in young adults. Transmission to humans is associated with the consumption of meat products from infected cattle, but the incubation period can last several years. The disease has become very rare due to the effective control measures that were established at the EU level over ten years ago. Only a few human infections through blood transfusion have so far been documented.

Epidemiological situation in 2010

In 2010, three vCJD cases (including one probable case) died in the United Kingdom, compared to the eight cases reported in 2009 (from five EU Member States). Neither of the cases was a blood donor or recipient of blood or blood products. The overall mortality rate remains low at 0.01 per 1 000 000 population.

Age and gender distribution

The three cases were males of 21, 25 and 65 years of age.

Discussion

Surveillance and reporting of vCJD was transferred to ECDC in 2011. Diagnostic support to the countries throughout Europe, and global monitoring, continues through the EuroCJD network[1]. Methods for case classification are harmonised, and all reporting countries have adopted the EU case definition.

Since the peak in 2000, the numbers of reported deaths from vCJD in the EU have declined. Nevertheless, because of the long incubation time of vCJD and the questions surrounding the transmissibility of other forms of CJD, surveillance needs to be continued at national and EU level. Germany, France, Belgium and Denmark have described or evaluated their surveillance systems[2]. It is crucial to maintain awareness about the importance of timely notification and to keep performing autopsies on patients with a probable and possible diagnosis.

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Yersiniosis

- Yersiniosis decreased significantly in the EU in 2006–10: 6780 confirmed cases were reported in 2010 (2006: 9071 cases).
- In 2010, the confirmed case rate of yersiniosis in EU/EEA countries was 1.76 cases per 100 000 population.
- The highest rate of confirmed cases was observed in children 0–4 year old, 10.70 cases per 100 000 population (more than ten times higher than in adults).

Yersiniosis is caused by two pathogenic *Yersinia* species, *Y. enterocolitica* and *Y. pseudotuberculosis*. It is a common cause of gastroenteritis in a number of EU/EEA countries. Pigs are an important reservoir, and many cases are considered to be related to the consumption of undercooked contaminated pork.

Epidemiological situation in 2010

In 2010, 6832 confirmed cases of yersiniosis were reported by 25 EU/EEA countries (overall confirmed case rate 1.76 per 100 000 population). As in previous years, Germany accounted for the highest proportion of

Table 2.3.23. Number and rate of reported confirmed yersiniosis cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Rate	Age standardised rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	84	84	1.00	1.05	140	1.68	93	1.12	142	1.71	158	1.91
Belgium	Y	C	216	216	1.99	1.90	238	2.21	273	2.56	248	2.34	264	2.51
Bulgaria	Y	A	5	5	0.07	0.00	8	0.11	10	0.13	8	0.10	5	0.07
Cyprus	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	447	447	4.25	4.46	463	4.42	557	5.37	576	5.60	534	5.21
Denmark	Y	C	193	193	3.49	3.43	238	4.32	331	6.05	274	5.03	215	3.96
Estonia	Y	C	58	58	4.33	4.21	54	4.03	42	3.13	76	5.66	42	3.12
Finland	Y	C	522	522	9.75	9.78	633	11.88	608	11.47	480	9.10	795	15.13
France	N	A	238	238	-	-	208	-	213	-	-	-	-	-
Germany	Y	C	3368	3346	4.09	4.64	3731	4.55	4352	5.29	4987	6.06	5161	6.26
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	87	87	0.87	0.89	51	0.51	40	0.40	55	0.55	38	0.38
Ireland	Y	C	3	3	0.07	0.08	3	0.07	3	0.07	6	0.14	1	0.02
Italy	Y	C	15	15	0.03	0.03	11	0.02	-	-	-	-	0	0.00
Latvia	Y	C	23	23	1.02	1.12	45	1.99	50	2.20	41	1.80	92	4.01
Lithuania	Y	C	428	428	12.86	13.31	483	14.42	536	15.92	569	16.81	411	12.08
Luxembourg	Y	C	39	39	7.77	7.66	36	7.30	17	3.51	22	4.62	5	1.07
Malta	Y	C	1	1	0.24	0.22	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	206	205	0.54	0.55	288	0.76	214	0.56	182	0.48	111	0.29
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Romania	Y	C	27	27	0.13	0.13	5	0.02	9	0.04	0	0.00	-	-
Slovakia	Y	C	168	166	3.06	3.07	167	3.09	68	1.26	71	1.32	82	1.52
Slovenia	Y	C	16	16	0.78	0.84	27	1.33	31	1.54	32	1.59	79	3.94
Spain	N	C	325	325	-	-	291	-	315	-	381	-	375	-
Sweden	Y	C	281	281	3.01	2.93	397	4.29	546	5.95	567	6.22	558	6.17
United Kingdom	Y	C	55	55	0.09	0.07	61	0.10	48	0.08	86	0.14	59	0.10
EU total	**-**	**-**	**6805**	**6780**	**1.77**	**1.82**	**7578**	**2.02**	**8356**	**2.69**	**8803**	**2.91**	**8985**	**2.55**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	0	0.00	-	-	-	-
Norway	Y	C	52	52	1.07	1.03	60	1.25	50	1.06	71	1.52	86	1.85
Total	**-**	**-**	**6857**	**6832**	**1.76**	**1.80**	**7638**	**2.01**	**8406**	**2.67**	**8874**	**2.88**	**9071**	**2.54**

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

reported cases (48.43%). Lithuania and Finland were the countries with the highest confirmed case rates, 12.86 and 9.75 cases per 100 000 population, respectively (Table 2.3.23).

A significantly decreasing trend for confirmed cases of yersiniosis was observed during 2006–10 in EU/EEA countries (Figure 2.3.54). Confirmed case rates decreased significantly in eight EU countries (Austria, Belgium, the Czech Republic, Germany, Latvia, Slovenia, Spain and Sweden), while increasing trends were observed in Hungary, Luxembourg and Slovakia[1].

Y. enterocolitica was, as in previous years, the most common *Yersinia* species reported in human cases (91.0% of all confirmed cases in 2010), followed by *Y. pseudotuberculosis* in 1.7% of cases[1].

Age and gender distribution

The gender distribution of confirmed cases for which information was provided (n=6 623) was 53.6% males and 46.4% females in EU/EEA countries. The male-female ratio was 1.2:1 in 2010. Confirmed case rates were higher for males than females in the age group 5–24 years, while rates remained similar for both genders in the youngest age group (0–4 years) and in age groups older than 25 years. The highest confirmed case rates were detected in 0–4-year-old children, both in males (10.79 cases per 100 000 population) and females (10.50 cases per 100 000) (Figure 2.3.55).

Seasonality

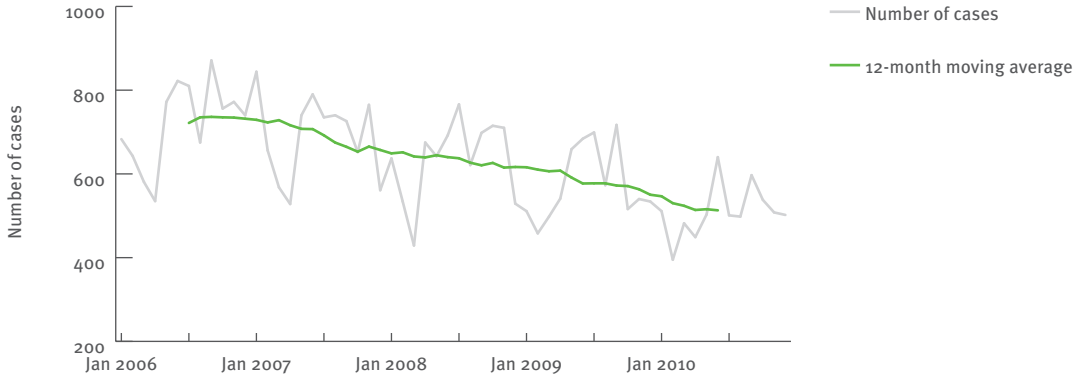
Cases of yersiniosis were reported throughout the year, with no marked seasonality in 2010 (Figure 2.3.56).

Discussion

Human yersiniosis showed a significant five-year decreasing trend in the EU since 2006. Yersiniosis is still the third most commonly reported zoonosis in humans, and a commonly reported gastrointestinal disease in Europe.

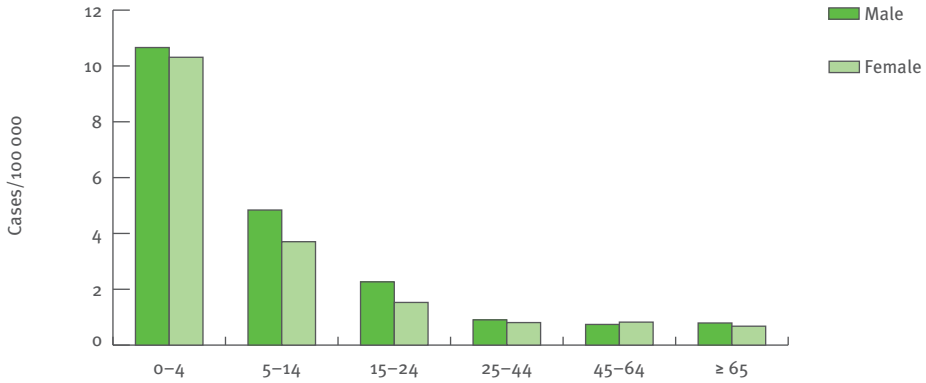
Yersinia is mainly found in pork, but may also be found in other foodstuffs and other animal species in the EU[1]. Pigs are considered the main reservoir of the bacterium as pigs regularly harbour the *Y. enterocolitica* serotypes, which are pathogenic to humans. The most frequent route of transmission to humans is consumption of undercooked contaminated pork.

Figure 2.3.54. Trend and number of reported confirmed cases of yersiniosis in EU/EEA countries, 2006–10



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

Figure 2.3.55. Rates of reported confirmed yersiniosis cases, by age and gender, EU/EEA countries, 2010



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

Most of the yersiniosis cases are sporadic, and outbreaks are reported rarely. In 2010, eleven possible *Yersinia* outbreaks, affecting 84 people, were reported by six Member States (Austria, Estonia, Finland, France, Germany and Lithuania)[1]. Vegetables were suspected as a source of a *Y. enterocolitica* 2/O:9 outbreak with 42 cases in Finland[2]. All human isolates had identical MLVA profiles. MLVA has been shown to be a powerful tool for the discrimination of *Y. enterocolitica* strains in outbreak investigations[3]. At present, PFGE is more commonly used to discriminate between *Y. enterocolitica* strains. However, there are no standard PFGE procedures or databases for *Y. enterocolitica* typing. MLVA was shown to have a better discriminatory power, it was less labour intensive, and the results were easier to analyse compared to the PFGE method[3].

References

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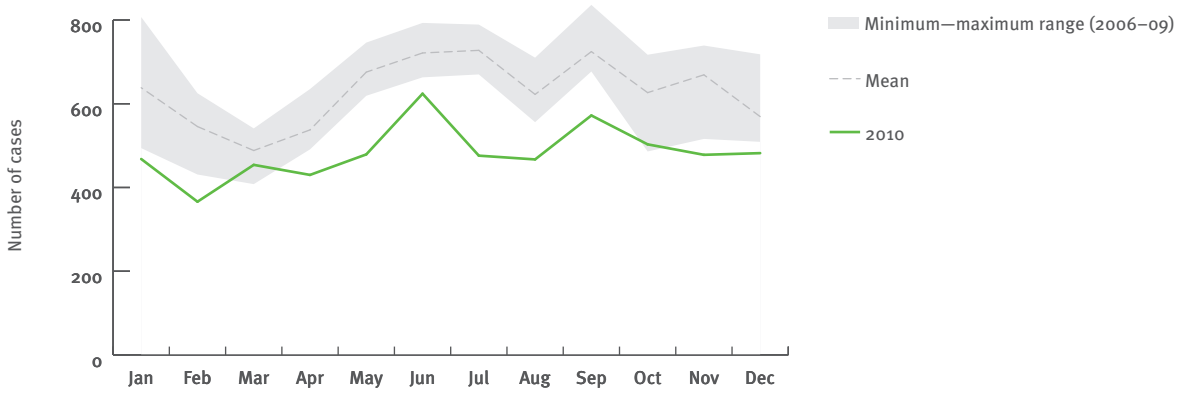
Figure 2.3.56. Seasonal distribution of reported confirmed cases of yersiniosis in EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-LAB	Cp	Co	P	C	Y	N	N	N	Y
Estonia	EE-YERSINIOSIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	N
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-ENTERNET	V	Se	P	C	Y	N	N	N	-
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-LNS-Microbio	V	Co	P	C	Y	N	Y	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-YERSINOSIS	O	Co	P	C	Y	N	Y	Y	Y

2.4 Emerging and vector-borne diseases

Malaria

- The confirmed case rate of malaria reported by EU/EEA countries remains stable, fluctuating around one per 100 000 population.
- Almost all cases of malaria in the EU/EEA (if origin is specified) were imported; imported cases were reported by EU/EEA countries that have strong ties with endemic areas. Greece is an exception with nearly 18% of indigenous cases.
- Local transmission remains possible in the EU, which stresses the need for surveillance, preparedness and prevention, as well as improved access to healthcare for seasonal workers.

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

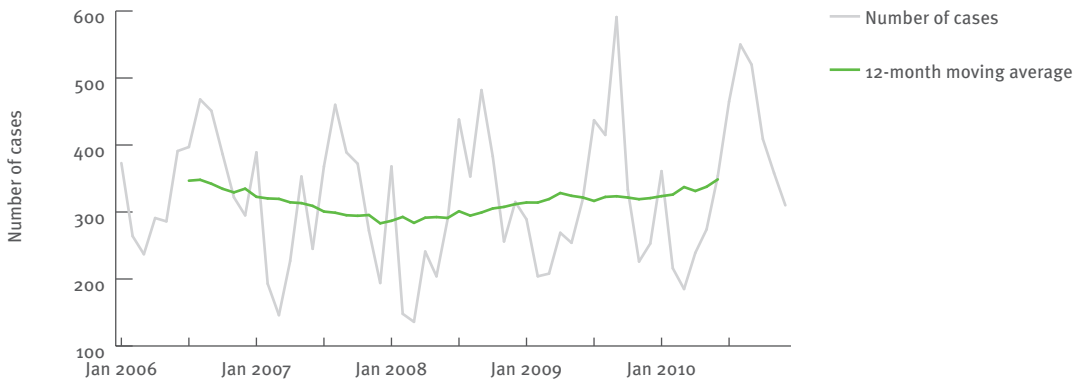
Epidemiological situation in 2010

In 2010, 6 759 confirmed cases of malaria were reported by 27 EU/EEA countries; the case count does not include cases reported in French overseas territories and départements. Eighty per cent of the cases are reported by four countries (France, the United Kingdom, Italy and Germany). The highest rates of confirmed cases were reported by the United Kingdom, Luxembourg, Ireland and Belgium (Table 2.4.1). No estimates for France are available because the country does not have a nationwide surveillance system. Data were not available for Denmark, Iceland and Liechtenstein.

The overall confirmed case rate was 0.99 per 100 000 population in 2010. The individual country rates varied between <0.1 and 2.8 cases per 100 000 population (United Kingdom). These figures are slightly higher than the ones observed in 2009.

Most malaria cases are reported as imported (the definition of 'imported' refers to cases imported to continental Europe). Information on the probable country of infection was not consistently available. Ten cases were confirmed as indigenous, eight from Greece and two from Spain. The number of imported malaria cases in the EU/EEA does not show any significant trend (Figure 2.4.1).

Figure 2.4.1. Trend and number of reported confirmed malaria cases in EU/EEA countries, 2006–10



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

Age and gender distribution

Information on age group was available for 62% of the cases. The confirmed case rate of malaria was twice as high in males as in females (1.35 and 0.61 per 100 000 population, respectively), giving a male-to-female ratio of 2.2:1. The age group 25–44 years had the highest rates (2.16 per 100 000 population, 0.98 in males and 0.83 in females) (Figure 2.4.2). This is consistent with the picture described in 2009 and likely reflects population travel patterns rather than other risk factors.

Seasonality

Information on month of reporting was available for 63% of cases. A clear seasonal trend in monthly reports is observed across all countries, with cases increasing during the holiday months (June to October) and peaking in August. A slight increase in January was observed, possibly related to the winter holiday period (Figure 2.4.3).

Updates from epidemic intelligence in 2011

Between 21 May and 5 December 2011, 63 cases of *Plasmodium vivax* infection were reported in Greece from five different districts, namely Lakonia (n=57), Attiki (n=2), Evoia (n=2), Viotia (n=1) and Larissa (n=1). The cases reported from Attiki, Evoia, Viotia, and Larissa were all classified as locally acquired malaria cases. Of the 57 cases reported from Lakonia, 23 cases were classified as imported and 34 as locally acquired.

Discussion

The confirmed case rate of malaria reported by EU/EEA countries has remained stable over the last five years, fluctuating around one per 100 000 population per year. Nearly all (more than 99.7%) of the reported cases are imported and notified by EU/EEA countries that have strong ties with endemic areas. The seasonality and age distribution most likely reflect travel patterns to malaria-endemic countries. Outside continental Europe, some European overseas countries and territories are endemic for malaria (e.g. Mayotte and French Guiana), but data

Table 2.4.1. Number and rate of reported confirmed malaria cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	48	48	0.57	44	0.53	57	0.69	34	0.41	50	0.61
Belgium	Y	C	166	166	1.53	144	1.34	181	1.70	193	1.82	195	1.86
Bulgaria	Y	A	5	5	0.07	8	0.11	0	0.00	4	0.05	14	0.18
Cyprus	Y	C	1	1	0.13	1	0.13	0	0.00	1	0.13	1	0.13
Czech Republic	Y	C	11	11	0.11	10	0.10	22	0.21	23	0.22	16	0.16
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	1	1	0.08	4	0.30	0	0.00	5	0.37	6	0.45
Finland	Y	C	33	33	0.62	34	0.64	42	0.79	22	0.42	31	0.59
France	N	A	2 439	2 439	-	2 199	-	2 246	3.51	-	-	-	-
Germany	Y	C	617	615	0.75	523	0.64	547	0.67	540	0.66	566	0.69
Greece	Y	C	45	45	0.40	51	0.45	39	0.35	21	0.19	22	0.20
Hungary	Y	C	5	5	0.05	8	0.08	5	0.05	7	0.07	18	0.18
Ireland	Y	C	82	82	1.84	90	2.02	82	1.86	71	1.65	94	2.23
Italy	Y	C	662	662	1.10	651	1.08	586	0.98	501	0.85	631	1.07
Latvia	Y	C	5	5	0.22	6	0.27	2	0.09	3	0.13	4	0.17
Lithuania	Y	C	3	3	0.09	3	0.09	3	0.09	4	0.12	0	0.00
Luxembourg	Y	C	12	12	2.39	3	0.61	2	0.41	4	0.84	4	0.85
Malta	Y	C	0	0	0.00	1	0.24	3	0.73	3	0.74	1	0.25
Netherlands	Y	C	247	247	1.49	237	1.44	229	1.40	210	1.28	250	1.53
Poland	Y	C	35	35	0.09	22	0.06	22	0.06	11	0.03	19	0.05
Portugal	Y	C	50	50	0.47	44	0.41	42	0.40	43	0.41	48	0.45
Romania	Y	C	19	19	0.09	12	0.06	13	0.06	24	0.11	16	0.07
Slovakia	Y	C	2	2	0.04	0	0.00	2	0.04	1	0.02	10	0.19
Slovenia	Y	C	9	9	0.44	7	0.34	3	0.15	9	0.45	3	0.15
Spain	Y	C	351	351	0.76	356	0.78	290	0.64	385	0.87	338	0.77
Sweden	Y	C	115	115	1.23	81	0.88	91	0.99	89	0.98	93	1.03
United Kingdom	Y	C	1761	1761	2.84	1 495	2.43	1371	2.24	1548	2.55	1758	2.91
EU total	**-**	**-**	**6 724**	**6 722**	**0.99**	**6 034**	**0.89**	**5 880**	**1.20**	**3 756**	**0.88**	**4 188**	**0.99**
Iceland	-	-	-	-	-	-	-	-	-	1	0.33	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	37	37	0.76	34	0.71	32	0.68	28	0.60	44	0.95
Total	**-**	**-**	**6 761**	**6 759**	**0.99**	**6 068**	**0.89**	**5 912**	**1.19**	**3 785**	**0.88**	**4 232**	**0.99**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; S: sub-national system only; Sen: Sentinel system data; —: No report; U: Unspecified.

for these areas are not collected through ECDC's TESSy database system.

Historically, malaria was endemic in Europe, but in the 1970s it was eliminated in most parts of the EU/EEA. However, cases of indigenous transmission of malaria have occasionally been reported over the last 10 years[1-4]. In 2010, Belgium, Greece and Spain reported locally acquired cases of malaria. For Spain this marked the first indigenous cases of malaria due to *Plasmodium vivax* since malaria was officially eradicated[1]. Greece reported local transmission of malaria for the third year in a row: in the summer of 2009 a cluster of *Plasmodium vivax* malaria occurred in Lakonia, and in 2010 Greece recorded another eight cases, one of which was reported from Lakonia. In 2011, another malaria outbreak affected five districts, including Lakonia[2].

These reports indicate that local transmission of *Plasmodium falciparum* and *Plasmodium vivax* is still possible in the EU if mosquito vectors are present. This underlines the need for surveillance, preparedness and prevention in EU/EEA countries, including improved access to healthcare for seasonal workers. Moreover, travellers visiting friends and relatives in endemic countries constitute a significant group for malaria importation[5].

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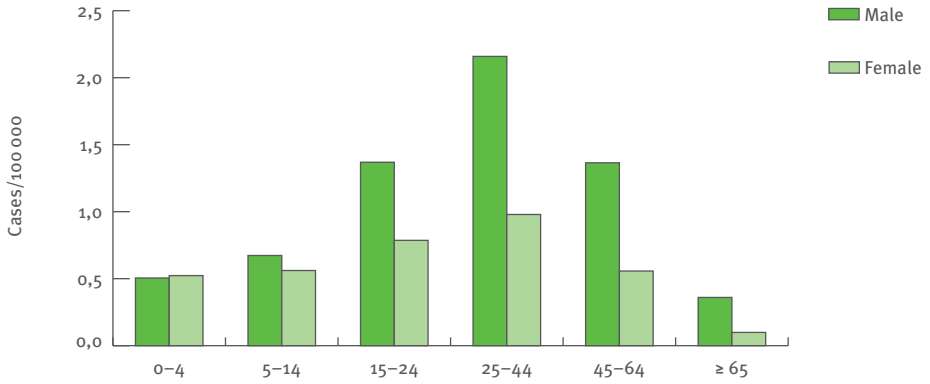
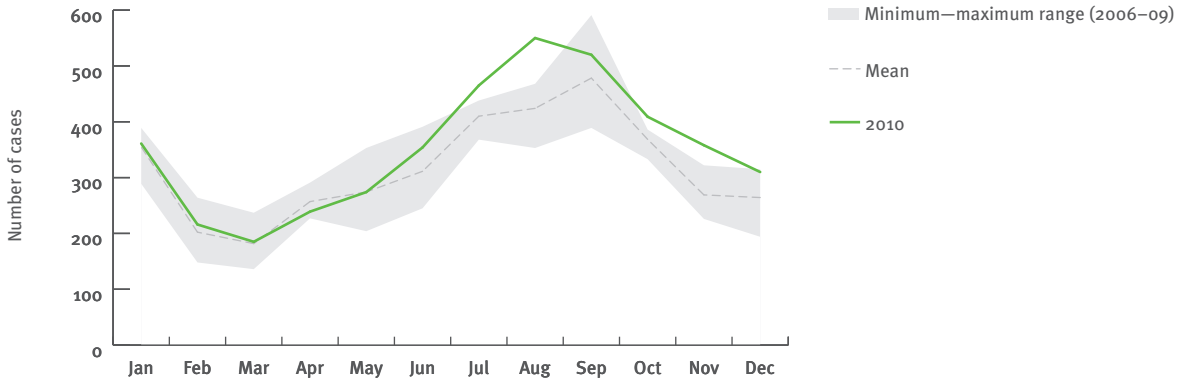
Figure 2.4.2. Rates of reported confirmed malaria cases, by age and gender, EU/EEA countries, 2010



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

Figure 2.4.3. Seasonal distribution of reported confirmed cases of malaria in EU/EEA countries, 2006–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-ANTH/CHOL/DIPH/MALA/SPOX/ TRIC/TULA/TYPH	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	N
Germany	DE-SURVNET@RKI-7.3	Cp	Co	P	C	Y	N	N	N	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-MALARIA	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-MALARIA	O	Co	A	C	Y	N	Y	Y	Y

Plague (*Yersinia pestis* infection)

There were no cases of indigenous plague reported in EU/EEA countries during 2010.

Plague, caused by the bacterium *Yersinia pestis*, is enzootic in small mammals in central and eastern Asia, Africa, the former Soviet Union and North America, and has been recognised recently as a re-emerging threat to humans. Humans can be infected through the bite of an infected flea carried by a rodent or, rarely, other animals; direct contact with contaminated tissues; or, in rare cases, inhalation of respiratory secretions from infected persons or animals[1]. Untreated plague is often fatal. While urban plague has been controlled in most of the world, it remains a public health problem in many countries.

Epidemiological situation in 2010

No cases of plague were reported by EU/EEA countries in 2010. Data were not available for Liechtenstein.

Discussion

Autochthonous plague has not occurred in Europe for several decades[2]. Recent outbreaks have shown that plague may reoccur in areas that have not reported outbreaks for an extended period of time[2]. In other areas, plague is considered an emerging disease: in 2008, Algeria reported cases in Laghouat province, an area which was not previously known as a plague focus; according to a 2010 journal article, surveillance should be extended to adjacent areas in Libya and Mauritania[3].

Investigations of two outbreaks in the Democratic Republic of the Congo showed the utility of a rapid diagnostic test detecting F1 antigen for initial diagnosis and public health management[4].

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Q fever

- In 2010, a total of 1380 confirmed Q fever infections were reported from 25 EU/EEA countries.
- Most cases continued to be reported from the Netherlands, where a large outbreak began in 2007; compared with 2009, Q fever cases decreased sharply in 2010.
- Recent studies among pregnant women in the Netherlands led to the conclusion that earlier retrospective studies may have led to an overestimation of the risk.
- Small outbreaks and sporadic cases were reported from other countries, including Germany, where areas with infected sheep 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. The bacteria are excreted in milk, urine and faeces and, in particularly high numbers, in birth products. 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 may also be possible.

Epidemiological situation in 2010

Twenty-five EU/EEA countries reported 1418 cases of Q fever in 2010 (seven countries reported zero cases), of which 1380 were confirmed (Table 2.4.2). The disease is not notifiable in Austria, Denmark, Italy, Liechtenstein and Norway; France reported for the first time. The overall crude confirmed case rate was 0.34 per 100 000 population. France, the Netherlands and Germany accounted for 81.1% of the total number of cases reported in 2010. There was a 47.8% decrease in the number of reported confirmed cases compared with 2009, with the largest decrease (78.5%) observed in the Netherlands. In 2010, two men (56 and 69 years of age) with confirmed disease were reported to have died of Q fever in the Netherlands.

Age and gender distribution

In 2010, as in previous years, the highest notification rate of human Q fever was in the 45–64 year-old age group (0.57 cases per 100 000 population), followed by the 25–44-year-old age group (0.40 cases per 100 000). Only 32 of the 1380 cases (2.3%) for which information was available were reported among children under the age of 15. The overall rate was higher in men than in women (0.42 and 0.27 per 100 000, respectively); the male-to-female ratio was 1.56:1 (1.58:1 in 2009) (Figure 2.4.5).

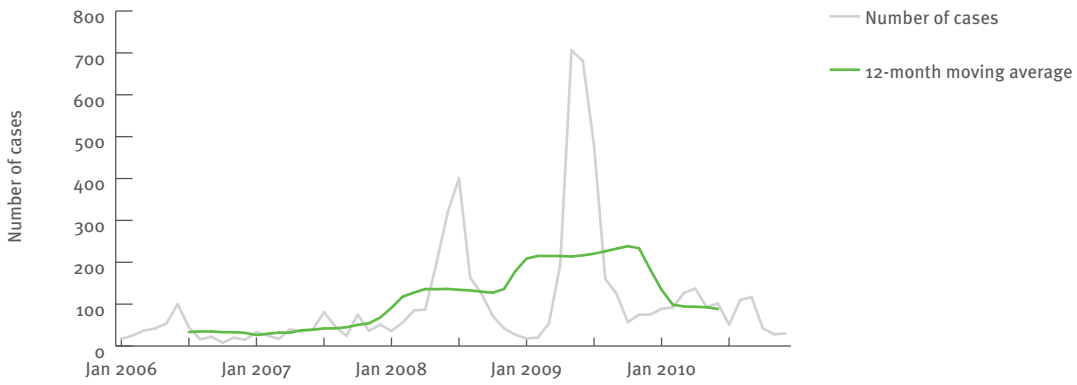
Seasonality

The seasonal pattern observed for Q fever shows a slow rise in reported cases in March and April, probably associated with the start of the kidding (goats) and/or lambing (sheep) seasons. One main peak is seen between May and July, followed by a sharp decrease until August; lower levels are again observed after October (Figure 2.4.6).

Enhanced surveillance in 2010

Q fever surveillance is detailed further in a report entitled 'The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2010'[1]. Since 2008, all reporting Member States have detected *C. burnetii* from at least one of the

Figure 2.4.4. Trend and number of reported confirmed Q fever cases in EU/EEA countries, 2006–10



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

domestic ruminant species (cattle, sheep or goats), confirming its endemicity in these species.

In response to the outbreak in humans, Dutch authorities have introduced a number of measures to control the spread[2]: culling of all pregnant goats and ewes from Q-fever-positive farms (more than 60 000 animals from over 90 herds, as of June 2010); imposing a breeding ban (lifted in July 2010); and annual vaccination of sheep and goats.

Updates from epidemic intelligence in 2011

An unusually high number of human Q fever cases were confirmed in late 2010/early 2011 in the border region between the German federal states of Hessen and North Rhine-Westphalia. The infection originated from sheep flocks; the veterinary authorities put restrictions on the infected flocks and imposed protective measures. The sheep were also vaccinated to reduce the shedding of the pathogen. A local risk assessment did not consider the situation unusual and stated that the risk to animals and humans in areas where Q fever infection was not present in sheep herds was minimal.

In the Netherlands, 81 cases of human Q fever have been reported to the Dutch public health institute RIVM as of 23 November 2011; one case was fatal.

Discussion

In the Netherlands the number of cases in 2010 (and 2011) was much smaller than in the previous years; the outbreak is now considered to be over. The specific epidemiology of Q fever was most likely related to intensive goat farming in the proximity of densely populated areas. The reduction in human cases is probably due to a combination of veterinary control measures and weather conditions[3].

Recent studies have shown that there is lack of scientific evidence to support the screening and treatment regimens for Q fever in pregnant women[4]. In the Netherlands, research efforts are now focussing on the

Table 2.4.2. Number and rate of reported confirmed Q fever cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	-	-	-	-	-	-	-	-	-	-	-	-	-
Belgium	Y	C	30	30	0.28	33	0.31	27	0.25	14	0.13	8	0.08
Bulgaria	Y	A	18	14	0.19	22	0.29	17	0.22	33	0.43	27	0.35
Cyprus	Y	C	4	4	0.50	2	0.25	31	3.93	8	1.03	2	0.26
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	-	-	-	-
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	5	5	0.09	1	0.02	2	0.04	2	0.04	3	0.06
France	Y	C	286	286	0.44	-	-	-	-	-	-	-	-
Germany	Y	C	360	326	0.40	191	0.23	370	0.45	83	0.10	204	0.25
Greece	Y	C	1	1	0.01	3	0.03	3	0.03	0	0.00	2	0.02
Hungary	Y	C	68	68	0.68	19	0.19	11	0.11	7	0.07	12	0.12
Ireland	Y	C	9	9	0.20	17	0.38	10	0.23	4	0.09	8	0.19
Italy	-	-	-	-	-	-	-	-	-	-	-	0	0.00
Latvia	Y	C	2	2	0.09	0	0.00	1	0.04	0	0.00	1	0.04
Lithuania	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	-	-	-	-
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	504	504	3.04	2 354	14.28	1 039	6.33	132	0.81	12	0.07
Poland	Y	C	0	0	0.00	3	0.01	4	0.01	0	0.00	0	0.00
Portugal	Y	C	13	13	0.12	14	0.13	12	0.11	8	0.08	9	0.09
Romania	Y	C	7	7	0.03	2	0.01	3	0.01	6	0.03	0	0.00
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.02	0	0.00
Slovenia	Y	C	1	1	0.05	0	0.00	0	0.00	93	4.63	3	0.15
Spain[(a)]	N	C	69	69	-	34	-	119	-	159	-	145	-
Sweden	Y	C	11	11	0.12	5	0.05	7	0.08	0	0.00	1	0.01
United Kingdom	Y	C	30	30	0.05	19	0.03	56	0.09	62	0.10	146	0.24
EU total	**-**	**-**	**1418**	**1380**	**0.34**	**2719**	**0.85**	**1712**	**0.51**	**612**	**0.15**	**583**	**0.12**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	0	0.00	-	-	-	-
Norway	-	-	-	-	-	0	0.00	0	0.00	0	0.00	-	-
Total	**-**	**-**	**1418**	**1380**	**0.34**	**2719**	**0.84**	**1712**	**0.50**	**612**	**0.15**	**583**	**0.12**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; S: sub-national system only; Sen: Sentinel system data; —: No report; U: Unspecified. (a) Surveillance system changed to full National coverage in 2009; earlier data covered only an estimated 25% of the population.

follow-up of acute Q fever patients and the screening of groups at risk for chronic Q fever, highlighting the difficulty of diagnosing chronic Q fever[5] and estimating the number of infected[6]. Other studies address the screening of blood and tissue and human vaccination[7].

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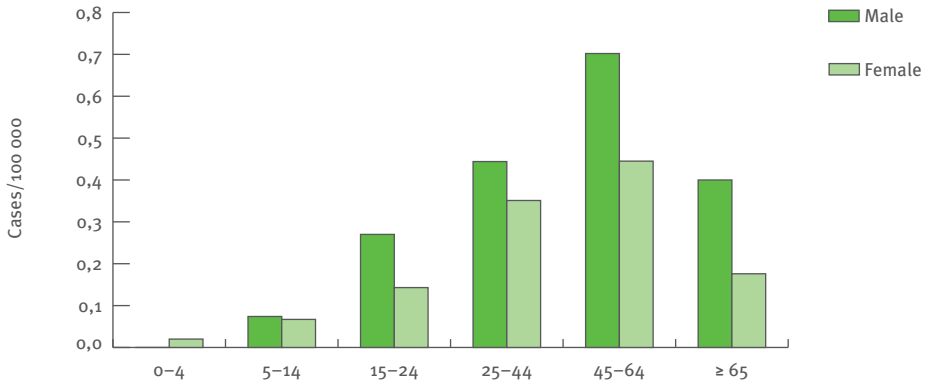
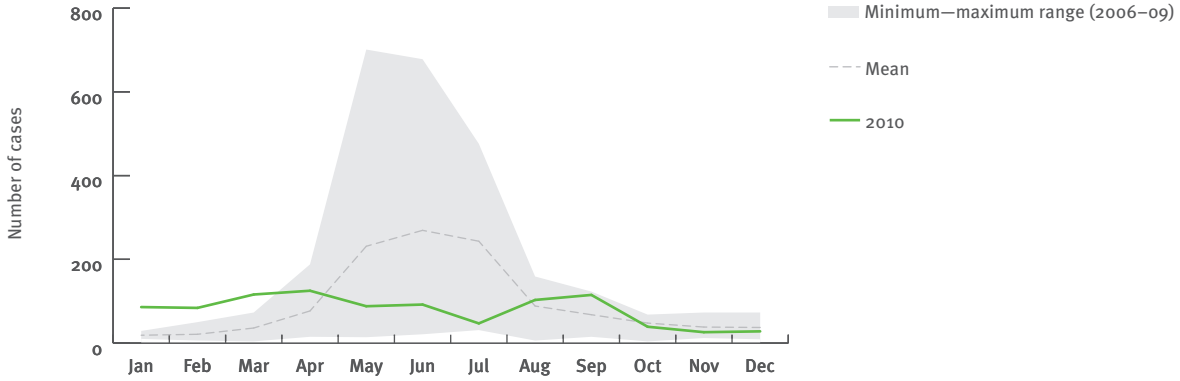
Figure 2.4.5. Rates of reported confirmed Q fever cases, by age and gender, EU/EEA countries, 2010



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

Figure 2.4.6. Seasonal distribution of reported confirmed cases of Q fever in EU/EEA countries, 2006–10



Source: Country reports from Cyprus, Estonia, Finland, Germany, Greece, Hungary, Ireland, Latvia, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden.

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
						Laboratories	Physicians	Hospitals	Others	
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-VHF	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-NATIONAL_REFERENCE_CENTRES	V	Co	P	C	Y	N	N	N	-
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	-	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-QFEVER	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-Q-FEVER	V	Co	P	C	Y	N	Y	Y	Y

Severe acute respiratory syndrome (SARS)

- Knowledge about the epidemiology and ecology of SARS coronavirus infection remains incomplete.
- It remains very difficult to predict when or whether SARS or a SARS-like disease will re-emerge in epidemic form.
- SARS has been shown to spread rapidly worldwide; therefore surveillance should be maintained during the inter-epidemic period. For this period, specific criteria are defined in the EU case definition.

Severe acute respiratory syndrome (SARS) is a respiratory disease in humans, caused by the SARS coronavirus (SARS-CoV). In 2002/03, an epidemic originating in Foshan, Guangdong Province, China, spread globally, with over 8 000 known cases in 33 countries on five continents. Twenty-one per cent of the cases were healthcare workers, and the case fatality rate was about 10%. The last known community case occurred in the USA in July 2003, but another localised SARS-related crossover from animals occurred in 2004[1].

Epidemiological situation in 2010

Despite continued surveillance, there were zero reports of SARS virus infection in humans from 28 EU/EEA countries in 2010; Cyprus and Liechtenstein did not report. There were no reports of SARS virus infections in humans worldwide.

Discussion

SARS is believed to have been an animal virus that recently crossed the species barrier to infect humans. Bats have been identified as potential reservoir hosts of coronaviruses associated with SARS[2,3]. Studies conducted since the SARS outbreak suggest that many novel viruses exist in animals and some may present a risk to humans[1,2].

The SARS outbreak illustrated the importance of sensitive detection tools in the preparedness and response to public health threats[4,5]. It further highlighted the importance of advance planning, communication, education and training, and stockpiling of personal protective equipment, as many lives could have been saved if proper precautions and isolation policies had been employed from the beginning of the outbreak. Unfortunately, government support for public health preparedness has been reduced in many countries, although the conditions of emergence and spread of emerging diseases remain unchanged[5].

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Smallpox

There were no reports of smallpox or potential smallpox in EU/EEA countries (or worldwide) in 2010.

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 globally eradicated.

Epidemiological situation in 2010

There were no reports of smallpox or potential smallpox in EU/EEA countries (or globally) in 2010.

Discussion

Mass smallpox vaccination campaigns have ceased after eradication and the population immunologically naïve to orthopoxviruses has increased significantly. Thus, smallpox is a potential biological weapon. Legitimately, the virus exists in only two WHO reference laboratories. 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 as soon as crucial research on the virus is completed. Determining a date for the destruction of the remaining virus stocks will be discussed at the 67th World Health Assembly in 2014.

Furthermore, the incidence of human monkeypox (a related virus present in central Africa, against which the smallpox vaccine also grants immunity) has dramatically increased in recent years, for example in rural Democratic Republic of Congo (DRC). While the infection is somewhat less serious than smallpox, and can be confused with chickenpox, it can still scar and even kill its victims. According to ProMED[3], 114 cases with five deaths occurred in DRC in early 2011, although some confusion with chickenpox might have occurred.

Improved surveillance and epidemiological analysis is needed to better identify the animal reservoirs (rodents, squirrels and monkeys), assess the public health burden, and develop strategies for reducing the risk of wider spread of monkeypox infection[2].

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Viral haemorrhagic fevers

- In 2010, the reporting of viral haemorrhagic fevers was divided into the following groups of diseases: hantavirus infections, Crimean–Congo haemorrhagic fever, Rift Valley fever, Ebola and Marburg infection, and Lassa fever. Dengue fever and chikungunya fever are also reported in this section.
- In 2010, 4175 confirmed cases of hantavirus infection were reported from 23 countries, nearly twice as many as in 2009; hantavirus infection is still the most commonly reported disease with potential haemorrhagic features in EU/EEA countries.
- Two cases of Crimean–Congo haemorrhagic fever were reported by Bulgaria.
- No cases of Rift Valley fever, Ebola, Marburg or Lassa fever were reported.
- 1143 confirmed cases of dengue fever were notified by EU/EEA countries, including two confirmed indigenous cases in southern France. One indigenous case was also identified in Croatia.
- Two confirmed indigenous cases of chikungunya fever were reported in southern France.

This section assembles a number of diseases under the heading of 'viral haemorrhagic fevers' (VHFs), despite obvious differences in virus type, geographical distribution, incidence, reservoir, way of transmission, and clinical symptoms. The common denominator of all VHFs is the possible emergence of a disease with general bleeding, often leading to death. Another common feature is the potential risk that VHF patients might pose to close contacts and to health and laboratory personnel until a firm diagnosis is established. Most of these viruses do not transmit easily, with the exception of yellow fever virus, chikungunya and dengue virus, which are spread through infected mosquitoes.

Viral haemorrhagic fevers 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), yellow fever and dengue haemorrhagic fever (transmitted through mosquito bites), Ebola and Marburg fever (often associated with monkeys).

Hantavirus

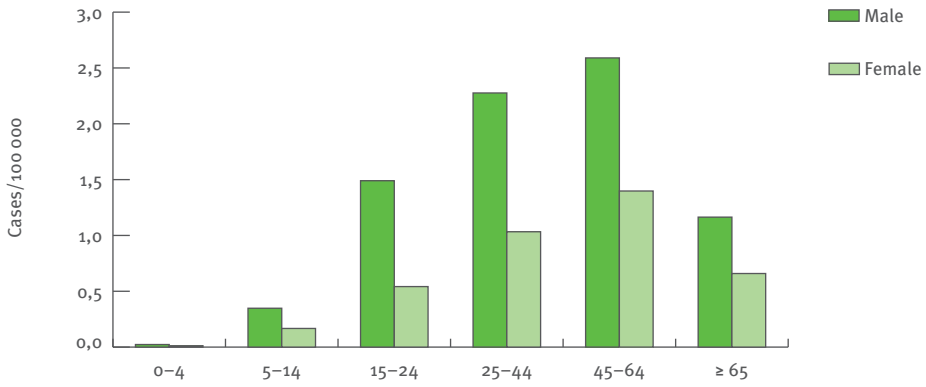
In Europe, hantaviruses cause haemorrhagic fever with renal syndrome. They are transmitted to humans by inhalation of dust contaminated with excreta of infected rodents.

Epidemiological situation in 2010

In 2010, 23 EU/EEA countries reported on hantavirus infection. Of these, 17 countries reported a total of 4175 confirmed cases, six countries reported zero cases. Cases are not notifiable in Cyprus, Denmark, France, Italy, Portugal, Iceland and Liechtenstein. The overall confirmed case rate from the 17 countries reporting cases was 1.15 per 100 000 population (0.68 in 2009), varying from 0.01 (Poland) to 26.97 (Finland).

Most of the cases are reported by Finland, Germany, Sweden and Belgium, with a total of 97.4% of all cases (2009: 95.4%; 2008: 97.3%). The 26.97 incidence rate per 100 000 population reported in Finland showed a decrease from 2009 (36.18) and 2008 (61.49). Sweden showed a higher incidence rate in 2010 (4.45) when compared with 2009 (0.57), but the rate was still lower than

Figure 2.4.7. Rates of reported confirmed hantavirus cases, by age and gender, EU/EEA countries, 2010



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

in 2008 (6.20). Germany reported a higher incidence rate in 2010 (2.46 per 100 000 population) when compared with 2009 and 2008 (0.22 and 0.30, respectively).

Information about the source of infection was not available. Thirty-two cases were identified as imported cases, mostly in Germany (28 cases). For 35.10% of the cases the status was not specified.

Age and gender distribution

Hantavirus infections are predominantly reported in adults, with 77% of cases in the age group of 25–64 years. A few cases are reported in children (2.1% of the cases), with a confirmed case rate of 0.02 per 100 000 in the 0–4-year age group and 0.26 per 100 000 population for the 5–14-year-olds.

The highest incidence is observed in the 45–64-year-old group (1.98 per 100 000 population), followed by the 25–44-year-olds (1.66 per 100 000 population). The incidence is higher among males (1.74 per 100 000 population) than females (0.87 per 100 000 population), and the male-to-female ratio is 1.98:1 (Figure 2.4.7).

Seasonality

Cases are reported all year round with an increase in May–August (especially in 2010) and another one in November–January. This reflects the observed situation in Germany for the first peak and in Finland for the November–December period (Figure 2.4.8). Cases occur all year round, but most frequently in the winter season in Nordic countries and in late spring/beginning of autumn in other countries.

Discussion

Hantavirus infections cause haemorrhagic fever with renal syndrome in Eurasia, and hantavirus pulmonary syndrome in the Americas. However, in some severe cases in Europe respiratory distress could be observed[1]. Hantavirus infections are widely distributed across Europe, with the exception of some Mediterranean countries. There seem to be large regional differences in the incidence, and the disease is particularly prevalent in northern Europe (Finland). In Germany, the number of cases and the incidence rates increased significantly compared with 2008 and 2009[2]. However, these figures

Table 2.4.3. Number and rate of reported confirmed hantavirus cases in EU/EEA countries, 2008–10

Country	2010					2009		2008	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	31	31	0.37	29	0.35	1	0.01
Belgium	Y	C	212	212	1.96	187	1.74	336	3.15
Bulgaria	Y	A	3	3	0.04	2	0.03	2	0.03
Cyprus	-	-	-	-	-	-	-	-	-
Czech Republic	Y	C	8	8	0.08	6	0.06	-	-
Denmark	-	-	-	-	-	-	-	-	-
Estonia	Y	C	5	5	0.37	17	1.27	11	0.82
Finland	Y	C	1443	1443	26.97	1927	36.18	3259	61.49
France	-	-	-	-	-	-	-	-	-
Germany	Y	C	2016	2016	2.46	181	0.22	243	0.30
Greece	Y	C	1	0	0.00	2	0.02	2	0.02
Hungary	Y	C	11	11	0.11	11	0.11	3	0.03
Ireland	Y	C	0	0	0.00	0	0.00	0	0.00
Italy	-	-	-	-	-	-	-	-	-
Latvia	Y	C	4	4	0.18	1	0.04	1	0.04
Lithuania	Y	C	0	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	1	0.20	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0	0.00	1	0.01	0	0.00
Poland	Y	A	6	4	0.01	4	0.01	0	0.00
Portugal	-	-	-	-	-	-	-	-	-
Romania	Y	C	4	4	0.02	8	0.04	4	0.02
Slovakia	Y	C	1	1	0.02	3	0.06	1	0.02
Slovenia	Y	C	17	17	0.83	5	0.25	45	2.24
Spain	Y	C	0	0	0.00	0	0.00	2	0.00
Sweden	Y	C	416	416	4.45	53	0.57	569	6.20
United Kingdom	Y	C	1	0	0.00	0	0.00	0	0.00
EU total	**-**	**-**	**4179**	**4175**	**1.16**	**2438**	**0.68**	**4479**	**1.29**
Iceland	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-
Norway	Y	C	21	21	0.43	21	0.44	50	1.06
Total	**-**	**-**	**4200**	**4196**	**1.15**	**2459**	**0.68**	**4529**	**1.29**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; S: sub-national system only; Sen: Sentinel system data; —: No report; U: Unspecified.

decreased significantly in Finland. The total number of cases in the EU increased in 2010 compared to 2009, but was quite stable when compared to 2008.

Haemorrhagic fever with renal syndrome is caused by different viruses: bank voles carry the Puumala virus, while yellow-necked field mice carry the Dobrava virus. Epidemics which occur locally (e.g. south-western Germany, 2010) may be linked to favourable environmental conditions in terms of food supplies for rodents, causing an increase of rodent carrier populations.

There are at present no indicators which allow the assessment of whether there is an actual increase in hantavirus cases in Europe or whether the observation is influenced by increased awareness and better use of diagnostic tools[3]. In addition, hantavirus infection should be considered as a cause of acute respiratory distress in all endemic areas worldwide.

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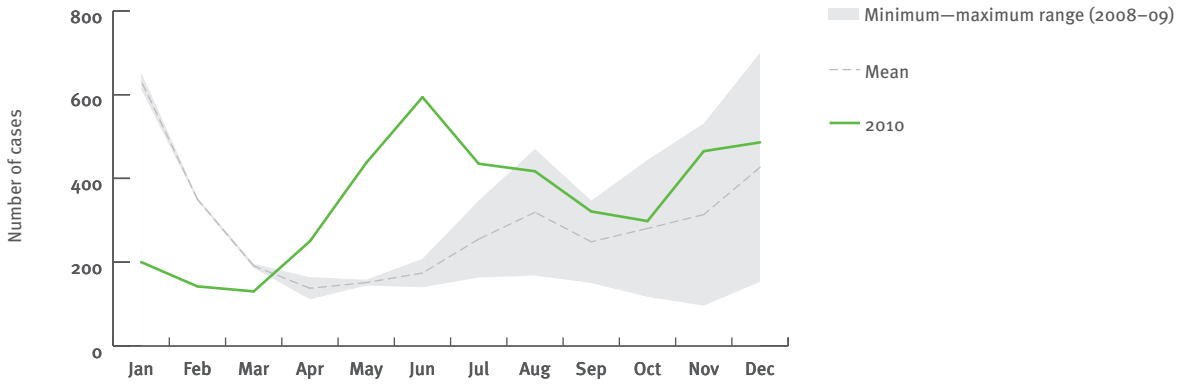
Figure 2.4.8. Seasonal distribution of reported confirmed cases of hantavirus infection in EU/EEA countries, 2008–10



Source: Country reports from Austria, Belgium, Estonia, Finland, Germany, Greece, Hungary, Ireland, Latvia, Malta, Netherlands, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-VHF	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-NVRL	V	Co	P	C	Y	N	N	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	-	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y
Norway	NO-MSIS_A	-	-	-	-	-	-	-	-	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-NRL	Cp	Co	P	C	Y	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-HANTAVIRUS	V	Co	A	C	Y	N	Y	Y	Y

Crimean–Congo haemorrhagic fever

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. During the course of the disease, 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, eastern Europe and south-western Europe.

In Europe, cases of human infections have been reported from Albania, Armenia, Bulgaria, Kazakhstan, Kosovo[i], Russia, Serbia, Tajikistan, Turkey, Turkmenistan, Ukraine, and Uzbekistan.

Epidemiological situation in 2010

Two confirmed cases of Crimean–Congo haemorrhagic fever were reported in 2010 in Bulgaria. Twenty-six EU/EEA countries reported; data on the disease are not reported by Denmark, Finland, Portugal, and Liechtenstein.

Discussion

CCHF is endemic in the Balkan region, and Bulgaria remains an area where cases are reported on a regular basis (one case in 2009 and two in 2008). Among the European Union and neighbouring countries, Turkey remains the most affected country, with 834 cases notified to WHO in 2010. This figure corresponds to a decline of 10% of cases over the last two years. Albania also notified 33 cases to WHO in 2010; Serbia reported one case[1]. In addition, the National Institute of Public Health in the Kosovo reported 10 confirmed cases of CCHF, including two deaths, between 26 April and 31 May 2010[2].

The cycle of CCHF virus involves mainly *Hyalomma* ticks and a large variety of hosts which can be infected without displaying any clinical symptoms. The identification of CCHF viral genome in a few Hyalomma ticks collected in 2010 in western Spain (Caceres) suggests that the virus might be present in other areas than those considered as endemic in Europe[3]. Additional data are necessary to establish the actual range of CCHF virus collected in southern Europe. In addition, vector, veterinarian and human surveillance should be enhanced[4].

i This designation is without prejudice to positions on status, and is in line with UNSCR 1244/99 and the ICJ Opinion on the Kosovo declaration of independence.

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Rift Valley fever

Rift Valley fever (RVF) is an acute viral disease that affects mainly domestic animals (such as cattle, buffalo, sheep, goats, and camels). The disease is caused by the RVF virus, generally found in regions of eastern and southern Africa, but also in most countries of sub-Saharan Africa, Madagascar, Saudi Arabia and Yemen. Humans may become infected 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 and hepatitis.

Epidemiological situation in 2010

No imported cases of Rift Valley fever were reported from 19 EEU/EEA countries. The disease is not notifiable in Austria, Bulgaria, Cyprus, Denmark, Finland, Ireland, the Netherlands, Poland, Portugal, Iceland and Liechtenstein.

Discussion

In South Africa, a Rift Valley fever outbreak which started in 2008–09 continued during the first half of 2010, with 236 human cases reported in several regions but mostly in the central Free State and some of the northern provinces[1,2]. The peak occurred during the warm season before the FIFA football World Cup in 2010. All cases had close contact with animals. Mauritania also reported human cases in 2010[3]. Additional outbreaks of RVF in animals were reported to OIE (World Organisation for Animal Health) from Namibia, Botswana, Saudi Arabia and Mauritania[4].

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Ebola and Marburg virus

Ebola and Marburg haemorrhagic fevers are caused by two related viruses: Ebola virus and Marburg virus. Both are rare diseases, but have the potential of causing high death rates. Transmission of the viruses occurs from person to person through close contact with blood or body fluids. 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 2010

No imported cases were reported in continental Europe in 2010, according to reports from 26 EU/EEA countries; the disease is not notifiable in Cyprus, Portugal, Iceland and Liechtenstein.

Updates from epidemic intelligence in 2011

In May 2011, one fatal case of Ebola-Sudan virus infection occurred in a 12-year-old girl in Uganda (Luwero district in the central region). The source of infection could not be identified and no further cases were reported during the active contact tracing.

Discussion

Viruses of the family *Filoviridae* with the two distinct genera *Ebolavirus* and *Marburgvirus* are predominately associated with outbreaks of viral haemorrhagic fevers in the sub-Saharan African continent, and bats are implicated as reservoirs and vectors for transmission[1]. Ebola has also been reported in the Philippines. A recent publication describes the identification of a new filovirus (provisionally named Lloviu virus) in Asturias, Spain, from an affected colony of *Minipterus schreibersii* bats in 2002. At present, this virus has not been associated with disease in humans[2]. Further characterisation of the properties of these viruses will be of interest for a better understanding of the pathology of the disease and development of drugs and vaccines.

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Lassa fever

The reservoirs of Lassa virus are rodents, and 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. Early treatment with the antiviral drug ribavirin is effective, and infection is prevented through good hygiene conditions. The disease is known to be constantly present in West Africa.

Epidemiological situation in 2010

No imported cases of Lassa fever were reported in 2010 in Europe according to reports from 24 EU/EEA countries; the disease is not notifiable in Cyprus, Denmark, Italy, Portugal, Iceland and Liechtenstein.

Discussion

Lassa fever is endemic in West Africa from Guinea and Mali to Nigeria, with high foci in Sierra Leone, Liberia and Nigeria. People living in rural areas of West Africa are most at risk of Lassa fever. Transmission of the virus to humans usually occurs via direct or indirect contact with rodent excreta but human-to-human transmission also occurs, mainly through direct contact with blood and body fluids. In 2010, one imported case from Nigeria was reported in the USA[1]. The patient had visited rural areas in Nigeria, and later developed fever, pharyngitis, chest pain, and diarrhoea without haemorrhagic symptoms. Recent studies on the pathogenesis of Lassa virus infection in non-human primates provide useful information about the development of Lassa fever[2].

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Dengue fever

- 1143 confirmed cases of dengue fever were notified by EU/EEA countries.
- The number of reported dengue fever cases in 2010 was more than twice as high as in 2009.
- One case of locally acquired dengue was reported in the EU, which highlights the need for vigilance among health professionals and the need for surveillance of dengue vector(s) in the EU.

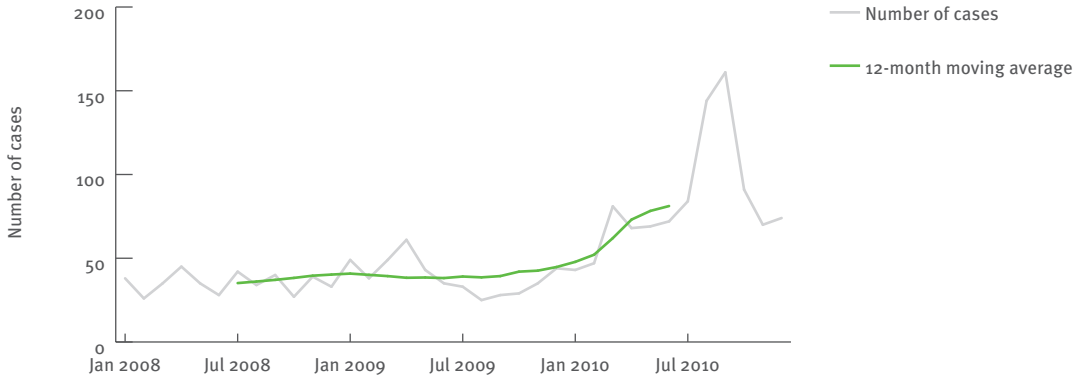
Dengue is a mosquito-borne disease, caused by a virus of the *Flaviviridae* family. Dengue fever is transmitted through bites of *Aedes* mosquitoes; it is widely spread in Asia, the Pacific, the Caribbean, the Americas and Africa. While most of the clinical cases present with a febrile illness, severe forms are reported, including haemorrhagic fevers and shock with fatalities. No specific treatment or vaccine exists for dengue, and general intensive care is often needed.

Epidemiological situation in 2010

In 2010, 1622 cases of dengue fever (1143 confirmed) were reported by 14 of 23 reporting EU/EEA countries. In 2010, twice as many confirmed cases of dengue fever were reported than in 2009. The increase was particularly noticeable in Belgium, Sweden and Germany (50 to 100%) and in France, which reported a tenfold increase (Table 2.4.4 and Figure 2.4.9).

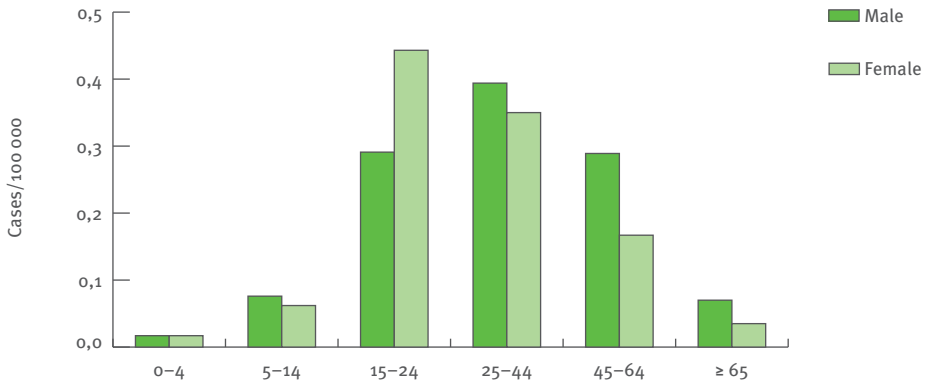
Data vary widely as some countries reported all diagnosed dengue fever cases, while others (like Ireland) only reported dengue haemorrhagic fever or locally acquired cases. The disease is not notifiable in Bulgaria, Cyprus, Denmark, the Netherlands, Portugal, Liechtenstein and Norway. Two cases in France have been locally acquired

Figure 2.4.9. Trend and number of reported confirmed dengue fever cases in EU/EEA countries, 2008 to 2010



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

Figure 2.4.10. Rates of reported confirmed dengue fever cases, by age and gender, EU/EEA countries, 2010



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

whereas the other cases were imported (59 of unknown origin).

The overall confirmed case rate was 0.25 per 100 000 compared with 0.11 per 100 000 in 2009. The individual country rates varied between 0.00 and 1.62 cases per 100 000 population. The higher rates were reported by Sweden (1.62 per 100 000), Belgium (1.19 per 100 000) and Finland (0.93 per 100 000) and reflect predominant choices of travel destinations to countries where dengue fever is endemic.

Age and gender distribution

The confirmed case rate was similar in males (0.27 cases per 100 000 population) and females (0.23 per 100 000), with a male-to-female ratio of 1.2:1. The age groups with the highest rates were the 15–24- and 25–44-year-olds (both with 0.37 cases per 100 000 population) (Figure 2.4.10). The age and gender distribution is most likely related to the age groups' travel preferences.

Seasonality

A clear seasonal trend in monthly reports is observed across all countries, with cases increasing during the summer months August–October, peaking in August. This contrasts with the seasonal trends of the two previous years (Figure 2.4.11).

Discussion

The increasing trend toward travel-related dengue fever in the EU persists in 2010 and is in line with the increasing number of persons who visit countries endemic for dengue and the deteriorating dengue situation in tropical regions where the disease is endemic; this is also reflected in the clear seasonal pattern displayed in the 2010 data. Dengue is the second most frequent reason, after malaria, for hospitalisation after return to the EU from abroad[1]. It should be noted that some overseas countries and territories (OCTs) that depend constitutionally on Member States are endemic for dengue, and some data are reported to TESSy, ECDC's European surveillance system.

Table 2.4.4. Number and rate of reported confirmed dengue fever cases in EU/EEA countries, 2008–10

Country	2010					2009		2008	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	11	11	0.13	0	0.00	0	0.00
Belgium	Y	A	129	129	1.19	53	0.49	60	0.56
Bulgaria	-	-	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-	-	-
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00
Finland	Y	C	50	50	0.93	35	0.66	35	0.66
France	Y	C	596	125	0.19	13	0.02	15	0.02
Germany	Y	C	595	595	0.73	298	0.36	273	0.33
Greece	Y	C	0	0	0.00	0	0.00	0	0.00
Hungary	Y	C	7	6	0.06	1	0.01	6	0.06
Ireland	Y	C	0	0	0.00	0	0.00	0	0.00
Italy	Y	C	51	51	0.09	10	0.02	12	0.02
Latvia	Y	C	8	8	0.36	1	0.04	0	0.00
Lithuania	Y	C	0	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	2	2	0.40	0	0.00	0	0.00
Malta	Y	C	1	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-
Poland	Y	C	6	0	0.00	0	0.00	0	0.00
Portugal	-	-	-	-	-	-	-	-	-
Romania	Y	C	0	0	0.00	0	0.00	1	0.01
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	8	8	0.39	4	0.20	6	0.30
Spain	Y	C	0	0	0.00	4	0.01	0	0.00
Sweden	Y	C	151	151	1.62	100	1.08	73	0.80
United Kingdom	Y	C	7	7	0.01	3	0.01	6	0.01
EU total	**-**	**-**	**1622**	**1143**	**0.25**	**522**	**0.11**	**487**	**0.11**
Iceland	Y	C	0	0	0.00	0	0.00	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**1622**	**1143**	**0.25**	**522**	**0.11**	**487**	**0.11**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; S: sub-national system only; Sen: Sentinel system data; —: No report; U: Unspecified.

The increasing trend in travel-related dengue in the EU increases the likelihood of onwards transmission from an imported viraemic patient, particularly in areas where the vector is established and where conditions are suitable for transmission, for example in Mediterranean EU countries[1-2]. In 2010, two indigenous cases of dengue fever were reported from metropolitan France (Nice), and one indigenous case of dengue fever was diagnosed in a returning traveller from Croatia[3-4]. Increased surveillance of dengue and its vector is essential, combined with increased vigilance among health professionals[5,6].

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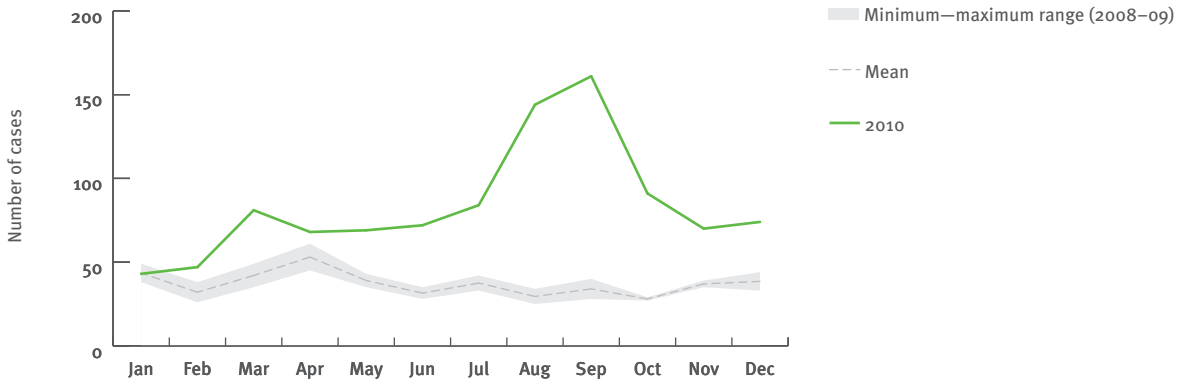
Figure 2.4.11. Seasonal distribution of reported confirmed cases of dengue fever in EU/EEA countries, 2008–10



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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	A	Y	N	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-VHF	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	-
Ireland	IE-NVRL	V	Co	P	C	Y	N	N	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	-	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-DENGUE	V	Co	A	C	Y	N	Y	Y	Y

Chikungunya fever

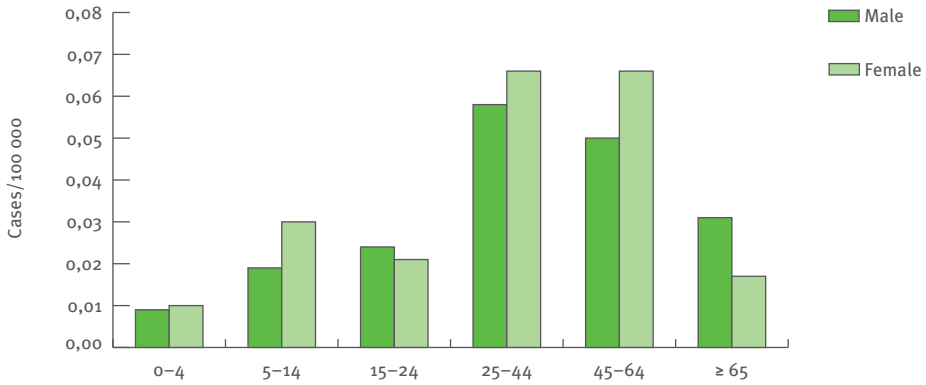
- 179 cases of chikungunya fever (56 confirmed) were notified by EU/EEA countries.
- Two cases of locally acquired chikungunya fever were reported in the EU, which highlights the need for vigilance among health professionals and the need for surveillance of the chikungunya fever vector(s) in the EU.

Chikungunya is a viral disease caused by an alphavirus of the *Togaviridae* family which is transmitted by *Aedes* mosquitoes to vertebrates. Chikungunya is present in most of Africa, the islands of the Indian Ocean and in south-east Asia. The most common clinical form is characterised by 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 EU level since 2008.

Epidemiological situation in 2010

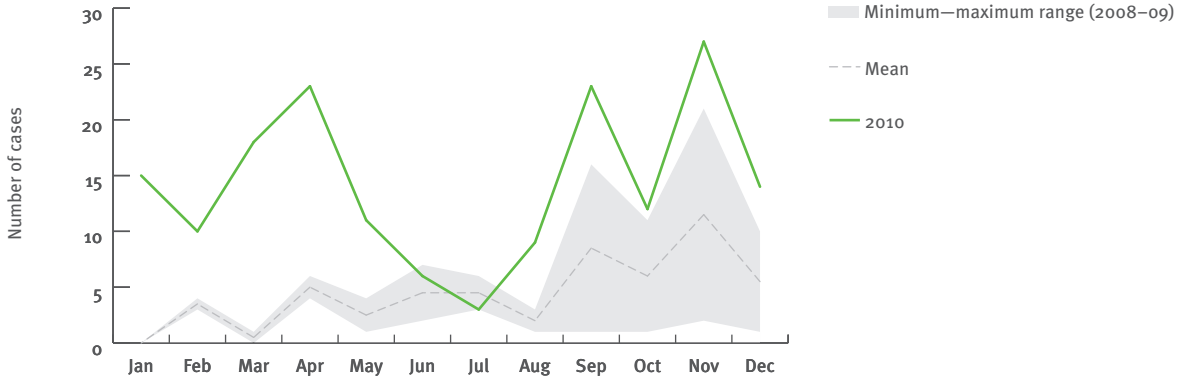
In 2010, 179 cases of chikungunya fever, 56 of which confirmed, were reported by eight of the 22 reporting EU/EEA countries (Table 2.4.4). No data were available from Bulgaria, Cyprus, Denmark, the Netherlands, Portugal, Iceland, Liechtenstein, and Norway. Cases were reported by Austria, Belgium, Finland, France, Germany, Italy, Ireland, and the United Kingdom. France and the United Kingdom only reported probable cases. Twenty-seven of the 44 cases reported by France went on record in Réunion, two cases were reported as locally acquired, whereas all remaining cases were imported (nine were of unknown origin)[1]. Information regarding the probable country of infection was not available.

Figure 2.4.12. Rates of reported confirmed chikungunya cases, by age and gender, EU/EEA countries, 2010



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, United Kingdom.

Figure 2.4.13. Seasonal distribution of reported confirmed cases of chikungunya fever in EU/EEA countries, 2008–10



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

Age and gender distribution

The reported rate[i] is identical in males and females (0.04 per 100 000 population). Most of the cases were identified in the age groups 25–44 and 45–64 years (0.06 cases per 100 000 in both age groups), probably because of travel preferences in these age groups (Figure 2.4.12).

Seasonality

Cases were mainly reported in April, September and November (Figure 2.4.13). The peak in April corresponds to cases reported by France, imported from Madagascar and Réunion, where an outbreak occurred in the spring of 2010.

i The reported case rate is calculated from all cases (confirmed and probable, as both are reportable) for which gender and age was indicated (see section on methods).

Discussion

Reported confirmed case numbers of chikungunya fever decreased compared with 2009, while the reported total case numbers actually increased (150 in 2009; 40 in 2008). Reported rates were highest among the 25–44 and 45–64 age groups. Outside continental Europe, some European overseas countries and territories are endemic for chikungunya, yet data are not collected through TESSy. However, an outbreak of chikungunya was reported in Madagascar and Réunion in the spring of 2010.

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 2008 and 2009, only imported cases of chikungunya were reported from EU/

Table 2.4.5. Number and rate of reported confirmed chikungunya fever cases in EU/EEA countries, 2008–10

Country	2010					2009		2008	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	2	2	0.02	8	0.10	0	0.00
Belgium	Y	A	8	8	0.07	6	0.06	0	0.00
Bulgaria	-	-	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-	-	-
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00
Finland	Y	C	1	1	0.02	3	0.06	0	0.00
France*	Y	C	44	0	0.00	13	0.02	1	0.00
Germany	Y	C	37	37	0.05	54	0.07	17	0.02
Greece	Y	C	0	0	0.00	0	0.00	0	0.00
Hungary	Y	C	0	0	0.00	0	0.00	0	0.00
Ireland	Y	C	1	1	0.02	0	0.00	0	0.00
Italy	Y	C	7	7	0.01	2	0.00	1	0.00
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-
Poland	Y	C	0	0	0.00	0	0.00	0	0.00
Portugal	-	-	-	-	-	-	-	-	-
Romania	Y	C	0	0	0.00	0	0.00	0	0.00
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	0	0	0.00	0	0.00	0	0.00
Spain	N	C	0	0	-	6	-	5	-
Sweden	Y	C	0	0	0.00	0	0.00	-	-
United Kingdom	Y	C	79	0	0.00	8	0.01	1	0.00
EU total	**-**	**-**	**179**	**56**	**0.01**	**100**	**0.02**	**25**	**0.01**
Iceland	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**179**	**56**	**0.01**	**100**	**0.02**	**25**	**0.01**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; S: sub-national system only; Sen: Sentinel system data; —: No report; U: Unspecified.
* Includes 27 cases from Réunion.

EEA countries. 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 in autumn[1].

Travel-related chikungunya in the EU might result in onwards transmission from an imported viraemic patient, particularly in areas where the vector is established and where conditions are suitable for transmission, for example in Mediterranean EU countries. Surveillance of chikungunya and its vector is an important measure to maintain vigilance among health professionals[3-5].

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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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-VHF	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-NVRL	V	Co	P	C	Y	N	N	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	-	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	-	-	-	-	-	-	-	-	-
Spain	ES-NRL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	-	-	-	-	-
United Kingdom	UK-CHIKUNGUYA	V	Co	A	C	Y	N	Y	Y	Y

West Nile fever

- A total of 200 confirmed cases of West Nile fever were reported across the EU/EEA in 2010.
- For two countries, Greece and Spain, 2010 marked the first year that autochthonous confirmed cases were reported.
- In countries with previous case reports, the number of cases was higher in 2010, with the exception of Italy.

West Nile fever is a disease caused by an arthropod-borne virus (genus *Flavivirus*) whose reservoir is wild birds and mosquitoes (mainly *Culex* mosquitoes). Transmission to humans occurs primarily through mosquito bites. West Nile fever is endemic in southeast Europe.

Epidemiological situation in 2010

Seven EU/EEA countries reported a total of 347 cases of West Nile fever in 2010, 200 of which were confirmed (Table 2.4.6). No data were reported from Austria, Bulgaria, Denmark, Iceland, Germany, Liechtenstein and Portugal. Three countries reported cases for the first time: Greece, where a large outbreak occurred in Central Macedonia (121 confirmed and 141 probable cases); Spain (two autochthonous cases); and the Netherlands (one imported case).

Table 2.4.6. Number and rate of reported confirmed West Nile fever cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	-	-	-	-	-	0	0.00	0	0.00	-	-	-	-
Belgium	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Bulgaria	-	-	-	-	-	-	-	0	0.00	0	0.00	-	-
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	-	-	-	-
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
France	Y	C	3	3	0.01	1	0.00	0	0.00	2	0.00	0	0.00
Germany	-	-	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	262	121	1.07	0	0.00	0	0.00	0	0.00	0	0.00
Hungary	Y	C	19	19	0.19	7	0.07	19	0.19	4	0.04	1	0.01
Ireland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Italy	N	C	3	3	-	18	-	3	-	0	-	-	-
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	-	-
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	-	-	-	-
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	1	0	0.00	0	0.00	0	0.00	0	0.00	-	-
Poland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	57	52	0.24	2	0.01	2	0.01	4	0.02	2	0.01
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Spain	Y	C	2	2	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Sweden	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
United Kingdom	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.00	1	0.00
EU total	**-**	**-**	**347**	**200**	**0.06**	**28**	**0.00**	**24**	**0.01**	**11**	**0.00**	**4**	**0.00**
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	**-**	**-**	**347**	**200**	**0.06**	**28**	**0.00**	**24**	**0.01**	**11**	**0.00**	**4**	**0.00**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; S: sub-national system only; Sen: Sentinel system data; —: No report; U: Unspecified.

The overall crude confirmed case rate was 0.06 per 100 000 population. Greece, Romania and Hungary accounted for 60.5%, 26.0% and 9.5% of the total number of confirmed cases, respectively. France and the Netherlands reported only imported cases. In addition, one imported case was reported from Hungary.

There was a very large increase (714%) in the number of reported confirmed cases compared with 2009. All countries reported more cases in 2010 than in 2009, with the exception of Italy (18 cases reported in 2009). Since 2006, numbers have been dramatically increasing (Figure 2.4.14).

In 2010, forty cases were reported to have died of West Nile disease: 34 in Greece, five in Romania and one in Hungary; the outcome was unknown for four cases.

Age and gender distribution

In 2010, information about age and gender was available for all confirmed cases of West Nile fever.

As in 2009, the highest notification rate of confirmed cases of West Nile fever was in the 65-year-old or older age group (0.19 cases per 100 000 population), followed by the 45–64-year-old age group (0.06 cases per 100 000). Only two cases (1%) were reported among children under the age of 15.

The overall rate was higher in men than in women (0.07 and 0.05 per 100 000 population, respectively), the male-to-female ratio was 1.4:1 (Figure 2.4.15).

Seasonality

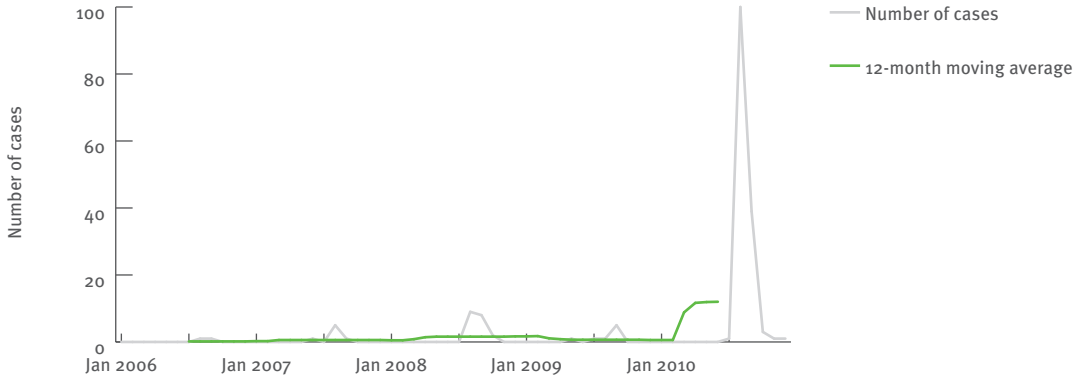
Most of the confirmed cases of West Nile fever (195) were reported between July and October, with a defined peak in August (113) and September (71). This seasonal pattern is consistent with observations from 2006 to 2009 and the period of higher activity of mosquito vectors.

Updates from epidemic intelligence in 2011

Between June and November 2011, ECDC monitored the West Nile fever situation during the transmission season in EU Member States and bordering countries. A total of 130 probable and confirmed autochthonous cases were detected in the EU; in neighbouring countries, 207 cases were reported.

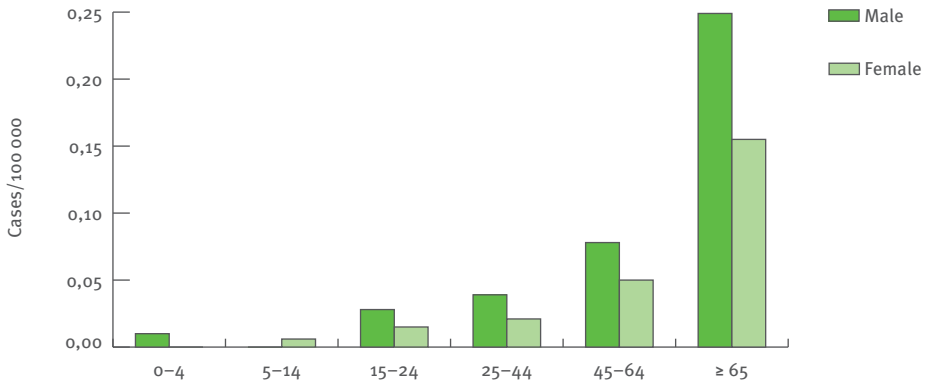
The cases reported in the EU included 69 confirmed and 31 probable cases from Greece, 14 confirmed and

Figure 2.4.14. Trend and number of reported confirmed West Nile fever cases in EU/EEA countries, 2006–10



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

Figure 2.4.15. Rates of reported confirmed West Nile fever cases, by age and gender, EU/EEA countries, 2006–10



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

two probable cases from Italy, 10 confirmed cases and one probable case from Romania, and three confirmed cases from Hungary. In the neighbouring countries, cases were notified in Albania (two), in the former Yugoslav Republic of Macedonia (four), in Israel (34), in the Russian Federation (153), in Tunisia (three), in Turkey (three), and in Ukraine (eight).

A detailed overview can be found on the ECDC website, complete with an epidemiological update summarising the West Nile fever season and the weekly ECDC West Nile risk maps[1].

Discussion

West Nile fever was first recognised in Europe in the 1960s[2] and then in 1996, when a large outbreak occurred in Romania[3]. Viruses of lineage 1 were the identified first in Europe, but viruses of lineage 2 have been reported in Europe since 2003 in birds[4] and, more recently, in *Cx. pipiens* mosquitoes[5].

Since the first large outbreak of West Nile fever in Romania, the disease has been recognised as a public health concern in Europe. In 2010, the number of confirmed cases of infection in humans in EU countries increased markedly to 200 (compared with 28 in 2009). Greece reported the highest number, and most of the cases occurred in Central Macedonia[6]. In Romania, small outbreaks were reported across the country; cases were also reported from Hungary, Italy and in Spain, the first time since 2004. At the same time, a large outbreak in humans was reported from Volgograd in Russia. Other cases were reported from Turkey. Infections in donkeys were confirmed in Bulgaria; horses were affected in Portugal and Morocco.

In 2011, a similar trend was observed. In Greece, the disease spread towards the western and southern part of the country (including Athens), and West Nile virus encephalitis in horses was – for the first time ever – identified in Greece. Italy experienced a growing geographical spread of the affected areas, with the first-ever case reports from Sardinia.

The increase of case reports can be partly explained by the substantial efforts made to strengthen the level of detection in the affected (or newly affected) countries. Health professionals (including blood safety authorities) were alert from the very beginning of the season, as were the stakeholders involved in animal and entomological surveillance.

The relevance of the presence of WNV lineages 1 and 2 in Europe still needs to be assessed. Continued close monitoring of the situation (in terms of human, veterinary and entomological surveillance) is required.

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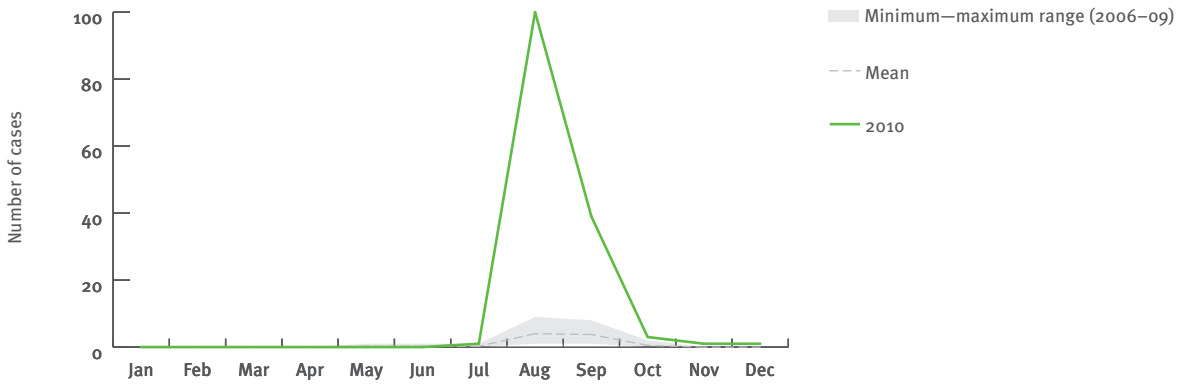
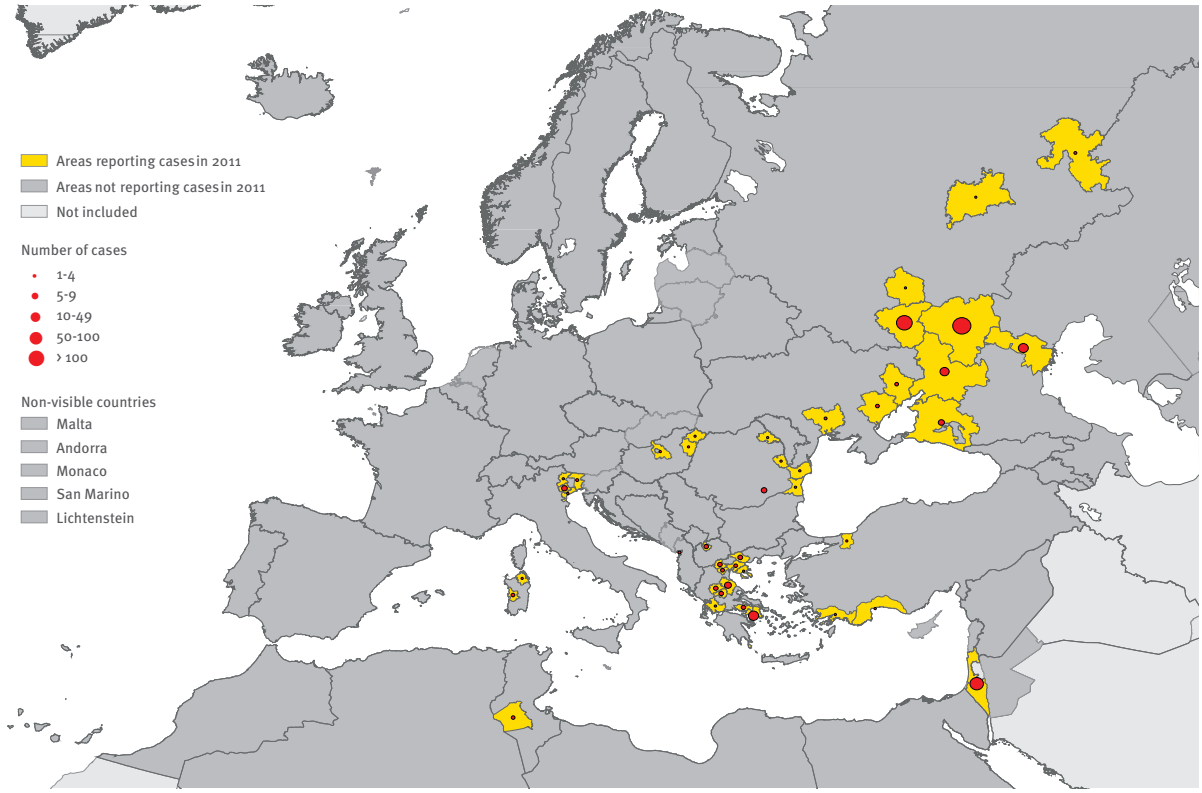
Figure 2.4.16. Seasonal distribution of reported confirmed cases of West Nile fever in EU/EEA countries, 2006–10



Source: Country reports from Belgium, Cyprus, Estonia, Finland, France, Greece, Hungary, Ireland, Latvia, Malta, Norway, Poland, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.4.17. Reported cases of West Nile fever in EU and neighbouring countries, 2011 transmission season



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
						Laboratories	Physicians	Hospitals	Others	
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Estonia	EE-VHF	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-WEST_NILE_VIRUS	V	Se	A	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-WNF	V	Co	P	C	Y	N	N	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	N
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	-	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-WEST_NILE_FEVER	V	Co	A	C	Y	N	Y	Y	Y

Yellow fever

Yellow fever is a viral infection that is present in some tropical areas of Africa and the central area of South America, where it has caused large outbreaks in the past. The virus is transmitted by mosquitoes which also act as an important reservoir. Monkeys and humans also act as reservoirs in the jungle yellow fever and the urban yellow fever cycles. Following the insect bite, most infections remain without symptoms. In case of disease, first symptoms are high fever and red eyes, then a second rise in temperature occurs, accompanied by signs of liver and kidney failure and bleedings (primarily intestinal). Up to 50% of cases with liver damage may die. No specific therapy is available.

A highly effective vaccine is available, providing immunity to 95% of vaccinated persons.

Epidemiological situation in 2010

No case of imported yellow fever was reported in 2010. Reports were received from 28 countries; there were no reports from Italy and Liechtenstein.

Updates from epidemic intelligence in 2011

In December 2010, an outbreak of yellow fever in northern Uganda was confirmed, with a total of 190 cases reported and 48 deaths (case-fatality rate 25%), affecting mainly males aged 20 to 34 years. Cases mostly presented with severe headache, fever, lethargy, abdominal pain, diarrhoea and vomiting, as well as with haemorrhagic signs. This was the first documented outbreak in the country since 1972. Mass vaccination, the single most important preventive measure, targeted 2.5 million residents in the northern districts of Uganda[1]. An update on travel advice and yellow fever prevention was issued.

Discussion

Yellow fever is a mosquito-borne disease which is endemic in Africa and in South America. Outbreaks in Eastern Africa are less frequent than in Western Africa and can be decades apart.

The disease can be prevented by a live-attenuated vaccine available which is effective, safe and provides protection for at least 10 years. Travellers in endemic countries might get their vaccine prophylaxis registered on an immunisation tracking card.

An update of yellow fever risk maps and recommendations for vaccination was published by an informal WHO working group[2]. An inactivated vaccine is currently under trial for patients for which the live vaccine is not suitable[3].

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2.5 Vaccine-preventable diseases

Diphtheria

- In 2010, 14 confirmed cases of diphtheria were reported across the EU, with a notification rate of <0.01 per 100 000 population. Most cases were reported in women aged 45 years and older. Diphtheria has been almost completely eradicated in Europe.
- Diphtheria remains prevalent in the countries of the former Soviet Union and occasional outbreaks still appear worldwide. Diphtheria can cause new outbreaks in Europe when population immunity is suboptimal. This underlines the need for maintaining high vaccination coverage through all age groups, including adult booster coverage.

Diphtheria is a respiratory infection, caused by *Corynebacterium diphtheriae*. Some strains are toxin-producing and can cause life-threatening illness. Diphtheria has become an extremely rare infection in Europe, due to universal childhood vaccination and regular boosters.

Epidemiological situation in 2010

For 2010, 29 EU/EEA countries provided diphtheria surveillance data. In total, 14 confirmed cases of diphtheria due to *C. diphtheriae* and *C. ulcerans* were reported for an overall notification rate of <0.01 per 100 000 population (Table 2.5.1). Three countries reported three *C. diphtheriae* cases in total: one indigenous case, caused by biotype gravis, was reported by Latvia, and one imported case each was reported by Germany and the United Kingdom. Diphtheria caused by *C. ulcerans* accounted for 11 cases: seven in Germany, two in France, and one each in Latvia and the United Kingdom.

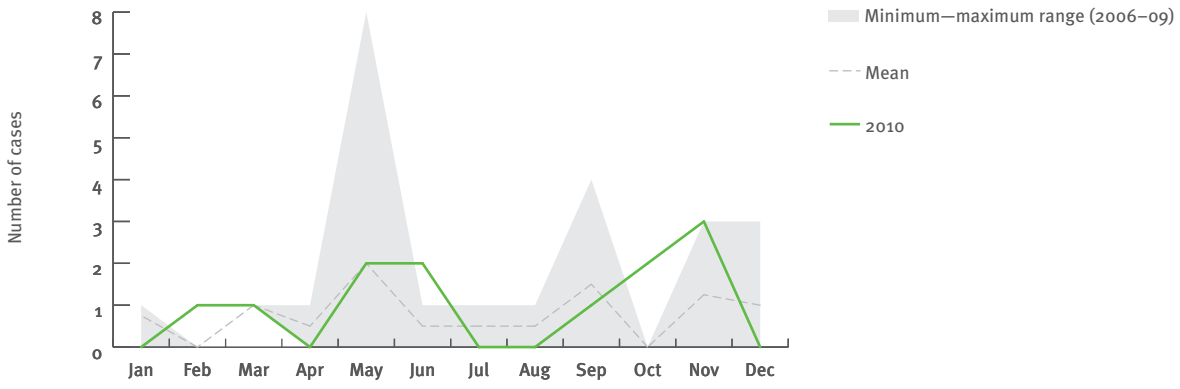
Seasonality

The small number of reported cases does not allow analysis of any seasonal variation. The cases in 2012 were reported in all seasons (Figure 2.5.1).

Age and gender distribution

Twelve of 14 confirmed cases of diphtheria were aged 45 years and older. The higher number of cases among

Figure 2.5.1. Trend and number of reported confirmed diphtheria cases in EU/EEA countries, 2006–10



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

45–64-year-olds could be attributed to a lower level of immunity in this age group. Ten of the 14 cases were female.

Discussion

Diphtheria, one of the major causes of morbidity and mortality in the past, has been nearly eliminated in EU/EEA countries. Indigenous transmission of diphtheria has decreased in recent years, most notably in Latvia where the notification rate dropped from 11.12 per 100 000 population in 2000[3] to 0.09 in 2010.

Since 2010, European diphtheria surveillance has been distinguishing between *C. diphtheriae* and *C. ulcerans*. Previously, these data were grouped together although the former pathogen is transmitted from human to human whereas the latter is zoonotic[1,2]. *C. ulcerans* infections were reported only by France, Germany, Latvia and the United Kingdom, perhaps suggesting a higher awareness of this pathogen in these countries.

Most cases of diphtheria occurred in women, possibly because women tend to interact more with their pets (*C. ulcerans*) and may have a lower vaccination coverage due to lack of routine vaccination associated with military service. The overrepresentation of reported cases in the age group 45 years and older suggests waning immunity in adults in the absence of booster doses[3,4]. However, a recent study carried out in Spain has shown that less than half of the study population born before 1975 were properly immunised against diphtheria[5].

Regular seroprevalence studies would be beneficial in the EU in order to identify and address gaps in population immunity against diphtheria. Diphtheria is still prevalent in Ukraine and Russia. In order to prevent future outbreaks of diphtheria in the EU, efforts must continue to shield immunisation programmes from budgetary constraints and maintain high diphtheria routine and booster vaccination coverage.

Table 2.5.1. Number and rate of reported confirmed diphtheria cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Belgium	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Bulgaria	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
France	Y	C	2	2	0.00	1	0.00	5	0.01	1	0.00	3	0.01
Germany	Y	C	8	8	0.01	4	0.01	0	0.00	2	0.00	0	0.00
Greece	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	-	-
Hungary	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Ireland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Italy	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Latvia	Y	C	2	2	0.09	5	0.22	28	1.23	15	0.66	32	1.40
Lithuania	Y	C	0	0	0.00	0	0.00	2	0.06	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Poland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Portugal	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Romania	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Spain	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	-	-
Sweden	Y	C	0	0	0.00	1	0.01	1	0.01	0	0.00	0	0.00
United Kingdom	Y	C	2	2	0.00	4	0.01	6	0.01	3	0.01	3	0.01
EU total	**-**	**-**	**14**	**14**	**0.00**	**15**	**0.00**	**42**	**0.01**	**21**	**0.00**	**38**	**0.01**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	0	0.00	4	0.08	0	0.00	0	0.00
Total	**-**	**-**	**14**	**14**	**0.00**	**15**	**0.00**	**46**	**0.01**	**21**	**0.00**	**38**	**0.01**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; S: sub-national system only; Sen: Sentinel system data; —: No report; U: Unspecified.

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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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-ANTH/CHOL/DIPH/MALA/SPOX/ TRIC/TULA/TYPH	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-DIPHTERIA	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	Y	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-DIPHTHERIA	O	Co	P	C	Y	N	Y	Y	Y

Invasive *Haemophilus influenzae* disease

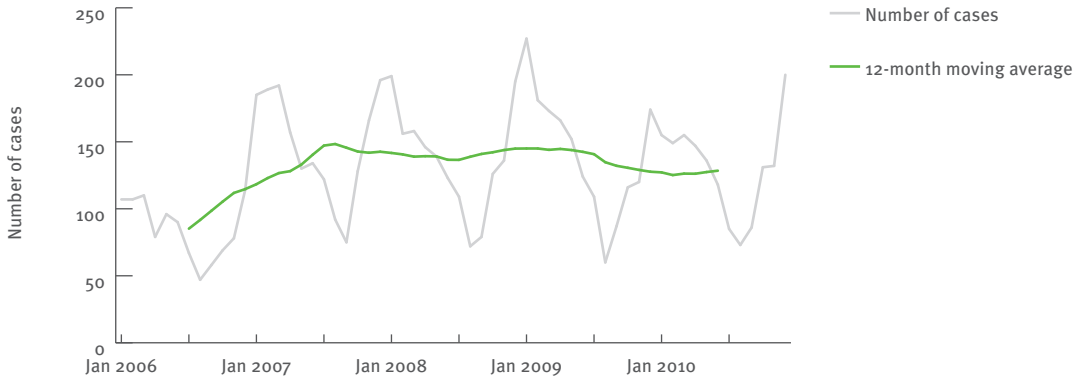
- The rate of confirmed cases of invasive *Haemophilus influenzae* disease in 2010 remains stable in the EU/EEA (0.41 per 100 000 population). The highest rates in the EU/EEA for 2010 were reported by Sweden and Norway.
- All EU Member States have the *Haemophilus influenzae* serotype b (Hib) vaccine included in their national immunisation schedule; routine vaccination continues to have an impact on the reduction of disease incidence due to serotype b. No serotype replacement has been observed so far.
- Routine Hib immunisation in early childhood is to be encouraged and promoted in order to maintain high coverage rates.

Invasive *Haemophilus influenzae* disease is a systemic infection caused by the bacterium *Haemophilus influenzae*. It often presents as meningitis. Between the late 1990s and 2009, all EU Member States have introduced routine Hib vaccination in their early childhood vaccination schedules and *Haemophilus influenzae* has become an uncommon disease.

Epidemiological situation in 2010

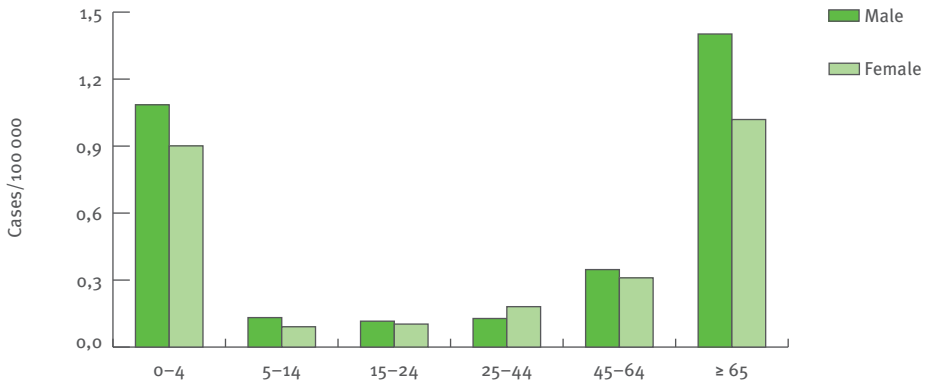
In 2010, 1970 confirmed cases of invasive *Haemophilus influenzae* disease (all serotypes) were reported by 29 countries (see Table 2.5.2), 27 of which have surveillance systems with national coverage. Spain and France reported data from sentinel surveillance.

Figure 2.5.2. Trend and number of reported confirmed invasive *Haemophilus influenzae* cases in EU/EEA countries, 2006–10



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

Figure 2.5.3. Rates of reported confirmed invasive *Haemophilus influenzae* disease cases, by age and gender, EU/EEA countries, 2006–10



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

The overall confirmed case rate was 0.40 per 100 000 population in 2010, very similar to the rates observed 2007–2009. The notification rate in 2006 was lower as only serotype b (Hib) was reported.

The highest rates in 2010 were reported by Sweden (1.92 per 100 000) and Norway (1.83), followed by the United Kingdom (1.00).

Age and gender distribution

Invasive *Haemophilus influenzae* disease was predominantly found in children younger than five years and in adults aged 65 years and older. The age-specific rate of confirmed cases in children under five years of age was 1.014 per 100 000 population. Adults aged 65 years or older had a rate of 1.17 per 100 000 population, with the highest rates reported by Norway (6.50 per 100 000), Sweden (6.33 per 100 000) and the United Kingdom (2.84 per 100 000). The gender-specific rate was 0.43 per 100 000 population for males and 0.39 for females, with a male to female ratio of 1.08:1.

Seasonality

The distribution of observed invasive *Haemophilus influenzae* cases follows a seasonal pattern, with the highest number of reported cases in the winter months, followed by a steady decrease until August and an increase towards a peak in December. The pattern follows the one established in 2006–09 (Figure 2.5.4).

Enhanced surveillance in 2010

The non-capsulated (non-typable) and non-b strains were the most frequently reported serotypes in 2010. The notification rates of these serotypes, however, remained stable compared with the previous years (Figure 2.5.5), and there are no indications of a serotype replacement from type b to non-capsulated (non-typable) strains.

Occurrence of serotype b infections has been constantly low in the EU since 2007, with a slightly decreasing trend in the reported rate.

Table 2.5.2. Number and rate of reported confirmed invasive *Haemophilus influenzae* disease cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed c ases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	2	2	0.02	14	0.17	5	0.06	4	0.05	7	0.09
Belgium	Y	C	64	64	0.59	76	0.71	49	0.46	55	0.52	-	-
Bulgaria	Y	A	10	10	0.13	15	0.20	14	0.18	19	0.25	-	-
Cyprus	Y	C	3	3	0.37	2	0.25	0	0.00	0	0.00	-	-
Czech Republic	Y	C	22	22	0.21	10	0.10	7	0.07	13	0.13	11	0.11
Denmark	Y	C	43	43	0.78	31	0.56	32	0.58	15	0.28	4	0.07
Estonia	Y	C	1	1	0.08	1	0.08	1	0.08	2	0.15	7	0.52
Finland	Y	C	40	40	0.75	47	0.88	45	0.85	54	1.02	32	0.61
France	Y	C	371	371	0.57	417	0.65	442	0.69	658	1.03	103	0.16
Germany	Y	C	224	224	0.27	199	0.24	160	0.20	93	0.11	55	0.07
Greece	Y	C	4	4	0.04	13	0.12	4	0.04	7	0.06	3	0.03
Hungary	Y	C	5	5	0.05	3	0.03	6	0.06	2	0.02	0	0.00
Ireland	Y	C	26	26	0.58	43	0.97	22	0.50	31	0.72	34	0.81
Italy	Y	C	69	69	0.11	56	0.09	50	0.08	33	0.06	23	0.04
Latvia	Y	C	0	0	0.00	1	0.04	1	0.04	0	0.00	-	-
Lithuania	Y	C	2	1	0.03	1	0.03	3	0.09	0	0.00	2	0.06
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.21	0	0.00
Malta	Y	C	2	2	0.48	3	0.73	0	0.00	1	0.25	-	-
Netherlands	Y	C	43	43	0.26	0	0.00	0	0.00	-	-	121	0.74
Poland	Y	C	25	25	0.07	19	0.05	28	0.07	39	0.10	19	0.05
Portugal	Y	C	10	10	0.09	8	0.08	5	0.05	16	0.15	17	0.16
Romania	Y	C	19	19	0.09	22	0.10	2	0.01	-	-	-	-
Slovakia	Y	C	3	3	0.06	5	0.09	4	0.07	6	0.11	0	0.00
Slovenia	Y	C	15	15	0.73	18	0.89	12	0.60	13	0.65	0	0.00
Spain	N	C	78	78	-	53	-	73	-	66	-	-	-
Sweden	Y	C	179	179	1.92	146	1.58	163	1.78	144	1.58	112	1.24
United Kingdom	Y	C	622	622	1.00	742	1.21	773	1.26	696	1.15	624	1.03
EU total	**-**	**-**	**1882**	**1881**	**0.40**	**1945**	**0.42**	**1901**	**0.40**	**1968**	**0.46**	**1174**	**0.29**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.33	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	89	89	1.83	71	1.48	75	1.58	83	1.77	73	1.57
Total	**-**	**-**	**1971**	**1970**	**0.41**	**2016**	**0.43**	**1976**	**0.42**	**2052**	**0.48**	**1247**	**0.30**

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

Discussion

Haemophilus influenzae disease has become uncommon in EU/EEA countries; incidence rates have been stable over the last few years[1].

Non-capsulated and non-b strains were the most frequently reported serotypes among known serotypes during 2007–10, with only slight yearly variations. Non-b serotypes occurred mainly in infants and the elderly.

Higher rates were observed, especially in northwestern countries, substantiating reports from the previous years. These findings are possibly due to improved case ascertainment, the implementation of enhanced surveillance systems, and increased awareness on the part of the doctors reporting the disease.

As in the previous years, the disease was predominantly reported in infants younger than five years old and in the oldest age group (65 years and older).

Absolute numbers and rates, as well as age distributions, should be viewed with caution as national surveillance systems differ geographically and vary over time. Caution must also be taken when analysing trends because surveillance methods were upgraded over the years to reflect the availability of new laboratory methodologies and improve comprehensiveness. In particular, most countries have adapted their surveillance systems to include all age groups and cover non-b and non-typable serotypes.

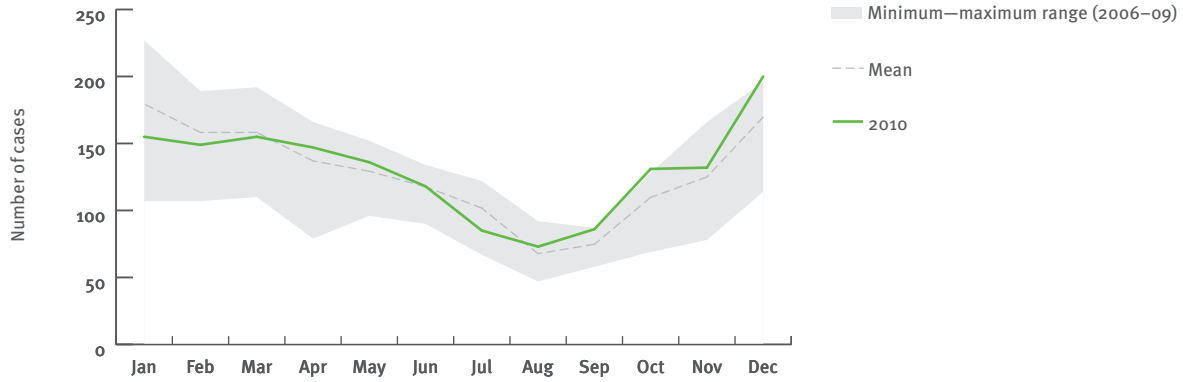
All in all, the disease is rare and the reported number of cases is relatively low, which explains that small changes in numbers may cause larger relative differences in notification rates, especially in small countries.

However, it is important that good Hib immunisation coverage is maintained, and perhaps increased, since the vaccine has proven to be effective and has led to a progressive reduction of b-serotype infections. There is no evidence so far of possible serotype replacement, and the vaccine has been added to many national immunisation schedules.

References

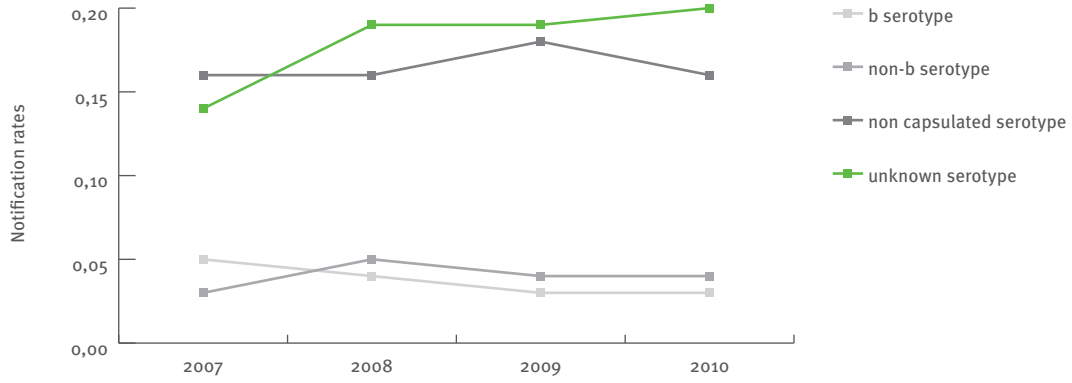
1. European Centre for Disease Prevention and Control. Surveillance of invasive bacterial diseases in Europe 2008/2009. Stockholm: ECDC; 2011.

Figure 2.5.4. Seasonal distribution of reported confirmed invasive *Haemophilus influenzae* disease cases in EU/EEA countries, 2006–10



Source: Country reports from Austria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Norway, Poland, Portugal, Slovakia, Slovenia, United Kingdom.

Figure 2.5.5. Confirmed case rates of invasive *Haemophilus influenzae* disease in EU/EEA countries with consistent reporting, by serotype and year, 2007–10 (n=5 340)



Source: Country reports from Austria, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Ireland, Malta, Italy, Norway, Poland, Portugal, Slovenia, Sweden, United Kingdom.

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-LABNET	V	Se	A	C	Y	N	-	-	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-HIB	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-EPIBAC	V	Se	A	C	Y	N	Y	N	Y
Germany	DE-SURVNET@RKI-7.1	Cp	Co	P	C	Y	N	N	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-MENINGITIS	Cp	Co	P	C	N	Y	Y	Y	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-HAEMOPHILUS_INFLUENZAE	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-HIB	O	Co	P	C	Y	N	Y	Y	-

Invasive meningococcal disease

- The confirmed case rate of invasive meningococcal disease remains low across Europe (0.73 per 100 000 population) and still appears to be decreasing, following a major decline from a peak of 1.9 per 100 000 in 1999; this is mainly due to the widespread introduction of meningococcal C (MenC) vaccine.
- Most invasive meningococcal infections are caused by serogroups B and C. Commonly used vaccines in Europe cover mainly serogroup C; however, a tetravalent (ACW135Y) conjugate vaccine has been available in the EU since 2010.
- Infants and children younger than five years of age are at the highest risk, followed by the 15–19-year-old age group.
- Detailed investigations need to be continued in order to explain the association between age group, geographical pattern, and the occurrence of meningococcal disease.

Invasive meningococcal disease (IMD) is an uncommon but severe and potentially life-threatening acute bacterial infection, appearing as meningitis or septicaemia. Rates have decreased by about one half after the introduction of a childhood vaccination against serogroup C. Despite modern diagnosis and treatment, case-fatality ratios have remained at about 7–8% over recent years. A marked reduction of cases has been reported since the introduction of the MenC vaccine in the national immunisation schedules of EU/EEA countries, but B is still the most prevalent serogroup.

Epidemiological situation in 2010

In 2010, 3711 confirmed cases of IMD were reported by 29 EU/EEA countries, with an overall notification rate of 0.73 per 100 000 population. Ireland, the United Kingdom and Lithuania reported the highest rates with 2.19, 1.63 and 1.44 per 100 000 population, respectively (Table 2.5.3). The reported rate of confirmed cases in EU/EEA countries declined from 1.06 per 100 000 population in 2006 to 0.73 per 100 000 in 2010.

Age and gender distribution

Children younger than five years of age continued to experience the highest rates of IMD (5.95 per 100 000 population), followed by those aged 15–24 years (1.22 per 100 000) (Table 2.5.4). The disease is very uncommon in older age groups.

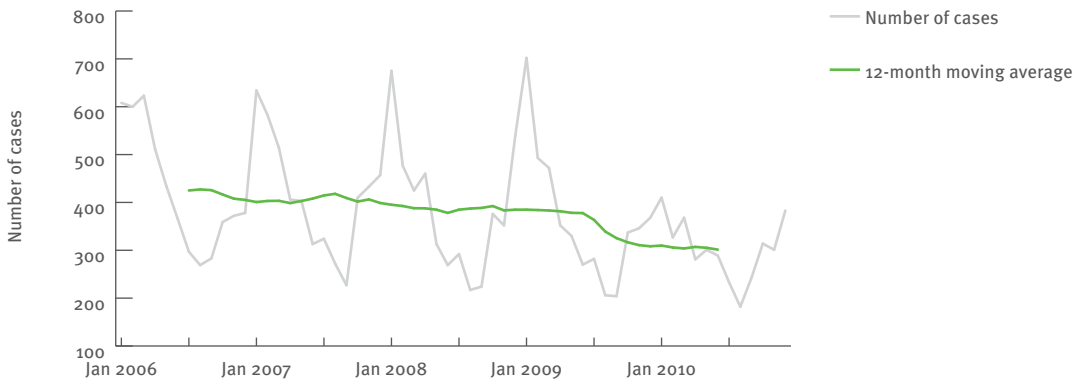
In the youngest age group (<5 years old), the reported rate was highest in Lithuania (20.71 per 100 000 population), Ireland (17.96) and the United Kingdom (14.04). The highest rates among 15–24-year-olds were reported by Iceland (4.27 per 100 000), Norway (3.35), and Denmark (2.95) (Table 2.5.4).

Rates among males (0.79 per 100 000) and females (0.69 per 100 000) were similar, with a slight preponderance in males (male-to-female ratio 1.15).

Seasonality

Information on seasonal distribution was available for 3710 cases. As in previous years, reported cases of IMD peaked in the winter months and declined by late summer (Figure 2.5.8).

Figure 2.5.6. Trend and number of reported confirmed invasive meningococcal disease cases in EU/EEA countries, 2006–10

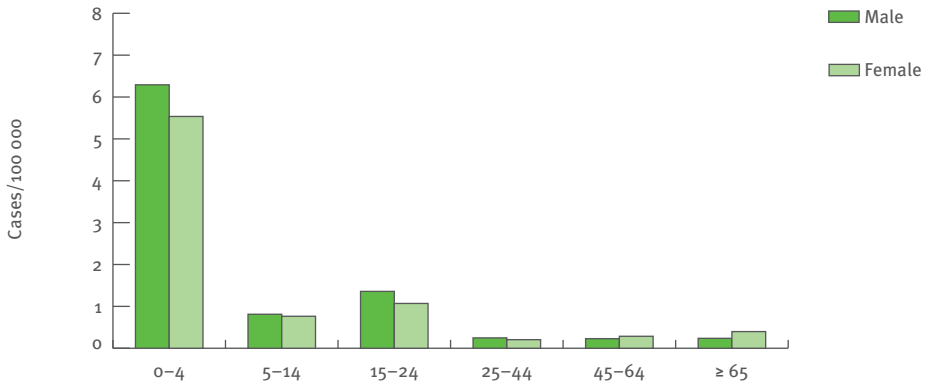


Source: Country reports: Austria, Belgium, Cyprus, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden.

Enhanced surveillance in 2010

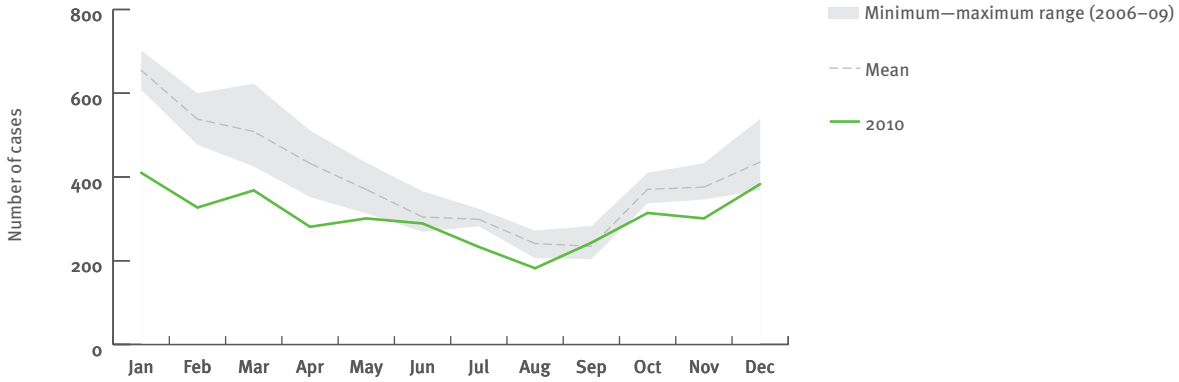
Figure 2.5.9 shows the trend of confirmed invasive meningococcal disease cases in EU/EEA countries from 2006–10. The reduction in the number of confirmed cases is mainly due to the decreasing incidence of serogroup B disease (from 0.72 per 100 000 population in 2007 to 0.51 per 100 000 population in 2010), whereas rates of the other serogroups did not change markedly

Figure 2.5.7. Rates of reported confirmed invasive meningococcal disease cases, by age and gender, EU/EEA countries, 2006–10



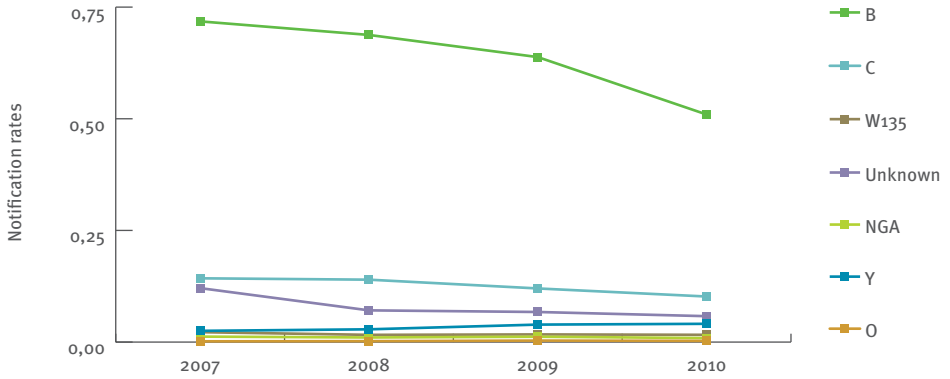
Source: Country reports from Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.5.8. Seasonal distribution of reported confirmed cases of invasive meningococcal disease in EU/EEA countries, 2006–10



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

Figure 2.5.9. Trend of reported confirmed invasive meningococcal disease cases by year of reporting and by serogroup, EU/EEA countries, 2007–10



Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.
B, C, W135, NGA, Y, O: serogroups.

over time. A slight reduction of the notification rate of serogroup C was observed (from 0.14 per 100 000 population in 2007 to 0.10 per 100 000 population in 2010).

Figure 2.5.10 shows that serogroup B is the prevalent serogroup at all ages, especially among children below four years of age. Serogroup C also presents the highest notification rate in children below four years of age (0.52 per 100 000 population).

Discussion

The reported incidence of confirmed cases of invasive meningococcal disease continues to decline in EU/EEA countries. This continues a decline that started around 2000 with the introduction of the MenC vaccine in the routine immunisation programmes of ten EU countries (notification rate in 1999: 1.90/100 000 population)[1].

Country-specific rates of confirmed IMD in 2010 ranged from 0.11 to 2.19 per 100 000 population. Some of these differences may be related to the presence of comprehensive vaccination programmes against serogroup C in some EU/EEA countries. Variations in reported rates may also reflect differences in surveillance systems and the methods used for confirming cases[3].

In the 15–25-year age group, the highest rates were reported by Iceland, Norway and Denmark; the high rates may be related to a peak in the normal cycle of meningococcal occurrence in the absence of a comprehensive vaccination programme, or to a cluster outbreak caused by a phenotype clone[3]. Detailed investigations of meningococcal disease need to be continued in order to explain the association between the disease occurrence in certain age groups and the geographical patterns. Strengthening surveillance of meningococcal disease is important to evaluate the impact of the current universal vaccination programmes and in view of the probable availability of vaccines against meningococcoccal disease caused by serotype B in the near future.

Table 2.5.3. Number and rate of reported confirmed invasive meningococcal disease cases in EU/EEA countries, 2006–10

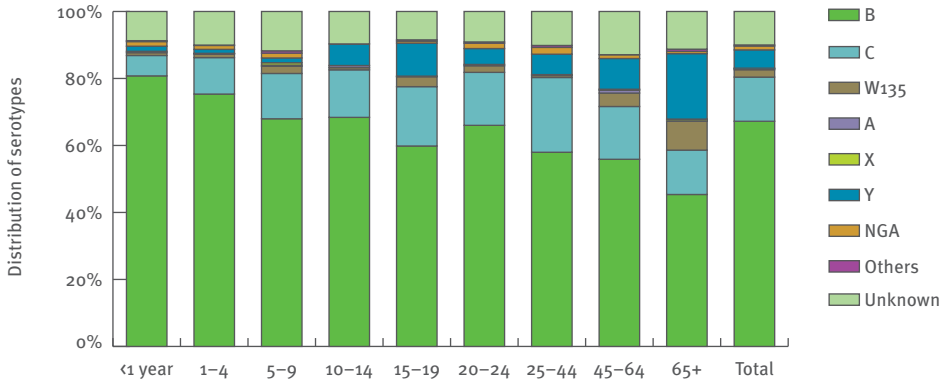
Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	85	85	1.02	89	1.07	84	1.01	61	0.74	68	0.82
Belgium	Y	C	96	96	0.89	104	0.97	110	1.03	158	1.49	137	1.30
Bulgaria	Y	A	16	8	0.11	16	0.21	20	0.26	24	0.31	39	0.51
Cyprus	Y	C	1	1	0.13	1	0.13	2	0.25	4	0.51	3	0.39
Czech Republic	Y	C	60	60	0.57	80	0.76	82	0.79	75	0.73	75	0.73
Denmark	Y	C	67	66	1.19	71	1.29	63	1.15	78	1.43	75	1.38
Estonia	Y	C	2	2	0.15	5	0.37	6	0.45	11	0.82	11	0.82
Finland	Y	C	34	34	0.64	33	0.62	28	0.53	43	0.82	45	0.86
France	Y	C	523	511	0.79	606	0.94	657	1.03	678	1.07	1245	1.97
Germany	Y	C	385	384	0.47	493	0.60	451	0.55	436	0.53	544	0.66
Greece	Y	C	56	55	0.49	77	0.68	78	0.70	106	0.95	98	0.88
Hungary	Y	C	37	37	0.37	37	0.37	30	0.30	43	0.43	32	0.32
Ireland	Y	C	114	98	2.19	134	3.01	152	3.45	162	3.76	173	4.11
Italy	Y	C	150	150	0.25	181	0.30	178	0.30	178	0.30	127	0.22
Latvia	Y	C	10	5	0.22	9	0.40	7	0.31	15	0.66	9	0.39
Lithuania	Y	C	50	48	1.44	39	1.16	48	1.43	50	1.48	44	1.29
Luxembourg	Y	C	1	1	0.20	3	0.61	2	0.41	2	0.42	2	0.43
Malta	Y	C	2	2	0.48	5	1.21	3	0.73	6	1.47	14	3.46
Netherlands	Y	C	143	143	0.86	150	0.91	162	0.99	195	1.19	171	1.05
Poland	Y	C	230	228	0.60	301	0.79	321	0.84	335	0.88	185	0.49
Portugal	Y	C	90	79	0.74	65	0.61	60	0.57	98	0.93	103	0.97
Romania	Y	C	64	52	0.24	102	0.47	104	0.48	145	0.67	114	0.53
Slovakia	Y	C	38	37	0.68	39	0.72	48	0.89	35	0.65	36	0.67
Slovenia	Y	C	9	9	0.44	15	0.74	24	1.19	18	0.90	8	0.40
Spain	Y	C	404	404	0.88	533	1.16	590	1.30	619	1.39	599	1.37
Sweden	Y	C	68	67	0.72	65	0.70	49	0.53	49	0.54	51	0.56
United Kingdom	Y	C	1046	1008	1.63	1190	1.93	1355	2.21	1522	2.50	1220	2.02
EU total	**-**	**-**	**3781**	**3670**	**0.73**	**4443**	**0.89**	**4714**	**0.95**	**5146**	**1.04**	**5228**	**1.06**
Iceland	Y	C	2	2	0.63	5	1.57	2	0.63	4	1.30	3	1.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	39	39	0.80	44	0.92	36	0.76	30	0.64	34	0.73
Total	**-**	**-**	**3822**	**3711**	**0.73**	**4492**	**0.89**	**4752**	**0.95**	**5180**	**1.04**	**5265**	**1.06**

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

References

1. European Centre for Disease Prevention and Control. Surveillance of invasive bacterial diseases in Europe 2008/2009. Stockholm: ECDC; 2011.
2. EU-IBIS Network. Invasive *Neisseria meningitidis* in Europe 2006. London: Health Protection Agency; 2006.
3. Magnus P, Brubakk O, Nyland H, Wold BH, Gjessing HK, Brandt I, et al. Vaccination as teenagers against meningococcal disease and the risk of the chronic fatigue syndrome. Vaccine 2009 1;27(1):23-7.

Figure 2.5.10. Rates of reported confirmed invasive meningococcal disease cases per 100 000 population, by age and by serogroups, EU/EEA countries, 2010



Source: Country reports from Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.
A, B, C, NGA, W135, X, Y: serogroups.

Table 2.5.4. Rates of reported confirmed invasive meningococcal disease cases per 100 000 population, by country and age group, EU/EEA countries, 2010

Country	Notification rate					
	0–4	5–14	15–24	25–44	45–64	≥ 65
Austria	7.13	1.17	2.74	0.29	0.36	0.27
Belgium	4.61	1.16	1.83	0.21	0.14	0.38
Bulgaria	-	-	-	-	-	-
Cyprus	0.00	0.00	0.84	0.00	0.00	0.00
Czech Republic	3.72	0.75	1.29	0.34	0.07	0.13
Denmark	6.75	0.74	2.95	0.14	0.47	1.11
Estonia	0.00	0.79	0.00	0.27	0.00	0.00
Finland	3.02	0.17	1.52	0.30	0.26	0.66
France	4.45	0.80	1.59	0.33	0.30	0.30
Germany	2.99	0.62	1.29	0.17	0.15	0.28
Greece	2.11	0.57	1.01	0.12	0.20	0.00
Hungary	2.66	0.30	1.12	0.13	0.08	0.06
Ireland	17.96	1.66	2.15	0.28	0.40	0.99
Italy	1.86	0.48	0.33	0.14	0.10	0.08
Latvia	1.75	0.00	0.00	0.16	0.17	0.00
Lithuania	20.71	1.49	0.59	0.32	0.12	0.37
Luxembourg	0.00	0.00	1.68	0.00	0.00	0.00
Malta	4.91	0.00	0.00	0.00	0.85	0.00
Netherlands	6.49	0.81	1.43	0.18	0.39	0.47
Poland	6.45	0.57	0.66	0.18	0.16	0.14
Portugal	7.12	1.19	0.59	0.19	0.18	0.53
Romania	1.75	0.42	0.20	0.03	0.23	0.13
Slovakia	5.71	1.45	0.51	0.24	0.35	0.00
Slovenia	4.88	0.54	1.26	0.00	0.00	0.00
Spain	7.52	1.09	1.03	0.30	0.36	0.43
Sweden	1.64	0.00	1.61	0.41	0.58	0.83
United Kingdom	14.04	1.33	1.84	0.39	0.55	0.74
EU total	**5.99**	**0.80**	**1.20**	**0.23**	**0.26**	**0.33**
Iceland	0.00	0.00	4.27	0.00	0.00	0.00
Liechtenstein	-	-	-	-	-	-
Norway	2.30	0.33	3.35	0.07	0.32	0.55
Total	**5.95**	**0.79**	**1.22**	**0.23**	**0.26**	**0.33**

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-MENINGOCOCC	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-MENINGITIS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-MENINGOCOCAL	Cp	Co	P	C	Y	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-MENINGOCOCCAL	O	Co	P	C	Y	N	Y	Y	Y

Invasive pneumococcal disease

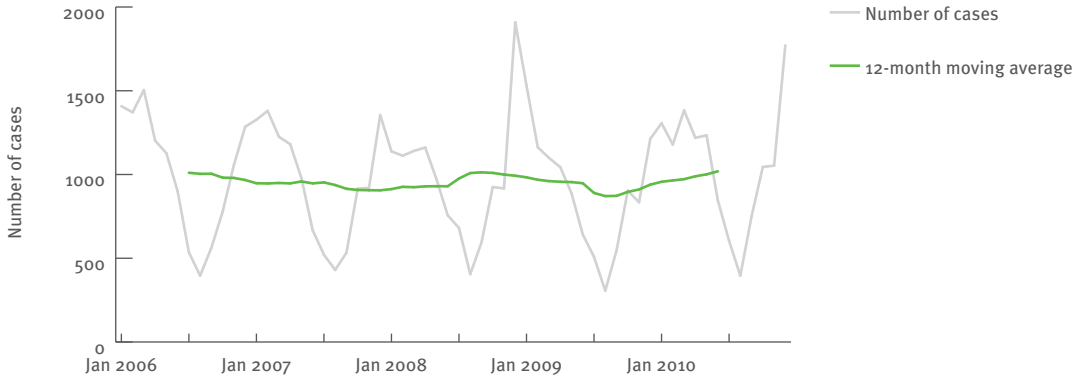
- The overall confirmed case rate of invasive pneumococcal disease (IPD) in 26 EU/EEA Member States was 5.22 per 100 000 population in 2010.
- IPD surveillance systems across Europe are heterogeneous. ECDC works together with the Member States to support harmonisation and standardisation of laboratory methods for diagnostics, characterisation (serotyping) and antimicrobial susceptibility testing of *S. pneumoniae*.
- Several studies point towards a replacement of serotypes included in pneumococcal conjugate vaccines and the emergence of antimicrobial-resistant strains.

Invasive pneumococcal disease is an acute and potentially life threatening disease caused by *Streptococcus pneumoniae*. Invasive disease encompasses severe syndromes including meningitis, septicemia, pneumonia/empyema, and bacteremia, and may lead to sequelae[1,2]. Children are at major risk, as are immunocompromised patients and the elderly. Globally, an estimated 1.6 million people, including one million children under five years of age, die of IPD annually[3].

Epidemiological situation in 2010

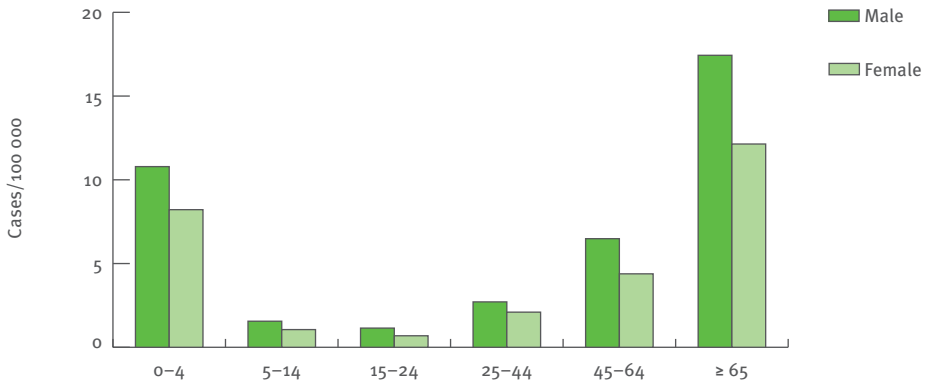
In 2010, 21565 cases were reported, resulting in an overall confirmed case rate of 5.22 per 100 000 population. The total number of reported cases has significantly increased in 2010 compared with 2009 (14 273 cases in 2009). Nevertheless, this increase should be interpreted cautiously: reporting improved in some

Figure 2.5.11. Trend and number of reported confirmed invasive pneumococcal disease cases in EU/EEA countries, 2006–10



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

Figure 2.5.12. Rates of reported confirmed invasive pneumococcal disease cases, by age and gender, EU/EEA countries, 2006–10



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

countries (i.e. Denmark, Spain), data reporting shifted to a different data source (the Czech Republic reports data from a national reference laboratory), and Iceland and France reported for the first time in 2010. Germany, Liechtenstein, Luxembourg and Portugal did not provide data. The highest rates were reported by Belgium (17.08 per 100 000), Denmark (17.35 per 100 000), Finland (15.62 per 100 000) and Sweden (15.59 per 100 000). Confirmed case rates were considerably higher in Nordic countries. Lithuania reported the lowest rate, followed by the Netherlands (Table 1).

There was no substantial change in the general trend of the rate of confirmed cases since 2006. However, the rate of confirmed cases slightly increased in 2010, most likely due to changes in surveillance and reporting (Figure 2.5.11). Compared with the previous year, there were increases in the confirmed case rates of invasive pneumococcal disease reported by Cyprus (1.13 in 2009 to 2.86 per 100 000 population in 2010), Denmark (from 2.34 to 17.35, most likely due to improvements in reporting), and the United Kingdom (from 8.15 to 9.05). Other countries display a decrease in comparison with 2009, namely Belgium, Finland, Norway, Slovenia and Sweden.

Despite the fact that the EU 2008 case definition[4] was applied in almost all Member States, country comparisons should be made with caution, given recent changes in the surveillance systems and improved disease reporting as a result of ECDC/Member States projects aimed at improved IPD surveillance (Table 2.5.5).

Age and gender distribution

The most affected age groups were the youngest (under five years old), with a case rate of 9.6 cases per 100 000 population, and the oldest (over 65 years old), with a confirmed case rate of 14.4 cases per 100 000 (Figure 2.5.12). A rate increase in this last group was observed, from 9.84 in 2009 to 14.4 in 2010.

Table 2.5.5. Number and rate of reported confirmed invasive pneumococcal disease cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Age standardised rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	325	325	3.88	3.77	296	3.54	133	1.60	361	4.36	141	1.71
Belgium	Y	C	1851	1851	17.08	16.11	2051	19.07	1875	17.58	1728	16.33	1484	14.12
Bulgaria	Y	A	26	26	0.34	0.00	46	0.61	35	0.46	39	0.51	1	0.01
Cyprus	Y	C	23	23	2.86	2.73	9	1.13	21	2.66	6	0.77	7	0.91
Czech Republic	Y	C	300	300	2.86	2.90	143	1.37	117	1.13	89	0.87	-	-
Denmark	Y	C	960	960	17.35	17.26	129	2.34	120	2.19	101	1.85	92	1.70
Estonia	Y	C	14	14	1.05	1.03	14	1.04	32	2.39	36	2.68	37	2.75
Finland	Y	C	836	836	15.62	15.08	855	16.05	925	17.45	791	14.99	747	14.21
France	Y	C	5117	5117	7.91	7.80	-	-	-	-	-	-	-	-
Germany	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	38	38	0.34	0.34	66	0.59	63	0.56	-	-	-	-
Hungary	Y	C	107	107	1.07	1.06	49	0.49	65	0.65	57	0.57	56	0.56
Ireland	Y	C	304	304	6.80	8.19	357	8.02	401	9.11	438	10.16	407	9.67
Italy	Y	C	854	854	1.42	1.30	738	1.23	694	1.16	-	-	-	-
Latvia	Y	C	16	16	0.71	0.67	7	0.31	7	0.31	4	0.18	0	0.00
Lithuania	Y	C	10	9	0.27	0.28	16	0.48	18	0.54	32	0.95	10	0.29
Luxembourg	-	-	-	-	-	-	-	-	0	0.00	2	0.42	0	0.00
Malta	Y	C	11	11	2.66	2.68	9	2.18	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	55	55	0.33	0.31	35	0.21	0	0.00	0	0.00	-	-
Poland	Y	C	333	333	0.87	0.89	274	0.72	212	0.56	250	0.66	196	0.51
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	80	80	0.37	0.38	122	0.57	0	0.00	-	-	-	-
Slovakia	Y	C	18	18	0.33	0.34	29	0.54	36	0.67	37	0.69	44	0.82
Slovenia	Y	C	224	224	10.94	10.73	253	12.45	204	10.15	192	9.55	13	0.65
Spain	Y	C	2212	2212	4.81	4.74	1339	-	1648	-	1428	-	2587	-
Sweden	Y	C	1456	1456	15.59	14.82	1618	17.48	1789	19.48	1441	15.81	1334	14.74
United Kingdom	Y	C	5616	5616	9.05	9.00	5019	8.15	5514	9.01	5624	9.25	5820	9.63
EU total	**-**	**-**	**20786**	**20785**	**5.09**	**5.00**	**13474**	**4.09**	**13909**	**4.15**	**12656**	**5.55**	**12976**	**5.93**
Iceland	Y	C	32	32	10.08	11.50	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	748	748	15.40	16.18	799	16.65	855	18.05	958	20.47	1006	21.68
Total	**-**	**-**	**21566**	**21565**	**5.22**	**5.12**	**14273**	**4.29**	**14764**	**4.37**	**13614**	**5.89**	**13982**	**6.34**

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

The confirmed case rate was slightly higher for males (6.0 per 100 000) than females (4.7 per 100 000). This difference was observed in all age groups, giving an overall male-to-female ratio of 1.3:1.

Seasonality

The seasonal distribution of cases of pneumococcal disease follows a pattern similar to that of other respiratory diseases. The lowest rates were observed during summer, increased rapidly with the onset of autumn and winter, and peaked in December – similar to the pattern observed in 2006–08 (Figure 2.5.13).

Enhanced surveillance 2010

In 2010, enhanced surveillance for IPD was put in place for the first time, and 24 EU/EEA countries reported data on serotyping for 9 946 isolates. The ten most common serotypes were 19A, 1, 7F, 3, 14, 22F, 8, 4, 12F and 19F (ordered by frequency), accounting for 59.8% of the typed isolates (Figure 2.5.29).

Data on antimicrobial susceptibility testing was submitted by 21 countries. Erythromycin was the antibiotic that presented the highest non-susceptibility (intermediate and resistant) proportion, followed by penicillin.

Multidrug resistance (resistance to three or more antibiotic classes) was observed in serotypes 19A, 14, 1, 19F and 23F.

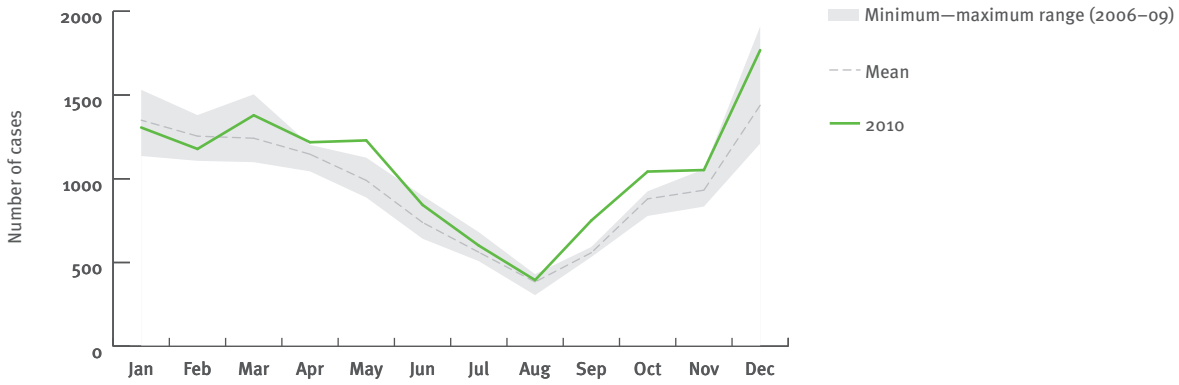
Discussion

The confirmed case rates varied widely across countries, ranging from 0.34 to 17.35 per 100 000, probably reflecting not only true variation in incidence between countries, but also significant differences in the national surveillance systems, diagnosis and medical practices (especially regarding blood culturing)[5-7].

The increase observed in the total number of reported cases compared to 2009 was due to the contribution of new countries, the implementation of the EU 2008 case definition in most of the Member States, and changes in data sources in a number of countries.

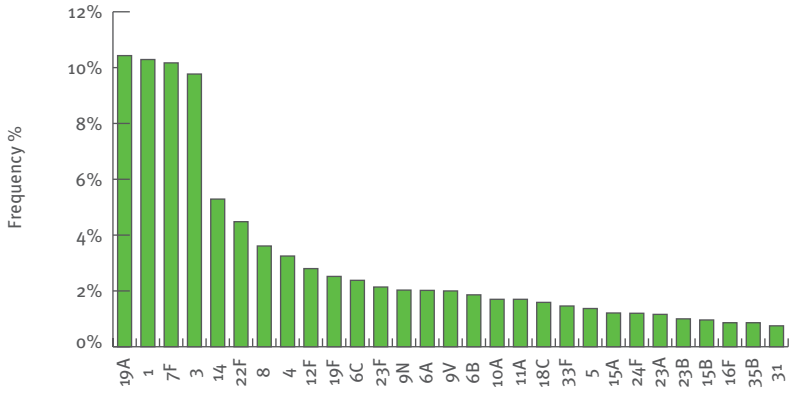
There is evidence that after the introduction of pneumococcal conjugate vaccines, invasive pneumococcal disease caused by vaccine serotypes has decreased. However, this decrease has been partially offset by the raise in non-vaccine serotypes and an upsurge of antimicrobial resistant strains[8-12]. Furthermore, with the recent

Figure 2.5.13. Seasonal distribution of reported confirmed cases of invasive pneumococcal disease in EU/EEA countries, 2006–10



Source: Country reports from Austria, Denmark, Finland, Hungary, Ireland, Malta, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.5.14. Serotype distribution of reported confirmed invasive pneumococcal disease cases, EU/EEA countries, 2010 (n=9 946)



Source: Country reports.

introduction of new conjugate vaccines (PCV13) in 2010 and 2011[13] in several national vaccination schedules, a similar decrease in the new vaccine serotypes (most likely 19A and 7F) may be observed. The continued monitoring of the relative prevalence of circulating serotypes and antimicrobial resistance in Europe will help assessing interventions and inform the development of new vaccines.

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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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-LABNET	V	Se	A	C	Y	N	N	N	N
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-NRL-STR	Cp	Co	A	C	Y	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-PNEUMOCOCC	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-EPIBAC	V	Se	A	C	Y	N	Y	N	Y
Greece	GR-Notification/Laboratory data	Cp	Co	P	C	Y	Y	Y	Y	Y
Hungary	HU-NRL_PNEU	V	Co	P	C	Y	N	N	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-PNEU	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-MENINGITIS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	Y	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	N	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-NRL	V	O	P	C	Y	N	Y	N	-
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-PNEUMOCOCCAL	O	Co	P	C	Y	N	Y	Y	Y

Measles

- The number of cases reported in 2010 increased compared with the previous years. A total of 32 480 confirmed cases were reported in 2010, with an overall rate of 5.87 cases per 100 000 population.
- Only two countries (representing about one per cent of the EU/EEA population) had not reported any cases over the last six years.
- Despite increased efforts, the number of reported cases remained high in 2011. Measles elimination remains a challenge in the WHO European Region. In September 2010, WHO European Region countries renewed their commitment to the elimination of indigenous transmission of measles by 2015[1].
- Public health priorities include a vaccination coverage of >95% (two doses), strengthened surveillance systems, and effective outbreak control[2].

Measles is a highly communicable disease caused by the measles virus. The disease is characterised by cough, coryza, fever, maculopapular rash, and Koplik spots. Patients usually recover, but serious complications of the respiratory tract and central nervous system may occur. The infectious agent is a measles virus which belongs to the genus *Morbillivirus* of the family *Paramyxoviridae*.

Epidemiological situation in 2010

In 2010, at total of 29 708 confirmed measles cases were reported (32 480 in total, including confirmed, possible and probable cases), with a confirmed case rate of 5.87 per 100 000 population (Table 2.5.6). Eight countries (the Czech Republic, Estonia, Hungary, Iceland, Latvia, Luxembourg, Malta, and Slovakia) reported zero cases in 2010, and 17 countries reported rates below one case per million inhabitants. Bulgaria was the most affected country, accounting for 74% (22 005) of confirmed cases in 2010. Several other countries reported an increase in the total number of reported cases (including France, Germany, Greece, Ireland, Italy, Romania, and Spain). The highest rates were reported by Bulgaria (290.93 per 100 000 population), Ireland (5.10 per 100 000), Italy (5.08 per 100 000) and France (4.14 per 100 000).

The total number of reported cases increased compared with previous years (2006–09) (Figure 2.5.15). Compared with 2009 (3 542 confirmed cases), an eightfold increase was observed. Only Iceland, Slovakia, and Slovenia have constantly reported zero cases since 2006.

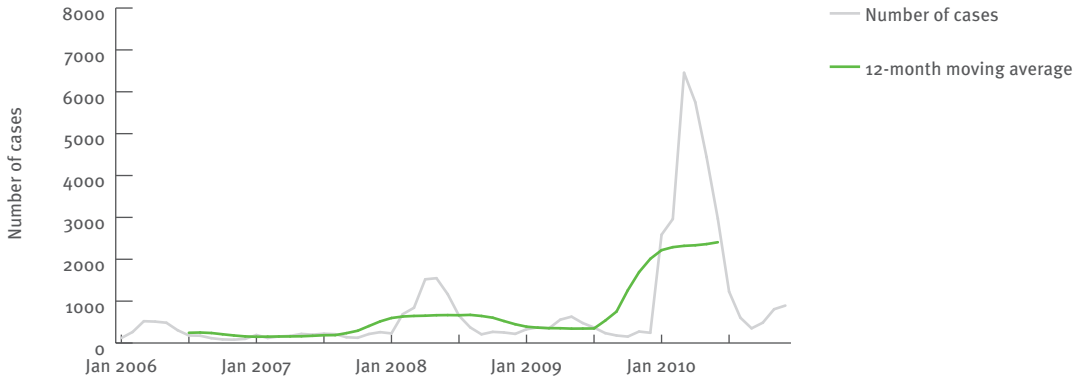
Age and gender distribution

Age was reported for 7 636 confirmed cases. The most affected age group was 0–4-year-olds (6.11 cases per 100 000), followed by 5–14-year-olds (3.36 per 100 000) and 15–24-year-olds (3.75 per 100 000). Gender was reported in 7 684 of all confirmed measles cases. No important differences in gender overall or within age groups were observed (Figure 2.5.15). The overall standardised rates were not calculated because Bulgaria, the most affected country, reported aggregate data based on different age groups brackets.

Seasonality

In 2010, as in previous years, a seasonal pattern was observed. Infection occurred primarily in late winter and early spring. The monthly distribution of cases from 2006 to 2010 is presented in Figure 2.5.18.

Figure 2.5.15. Trend and number of reported confirmed measles in EU/EEA countries, 2006–10



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

Enhanced surveillance in 2010

EUVAC.NET, the surveillance community network for vaccine-preventable infectious diseases, reported a total of 30 367 measles cases in EU/EEA countries in 2010[3]. Nineteen per cent of the cases were laboratory confirmed, three per cent epidemiologically linked, and 77% were clinically diagnosed. The importation status was available for 80% of the cases; of these measles cases, 217 were imported (3.2% of cases with known importation status). Vaccination status was known for 86% (7157) of all measles cases that were reported in a case-based format; 85% (6061) of these cases were unvaccinated. Data on hospitalisation was reported for 90% of all cases, with a total of 21877 (80%) hospitalised cases. A total of 21 measles-related deaths were reported by three countries: Bulgaria (18 deaths), France (two), and Romania (one).

Updates for epidemic intelligence 2011

In 2011, measles continued to afflict most EU/EEA countries and more than 30000 cases were reported (Figure 2.5.16). The number of reported measles cases in 2010 and 2011 in EU/EEA countries was three to eleven times higher than the number of cases reported per year between 2006 and 2009.

Figure 2.5.16. Rates of reported measles cases in EU/EEA countries, January to December 2011

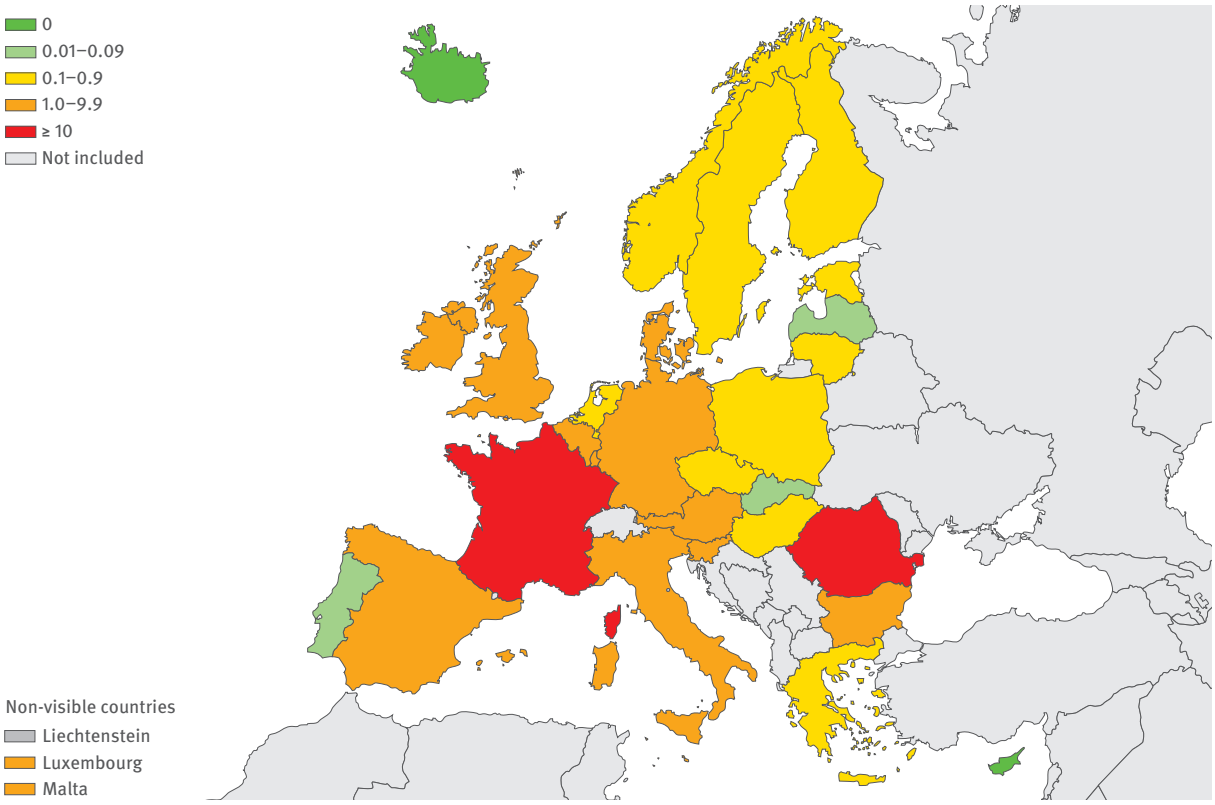
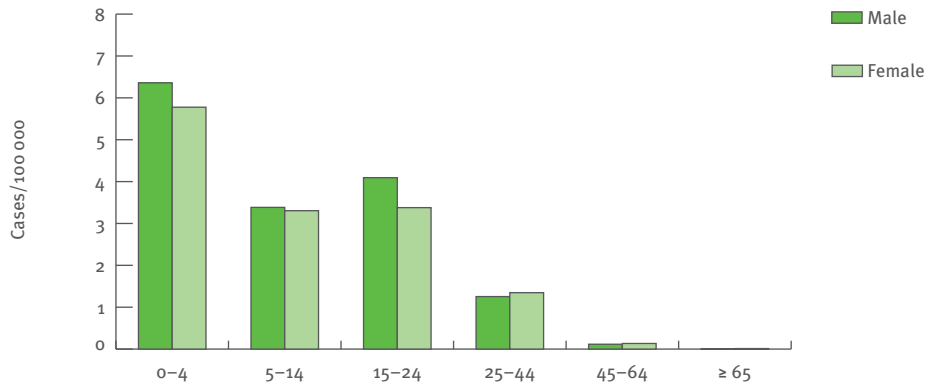


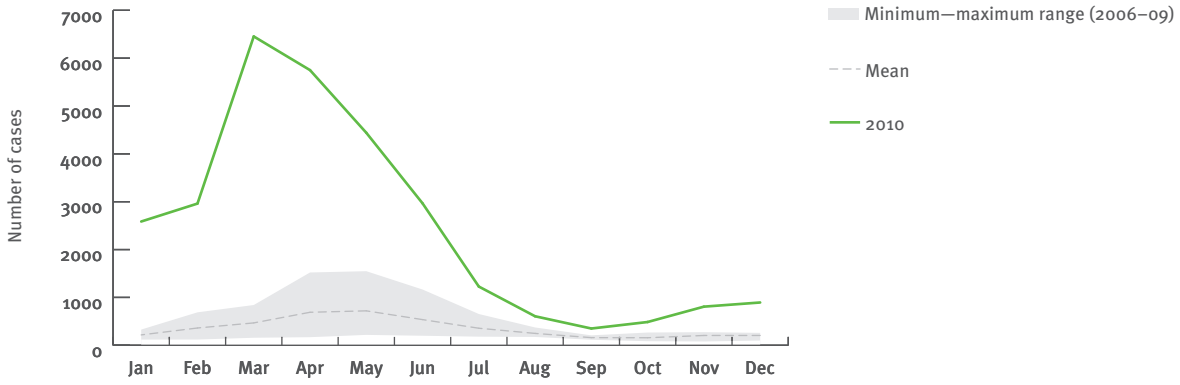
Figure 2.5.17. Rates of reported confirmed measles cases, by age and gender, in EU/EEA countries, 2010



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

Twenty-four of the 29 reporting countries recorded more cases in 2011 than in 2010, when the majority of cases were reported from Bulgaria. In 2011, five countries (France, Italy, Romania, Spain, and Germany) accounted for more than 90% of all cases. Only Cyprus and Iceland reported zero cases. Several countries reported

Figure 2.5.18. Seasonal distribution of reported confirmed cases of measles in EU/EEA countries, 2006–10



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

Table 2.5.6. Number and rate of reported confirmed measles cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Age standardised rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	56	15	0.18	0.19	28	0.34	157	1.89	16	0.19	15	0.18
Belgium	Y	C	40	30	0.28	0.28	24	0.22	38	0.36	14	0.13	8	0.08
Bulgaria	Y	A	22 005	22 005	290.93	0.00	696	9.15	1	0.01	1	0.01	1	0.01
Cyprus	Y	C	18	16	1.99	1.87	0	0.00	1	0.13	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0.00	5	0.05	2	0.02	2	0.02	7	0.07
Denmark	Y	C	5	4	0.07	0.07	8	0.15	12	0.22	2	0.04	26	0.48
Estonia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	1	0.07	27	2.01
Finland	Y	C	5	5	0.09	0.10	2	0.04	5	0.09	0	0.00	0	0.00
France	Y	C	5 019	2 677	4.14	4.05	886	1.38	305	0.48	25	0.04	17	0.03
Germany	Y	C	780	712	0.87	1.01	387	0.47	374	0.46	280	0.34	835	1.01
Greece	Y	C	149	92	0.81	0.87	1	0.01	1	0.01	0	0.00	214	1.92
Hungary	Y	C	0	0	0.00	0.00	1	0.01	0	0.00	0	0.00	1	0.01
Ireland	Y	C	403	228	5.10	3.98	100	2.25	10	0.23	14	0.33	23	0.55
Italy	Y	C	3 064	3 064	5.08	5.72	759	1.26	5 311	8.91	595	1.01	571	0.97
Latvia	Y	C	0	0	0.00	0.00	0	0.00	3	0.13	0	0.00	6	0.26
Lithuania	Y	C	2	2	0.06	0.06	0	0.00	1	0.03	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0.00	1	0.24	1	0.24	0	0.00	0	0.00
Netherlands	Y	C	15	13	0.08	0.08	14	0.09	50	0.31	10	0.06	1	0.01
Poland	Y	C	13	6	0.02	0.02	62	0.16	89	0.23	30	0.08	90	0.24
Portugal	Y	C	5	5	0.05	0.05	3	0.03	1	0.01	0	0.00	0	0.00
Romania	Y	C	188	180	0.84	0.87	7	0.03	11	0.05	344	1.60	2 830	13.10
Slovakia	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	2	2	0.10	0.09	0	0.00	0	0.00	0	0.00	0	0.00
Spain	Y	C	305	248	0.54	0.55	31	0.07	196	0.43	235	0.53	297	0.68
Sweden	Y	C	6	6	0.06	0.07	3	0.03	19	0.21	0	0.00	19	0.21
United Kingdom	Y	C	397	395	0.64	0.60	1154	1.87	1379	2.25	975	1.60	769	1.27
EU total	**-**	**-**	**32 477**	**29 705**	**5.93**	**1.60**	**4 172**	**0.84**	**7 967**	**1.60**	**2 544**	**0.51**	**5 757**	**1.17**
Iceland	Y	C	0	0	0.00	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	3	3	0.06	0.06	2	0.04	3	0.06	17	0.36	0	0.00
Total	**-**	**-**	**32 480**	**29 708**	**5.87**	**1.58**	**4 174**	**0.83**	**7 970**	**1.59**	**2 561**	**0.51**	**5 757**	**1.16**

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

substantial outbreaks: Belgium, Italy, Romania, France, Spain, Sweden, and the United Kingdom.

Discussion

The number of measles cases in EU/EEA countries increased in 2010 and 2011. In 2010, Bulgaria accounted for the majority of cases. In 2011, several EU countries reported substantial increases in cases and outbreaks. There is evidence that the majority of cases in 2010 were related to hard-to-reach populations in at least one country[4], whereas in 2011 measles affected mainly the general population of several countries[5].

Measles elimination remains a challenge in the WHO European Region. In September 2010, WHO European Region countries renewed their commitment to the elimination of indigenous transmission of measles by 2015[1]. Priority public health measures include improved coverage of vaccination programmes (>95% with two doses of vaccine), strengthened surveillance systems, and effective outbreak control[2].

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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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-PEDISURV	V	Se	A	C	Y	Y	Y	Y	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-MEASLES_POLIO	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-MEASLES	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	-	Y	N	N	-
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-Historical_EUVACNET	-	-	-	-	-	-	-	-	-
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-MEASLES	O	Co	P	C	Y	N	Y	Y	Y

Mumps

- Mumps is one of the vaccine-preventable viral diseases that continue to occur frequently across Europe: in 2010, the rate of confirmed cases was 1.98 per 100 000 population.
- As in previous years, the most affected age group was the 15–24-year-olds.
- The highest rates were reported from the Czech Republic, the United Kingdom, and the Netherlands.
- Enhanced surveillance data showed that 35% of cases were unvaccinated, 34% had received one dose, 26% had received at least two doses, and in five per cent the number of received doses was unknown.
- Breakthrough infections occurred in a significant number of cases, possibly due to waning immunity and reduced vaccine effectiveness against certain genotypes.

Mumps is an infection caused by the mumps virus of the genus *Paramyxovirus*. Serious complications are rare, but in addition to fever and parotitis, orchitis (in adolescent males) and pancreatitis are common symptoms. Rarely neurological symptoms and residual hearing loss may occur. Outbreaks continue to be a concern for public health. The vaccine is included in the primary vaccination schedule of all EU Member States.

Epidemiological situation in 2010

A total of 7 103 confirmed cases of mumps (total number of cases: 11 755) were reported in 2010 by 27 EU/EEA countries, with an overall confirmed case rate of 1.98 per 100 000 population. There has been a decrease in the rate of confirmed cases since 2006 (8.7 per 100 000 population).

The Czech Republic (9.45 per 100 000 population), the United Kingdom (7.07) and the Netherlands (2.56) reported the highest rates of confirmed cases. France, Germany, and Liechtenstein did not report.

Age and gender distribution

Age and gender were reported in 7 445 cases. Mumps occurred in all age groups, however adolescents between 15 and 24 years of age (9.2 per 100 000 population) were the most affected, followed by 5–14-year-olds (4.1) and 0–4-year-olds (2.9). Patterns varied among countries.

Of the 7 445 cases for whom gender information was reported, 4 012 cases (53.9%) were male and 3 288 (44.2%) female. Confirmed case rates were higher in males for all age groups, with the exception of cases aged 65 years or over. The male-to-female ratio was 1.21:1.

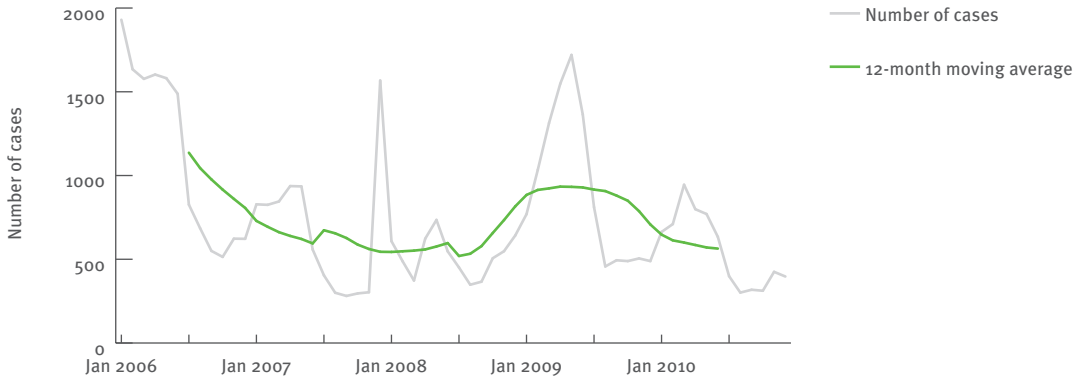
Seasonality

Information on seasonal distribution was available for 7 445 cases. In 2010, the seasonal pattern showed a peak in spring; 2010 also marked the lowest number of reported confirmed cases during the summer months since 2006. Contrary to other years, the winter of 2010 showed no significantly increased number of cases.

Enhanced surveillance in 2010

A total of 14 568 mumps cases in 27 countries (25 EU/EEA countries plus Croatia and Turkey) were reported through EUVAC.NET, the surveillance community network for vaccine-preventable infectious diseases in

Figure 2.5.19. Trend and number of reported confirmed mumps cases in EU/EEA countries, 2006–10



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

2010. Vaccination status was known for 9 014 reported mumps cases (reports from 25 countries). Of these, 3 130 (35%) were unvaccinated, 3 103 (34%) were vaccinated with one dose, 2 303 (26%) were vaccinated with at least two doses, and 478 (5%) were vaccinated with an unspecified number of doses.

In total, 338 (4%) reported cases were hospitalised in the 21 countries reporting on hospitalised cases; among those, 281 cases developed complications (reports on complications from 19 countries). The age and gender distribution of cases with complications and the outcome is not known[1].

Discussion

An overall decrease in the number of reported mumps cases was observed between 2006 and 2010: from 8.7 cases per 100 000 population to 1.98 per 100 000. However, high confirmed case rates were still observed in the Czech Republic, the United Kingdom and the Netherlands. In addition, several outbreaks were reported from the Netherlands[2], Germany[3] and Scotland[4].

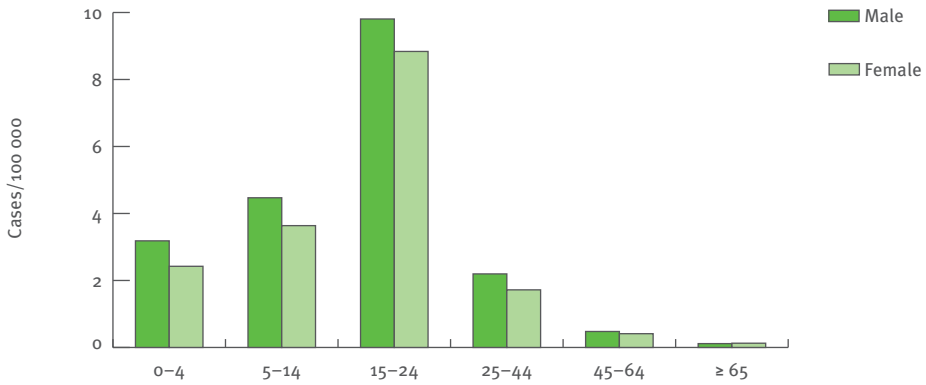
Mumps is increasingly reported in older age groups, e.g. in 15–24-year-olds. Waning immunity leading to secondary vaccine failure has been suggested as a reason for this shift[2].

Enhanced surveillance continues to show the high number of individuals with breakthrough infections after one or more doses of mumps-containing vaccine. A mismatch between the genotype of the circulating wild-type mumps virus and the vaccine strain may influence the efficacy of the vaccine[5].

Little is known about the severity of disease in the mainly affected age groups, but according to the literature on this topic, complications are more frequently reported in young adults than in children. In general, the clinical severity of the disease in previously vaccinated persons is lower than in non-vaccinated individuals[4].

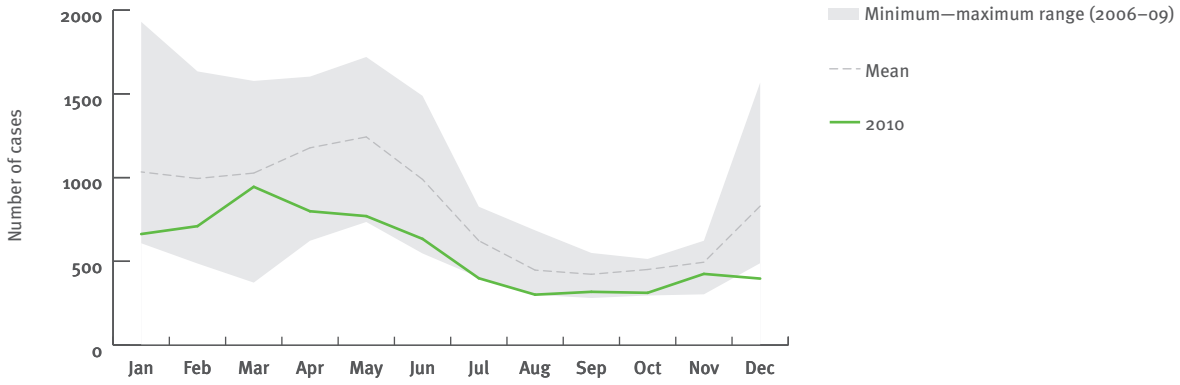
Further research into waning immunity to mumps virus and the genotype mismatch between the wild-type virus and the vaccine virus is needed in order to inform future immunisation programmes. Meanwhile, the importance

Figure 2.5.20. Rates of reported confirmed mumps cases, by age and gender, EU/EEA countries, 2010



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

Figure 2.5.21. Seasonal distribution of reported confirmed cases of mumps in EU/EEA countries, 2006–10



Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Italy, Lithuania, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

of maintaining a high coverage of MMR with two doses should be highlighted. Since all European countries use MMR vaccines in their national childhood immunisation programmes, mumps will benefit indirectly from the efforts made to reach the WHO measles elimination goal by 2015.

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Table 2.5.7. Number and rate of reported mumps cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Age standardised rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	15	15	0.18	0.19	14	0.17	22	0.26	7	0.09	227	2.75
Belgium	Y	A	30	30	0.28	0.00	43	0.40	50	0.47	68	0.64	35	0.33
Bulgaria	Y	D	317	26	0.34	-	185	2.43	1155	15.12	875	11.39	911	11.80
Cyprus	Y	C	2	2	0.25	0.24	3	0.38	3	0.38	5	0.64	0	0.00
Czech Republic	Y	C	1068	993	9.45	10.37	279	2.67	260	2.51	735	7.15	3969	38.72
Denmark	Y	C	32	32	0.58	0.60	17	0.31	24	0.44	12	0.22	11	0.20
Estonia	Y	C	13	0	0.00	1.02	11	0.82	14	1.04	18	1.34	17	1.26
Finland	Y	C	4	4	0.08	0.08	1	0.02	5	0.09	6	0.11	8	0.15
France	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	2	0	0.00	0.02	3	0.03	1	0.01	3	0.03	3	0.03
Hungary	Y	C	0	0	0.00	0.00	5	0.05	11	0.11	16	0.16	7	0.07
Ireland	Y	C	120	109	2.44	2.36	1381	31.03	698	15.86	69	1.60	209	4.97
Italy	Y	C	721	721	1.20	1.35	1103	1.84	1387	2.33	1312	2.22	1455	2.48
Latvia	Y	C	3	0	0.00	0.14	1	0.04	2	0.09	2	0.09	3	0.13
Lithuania	Y	C	87	0	0.00	2.61	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	-	-	-	-	-	-	25	5.07	26	5.37	0	0.00	0	0.00
Malta	Y	D	2	2	0.48	-	0	0.00	0	0.00	2	0.49	0	0.00
Netherlands	Y	C	424	424	2.56	2.67	31	0.19	7	0.04	0	0.00	-	-
Poland	Y	A	2754	3	0.01	0.00	1	0.00	0	0.00	0	0.00	20	0.05
Portugal	Y	C	140	11	0.10	0.11	9	0.09	15	0.14	48	0.45	34	0.32
Romania	Y	C	242	0	0.00	1.07	0	0.00	0	0.00	0	0.00	14671	67.89
Slovakia	Y	C	2	1	0.02	0.02	5	0.09	5	0.09	3	0.06	13	0.24
Slovenia	Y	C	5	2	0.10	0.11	3	0.15	13	0.65	9	0.45	4	0.20
Spain	Y	C	1351	315	0.69	0.73	185	0.40	1012	2.24	3147	7.08	1440	3.29
Sweden	Y	C	24	16	0.17	0.18	21	0.23	51	0.56	47	0.52	60	0.66
United Kingdom	Y	C	4383	4383	7.07	6.94	7946	12.90	2644	4.32	2702	4.45	6129	10.15
EU total	**-**	**-**	**11741**	**7089**	**2.00**	**2.50**	**11272**	**3.19**	**7405**	**2.11**	**9086**	**2.60**	**29226**	**8.82**
Iceland	Y	D	2	2	0.63	0.00	4	1.25	0	0.00	1	0.33	29	9.67
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	12	12	0.25	0.26	12	0.25	16	0.34	23	0.49	24	0.52
Total	**-**	**-**	**11755**	**7103**	**1.98**	**2.47**	**11288**	**3.15**	**7421**	**2.08**	**9110**	**2.57**	**29279**	**8.71**

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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Reflab	V	O	P	C	Y	N	N	N	Y
Belgium	BE-PEDISURV	V	Se	A	C	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-MUMPS	Cp	Co	P	C	N	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-MUMPS	Cp	Co	P	C	N	Y	N	N	-
Romania	RO-RNSSy	Cp	Co	P	A	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-MUMPS	O	Co	A	C	Y	N	Y	Y	Y

Pertussis

- The slight decrease in reported rates observed since 2008 continued in 2010. The overall confirmed case rate in 2010 was 3.87 per 100 000 population.
- Despite the availability of effective vaccines, an increase in pertussis cases was observed in many countries, particularly among older children, adolescents and adults.
- Pertussis can present as a mild disease and is frequently not diagnosed. Infants too young to have received three doses of the pertussis-containing vaccine can be infected by siblings, parents, grandparents and caregivers that may not be aware they have the disease[1].
- Vaccination and control strategies rely on factors such as increasing awareness among the public and health professionals, optimising diagnostic methods, and improving surveillance systems.

Pertussis (whooping cough) is a highly contagious acute respiratory infection caused by the bacterium *Bordetella pertussis*. Patients develop catarrhal symptoms including cough. In the course of 1–2 weeks, coughing paroxysms ending in a characteristic 'whoop' sound may occur. Pertussis is an endemic disease, with sporadic outbreaks, and epidemic peaks occurring every two to five years. It is often not diagnosed and occurs with increasing frequency in older children and adults, who may pass the infection to vulnerable younger children who may be severely affected by the disease.

Epidemiological situation in 2010

In 2010, 13 964 confirmed cases (total number of cases: 15 446) were reported by 28 EU/EEA countries. Germany and Liechtenstein did not report. The overall confirmed case rate remains low with 3.87 per 100 000, slightly decreasing over the previous years (Table 2.5.14 and Figure 2.5.22).

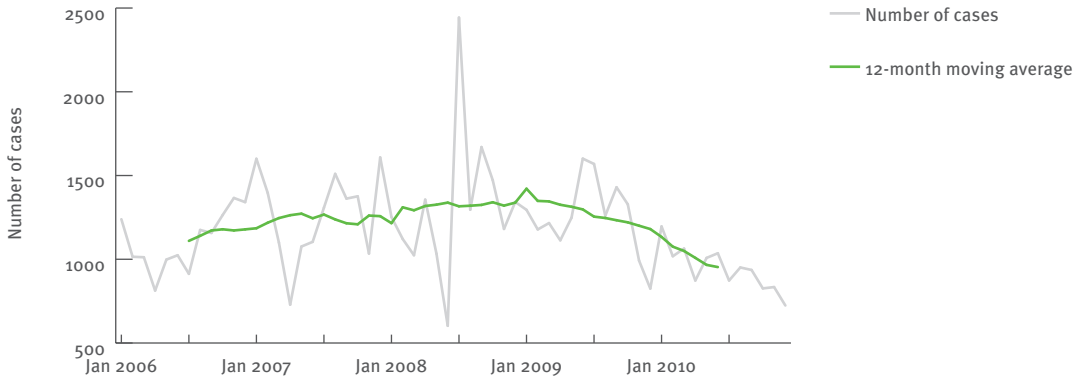
Estonia reported the highest confirmed case rate with 95.44 per 100 000 population; Norway and Slovakia followed with 73.28 and 25.36 per 100 000, respectively. Increases in confirmed case rates were reported by Austria (0.02 in 2009 to 2.82 in 2010), Estonia (46.93 in 2009 to 95.44 in 2010), Slovakia (5.32 in 2009 to 25.36 in 2010) and Spain (0.28 in 2009 to 0.66 in 2010), while Belgium, Bulgaria, France, Italy, Lithuania, the Netherlands, Portugal, Norway and the United Kingdom reported a decrease.

The Netherlands reported the highest total number of cases (n=3 733), representing 24% of the total EU/EEA reported number of cases, followed by Norway (n=3 560, 23%) and Slovakia (n=1 376, 9%). Cyprus, Iceland and Luxembourg reported zero cases.

Age and gender distribution

As in previous years, the most affected group was the 5–14-year-olds, with a confirmed case rate slightly above 11 per 100 000 population (Figure 2.5.22). This was the most affected age group in those countries that reported the highest confirmed case rates, mainly northern countries. For most of the remaining countries, the most affected group were young children under five years of age, with a confirmed case rate of 8 per 100 000 population. Overall, females (4.2 per 100 000) were slightly more often affected than males (3.7 per 100 000) across all age groups, with a male-to-female ratio of 0.87:1.

Figure 2.5.22. Trend and number of reported confirmed pertussis cases in EU/EEA countries, 2006–10



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

Seasonality

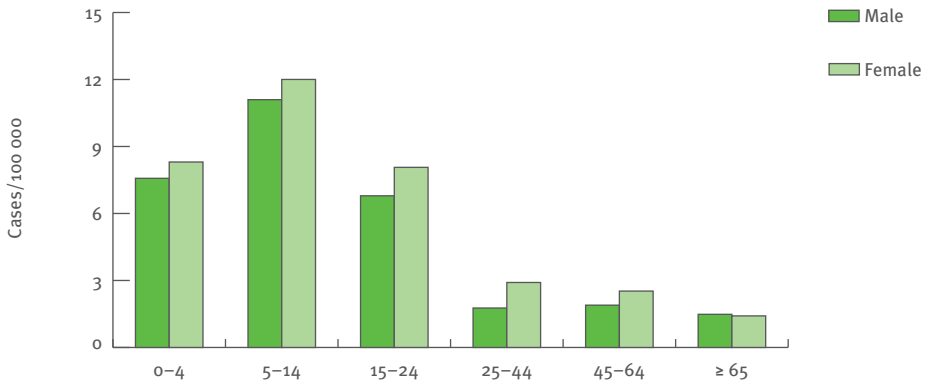
Pertussis cases occur all year round. In 2010, reported pertussis cases did not display any seasonal pattern (Figure 2.5.24).

Discussion

Rates of reported confirmed cases vary widely among countries, ranging from 0.12 to 95.4 per 100 000 population. Northern countries (Estonia, Norway, the Netherlands and Finland) and central European countries (Slovakia and Slovenia) show higher confirmed case rates than the rest of Europe. The most affected age group in these countries are 5–14-year-old children and adolescents. Austria, Belgium, Finland, France, Germany, Norway and Italy have introduced adolescent boosters in their vaccination schedules[2,3], Sweden will follow in 2016. In 2010, several outbreaks were reported in Europe, involving only a small numbers of cases[4,5].

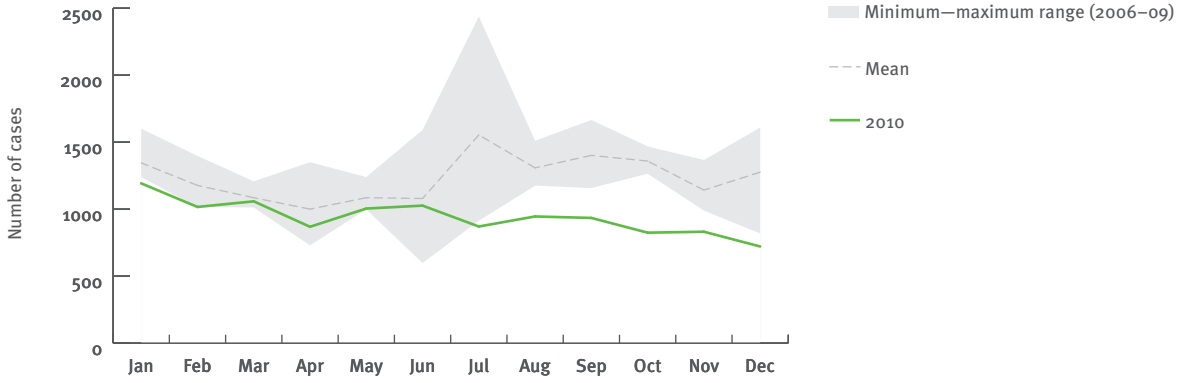
Comparisons between countries should be made with caution. Notwithstanding real differences in disease incidence, the variation in rates in different countries may in part be related to different vaccination policies, but also to different levels of awareness towards the clinical presentation of the disease (that is very often not recognised as pertussis), differences in reporting procedures and surveillance systems, the case definition in use, and the different methods for laboratory confirmation[3,6,7]. Waning immunity[8], changing epidemiology and emergence of antigenically different[9] and more virulent strains[10] are aspects that require further monitoring.

Figure 2.5.23. Rates of reported confirmed pertussis cases, by age and gender, EU/EEA countries, 2010



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

Figure 2.5.24. Seasonal distribution of reported confirmed cases of pertussis in EU/EEA countries, 2006–10



Source: Country reports from Cyprus, Czech Republic, Denmark, Greece, Hungary, Iceland, Ireland, Italy, Netherlands, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

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Table 2.5.8. Number and rate of reported confirmed pertussis cases in EU/EEA countries, 2006–10

Country	2010						2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population			Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Age standardised rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	236	236	2.82	2.87	2	0.02	175	2.10	136	1.64	78	0.95
Belgium	Y	A	100	100	0.92	0.00	160	1.49	174	1.63	214	2.02	197	1.87
Bulgaria	Y	D	54	22	0.29	-	133	1.75	130	1.70	235	3.06	335	4.34
Cyprus	Y	C	0	0	0.00	0.00	5	0.63	3	0.38	9	1.16	3	0.39
Czech Republic	Y	C	661	656	6.24	7.09	953	9.10	763	7.35	184	1.79	233	2.27
Denmark	Y	C	78	78	1.41	1.24	91	1.65	106	1.94	94	1.73	54	1.00
Estonia	Y	C	1295	1279	95.44	96.54	629	46.93	485	36.17	409	30.47	153	11.38
Finland	Y	C	343	343	6.41	6.44	267	5.01	511	9.64	480	9.10	536	10.20
France	N	C	50	50	-	-	82	-	55	-	61	0.10	125	0.20
Germany	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	64	55	0.49	0.51	16	0.14	10	0.09	6	0.05	5	0.05
Hungary	Y	C	25	25	0.25	0.25	31	0.31	33	0.33	48	0.48	17	0.17
Ireland	Y	C	114	45	1.01	0.74	61	1.37	71	1.61	47	1.09	38	0.90
Italy	Y	C	385	385	0.64	0.72	638	1.06	336	0.56	795	1.34	836	1.42
Latvia	Y	C	9	6	0.27	0.32	1	0.04	7	0.31	15	0.66	10	0.44
Lithuania	Y	C	19	16	0.48	0.46	233	6.96	51	1.52	17	0.50	4	0.12
Luxembourg	Y	C	0	0	0.00	0.00	1	0.20	2	0.41	4	0.84	0	0.00
Malta	Y	D	2	2	0.48	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	3733	3733	22.52	22.22	5751	34.89	8557	52.16	7185	43.92	4174	25.55
Poland	Y	C	1266	573	1.50	1.53	1056	2.77	1272	3.34	1667	4.37	1368	3.59
Portugal	Y	C	14	13	0.12	0.13	63	0.59	68	0.64	20	0.19	21	0.20
Romania	Y	C	29	29	0.14	0.14	10	0.05	46	0.21	2	0.01	14	0.07
Slovakia	Y	C	1378	1376	25.36	24.19	288	5.32	99	1.83	21	0.39	21	0.39
Slovenia	Y	C	611	371	18.12	21.14	351	17.27	162	8.06	533	26.51	446	22.26
Spain	Y	C	714	305	0.66	0.67	126	0.28	200	0.44	151	0.34	102	0.23
Sweden	Y	C	263	263	2.82	2.77	279	3.01	459	5.00	690	7.57	795	8.79
United Kingdom	Y	C	443	443	0.71	0.71	852	1.38	1051	1.72	65	0.11	3	0.01
EU total	**-**	**-**	**11886**	**10404**	**2.92**	**3.06**	**12079**	**3.40**	**14826**	**4.20**	**13088**	**3.17**	**9568**	**2.33**
Iceland	Y	C	0	0	0.00	0.00	0	0.00	1	0.32	2	0.65	3	1.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	3560	3560	73.28	71.56	5544	115.52	3887	82.05	5373	114.78	6587	141.96
Total	**-**	**-**	**15446**	**13964**	**3.87**	**4.05**	**17623**	**4.89**	**18714**	**5.23**	**18463**	**4.42**	**16158**	**3.89**

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

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Belgium	BE-REFLAB	V	Co	P	C	Y	N	N	N	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-PERTUSSIS/SHIGELLOSIS/SYPHILIS	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	N	N	N	Y
France	FR-RENACOQ	V	Se	A	C	Y	Y	Y	N	N
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	-	Y	N	N	-
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-PERTUSSIS	Cp	Co	P	C	N	Y	N	N	-
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-PERTUSSIS	O	Co	P	C	Y	N	Y	Y	Y

Polio

- The WHO European Region was declared polio-free in 2002; neither wild-type nor vaccine-type associated poliomyelitis cases were reported in EU/EEA countries in 2010.
- An outbreak of polio in Tajikistan in 2010 did not compromise the polio-free status of the WHO European Region.
- Inactivated poliovirus vaccines are used in all EU/EEA countries, except Poland, where live-attenuated vaccines are still used for the fourth dose.
- Persistent pockets of wild-type and vaccine-type poliovirus transmission were reported from several African and Asian countries in 2011.
- Imported wild-type and vaccine-type polioviruses still remain a threat to unvaccinated European populations. Maintaining high coverage and continued clinical and environmental surveillance remain the most important tools for keeping Europe polio-free.

Poliomyelitis is caused by polioviruses (serotype 1–3); humans are the only reservoir of infection. Infected people may be asymptomatic or develop more severe symptoms such as meningitis or paralysis, which may result in death or in permanent disability.

Inactivated poliovirus vaccines containing all three serotypes are offered in all EU/EEA countries except Poland, where the fourth dose of vaccination is offered with the oral-attenuated formulation (OPV). Current immunisation programmes provide an excellent immune response.

Polio disease may result from infection with wild or vaccine-derived polioviruses (WPV or VDPV). The latter originate from OPV viruses that acquired the neurovirulence and transmissibility characteristics of WPV. Disease resulting from infection with either WPD or VDPV is reportable at the European level. A rare event following immunisation with the attenuated formulation is vaccine-associated polio paralysis (VAPP).

Epidemiological situation in 2010

No cases of poliomyelitis disease were reported in any of the 29 reporting EU/EEA countries in 2010. There was no report from Liechtenstein.

In April 2010, WHO announced the confirmation of wild poliovirus serotype 1 (WPV1) in seven acute flaccid paralysis (AFP) cases in Tajikistan. The virus was most likely imported from Uttar Pradesh, India. The outbreak resulted in 478 confirmed cases in four countries: Tajikistan (460), Russia (14), Turkmenistan (one of the three confirmed cases was diagnosed with wild poliovirus type 3), and Kazakhstan (1)[1]. The last case was reported in September 2010. In response to this multi-country outbreak, supplementary immunisation activities were conducted in all countries. This was the first outbreak of polio in the WHO European Region since it was certified polio-free in 2002. The outbreak did not result in indigenous transmission because 12 months after the importation of WPV1 there were still no reports of new polio cases in the WHO European Region, demonstrating that the actions taken were appropriate and effective[2].

Poland reported a case of VAPP/VDPD to WHO in 2010; the report did not distinguish between VAPP and VDPD[3]. Considering the time between OPV vaccination and disease onset, the reported case was probably a case of VAPP.

Enhanced surveillance in 2010

The Global Polio Laboratory Network (GPLN), comprising 146 laboratories in 97 countries and operating in EU/EEA countries and all six WHO regions, perform laboratory surveillance for wild-type and vaccine-type polioviruses in patients with acute flaccid paralysis and in sewage water. The GPLN evaluates progress towards polio eradication[4,5].

Seven EU/EEA countries screen sewage water samples for wild-type and vaccine-type polioviruses. In previous years, vaccine-derived polio viruses were identified in Slovakia, Spain, France, Switzerland, Italy, and Finland. In 2010, VDPV were also reported in Estonia[3]. The latter isolation is from a virus that was previously isolated and keeps evolving. Shedding of such viruses has often been reported in immunocompromised individuals who were previously vaccinated with the attenuated vaccine, but in this case the source could not be identified.

Updates from epidemic intelligence 2011

In 2011, WHO reported 650 wild-type polio cases worldwide[1]; most of these cases occurred in Pakistan, Afghanistan, Nigeria (countries still considered endemic), Chad and the Democratic Republic of Congo (countries which, together with Angola, have experienced re-established transmission after they had been polio-free for years). In India, a country that has been considered endemic, the last case of wild polio virus was identified in January 2011.

Eleven other countries were affected by wild polio virus (type 1 and 3) outbreaks in 2011: Angola, Cameroon, China, Central African Republic, Mali, Niger, Congo, Côte d'Ivoire, Guinea, Gabon and Kenya. In addition,

circulating vaccine-derived polioviruses have been observed in polio cases in countries in Asia and in Africa.

Discussion

A significant global public health investment and effort led by WHO aims to globally eradicate polio. However, there are still areas where the viruses continue to circulate, especially in some countries in Asia and Africa, and importation of cases into polio-free areas like the European Union remains a potential threat.

While clinical surveillance is considered the gold standard for certification purposes, other surveillance strategies may complement it, especially in countries that have been non-endemic for a long time; these include enterovirus surveillance and/or environmental surveillance for polioviruses through sewage systems[6].

Several EU countries have identified vaccine-derived poliovirus strains in their sewage water, originating either from newly vaccinated visitors, immigrants to Europe, or chronic carriers. This needs to be further monitored, and immunity in the European populations must be ensured, particularly the immunity of sewage workers. Travellers to endemic areas should be adequately counselled because official data on national vaccination coverage can be misleading and pockets of susceptible populations with local virus circulation may exist at sub-national level.

Vaccine-associated polio paralysis continues to be a risk – although a very small one – in countries using OPV vaccination as part of the schedule. The risk is reduced by the earlier administration of three doses of inactivated vaccine. The choice of vaccination schedule depends on a country's risk evaluation for WPV importation and transmission[7].

The 2010 outbreak in Tajikistan is a reminder that the already high vaccination coverage in EU/EEA countries must be maintained in order to reduce the risk imposed by the importation of polioviruses. Obtaining high vaccination coverage will also provide herd immunity to still susceptible individuals, e.g. children belonging to families refraining from vaccination, migrant populations, and individuals suffering from congenital or acquired immunodeficiency.

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Surveillance systems overview

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						Laboratories	Physicians	Hospitals	Others	
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Belgium	BE-PEDISURV	V	Se	A	C	Y	Y	Y	Y	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-MEASLES, POLIO	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	A	C	Y	Y	Y	N	Y
Portugal	PT-POLIMYELITIS	Cp	Co	P	C	Y	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-POLIMYELITIS	O	Co	P	C	Y	N	Y	Y	Y

Rabies

- The rabies virus remains endemic in wild and domestic animals in south-eastern parts of the EU.
- Two human rabies cases were reported in 2010.

Rabies is a highly fatal infection caused by the rabies virus, which can infect all warm-blooded species; it is hosted by a wide range of domestic and wild animals. The virus is found in the saliva of infected animals and usually transmitted by animal bites. Preventive measures (including oral vaccination of wildlife and domestic animals) and timely prophylaxis in case of exposure to a potentially infected animal are of utmost importance. Knowledge of the epidemiological situation is vital to make decisions with regard to appropriate post-exposure measures[1]. Treatment consists of local wound care, vaccination and, if indicated, passive immunisation with immunoglobulin. To be effective, treatment has to occur as soon as possible after exposure.

Epidemiological situation in 2010

In 2010, two confirmed human cases of rabies were reported from Romania. Twenty-nine EU/EEA countries reported data on rabies; Liechtenstein did not report. The two reported cases were in children in southern counties of Romania, and both cases were fatal. One child was bitten by a cat; in the second case there was no history of animal bites or contacts with sick animals[2].

Animal cases of rabies in the EU

The rabies virus remains endemic in wild and domestic animals in the Baltic countries and south-eastern parts of Europe. In 2010, 1286 cases of rabies were reported in animals in the EU: 274 in domestic animals, 954 in wildlife excluding bats, and 58 in bats[3]. The majority of animal cases were reported from Romania, Poland and Italy.

Discussion

This is the third consecutive year that Romania reported indigenous human cases. Despite continuous efforts to further reduce the burden, the disease is still endemic in wild and domestic animals in southern and eastern parts of the EU as well as in neighbouring non-EU countries, and human cases still occur. In 2010, several EU countries received financial assistance by the European Union to further support eradication programmes (Decision 2009/883/EC)[4]. Although most western European countries are considered free of human and animal rabies, these countries remain susceptible to the reintroduction of the virus as shown by the outbreak of fox rabies in north-eastern Italy in 2008[5,6].

Although human rabies is a very rare disease in the EU, the fatal cases in Romania and the reintroduction of the rabies virus among animals in Italy – a country that has been rabies-free since 1991 – highlight the importance of continuous monitoring of the epidemiological situation, especially in animal reservoirs. The number of rabies cases in animals in 2010 shows an increase, in contrast to the general decreasing trend observed during previous years. However, surveillance and monitoring of rabies in animals varies greatly between Member States, making interpretation difficult[7].

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Surveillance systems overview

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						Laboratories	Physicians	Hospitals	Others	
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Belgium	BE-REFLAB	V	Co	P	C	-	-	-	-	-
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-RABIES	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-Zoonoses	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
Portugal	PT-RABIES	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	Y	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-RABIES	O	Co	A	C	Y	N	Y	Y	Y

Rubella

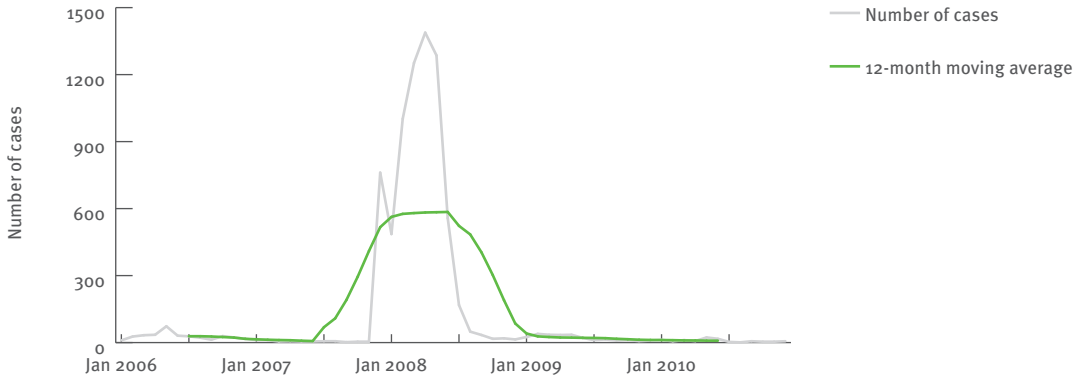
- A total of 4729 cases were reported in 2010; only 100 cases (2%) were confirmed.
- The proportion of laboratory-confirmed cases is decreasing and too low in the context of planned rubella elimination.
- Despite an overall large decrease in the number of cases of congenital rubella infection following introduction of vaccination, sporadic cases still occur in Europe.
- Sub-optimal coverage with the measles-mumps-rubella vaccine can lead to pockets of susceptible individuals and subsequent reports of these diseases, including congenital rubella infection.

Epidemiological situation in 2010

In 2010, 4729 cases were reported from 26 EU/EEA countries. Only 100 cases out of 4729 (2%) were reported as confirmed (Table 2.5.15). Belgium, France, Germany and Liechtenstein did not report. The number of reported rubella cases has significantly decreased since 2006, but most of these cases are not laboratory confirmed.

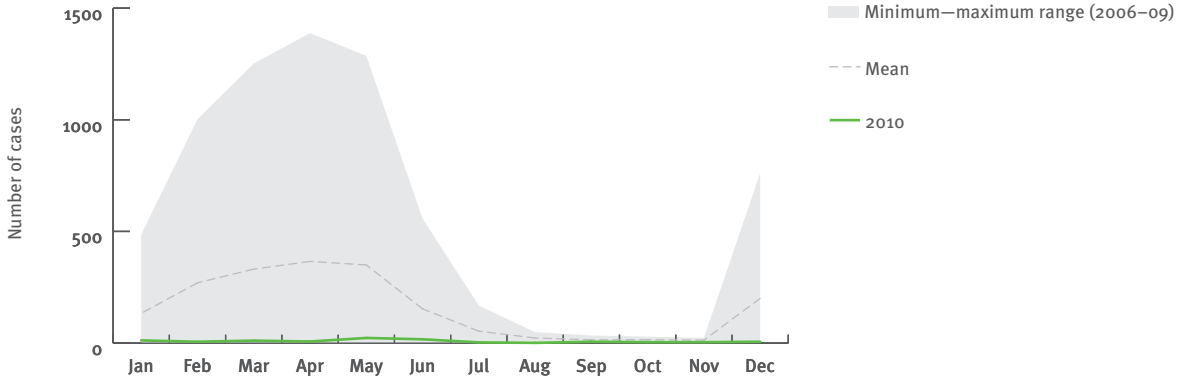
Poland reported the highest number of clinical rubella cases (4197, all but one unconfirmed). Austria reported a decrease in cases, one year after an outbreak with over 300 cases (247 confirmed) in 2009. Italy reported a decrease in total confirmed cases from 6183 in 2008 to 221 in 2009 and 84 in 2010.

Figure 2.5.25. Trend and number of reported cases of rubella in EU/EEA countries, 2006–10



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

Figure 2.5.26. Seasonal distribution of reported cases of rubella in EU/EEA countries, 2006–10



Source: Country reports from Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

In several Member States the surveillance system does not cover the entire country. In Germany, for example, mandatory reporting of rubella cases is only established in some federal states; in France, nationwide mandatory reporting is restricted to congenital rubella.

Age and gender distribution

This distribution cannot be reliably described because the number of confirmed rubella cases is very low (2%).

Seasonality

This section should be interpreted with caution as it relates only to confirmed cases. In 2009, the peak confirmed case rate was seen in late winter and early spring, with a pronounced decrease over summer and autumn – a pattern similar to the one observed in previous years (Figure 2.5.26).

Enhanced surveillance in 2010

The enhanced surveillance network EUVAC.NET reported a total of 4693 rubella cases in 2010, 104 of which were laboratory confirmed. Reports came from 28 countries: 496 cases were reported from 27 countries, the remaining 4197 from Poland. Vaccination status was known for 460 of the 496 rubella cases reported in case-based format (93%): 58% were unvaccinated, 31% were vaccinated with one dose, and 8% were vaccinated with at least two doses.

Discussion

The main aim of rubella vaccination is the prevention of congenital rubella infection (CRI). Many countries had originally started to selectively vaccinate adolescent girls. After introduction of the measles-mumps-rubella vaccine (MMR), most countries began vaccinating

Table 2.5.9. Number and rate of reported confirmed rubella cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	Y	C	2	2	0.02	247	2.96	5	0.06	14	0.17	-	-
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	-
Bulgaria	Y	A	39	1	0.01	1	0.01	0	0.00	3	0.04	247	3.20
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	4	2	0.02	0	0.00	2	0.02	2	0.02	3	0.03
Denmark	Y	C	0	0	0.00	0	0.00	4	0.07	0	0.00	0	0.00
Estonia	Y	C	2	0	0.00	1	0.08	4	0.30	10	0.75	5	0.37
Finland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	1	0.02
France	-	-	-	-	-	-	-	-	-	-	-	-	-
Germany	-	-	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	0	0	0.00	3	0.03	0	0.00	0	0.00	0	0.00
Hungary	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	2	0.02
Ireland	Y	C	24	1	0.02	1	0.02	2	0.05	3	0.07	1	0.02
Italy	Y	C	84	84	0.14	221	0.37	6183	10.37	758	1.28	257	0.44
Latvia	Y	C	0	0	0.00	1	0.04	1	0.04	1	0.04	1	0.04
Lithuania	Y	C	2	0	0.00	0	0.00	0	0.00	13	0.38	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	3	0.73	2	0.49	0	0.00
Netherlands	Y	C	0	0	0.00	2	0.01	2	0.01	4	0.02	5	0.03
Poland	Y	A	4197	1	0.00	8	0.02	70	0.18	153	0.40	103	0.27
Portugal	Y	C	1	0	0.00	3	0.03	1	0.01	1	0.01	0	0.00
Romania	Y	C	350	1	0.01	2	0.01	1746	8.11	2958	13.72	0	0.00
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	2	0.04
Slovenia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Spain	Y	C	9	2	0.00	7	0.02	40	0.09	14	0.03	27	0.06
Sweden	Y	C	3	0	0.00	1	0.01	0	0.00	2	0.02	3	0.03
United Kingdom	Y	C	12	6	0.01	10	0.02	36	0.06	34	0.06	36	0.06
EU total	**-**	**-**	**4729**	**100**	**0.03**	**508**	**0.15**	**8099**	**2.38**	**3972**	**1.17**	**693**	**0.21**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	0	0.00	1	0.02	0	0.00	2	0.04
Total	**-**	**-**	**4729**	**100**	**0.03**	**508**	**0.15**	**8100**	**2.34**	**3972**	**1.16**	**695**	**0.21**

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

children and adolescents in a two-dose schedule, changing the vaccination strategy from protecting the individual woman to creating herd immunity. In order to keep herd immunity sufficiently high, vaccination coverage is essential.

The overall proportion of laboratory-confirmed cases was only 2% of the total cases. In the context of rubella elimination/prevention of congenital rubella infection set for 2015, this is very low. Strengthening laboratory capacity in order to ensure investigation of clinical rubella cases is a key element to reach the goal of elimination.

References

1. EUVAC.NET. Rubella surveillance report 2010. Copenhagen: EUVAC.NET; 2011. Available from: http://ecdc.europa.eu/en/publications/Publications/measles_report_2010_euvacnet.pdf

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
						Laboratories	Physicians	Hospitals	Others	
Austria	AT-Epidemiegesetz	Cp	Co	P	C	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-RUBELLA	Cp	Co	P	C	Y	Y	Y	Y	Y
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	Y	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	-	Y	N	N	-
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Romania	RO-RNSSy	Cp	Co	P	A	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y

Tetanus

- Tetanus is a rare disease in all EU/EEA countries, thanks to effective universal vaccination in all countries and generally good standards of public health and hygiene.
- The overall confirmed case rate remains very low (0.02 per 100 000 population).
- Most cases were reported for elderly women (65 years or older). Additional efforts should be made in order to improve the immunisation status of the adult and elderly population.

Tetanus is a sporadic and relatively uncommon infection in EU/EEA countries, caused by the bacterium *Clostridium tetani*. Contamination of wounds with tetanus spores in unimmunised persons can cause an illness with muscular spasms and sometimes death. Tetanus is included in the primary vaccination schedule of all EU countries, and periodic vaccination in adulthood is required to maintain immunity.

Epidemiological situation in 2010

In 2010, 130 cases, including 74 confirmed cases meeting the EU case definition, were reported by 12 EU/EEA countries (Table 2.5.16). Austria, Denmark Finland, Germany and Liechtenstein did not report. Italy, Poland, France,

Table 2.5.10. Number and rate of reported tetanus cases in EU/EEA countries, 2006–10

Country	2010					2009		2008		2007		2006	
	National coverage	Report type	Total cases	Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population		Confirmed cases and notification rate per 100 000 population	
				Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate	Cases	Crude rate
Austria	-	-	-	-	-	-	-	0	-	-	-	-	-
Belgium	Y	C	0	0	0.00	0	0.00	1	0.01	1	0.01	1	0.01
Bulgaria	Y	A	2	2	0.03	0	0.00	2	0.03	0	0.00	4	0.05
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	Y	C	0	0	0.00	0	0.00	2	0.04	3	0.06	2	0.04
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Finland	-	-	-	-	-	-	-	-	-	-	-	-	-
France	Y	C	15	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Germany	-	-	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	5	1	0.01	0	0.00	0	0.00	8	0.07	5	0.05
Hungary	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	7	0.07
Ireland	Y	C	0	0	0.00	0	0.00	2	0.05	1	0.02	0	0.00
Italy	Y	C	57	57	0.09	58	0.10	53	0.09	59	0.10	64	0.11
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	2	0	0.00	0	0.00	1	0.03	1	0.03	3	0.09
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	3	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	1	0	0.00	0	0.00	0	0.00	0	0.00	-	-
Poland	Y	C	16	0	0.00	1	0.00	14	0.04	19	0.05	22	0.06
Portugal	Y	C	3	0	0.00	0	0.00	1	0.01	9	0.09	7	0.07
Romania	Y	C	9	8	0.04	7	0.03	11	0.05	9	0.04	10	0.05
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	0	0	0.00	0	0.00	1	0.05	1	0.05	4	0.20
Spain	Y	C	8	6	0.01	3	0.01	10	0.02	8	0.02	13	0.03
Sweden	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	1	0.01
United Kingdom	Y	C	9	0	0.00	1	0.00	0	0.00	0	0.00	3	0.01
EU total	**-**	**-**	**130**	**74**	**0.02**	**70**	**0.02**	**98**	**0.02**	**119**	**0.03**	**146**	**0.04**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	1	0.02	2	0.04	0	0.00	0	0.00
Total	**-**	**-**	**130**	**74**	**0.02**	**71**	**0.02**	**100**	**0.03**	**119**	**0.03**	**146**	**0.04**

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

Romania, the United Kingdom and Spain accounted for most of the notified cases. Italy accounted for 57 of the 74 confirmed cases reported in 2010. Italy has been continuously reporting the highest number of tetanus cases since 2006, ranging between 53 and 64 cases per year. The overall confirmed case rate remains low at 0.02 per 100 000 population. The highest rate was reported by Italy (0.09 per 100 000).

Age and gender distribution

The highest reported rate was in the age group aged 65 years and over (0.02 per 100 000 population). Females accounted for 63% of the reported cases, almost all of them in the 65-years-and-over bracket (66 out of 78 female cases).

Seasonality

A peak of confirmed tetanus cases is seen from June to October, even though the number of cases is low (Figures 2.5.27 and 2.5.28). This is probably related to more outdoor activities during this period. This trend has been observed since 2006.

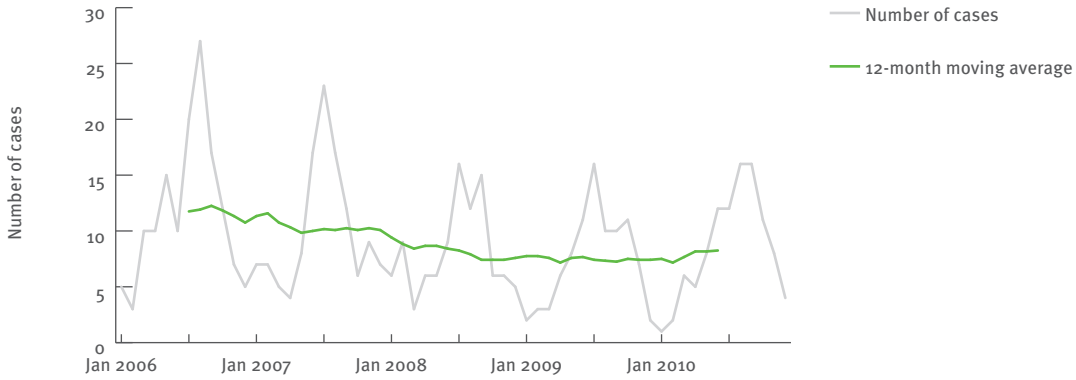
Discussion

The confirmed case rate of tetanus remains low in the EU. This may be explained by the fact that laboratory confirmation is usually not performed for tetanus and diagnosis is based on clinical presentation. The widespread use of tetanus vaccination in EU/EEA countries also contributes to a low disease rate. The cases reported in the elderly were probably related to lower coverage or waning immunity in this population. The high proportion of women could be explained by different vaccination strategies during their youth, particularly in relation to vaccination on enrolment to obligatory military service for men and occupational vaccination programmes[1]. This emphasises the need to maintain high vaccination rates in all age groups and to implement catch-up/booster strategies in countries which have a higher rate of disease.

References

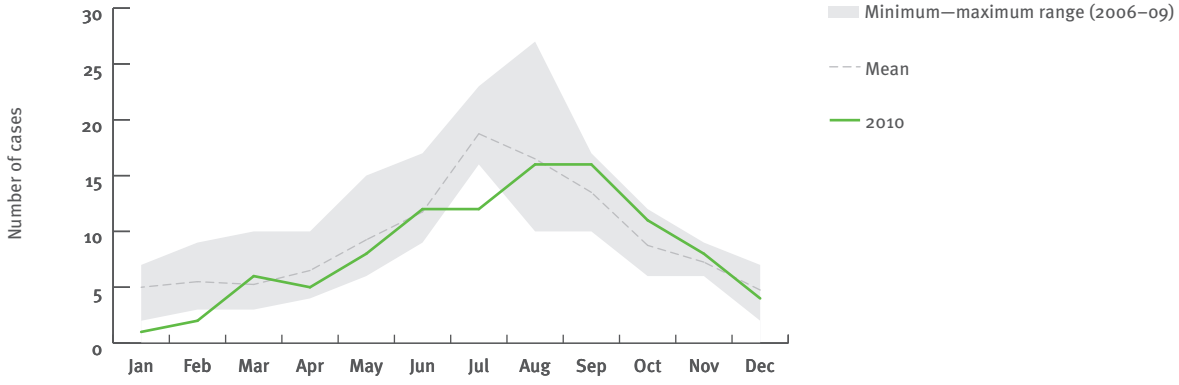
1. Wassilak SGF, Roper MH, Kretsinger K, Orenstein WA. Tetanus toxoid. In: Plotkin SA, Orenstein WA, Offit PA, editors. Vaccines. 5th ed. Philadelphia: Saunders Elsevier; 2008. p. 805–39.

Figure 2.5.27. Trend and number of reported confirmed tetanus cases in EU/EEA countries, 2006–10



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

Figure 2.5.28. Seasonal distribution of reported confirmed cases of tetanus in EU/EEA countries, 2006–10



Source: Country reports from Cyprus, Czech Republic, Denmark, Estonia, France, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden.

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
						Laboratories	Physicians	Hospitals	Others	
Belgium	BE-FLA_FRA	Cp	Co	P	C	Y	Y	Y	Y	Y
Bulgaria	BG-NATIONAL_SURVEILLANCE	Cp	Co	P	A	Y	Y	Y	Y	Y
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y
Czech Republic	CZ-EPIDAT	Cp	Co	A	C	N	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-TETANUS	Cp	Co	P	C	N	Y	Y	Y	Y
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y
Hungary	HU-EFRIR	Cp	Co	P	C	Y	Y	Y	N	Y
Iceland	IS-SUBJECT_TO_REGISTRATION	Cp	Co	P	C	Y	Y	Y	N	Y
Ireland	IE-CIDR	Cp	Co	P	C	Y	Y	Y	N	Y
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y
Latvia	LV-BSN	Cp	Co	P	C	Y	Y	Y	N	Y
Lithuania	LT-COMMUNICABLE_DISEASES	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	Y	Y
Netherlands	NL-OSIRIS	Cp	Co	P	C	Y	Y	N	Y	Y
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y
Poland	PL-NATIONAL_SURVEILLANCE	Cp	Co	P	C	N	Y	Y	N	Y
Portugal	PT-TETANUS	Cp	Co	P	C	N	Y	N	N	Y
Romania	RO-RNSSy	Cp	Co	P	C	N	N	Y	N	Y
Slovakia	SK-EPIS	Cp	Co	A	C	Y	Y	Y	N	Y
Slovenia	SI-SURVIVAL	Cp	Co	P	C	Y	Y	Y	N	Y
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y
Sweden	SE-SMINET	Cp	Co	P	C	Y	Y	N	N	Y
United Kingdom	UK-TETANUS	O	Co	P	C	Y	N	Y	Y	Y

2.6 Antimicrobial resistance and healthcare-associated infections

Antimicrobial resistance

- According to data from the European Antimicrobial Resistance Surveillance Network (EARS-Net), the antimicrobial resistance situation in Europe shows large variations with regard to pathogen type, antimicrobial agent and geographical region.
- The occurrence of meticillin-resistant *Staphylococcus aureus* (MRSA) was stabilising or even decreasing in several European countries. However, the percentage of MRSA among all *Staphylococcus aureus* isolates remained above 25% in eight of the 28 countries reporting in 2010.
- Resistance to third-generation cephalosporins and multidrug resistance (combined resistance to three or more of the following antibiotics: aminopenicillins, third-generation cephalosporins, fluoroquinolones and aminoglycosides) continued to increase in *Escherichia coli* and *Klebsiella pneumoniae* isolates.
- High percentages of carbapenem resistance in *Pseudomonas aeruginosa* were reported from several countries, and percentages of carbapenem resistance in *Klebsiella pneumoniae* were increasing compared with previous years.
- The spread of carbapenemase-producing *Enterobacteriaceae* (CPE) in Europe continued. In 2011, CPE caused local outbreaks and country-wide epidemics in healthcare facilities in several European countries, emphasising the need for implementation of infection control measures.

Antimicrobial resistance (AMR) is a serious threat to public health. The percentages of AMR, especially multidrug resistance, continued to increase in Europe, leading to mounting healthcare costs, failed treatments, and deaths.

Data sources

The data presented in this section were collected by the European Antimicrobial Surveillance Network (EARS-Net); data collection was coordinated by ECDC. EARS-Net collects data on invasive bacterial isolates from approximately 900 public health laboratories. These laboratories serve over 1400 hospitals in Europe and provide services to an estimated 100 million European citizens. For more details on EARS-Net, detailed surveillance results and information on analysis methods, please refer to the EARS-Net Annual Report 2010[1] and the EARS-Net website[2].

Escherichia coli

Escherichia coli is among the most frequently isolated Gram-negative bacteria in blood cultures and a major cause of urinary tract infection, both in the community and in healthcare settings.

The Europe-wide increase of antimicrobial resistance observed in *E. coli* during recent years continued in 2010. The highest resistance percentages in *E. coli* were reported for aminopenicillins, ranging between 34% and 83% per country.

The percentages of *E. coli* isolates resistant to third-generation cephalosporins showed a clear north-to-south gradient, with the highest percentages reported from southern Europe and lower percentages reported by countries in northern Europe (Figure 2.6.1). Over the last four years, the percentages of *E. coli* resistant to third-generation cephalosporins increased significantly in half of the reporting countries, while a decreasing trend was observed in only two countries (Austria and Portugal). The increase seems to be directly linked to the high percentage (ranging between 65% and 100%) of ESBL (extended-spectrum beta-lactamase) producers among third-generation cephalosporin-resistant *E. coli* isolates reported in 2010.

Trend analyses for the period 2007 to 2010 showed a significant increase in the percentage of *E. coli* isolates

that were multidrug-resistant (combined resistance to three or more of the following antibiotics: aminopenicillins, third-generation cephalosporins, fluoroquinolones and aminoglycosides) in 10 of 28 reporting countries. Of these countries, several had already reported high levels of multidrug resistance (e.g. Greece, Hungary and Italy). Combined resistance to all four groups of antimicrobials under surveillance was reported in 4% of the isolates.

Klebsiella pneumoniae

Klebsiella pneumoniae is an important cause of infection in persons with impaired immune system and patients with indwelling devices. Urinary tract infections, respiratory tract infections and bloodstream infections are frequently encountered. The increasing percentage of antimicrobial-resistant *K. pneumoniae* is a public health concern of growing importance in Europe and worldwide.

In 2010, the percentage of *K. pneumoniae* isolates resistant to third-generation cephalosporin continued to increase in Europe, ranging between 2% and 76% per country. Trend analyses for the period 2007 to 2010 showed significantly increasing trends for nine countries, while none of the countries showed a decreasing trend. The percentages of third-generation cephalosporin-resistant isolates reported as ESBL producers ranged between 60% and 100%.

The majority of third-generation cephalosporin-resistant isolates was also resistant to fluoroquinolones and aminoglycosides, indicating that multidrug resistance was common. The percentage of *K. pneumoniae* isolates that were multidrug resistant (resistant to third-generation cephalosporins, fluoroquinolones and aminoglycosides) was above 10% in half of all reporting countries in 2010, and one fourth of the countries reported resistant percentages higher than 25% (Figure 2.6.2). High percentages of multidrug-resistant *K. pneumoniae* isolates were reported, in particular by countries in southern, central and eastern Europe.

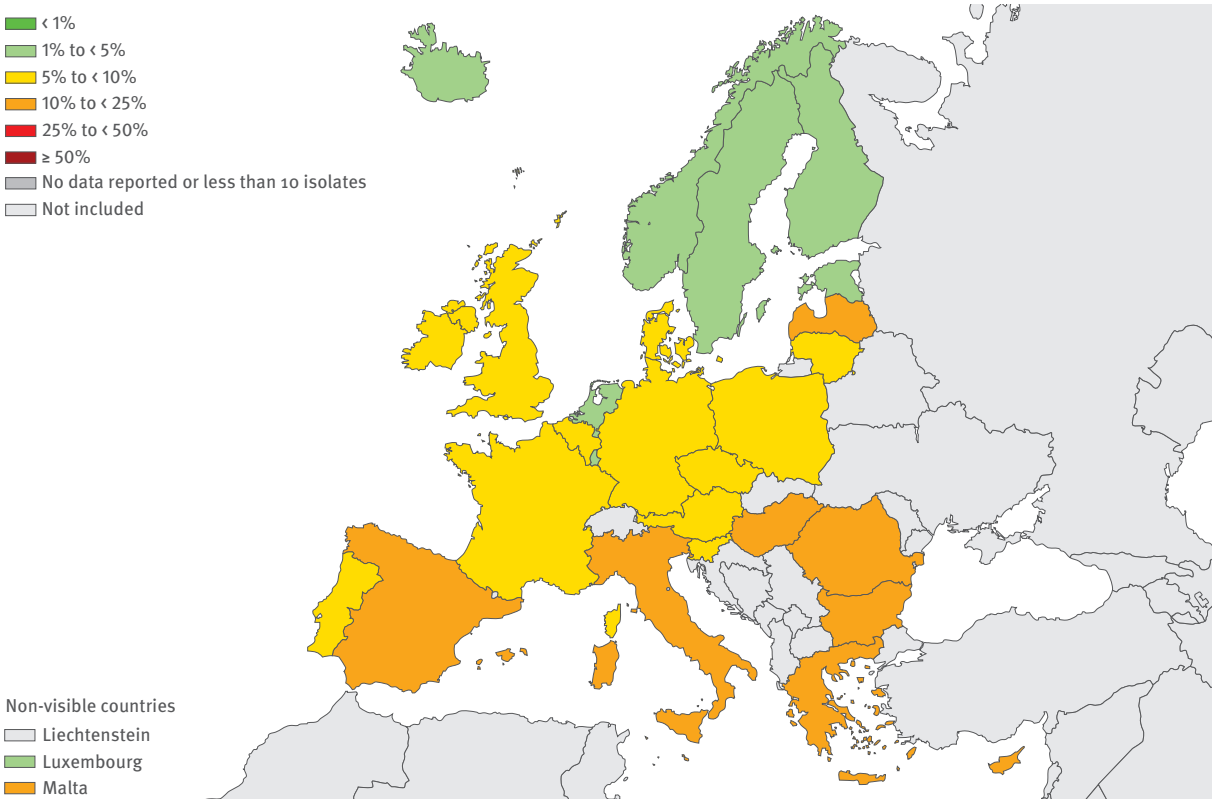
Carbapenem-resistant *K. pneumoniae* isolates were reported by 12 countries in 2010, and in five countries (Austria, Greece, Hungary, Italy and Portugal) an increase was observed compared with 2009. This situation is of particular concern as carbapenems are among the few effective antimicrobials available for the treatment of infections caused by multidrug-resistant *K. pneumoniae*.

Pseudomonas aeruginosa

Pseudomonas aeruginosa is an important cause of infection among patients with impaired immune system.

In 2010, high percentages of *P. aeruginosa* isolates resistant to aminoglycosides, ceftazidime, fluoroquinolones, piperacillin/tazobactam and carbapenems were reported from several countries, especially in southern and eastern Europe. Resistance to carbapenems was above 10% in 18 of 28 countries (Figure 2.6.3). Multi-resistance was also common, with 15% of the

Figure 2.6.1. *Escherichia coli*: percentage of invasive (blood and cerebrospinal fluid) isolates resistant to third-generation cephalosporins, 2010



Source: EARS-Net. Only data from countries reporting more than 10 isolates are shown.

isolates reported as resistant to at least three antimicrobial classes. Five per cent of the isolates were reported as resistant to all five antimicrobial classes under surveillance by EARS-Net.

Despite the high percentages of resistance in invasive *P. aeruginosa* isolates, trend analyses for the period 2007 to 2010 show a generally stable situation in Europe, with few countries reporting significantly increasing or decreasing trends of resistance to various antimicrobial agents.

Streptococcus pneumoniae

Streptococcus pneumoniae is a common cause of disease, especially among young children, elderly people and patients with compromised immune systems. The clinical spectrum ranges from upper respiratory tract infections such as sinusitis and otitis media to invasive bloodstream infections and meningitis. *S. pneumoniae* is also one of the major causes of pneumonia worldwide and is associated with high morbidity and mortality.

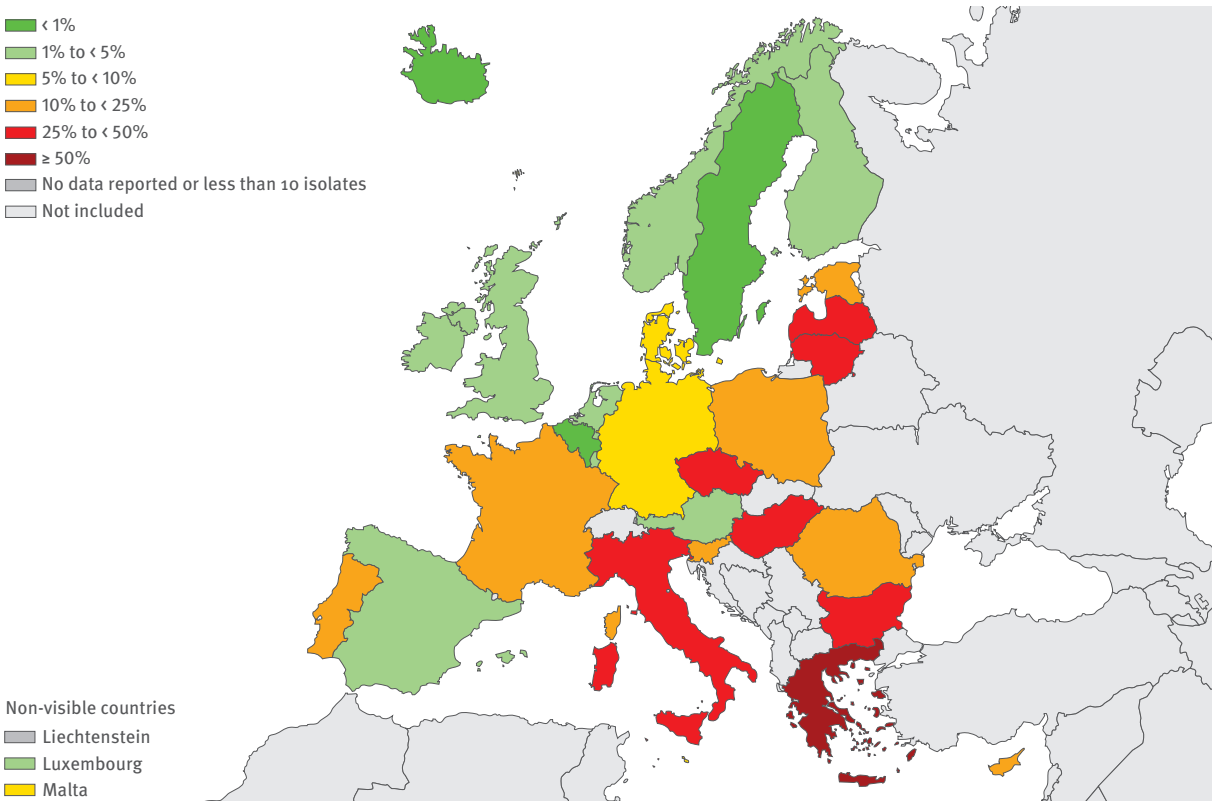
The percentage of *S. pneumoniae* non-susceptible to penicillin was above 10% in 14 of 27 reporting countries, while combined non-susceptibility to both penicillin and macrolides was above 10% in eight out of 27 countries. Trend analyses for the period 2007 to 2010 showed a relative stable situation throughout Europe for both non-susceptibility to penicillin and combined non-susceptibility to penicillin and macrolides. Only two countries (Ireland and Spain) showed a significantly increasing trend for combined non-susceptibility, while three countries (Belgium, France and Hungary) had decreasing trends.

Meticillin-resistant *Staphylococcus aureus*

Staphylococcus aureus in its oxacillin-resistant form (meticillin-resistant *S. aureus*, MRSA) is one of the most important causes of antibiotic-resistant healthcare-associated infections worldwide. During the past decade, several European countries have implemented national action plans targeted at reducing the spread of MRSA in healthcare facilities.

The percentage of *S. aureus* isolates reported as MRSA is now stabilising or decreasing in most European countries. Seven countries reported significantly decreasing trends over the last four years (Austria, Cyprus, Estonia, France, Greece, Ireland, and the UK) while four reported an increasing trend (Germany, Hungary, Italy and Slovenia). Although these observations provide cause for optimism, MRSA remains a public health priority because the percentage of MRSA is still above 25% in eight out of 28 countries, mainly in southern and eastern Europe (Figure 2.6.4).

Figure 2.6.2. *Klebsiella pneumoniae*: percentage of combined resistance to third-generation cephalosporins, fluoroquinolones and aminoglycosides, 2010



Source: EARS-Net. Only data from countries reporting more than 10 isolates are shown.

Enterococcus faecalis and *Enterococcus faecium*

Enterococci belong to the normal bacterial flora of the gastrointestinal tract of humans, but may also cause a variety of clinical infections including endocarditis, bacteraemia, meningitis, wound and urinary tract infections, and are associated with peritonitis and intra-abdominal abscesses.

High-level aminoglycoside resistance in *E. faecalis* occurs frequently, with a majority of the countries reporting percentages of resistant isolates between 25% and 50%. A significant decrease over the last four-year period was observed for Belgium, Cyprus, Germany, Greece and Portugal. A significantly increasing trend was only observed in Italy.

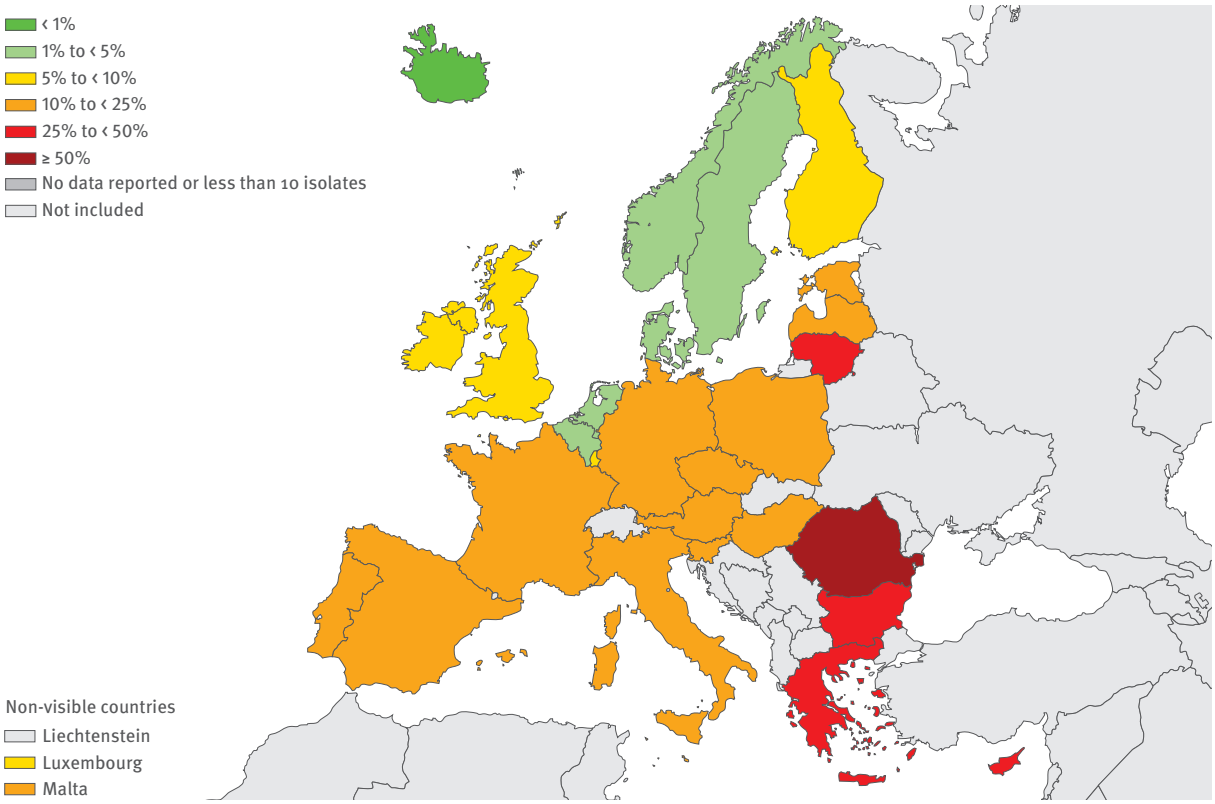
The occurrence of vancomycin resistance in *E. faecium* continued to decrease in Europe. Four countries reported significantly decreasing trends over the last four years (Germany, Greece, Italy and the United Kingdom), while two reported an increasing trend (Ireland and Latvia). Only one country (Ireland) reported percentages of resistant isolates above 25%, while most of the countries reported percentages of resistant isolates below 5% (Figure 2.6.5).

2011 update: Continued spread of carbapenemase-producing *Enterobacteriaceae* (CPE) in Europe

Enterobacteriaceae (including *K. pneumoniae* and *E. coli*) can acquire mobile genetic elements that encode carbapenemases, which are enzymes that can efficiently hydrolyse most beta-lactam antibiotics, including carbapenems. In addition, many CPE strains frequently carry additional resistance determinants conferring resistance to non-beta-lactam antibiotics. As a consequence, CPE are resistant to most available antibiotics, leaving very few treatment options for infected patients.

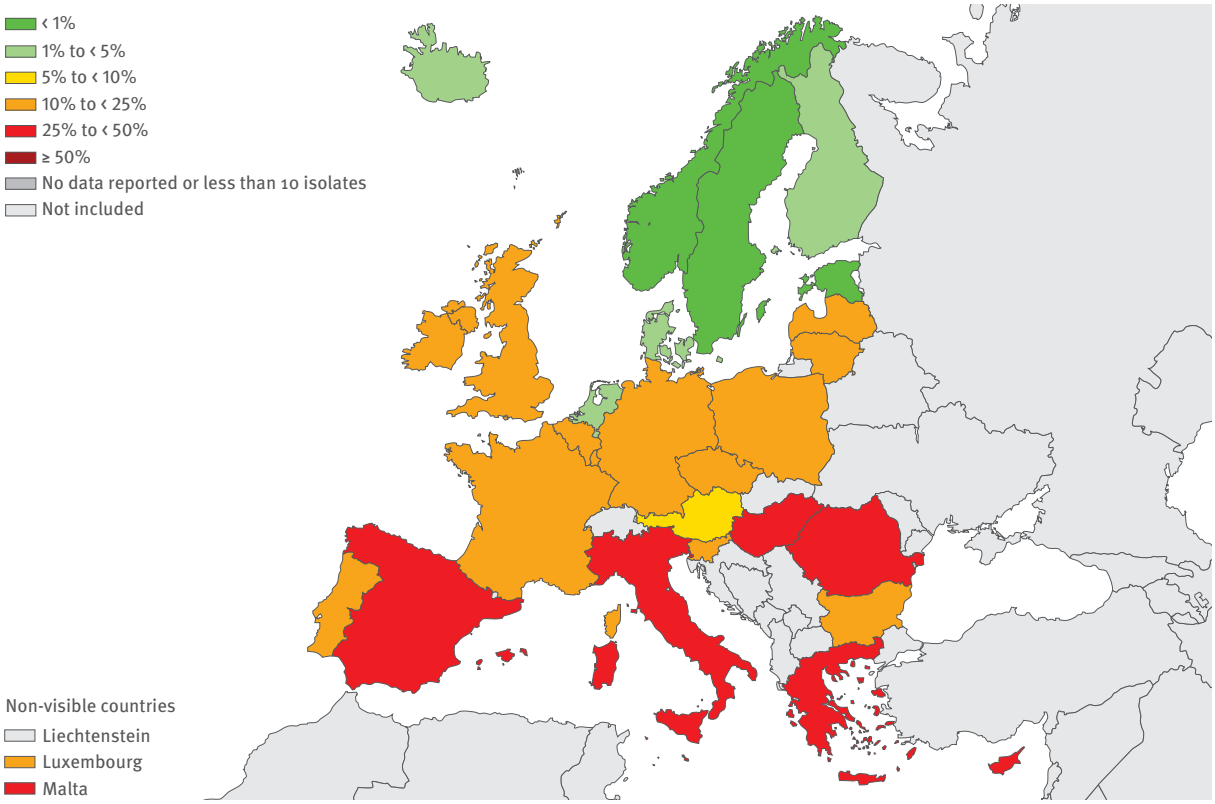
In recent years, carbapenemase-producing *Enterobacteriaceae* (CPE) have become an exceedingly important clinical and public health issue in Europe[3]. Data from scientific publications and enhanced surveillance established by some EU Member States indicate an increase in the spread of CPE in Europe over the last years. From these reports it is evident that although carbapenemases such as *Klebsiella pneumoniae* carbapenemase (KPC) and Verona integron-encoded metallo-beta-lactamase (VIM) are the most prevalent in Europe; other carbapenemases such as NDM and OXA-48 are on the increase, with recent reports of travel-related cases, autochthonous cases and outbreaks[3,4].

Figure 2.6.3. *Pseudomonas aeruginosa*: percentage of invasive (blood and cerebrospinal fluid) isolates resistant to carbapenems, 2010



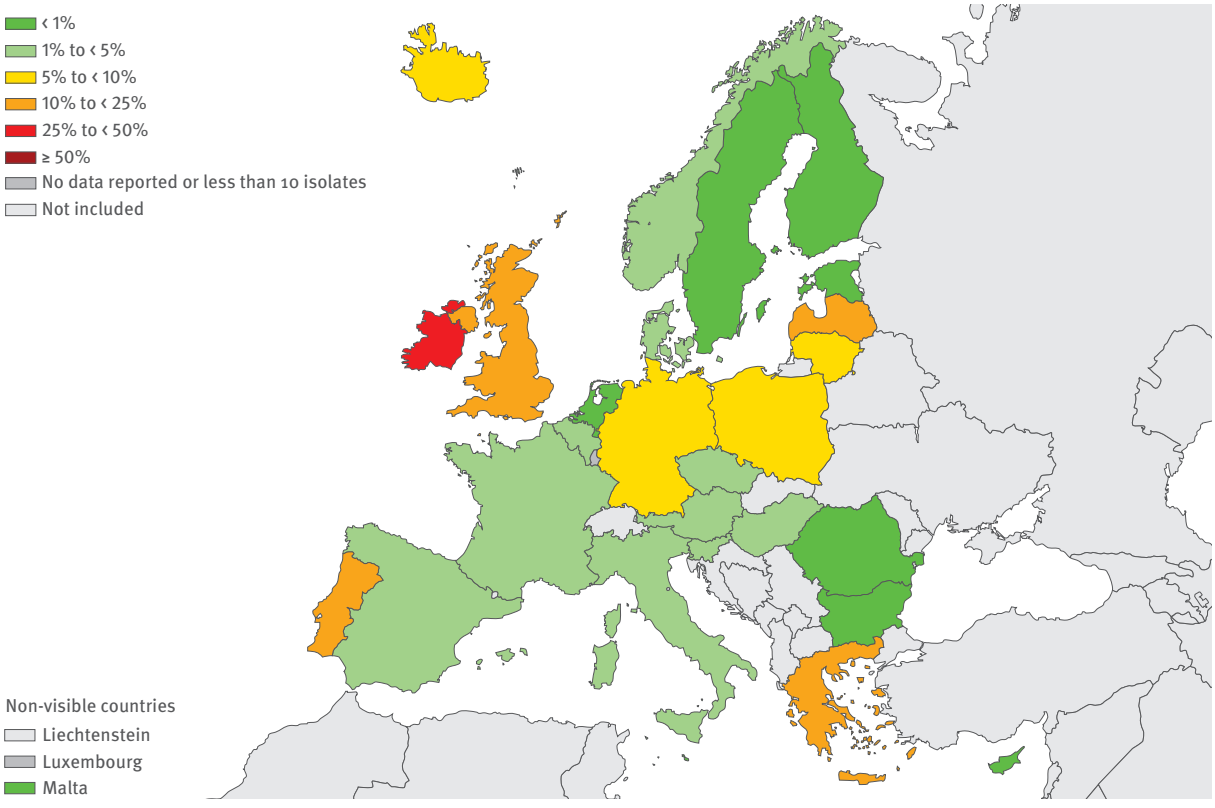
Source: EARS-Net. Only data from countries reporting more than 10 isolates are shown.

Figure 2.6.4. ***Staphylococcus aureus*: percentage of invasive (blood and cerebrospinal fluid) isolates resistant to meticillin, 2010**



Source: EARS-Net. Only data from countries reporting more than 10 isolates are shown.

Figure 2.6.5. ***Enterococcus faecium*: percentage of invasive (blood and cerebrospinal fluid) isolates resistant to vancomycin, 2010**



Source: EARS-Net. Only data from countries reporting more than 10 isolates are shown.

Information available for 2011 indicates that the spread of CPE in Europe requires close monitoring. In 2011, CPE were the cause of local outbreaks and country-wide epidemics in healthcare facilities in several European countries, with several examples of cross-border transfer and secondary transmission in healthcare facilities[5-9]. The spread of New Delhi metallo-beta-lactamase (NDM)-producing *Enterobacteriaceae* continued in 2011. Up until 31 March 2011, Member States had reported a total of 106 cases of NDM-producing *Enterobacteriaceae*. This included 29 additional cases compared with a previous report published on 4 October 2010[10].

In 2011, as a response to this situation, ECDC issued two risk assessments targeting CPE[4,10]. ECDC emphasises the need for implementation of infection control measures such as active patient screening and additional hygienic precautions for the care of CPE-positive patients. Additional suggestions from ECDC call for countries to develop national guidance on how to stop the spread of CPE in their countries and to actively report cases of CPE by making confirmed cases notifiable to national public health authorities.

Discussion

According to EARS-Net data, the antimicrobial resistance situation in Europe shows large variations with regard to pathogen type, antimicrobial agent and geographical region. Some trends give reason to hope that national efforts on infection control in healthcare might halt or even reverse resistance trends. Unfortunately, increasing percentages of multidrug-resistant *K. pneumoniae* isolates, most of them ESBL-producers, and reports of an increase of CPE in European healthcare settings, underline that antimicrobial resistance remains a serious threat to patient safety and public health in Europe.

Antimicrobial resistance calls for international cooperation, as well as concerted efforts at the national level. While Europe is obviously making progress towards increased awareness about prudent use of antibiotics and the prevention and control of antibiotic-resistant bacteria and healthcare-associated infections, antimicrobial resistance in Europe requires continued close surveillance.

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Healthcare-associated infections

- In 2010, all 27 Member States and Norway contributed to at least one of the four components of the Healthcare-Associated Infections Surveillance Network (HAI-Net): 13 countries participated in the surveillance of surgical site infections, 14 in surveillance of healthcare-associated infections (HAI) in intensive-care units, 23 in the pilot point prevalence survey of HAI and antimicrobial use in acute-care hospitals, and 25 in the first EU-wide point prevalence survey of HAI and antimicrobial use in long-term care facilities (LTCFs). Seven countries participated in all surveillance components.
- The results of the pilot point prevalence survey in acute-care hospitals showed an HAI prevalence of 7.1%, identical to the earlier average prevalence of 7.1% reported by ECDC from a review of national or multicentre point prevalence surveys which had assumed 4.1 million patients with HAI in acute-care facilities per year in the EU[1].
- Results from the first point prevalence survey in LTCFs showed a prevalence of signs and symptoms of HAI of 4.0% and a prevalence of confirmed cases of HAI of 2.4%. With at least 3 100 000 LTCF beds currently available in EU/EEA countries, the number of HAI episodes occurring each year in LTCFs can be estimated at 4.3 million, 2.6 million of which are case-definition confirmed.
- Decreasing trends previously observed for surgical site infections following hip prosthesis were confirmed in 2010. Antimicrobial resistance markers in bacteria associated with HAI in intensive-care units showed an increase of the percentages of third-generation cephalosporin-resistant *Enterobacteriaceae* and meticillin-resistant *S. aureus*.

Surveillance of surgical site infections

Data on surveillance of surgical site infections (SSIs) in 2010 were collected using a patient-based methodology as described in 'Surveillance of surgical site infections in European hospitals – HAISSI protocol (v.1.02)'[2]. Two indicators were used to express the risk of SSI: the cumulative incidence, which is the crude percentage of surgical operations resulting in a surgical site infection, and the incidence density, which is the number of SSIs per 1000 post-operative days at risk in the hospital. The incidence density is the preferred measure for comparison of incidence between countries as it uses only observations during the hospital stay in both the numerator and the denominator. Comparisons are therefore less affected by variations in the length of post-operative stay or in the intensity of post-discharge case-finding. However, incidence density can only be calculated if the date of discharge from the hospital is known. For detailed information on the statistical analyses, please refer to the ECDC surveillance report on surgical site infections in Europe 2008–2009[3].

SSI surveillance data for 2010 (with partial follow-up of patients who had undergone orthopaedic surgery until December 2011) were received from 17 networks and 13 countries and included 386 597 surgical operations from 1427 hospitals (compared with 339 702 surgical operations from 1407 hospitals in 2009). The types and numbers of surgical operations reported by each country are shown in Table 2.6.1.

The percentage of SSI varied according to the type of operation; the highest rates were in colon surgery (9.9%) and the lowest rates in knee prosthesis (0.7%). Similarly to 2009, the cumulative incidence of SSI after hip prosthesis (HPRO) operation showed a significant decreasing trend ($p<0.001$) as shown in Figure 2.6.6.

Intra-country trends for rates of SSI after hip prosthesis operation from 2004 to 2010 were analysed both for the cumulative incidence of SSI adjusting for case-mix (risk index) and for the in-hospital incidence density of SSI (SSIs registered only in hospitals) using Poisson regression analysis. Significant risk-adjusted decreasing trends for cumulative incidence of SSI after hip prosthesis were observed in Austria ($p=0.028$), Finland ($p<0.001$), France ($p<0.001$), Germany ($p<0.001$), Hungary ($p<0.001$) and the United Kingdom ($p<0.001$).

The trend analysis of the in-hospital incidence density of SSI showed significant decreasing trends in Finland, Germany, Hungary and the United Kingdom (Figure 2.6.7).

Overall, the percentage of SSI detected after hospital discharge in 2010 was 51% (all intervention categories combined). The percentage was highest for Caesarean section (84%) and the lowest in colon surgery (17%). A large number of SSIs diagnosed after hospital discharge were reported by Norway (78%), the United Kingdom (72%), Malta (56%) and the Netherlands (54%). For hip prosthesis operations, more than half of the SSIs were detected post-discharge in Norway (79%), Italy (77%), the Netherlands (77%), France (64%) Portugal (56%) and the United Kingdom (56%) (Figure 2.6.7).

Inter-country comparisons of SSI rates should be made with caution because at least part of the inter-country differences can be explained by one or several of the following factors:

- Differences in post-discharge surveillance methods (e.g. more intensive in Norway and the Netherlands); post-discharge surveillance was introduced in 2009 in England (infections detected at re-admission).
- Differences in post-operative length of stay (because SSIs are more likely to be detected in the hospital than in the community) and variations over time in post-operative length of stay within the same country.
- Bias due to selection of hospitals with specific problems in countries with low participation in SSI surveillance.
- Differences in the mix of hospitals that participated each year.
- Differences in patient case-mix and mix of types of operation, although these are partly taken into account by the risk index (e.g. some countries perform more total hip prosthesis operations and fewer partial hip prosthesis operations (the latter have a higher intrinsic risk of infection), which affects the mix of interventions within the HPRO (hip replacement surgery) category.
- Different interpretations of the same case definitions, resulting in different reported percentages of superficial infections.
- Follow-up of orthopaedic surgery up to one year after operation, as foreseen in the case definition of SSI, is not implemented consistently in all countries (or at the time of data collection; data up to one year after the operation were not available for all operations/hospitals within a country). SSIs detected between 30 days and up to one year after follow-up surgery represented 14% of all SSIs reported in HPRO and KPRO (knee arthroplasty) operations, varying between 0% and 39% per country.
- Organisational aspects such as mandatory participation with public disclosure of SSI indicators (e.g. in the United Kingdom).

Surveillance of infections in intensive-care units

Two protocols are used for the surveillance of infections that were acquired in intensive-care units (ICUs): a patient-based ('standard') protocol and a unit-based ('light') protocol. In patient-based surveillance, data include risk factors for risk adjusted inter-hospital comparisons and are collected for each patient, regardless of infection status. In unit-based surveillance, denominator data (i.e. patient days) are collected for the entire ICU.

In 2010, 14 countries (Austria, Belgium, Estonia, France, Germany, Italy, Lithuania, Luxembourg, Malta, Portugal, Slovakia, Spain, Sweden and UK-Scotland) reported data from 885 hospitals and 1050 ICUs on 10709 episodes of ICU-acquired pneumonia and 5058 episodes of ICU-acquired bloodstream infections. Three countries (Germany, Malta and Sweden) only provided unit-based data; one country (Belgium) provided unit-based and patient-based data. The remaining nine countries submitted patient-based data only. As in previous years, Germany did not provide denominator data for patients staying more than two days in an ICU. Therefore, data from Germany were included in the descriptive analysis of ICU-acquired infections, but excluded from the calculation of infection rates.

Of 91634 patients staying more than two days in an ICU (patient-based data), 5.9% acquired pneumonia (intubation-associated in 91% of the cases). The mean incidence density was 6.9 pneumonia episodes per 1000 patient-days, ranging from 3.2 in ICUs with less than 30% intubated patients to 6.3 in ICUs with 30–59% intubated patients, and 8.2 in ICUs with ≥60% intubated patients. The mean device-adjusted rate was 10.8 intubation-associated pneumonia episodes per 1000 intubation-days and varied between 3.9 per 1000 intubation-days in Luxembourg and 23.0 per 1000 intubation-days in Estonia (Table 2.6.2).

Table 2.6.1. Number of reported operations by country and type of operation, 2010

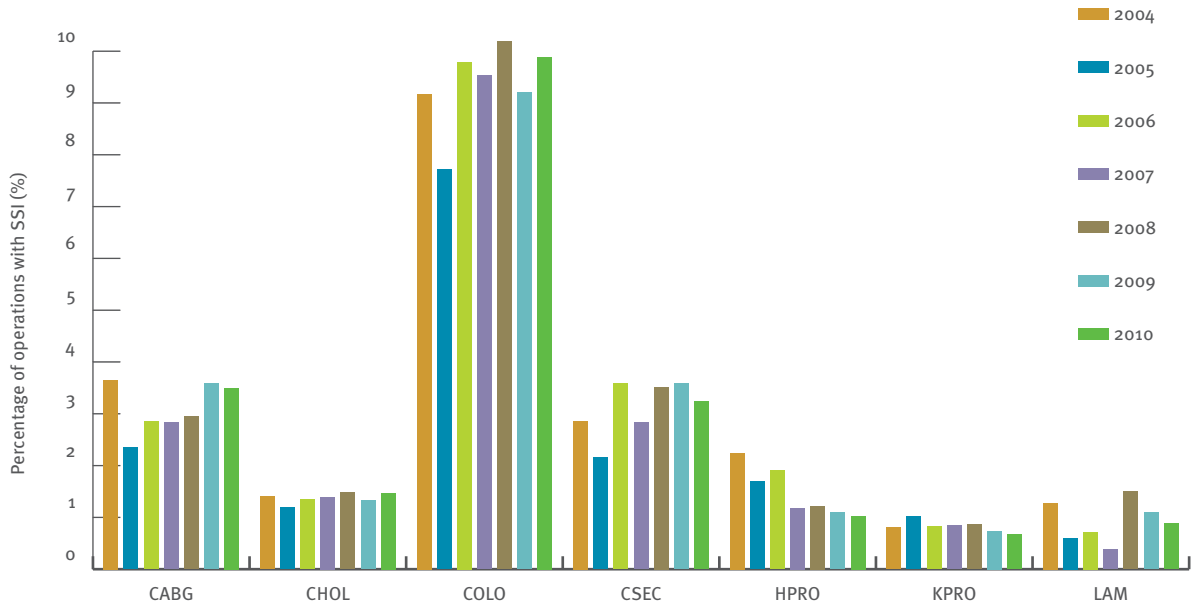
Country	Number of hospitals	Number of operations							
		CABG	CHOL	COLO	CSEC	HPRO	KPRO	LAM	Total
Austria	37	316	414	260	3586	4616	164	-	**9356**
Germany	289	10917	11486	6274	13245	30663	16916	2610	**92111**
Finland	13	-	-	-	-	4480	3636	-	**8116**
France	541	964	13850	6458	18868	24325	12830	1877	**79172**
Hungary	26	284	1905	385	2518	205	118	107	**5522**
Italy	84	451	2761	1976	4492	2148	833	369	**13030**
Lithuania	17	515	977	375	2228	409	396	-	**4900**
Malta	1	230	-	-	107	-	-	-	**337**
Netherlands	36	-	3140	2043	3945	6552	4517	517	**20714**
Norway	53	612	569	285	2486	2568	-	-	**6520**
Portugal	21	-	1887	728	1484	887	546	74	**5606**
Spain	31	575	1748	1444	1282	2446	1399	285	**9179**
United Kingdom[a]	278	6411	-	3706	27483	46745	47406	283	**132034**
Total	**1427**	**21275**	**38737**	**23934**	**81724**	**126044**	**88761**	**6122**	**386597**

Source: HAI-Net SSI. CABG: coronary artery bypass graft; CHOL: cholecystectomy; COLO: colon surgery; CSEC: Caesarean section; HPRO: hip prosthesis; KPRO: knee prosthesis; LAM: laminectomy; –: no data. (a) Comprises data from England, Northern Ireland, Scotland and Wales.

Overall, the most frequently isolated microorganisms in ICU-acquired pneumonia episodes were *Pseudomonas aeruginosa* and *Staphylococcus aureus*, with an average proportion of meticillin-resistant isolates (MRSA) of 41.8%. Inter-country differences showed higher relative frequencies of *Acinetobacter* spp. in Italy, Portugal, Lithuania and Spain. The high percentage of *Candida* spp. reported by ICUs in Austria, Germany and the United Kingdom (Scotland) may indicate different diagnostic practices for ICU-acquired pneumonia in these countries or reflect differences in reporting this microorganism, which is often isolated in respiratory samples but only rarely involved in the pathogenesis of pneumonia. The removal of *Candida* spp. if another microorganism was reported only reduced its overall relative frequency from 6.8% to 6.6% and did not explain inter-country variations.

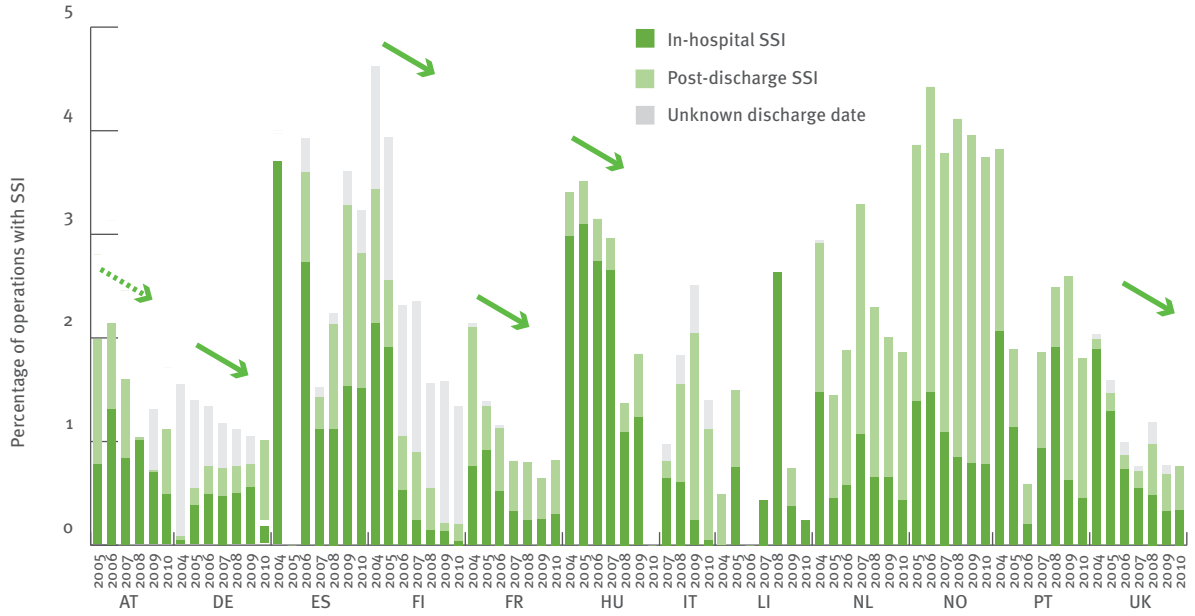
On average, ICU-acquired bloodstream infections occurred in 3.1% of patients staying more than two days in the ICU, with an average incidence density of 3.5 bloodstream infection episodes per 1000 patient-days. As to bloodstream infections, 36.5% were catheter-related,

Figure 2.6.6. Trends in cumulative incidence of surgical site infections by operation type, EU/EEA countries, 2004–2010



Source: HAI-Net SSI.
CABG: coronary artery bypass graft; CHOL: cholecystectomy; COLO: colon surgery; CSEC: Caesarean section; HPRO: hip prosthesis; KPRO: knee prosthesis; LAM: laminectomy. Data from all countries were pooled; methodological variations between and within countries may account for a part of the observed trends.

Figure 2.6.7. Trends in cumulative incidence of surgical site infections in hip prosthesis by country, 2004–10



Source: HAI-Net SSI. Arrows indicate significant trends (green line p<0.001; dotted line p<0.05).

37.0% were secondary to another infection, and 26.4% were of unknown origin. In cases where the bloodstream infection was secondary, the primary infection site was pulmonary in 47.8% of the cases, the gastrointestinal tract accounted for 18.3% of the cases, the urinary tract was affected in 14.5% of the cases, a surgical site was infected in 4.6% of the cases, skin and soft tissue were affected in 3.8% of the cases, and 10.9% of the cases were 'other/unknown'. The average central vascular catheter (CVC) utilisation rate was 73.2 CVC days per 100 patient-days (lowest: Luxembourg, 61.2; highest Austria, 89.5). The mean device-adjusted rate in patients staying more than two days in the ICU was 3.1 CVC-associated bloodstream infection episodes per 1000 CVC-days (25th percentile: 0.7, median: 2.2, 75th percentile: 4.3).

The most frequently isolated microorganisms in bloodstream infection episodes were coagulase-negative staphylococci, followed by *Enterococcus* spp., *S. aureus* (56.3% of which were MRSA), *Candida* spp. and *P. aeruginosa* (Table 2.6.4). The percentage of *Acinetobacter* spp. was higher in Italy, Lithuania, Portugal, Slovakia and Spain. The large differences in the proportion of coagulase-negative staphylococci probably indicate differences in reporting skin contaminants isolated from blood cultures. These differences were not explained after removing coagulase-negative staphylococci that were reported together with other microorganisms (overall decrease from 25.9% to 25.7%).

Urinary tract infections (UTIs) were reported in 3.2% of the patients staying more than two days in the ICU, with 96.4% of the infections associated with the use of a urinary catheter. The mean device-adjusted UTI rate was 4.0 catheter-associated UTI episodes per 1000 urinary catheter-days (25th percentile: 1.0, median: 3.0, 75th percentile: 5.6). On average, urinary catheters were used in 81% of the patient-days. The most frequently isolated microorganisms in UTI episodes were *E. coli*, *Candida* spp. and *Enterococcus* spp. (Table 2.6.5).

Overall, the percentages of resistant isolates in selected bacteria associated with ICU-acquired infections were: 46% oxacillin resistance (MRSA) in *S. aureus* isolates (up from 36% in 2009), 6% vancomycin resistance in *Enterococcus* spp. isolates (up from 3% in 2009), 22% ceftazidime resistance in *P. aeruginosa* isolates (down from 26% in 2009), 23% ceftriaxone or cefotaxime resistance in *E. coli* isolates (up from 16% in 2009), 38% ceftriaxone or cefotaxime resistance in *Klebsiella* spp. isolates (up from 28% in 2009), and 52% ceftriaxone or cefotaxime resistance in *Enterobacter* spp. isolates (comparable to 50% in 2009).

In the six countries that collected detailed resistance data from bacteria associated with ICU-acquired infections (Belgium, Italy, Malta, Portugal, Slovakia, Spain and Sweden), additional data were available for carbapenem and colistin resistance. In these countries, carbapenem resistance was reported in 3.5% of *Klebsiella* spp., 1.3% of *E. coli*, 4.2% of *Enterobacter* spp., 35.6% of *P. aeruginosa* and 87.7% of *Acinetobacter baumannii* isolates. Among isolates that were tested for colistin susceptibility, colistin resistance was reported in 2.7% of *A. baumannii*, 1.3% of *P. aeruginosa* and 42.5% of *Stenotrophomonas maltophilia* isolates.

Pilot point prevalence survey of healthcare-associated infections and antimicrobial use in acute-care hospitals

From January 2009 to March 2011, ECDC developed a standardised methodology for point prevalence surveys (PPSs) of HAI and antimicrobial use in acute-care hospitals[5], together with more than 100 experts from all EU Member States, two EEA and four EU enlargement countries, as well as other international partners such as the former ESAC project. From May to October 2010, the PPS methodology was piloted in 66 hospitals in 23 countries (Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and the United Kingdom–Scotland)[5,6].

Of a total of 19888 patients included in the pilot PPS, 1408 (7.1%) had at least one HAI at the time of the survey.

Table 2.6.2. Intubation-associated pneumonia rates by country, patient-based surveillance, 2010

Country	Number of patients	Average length of ICU stay (days)	Intubation rate (days per 100 patient days)	Intubation associated pneumonia rate (episodes per 1000 intubation days)				
				Pooled country mean	Mean of ICUs	25th percentile	Median	75th percentile
Austria	5207	10.5	61.3	12.5	12.1	3.3	11.8	17.3
Belgium	4163	7.9	40.4	13.8	9.5	0.0	7.0	16.0
Estonia	43	11.2	72.2	23.0	22.9	22.9	22.9	22.9
France	25685	11.6	60.6	13.4	12.9	7.7	11.8	16.3
Italy	18216	10.7	66.3	7.8	8.5	3.5	6.4	10.9
Lithuania	2442	7.9	40.9	11.7	11.2	0.0	0.0	26.8
Luxembourg	2545	9.3	32.8	3.9	7.0	2.5	5.3	8.6
Portugal	2893	12.2	74.9	10.4	12.7	5.8	9.7	19.1
Slovakia	222	10.4	81.0	7.5	9.4	1.6	6.8	10.4
Spain	24934	8.5	45.5	11.2	11.5	3.8	8.7	17.0
United Kingdom	5284	8.0	67.3	5.6	5.7	5.7	5.7	5.7
Total	**91634**	**10.0**	**57.4**	**10.8**	**11.3**	**4.5**	**9.6**	**16.0**

Source: HAI-Net ICU, patient-based surveillance. ICUs that reported data on fewer than 20 patients were excluded; United Kingdom: data from Scotland only.

Of 1531 HAIs, the most frequent types were pneumonia (22%), surgical site infections (19%), urinary tract infections (17%), bloodstream infections (12%) and gastrointestinal infections (7%). Of 1165 microorganisms reported from 905 (59%) HAIs, the most frequent ones were *E. coli* (15%), *S. aureus* (12%), *Pseudomonas* spp. (12%), *Enterococcus* spp. (10%) and coagulase-negative staphylococci (9%).

Overall, 6875 (34.6%) patients received at least one antimicrobial agent (mean of hospitals 38.0%; median 35.6%, IQR 28.0–44.7%). The percentage of patients receiving at least one antimicrobial agent varied between 2.2% in psychiatric wards and 61.3% in intensive-care units. Patients treated with antimicrobials received on average 1.4 agents. Combinations of penicillins and beta-lactamase inhibitors (ATC group J01CR) were the most frequently prescribed antimicrobial agents (16.4%), followed by fluoroquinolones (13.5%), second-generation cephalosporins (9.4%) and third-generation cephalosporins (7.3%). The indication was intended treatment for 66.4% of all antimicrobial courses (community infection, 41.3%; hospital infection, 24.0%; other healthcare-associated infection, 1.1%), prophylaxis for 30.7% of the antimicrobial courses (surgical prophylaxis, 17.2%; medical prophylaxis, 13.5%), and unknown for the remaining courses (2.9%).

The results of this survey should be interpreted with caution because they are based on a non-representative sample of hospitals and data were collected in the context of a pilot study. Nevertheless, the pilot PPS made it possible to make final adjustments to the ECDC-PPS protocol in view of its planned implementation in all EU Member States in 2011–12.

First point prevalence survey of healthcare-associated infections and antimicrobial use in long-term care facilities

From December 2008 until May 2011, the European Centre for Disease Prevention and Control funded the HALT (healthcare-associated infections in long-term care facilities) project[i] with the aim of supporting the prevention of healthcare-associated infections (HAI) and antimicrobial resistance (AMR) in European long-term care facilities (LTCFs). HALT was also intended to measure the prevalence of HAI, quantify antimicrobial use, and serve as a performance indicator for infection prevention/control practices and antimicrobial stewardship practices in LTCFs. Based on previous experiences from the IPSE and ESAC projects, a repeated point prevalence methodology tailored to the LTCF/nursing home setting was developed and implemented in a Europe-wide network of LTCFs.

The HALT project estimated that there were at least 62 000 LTCFs in the EU in 2010, with a capacity of approximately 3.1 million beds located in general nursing homes (residents needing 24-hour medical or highly skilled nursing supervision; 58% of total LTCF beds), residential homes (residents needing 24-hour supervision of daily activities; 32%), and mixed facilities (10%).

In 2010, a first point prevalence survey included a total of 64 007 residents surveyed in 722 LTCFs in 25 countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, UK–England, UK–Northern Ireland, UK–Scotland, UK–Wales). A total of 61 932 residents were included in the analysis, with 4.3% receiving antimicrobials. The five most prescribed antimicrobials were amoxicillin-clavulanate (12.7%), nitrofurantoin (10.4%), trimethoprim (9.9%), amoxicillin (7.3%) and ciprofloxacin (6.9%). Uroprophylaxis represented 27.7% of all prescribed antimicrobial agents in participating LTCFs. Half of all antimicrobials in participating LTCFs were prescribed for urinary tract infection.

i ECDC Grant/2008/04 awarded to a consortium lead by the Université Claude Bernard Lyon (UCBL) in collaboration with the Belgian Scientific Institute of Public Health (WIV-ISP), the Agenzia sanitaria e sociale regionale Bologna (ASSR), and the Health Protection Agency London (HPA), including EU/EEA countries and Croatia.

Table 2.6.3. Ten most frequently isolated microorganisms in ICU-acquired pneumonia by country, 2010

	Austria	Belgium	Estonia	France	Germany	Italy	Lithuania	Luxembourg	Portugal	Slovakia	Spain	Sweden	United Kingdom	Total
Number of isolates	566	758	10	3292	4288	134	113	34	289	22	1120	132	166	**10924**
Pseudomonas aeruginosa	22.6%	17.3%	30.0%	20.4%	13.7%	17.2%	16.8%	20.6%	26.3%	22.7%	21.2%	6.8%	10.2%	**17.5%**
Staphylococcus aureus	7.8%	9.6%	0.0%	16.6%	16.2%	9.7%	6.2%	5.9%	16.6%	0.0%	15.8%	19.7%	18.1%	**15.2%**
Escherichia coli	8.0%	12.7%	10.0%	9.3%	12.4%	11.9%	5.3%	11.8%	6.2%	4.5%	7.3%	3.8%	10.2%	**10.3%**
Klebsiella spp.	9.0%	7.5%	30.0%	7.8%	10.5%	11.2%	16.8%	17.6%	9.0%	40.9%	8.0%	9.1%	9.6%	**9.3%**
Enterobacter spp.	7.4%	11.9%	0.0%	7.4%	7.1%	3.7%	7.1%	2.9%	6.6%	4.5%	7.0%	5.3%	7.8%	**7.5%**
Candida spp.	14.5%	1.1%	0.0%	5.3%	9.1%	3.7%	1.8%	2.9%	2.4%	4.5%	4.2%	6.1%	14.5%	**6.8%**
Stenotrophomonas spp.	4.1%	5.1%	10.0%	3.7%	3.8%	6.0%	0.9%	8.8%	2.8%	0.0%	4.4%	3.0%	2.4%	**3.9%**
Acinetobacter spp.	2.5%	1.2%	0.0%	2.8%	1.9%	22.4%	16.8%	0.0%	18.3%	4.5%	9.0%	0.8%	1.2%	**3.7%**
Serratia spp.	2.8%	3.8%	0.0%	2.8%	3.7%	0.7%	3.5%	5.9%	2.4%	0.0%	3.8%	2.3%	1.8%	**3.2%**
Haemophilus spp.	1.6%	2.8%	0.0%	4.2%	2.0%	1.5%	1.8%	0.0%	0.7%	0.0%	3.9%	9.1%	6.6%	**3.0%**

Source: HAI-Net ICU. Italy: data from SPI-UTI network only; United Kingdom: data from Scotland only.

Signs and symptoms of an infection were reported for 2496 (4.0%) of the eligible residents; infections were confirmed (i.e. meeting EU case definitions for HAI) in only 1488 (2.4%) residents. The most frequently reported types of infection were respiratory tract infection (33.6%), urinary tract infection (22.3%), skin and soft tissue infection (21.4%), conjunctivitis (8%) and gastro-intestinal infection (4.6%).

Based on these results, the total number of long-term-care-associated infections each year in EU/EEA countries was estimated at 4.3 million, 2.6 million of which would be case-definition confirmed[2]. It should be noted that these estimates merely give an order of magnitude of the burden of HAI in LTCFs and come in addition to the earlier estimate of 4.1 million patients who acquire an HAI in acute-care facilities every year[4].

Discussion

Eighteen countries submitted data for at least one surveillance component. The number of included surgical operations and ICU patients increased compared with last year's report (2009 data)[6].

HAI surveillance at the national level is an essential component of infection prevention. Control programmes offer participating hospitals a standardised tool to compare their own performance to other participants. Participation in the surveillance network encourages compliance with existing guidelines and helps to correct or improve specific practices as well as evaluate new preventive practices. Participation in the European network could also produce benefits at the local level because international comparisons may provide insights not possible at the regional or national level.

An example of the effectiveness of surveillance as an HAI prevention tool is the decreasing overall trend of SSI after hip prosthesis surgery which was reported in 2009 and confirmed by 2010 data. However, inter-country differences in surveillance methods persist and further emphasis should be put on harmonisation of surveillance methods.

Table 2.6.4. Ten most frequently isolated microorganisms in ICU-acquired bloodstream infections, 2010

	Austria	Belgium	Estonia	France	Germany	Italy	Lithuania	Luxembourg	Malta	Portugal	Slovakia	Spain	United Kingdom	Total
Number of isolates	302	170	4	901	1789	70	64	41	44	194	18	1005	119	**4721**
Coagulase-negative staphylococci	41.7%	22.4%	0.0%	19.2%	29.2%	32.9%	23.4%	26.8%	2.3%	15.5%	27.8%	25.4%	19.3%	**25.9%**
Enterococcus spp.	14.6%	14.1%	25.0%	9.7%	17.9%	15.7%	4.7%	7.3%	15.9%	10.3%	5.6%	9.8%	9.2%	**13.4%**
Staphylococcus aureus	3.6%	5.9%	25.0%	9.5%	13.4%	5.7%	6.3%	12.2%	6.8%	13.9%	5.6%	6.5%	18.5%	**10.1%**
Candida spp.	14.2%	7.6%	0.0%	8.0%	7.4%	10.0%	4.7%	22.0%	6.8%	9.3%	0.0%	8.7%	8.4%	**8.4%**
Pseudomonas aeruginosa	5.0%	8.8%	0.0%	9.8%	3.3%	5.7%	9.4%	7.3%	22.7%	12.4%	33.3%	12.0%	0.0%	**7.4%**
Escherichia coli	2.6%	11.8%	0.0%	11.2%	6.6%	4.3%	3.1%	7.3%	2.3%	3.6%	5.6%	6.6%	14.3%	**7.4%**
Klebsiella spp.	4.0%	7.6%	25.0%	6.4%	5.1%	10.0%	9.4%	9.8%	9.1%	9.3%	11.1%	8.4%	9.2%	**6.6%**
Enterobacter spp.	2.0%	4.7%	0.0%	8.0%	4.0%	0.0%	6.3%	0.0%	11.4%	6.7%	0.0%	5.6%	5.0%	**5.1%**
Acinetobacter spp.	1.0%	0.0%	0.0%	1.1%	0.7%	11.4%	9.4%	0.0%	2.3%	6.2%	5.6%	7.4%	0.8%	**2.7%**
Serratia spp.	0.7%	4.7%	0.0%	2.3%	2.0%	0.0%	3.1%	0.0%	4.5%	5.7%	0.0%	2.6%	2.5%	**2.3%**

Source: HAI-Net ICU. Italy: data from SPI-UTI network only; United Kingdom: data from Scotland only.

Table 2.6.5. Ten most frequently isolated microorganisms in ICU-acquired urinary tract infections, 2010

	Austria	Belgium	Estonia	France	Germany	Italy	Lithuania	Luxembourg	Portugal	Slovakia	Spain	Total
Number of isolates	448	49	7	1158	931	25	67	25	84	25	673	**3492**
Escherichia coli	12.5%	32.7%	14.3%	30.1%	29.9%	8.0%	9.0%	32.0%	16.7%	8.0%	24.5%	**25.7%**
Candida spp.	32.1%	6.1%	14.3%	16.5%	10.8%	16.0%	26.9%	8.0%	21.4%	20.0%	25.6%	**18.9%**
Enterococcus spp.	18.5%	10.2%	28.6%	13.0%	21.7%	16.0%	20.9%	28.0%	14.3%	20.0%	15.2%	**16.8%**
Pseudomonas aeruginosa	18.8%	22.4%	0.0%	14.2%	12.6%	20.0%	7.5%	8.0%	19.0%	24.0%	12.8%	**14.2%**
Klebsiella spp.	4.9%	4.1%	42.9%	6.6%	7.9%	8.0%	10.4%	12.0%	9.5%	16.0%	6.8%	**7.1%**
Enterobacter spp.	3.1%	8.2%	0.0%	5.7%	4.3%	0.0%	0.0%	0.0%	3.6%	0.0%	3.1%	**4.2%**
Proteus spp.	2.2%	6.1%	0.0%	3.6%	5.6%	8.0%	11.9%	0.0%	4.8%	8.0%	2.8%	**4.1%**
Coagulase-negative staphylococci	5.4%	4.1%	0.0%	1.7%	1.3%	0.0%	0.0%	4.0%	0.0%	0.0%	1.9%	**2.1%**
Citrobacter spp.	0.2%	0.0%	0.0%	2.1%	1.4%	0.0%	0.0%	4.0%	1.2%	0.0%	0.9%	**1.3%**
Staphylococcus aureus	0.4%	0.0%	0.0%	1.7%	1.0%	4.0%	0.0%	4.0%	2.4%	0.0%	0.7%	**1.1%**

Source: HAI-Net ICU.

Data from the surveillance of infections that were acquired in intensive-care units showed a steady increase of several antimicrobial resistance markers in Gram-negative bacteria. Resistance to last-line antimicrobials such as carbapenems and colistin was also reported.

The methodology of the ECDC point prevalence survey of HAI and antimicrobial use in acute-care hospitals was successfully piloted in 2010 and implemented in the Member States in 2011 and 2012. Results supported the order of magnitude of earlier estimates of the burden of HAI in acute-care hospitals in EU/EEA countries[5]. The first point prevalence survey of HAI and antimicrobial use was carried out in 722 long-term care facilities in 25 countries and provided the first estimates of the prevalence of HAI in nursing homes and residential homes in Europe.

ECDC will continue to support Member States in their efforts to set up national HAI surveillance networks that are compatible with HAI-Net by providing free software for healthcare institutions and network coordination centres, organising training courses, and performing on-demand country visits for technical support.

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Antimicrobial consumption

- The European Surveillance of Antimicrobial Consumption Network (ESAC-Net) provides data on antimicrobial consumption from the community and hospital sectors of 29 EU/EEA countries. Twenty-six countries reported data for 2010.
- In 2010, consumption of antibacterials ('antibiotics') for systemic use (ATC group J01) in the community varied broadly in the various countries and ranged from 11.1 to 39.4 defined daily doses (DDD) per 1000 inhabitants per day; median 18.3 DDD per 1000 inhabitants and per day.
- In 2010, consumption of antibacterials for systemic use (ATC group J01) in the hospital sector in the various countries ranged from 1.1 DDD to 3.0 DDD.
- The reporting of hospital antimicrobial consumption data needs to be improved to allow for the linking of two major data sets: antimicrobial consumption data from ESAC-Net and antimicrobial resistance data from the European Antimicrobial Resistance Surveillance Network (EARS-Net).
- Comparable and reliable data collected by ESAC-Net may provide the basis for building indicators that could be used for healthcare professionals and policy makers to monitor progress towards a more prudent use of antibiotics.

The European Surveillance of Antimicrobial Consumption Network (ESAC-Net, formerly ESAC project) is a Europe-wide network of national surveillance systems. The network has been providing European reference data on antimicrobial consumption since 2001[1]. ESAC-Net collects and analyses data on antimicrobial consumption from 29 EU/EEA countries, both in the community and in the hospital sector. Coordination of ESAC-Net was transferred from the University of Antwerp, Belgium, to the European Centre for Disease Prevention and Control (ECDC) in July 2011.

The data sources for ESAC-Net are national sales and reimbursement data, depending on national preferences in the Member States, and include information from national drug registers. The WHO Anatomical Therapeutic Chemical (ATC) classification system is used for the grouping of antimicrobials[2]. Data on antimicrobial consumption are collected at the product level for antibacterials ('antibiotics') for systemic use (ATC group J01), antimycotics for systemic use (ATC group J02), antimycobacterials (ATC group J04), and antivirals for systemic use (ATC group J05). In addition, data on a few other antimicrobials (outside of ATC group J) are also collected. Antimicrobial consumption is expressed as the number of WHO defined daily doses (DDD) per 1000 inhabitants per day.

Epidemiological situation in 2010

Twenty-six countries reported data in 2010. All reported data on antimicrobial consumption in the community. Two countries (Iceland and Greece) were only able to report data on the total consumption in the country. For three other countries (Cyprus, Romania and Slovakia), data for 2010 were not available for this report and data for 2009 were used instead; from Cyprus data were only available on the total consumption in the country.

Eighteen countries reported data on antimicrobial consumption, specifically from the hospital sector. In the community and the hospital sectors, mainly sales data or a combination of sales and reimbursement data were available.

Consumption of antibacterials ('antibiotics') for systemic use in the community

Consumption of antibacterials ('antibiotics') for systemic use in the community (i.e. outside hospitals) ranged from 11.1 DDD per 1000 inhabitants per day in Estonia to 39.4 DDD per 1000 inhabitants per day in Greece (Figure 2.6.8). The median consumption was 18.3 DDD per 1000 inhabitants per day.

As in previous years, penicillins were the most frequently prescribed antibacterials in all countries, ranging from 28.3% (Germany) to 67.2% (Slovenia), whereas the proportion of consumption of other antibacterial classes varied widely among the countries. For example, cephalosporins and other beta-lactams ranged from 0.2% (Denmark) to 23.7% (Malta); macrolides, lincosamides and streptogramins varied from 5.3% (Sweden) to 23.9% (Austria); and quinolones ranged from 3.1% (Denmark) to 13.3% (Portugal) (Figure 2.6.8).

Temporal trends in the consumption of antibacterials ('antibiotics') for systemic use from 2008 to 2010 are presented in Figure 2.6.9. Austria, Lithuania and Poland showed a decrease of more than 5% between 2009 and 2010, while Iceland, Latvia and the United Kingdom showed an increase of more than 5% during the same period. During the period 2008–10, consumption in the community continuously decreased in Bulgaria, Estonia, Lithuania and Slovenia.

Consumption of antibacterials ('antibiotics') for systemic use in the hospital sector

Consumption of antibacterials ('antibiotics') for systemic use in the hospital sector ranged from 1.1 DDD per 1000 inhabitants per day in the Netherlands to 3.0 DDD per

1000 inhabitants per day in Latvia (Figure 2.6.10). The position of Finland is explained by the fact that Finnish data for the hospital sector also include antimicrobial consumption in remote primary healthcare centres and nursing homes.

The relative proportion of consumption of antibacterials from various classes in the hospital sector varied widely among the countries (Figure 2.6.10). Contrary to the situation in the community, penicillins were not always the most frequently prescribed antibiotic class: substantial proportions were reported for cephalosporins and other beta-lactams, including carbapenems (range: 9.3% in Ireland to 49.9% in Bulgaria), macrolides, lincosamides and streptogramins (range: 2.4% in Lithuania to 14.6% in Ireland) and quinolones (range: 6.1% in Portugal to 20.9% in Hungary).

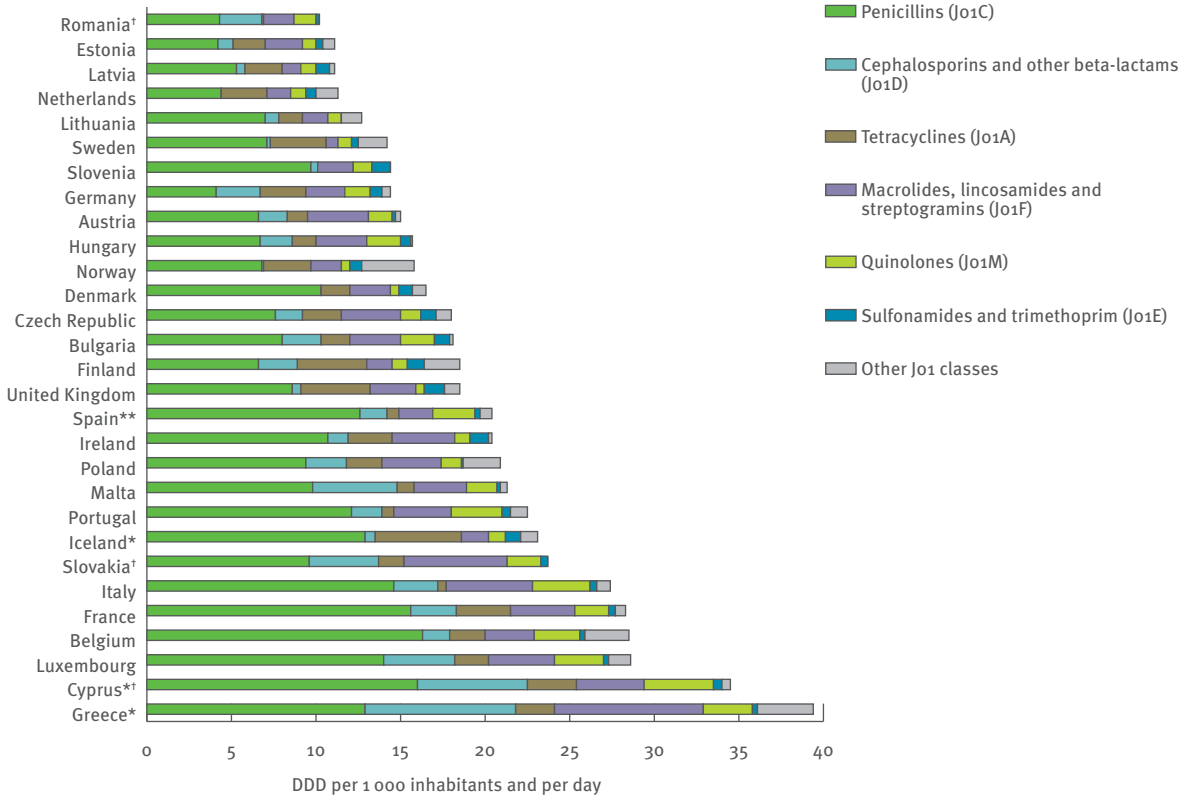
Discussion

Overuse and irresponsible use of antimicrobials is associated with the development and spread of antimicrobial resistance – a serious threat to public health, notably because of the emergence and spread of highly-resistant bacteria and the relative lack of new antimicrobial agents in the research and development pipeline[3]. Antimicrobial consumption, and in particular the consumption of antibacterials for systemic use (expressed in DDD per 1000 inhabitants per day) can be a helpful indicator[4] for healthcare professionals and policy makers to monitor progress towards a more prudent use of antibiotics.

As always, inter-country comparisons should be made with caution. Some countries only report total consumption, combining both the community and the hospital sector, and this may vary from year to year, even within the same country. In addition, national data sources vary; while some countries have a national registry of all antimicrobials available in the market, such a register is lacking in others, which makes the proper calculation of antimicrobial consumption rather difficult.

Most antimicrobials are prescribed and consumed in the community, i.e. outside of hospitals. Despite this fact, the use of antimicrobials in hospitalised patients is a major driver for the selection and spread of multidrug-resistant bacteria responsible for hospital infections, e.g. carbapenemase-producing *Enterobacteriaceae*. Reporting of hospital antimicrobial consumption data must be further improved as it represents the next challenge for antimicrobial surveillance. Collecting data at the hospital level would make it possible to link antimicrobial consumption data from ESAC-Net to antimicrobial resistance data from the European Antimicrobial Resistance Surveillance Network (EARS-Net). A prerequisite for this type of analysis, however, would be the harmonisation of hospital codes and denominator data in ESAC-Net and EARS-Net.

Figure 2.6.8. Consumption of antibacterials for systemic use (ATC group J01) in the hospital sector, according to Anatomical Therapeutic Chemical (ATC) classification, EU/EEA countries, 2010

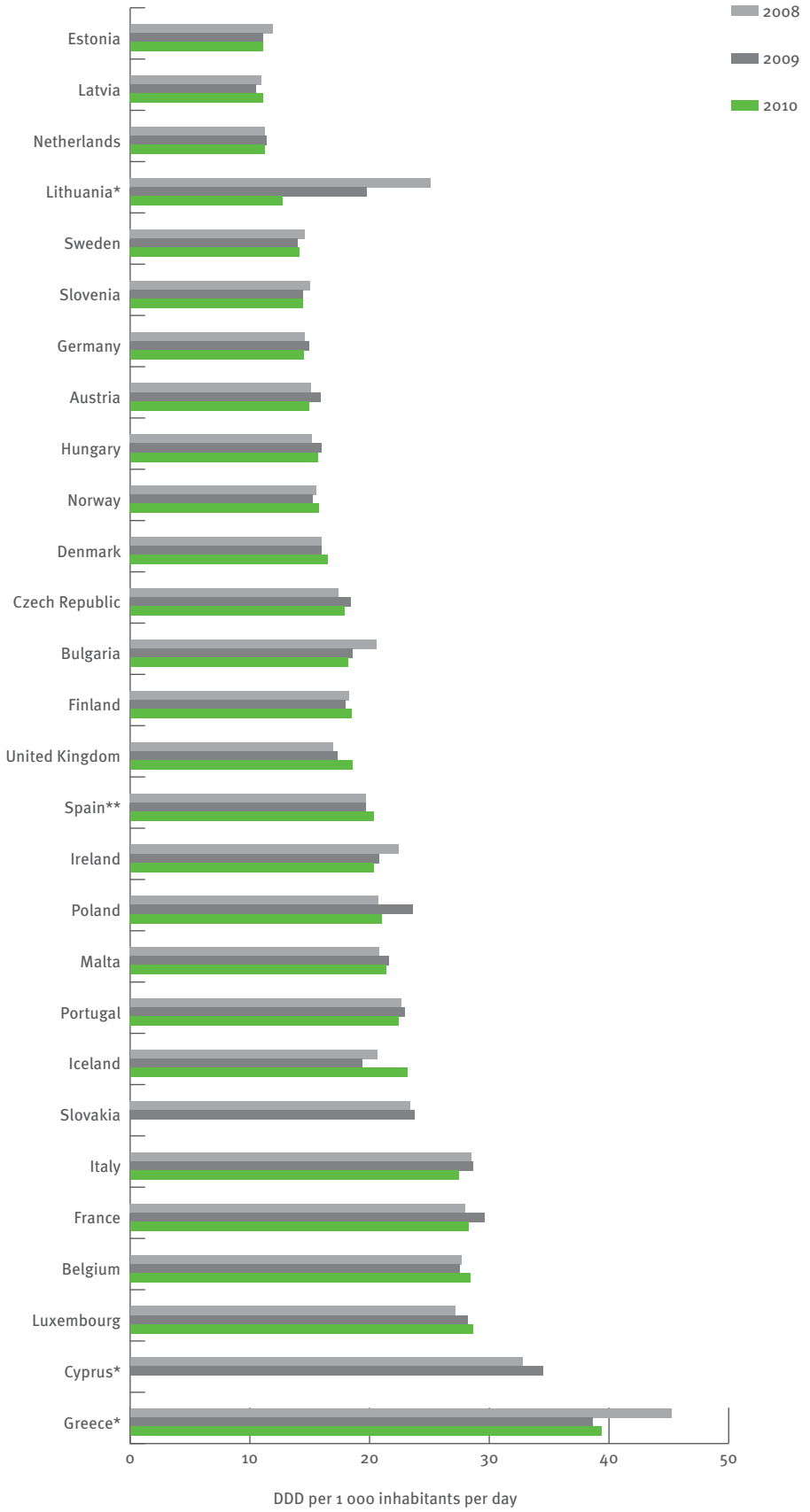


* Cyprus, Greece and Iceland: total consumption, i.e. including the hospital sector.

** Spain: reimbursement data. Excludes over-the-counter sales without prescription and other non-reimbursed courses.

† Cyprus, Romania and Slovakia: 2009 data.

Figure 2.6.9. Trends in the consumption of antibacterials for systemic use (ATC group J01) in the community (outside of hospitals), EU/EEA countries, 2008–10



Source: ESAC. * Cyprus, Lithuania: total care data. ** Spain: reimbursement data. Excludes over-the-counter sales without prescription and other non-reimbursed courses. *** Greece: Total care data for 2007 and 2008

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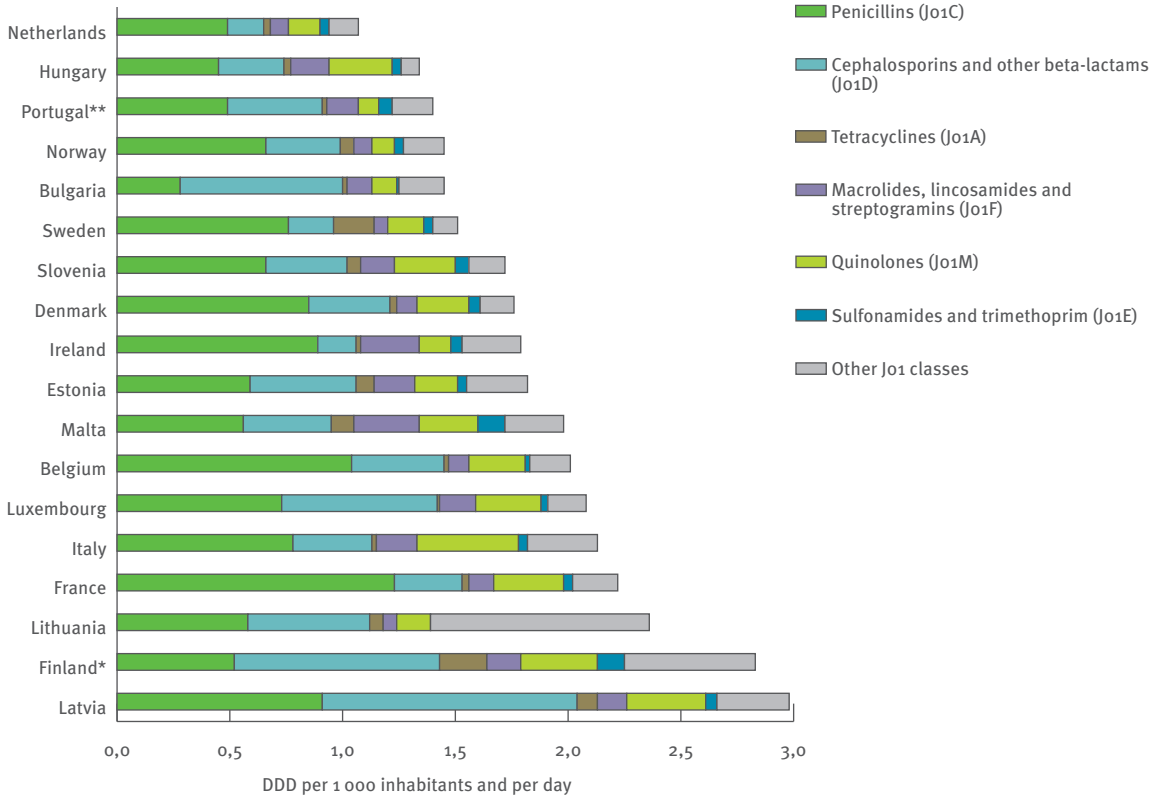
Figure 2.6.10. Consumption of antibacterials for systemic use (ATC group J01) in the hospital sector, according to Anatomical Therapeutic Chemical (ATC) classification, EU/EEA countries, 2010



* Finland: Includes consumption in remote primary healthcare centres and nursing homes.

** Portugal: data from public hospitals only.

3 Annual threat report: Analysis of potential communicable disease threats to public health in the European Union

3.1 Temporal analysis

Threats monitored through daily epidemic intelligence activities

From June 2005 to December 2011, ECDC actively monitored 942 threats, ranging from a minimum of 64 threats in 2011 to a maximum of 251 threats in 2008 (Figure 3.1). A median of 10 threats were monitored per month, with a range of 2–39. The seasonal distribution of threats tends to peak around summer and autumn. These seasonal peaks are mainly due to legionellosis and food- and waterborne diseases (Figure 3.2 and Figure 3.3). In 2011, the highest number of threats was recorded during March 2011 (Figure 3.3).

The 64 threats monitored in 2011 represent a 31% decrease compared with 2010. Of these 64 threats, 53

Figure 3.1. Number of threats monitored by ECDC, June 2005–December 2011

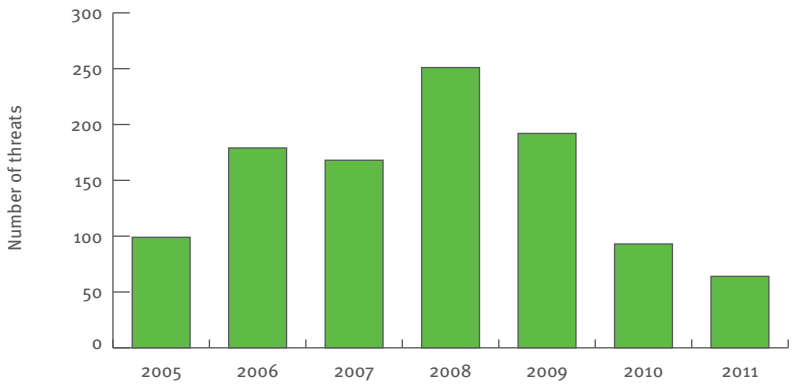
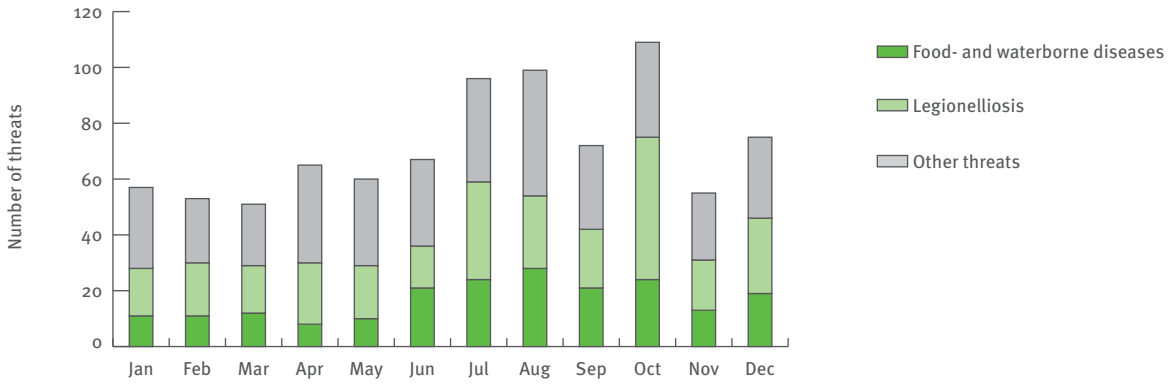


Figure 3.2. Seasonal distribution of threats monitored by ECDC, by month and group of disease, January 2006–December 2010



(83%) were identified and newly monitored in 2011, while 11 were ongoing; six were carried over from 2010 (NDM-1 carbapenemase-producing *Enterobacteriaceae*; autochthonous malaria in Spain; cholera in Haiti and the Dominican Republic; severe cases of influenza A(H1N1) in the United Kingdom; yellow fever in Uganda; and *Salmonella* Poona infections in Norway, Sweden, and Spain); two originated in 2006 (global monitoring of cholera and dengue) and three were originally monitored in 2005 (global monitoring of influenza A(H5N1), poliomyelitis, and chikungunya).

The decrease of monitored threats in 2011 is largely due to the fact that the proportion of threats meeting the criteria for inclusion in the Early Warning Response System (EWRS) was higher in 2011 (45%) than in 2010 (31%). The number of threats meeting the criteria (29) was the same for both years.

The number of monitored threats related to legionellosis decreased from 28 (30%) in 2010 to eight (13%) in 2011. This is mainly due to the fact that the European Legionnaires' Disease Surveillance Network (ELDSNet), which went live on 1 April 2010, is now fully functional and only monitors rapidly evolving clusters.

Table 3.1. Distribution of Early Warning Response System (EWRS) messages, January 2005–December 2011

Year of posting*	Message threads (related to threats)	Comments posted	Excluded messages (not related to threats)	Selective exchange messages posted
2005	87	131	16	2
2006	135	222	3	50
2007	79	259	6	208
2008	93	209	6	169
2009	501	811	8	720
2010	85	225	4	211
2011	96	441	2	316
Total	**1076**	**2298**	**45**	**1676**

* Comments posted in 2011 can relate to message threads posted in 2010.

Figure 3.3. Seasonal distribution of threats monitored by ECDC, by month and group of disease, January 2011–December 2011

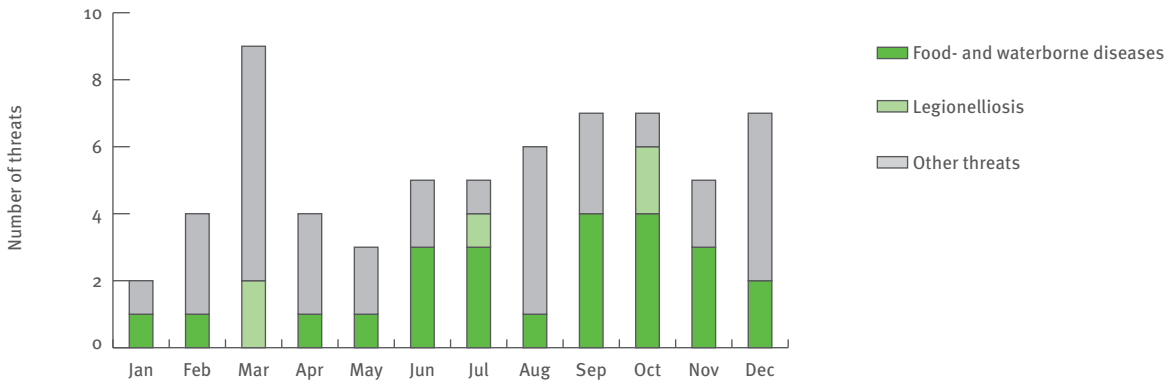
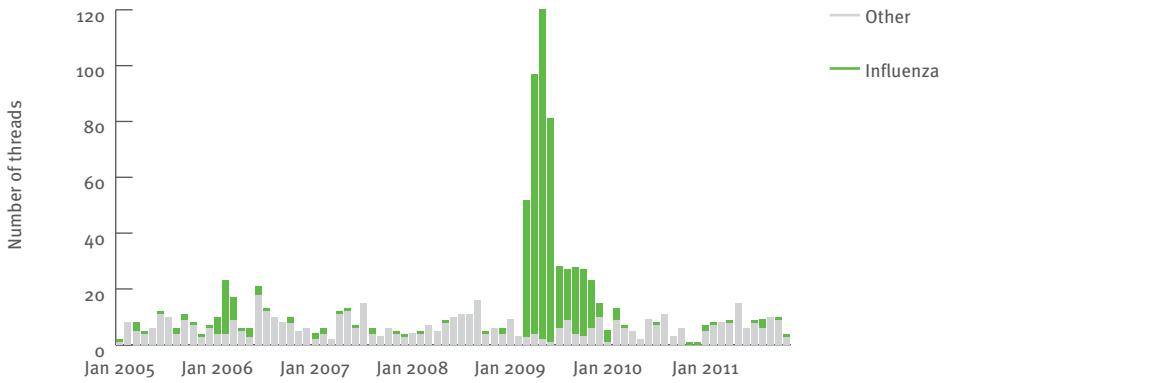


Figure 3.4. Number of EWRS message threads by year and month of reporting, January 2005–December 2011



Messages posted on EWRS

From January 2005 until the end of 2011, 1121 new message threads were posted on the EWRS, 1076 of which were related to threats (96%); 45 were related to maintenance, system interruptions, instructions or exercises and therefore excluded from further analysis (Table 3.1).

In 2011, 96 message threads were posted. This number was similar to previous years if one disregards all messages related to influenza in 2006 and 2009. In 2006, 32% of the threads were related to avian influenza; in 2009, 89% of the message threads referred to the influenza A(H1N1) pandemic (Figure 3.4).

A total of 441 comments were posted in reply to messages in 2011, nearly double the number received in other years, with the exception of 2009 when messages and comments were significantly higher due to the influenza A(H1N1) pandemic. The increase in the number of comments in 2011 (Table 3.1) was mainly due to the STEC outbreak which accounted for 58% (251) of

Figure 3.5. Number of EWRS message threads, comments and selective messages posted, by month, January 2011–December 2011

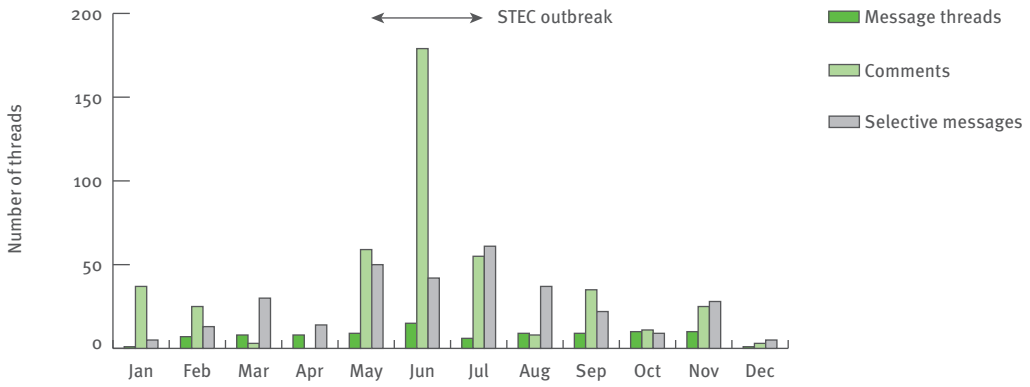
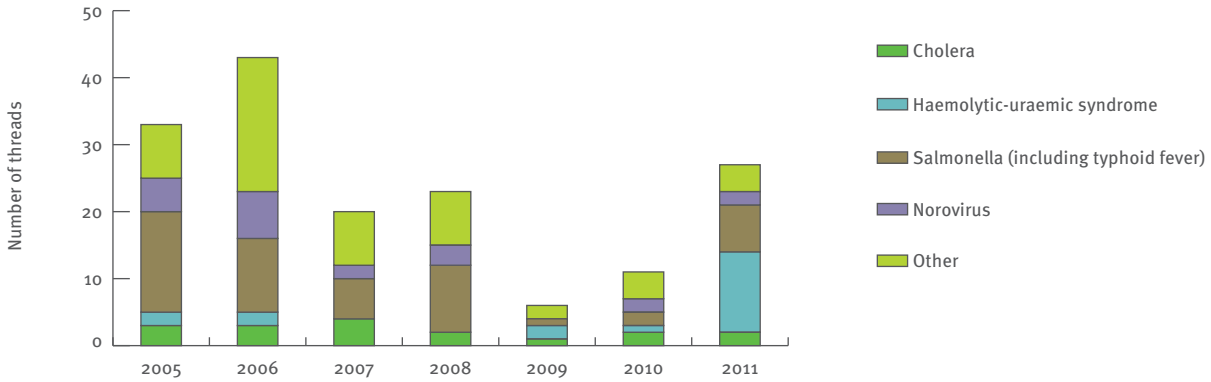
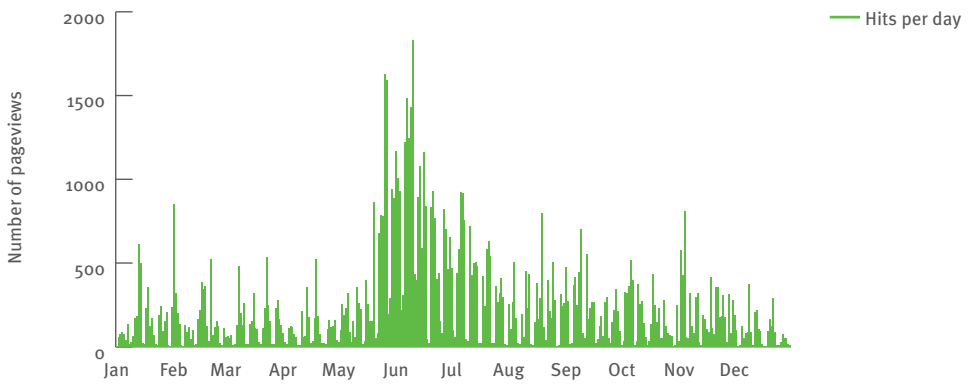


Figure 3.6. Number of message threads related to gastro-intestinal infections, January–December 2011



Note: 'Other' includes message threads related to acute diarrhoea, shigellosis, campylobacteriosis, cryptosporioidosis and food intoxications.

Figure 3.7. Number of EWRS pageviews by registered EWRS users, January 2011–December 2011



the comments, while only 13% of the message threads were related to this outbreak (Figure 3.5). The number of message threads related to gastro-intestinal diseases in 2011 was the third highest (27) since 2005 (Figure 3.6). The highest number of message threads (12) in 2011 concerned haemolytic-uraemic syndrome (HUS), followed by measles and influenza, which accounted for eleven message threads each. The number of EWRS pageviews by registered users was highest during the STEC outbreak (Figure 3.7).

Figure 3.8. Number of message threads monitored by ECDC, by day of week and time of day of posting, January 2005–December 2010

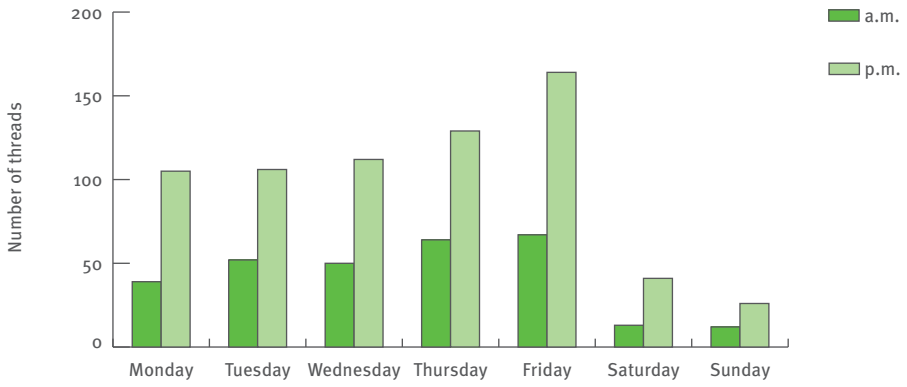


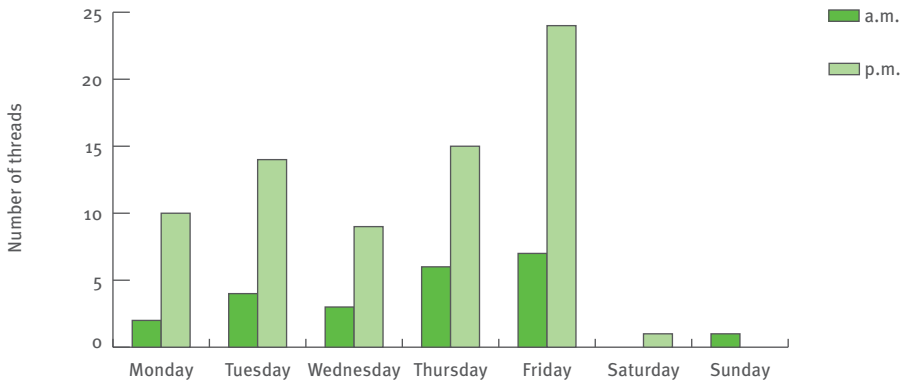
Table 3.2. Number of message threads, comments and selective messages posted, by reporting country/body, January 2005–December 2011

	Message threads posted	Comments posted	Selective exchange messages posted	Total number of messages posted
European Commission	166	340	284	**790**
Germany	63	168	147	**378**
France	70	82	106	**258**
Sweden	61	90	107	**258**
Spain	34	87	131	**252**
Austria	14	77	115	**206**
Italy	68	75	63	**206**
Portugal	59	110	37	**206**
Denmark	36	95	65	**196**
United Kingdom	64	60	72	**196**
The Netherlands	29	58	99	**186**
Romania	33	91	60	**184**
Ireland	43	70	31	**144**
Belgium	25	90	24	**139**
Lithuania	20	93	22	**135**
Slovakia	20	70	37	**127**
Czech Republic	22	57	43	**122**
Latvia	19	64	24	**107**
Finland	36	23	45	**104**
Hungary	19	52	32	**103**
Estonia	22	58	14	**94**
Norway	27	48	12	**87**
Malta	11	49	14	**74**
Poland	14	40	20	**74**
Greece	24	36	10	**70**
Iceland	22	42	4	**68**
Slovenia	17	48	1	**66**
Luxembourg	18	40	3	**61**
Bulgaria	11	30	19	**60**
Cyprus	7	45	8	**60**
ECDC	2	10	27	**39**
Liechtenstein	0	0	0	**0**
Total	**1076**	**2298**	**1676**	**5050**

Over the last six years, the number of new message threads was highest on Fridays and lowest during weekends (Figures 3.8 and 3.9). This 'Friday afternoon trend' became more pronounced in 2011.

Between 2005 and 2011, seven EU/EEA countries posted more than 200 messages each, including message threads, comments and selective messages. Twelve countries posted between 100 and 200 items, while the remaining eleven countries posted less than 100, with the exception of Liechtenstein, which posted no messages at all. The European Commission posted the highest number of message threads, comments and selective exchange messages during the observation period, accounting for 16% of all EWRS online postings (Table 3.2).

Figure 3.9. Number of message threads by day of week and time of day of posting, January 2011–December 2011



Analysis by disease group

The proportion of threats related to food- and waterborne diseases decreased from 42% in 2005 to 10% in 2010, its lowest value since 2005. In 2011, the proportion jumped to 36% of all monitored threats (23 threats) (Table 3.3 and Figure 3.10). Twenty threats (31%) were related to diseases of environmental and zoonotic origin; seven threats were related to influenza and events not directly related to diseases, e.g. increased migration to Greece; the earthquake and tsunami in Japan; the World Youth Day in Spain; several unexplained deaths in Chiang Mai, Thailand; the re-entry of Russia's Mars probe Phobos-Grunt; and the civil unrest in Libya (two monitored threats).

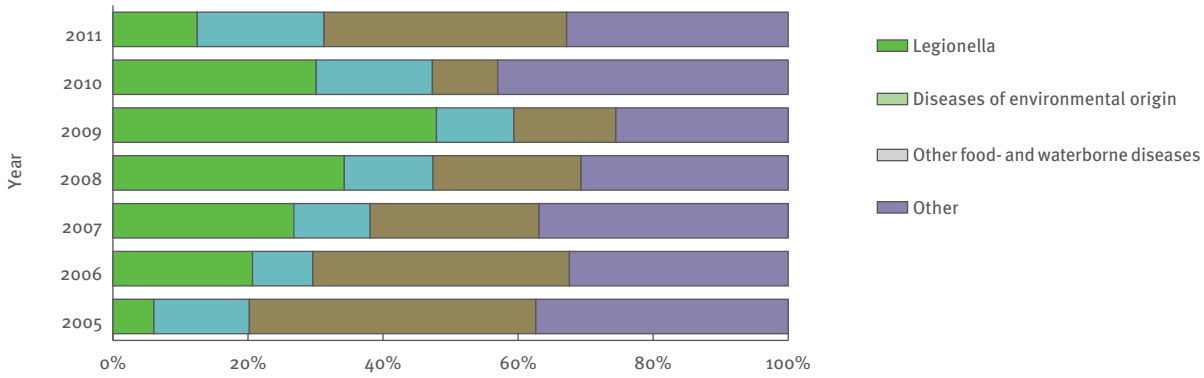
In 2011, two threats were related to the emergence of carbapenem-resistant bacteria, one of which – in a long-term-care facility in Ireland – was the first recorded nosocomial outbreak of carbapenem-resistant *Klebsiella pneumoniae*.

Four threats were related to vaccine-preventable diseases, namely the global monitoring of poliomyelitis, the monitoring of measles in EU/EEA countries, one case of diphtheria in a French citizen with unknown exposure, and one case of meningococcal meningitis reported during an international pilgrim gathering in France. No tuberculosis threats were monitored in the last two years.

Table 3.3. Percentage of threats monitored by ECDC, by year and group of disease, EU/EEA, June 2005–December 2011

	2005	2006	2007	2008	2009	2010	2011
Antimicrobial resistance and healthcare-associated infections	3%	2%	1%	0%	0%	1%	3%
Food- and waterborne diseases	42%	38%	25%	22%	15%	10%	36%
Hepatitis, HIV, STI blood-borne diseases	1%	1%	1%	1%	2%	2%	2%
Influenza	6%	3%	2%	4%	7%	8%	11%
Other environmental or zoonotic diseases	20%	30%	38%	47%	59%	47%	31%
Tuberculosis	2%	2%	10%	5%	4%	0%	0%
Vaccine-preventable and invasive bacterial diseases	13%	6%	10%	11%	9%	13%	6%
Not applicable	12%	18%	13%	9%	3%	19%	11%
Absolute number of monitored threats per year	**99**	**179**	**168**	**251**	**192**	**93**	**64**

Figure 3.10. Proportion of threats related to source of infection, by year, June 2005–December 2011



Analysis by initial source of notification

Confidential sources are defined as sources with restricted access, for example disease-specific surveillance networks, EWRS or information sent to ECDC by Member States or the World Health Organization (WHO). All sources publicly accessible on the internet are considered public sources.

In 2011, the main source of new threats was the EWRS, accounting for 27% of all monitored threats (14 threats), followed by information from Member States (six threats, 11%), WHO (six threats, 11%) and other public sources.

ECDC's TESSy surveillance database system is now fully operational; information feeds from disease-specific networks have been discontinued. The proportion of newly monitored threats originating from confidential sources in 2011 was 72% (range 70–80%, excluding the incomplete year 2005) (Table 3.4).

Table 3.4. Percentage of new threats monitored per year, by initial source of information, EU/EEA countries, June 2005–December 2011

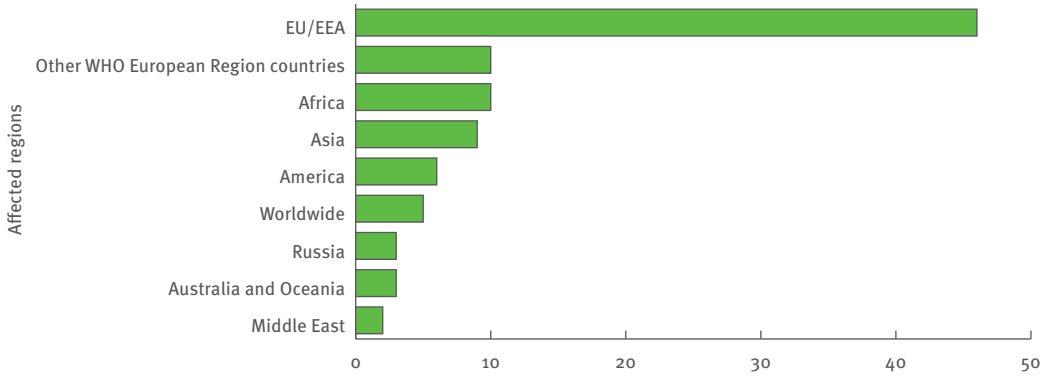
Percentage of new threats monitored per year	2005	2006	2007	2008	2009	2010	2011	Total
Confidential sources								
EPIS for food- and waterborne diseases	-	-	-	-	-	2%	8%	1%
EWGLI/ELDSNet	2%	18%	28%	34%	49%	30%	9%	29%
EWRS	23%	32%	30%	33%	24%	19%	27%	28%
WHO	17%	9%	4%	1%	2%	6%	11%	5%
Information from Member States	1%	3%	1%	3%	1%	5%	11%	2%
European disease surveillance networks	9%	7%	6%	2%	3%	3%	-	4%
Other confidential sources	-	1%	3%	4%	2%	11%	6%	3%
Total	**52%**	**70%**	**72%**	**77%**	**81%**	**76%**	**72%**	**72%**
Public sources								
ProMED	37%	9%	14%	4%	3%	1%	2%	10%
MedISYS	2%	3%	-	-	4%	0%	6%	2%
GPHIN	4%	12%	3%	-	2%	0%	2%	3%
Eurosurveillance	-	1%	1%	-	-	0%	0%	0%
Public reports available on the internet	5%	5%	8%	8%	4%	8%	7%	7%
Other public sources	0%	0%	2%	11%	6%	15%	11%	6%
Total	**48%**	**30%**	**28%**	**23%**	**19%**	**24%**	**28%**	**28%**
Total number of new threats	**99**	**163**	**142**	**228**	**174**	**83**	**53**	**942**

Note: The number of threats above only includes newly opened threats. The actual number of monitored threats per year is higher as threats are carried over from the previous year.

Analysis by region of origin and affected countries

Forty-nine per cent of all monitored threats affected EU/EEA Member States, followed by threats related to African countries (11%), non-EU/EEA European countries (11%) and countries in Asia (10%) (Figure 3.11). Nineteen of the 30 EU/EEA countries were affected by the threats monitored. Germany was affected by the highest number of events (9 threats), followed by Greece and France (8 each), the United Kingdom (6), Spain and Sweden (5 each), Italy (4), Belgium (3), Norway (2), and Austria, Bulgaria, Cyprus, Denmark, Finland, Hungary, Malta and Romania (one each).

Figure 3.11. Number of monitored threats in 2011, by affected region



Note: The number of affected countries and regions does not coincide with the number of monitored threats: a threat may affect several countries or regions.

3.2 Response to threats

Published rapid risk assessments

In 2011, 31 rapid risk assessments (RRA) were produced and shared with the Member States: 12 were new assessments, 19 were updates. While the majority of the RRAs were directly related to communicable diseases – such as the outbreak of Shiga toxin-producing *E. coli* (STEC) in Germany or the emergence of vector-borne diseases (e.g. autochthonous *Plasmodium vivax* malaria in Greece) – assessments were also prepared for the health impact of HIV among people who inject drugs in the EU or the risk of communicable disease outbreaks following the civil unrest in Libya.

Eight RRAs were related to influenza, seven to STEC, four to the civil unrest in northern Africa, two to the measles situation in the EU, and two to antimicrobial resistance. RRAs were published throughout the year (between one and six per month). All but two RRAs were distributed to Member State authorities using the EWRS platform; 19 (61%) were published on the ECDC website (Table 3.5).

Table 3.5. Distribution of ECDC rapid risk assessments by subject, type and date of publication, 2011

Subject	N: new RRA U: update	Date of publication (EWRS post)	Date of publication (website)
Seasonal influenza 2010–2011 in Europe	U	–	11/01/2011
Epidemiological situation of measles in the EU	U	18/02/2011	–
Narcolepsy and *Pandemrix* in Finland, Sweden and Iceland	U	24/02/2011	–
Risk of communicable disease outbreaks and spread following the unrest in Libyan Arab Jamahiriya	N	09/03/2011	–
Situation in northern Africa/Libyan Arab Jamahiriya and the influx of refugees to Europe	U	11/04/2011	12/04/2011
Epidemiological situation on measles outbreaks in Europe	U	20/05/2011	12/05/2011 (Epidemiological Update)
Situation in northern Africa/Libyan Arab Jamahiriya and the influx of refugees and irregular migrants to Europe	U	19/05/2011	–
Outbreak of Shiga toxin-producing *E. coli* (STEC) in Germany	N	25/05/2011	–
Outbreak of Shiga toxin-producing *E. coli* (STEC) in Germany	U	27/05/2011	27/05/2011
Cholera in Ukraine	N	30/05/2011	–
Outbreak of Shiga toxin-producing *E. coli* (STEC) in Germany	U	15/06/2011	14/06/2011
Cluster of haemolytic-uraemic syndrome in children in France	N	17/06/2011	–
Cluster of haemolytic-uraemic syndrome (HUS) in Bordeaux, France	U	25/06/2011	–
Risk of travel-associated cholera from the Dominican Republic	U	30/06/2011	11/07/2011
ECDC and EFSA joint rapid risk assessment: cluster of haemolytic-uraemic syndrome (HUS) in Bordeaux, France	U	29/06/2011	29/06/2011
Outbreak of Shiga toxin-producing *E. coli* (STEC) O104:H4 2011 in the EU	U	08/07/2011	12/07/2011
Autochthonous *Plasmodium vivax* malaria in Greece	U	19/08/2010	23/08/2011
Legionnaires' disease outbreak in Lazise, Italy	N	29/08/2011	06/09/2011
Potential resurgence of H_5N_1 highly pathogenic avian influenza	U	31/08/2011	11/09/2011
Oseltamivir-resistant influenza A(H_1N_1)2009 cluster in Australia	N	06/09/2011	11/09/2011
A(H_5N_1) highly pathogenic avian influenza in Egypt and risk for human health in Europe	N	09/09/2011	–
Risk assessment on the spread of carbapenemase-producing *Enterobacteriaceae* (CPE) through patient transfer between healthcare facilities, with special emphasis on cross-border transfer	N	17/10/2011	13/09/2011
Review of the epidemiological situation of West Nile virus infection in the European Union	U	20/09/2011	19/09/2011
Autochtonous *Plasmodium vivax* malaria in Greece	U	04/10/2011	13/10/2011
Transfer of patients from Libya to hospitals in the European Union	N	02/11/2011	–
Updated ECDC risk assessment on the spread of New Delhi metallo-β-lactamase (NDM) and its variants within Europe	U	–	11/11/2011
Swine-origin triple reassortant influenza A(H_3N_2) viruses in North America	N	25/11/2011	–
HIV in injecting drug users in the EU following a reported increase of cases in Romania and Greece	N	30/11/2011	12/01/2012
Swine-origin triple reassortant influenza A(H_3N_2) viruses in North America	U	30/11/2011	29/11/2011
Swine-origin triple reassortant influenza A(H_3N_2) in North America	U	09/12/2011	–
New orthobunyavirus isolated from infected cattle and small livestock – potential implications for human health	N	21/12/2011	22/12/2011

Mobilisation of expertise

ECDC may offer support to Member States which are affected by outbreaks and threats involving other Member States. In 2011, ECDC provided coordination and investigation support during an outbreak of Shiga toxin-producing *E. coli* O104:H4 in Germany and another 11 EU/EEA countries. ECDC sent a liaison officer to Germany's Robert Koch Institut and joined a delegation of EFSA and EU experts.

The increase of autochthonous cases of malaria in Greece required an in-depth assessment of the situation (two field visits) in support of the Greek Ministry of Health. The missions were aimed at reviewing the risks related to the potential re-establishment of malaria transmission in Greece and measures to prevent this possibility[1].

A joint ECDC/WHO Regional Office for Europe mission was conducted in Greece to assess the public health risks connected to increased migration and the related communicable disease threats[2]. The team identified an increased risk for communicable diseases in the detention centres, mainly due to severe overcrowding, lack of hygiene, lack of basic supplies (e.g. blankets, shoes, soap, etc.), lack of outdoor activities, and the long duration of detention. Despite the conditions in the detention centres, no outbreaks were reported at the time of the visit, probably because most migrants were reported to be in good health overall[2]. In order to strengthen the early warning system in detention centres, follow-up missions were conducted, involving one ECDC expert, two EPIET participants and one EUPHEM fellow.

As a result of the successful collaboration between ECHO and ECDC during the cholera epidemic in 2010 in Haiti, the European Commission Directorate-General for Humanitarian Aid and Civil Protection (DG ECHO) requested the support of an ECDC expert to further assess the epidemiological situation in June 2011. This also involved advice on DG ECHO's response fund strategy and the identification of priorities, both in Haiti and the Dominican Republic.

Targeted expert consultations

Following the expert consultation on West Nile virus (WNV) infection in Stockholm (21 and 22 April 2009[3]) and the expert consultation on mosquito-borne disease transmission risk in Europe held in Paris in November 2010[4], the Hellenic Centre for Disease Control (KEELPNO), ECDC, and the WHO Regional Office for Europe organised a consultation of WNV experts in Thessaloniki, Greece, on 24 and 25 January 2011. The objective of this second consultation meeting was to obtain a comprehensive overview of the changing WNV epidemiology in Europe in order to improve public health preparedness and local response options during WNV outbreaks. The consultation concluded that the epidemiological picture of WNV infection in humans during the 2010 transmission season in and around Europe appeared to indicate increased viral circulation. The experts also pointed out the challenges associated with implementing, monitoring and coordinating integrated surveillance systems for WNV and emphasised the complexity of multi-sector responses to WNV outbreaks in humans in different country settings[5].

On 8 and 9 December 2011, an expert consultation on guidelines for the surveillance of invasive mosquitoes was held in Stockholm. A panel of 22 experts and potential users from public health authorities from across the EU reviewed the draft guidelines and requested several changes to improve the guidelines' practicability[6].

In April 2011, ECDC, together with the European Biosafety Association (EBSA), hosted a special session at EBSA's annual conference in Estoril, Portugal, dedicated to the development of biosafety networks/associations in the EU. Representatives of 10 Member States were invited to share ideas with international laboratory and biosafety experts on how to foster a more representative European biosafety community. The session was attended by over 30 participants from 20 countries[6].

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3.3 Threats of particular interest

Mass gathering event: World Youth Day in Madrid, Spain

World Youth Day 2011 was held in Madrid, Spain, from 16 to 21 August 2011. Around 1.2 million pilgrims from around the world attended the event.

In collaboration with national and local authorities in Spain, the ECDC epidemic intelligence group monitored media information about communicable disease risks related to this event, using specifically tailored event-based web surveillance. Media reports about health threats or events were shared with the Spanish authorities on a daily basis. In addition, ECDC received regular bulletins from the Spanish authorities which included details on health events and referrals to emergency units.

During the period of enhanced epidemic intelligence activity, web-based media screening enabled ECDC to identify two food poisoning events, which were then shared with the health authorities. Spain confirmed ECDC's initial information and provided additional details. The first food poisoning incident affected a group of Italians in Granada on the weekend before the event: the cases presented with symptoms of acute gastroenteritis after eating contaminated food; they later travelled to Madrid. A second gastroenteritis outbreak was identified in Pamplona where several pilgrims in route to Madrid were affected, presumably after eating contaminated seafood: 43 pilgrims received medical care and were eventually discharged.

ECDC detected several media reports about a Mexican student arrested in Madrid under suspicion of preparing a chemical weapon. The reports were later confirmed by the Spanish authorities and shared with Europol; no consequences for the participants were identified.

On its website, ECDC emphasised the importance of updating relevant vaccinations such as measles well ahead of time, especially when planning to attend mass gatherings.

Schmallenberg virus

Schmallenberg virus is a novel orthobunyavirus that has been associated with disease in ruminants (cattle, bison[1], sheep and goats) in Europe.

The disease causes transient clinical symptoms (milk drop, pyrexia, diarrhoea) in adult cattle, late abortion, and congenital malformation in newborn cattle, sheep and goats.

The virus was first isolated in Germany and the Netherlands (November 2011). It was later reported in Belgium, the United Kingdom, France, Luxemburg and Italy (as of 7 March 2012)[2-7].

Information available on the Schmallenberg virus genome suggests that the virus is part of the Simbu serogroup of the *Bunyaviridae* family, genus *Orthobunyavirus*[8]. Simbu serogroup viruses are primarily transmitted by insect vectors (midges, mosquitoes), although the routes of Schmallenberg virus transmission have not yet been confirmed[9]. The potential for direct transmission from animal to animal is yet unknown.

Despite the spread of the virus in ruminants, preliminary risk assessments of the impact of the virus on human health suggest that it is unlikely that the virus can cause disease in humans[10,11]. Initial investigations showed that people in close contact with infected animals (e.g. animal workers, farmers and veterinarians) did not report any unusual disease.

Investigations and research projects are ongoing in the affected countries to better understand the epidemiological and the microbiological aspects of this outbreak among ruminants and humans and to implement relevant preventive measures.

Public health authorities in the EU Member States were alerted about this outbreak. The animal and human health authorities, both at national and EU levels, were closely collaborating to ensure the rapid detection of

any change in the epidemiology in animals and humans, particularly among people in close contact with infected animals.

Animal workers, farmers and veterinarians are advised to follow protective hygiene measures when working with livestock and abortion material. As a general precaution (as for any zoonotic agent) it is advised that pregnant women should not assist with lambing and kidding.

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Earthquake and tsunami in Japan

On 11 March 2011, a devastating earthquake (magnitude 9.0 on the Richter scale) triggered a tsunami with waves of up to 20 meters that hit the north-east coast of Japan about 30 minutes later. According to Japanese authorities, approximately 16 000 people died, 6 000 people were injured, and more than half a million were made homeless[1].

The Fukushima Daiichi power plant was severely affected by the earthquake. The tsunami disabled the reactors' cooling systems and led to a nuclear emergency with the subsequent release of radioactive elements in the environment, which caused severe problems regarding air and water quality, food safety, housing, waste disposal and sanitation[2].

No major communicable disease outbreaks were reported from the affected prefectures, including the evacuation centres. There were, however, reports of scattered cases of influenza-like illness, laboratory-confirmed influenza A(H3N2), pandemic influenza A(H1N1), tetanus, and legionellosis. A large outbreak of hand, foot and mouth disease was reported in summer 2011, which might have been related to the tsunami[3].

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The Libyan crisis and its impact on Europe

Following the civil unrest in bordering Tunisia and Egypt ('Arab spring') in late 2010 and early 2011, protests started in Benghazi, Libya, on 15 February 2011 and soon spread to the entire country. The main risks for the approximately 1.5 million migrant workers and the Libyan population as a whole were directly associated to violence, lack of access to healthcare, and interruption of treatment of chronic diseases[1]. From the beginning of the crisis until 7 October 2011, more than 720 000 persons left Libya, the majority through Tunisia (approximately more than 310 000 people) and Egypt (more than 220 000)[2]. A large proportion of the refugees were healthy young males.

ECDC, in collaboration with several international organisations, closely monitored the unrest and migrant movements during 2011 in order to rapidly identify and assess potential communicable disease threats. ECDC prepared four rapid risk assessments related to the situation (two of which were published online[3,5]) and concluded that the risk for communicable disease outbreaks was low and depended on factors such as the duration of the crisis, access to safe drinking water and food, shelter, healthcare, living conditions at the detention centres, the demographic composition of the refugees, their health and social status, and the number of migrants entering the EU[3].

In view of the difficult conditions at the borders (e.g. severely crowded camps) and delays in evacuating refugees to third countries, especially to Member States that received large numbers of refugees, ECDC recommended enhanced surveillance and improved diagnostic capacities so that infectious diseases could be detected at an early stage; these diagnostic measures should be combined with a rapid exchange of information at all levels.

No major outbreaks of communicable diseases were reported in Libya or any of the Tunisian-Libyan border camps.

On 12 October 2011, the Maltese and French authorities posted EWRS notifications regarding patients who were carriers of various multidrug-resistant bacteria (MDR); these patients were transferred to healthcare facilities in France (Paris area) and Malta, all of them with injuries sustained during the Libyan conflict. The bacteria carried by these patients included extended-spectrum beta-lactamase (ESBL)-producing and/or carbapenemase-producing *Enterobacteriaceae*, carbapenem-resistant *Acinetobacter baumannii* and carbapenem-resistant *Pseudomonas aeruginosa*, vancomycin-resistant enterococci and *Clostridium difficile*.

A similar incident was reported by the United Kingdom on 9 November 2011, when a Libyan war casualty with OXA-48 carbapenemase-producing *Klebsiella pneumoniae* infection was admitted to hospital ITU and subsequently died. An ECDC rapid risk assessment concluded that there was a high risk of introducing multidrug-resistant bacteria to the EU through the transfer of Libyan patients to hospitals in the EU; appropriate infection control measures were therefore considered essential to control the further spread of multidrug-resistant bacteria[5].

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Increased influx of migrants at the Greek-Turkish border

Following the highly volatile situation in North Africa and in view of the potentially increased migratory flows on the Greek-Turkish border, ECDC and the WHO Regional Office for Europe were requested by the Greek Ministry of Health and Social Solidarity to assess the public health risks related to migration into Greece.

The sheer number of migrants that crossed the Greek-Turkish land border – estimated to have increased by a factor of ten when compared with earlier years – was cause for concern. The most urgent concern was related to the poor living conditions of the refugees, such as overcrowding and lack of sanitation – serious risk factors for communicable disease outbreaks. It was therefore recommended that minimum living conditions should be improved immediately.

Following the initial mission, one ECDC expert, one EUPHEM fellow and three EPIET participants provided additional support to strengthen the early warning system in the Greek detention centres. The experts recommended a context-adapted surveillance system for early warning purposes, including entry screening (e.g. medical history, examination) and proper referral systems to ensure rapid response activities if needed[1,2].

Greece continues to be the main point of entry for migrants to the EU.

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Unexplained deaths in Chiang Mai, Thailand

Between 9 January and 19 February 2012, six unexplained deaths were reported from Chiang Mai, Thailand; five of the dead were tourists. Three additional non-fatal cases were associated with these fatalities[1]. All fatal cases died from cardiac and circulatory failure, although the clinical picture was not identical. The post-mortem examination revealed acute severe myocarditis in one case, coronary occlusion in two cases, and myocardial injury in three cases as the most likely cause of death. One 47-year-old female case with myocardial injury also showed signs of coronary occlusion[2].

Extensive investigations were conducted by several national and international agencies, including WHO and the US CDC. Clinical and biological samples were collected from patients; environmental samples were taken from the implicated hotels and the nearby outdoor market and analysed for viral, toxic, gaseous and a variety of other chemical substances. The investigation included interviews with travel companions. The median age of the nine cases was 29 years (range 23 to 78 years); all but one were female.

Several cases were linked to a Chiang Mai hotel. A 29-year old US citizen became sick in this hotel, and a 33-year old Canadian died after a stay in the hotel.

Three 23-year-old citizens of New Zealand also stayed at this hotel (one died), as did a British couple (aged 74 and 78; both were found dead in their room) and a 47-year-old Thai tour guide, who was also found dead in her hotel room.

A second hotel in Chiang Mai was implicated in the outbreak when a 25-year-old French women died on 19 January 2011 – the only person who had suffered from a

confirmed fever; she had developed symptoms prior to her arrival in Chiang Mai. Her friend, who checked in to the same hotel, remained symptomless. The most likely cause for the woman's death was viral myocarditis, although the pathogen was never confirmed.

Where information was available, all survivors and fatal cases reported severe vomiting, with the exception of the French woman, who suffered from probable viral myocarditis.

The cause of this highly fatal disease was never officially determined. A rodenticide in the first hotel and a pesticide containing aluminium in the second hotel were considered to be the most likely causes.

Following this event, the Thai authorities implemented measures in Chiang Mai and other areas in Thailand to reduce the risk of exposure to harmful chemicals and pesticides.

On 20 March 2011, some media reported a seventh fatality in Chiang Mai: a 59-year-old Canadian man had died under similar circumstances on 26 January 2011, two weeks after his arrival in Chiang Mai. Although he had stayed in a third hotel, he was reported to have used the facilities at one of the implicated hotels; any association or correlation, however, has been ruled out [3]. No further cases have been reported by the Thai authorities or media since then.

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3.4 Food- and waterborne threats

The Epidemic Intelligence Information System for Food- and Waterborne Diseases and Zoonoses (EPIS-FWD), launched in March 2010, is a non-public, password-protected, and web-based communication platform bringing together multidisciplinary experts to ensure the early detection and coordination of the response to multistate outbreaks through the timely sharing of cross-sector information. The system connects epidemiologists, microbiologists, veterinarians, food safety officers, policy makers and risk managers. The majority hails from the 27 European Union Member States and EEA countries; however, experts from Australia, Canada, Japan, New Zealand, South Africa, Turkey and the United States of America also contribute actively to the information exchange.

General overview

In 2011, 48 urgent inquiries (UIs) were issued by the network, compared with 31 in 2010, 28 in 2009, and 33 in 2008. This represents an increase by 55% in the usage of EPIS-FWD during 2011.

Sixteen different countries posted UIs in 2011 (Figure 3.12). Forty-four (92%) were initiated by EU/EEA Member States, one was initiated by the United States of America, and three were initiated by ECDC. The majority of UIs in 2011 were posted by the United Kingdom (n=9), France (n=8) and Ireland (n=6). ECDC posted two UIs following requests from the European Food Safety Agency and from Israel (both are not part of the FWD network). At the request of several FWD network members, ECDC posted one UI to gather information about imported cholera cases.

In 2011, a total of 571 messages were posted (initial posts and replies, excluding updates), with a mean of twelve replies per UI (range 0–27) (Figure 3.13).

Thirty-three of the 38 FWD network member countries (87%) were active participants in EPIS-FWD in 2011, 28 of which were EU/EEA countries.

Figure 3.12. Number of urgent enquiries launched by country, 2011 (n=48)

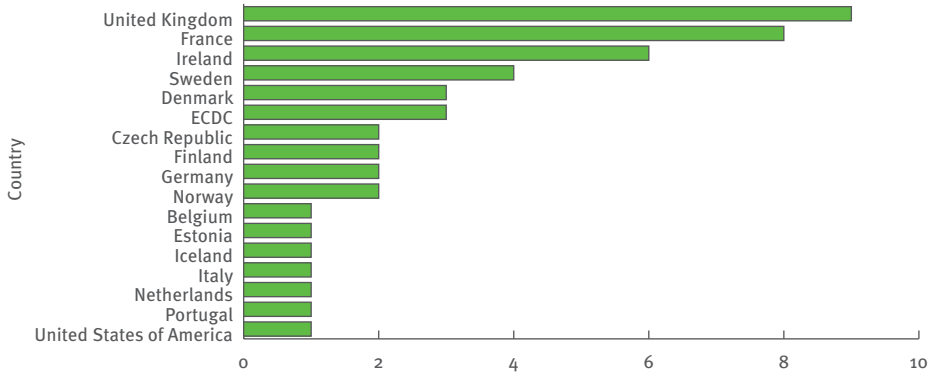
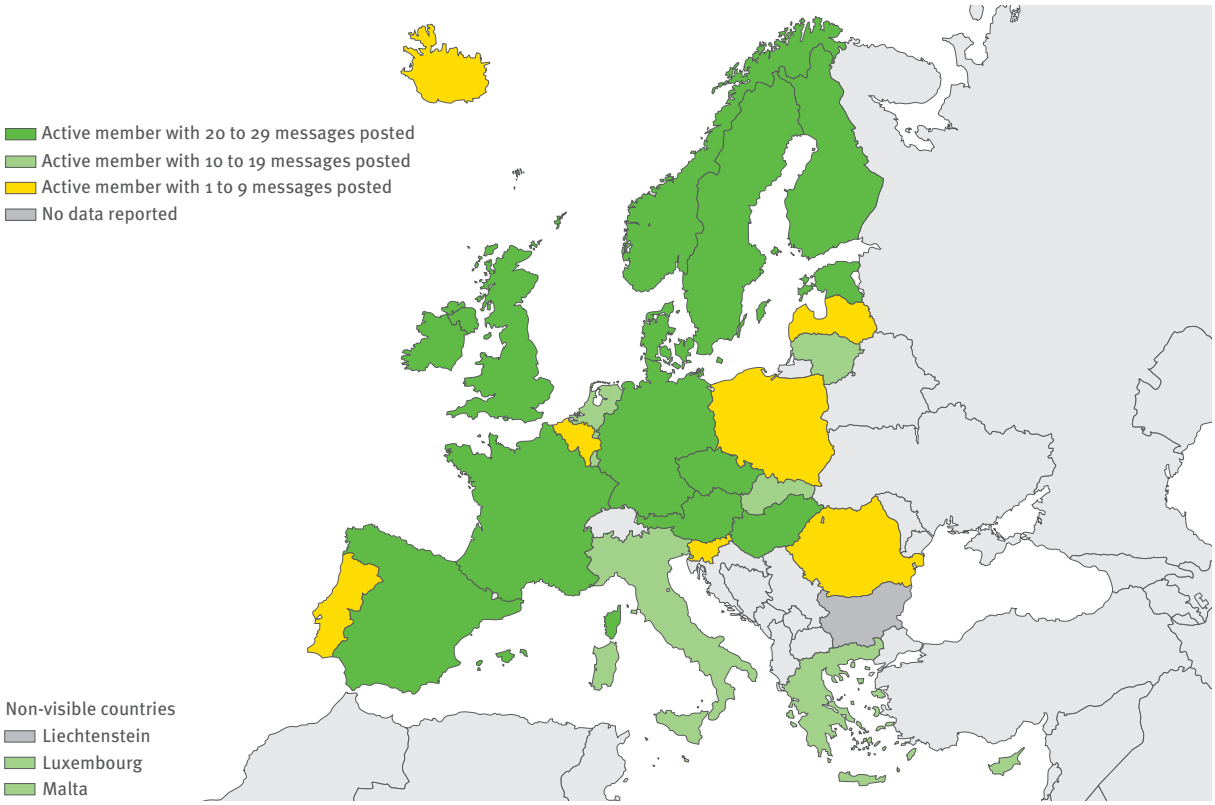


Figure 3.13. **Active members of EPIS-FWD in EU/EEA countries, 2011**



Pathogens and vehicles of infection

In 2011, UIs referred to nine different pathogen groups. The majority (67%) of the UIs referred to *Salmonella* spp. infections, with *Salmonella* Enteritidis and *Salmonella* Typhimurium being the most frequently represented (28% and 16% of *Salmonella* spp., respectively). These two serotypes were also the most frequently represented in 2008, 2009 and 2010.

Other UIs related to *Escherichia coli* (15%), *Clostridium botulinum* (4%) and hepatitis A virus (4%). A detailed breakdown of UI pathogens is shown in Table 3.6.

For 30 UIs (63%), a vehicle of infection was suspected or confirmed. This is a slight decrease compared to previous years (69% in 2009, 74% in 2010).

Of the UIs for which a vehicle of infection was suspected or confirmed, vegetables and juices (12) lead the list, followed by pork products (4), eggs and egg products (3), bovine meat (2), and infection associated with travel (2) (Tables 3.6 and 3.7).

Affected countries

In 2011, 36 UIs (75%) involved only a single country, compared with 22 (71%) in 2010. Forty-three UIs (90%) were limited to EU/EEA countries. Five UIs (10%) involved non-EU/EEA countries, three per cent less than in 2010.

Three of the five UIs that involved non-EU/EEA countries were initiated by EU/EEA countries: the STEC O104:H4 outbreak in Germany, a *Salmonella* Heidelberg outbreak associated with an aircraft flight, and several travel-related cases of cholera from the Dominican Republic. The two remaining UIs were launched by non-EU/EEA countries: a *Salmonella* Havana outbreak in Israel (launched by ECDC) and a laboratory-associated salmonellosis outbreak in the USA.

After changing the threshold necessary to launch an UI in 2011, the proportion of multinational UIs dropped to 25% (12 UIs). In 2010, 29% (nine out of 31) of all UIs were considered multinational, i.e. affected more than one country.

EWRS and Rapid Alert System for Food and Feed (RASFF)

For 17 of the 48 UIs launched in 2011, a notification was issued through the European Rapid Alert System for Food and Feed (RASFF). For eleven of these events, the UIs were launched prior to the RASFF notifications; five of the UIs were notified first through RASFF. For one event, the UI and the RASFF notification were launched on the same day. For three of the twelve multinational UIs, a RASFF notification was issued. For the remaining nine multinational UIs, the vehicle of infection was suspected but not confirmed (n=5), unknown (n=2), or related to travel (n=2).

Fifteen (31%) of the UIs launched in 2011 were also reported through the EWRS. Of these fifteen UIs, five were launched prior to the EWRS report, six were launched at the same time as the EWRS notification, and four were launched after the EWRS alerts. For eight of the twelve multinational outbreaks, an EWRS message was issued. For the remaining four multinational UIs, the vehicle was either suspected but not confirmed (n=2) or unknown (n=2); consequently, no RASFF notifications were issued.

Table 3.6. Distribution of pathogens associated with urgent inquiries and suspected and confirmed vehicles of infection, 2011

Pathogen	Number of urgent inquiries	%	Suspected or confirmed vehicle of infection
Salmonella spp.	32	67	
Salmonella Enteritidis	9		Bovine meat, eggs and egg products, mixed or buffet meals, other or unspecified poultry meat (other than broiler meat), vegetables and juices
Salmonella Typhimurium	5		Laboratory-acquired infection, pork products[1]
Salmonella Senftenberg	1		-
Salmonella Virchow	1		-
Salmonella Minnesota	1		-
Salmonella Umbilo	1		-
Salmonella Veneziana	1		-
Salmonella Montevideo	1		-
Salmonella Abony	1		-
Salmonella Mbandaka	1		Vegetables and juices
Salmonella Haifa	1		Vegetables and juices[2]
Salmonella Heidelberg	1		Eggs and egg products, broiler meat (*Gallus gallus*)
Salmonella Oranienburg	1		-
Salmonella Goldcoast	1		Pork products[3]
Salmonella Strathcona	1		Vegetables and juices[4]
Salmonella Havana	1		-
Salmonella Newport	1		-
Salmonella Javiana	1		-
Salmonella Java	1		Vegetables and juices
Salmonella spp.	1		Vegetables and juices
Escherichia coli	7	15	Bovine meat, travel-associated infection[5], vegetables and juices[6,7]
Hepatitis A virus	2	4	Vegetables and juices[8-10]
Clostridium spp.	2	4	
Clostridium botulinum	1	2	Canned food products[11]
Clostridium butyricum	1	2	Contact with exotic pets
Listeria monocytogenes	1	2	Cheese
Norovirus	1	2	Crustaceans, shellfish, molluscs
Shigella sonnei	1	2	Herbs and spices[12]
Vibrio cholerae	1	2	Travel-associated infection
Yersinia enterocolitica	1	2	Vegetables and juices[13]

Table 3.7. Distribution of urgent inquiries by vehicle/origin of infection, 2011

Categories of suspected or confirmed vehicle of infection	Details of the suspected vehicles or confirmed vehicle of infection
Bovine meat	Raw meat, ground beef burgers
Broiler meat (*Gallus gallus*)	Chicken meat
Canned food products	Green olive tapenade with almonds
Cheese	Pasteurised cheese
Contact with exotic pets	Freshwater turtles
Crustaceans, shellfish, molluscs	Mussels
Eggs and egg products	Poultry eggs eaten raw or cooked
Herbs and spices	Fresh basil
Other or unspecified poultry meat	Duck breasts
Pork products	Pork meat, salami, dried pork sausage, pork sausage
Vegetables and juices	Lettuce mixture, pre-packed or ready-to-eat lettuce/salad, radicchio, leafy greens, mung bean sprouts, raw sprouts, onion powder, red onions, sugar snaps, tomatoes, sun-dried tomatoes, paan leaves

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Annex

Annex. List of communicable diseases for EU surveillance

Annex I of Commission Decision 2000/96/EC 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, as amended by Decisions 2003/534/EC, 2003/542/EC, 2007/875/EC, 2009/312/EC, 2009/539/EC and 2012/492/EU.

1 Communicable diseases and special health issues to be progressively covered by the community network as referred to in Article 1 [of Decision 2000/96/EC]

1.1 For the communicable diseases and special health issues listed in this Annex, epidemiological surveillance within the Community network is to be performed by the standardised collection and analysis of data in a way that is to be determined for each communicable disease and special health issue when specific surveillance networks are put in place.

2 Diseases

2.1 Diseases preventable by vaccination

Diphtheria
Infections with *haemophilus influenza* group B
Influenza – including influenza A(H1N1)
Measles
Mumps
Pertussis
Poliomyelitis
Rubella
Smallpox
Tetanus

2.2 Sexually transmitted diseases

Chlamydia infections
Gonococcal infections
HIV infection
Syphilis

2.3 Viral hepatitis

Hepatitis A
Hepatitis B
Hepatitis C

2.4 Food- and waterborne diseases and diseases of environmental origin

Anthrax
Botulism
Campylobacteriosis
Cryptosporidiosis
Giardiasis
Infection with enterohaemorrhagic *E.coli*
Leptospirosis
Listeriosis
Salmonellosis
Shigellosis
Toxoplasmosis
Trichinosis
Yersinosis

2.5 Other diseases

2.5.1 Diseases transmitted by non-conventional agents
Transmissible spongiform encephalopathies
Variant Creutzfeldt–Jakob's disease

2.5.2 Airborne diseases
Legionellosis
Meningococcal disease
Pneumococcal infections
Tuberculosis
Severe Acute Respiratory Syndrome (SARS)

2.5.3 Zoonoses (other than those listed in 2.4)
Brucellosis
Echinococcosis
Rabies
Q fever
Tularaemia
Avian influenza in humans
West Nile virus infection

2.5.4 Serious imported diseases
Cholera
Malaria
Plague
Viral haemorrhagic fevers

2.5.5 Vector-borne diseases
Tick-borne encephalitis

3 Special health issues

3.1 Nosocomial infections

3.2 Antimicrobial resistance

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