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EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

SURVEILLANCE REPORT

Annual epidemiological report

Reporting on 2009 surveillance data and 2010 epidemic intelligence data

2011

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Errata
August 2012. Table 2.1.1. (page 30) was amended to correct historical data for Italy. Text describing the epidemiological situation in 2009 was corrected to reflect data in Table 2.1.1.
August 2017. Page 195: 'CVC days per 1 000 patient-days' now reads 'CVC days per 100 patient-days'.

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Foreword

This is the fifth Annual Epidemiological Report that ECDC has published since becoming operational. As in 2007, when ECDC published the first of these reports, the overall picture is of a European Union (EU) in which citizens are well protected against infectious diseases. Public health systems in EU Member States continue to provide a high level of protection, most notably via their various vaccination programmes and operation of their surveillance systems.

In 2009 Europe, and indeed the world, experienced the first influenza pandemic since 1968. In November and December of 2009, intensive care units in several Member States came under severe pressure. However, the pandemic passed without the society-wide crisis that had been predicted by some experts. This was partly due to the pandemic influenza A(H1N1) virus being significantly less pathogenic than the worst case scenario for a pandemic virus. But the pandemic preparedness planning undertaken in the EU during 2005–08 should also be given some credit for this benign outcome.

In 2009, like each of the previous years, the quality and comparability of the surveillance data gathered in the EU continues to improve. ECDC can take some of the credit for this, but the biggest thanks need to go to our partners in the national public health institutes.

But despite all these positive developments, as I look through this report I see some worrying signals.

There were several significant outbreaks of measles in EU countries during 2009. This was a clear marker that Europe was on track to miss its target of eliminating measles by 2010. Though incidence of tuberculosis continued to decline, progress was slow. Progress towards achieving bacteriological confirmation of and completed treatment courses for all tuberculosis cases in the EU appeared to be limited. Moreover, there were signs of the emergence of new diseases in parts of Europe. We had indications that the West Nile virus might have established itself in parts of south-eastern Europe, and we even saw a few cases of locally transmitted malaria in one Member State. Less exotic, but even more worrying, we continued to see growing resistance of pathogens against the most widely used antibiotics.

The biggest threat we face is complacency about infectious diseases. The attitude that the battle against infectious diseases has been won must be continuously challenged. This report provides plenty of evidence that microbes are still formidable enemies. The surveillance data it contains give us a basis to gauge the extent of the threat different microbes pose, and track progress in addressing those threats. It is only by continuing to invest in, and further improve, surveillance systems across the EU that we will really know if we are making progress.

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-associate 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 and conclusions

Summary and conclusions

This report presents the analysis of surveillance data reported for 2009 by the 27 EU Member States and three EEA/EFTA countries, as well as an analysis of threats detected in 2010. It is targeted towards policymakers, epidemiologists and the wider public and aims to provide an overview of the key aspects of communicable diseases in the European Union. The report describes areas where a more concerted public health response is required in order to decrease the present and future burden of communicable disease on society and healthcare systems. The data presented here further contributes to ECDC's task of providing the evidence-base for public health action.

Although the quality and comparability of reported data has improved considerably since the establishment of ECDC, the reader is still cautioned against making direct comparisons of the presented data between countries. Surveillance systems differ widely, and the relationship between reported confirmed case rates and actual incidence varies from country to country for many diseases.

Respiratory tract infections

A pandemic influenza A(H1N1) virus emerged in North America in April 2009, and cases were soon recognised in the United Kingdom and other Member States. Following an initial spring and summer peak, most virus transmission occurred in the autumn and early winter, declining to low levels by the beginning of 2010. ECDC monitored the pandemic through extension of the normal European surveillance systems, including sentinel surveillance of general practice consultations, influenza-positive specimens from sentinel practices and surveillance of severe acute respiratory infection in sentinel hospitals.

Almost all influenza cases were caused by the new A(H1N1)2009 virus and only a very few percentage of cases were due to a B virus (Victoria lineage). The previous seasonal A(H1N1) was eclipsed, and with it the associated resistance to oseltamivir, widely used for prophylaxis and treatment during the pandemic. The highest primary care consultation rates were seen in the 0–14 years age group, but severe disease predominated in adults under 65 years.

Monitoring of hospitalised severe acute respiratory cases was implemented in varying forms by 11 Member States. From week 40/2009, 9469 cases were reported with 569 related fatalities. The rate of reported cases decreased with age, and a severe outcome was related to increased age, male gender and the presence of at least one underlying medical condition. Unusually, 20% of confirmed influenza deaths occurred in previously healthy adults and children, often in association with an acute respiratory distress syndrome.

In August 2010, the pandemic was officially declared to have entered the post-pandemic phase. In the winter of 2010, a large number of patients infected with the pandemic strain required intensive care, putting the health systems of several countries under pressure, despite a relatively mild influenza season overall. Half of the investigated influenza strains during the 2010/2011 influenza surveillance season were due to the pandemic strain.

A monovalent vaccine recommended by WHO was deployed by Member States, with varying definitions of target groups. The vaccines used were a good match with the pandemic virus resulting in high observed vaccine effectiveness; however, their impact was limited by deployment after most virus transmission had occurred. In August 2010, Finland, followed by Sweden, reported an increase of narcolepsy cases in adolescents vaccinated with a specific brand of a pandemic vaccine. A number of studies were initiated to investigate whether there is a causal relationship between this vaccine and narcolepsy.

Lessons for surveillance and response derived from this pandemic experience include the need for European countries to strengthen their individual and collective surveillance of 'normal' seasonal influenza, as systems in pandemic situations are developed from this foundation. The pandemic also showed a need for countries to strengthen their ability to conduct the necessary applied research into the pandemic strain epidemiology in a timely manner, both during the pandemic and the period immediately thereafter.

Several outbreaks of avian influenza were recognised in birds during 2009, including two due to highly pathogenic strains – Germany, A(H5N1); and Spain, A(H7N7). No human cases associated with avian influenza outbreaks were reported.

Legionnaires' disease (legionellosis) remains an uncommon infection in EU and EEA/EFTA countries. There has also been a significant decrease since 2007 in the number of travel-associated cases – 88 clusters of travel-associated cases of infection were identified in 2009. This decrease in travel-associated cases may be related to better implementation of guidelines for *Legionella* control and the downturn in international travel during the global economic recession. Further review of this situation is needed.

Tuberculosis (TB) remains a common infection and an important disease burden, with nearly 80 000 cases still notified annually across the EU. The number of cases of TB reported continued to decline; there has been a small but sustained decrease in notification rates in the EU/EEA overall since 2005 of about 4% per annum. Most Member States reported a decrease in rates over this period. Some countries with relatively low rates of infection (e.g. the Nordic countries, Cyprus, Malta, United Kingdom) reported increasing rates at least partly associated with increasing numbers of cases born outside the reporting country. Tuberculosis is more prevalent among disadvantaged and marginalised groups, includ-

ing migrants, the homeless, poor people in inner cities, prisoners, people infected with HIV, and drug users.

The proportion of combined multidrug-resistant tuberculosis (MDR TB) cases was down slightly from 2008 (5.3%), but the proportion of these cases characterised as extensively drug-resistant TB (7%) is a concern, and related primarily to incomplete or ill-designed treatment regimes. The overall treatment outcome success rate for the 2008 cohort was 78%; six countries reported achieving the 85% treatment success target for the 2007 cohort.

HIV, sexually transmitted infections, hepatitis B and C

HIV infection remains one of the major public health problems in Europe. The total number of confirmed cases reported annually in EU and EEA/EFTA countries has stabilised at around 28000 cases annually. Men who have sex with men comprised the largest group of cases (35%), followed by those who acquired the virus through heterosexual contact in Europe (24%), and injecting drug users (5%). Mother-to-child transmission, nosocomial infection, transfusion or other blood products accounted for only 1% of cases.

Significant trends in patterns of disease transmission continue to be seen. Between 2004 and 2009, cases in men who have sex with men increased by 24%, cases acquired by heterosexual transmission reported in European Member States remained relatively stable with some signs of increase in 2009; cases of heterosexual transmission originating from countries with a generalised HIV epidemic decreased by nearly 50%. The number of cases in injecting drug users also declined substantially.

Reflecting improvements in access to and effectiveness of treatment, the number of AIDS diagnoses in the EU has decreased by more than half between 2004 and 2009. The Baltic States were an exception to this, with increases in case numbers of between 8% and 76%.

Chlamydia is the most frequently reported sexually transmitted infection (STI) in the EU, with nearly 350000 cases reported in 2009. Reported rates have more than doubled over the past 10 years. This increase to a large extent reflects measures taken by Member States to improve diagnosis and reporting of the infection, including development of screening and surveillance programmes. Over three quarters of cases are diagnosed in young adults under the age of 25 years. However, cases are likely to be underreported due to the asymptomatic nature of infection. Chlamydia presents a significant and increasing burden of infection to both individuals (predominantly young adults) and health services, given both the number of infections and the occurrence of reduced fertility as an outcome for some women.

Reported rates for gonorrhoea and syphilis are much lower, and trends appear to be relatively stable, with a small decrease (9%) overall in reported cases for both infections over 2006–09. However, reported rates vary greatly by country, and some countries do not report these infections. Rates of gonorrhoea decreased significantly in several Member States over 2006–09; higher and stable rates were reported from the United Kingdom, the Netherlands and the Baltic States. Increasing resistance to the principal antibiotics used for treatment of gonorrhoea in the EU is an emerging public health issue. Both reported rates and trends for syphilis cases also varied greatly between Member States over 2006–09. Large increases in cases were reported from several countries, mostly associated with increases in reports of infection among men who have sex with men.

The numbers of reported hepatitis B cases declined steadily across the EU during 2006–09, with decreases seen in most Member States. Within this overall decline, the epidemiology reflects a complex mix of sexual, bloodborne and perinatal transmission, which varies in different Member States. The overall trend in reported hepatitis C cases appears to be increasing over time, and hepatitis C is thought to be the most common form of viral hepatitis in the EU. However, this observation remains tentative, as many Member States' surveillance systems do not distinguish between acute and chronic infection. In addition, the differences between diagnostic practices and surveillance systems in Member States, for both infections, increase the variations in rates reported between countries, and make the comparability of information for these diseases at country level particularly difficult.

The coordination of the surveillance networks for HIV/AIDS and sexually transmitted infections was integrated into ECDC in 2008 and 2009, respectively, and in 2011, ECDC established a new network for the hepatitis surveillance. ECDC is working with these networks to further standardise surveillance for these diseases and to work toward greater comparability of information on their epidemiology.

Food- and waterborne diseases

Salmonella and *Campylobacter* infections remain the most commonly reported gastrointestinal diseases across the EU. The reported incidence of *Salmonella* infection has been declining steadily since 2004, associated, at least in part, with successful infection control programmes in the poultry industry; rates of *S.* Enteriditis infection declined 24% compared with 2008. Case rates are highest in the Czech Republic, Slovakia, Hungary and Lithuania, although they have also decreased substantially in these countries in recent years. *Salmonella* infection continues to be reported most frequently in children under 5 years of age. It also continues to be the source of many outbreaks; 324 outbreaks including 4500 identified cases were verified from Member States during 2009. Some outbreaks were multinational, including an outbreak of *S.* Goldcoast (six EU countries) and *S.* Typhimurium type (FDT) 191a (affecting the United Kingdom and the USA).

Campylobacter infections are the most frequently reported gastrointestinal infection in Europe, being

ubiquitous across all Member States. Reported rates are stable, most cases are sporadic, and outbreaks infrequent. However, the frequency of infection constitutes a significant disease burden, and a minority of people with this infection experience significant disability, including arthritis. Again, reported infection rates are highest in very young children. While the source of infection is unknown in many cases, poultry meat is considered the most important food-borne source of this infection, and current and likely future control measures continue to focus on this.

Parasitic diseases, particularly cryptosporidiosis and giardiasis, remain significant causes of gastrointestinal infection in Europe, and are particularly subject to going undiagnosed and underreported. The burden of these diseases remains poorly characterised, together with pertinent information for interventions to reduce their occurrence.

Many diseases in this group remain rarely or infrequently reported. Some have serious outcomes for some of the individuals infected (e.g. anthrax, botulism, listeriosis, toxoplasmosis). Generally, these diseases are reported from throughout the EU, and confirmed case rates appear relatively stable with little or no discernable trend over the 2006–09 period.

There were some important exceptions in 2009. Anthrax cases were more frequent, due primarily to an outbreak among intravenous drug users in the United Kingdom; anthrax should be considered an emerging disease in relation to this route of transmission. Cases of haemolytic uraemic syndrome (HUS), a potentially fatal clinical manifestation of STEC/VTEC infection, were reported more frequently in 2009 than previously. This may be related to the characteristics of the *E. coli* types responsible for two large outbreaks in the United Kingdom and the Netherlands; however, this possible trend toward more severe infection needs review. Deaths due to variant CJD infection continued to decline.

Some rare or uncommon gastrointestinal infections are more frequent in particular sub-regions and countries. Brucellosis is reported primarily 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 domestically reared pork and wild boar; most confirmed echinococcosis cases were reported from Bulgaria. Yersiniosis case reports are declining overall but reported case rates remain increased in Nordic states, Germany, Czech Republic and Slovakia; infection is often associated with pork consumption. Confirmed case rates for listeriosis were highest in Denmark, and have increased in recent years, for reasons that remain uncertain. Hepatitis A cases were reported relatively infrequently overall, but confirmed case rates remain relatively high in Latvia, Czech Republic, Slovakia, Romania and Bulgaria.

Typhoid and paratyphoid fever and cholera are considered rare diseases in EU and EEA/EFTA countries, but cases occur mostly as sporadic importations from outside the Union, and their distribution reflects travel patterns of EU citizens to countries where these diseases are endemic.

Emerging and vector borne diseases

The reported rate of malaria cases remains stable, with almost all cases imported from countries outside the Union. The distribution of cases across Member States primarily reflects travel patterns of citizens to countries where malaria is endemic. A small number of indigenous cases of *Plasmodium vivax* were reported from Greece in 2009. In 2010, Spain reported its first indigenous case of *Plasmodium vivax* since 1961.

Sporadic cases of West Nile fever (WNV infection) continued to be reported during 2009 from Italy, Hungary and Romania. The features of the Italian cases suggest continuation of the 2008 outbreak in northern Italy. In 2010, an upsurge of mosquito-borne disease including WNV infection was observed in several EU countries. The number of human WNV cases in 2010 was the highest reported in Europe in the last decade, with Greece accounting for the majority of the 340 confirmed EU cases. Outside Greece, WNV cases were also reported from Spain, Hungary, Romania and Italy, as well as from a large outbreak in southern Russia.

Two indigenous cases of dengue were reported from southern France and 15 indigenous cases of dengue from Croatia, both areas where the mosquito vector *Aedes albopictus* is known to be well established. Chikungunya case numbers significantly increased in 2009 in returning travellers from countries where transmission is occurring. In 2010, indigenous transmission was reported for the second time in Europe (after the Italian outbreak of 2007), with two cases identified in southern France. Continued close surveillance (human, veterinary, entomological) is needed to keep this situation under review.

High rates of Q fever cases continued to be reported, primarily due to an outbreak in the Netherlands stretching over several years. This is now the largest community outbreak of Q fever ever reported. Cases and some small outbreaks were also reported from a number of other countries including Belgium, Germany, Ireland and Bulgaria. Q fever is an underdiagnosed disease due to its non-specific clinical features, and is also not reported by some countries.

Hantavirus infections remain the most commonly reported of the viral haemorrhagic fevers, with most cases reported from Finland in 2009. Substantial numbers of dengue fever cases were also reported by Member States; as for malaria, the epidemiology reflects travel of citizens to countries where dengue is endemic. Other forms of viral haemorrhagic fever were

reported rarely (as sporadic imported cases), or not at all, in 2009.

No cases of plague, smallpox or SARS were reported by Member States in 2009, but there was one case of yellow fever (in a traveller to Ghana).

Vector borne diseases remain a significant burden for Member States, both in the form of infected travellers returning from countries where these diseases are endemic and in relation to the risk of disease transmission becoming established in EU countries. West Nile fever is now endemic in Europe; given the presence of competent vectors, and with the occurrence of outbreaks in other world regions there is a risk that indigenous transmission of other diseases, such as dengue fever and chikungunya, could become established in European countries in coming years.

Vaccine-preventable diseases

Most vaccine preventable diseases continued to show either a declining or stable trend in reported incidence of confirmed cases in 2009, although a substantial increase in measles activity recurred in 2010. Among the primary vaccine schedule diseases, diphtheria cases were rare and continued to decline, confined to a few cases across five countries. Isolated tetanus cases were reported from a few countries; Italy was an exception with 58 cases reported. No cases of polio were reported in 2009, but a large polio outbreak in 2010, mainly affecting Tajikistan and neighbouring countries, with nearly 500 confirmed cases due to wild poliovirus serotype 1 (WPV1), was a significant challenge to the European Region's certified polio-free status.

Invasive *Haemophilus influenzae* disease remained uncommon, and stable in trend, reflecting the gains from previous vaccine introduction; cases were dominated by non-capsulated and non-b serotypes. Invasive meningococcal disease also remains relatively uncommon, following the introduction of C group vaccine, although case fatality and disability rates continue to be substantial. Invasive pneumococcal disease is more frequently reported, but surveillance systems for this disease are heterogeneous and not universal across Europe, and the effects of introduction of pneumococcal vaccination difficult to assess.

For other diseases, the epidemiological picture is more varied and of concern. Despite being a primary vaccination in all countries, pertussis remains a relatively common and underdiagnosed infection, with stable or increasing reported rates. Increasing numbers of cases are reported among older children and adolescents, and adults. These represent a large reservoir and important source of infection for vulnerable younger children.

Thousands of measles, mumps and rubella cases continue to be reported across Europe. The commitment for elimination of indigenous measles and rubella was renewed in 2010, but elimination by 2015 will not be reached unless effective interventions to increase vaccine coverage are achieved by all Member States. Communities with limited access to routine health services are a particular challenge. Only three countries (Slovenia, Slovakia and Iceland) have maintained zero case reporting since 2006.

The number of measles cases in the EU overall declined in 2009 compared with previous peak years (2006, 2008) and outbreaks or increases in case numbers were reported in 2009 from France, Germany, Italy, Austria, Bulgaria, United Kingdom and Ireland. But incidence increased again markedly in 2010, with Bulgaria accounting for the majority of the over 30 000 reported cases in Europe, including 21 deaths.

Mumps cases increased significantly in 2009, mainly due to a national outbreak in the United Kingdom, related to unvaccinated cohorts reaching university age. Confirmed rubella cases decreased in 2009, reflecting partly the resolution of an outbreak in Italy in 2008, but also reflecting variations in surveillance systems and reporting, including very low rates of laboratory confirmation, and changes in case definitions used for reporting by some countries.

Antimicrobial resistance and healthcare-associated infections

Based on the antimicrobial resistance data reported to EARS-Net by 28 countries in 2009, and on the results of trend analyses, including EARSS data from previous years, the situation in Europe displays large variations depending on the microorganism, the antimicrobial concerned and the geographic region.

In 2009, the trends of greatest concern were the rapidly decreasing susceptibility of *Escherichia coli* isolated from invasive infections to essentially all antimicrobial agents included in the EARS-Net surveillance with the exception of carbapenems, and the high percentages of resistance to third-generation cephalosporins, fluoroquinolone and aminoglycosides in *Klebsiella pneumoniae* from invasive infections. In half of the reporting countries, the percentage of *K. pneumoniae* isolates that were multidrug-resistant (combined resistance to third-generation cephalosporins, fluoroquinolones and aminoglycosides) was above 10 %, and a few countries also reported high percentages of resistance to carbapenems.

These antibiotics have been widely used in many countries due to the increasing prevalence of extended-spectrum beta-lactamase (ESBL)-producing Enterobacteriaceae and this resulted in the emergence of carbapenemase (VIM, KPC and NDM-1) production, especially in *K. pneumoniae*. Resistance to third-generation cephalosporins in *E. coli* also increased significantly during the last four years in more than half of the reporting countries.

Even though the percentage of meticillin-resistant *Staphylococcus aureus* (MRSA) among *Staphylococcus aureus* isolates seems to stabilise, or even decreases in some European countries, MRSA remains a public health priority, since the proportion of MRSA is still above 25% in more than one third of the reporting countries.

Antimicrobial consumption data reported to ESAC continued to show a nearly fourfold variation between countries in outpatient antibiotic use expressed in defined daily doses per population. There were also large inter-country variations in the relative use of various antimicrobial classes. Penicillins remained the most frequently used antimicrobial group, ranging from 29% to 66% of all antimicrobials used in outpatients. Other antimicrobial classes (e.g., cephalosporins, macrolides, quinolones) made up widely varying proportions of outpatient antimicrobial use depending on the country.

For the first time since the transition of the coordination of the surveillance of healthcare-associated infections to ECDC in 2008, data were collected through ECDC's TESSy system. Seventeen countries submitted data for at least one of the HAI surveillance components. The number of surgical interventions included in the surveillance for 2009 increased by 9.6%, and the number of participating ICUs by 22.7%, compared to 2008.

Decreasing trends in the prevalence of surgical site infections following hip prosthesis continued in 2009. The distribution of microorganisms associated with infections acquired in intensive care units showed a high proportion of third-generation cephalosporin-resistant Enterobacteriaceae (in particular, *Klebsiella* spp. and *Enterobacter* spp.) isolates. Colistin resistance in *Pseudomonas aeruginosa, Acinetobacter baumannii* and *Stenotrophomonas maltophilia* was more frequently reported in 2009.

Conclusions

The pandemic of 2009 and 2010, its aftermath and evaluations of the response raised a number of issues for preparedness and response to new influenza virus strains with essentially unknown characteristics. One consistent lesson from reviews of the European experience is the need to strengthen routine seasonal influenza surveillance in hospitals and especially Intensive Care Units in many Member States, 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. While the nature of the association between one of the pandemic influenza vaccines and narcolepsy in children and young adults is still to be established, efficient monitoring of vaccine coverage, effectiveness and safety must be an integral part of influenza surveillance. The next priority will be to determine the characteristics of the new seasonal influenza in Europe, including assessing the possible transmission of already resistant strains.

A number of European targets appear likely to be missed unless more effective interventions can be implemented by Member States. Outbreaks and epidemics of measles are more frequent and widespread than previously, and the epidemic in Bulgaria in 2009 offered a reminder of how widespread and intensive such epidemics can be, with many avoidable cases of infection and death. Measles and rubella epidemiology is deteriorating rather than improving, with several Member States struggling to achieve or maintain adequate immunisation levels. Although the reported overall occurrence of tuberculosis continues to decline, progress towards targets for achieving bacteriological confirmation and successful treatment of all tuberculosis cases remains limited. The re-emergence of polio in the form of an outbreak in Tajikistan underlines that maintaining the European Region's polio-free status requires continued vigilance.

HIV remains a major public health concern with ongoing transmission in all countries, although the epidemiology in population risk groups continues to differ from country to country. Men who have sex with men still constitute the largest risk group in the EU/EEA overall, with no evidence of a decrease in the rate of new infections. The diversity of affected population groups across different countries also applies to certain sexually transmitted infections (e.g. syphilis, gonorrhoea) and Hepatitis B and C. The high and increasing rates of Chlamydia infection among young people reported from many EU countries is a particular concern. Countries need to complement classical disease prevention strategies with approaches that support comprehensive and coordinated interventions for these risk groups.

The ability to recognise, investigate and identify the likely source of an outbreak remains critically important for food- and waterborne diseases. This report provides information on national and international outbreaks of disease from cryptosporidium and norovirus, to listeriosis and VTEC, affecting countries across the European Union. Multinational salmonella outbreaks underline the need to better coordinate investigation and control measures across Member States, at European level, and between human, veterinary and food safety organisations and networks. This has been further exemplified by the recent outbreak of enterohaemorrhagic *E.coli* centred in Lower Saxony.

Development of microbial resistance continues to be a major public health problem, as illustrated by the emergence of New Delhi metallo-beta-lactamase-1 (NDM-1) producing *Enterobacteriaceae*, from the Indian subcontinent, and its spread in the European Union. Countries need to intensify their programmes for infection control and prudent use of antibiotics to prevent and control the spread of multi-drug resistant strains of bacteria in Europe. The progress made in reducing the prevalence of meticillin-resistant *Staphyloccocus aureus* (MRSA) infections in several EU countries is encouraging, and represents an example of what may be achieved through implementation of coordinated prevention and control strategies.

Emergent diseases in the European context continue to pose a public health risk. West Nile virus must now be considered endemic in the south east of Europe, and there have been reports of locally acquired cases of diseases previously only considered to be imported – e.g. malaria, dengue fever and chikungunya. Coordinated and enhanced human, veterinary and environmental surveillance is needed in all Member States at risk of these diseases, together with development of effective countermeasures. Other diseases are considered 'emergent' through changes in the groups affected and the means of transmission. Anthrax has emerged as a potential epidemic disease among intravenous drug users.

A number of diseases remain particularly liable to underdiagnosis and reporting, 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 under surveillance or being routinely reported 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. Countries affected may want to review this situation. For other diseases, reporting cases according to EU case definitions remains a significant challenge for some Member States.

Table A. Overview of overall recent trend, EU notification rate and main age groups affected, for communicable diseases reported to ECDC, 2009

Disease	General trend 2006–2009	EU rate of confirmed cases for 2009 (per 100 000)	Main age groups affected (2009)
Respiratory tract infections			
Influenza	⟷ [i]	N/A	0–14 [i]
Animal influenza	Insufficient data	0.0	Insufficient data
Legionnaires' disease (legionellosis)	⟷	1.0	45+
Tuberculosis	↓	9.1	25+
HIV, sexually transmitted infections and blood-borne viral infections			
Chlamydia infection	↑	185.1	15–24
Gonorrhoea infection	⟷	9.7	15–34
Hepatitis B	↓	1.2	15–64
Hepatitis C	Insufficient data	8.2	25–64
HIV	⟷	5.7	25+
AIDS	↓	1.0	40–49
Syphilis	⟷	4.5	20–44
Food- and waterborne diseases and zoonoses			
Anthrax	N/A	‹0.01	Insufficient data
Botulism	⟷	0.03	0–4, 25–64
Brucellosis	↓	0.08	15+
Campylobacteriosis	⟷	53.1	0–4
Cholera	N/A	‹0.01	Insufficient data
Cryptosporidiosis	⟷	2.7	0–4
Echinocccosis	↓	0.2	25+
Vero/Shiga toxin-producing *Escherichia coli* (VTEC/STEC)	⟷	0.9	0–4
Giardiasis	⟷	5.6	0–4
Hepatitis A	⟷	3.4	0–24
Leptospirosis	↓	0.1	15+
Listeriosis	⟷	0.35	65+
Salmonellosis	↓	23.6	0–4
Shigellosis	⟷	1.6	0–44
Congenital toxoplasmosis	N/A	0.01	‹1
Trichinellosis	⟷	0.15	5–64
Tularaemia	⟷	0.18	45+
Typhoid/paratyphoid fever	⟷	0.3	0–44
Variant Creutzfeldt–Jakob Disease (vCJD)	N/A	‹0.01	Insufficient data
Yersiniosis	↓	2.0	0–14

i In 2009, reported rate increased overall and in 0–14 year age groups due to A(H1N1) pandemic.

Disease	General trend 2006–2009	EU rate of confirmed cases for 2009 (per 100 000)	Main age groups affected (2009)
Emerging and vector-borne diseases			
Malaria	⟷	0.9	25–44
Plague	N/A	0.0	N/A
Q fever	↑	0.6	45–64
Severe acute respiratory syndrome (SARS)	N/A	0.0	N/A
Smallpox	N/A	0.0	N/A
Hantavirus infection	Insufficient data	0.7	25+
Dengue fever	Insufficient data	0.1	15–64
Chikungunya fever	↑	0.02	25–64
West-Nile virus infection	↑	<0.01	45+
Yellow fever	N/A	<0.01	N/A
Vaccine-preventable diseases			
Diphtheria	↓	<0.01	45+
Invasive *Haemophilus influenzae* disease	⟷	0.4	0–4, ≥65
Invasive meningococcal disease	⟷	0.9	0–4, 15-24
Invasive pneumococcal disease	↓	4.4	0–4, ≥65
Measles	⟷	0.8	0–24
Mumps	↓	3.2	15–24
Pertussis	⟷	4.9	0–24
Poliomyelitis	N/A	0.0	N/A
Rabies	N/A	<0.01	Insufficient data
Rubella	⟷	0.1	0–4, 15–24
Tetanus	↓	0.02	65+
Antimicrobial resistance and healthcare-associated infections			
Antimicrobial resistance	↑	N/A	N/A
Healthcare-associated infections	⟷	N/A	N/A

N/A: not applicable.
Insufficient data – relating to uncommon diseases where trend not discernable with precision.

1 Introduction

1.1 Background

This report aims to give 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 three European Economic Area (EEA)/European Free Trade Association (EFTA) countries[i,ii].

This report is produced annually and is intended for policymakers and their key advisors, epidemiologists, scientists and the wider public. It is hoped that readers will find this overall compilation a useful one volume overview and reference, to better understand the present situation regarding communicable diseases in Europe. It should also usefully support policymakers, planners and their advisors in making evidence-based decisions to plan and improve programmes, services and interventions for preventing, managing and treating these diseases.

This report is based on data collected for 2009 from the surveillance systems of the Member States and uploaded into the European Surveillance System (TESSy), from data and reports produced by Dedicated Surveillance Networks (DSNs) not yet integrated into ECDC, and from various ECDC technical and scientific reports and publications related to the epidemiological situation for specific communicable diseases and disease groups in 2009. The emphasis is on the outline descriptive epidemiology of each disease in recent years, usually 2006–2009. Some of the disease-specific sections in Chapter 2 also include short notes of relevant epidemiological updates for 2010.

This document also describes emerging threats in 2010 (Chapter 3) that were 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 (e.g. Program for Monitoring Emerging Diseases – ProMED, Global Public Health Intelligence Network – GPHIN, media, and various additional sources, both formal and informal).

The reader will also find related information regarding these diseases and public health problems elsewhere in the ECDC publications and website (www.ecdc.europa.eu). 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, as appropriate. Finally, information relating to most diseases reported here, including their causes, characteristics as public health problems and methods for prevention and control are available on the ECDC website health topics pages (at: http://ecdc.europa.eu/en/healthtopics/).

1.2 Structure of the report

This report is set out as follows:

- The *Summary and conclusions* 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/EFTA countries, including discussion of the value and limitations of the present surveillance information;
- *Chapter 2* gives an overview of the epidemiological situation in 2009 for each of the 47 communicable diseases and two health issues under mandatory surveillance within the EU;
- *Chapter 3* gives an overview of the threats monitored through epidemic intelligence activities during 2010, with emphasis on some threats of particular interest either because of their public health importance or unusual or new epidemiological patterns.

1.3 Description of methods

Data source

All EU Member States and three EEA/EFTA 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]. The metadataset also defines the information items to be included with each case report. Most data is submitted as anonymised case data, but aggregated data is reported by some Member States for some diseases.

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.

iv Commission Decision 2002/253/EC.

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 TESSy format before uploading. Overview 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. Additional validation is performed by ECDC experts and data managers following the end of the data call. Member States receive summary overview tables to verify the data to be included in this annual report. Member States' information staff upload any corrections required to TESSy. 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 as part of the Annual Epidemiological Report data call.

For the present report, data was drawn from the following sources:

- data submitted in response to data calls by ECDC Disease Programmes for annual reports on the enhanced surveillance of specific diseases/disease groups;
- data from European Disease Networks not integrated into ECDC in 2009: 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.

Table 1.1. Sources of data analysed in the *Annual epidemiological report 2011*

Disease	Section	Source of Data
Antimicrobial resistance	Antimicrobial resistance and healthcare-associated infections	TESSy (Disease-specific call)
Healthcare-associated infections	Antimicrobial resistance and healthcare-associated infections	TESSy (Disease-specific call)
Malaria	Emerging and vector-borne diseases	TESSy (Annual Report data call)
Plague	Emerging and vector-borne diseases	TESSy (Annual Report data call)
Q fever	Emerging and vector-borne diseases	TESSy (Disease-specific call)
SARS	Emerging and vector-borne diseases	TESSy (Annual Report data call)
Smallpox	Emerging and vector-borne diseases	TESSy (Annual Report data call)
Viral haemorrhagic fevers	Emerging and vector-borne diseases	TESSy (Annual Report data call)
West Nile virus infection	Emerging and vector-borne diseases	TESSy (Annual Report data call)
Yellow fever	Emerging and vector-borne diseases	TESSy (Annual Report data call)
Anthrax	Food- and waterborne diseases	TESSy (Annual Report data call)
Botulism	Food- and waterborne diseases	TESSy (Annual Report data call)
Brucellosis	Food- and waterborne diseases	TESSy (Disease-specific call)
Campylobacteriosis	Food- and waterborne diseases	TESSy (Disease-specific call)
Cholera	Food- and waterborne diseases	TESSy (Annual Report data call)
Cryptosporidiosis	Food- and waterborne diseases	TESSy (Annual Report data call)
Echinococcosis	Food- and waterborne diseases	TESSy (Disease-specific call)
Giardiasis	Food- and waterborne diseases	TESSy (Annual Report data call)
Hepatitis A	Food- and waterborne diseases	TESSy (Annual Report data call)
Leptospirosis	Food- and waterborne diseases	TESSy (Annual Report data call)
Listeriosis	Food- and waterborne diseases	TESSy (Disease-specific call)
Salmonellosis	Food- and waterborne diseases	TESSy (Disease-specific call)
Shigellosis	Food- and waterborne diseases	TESSy (Annual Report data call)
Toxoplasmosis	Food- and waterborne diseases	TESSy (Disease-specific call)
Trichinellosis	Food- and waterborne diseases	TESSy (Disease-specific call)
Tularaemia	Food- and waterborne diseases	TESSy (Annual Report data call)
Typhoid/paratyphoid fever	Food- and waterborne diseases	TESSy (Disease-specific call)
Variant Creutzfeldt-Jakob disease (vCJD)	Food- and waterborne diseases	DSN
VTEC infection	Food- and waterborne diseases	TESSy (Disease-specific call)
Yersiniosis	Food- and waterborne diseases	TESSy (Disease-specific call)

Disease	Section	Source of Data
Chlamydia infection	HIV/AIDS, STI and hepatitis	TESSy (Disease-specific call)
Gonorrhoea	HIV/AIDS, STI and hepatitis	TESSy (Disease-specific call)
Hepatitis B	HIV/AIDS, STI and hepatitis	TESSy (Annual Report data call)
Hepatitis C	HIV/AIDS, STI and hepatitis	TESSy (Annual Report data call)
HIV/AIDS	HIV/AIDS, STI and hepatitis	TESSy (Disease-specific call)
Syphilis	HIV/AIDS, STI and hepatitis	TESSy (Disease-specific call)
Avian influenza in humans	Influenza	TESSy (Annual Report data call)
Influenza	Influenza	TESSy (Disease-specific call)
Legionnnaires' disease	Legionellosis	TESSy (Disease-specific call)
Tuberculosis	Tuberculosis	TESSy (Disease-specific call)
Diphtheria	Vaccine-preventable diseases	DSN
Invasive *Haemophilus influenzae* disease	Vaccine-preventable diseases	TESSy (Disease-specific call)
Invasive meningococcal disease	Vaccine-preventable diseases	TESSy (Disease-specific call)
Invasive pneumococcal disease	Vaccine-preventable diseases	TESSy (Annual Report data call)
Measles	Vaccine-preventable diseases	DSN
Mumps	Vaccine-preventable diseases	DSN
Pertussis	Vaccine-preventable diseases	DSN
Poliomyelitis	Vaccine-preventable diseases	TESSy (Annual Report data call)
Rabies	Vaccine-preventable diseases	TESSy (Disease-specific call)
Rubella	Vaccine-preventable diseases	DSN
Tetanus	Vaccine-preventable diseases	TESSy (Annual Report data call)

TESSy: the European Surveillance System; DSN: Dedicated Surveillance Network.

The source of the data for each disease and disease group is given in Table 1.1.

The source of the data for Chapter 3 are health threats identified 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 this tool and from the EWRS database. The analysis of monitored threats covers the periods from the activation of TTT in June 2005, and for the EWRS since January 2005, until the end of 2010.

The expression 'opening a threat' refers to the way ECDC assesses threats during its daily threat review meetings, internally known as 'roundtable meetings'. The roundtable meeting is attended by ECDC experts who evaluate potential threats and validate events that require further attention or action from ECDC due to their relevance for 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.

Following Decision No. 2000/57/EC of the European Parliament and of the Council, events are considered relevant to be reported to the EWRS if one or more of the criteria below are met[v]. 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 notifications and the need to exchange details following contact tracing[v].

The criteria for reporting to the EWRS are the following:

- 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 has to be reported also through EWRS;

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.

- any event related to communicable diseases with a potential EU dimension necessitating contact tracing to identify infected persons or persons potentially in danger 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 identified as a footnote to the summary table for each disease description. 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 2009. For calculation of age- and gender-specific rates, the data are aggregated into the following age groups for the analyses: 0–4, 5–14, 15–24, 25–44, 45–64 and ≥ 65 years.

Presentation of analyses

The descriptive epidemiology for each disease is set out as a summary table by country and supplementary figures describing overall epidemiology at EU and EEA/EFTA level. These include the trend for reported confirmed cases over 2006–09, 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/EFTA area.

Summary table

This table, given for each disease, presents an overview of the number and rates of confirmed cases reported by the Member States surveillance systems for the period 2006–09. The total number of reported cases (independent of case classification) for 2009 is also shown.

Confirmed case 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.

The summary table indicates whether the country data was 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').

Aspects of descriptive epidemiology at EU/EEA level

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

- **Trends in reported number of confirmed cases.** The number of confirmed cases by month, 2006–09, for the EU and EEA/EFTA area 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 and EEA/EFTA area 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/EFTA 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 2009, compared with the maximum and minimum case numbers observed for each month for the period 2006–08. These analyses include only cases for which the month of reporting is given (again 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 is 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

vi Eurostat (http://epp.eurostat.ec.europa.eu) is the statistical office of the European Union.

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.

1.4 A note to the reader

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 2009 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 previous years (2006–08). 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.

2 Epidemiology of communicable diseases in Europe, 2009

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, Legionnaires' disease, 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, 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 (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 2009/10 influenza pandemic caused by the A(H1N1)2009 virus that emerged in the Americas in April 2009 spread quickly to Europe where, following a modest spring/summer wave of infection in 2009, most transmission and cases took place in the autumn and early winter with a moderate intensity.
- Almost all influenza cases in 2009 after the 2008/09 season were caused by the 2009 pandemic A(H1N1) virus. Only a few percentages of cases were due to a B virus (Victoria lineage). The previous seasonal A(H1N1) was eclipsed and with it most oseltamivir resistance.
- Among primary care consultations, the most affected age group was children under 14 years.
- Unusually severe disease and deaths due to influenza were more frequent in younger adults (under 65 years) than older people.
- Surveillance of severe (hospitalised) acute respiratory cases was implemented in varying forms by 10 EU countries during the pandemic. Concerning those with laboratory-confirmed influenza infections from week 40/2009, 9 469 cases were reported with 569 related fatalities. The rate of cases reported decreased with age but a severe outcome was associated with increased age, male gender and the presence of at least one underlying medical condition. Nevertheless, one quarter of severe influenza cases had no prior underlying medical condition.
- Most severe disease and deaths occurred in people with underlying medical conditions. However, 20% of confirmed influenza deaths occurred in previously healthy adults and children, often in association with a difficult to treat acute respiratory distress syndrome. If sustained, these changes in risk patterns for severe influenza may result in a change in thinking about who should be offered immunisation.
- The match of the pandemic virus with the new pandemic vaccines was good, resulting in high field vaccine effectiveness. However, the impact of these vaccines was limited by their availability after most transmission had occurred in the 2009/10 waves.
- A number of significant weaknesses in routine and enhanced influenza surveillance systems were identified, notably in severe disease and mortality surveillance and sero-epidemiology. Most require to be remedied for seasonal influenza both for their own sake, and if they are to work effectively in future pandemics. An additional weakness was in rapid implementation of essential research and development during the pandemic.

Influenza is an acute respiratory disease caused by influenza viruses. While most illnesses cases are short and without consequence, regular seasonal epidemics of influenza include significant rates of severe illness and death, particularly among elderly persons and those with underlying chronic medical conditions. Type A virus causes the most severe disease and is associated with epidemics and pandemics. Continuing changes in the genetic makeup of influenza viruses lead to development of new strains that are more effective in causing epidemics. Occasionally, strains develop, many humans have little or no immunity to the new strain and worldwide pandemics occur, as in 2009.

Epidemiological situation: May 2009 to May 2010 (week 20/2009–20/2010)

Sentinel surveillance of influenza-like illness and acute respiratory infection and laboratory reports

The 2009 pandemic A(H1N1) virus that emerged in North America in the spring of 2009 was brought by travellers to many European countries in the spring and early summer of that year. Transmission rapidly established itself in a number of countries. Initially, the greatest number of cases appeared in the United Kingdom, where a peak was observed in July (around week 30/2009), although laboratory reports indicated transmission in a number of European countries[1]. Transmission then subsided again in all countries in parallel with the summer closure of schools, but accelerated in the autumn, following school reopening (Figure 2.1.1).

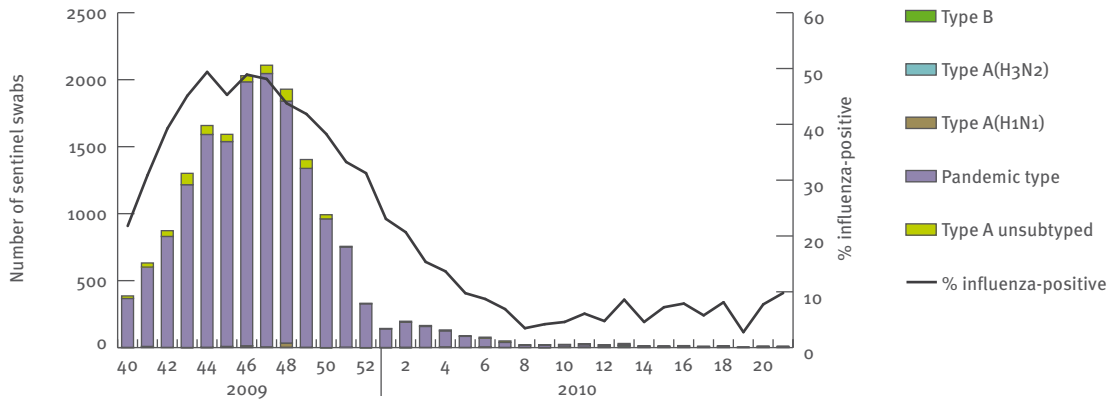
By week 40/2009 (early October), five European countries (Belgium, Ireland, Malta, Spain and the United Kingdom (Northern Ireland)) already reported influenza activity above the baseline and 11 countries reported increasing intensity activity. Weekly consultations in sentinel practices for influenza-like illness (ILI, 14 countries) acute respiratory infections (ARI, four countries), or both (10 countries) had already shown increases by week 40/2009, and peaked around week 46/2009 (mid-November), returning to a low level by week 53/2009 (probably also due to low reporting during the holidays). The autumn/winter wave of the pandemic lasted on average 11 weeks in each country, and there was the often observed west-to-east progression of influenza infection in Europe[2]. These data were in line with the percentage of influenza-positive specimens reported among samples from sentinel medical practices sending specimens to supporting laboratories. This is usually the best surrogate indicator of the influenza activity, which increased from 21.8% during week 40/2009, peaked at 49.4% in week 44/2009, decreased under 10% in week 04/2010 and did not come back over this level for the rest of the season. The highest rate of infection was reported in the 0–14 years age group[1].

The intensity of the pandemic as measured by consultations in primary care was lower in comparison with the two previous seasons in some countries. However, as in other parts of the world, such paradoxical findings could be explained with the change in healthcare seeking pattern as people were advised to avoid their general practitioners (GPs) in some countries at certain periods while in other places and periods there was more care seeking than usual[1,3]. Serological studies in some countries found that transmission was at least as intense in younger people as during seasonal epidemics and in some localities higher[4–6]. It is also noteworthy that cases of respiratory syncytial viruses (RSV) peaked concomitantly around week 53/2009, but with a lower intensity compared with the two previous seasons.

From the 48 317 specimens collected by sentinel GPs during the 2009/10 season, 17 089 influenza viruses were detected. Of these, 16 924 (99.0%) were type A and 165 (1.0%) type B influenza viruses. Of 16 242 subtyped influenza virus, 16 198 (99.7%) were A(H1N1)2009 virus, 36 (0.2%) were A(H1)seasonal virus and 8 (<0.1%) were A(H3) virus.

From week 40/2009 to week 20/2010, 3 305 influenza viruses from sentinel and non-sentinel specimens were characterised antigenically and 1 251 were characterised genetically. Of the former, 3 248 (98.3%) were antigenically pandemic A/California/7/2009(H1N1)-like, and of the latter, 1 229 (98.2%) belonged to the phylogenetic cluster represented by A/California/7/2009. Fifteen (75%) of the 20 influenza type B viruses antigenically characterised up to week 20/2010 were of the B/Victoria/2/87 lineage, while the remaining five (25%) were of the B/Yamagata/16/88 lineage. One mutation

Figure 2.1.1. Number of sentinel swabs and percentage of influenza-positive sentinel samples in the EU and EEA/EFTA countries, by type, subtype and week of reporting, weeks 40/2009–20/2010



in the haemagglutinin gene HA1 (known as D222G) was for the first time observed in Europe in association with severe influenza. However, no conclusion could be reached as to whether this was due to any increased pathogenicity of the virus or because it reproduced more successfully than other variants in certain deep tissue environments[7].

In Europe the pandemic virus continued to circulate during the following winter season (2010/11), and was the most prevalent strain along with B viruses[12]. By the end of 2010, intensive care departments had come under serious pressure from cases of severe influenza cases in a number of EU countries.

Antiviral resistance

All pandemic viruses tested were resistant to M2 inhibitors. Of the 1453 viruses tested from nine countries, only 37 (2.5%) were resistant to oseltamivir, and of 1447 viruses tested, none were resistant to zanamivir. All of those found to be resistant to oseltamivir had the well-established A(H1N1)H275Y mutation and most were associated with prior use of the drug, usually in immune-deficient individuals. There were only a few reports of oseltamivir resistant A(H1N1)2009 viruses being found in well individuals with no history of previous use. This was a marked contrast with previous seasonal influenza A(H1N1) viruses, where oseltamivir resistant strains predominated after 2007[8].

Surveillance of severe-end laboratory-confirmed A(H1N1)2009 cases in sentinel hospitals and related fatalities

When the influenza pandemic was declared, Member States were asked to report severe acute respiratory cases. The clinical case definition used for the reporting of these cases included all of following symptoms: sudden onset of fever over 38°C, cough or sore throat in the absence of any other diagnosis, shortness of breath or difficulty breathing and requiring hospital admission.

In addition, any death in a person with severe acute respiratory infection (SARI) or any unexplained deaths in hospital were also recorded. In this report, only laboratory-confirmed A(H1N1)2009 cases are considered, i.e. 82.7% of reported cases. Five countries (Ireland, Malta, Netherlands, Romania and Slovakia) distinguished the type of hospitalisation (ICU versus hospital ward) while France reported only cases admitted to ICU from week 45/2000. This is one of the main limitations of the pooled analysis of reported severe A(H1N1)2009 hospitalised cases.

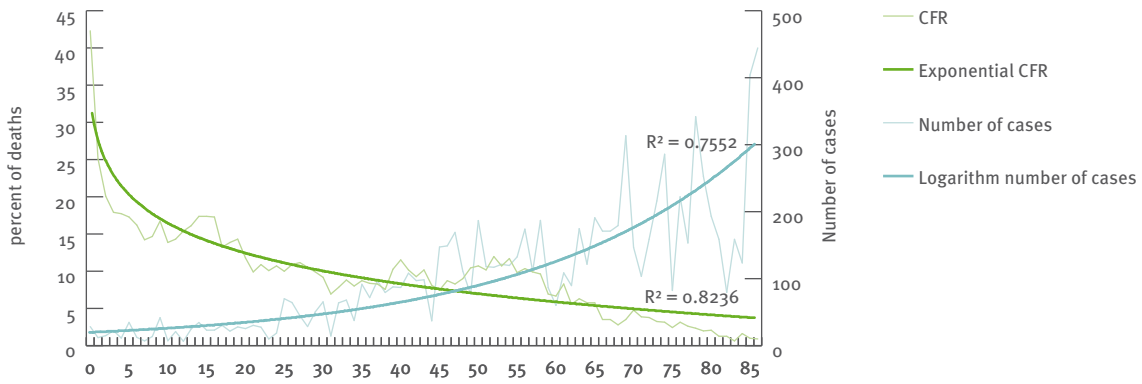
From week 40/2009 to week 20/2010, 10 countries reported 9469 laboratory-confirmed cases and 569 related fatalities. The peak period of severe A(H1N1)2009 varied in reporting countries from week 43/2009 to week 01/2010. The median age of all cases was 24 years old, 44 years in patients admitted to ICU and 50 years in SARI patients who died. The gender ratio (male/female) was 1.1 and the age-specific notification rate decreased from 22/10^5 in children aged <1 year to 2/10^5 in the elderly aged 75 and more. In patients with available information, 28.2% had no underlying condition. The crude case fatality ratio was 6.2% and 77.2% of deaths occurred in patients less than 65 years old. This picture was mirrored in national studies[9,10].

The number of cases decreased logarithmically with age with a strong statistical association high R^2 (0.83), suggesting that much of the decrease was associated with increasing to age; on the other hand, the case-fatality rate increased with age exponentially, also with a very high R^2 (0.76). Considered together, this suggested that though decreasing numbers of people were infected as age increased the individual risk of an infected individual dying increased with age (Figure 2.1.2).

Deaths

For the first 12 months of the pandemic (to the end of March 2010), ECDC actively monitored deaths officially

Figure 2.1.2. Number of cases of influenza and case fatality ratio in the EU and EEA/EFTA countries, by age, weeks 40/2009–20/2010



announced by Member States as being attributed to the pandemic (on national websites), as well as more detailed reports of case-based deaths to ECDC. The former method using epidemic intelligence found 2 900 confirmed announced deaths, while a considerably smaller number was reported to ECDC. As for all forms of human influenza, these totals are likely to represent a considerable underestimate of the true picture of mortality during the pandemic[1].

Case reports to ECDC indicated a considerable difference from the picture in previous seasonal influenza, where most deaths occurred in older people. During the pandemic, most deaths were in younger adults (under age 65 years), and especially in those with chronic underlying conditions. This was confirmed in country studies where it was noted that around 20 % of deaths were in young previously healthy adults and children and the only age group that showed a rise in mortality during the pandemic was older children[11]. One of the reasons for the low numbers of deaths in older people was pre-existing immunity in adults born before the mid-1950s, apparently due to circulation of an antigenically similar virus before that time[1,5,6].

Impact of countermeasures

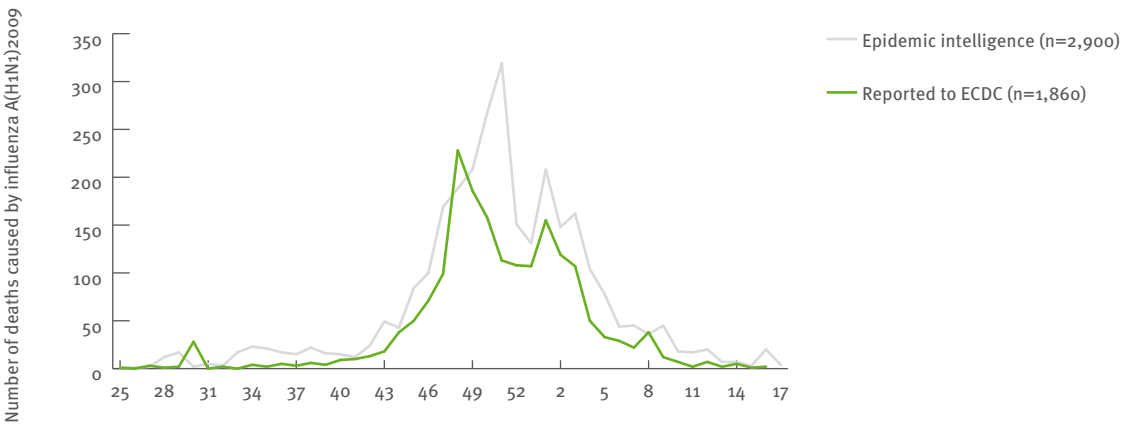
Influenza antivirals (neuraminidase inhibitors) were applied to variable extents. Initially, there were unsuccessful efforts made to use them in combination with intensive case-finding to contain the virus[1]. Observational data indicated that, in accordance with the findings of previous trials, their early use was associated with less risk of development of severe disease[10,12]. Following a planned prevention measure, monovalent vaccines were rapidly developed and authorised by the European Commission following scientific advice from the European Medicines Agency and its advisory committees[13]. The almost exclusive circulation of the pandemic strain made for a good match with the vaccines, which were mostly augmented with adjuvants. This was associated with particularly good effectiveness of the vaccine when this was measured in the field[14]. However, generally the vaccines arrived too late to have any population impact[15]. Pharmacovigilance for the antivirals revealed few adverse effects and one significant instance of adverse events following immunisation is described in Chapter 3[13].

Discussion

The 2009 pandemic dominated the respiratory infections in 2009. Not only were most of the infections it caused mild but in other ways the pandemic was less severe in Europe than in parts of the world affected earlier[16]. Equally, it was much less severe than the 'reasonable worse case scenario' for which many countries had prepared[17]. However, the pressures on some hospital services, notably paediatric services and intensive care, were considerable. Cases of acute respiratory distress syndrome in adults proved especially difficult to treat and resulted in higher levels of severe disease than might be expected from the generally benign picture of the pandemic in the community[18]. The change in the risk profile of those developing severe disease, if sustained, may have to result in different thinking on who to offer immunisation to in Europe.

Surveillance and response system weaknesses were exposed by the pandemic and have been identified in a number of evaluation reports[19,20]. Surveillance for severe disease due to influenza was already known to be not well developed in Europe as elsewhere, and attempts to establish new systems during the pandemic were only of limited success. Surveillance for severe acute respiratory infection due to any cause (a system developed for moderate and poorly resourced settings) was generally less successful in European countries than surveillance for confirmed influenza in hospitalised patients[9,10]. Too much time was spent producing numbers of cases and deaths of uncertain validity leaving little time or energy to answer important questions, monitor trends and

Figure 2.1.3. Officially announced deaths and deaths reported to ECDC due to 2009 pandemic influenza A(H1N1) in EU and EEA/EFTA countries, by week of report, weeks 40/2009–20/2010



ascertain risk factors[16,17]. Although sero-epidemiological data were generated in Europe, results were available well after they could have advised policy[4–6].

A major test of European countries' individual and collective ability to strengthen infection surveillance will be the extent to which the many 'lessons learnt' are implemented[16,19,20]. Most of the needed enhancements will need to be integrated into routine surveillance arrangements for seasonal influenza. This is both because of the information provided each season, but also because the experience that systems implemented for the first time during the pandemic under public health emergency conditions generally did not work well[20]. Equally, there was a general inability to undertake essential research and development work in a timely manner during the pandemic and the immediate period thereafter[4,6,10,16,21]. However, success with rapid estimated vaccine effectiveness and investigation of adverse effects associated with vaccination shows that this deficiency was not inevitable[15] (see also Chapter 3).

In the summer of 2010, Sweden, and later Finland, reported an unusual number of narcolepsy cases among children and adolescents vaccinated with one of the pandemic vaccines. Following these reports, several national and international studies to investigate a possible link between pandemic vaccine and narcolepsy have been initiated. Further information is given in Chapter 3.

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Animal influenzas, including avian influenza

- No human infections were reported in the EU and EEA/EFTA countries with highly pathogenic A(H5N1) in 2009 and there were no reports of human infections with other avian influenzas.
- One human infection with a true A(H1N1) swine influenza was reported. This was not related to the later A(H1N1)2009 pandemic which was of swine origin.
- It is considered that highly pathogenic A(H5N1) viruses remain a significant public health threat for Europe.

Introduction

Wild birds, along with some other animals such as pigs, are reservoirs of animal influenza viruses. Wild aquatic birds are considered to be the original natural reservoir for most influenza viruses. 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[1]. Since 1996, strains of highly pathogenic[i] influenza viruses type A(H5N1) have become established in bird populations, which, unusually among animal influenzas, have led to some sporadic cases and a few clusters of human infection and deaths[2]. 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) viruses remain a concern for human health in Europe because of four characteristics[3]:

- they are still highly pathogenic for humans;
- they are a persistent zoonotic infection among birds with which humans are in close contact;
- they are continuing to evolve;
- there is a risk of genetic recombination with influenza viruses that are better adapted to, and transmissible among, humans.

In 2009, only two outbreaks caused by highly pathogenic avian influenza were reported in domestic poultry – one in Germany, of type A(H5N1); and another in Spain, of type A(H7N7)[4]. No human cases associated with these two outbreaks were reported, though it cannot be determined whether public health measures implemented by the national authorities of these two countries contributed to this positive outcome.

i The term 'highly pathogenic' refers to the pathogenicity (case fatality rate) in poultry, not humans.

The World Health Organization (WHO) closely monitors reports of avian influenza A(H5N1) infections in humans worldwide and in January 2010 it published a review of the clusters of A(H5N1) across the world spanning the period 2003–09[2]. Extensive information regarding avian influenza A(H5N1) cases and outbreaks in humans and its public health implications has also been published by ECDC, though 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. Single cases of human infection in Cambodia, China, Egypt, Indonesia and Vietnam should no longer be remarkable though they still need to be monitored to detect changes in their epidemiology and clinical picture[5,6].

Low pathogenic avian influenza in birds

In 2009, a number of outbreaks of low pathogenic avian influenza occurred in the EU and were reported to the World Organisation for Animal Health (OIE). The reporting countries were Spain (one outbreak, H5 type), France (two outbreaks, H5N3 subtype), the Netherlands (two outbreaks, H5N2 subtype), Germany (multiple H5 type outbreaks, mostly H5N3 subtype), the Czech Republic (two outbreaks, one of them H5N3 subtype) and Romania (one outbreak, H5N3 subtype). Though low pathogenic avian and other animal influenzas have infected humans, they only rarely cause disease and that is almost always mild[7].

Other animal influenzas

One genuine human case of swine influenza was reported from Spain in early 2009, but the infection was probably acquired in 2008 from direct contact with a pig[8]. The result was a mild illness that did not require hospital care and the patient recovered fully. In fact the infection was only detected by chance[8,9]. True swine influenzas (influenza adapted to pigs) of the Eurasian types are endemic in domestic pigs in many parts of Europe but it is not reportable and so the epidemiology reporting relies on research findings[9,10]. Surveillance for swine influenzas in human 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[9,10]. The naming of the A(H1N1)2009 pandemic virus as 'swine flu' in some countries was unfortunate as it caused confusion, especially with communication to the public. The pandemic virus is in fact a human A(H1N1) influenza that originated as a recombined virus that includes swine influenza components.

Discussion

Worldwide, 48 cases of human influenza A(H5N1) infection were reported to WHO in 2010. But none of these

was from Europe[11]. This was the second lowest number of cases identified since 2005. In most instances, reports of avian influenza in birds are a result of passive surveillance activities so these infections are likely to be under-reported. 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 in 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 considerations, at least in EU countries and through initiatives sponsored by the European Commission (DG Research), could be to convert the current passive surveillance into an active system of routine monitoring of animal influenza, including influenza in animals like pigs[9,10].

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Legionnaires' disease (legionellosis)

- Legionnaires' disease remains an uncommon infection in the EU and EEA/EFTA countries.
- The rate of confirmed cases remains low and relatively stable at 1.0 per 100 000 population.
- The peak of reported cases, in July in previous years, has changed in 2009 to a more prolonged period, from June to September.
- The number of reported cases and clusters of travel-associated Legionnaires' disease decreased compared with 2008.

Legionnaires' disease is an uncommon respiratory infection caused by bacteria belonging to the *Legionella* genus. The infection can be fatal and outbreaks from a common environmental source can occur. The bacteria survive well in watery environments, and transmission to humans is most commonly through inhalation of contaminated aerosols.

Epidemiological situation in 2009

Of the 5567 cases of Legionnaires' disease reported across 29 EU and EEA/EFTA countries in 2009, 5157 cases were confirmed. Only Lithuania reported zero cases. Data were not available from Liechtenstein.

The overall confirmed case rate was 1.0 per 100 000 population (Table 2.1.1). The individual country rates varied between ‹0.1 and 3.0 cases per 100 000 population; only two countries (Slovenia and Spain) reported a rate over 2.5 per 100 000.

Table 2.1.1. Number and rate of reported cases of Legionnaires' disease in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type*	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	92	83	0.99	95	1.14	96	1.16	64	0.78
Belgium	Y	C	80	64	0.60	0	0.00	77	0.73	131	1.25
Bulgaria	Y	C	4	3	0.04	0	0.00	1	0.01	2	0.03
Cyprus	Y	C	3	3	0.38	9	1.14	1	0.13	1	0.13
Czech Republic	Y	C	20	10	0.10	9	0.09	14	0.14	12	0.12
Denmark	Y	C	123	99	1.80	130	2.37	126	2.31	90	1.66
Estonia	Y	C	6	6	0.45	7	0.52	3	0.22	4	0.30
Finland	Y	C	22	8	0.15	30	0.57	46	0.87	0	0.00
France	Y	C	1206	1181	1.83	1205	1.88	1336	2.10	1386	2.20
Germany	Y	C	503	378	0.46	406	0.49	392	0.48	363	0.44
Greece	Y	C	15	15	0.13	26	0.23	22	0.20	30	0.27
Hungary	Y	C	65	14	0.14	20	0.20	11	0.11	6	0.06
Ireland	Y	C	7	7	0.16	8	0.18	14	0.32	11	0.26
Italy	Y	C	1207	1159	1.93	1144	1.92	906	1.53	903	1.54
Latvia	Y	C	3	3	0.13	10	0.44	4	0.18	2	0.09
Lithuania	Y	A	0	0	0.00	2	0.06	2	0.06	0	0.00
Luxembourg	Y	C	5	5	1.01	4	0.83	5	1.05	9	1.92
Malta	Y	C	4	4	0.97	2	0.49	14	3.43	2	0.49
Netherlands	Y	C	251	214	1.30	313	1.91	300	1.83	418	2.56
Poland	Y	C	10	4	0.01	6	0.02	5	0.01	18	0.05
Portugal	Y	C	96	93	0.88	91	0.86	78	0.74	89	0.84
Romania	Y	C	3	1	0.00	0	0.00	0	0.00	-	-
Slovakia	Y	C	2	1	0.02	6	0.11	2	0.04	2	0.04
Slovenia	Y	C	66	61	3.00	44	2.19	32	1.59	-	-
Spain	Y	C	1231	1205	2.63	1220	2.69	1123	2.53	1328	3.03
Sweden	Y	C	126	126	1.36	153	1.67	127	1.39	105	1.16
United Kingdom	Y	C	376	372	0.61	394	0.64	486	0.80	581	0.96
EU total	**-**	**-**	**5526**	**5119**	**1.03**	**5334**	**1.07**	**5223**	**1.05**	**5557**	**1.12**
Iceland	Y	C	7	6	1.88	2	0.63	4	1.30	1	0.33
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	34	32	0.67	35	0.74	33	0.70	26	0.56
Total	**-**	**-**	**5567**	**5157**	**1.02**	**5371**	**1.07**	**5260**	**1.05**	**5584**	**1.12**

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

Age and gender distribution

Cases of Legionnaires' disease are mainly reported in persons in older age groups: in 2009, 4438 (86%) were at least 45 years old. The male-to-female ratio is 2.9:1. The confirmed case rates increased with age, from <0.1 per 100 000 in the under 25 years old to 2.6 per 100 000 in persons aged 65 years and above (4.2 per 100 000 in males and 1.5 per 100 000 in females) (Figure 2.1.5).

Seasonality

A clear trend in the monthly reports can be observed across all countries, with cases increasing in May, peaking during July to September and then decreasing gradually throughout the winter months. In 2009, July to September accounted for 2547 cases which represent almost 50% of the reported cases in 2009 with a known month of report (Figure 2.1.6).

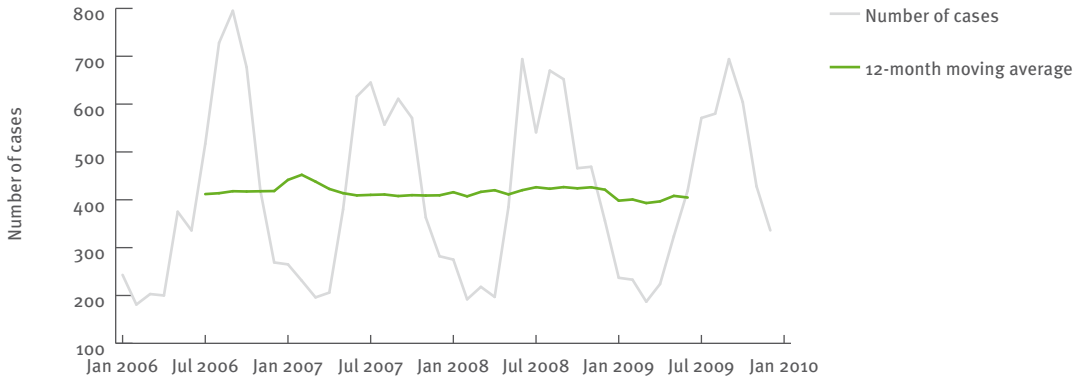
Enhanced surveillance in 2009

EWGLINET was the EU's dedicated surveillance network collecting data on cases of Legionnaires' disease in the EU and travel-associated Legionnaires' disease (TALD) in 2009. The network is since 1 April 2010 coordinated by ECDC and renamed ELDSNet (European Legionnaires' Disease Surveillance Network). In 2009, the countries collaborating in the EWGLINET scheme reported 824 confirmed individual TALD cases resulting in 88 new TALD clusters being identified[1]. The number of reported individual cases has decreased compared with 2007 (947 cases) and 2008 (871 cases). The number of TALD clusters of cases detected in 2009 also decreased compared with 2007 and 2008 (113 and 108, respectively).

Discussion

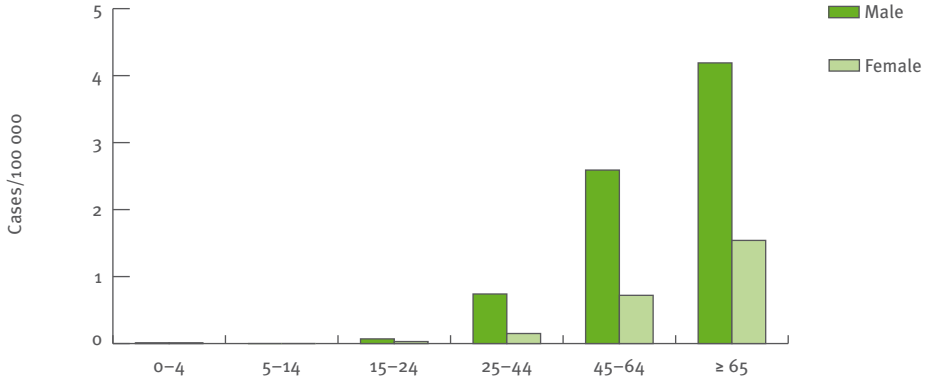
The confirmed case rate of reported Legionnaires' disease across the EU and EEA/EFTA remained stable in 2009 (allowing for delays in case reporting). Seasonality and age and gender distributions of cases were similar to those observed in previous years. The slight decrease in occurrence of TALD cases and clusters in 2009 compared to previous years may reflect the implementation of EWGLI guidelines and country legislation for the control of Legionnaires' disease in the EU and EEA/EFTA. However, the decrease in global travel, associated with the worldwide recession, is also likely to have influenced the occurrence of travel-associated Legionnaires' disease. There was in 2010 a small increase in international

Figure 2.1.4. Trend and number of reported confirmed Legionnaires' disease cases by month in EU and EEA/EFTA countries, 2006–09



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

Figure 2.1.5. Rates of reported confirmed Legionnaires' disease cases, by age and gender, in EU and EEA/EFTA countries, 2009



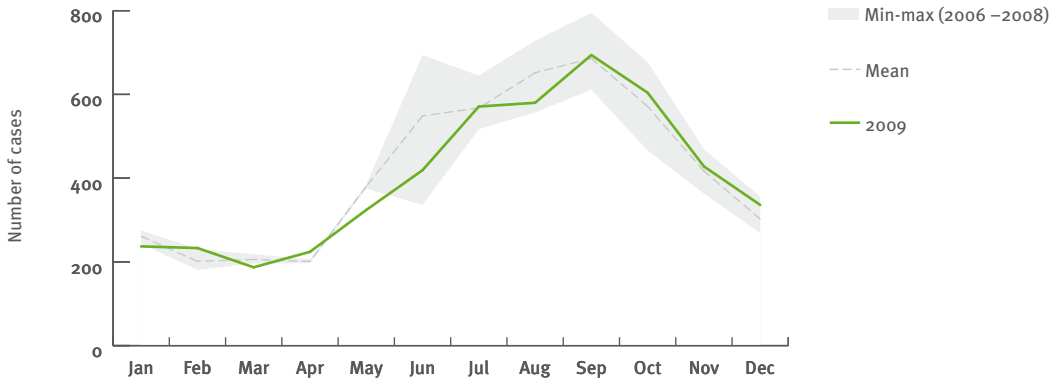
Source: Country reports: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

traveller numbers, associated with a small increase in the number of TALD cases reported (from 824 to 863). More information on TALD cases and clusters in 2010 can be found in Chapter 3.

References

1. Joseph CA, Ricketts KD, Yadav R, Patel S, on behalf of the European Working Group for Legionella Infections. Travel-associated Legionnaires' disease in Europe in 2009. Euro Surveill. 2010;15(41):pii=19683.

Figure 2.1.6. Seasonal distribution of reported confirmed cases of Legionnaires' disease, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Iceland, Italy, Latvia, 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	-	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	Y	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

Tuberculosis

- The overall case notification rate for tuberculosis (TB) in the EU and EEA/EFTA countries continues to decline: in 2009 it was 4.5% lower than that for 2008, reflecting a net downward trend in 20 countries.
- In 2009, 29 EU and EEA/EFTA countries reported 79 665 tuberculosis cases with an overall notification rate of 15.8 per 100 000 (range: 2.8 in Iceland to 108.2 cases per 100 000 in Romania); 46 046 (57.8%) of these cases were confirmed by culture (9.1 per 100 000).
- The highest culture-confirmed case rates were reported from Romania (57.5 per 100 000), Lithuania (44.1), Latvia (34.2), Estonia (23.1), Portugal (17.8) and Bulgaria (16.8).
- In 2009, 23.6% of TB cases were of foreign origin, 34.2% of these cases were from Asia (outside of WHO European Region); 28.6% from Africa; 9.5% from other countries of the EU and EEA/EFTA, 10.4% from non-EU and EEA/EFTA European countries and 17.3% from other or unknown countries.
- Multidrug resistance (MDR) remained most frequent in the Baltic States (17.4%–28.0%) and Romania (11.2%). Other countries reported lower levels of MDR (0%–8%), where it was generally more common in cases of foreign origin.
- Overall, for the 15 countries reporting drug susceptibility testing results for second-line anti-TB drugs, 7.1% 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 2008. Among previously untreated, culture-confirmed pulmonary TB cases, 78.1% had a successful outcome. Successful outcomes among previously treated pulmonary TB cases (53.2%) and among all culture-confirmed MDR TB cases at 24 months (32.0%) were much lower.

Tuberculosis (TB) is a disease caused by the infection with bacteria of the *Mycobacterium tuberculosis* complex (primarily *M. tuberculosis, M. africanum, M. bovis*). TB continues to be a major cause of disability and death in the EU and in many parts of the world. Humans are the primary reservoir, and the infection is usually acquired by inhalation of aerosol droplets from another person. Case fatality rates remain significant, even with treatment. Compliance with treatment, developing drug resistance, early diagnosis and prevention of spread to others remain major clinical and public health challenges.

Epidemiological situation in 2009

In 2009, 79 655 TB cases were reported by 27 European Union (EU) countries and two European Economic Area (EEA) countries (Iceland and Norway) (Table 2.1.2), showing a decrease of 3 635 cases compared with 2008[i]. Over 75% of cases occurred in the seven countries that reported 3 000 cases or more each (France, Germany, Italy, Poland, Romania, Spain and United Kingdom).

The overall TB notification rate in 2009 was 15.8 per 100 000 population. Rates lower than 20 per 100 000 were reported by 22 countries and rates higher than 20 per 100 000 by Romania (108.2), the Baltic States — Lithuania (62.1), Latvia (43.2), Estonia (30.7) — Bulgaria (38.3), Portugal (27.0) and Poland (21.6).

The overall notification rate was 4.5% lower than that for 2008 (for the 29 reporting countries), reflecting a net downward trend in 20 countries, as compared to 2008. The overall average annual decrease in rates between 2005 and 2009 was 3.8%.

Age and gender distribution

The rates of males were predominant in the notified TB cases in nearly all countries, this feature being more marked among nationals than among cases of foreign origin (overall male-to-female ratio was 2:1 for nationals compared with 1.4:1 for foreign cases).

Among previously untreated cases (Figure 2.1.7), the age groups 25–44 and 45–64 together accounted for more than 60% of all new cases (31.1% and 29.1%, respectively). The middle-aged (45–64 years old) and the elderly (>64 years old) together represented more than half of the cases (all cases) of national origin but only 28.4% of foreign cases. Most cases of foreign origin were reported among younger adults, especially in the 15–24 and 25–44 years age group (68.4%).

Cases in children (<15 years old) accounted for 4.2% of all notified cases. Nearly all countries experienced a decline or stabilisation at low levels in paediatric notification rates since 2005, suggesting low levels of transmission in the general population. In Bulgaria, Latvia,

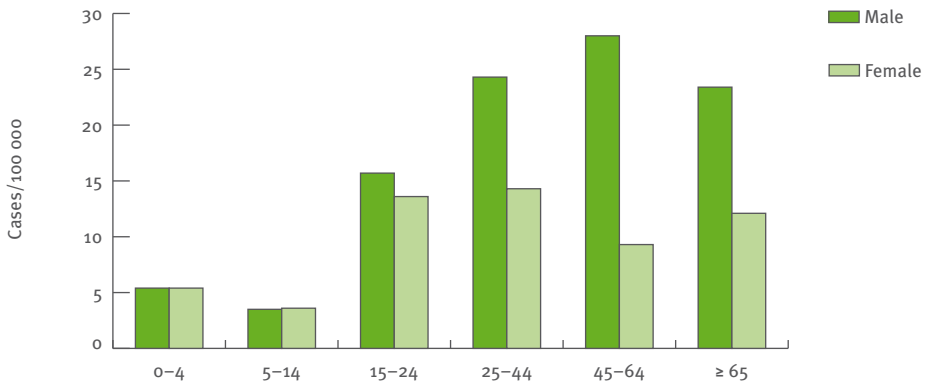
i A notified TB case is reported according to the EU case definition: cases are divided into 'possible' (based on clinical criteria only – all notifiable TB cases should classified as 'clinical criteria met'), 'probable' (having in addition positive acid-fast bacilli (AFB) detected or detection of *M. tuberculosis* in nucleic acid or granulomata in histology) and 'confirmed' (by culture or by detection of both positive AFB and *M. tuberculosis* nucleic acid).

Table 2.1.2. Number and notification rate of tuberculosis reported in EU and EEA/EFTA countries, 2007–09

Country	National Coverage	Report type*	All cases 2009		Confirmed cases[a] 2009		2008		2007	
			Total number and notification rate per 100 000 population		Total number and notification rate per 100 000 population		Total number and notification rate per 100 000 population (all reported cases)		Total number and notification rate per 100 000 population (all reported cases)	
			Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	707	8.5	446	5.3	822	9.9	874	10.5
Belgium	Y	C	1020	9.6	815	7.6	990	9.3	1020	9.6
Bulgaria	Y	C	2911	38.3	1280	16.8	3150	41.3	3038	39.7
Cyprus	Y	C	55	6.9	41	5.1	50	6.3	42	5.4
Czech Republic	Y	C	702	6.7	477	4.6	868	8.3	846	8.2
Denmark	Y	C	329	6.0	242	4.4	376	6.8	391	7.2
Estonia	Y	C	411	30.7	309	23.1	445	33.2	490	36.5
Finland	Y	C	419	7.9	307	5.8	344	6.5	348	6.6
France	Y	C	5308	8.2	2432	3.8	5812	9.1	5588	8.8
Germany	Y	C	4432	5.4	3011	3.7	4536	5.5	4998	6.1
Greece	Y	C	586	5.2	306	2.7	669	6.0	659	5.9
Hungary	Y	C	1448	14.4	711	7.1	1620	16.1	1686	16.8
Ireland	Y	C	472	10.6	242	5.4	468	10.6	480	11.0
Italy	Y	C	3877	6.5	2511	4.2	4418	7.4	4525	7.6
Latvia	Y	C	977	43.2	773	34.2	1070	47.2	1255	55.1
Lithuania	Y	C	2081	62.1	1478	44.1	2250	67.0	2408	71.3
Luxembourg	Y	C	27	5.5	27	5.5	28	5.7	39	8.1
Malta	Y	C	44	10.6	20	4.8	53	12.9	38	9.3
Netherlands	Y	C	1160	7.0	760	4.6	1021	6.2	1004	6.1
Poland	Y	C	8236	21.6	5223	13.7	8080	21.2	8614	22.6
Portugal	Y	C	2871	27.0	1892	17.8	3002	28.3	3139	29.6
Romania	Y	C	23267	108.2	12351	57.5	24680	114.7	24837	115.3
Slovakia	Y	C	506	9.3	235	4.3	633	11.7	682	12.6
Slovenia	Y	C	188	9.3	179	8.8	213	10.5	218	10.8
Spain	Y	C	7592	16.6	4095	8.9	8216	18.0	7768	17.3
Sweden	Y	C	627	6.8	515	5.6	546	5.9	482	5.3
United Kingdom	Y	C	9040	14.8	5075	8.3	8621	14.1	8314	13.6
EU total			**79293**	**15.9**	**45753**	**9.2**	**82981**	**16.7**	**83783**	**16.9**
Iceland	Y	C	9	2.8	8	2.5	6	1.9	14	4.5
Liechtenstein	Y	C	-	-	-	-	-	-	5	14.2
Norway	Y	C	363	7.6	285	5.9	313	6.6	302	6.4
Total		**C**	**79665**	**15.8**	**46046**	**9.1**	**83300**	**16.5**	**84104**	**16.8**

Source: Country reports. A: Aggregated data report; C: Case-based report; –: No report, U: Unspecified. (a) A confirmed TB case for this report is defined as a patient with culture-confirmation for *M. tuberculosis* complex.

Figure 2.1.7. Rates of tuberculosis cases, by age and gender, in EU and EEA/EFTA countries, 2009 (n = 79 402)



Source: Country reports: 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.

Lithuania and Romania, however, rates among children remained high (12.9–29.6 per 100 000 child population) in 2009 and have increased in Bulgaria since 2000 (from 11.8 to 20.6 per 100 000). Although rates are low in Belgium, Finland, Germany, the Netherlands, Slovenia, Sweden and the United Kingdom (<10 per 100 000), some increases in paediatric notified cases have been recorded in these countries.

Enhanced surveillance in 2009

In 2009, 79% of the reported cases were previously untreated, with a wide variation between countries (range: 54.4–96.7%). This proportion has not changed markedly in the past years, but the total number of new cases has decreased progressively and is probably the main reason for the decline observed in notification rates of TB in the EU and EEA/EFTA countries.

Pulmonary TB accounted for 78% of all TB cases and 43.5% of these cases were sputum smear positive. Among paediatric cases (<15 years), 58.2% were pulmonary cases (14.4% sputum smear positive), and 40.7% extra pulmonary.

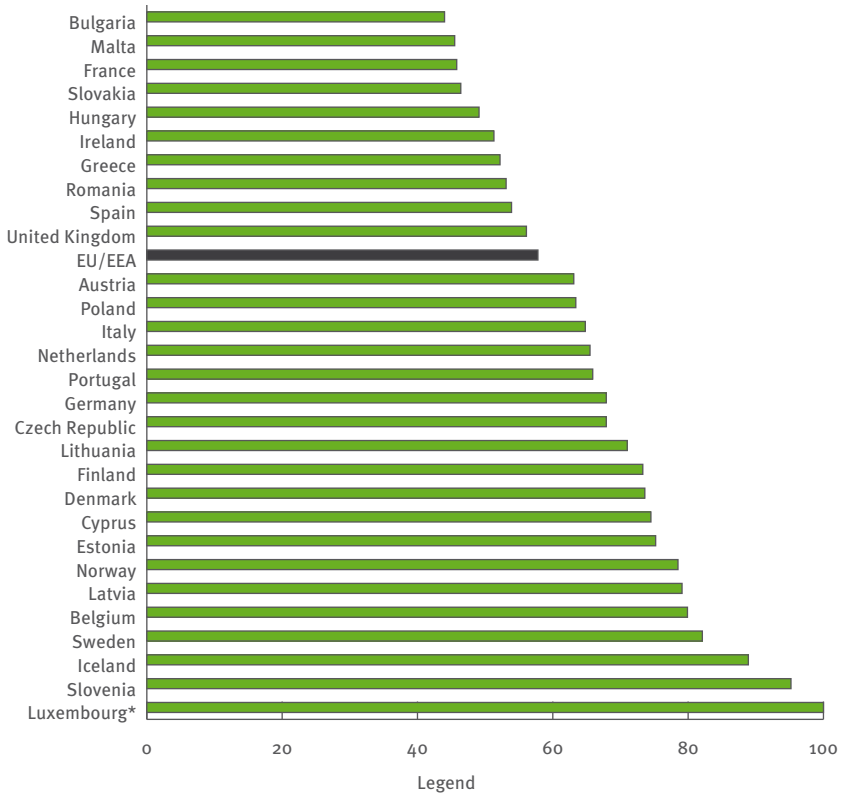
Of the cases reported in 2009, 57.8% were culture-confirmed, but the level differed widely across countries (range: 44–100%, Figure 2.1.8) and data were not complete for five countries (i.e. <50% of culture-confirmed cases). The latter is an improvement from 2008, at which point data were not complete for seven countries. The overall proportion has remained stable since 2005. Species identification showed *M. tuberculosis* in 83% of culture-positive cases in 2009 in the 29 reporting countries, *M. bovis* (0.3%) was reported by 10 countries and *M. africanum* (0.2%) by eight countries. Data on the other members of *M. tuberculosis* complex were not analysed for 2009.

TB cases of foreign origin

In 2009, 23.6% of reported TB cases were in individuals of foreign origin[ii], the proportion ranging from 30.1% to 89% in 18 countries. The overall proportion was substantially higher (35%) when excluding data from Bulgaria and Romania. Overall, all 29 reporting countries reported area of origin of TB cases: 10.4% from non-EU and EEA/EFTA European countries; 34.2% of cases of foreign origin were from non-European Asia; 9.5% from other countries of the EU and EEA/EFTA; 28.6% from Africa and 17.3% from other regions (Americas and Western Pacific countries), or of unknown origin.

ii Geographical origin of TB cases is classified according to place of birth (born in the country/foreign-born) or, if unavailable, citizenship (citizen/non-citizen). In Denmark, the place of birth of the parents is also used in classifying origin.

Figure 2.1.8. Proportion of culture-positive cases among all notified tuberculosis cases in the EU and EEA/EFTA countries, 2009



*Reported only culture-positive cases.

Tuberculosis and HIV infection

Aggregated data on HIV serostatus of TB cases reported between 2007 and 2009 were available for 20 countries. Overall, for the EU and EEA/EFTA, the proportion of reported HIV-seropositive TB cases was 2.3% in 2009; similar to the proportion in 2007 (2.4%) and a small decrease compared to 2008 (3.1%).

The completeness of data varied, with only eight countries reporting complete[iii] data in 2009. This is mainly due to differences in testing policies and in data collection. Among these eight countries, the proportion of TB/HIV co-infected cases in 2009 was highest in Portugal (12.2%), Estonia (9.5%), Latvia (7.5%) and Malta (9.1%, representing only four cases), and ranged between 0% and 4.2% in Belgium, Iceland, Slovakia, and Slovenia.

iii Data considered complete when known HIV status is 50% or more of all reported TB cases at the latest year with data.

Multidrug-resistant tuberculosis

Data on anti-TB drug-resistance surveillance (DRS) in 2009 were made available by 28 countries, all of which have national coverage. Data from 19 of the 28 countries reporting culture and DST data, or providing DST results as part of a national case-linked dataset, were considered complete[iv] for 2009. Nationwide aggregated data were reported from France, Italy and Spain[v].

Cases resistant to one or more first-line anti-TB drug were reported by all 28 reporting countries. Overall, the proportion of cases with combined multidrug-resistant

iv 100% national coverage or culturing available for 90% of all cases, and 50% of all cases were culture-positive, 75% of them had reported DST results, and EQA results have 95% match.

v Aggregated data as submitted to WHO/CISID and thus not case-based data (DST results provided to ECDC/TESSy as part of a case-based individual dataset). Spain links the two databases, however, Italy does not, and therefore the numbers listed in table on resistance may differ from other tables.

Table 2.1.3. Number and percentage of multidrug-resistant and extensively drug-resistant tuberculosis cases reported in EU and EEA/EFTA countries, 2009

Country	Culture-confirmed cases notified	Cases with drug-resistance surveillance results		Multidrug-resistant TB among tested culture-confirmed cases		Extensively drug-resistant TB among all multidrug-resistant TB cases	
		N	(%)	N	(%)	N	(%)
Austria	446	439	(98.4)	22	(5.0)	2	(9.1)
Belgium	815	774	(95.0)	10	(1.3)	3	(30.0)
Bulgaria	1280	844	(65.9)	43	(5.1)	-	-
Cyprus	41	31	(75.6)	4	(12.9)	0	(0.0)
Czech Republic*	477	452	(94.8)	8	(1.8)	1	(12.5)
Denmark	242	242	(100.0)	2	(0.8)	-	-
Estonia	309	307	(99.4)	86	(28.0)	10	(11.6)
Finland	307	302	(98.4)	6	(2.0)	-	-
France*	2432	1564	(64.3)	30	(1.9)	-	-
Germany	3011	2702	(89.7)	56	(2.1)	-	-
Greece	306	174	(56.9)	14	(8.0)	4	(28.6)
Hungary*	711	542	(76.2)	20	(3.7)	-	-
Ireland	242	206	(85.1)	0	(0.0)	-	-
Italy	2511	2511	(100.0)	82	(3.3)	1	(1.2)
Latvia	773	752	(97.3)	131	(17.4)	16	(12.2)
Lithuania	1478	1478	(100.0)	322	(21.8)	-	-
Luxembourg	27	27	(100.0)	0	(0.0)	-	-
Malta*	20	17	(85.0)	0	(0.0)	-	-
Netherlands	760	760	(100.0)	20	(2.6)	-	-
Poland	-	-	-	-	-	-	-
Portugal	1892	1539	(81.3)	22	(1.4)	3	(13.6)
Romania*	12351	3867	(31.3)	435	(11.2)	22	(5.1)
Slovakia*	235	235	(100.0)	1	(0.4)	0	(0.0)
Slovenia	179	175	(97.8)	1	(0.6)	-	-
Spain*	4095	1750	(42.7)	56	(3.2)	5	(8.9)
Sweden*	515	515	(100.0)	13	(2.5)	0	(0.0)
United Kingdom	5075	4991	(98.3)	58	(1.2)	2	(3.4)
EU total	**40530**	**27196**	**67.1**	**1442**	**5.3**	**69**	**4.8**
Norway	8	8	(100.0)	0	(0.0)	0	(0.0)
Liechtenstein	-	-	-	-	-	-	-
Iceland	285	283	(99.3)	8	(2.8)	0	(0.0)
Total	**40823**	**27487**	**67.3**	**1450**	**(5.3)**	**69**	**(4.8)**

*Countries known to have incomplete data.

TB (MDR TB) was 5.3%, a 0.7 percentage point decrease from 2008, with the Baltic States and Romania reporting the highest proportions (17.4–28.0% and 11.2%, respectively) (Table 2.1.3). Of the 15 countries reporting data on extensively drug-resistant TB (XDR TB) for 2009, 66 XDR TB cases were reported, with the proportion of XDR TB cases increasing from 6.9% of MDR cases in 2008 to 7.1% in 2009. Estonia, Latvia and Romania had the highest numbers of XDR cases in 2009 (10, 16 and 22 cases, respectively), though Romania reported a decrease in the total number of these cases (from 54 in 2008 to 22 in 2009).

Treatment outcome

Although the overall treatment success rate for new pulmonary TB cases has shown a marginal decrease (from 79.5% to 78.1%) between the 2007 and 2008 cohorts, the number of countries achieving the 85% treatment success target has doubled, with six countries reporting success rates of 85% or more for the 2008 cohort. This achievement is further accompanied by an increase of countries reporting treatment outcome monitoring (TOM) data.

Concerns remain, however, in the TOM of the MDR TB cohort. The 24-month success rate in this cohort (i.e. all MDR TB cases) remains extremely low, at 32.0% for the 2007 cohort. This poses a serious threat to patient survival and development of XDR TB, particularly in view of the elevated treatment failure rates.

Among previously treated cases, the overall success rate (53.2%) was lower than among new cases.

Discussion

Most countries of the EU and EEA/EFTA have continued to experience a steady decline in the overall case notification rates.

As for previous years, in the EU and EEA/EFTA the data reflect the heterogeneity of the TB situation with two distinct epidemiological groups of countries:

- Low-incidence countries[vi] with cases increasingly reported from the foreign-born population;
- Countries with relatively high notification rates and with a high proportion of MDR TB cases, but with declining overall TB rates.

In addition the following issues should be highlighted:

- The assessment of TB surveillance systems' quality and sensitivity (i.e. ability to capture all cases) should become a priority and standardised approaches, adaptable by countries, be developed. This should include the implementation and optimisation of linkages between laboratory and epidemiological registers at the reporting level through case-based reporting.
- As successful treatment contributes to reducing disease transmission and preventing emergence of resistant strains, the treatment success rate of new, pulmonary TB cases is one of the core indicators in the *Follow-up to the Framework Action Plan to fight TB in the EU* (with a target of 85% treatment success rate defined). A treatment success rate target for new pulmonary culture-positive MDR cases of 70% at 24 months is also defined. Prioritisation of improving treatment outcome monitoring as well as treatment success rates should be continued in light of the low proportion still measured. Urgent attention should be paid to the high failure rates among the cohort of MDR TB patients at EU/EEA level for which 24 months treatment outcome is reported.

On the basis of the fundamental need to maximise detection of infectious cases and early identification of drug-resistant cases, improvement in the proportion of cases with bacteriological confirmation is needed. Culture confirmation of specimens and identification of *M. tuberculosis* is the most accurate method of confirming active tuberculosis, and defines a confirmed case of TB as per EU case definitions. From a programme perspective, the achievement of a target for bacteriological confirmation among new pulmonary TB cases (80%) is of key importance for ensuring rapid detection and treatment (following DST) for MDR/XDR TB cases. Member States should evaluate the extent to which the underachievement of culture-confirmation targets reflects suboptimal practice in testing by culture, or in the reporting of bacteriological results.

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

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	P	C	Y	Y	Y	Y	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	Y	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 2009, 343 958 cases of chlamydia have been reported in 23 EU and EEA/EFTA Member States; a rate of 185 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 976 per 100 000 population; young women are affected more often than young men.
- The overall trend compared with previous years appears to have increased substantially. However, this most likely reflects changes in screening and testing practices in a number of countries; the overall reporting rate increased by 42 % between 2006 and 2009.

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

Epidemiological situation in 2009

In 2009, 23 of the EU and EEA/EFTA Member States reported 343 958 cases (185.1 per 100 000). Almost 95 % of the Chlamydia infections were reported by five countries (United Kingdom, Sweden, Denmark, Norway and Finland). The highest confirmed case rates were reported by Iceland (711 per 100 000), Denmark (541 per 100 000), Norway (474 per 100 000) and Sweden (408 per 100 000) (Table 2.2.1).

Overall the incidence of reported confirmed cases has increased by 42 % between 2006 and 2009 in EU and EEA/EFTA countries. This apparent increase is, however, most likely due to improved case detection, through screening and testing activities, in a number of countries. For example, the United Kingdom now includes chlamydia data from community-based test settings as well as from STI clinics. These have been reported together for the first time in 2008, accounting for at least part of the increase in reported cases.

National surveillance systems for STIs (chlamydia, gonorrhoea and syphilis) consist of a mixture 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* infections. This means that the true incidence and prevalence is likely to be higher than the rates here reported.

Age and gender distribution

Data on age were available for 339 053 of the reported confirmed cases (98.6 % of all cases). The age category 20–24 years is the largest, accounting for 41 % of the cases; followed by the category 15–19 years, with 34 %. Three quarters of the cases (for which data on age were available) were reported in the age group 15–24 years (255 036 cases), which also had the highest age-specific rate (976 per 100 000). Compared with previous years, the overall notification rate for this age group has substantially increased. This could be due to increased testing activities and screening programmes specifically targeted at young people (and women in particular).

Information on gender was available for 342 118 cases. Gender was reported as unknown for 1 840 cases (0.5 %). Some 138 327 cases were reported in males and 203 791 in females, with rates of 152 and 217 per 100 000,

respectively, giving the male-to-female rate ratio as 0.70:1. 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 85% of the chlamydia cases (N=293788). The high proportion of missing data for transmission category is mainly due to the countries with the highest number of reported cases (Denmark, Norway, Finland and United Kingdom) not reporting this data. Information is available for 50170 cases (from nine countries) and was reported as heterosexual in 89% and as in men who have sex with men (MSM) in 4% and as 'unknown' in 7% of the cases.

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 among men who have sex with men[2,3]. Only three countries reported confirmed LGV cases in 2009: Belgium (17 cases), the Netherlands (86 cases) and the United Kingdom (142 cases). Almost all cases have been diagnosed in men (one female case was reported in the UK). Between 2000 and 2009, 1390 cases of LGV were reported from five countries: United Kingdom, 897 cases; Netherlands, 413 cases; Denmark, 47 cases; Belgium, 29 cases; and Ireland, four cases. The number of reported LGV cases has increased from 183 in 2006 to 245 in 2009.

Discussion

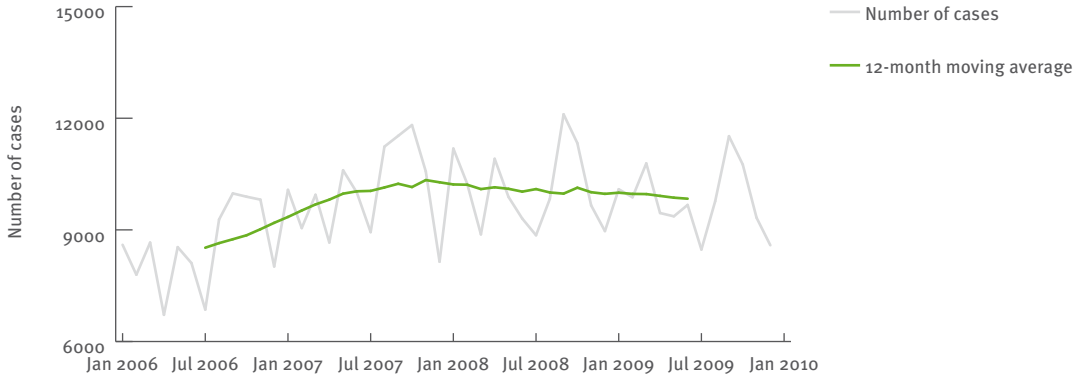
In many European countries, the incidence rates of chlamydia have increased substantially over the past 10 years. However, in a number of European countries it is still not a notifiable disease. The distribution of chlamydia across countries appears to be very heterogeneous with rates varying from below 1 to more than 500 cases per 100000 population. Almost 90% of the cases are reported from four countries. However, this is likely to reflect the considerable variation in screening, diagnostic and surveillance practices across EU countries. High rates of 200/100000 or more are reported by countries in the western and northern parts of the EU/EEA. Rates in

Table 2.2.1. Number and rate of *Chlamydia* infection cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009				2008		2007		2006	
	National Coverage	Report type	Reported cases and rate per 100000 population		Reported cases and rate per 100000 population		Reported cases and rate per 100000 population		Reported cases and rate per 100000 population	
			Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	597	-	742	-	822	-	-	-
Belgium	Y	C	2942	-	2601	-	2480	-	2060	-
Bulgaria	-	-	-	-	-	-	-	-	-	-
Cyprus	Y	C	4	0.5	1	0.1	0	-	6	0.8
Czech Republic	-	-	-	-	-	-	-	-	-	-
Denmark	Y	C	29825	541.1	29116	531.7	25795	473.6	24866	458.2
Estonia	Y	C	1952	145.6	2206	164.5	2536	188.9	2529	188
Finland	Y	C	13317	250	13873	261.7	13968	264.7	13878	264.1
France	-	-	-	-	-	-	-	-	-	-
Germany	-	-	-	-	-	-	-	-	-	-
Greece	N	A	327	2.9	71	0.6	-	-	-	-
Hungary	Y	A	711	-	754	-	699	-	598	-
Ireland	Y	A	3997	89.8	6290	142.9	5023	116.5	3144	74.7
Italy	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	1078	47.7	748	32.9	716	31.4	820	35.7
Lithuania	Y	C	326	9.7	403	12	403	11.9	556	16.3
Luxembourg	Y	C	0	-	4	0.8	0	-	0	-
Malta	Y	C	58	14	108	26.3	70	17.2	43	10.6
Netherlands	Y	C	9788	-	9355	-	7821	-	7140	-
Poland	Y	A	908	2.4	695	1.8	627	1.6	612	1.6
Portugal	-	-	-	-	-	-	-	-	-	-
Romania	Y	A	91	0.4	127	0.6	115	0.5	238	1.1
Slovakia	Y	C	228	4.2	105	1.9	78	1.4	61	1.1
Slovenia	Y	C	130	6.4	120	6	198	9.8	146	7.3
Spain	N	C	846	-	402	-	223	-	139	-
Sweden	Y	C	37775	408.1	41974	457.1	47081	516.6	32518	359.4
United Kingdom	Y	A	214033	347.5	200169	324.9	120058	196.2	112013	184.1
EU total	**-**	**-**	**318933**	**176.1**	**309864**	**171.2**	**228713**	**135.5**	**201367**	**119.5**
Iceland	Y	C	2271	711.1	1834	581.4	1814	589.6	1728	576.2
Liechtenstein	-	-	-	-	-	-	-		-	
Norway	Y	C	22754	474.1	23488	495.8	22847	488.1	21259	458.1
Total	**-**	**-**	**343958**	**185.1**	**335186**	**180.6**	**253374**	**146.4**	**224354**	**129.9**

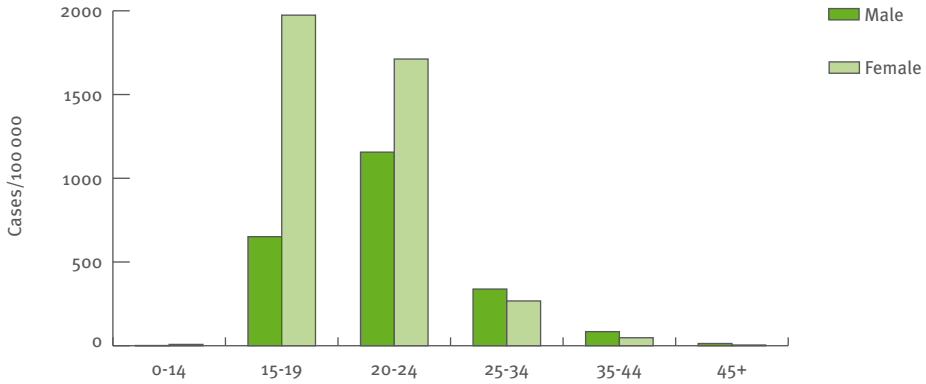
Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified.

Figure 2.2.1. Trend and number of reported confirmed cases of *Chlamydia* infection by month, in EU and EEA countries, 2006–09



Source: Country reports: Belgium, Cyprus, Denmark, Finland, Malta, Netherlands, Norway, Slovakia, Slovenia, Sweden.

Figure 2.2.2. Rates of reported confirmed *Chlamydia* infection cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

central and eastern parts of the EU/EEA are much lower, at 30 or less per 100 000 population. Baltic States, 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, affecting young people generally, especially young women with highest rates of 2 000 per 100 000 in 15–19 years age group. The interpretation of both gender and age distributions needs to be done cautiously as this is strongly associated with current testing and screening practices as they are often targeted at teenagers and young adults.

In order to control the *Chlamydia* infection disease burden 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. Even though absolute numbers are low, the incidence in these countries appears to have increased.

Enhanced surveillance for sexually transmitted infections

The coordination of the European network on STI surveillance has been integrated into ECDC as from 1 January 2009. More details on the epidemiology and trends of chlamydia can be found in the first surveillance report on 1990–2009 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
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-CHLAMYDIA	V	Se	P	C	Y	N	Y	-	N
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

- Gonorrhoea is still an STI with a notable incidence in the EU and EEA/EFTA countries.
- In 2009, a total of 29 202 cases of gonorrhoea were reported by 28 EU and EEA/EFTA countries, giving a rate of 9.7 per 100 000 population.
- Gonorrhoea is reported three times more frequently in men than in women. More than 40 % of all gonorrhoea cases were reported in people below 25 years of age.
- Compared with previous years, the number of cases has decreased slightly in many countries, although no consistent patterns can be observed across countries. The overall rate decreased by 9 % between 2006 and 2009.
- In 2009, the European gonococcal antimicrobial surveillance programme has identified high rates of ciprofloxacin and azithromycin resistance across Europe (63 % and 13 %, respectively) and decreased susceptibility to cefixime (5 % of isolates). 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 2009

In 2008, 29 202 cases of gonorrhoea were reported in 28 EU and EEA countries resulting in a notification rate of 9.7 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. Between 2006 and 2009, the number of reported gonorrhoea cases has decreased in 10 countries but increased in 11, resulting in an overall decrease of 9 %.

There is wide variation in rate of reported cases, ranging from less than 1.5 per 100 000 in Greece, Luxembourg, Portugal, Poland and Slovenia, to more than 15 per 100 000 in Iceland, Latvia, Malta and the United Kingdom.

National surveillance systems for all 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 hamper meaningful comparisons.

Age and gender distribution

Data on age was available for 26 255 of the reported cases (90 % of all cases). The age category 25–34 years is the largest, accounting for 31 % of the cases, immediately followed by the category 20–24 years, with 28 %. Almost 45 % of cases (for which data on age were available) were reported in the age group 15–24 years.

Information on gender was available for 27 209 cases. Only for 1 992 cases (6.8 %) gender was reported as unknown (mainly due to missing information from Spain). Men account for 72 % of all gonorrhoea cases (19 565 cases) with an overall rate of 16 per 100 000 compared with 4 per 100 000 women (7 644 cases). The male-to-female ratio was 2.6:1. If calculated without the United Kingdom, the ratio was 3.6:1. The male-to-female ratio ranged from 0.3:1 in Austria to 9.6:1 in Italy. Only three countries reported a ratio below 1.0:1 (Austria, Estonia and Iceland).

Transmission category

In 2009, information on transmission category was available for 13 countries (Austria, Cyprus, Czech Republic, France, Greece, Latvia, Lithuania, Malta, Netherlands, Norway, Slovenia, Sweden and United Kingdom) providing 80 % of the gonorrhoea cases (23 137 cases). Information was missing for 20 % of cases. The transmission category was unknown for 60 %, was indicated as heterosexual in 18 % and as in men who have sex with men (MSM) in 24 % of the cases. The high proportion of unknown transmission category is due to cases diagnosed in the United Kingdom (13 736 cases), which only collected data on confirmed transmissions among MSM. Cases diagnosed in MSM represent 29 % (5 523 cases) of all male cases reported in 2009.

Gonococcal antimicrobial resistance in 2009

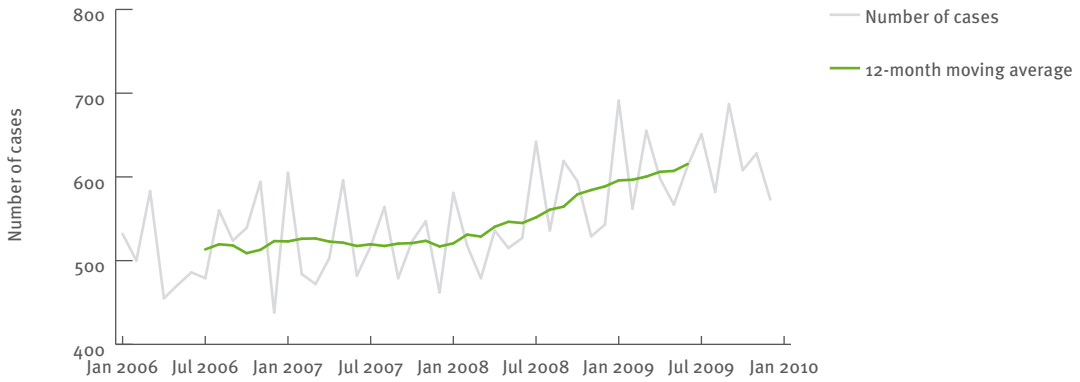
In 2009, 17 EU and EEA/EFTA Member States participated in the European gonococcal antimicrobial surveillance programme (Euro-GASP) by submitting 110 consecutive gonococcal isolates. Susceptibility testing was performed (by E-test or agar dilution) for the following therapeutically relevant antimicrobials: cefixime, ceftriaxone, ciprofloxacin, azithromycin, spectinomycin and gentamicin. A total of 1 366 isolates were collected and tested. The majority of gonococci (84 %) were collected from men. The age range of the patients was less than 1 year to 88 years, with a median of 29 years; 32 % 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.

Table 2.2.2. Number and rate of gonorrhoea cases reported in EU and EEA/EFTA countries, 2006–09

Country	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	
			Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	143	-	263	-	131	-	171	-
Belgium	Y	C	711	-	718	-	585	-	535	-
Bulgaria	Y	A	191	2.5	178	2.3	149	1.9	165	2.1
Cyprus	Y	C	7	-	2	-	5	-	8	-
Czech Republic	Y	C	712	6.8	809	7.8	1108	10.8	1087	10.6
Denmark	Y	C	563	10.2	409	7.5	352	6.5	414	7.6
Estonia	Y	C	125	9.3	146	10.9	176	13.1	280	20.8
Finland	Y	C	237	4.4	198	3.7	192	3.6	231	4.4
France	N	C	342	-	236	-	217	-	196	-
Germany	-	-	-	-	-	-	-	-	-	-
Greece	N	A	164	1.5	208	1.9	201	1.8	190	1.7
Hungary	Y	A	872	-	892	-	1041	-	916	-
Ireland	Y	A	400	9	444	10.1	417	9.7	431	10.2
Italy	Y	C	213	-	154	-	152	-	258	-
Latvia	Y	C	419	18.5	500	22	670	29.4	746	32.5
Lithuania	Y	C	391	11.7	533	15.8	471	13.9	437	12.8
Luxembourg	Y	C	6	1.2	18	3.7	1	0.2	4	0.9
Malta	Y	C	62	15	50	12.2	52	12.7	33	8.1
Netherlands	Y	C	2426	-	1969	-	1830	-	1778	-
Poland	Y	A	402	1.1	285	0.7	330	0.9	395	1
Portugal	Y	C	114	1.1	67	0.6	74	0.7	53	0.5
Romania	Y	A	622	2.9	631	2.9	815	3.8	1348	6.2
Slovakia	Y	C	171	3.2	152	2.8	81	1.5	66	1.2
Slovenia	Y	C	30	1.5	40	2	42	2.1	34	1.7
Spain	Y	A	1954	4.3	1897	4.2	1698	3.8	1423	3.3
Sweden	Y	C	608	6.6	722	7.9	642	7	657	7.3
United Kingdom	Y	A	17001	27.6	16121	26.2	18291	29.9	18480	30.4
EU total	**-**	**-**	**28886**	**9.8**	**27642**	**9.5**	**29723**	**10.5**	**30336**	**10.9**
Iceland	Y	C	47	14.7	25	7.9	24	7.8	31	10.3
Liechtenstein	-	-	-	-	-	-	-		-	
Norway	Y	C	269	5.6	301	6.4	238	5.1	236	5.1
Total	**-**	**-**	**29202**	**9.7**	**27968**	**9.5**	**29985**	**10.4**	**30603**	**10.8**

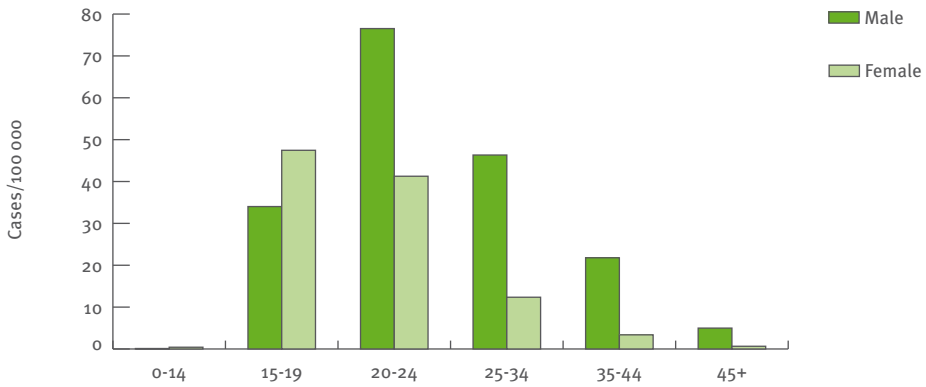
Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified.

Figure 2.2.3. Trend and number of reported confirmed gonorrhoea cases by month, in EU and EEA/EFTA countries, 2006–09



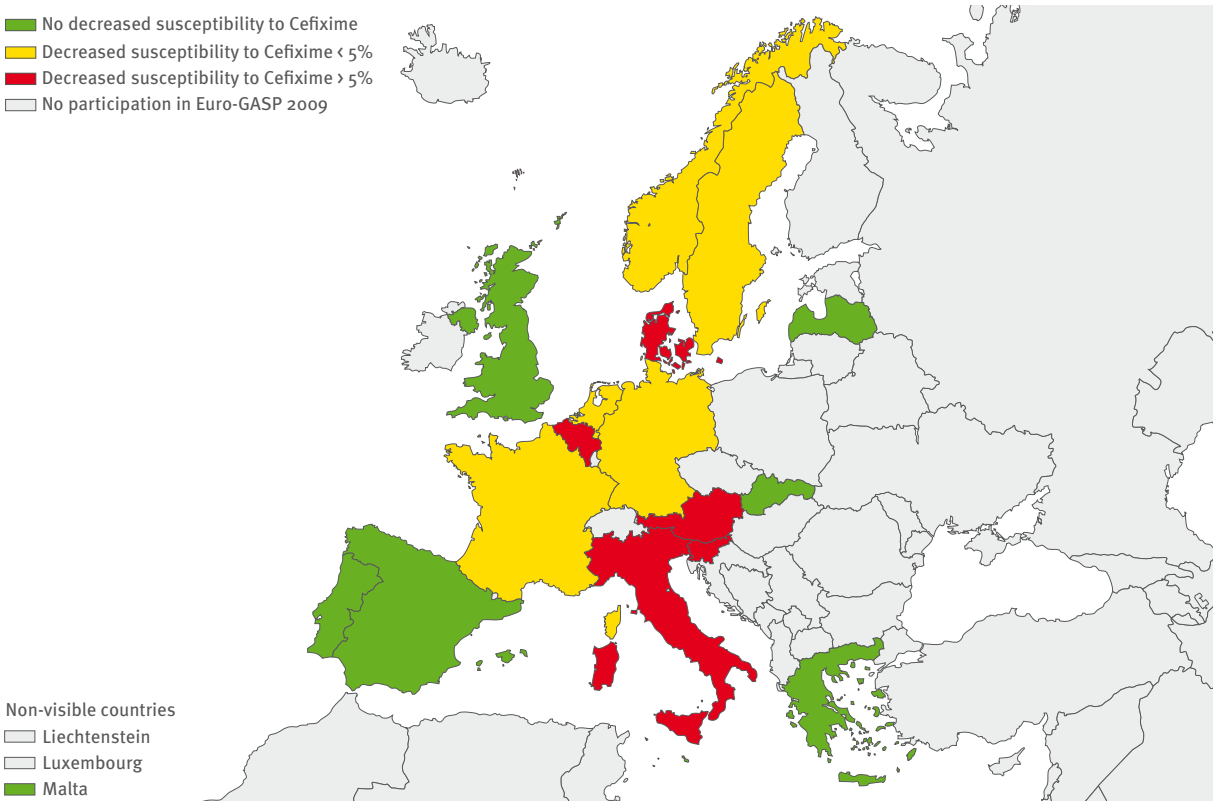
Source: Country reports: Belgium, Cyprus, Czech Republic, Denmark, Finland, Iceland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Slovenia, Sweden.

Figure 2.2.4. Rates of reported confirmed gonorrhoea cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.2.5. Gonococcal antimicrobial susceptibility surveillance in EU and EEA/EFTA countries participating in Euro-GASP, 2009



The European gonococcal antimicrobial surveillance programme has identified high rates of ciprofloxacin and azithromycin resistance across Europe (63 % and 13 %, respectively); these antimicrobials should, therefore, not be used for treatment, unless isolates are known to be susceptible or local resistance rates are known to be less than 5 %. Decreased susceptibility to cefixime was detected in 10 countries. Overall, 5 % of the isolates (with a cut-off of › 0.125mg/L) have decreased susceptibility. In five countries, the percentage of isolates with decreased susceptibility to cefixime was above 5 %. Figure 2.2.5 displays the geographical distribution of these isolates.

Enhanced surveillance for sexually transmitted infections

The coordination of the European network on STI surveillance has been integrated into ECDC as from 1 January 2009. More details on the epidemiology and trends of gonorrhoea can be found in the first surveillance report on 1990–2009 data[1]. More details on the European Gonococcal Antimicrobial Susceptibility surveillance Programme (Euro-GASP) can be found in the 2009 annual report[2].

Discussion

There are no consistent overall EU trends and the 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 countries. Data presented here, however, must be interpreted with caution as the proportions of gonorrhoea cases that are actually diagnosed and reported are likely to differ greatly across 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.

References

1. European Centre for Disease Prevention and Control. Sexually transmitted infections in Europe, 1990–2009. Stockholm: ECDC; 2011.
2. European Centre for Disease Prevention and Control. Gonococcal antimicrobial susceptibility surveillance in Europe, 2009. 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-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	P	C	Y	Y	Y	Y	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-MICROBIOLOGICAL	V	Se	P	C	Y	N	N	N	N
Spain	ES-STATUTORY_DISEASES_STI_AGGR	Cp	Co	P	A	N	Y	N	N	-
Sweden	SE-SMINET	Cp	Co	P	C	Y	N	N	N	Y
United Kingdom	UK-GUM	Cp	Co	P	A	N	N	N	Y	Y

Hepatitis B virus infection

- In 2009, 5969 confirmed cases of hepatitis B virus infection were reported by 29 EU and EEA/EFTA Member States, a rate of 1.16 per 100000 population.
- The most affected age groups are those between 25 and 44 years old with 49% of cases (2.0 cases per 100000), followed by the 15–24 year-olds (1.7 cases per 100000). Among females, the incidence rate is, however, highest in the 15–24 years old age group.
- As in 2008 the numbers of cases decreased compared to earlier years. However, the significant differences in the sensitivity of each country's surveillance system, as well as reporting delays, may have influenced the figures.
- Interpretation of hepatitis B data is complex due to the differences between surveillance systems across Europe and the reporting of mixtures of acute and chronic cases.
- ECDC will be implementing EU-wide enhanced surveillance in 2012, developing surveillance objectives and reporting protocols in cooperation with Member States.

Infection with the hepatitis B virus is relatively uncommon, but can cause acute or long-term illness, which is sometimes fatal. It is transmitted through both unprotected sexual activity and contaminated blood (e.g. injecting drug use).

Epidemiological situation in 2009

In 2009, 28 EU and EEA/EFTA Member States reported 5969 cases of hepatitis B virus infection (Liechtenstein did not report). Of these, 5837 were confirmed, giving an overall confirmed case rate of 1.16 per 100000 population (Table 2.2.3).

The highest confirmed case rates were observed in Bulgaria (6.63 cases per 100000), Latvia (5.44), Luxembourg (3.85) and Denmark (3.10).

The decreasing trend of hepatitis B cases observed during previous years of EU-wide surveillance continued in 2009 (Figure 2.2.6). A decrease of 12.5% in cases reported compared to 2008 was observed.

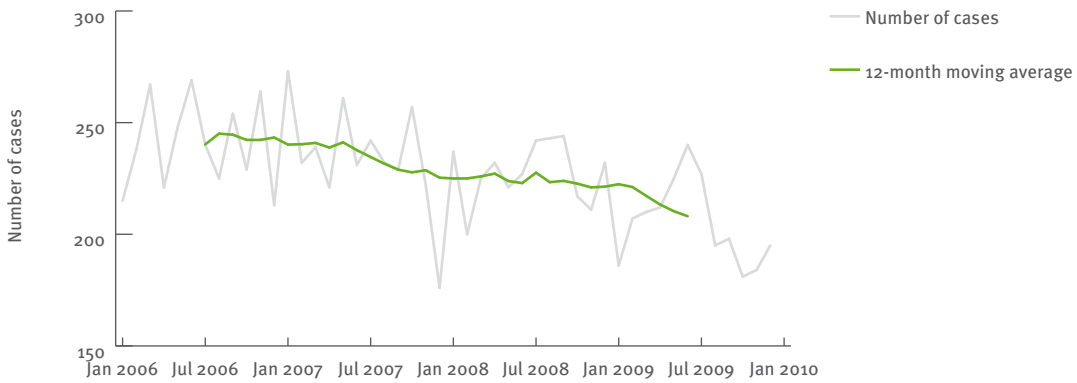
Age and gender distribution

In 2009, 3558 confirmed cases of hepatitis B were reported among males (1.62 per 100000) and 1781 among females (0.78 per 100000), with a male-to-female rate ratio of 2.1:1.

The majority of the hepatitis B cases were reported in the age group 25–44 years (49% of the total) that also had the highest rate at 2.03 per 100000 (Figure 2.2.7) followed by the 15–24 year-olds (1.70 per 100000).

The confirmed case rate among females was highest in the 15–24 years group, while among men it was highest in the 25–44 years age group.

Figure 2.2.6. Trend and number of reported confirmed hepatitis B cases by month, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Cyprus, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Malta, Norway, Portugal, Slovakia, Slovenia, Spain.

Table 2.2.3. Number and rate of hepatitis B cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type*	Total cases	Confirmed cases and rate per 100 000 population		Confirmed cases and rate per 100 000 population		Confirmed cases and rate per 100 000 population		Confirmed cases and rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	45	20	0.24	3	0.04	19	0.23	0	0.00
Belgium	Y	A	129	129	1.20	122	1.14	0	0.00	401	3.82
Bulgaria	Y	A	504	504	6.63	624	8.17	751	9.78	773	10.02
Cyprus	Y	C	7	7	0.88	7	0.89	13	1.67	7	0.91
Czech Republic	Y	C	247	247	2.36	304	2.93	304	2.96	306	2.99
Denmark	Y	C	171	171	3.10	180	3.29	278	5.10	20	0.37
Estonia	Y	C	29	29	2.16	53	3.95	44	3.28	45	3.35
Finland	Y	C	36	36	0.68	49	0.92	24	0.46	39	0.74
France	Y	C	111	111	0.17	145	0.23	156	0.25	182	0.29
Germany	Y	C	748	748	0.91	822	1.00	1008	1.23	1179	1.43
Greece	Y	C	53	52	0.46	77	0.69	77	0.69	67	0.60
Hungary	Y	C	66	66	0.66	88	0.88	81	0.81	83	0.82
Ireland	Y	C	78	77	1.73	82	1.86	52	1.21	94	2.23
Italy	Y	C	710	710	1.18	855	1.43	1097	1.86	1068	1.82
Latvia	Y	A	123	123	5.44	140	6.17	165	7.23	167	7.28
Lithuania	Y	A	58	58	1.73	90	2.67	84	2.48	0	0.00
Luxembourg	Y	C	19	19	3.85	21	4.34	14	2.94	9	1.92
Malta	Y	C	4	4	0.97	4	0.98	2	0.49	2	0.49
Netherlands	Y	C	202	144	0.87	225	1.37	223	1.36	-	-
Poland	Y	A	199	154	0.40	165	0.43	269	0.71	362	0.95
Portugal	Y	C	67	65	0.61	52	0.49	64	0.60	40	0.38
Romania	Y	C	596	596	2.77	718	3.34	927	4.30	1279	5.92
Slovakia	Y	C	140	140	2.59	111	2.06	103	1.91	123	2.28
Slovenia	Y	C	43	43	2.12	17	0.85	16	0.80	26	1.30
Spain	Y	C	710	710	1.55	758	1.67	645	1.45	496	1.13
Sweden	Y	C	110	110	1.19	177	1.93	201	2.21	162	1.79
United Kingdom	Y	C	684	684	1.11	620	1.01	-	-	-	-
EU Total	**-**	**-**	**5889**	**5757**	**1.15**	**6509**	**1.31**	**6617**	**1.52**	**6930**	**1.66**
Iceland	Y	C	23	23	7.20	61	19.34	47	15.28	11	3.67
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	57	57	1.19	103	2.17	120	2.56	149	3.21
Total	**-**	**-**	**5969**	**5837**	**1.16**	**6673**	**1.33**	**6784**	**1.54**	**7090**	**1.68**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U=Unspecified. Due to the differences in the reporting systems between countries, comparisons between individual Member States should be interpreted with caution.

The highest rates among young people (aged 15–24 years) were reported in Bulgaria (18 per 100 000) and Latvia (12 per 100 000), followed by Slovakia (5.9 per 100 000). In each of these countries, this was also the age group with the highest rate.

Discussion

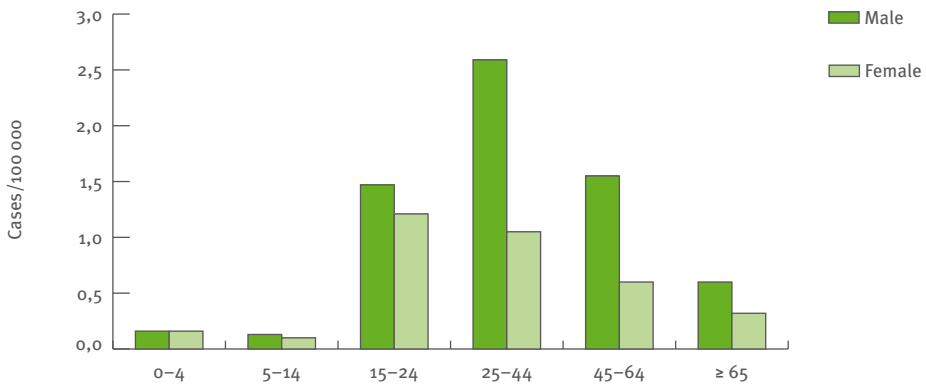
Hepatitis B virus infection bears the characteristics of both a sexually transmitted and a blood-borne disease. However, the distribution patterns and proportions of risk groups affected may differ widely across the EU. Children born to infected mothers are at a higher risk of becoming infected and are also more likely to be reported.

Newborns and infants are also at risk of acquiring infection from chronically infected household members. While universal childhood vaccination programmes in many countries have reduced the risk of hepatitis B infection among young injecting drug users, older populations may still be at risk in some countries. The highest incidence among women is seen in the age group 15–24 years. Among men, incidence is highest in the older age group 25–44 years. This gender pattern is similar to that seen in many sexually transmitted infections.

Interpretation of the trends is complicated by differences between surveillance systems, recent changes in reporting, low numbers in some countries, undiagnosed cases, differences in case definitions used (i.e. different use and/or interpretation of hepatitis B markers) and incomplete reporting in some countries. In addition, some countries do not distinguish between reports of acute and chronic cases of hepatitis B and this, together with the high prevalence of asymptomatic cases, makes comparison between countries difficult.

Establishing enhanced surveillance of hepatitis B virus infection will be essential to provide the necessary information with which to monitor the trends of disease, to recognise and interpret real differences in epidemiology and to evaluate prevention and control programmes. ECDC is preparing to launch EU-wide enhanced surveillance in 2012, developing surveillance objectives and

Figure 2.2.7. Rates of reported confirmed hepatitis B cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: Austria, Bulgaria, 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.

reporting protocols in collaboration with EU Member States. A dedicated network of country experts will participate in the work of developing a system that will improve the understanding of the epidemiology of these blood-borne viral infections in Europe.

A particular challenge for surveillance of blood-borne infections is the increased intra-EU cross-border exchange and trade of substances of human origin. This diverse group of materials for human therapeutic use includes blood and blood products, cells, tissues and materials derived from them, as well as organs. Increased exchange of these materials within the Union necessitates well-managed risks of blood-borne infections to maintain a high quality of the products and avoid the risk of outbreaks.

References

1. European Centre for Disease Prevention and Control. Hepatitis B and C in the EU neighbourhood: prevalence, burden of disease and screening policies. Stockholm: ECDC; 2010.

2. European Centre for Disease Prevention and Control. Surveillance and prevention of hepatitis B and C in Europe. Stockholm: ECDC; 2010.

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	-	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	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

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	
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-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	N	N	N	Y
United Kingdom	UK-HEPATITISB	O	Co	P	C	Y	N	Y	N	Y

Hepatitis C virus infection

- In 2009, 27354 confirmed cases of hepatitis C were reported by 26 EU and EEA/EFTA Member States, with an overall rate of 8.19 per 100000 population.
- There are limitations to the hepatitis C data, resulting mainly from the inability of the routine tests to distinguish between acute and chronic infection. Nevertheless, available data suggests that hepatitis C virus infection is the most common type of viral hepatitis reported in the EU and EEA/EFTA countries.
- The most commonly affected age group is the 25–44 year olds (15.8 cases per 100000); with twice as many males infected as females overall.
- Interpretation of hepatitis C data is complex due to the differences between surveillance systems across Europe and the reporting of mixtures of acute and chronic cases.
- ECDC will be preparing to launch EU-wide enhanced surveillance in 2012 by developing surveillance protocols and objectives in cooperation with EU Member States.

Infection with the Hepatitis C virus is not uncommon in the EU, and commonly leads to chronic infection, which can lead to cirrhosis or cancer of the liver. It is mostly transmitted through infected blood, particularly during use of injecting drugs.

Epidemiological situation in 2009

In 2009, 27545 cases of hepatitis C virus (HCV) infection were reported by 26 EU and EEA/EFTA Member States, of which 27354 were confirmed, giving an overall confirmed case rate of 8.2 per 100000 population. No data were available from France, Italy, Spain or Liechtenstein (Table 2.2.4).

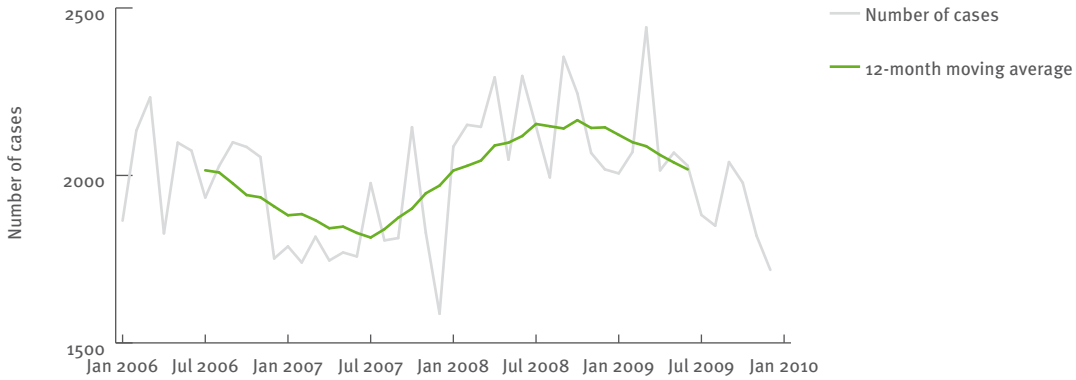
There is wide variation in reported rates of confirmed cases within the EU, ranging from less than one per 100000 in Belgium, Cyprus, Greece, Hungary, Malta, the Netherlands, Portugal, Romania and Slovenia; to much higher rates in Norway (48 per 100000), Iceland (32), Ireland (28), Sweden (24), Finland (20) and the United Kingdom (18).

However, comparisons between countries are of limited value as surveillance systems, testing and screening practices and reporting behaviour vary widely. Several countries reporting the highest rates include all newly recognised cases, irrespective of the clinical presentation (asymptomatic, chronic, acute, etc.), while many other countries with very low rates only report those cases confirmed to have had a clinically indicated acute infection. Due to these differences in the reporting systems between countries, comparisons should be made with caution. Also, these differences make the analysis of trends of incidence for hepatitis C on a European level difficult.

Age and gender distribution

In 2009, 16448 confirmed cases of hepatitis C virus infection were reported in men and 8465 in women, with rates of 11.1 and 5.7 per 100000, respectively (male-to-female ratio 1.9:1). Slightly more than half of the hepatitis C cases were reported in the age group 25–44 years (53% of the total) with a rate of 15.8 per 100000.

Figure 2.2.8. Trend and number of reported confirmed hepatitis C cases by month, in EU and EEA/EFTA countries, 2006–09



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

Table 2.2.4. Number and rate of confirmed hepatitis C cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type*	Total cases	Confirmed cases and rate per 100 000 population		Confirmed cases and rate per 100 000 population		Confirmed cases and rate per 100 000 population		Confirmed cases and rate per 100 000 population	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	277	92	1.10	1	0.01	4	0.05	0	0.00
Belgium	Y	A	34	34	0.32	43	0.40	434	4.10	739	7.03
Bulgaria	Y	A	93	93	1.22	89	1.16	98	1.28	121	1.57
Cyprus	Y	C	27	27	3.39	2	0.25	9	1.16	5	0.65
Czech Republic	Y	C	836	836	7.99	974	9.38	980	9.53	1022	9.97
Denmark	Y	C	272	272	4.94	294	5.37	366	6.72	348	6.41
Estonia	Y	C	67	67	5.00	64	4.77	36	2.68	57	4.24
Finland	Y	C	1052	1052	19.75	1143	21.56	1164	22.06	0	0.00
France	-	-	-	-	-	-	-	-	-	-	-
Germany	Y	C	5411	5411	6.60	6195	7.53	6858	8.33	7509	9.11
Greece	Y	C	9	8	0.07	17	0.15	11	0.10	10	0.09
Hungary	Y	C	31	31	0.31	34	0.34	22	0.22	29	0.29
Ireland	Y	C	1262	1261	28.34	1524	34.63	1561	36.20	1226	29.13
Italy	-	-	-	-	-	-	-	308	0.52	322	0.55
Latvia	Y	A	91	89	3.94	116	5.11	103	4.51	105	4.58
Lithuania	Y	A	47	47	1.40	43	1.28	46	1.36	0	0.00
Luxembourg	Y	C	55	55	11.14	58	11.99	58	12.18	12	2.56
Malta	Y	C	1	1	0.24	1	0.24	1	0.25	11	2.72
Netherlands	Y	C	52	52	0.32	45	0.27	44	0.27	30	0.18
Poland	Y	A	1939	1939	5.08	2353	6.17	2753	7.22	2949	7.73
Portugal	Y	C	85	84	0.79	44	0.41	56	0.53	82	0.78
Romania	Y	C	65	64	0.30	101	0.47	90	0.42	84	0.39
Slovakia	Y	C	339	339	6.26	315	5.83	336	6.23	31	0.58
Slovenia	Y	C	6	6	0.30	8	0.40	14	0.70	-	-
Spain	-	-	-	-	-	129	-	214	-	422	-
Sweden	Y	C	2203	2203	23.80	2522	27.46	2096	23.00	1976	21.84
United Kingdom	Y	C	10867	10867	17.76	10325	16.88	9533	15.68	10417	17.24
EU total	**-**	**-**	**25121**	**24930**	**7.58**	**26440**	**8.00**	**27195**	**6.97**	**27507**	**7.05**
Iceland	Y	C	103	103	32.25	93	29.48	81	26.33	45	15.01
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	2321	2321	48.36	3394	71.65	0	0.00	48	1.03
Total	**-**	**-**	**27545**	**27354**	**8.19**	**29927**	**8.93**	**27276**	**6.90**	**27600**	**6.98**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified. Due to the differences in the reporting systems between countries, comparisons between individual Member States should be interpreted with caution.

In contrast to hepatitis B, the 25–44 age group has the highest confirmed case rate in both men and women (Figure 2.2.9). The highest rates in this age group were observed in Norway (101 per 100 000), Iceland (66), Ireland (62), the United Kingdom (39), Finland (38), Sweden (38) and Luxembourg (29).

The highest rates in young adults aged 15–24 years were reported in Finland (51 per 100 000), Iceland (42), Norway (40) and Sweden (35).

As for hepatitis B, children born to infected mothers are at a higher risk of becoming infected (and are also at risk of acquiring infection from other household contacts). These children are more likely to be diagnosed and reported and, therefore, to appear in the distribution graph (Figure 2.2.9).

Discussion

Hepatitis C virus infection is mainly a blood-borne infection, with a high risk of establishing chronic infection, which is the main determinant of the populations affected by the disease. Significant proportions of older population cohorts within the EU/EEA region may have been infected by nosocomial or blood-product associated routes several decades ago, prior to comprehensive application of universal precautions and blood screening. Such a cohort effect may be visible over extended times and probably still affects newly diagnosed rates.

Currently hepatitis C transmission in Europe is closely associated with sharing of infection equipment among injecting drug users, leading to significant cohort effects in many countries depending on how drug use practices change. Sexual transmission is known to occur, but is estimated to have little general epidemiological impact outside very specific settings[1].

Most European countries have implemented surveillance systems for hepatitis C, but due to their differences, particularly in system structures, reporting practices, data collection methods and case definitions in use, the surveillance data are difficult to compare across countries. Similarly, interpretation of the trends is hampered by

differences in surveillance systems (in terms of completeness and representativeness), recent changes in reporting, low numbers in some countries, undiagnosed cases and incomplete reporting in some countries. Also, there is difficulty in interpreting test results as referring to acute and chronic cases of hepatitis C.

Hence, surveillance data cannot as yet be used to describe the true incidence or trends of the disease. Estimating the true proportions of known transmission modes would be dependent on collecting transmission category data as part of enhanced hepatitis surveillance.

Establishing enhanced surveillance of hepatitis C virus infection will be essential to provide the necessary information with which to monitor the trends of disease, to recognise and interpret real differences in epidemiology and to evaluate prevention and control programmes. Furthermore, the harmonisation of hepatitis B and hepatitis C surveillance at the European level is needed to improve the understanding of the epidemiology of these blood-borne viruses.

ECDC is preparing to launch EU-wide enhanced surveillance in 2012 by developing surveillance objectives and reporting protocols in collaboration with EU Member States. A dedicated network of country experts will participate in the work of developing a system that will improve the understanding of the epidemiology of these blood-borne viral infections in Europe.

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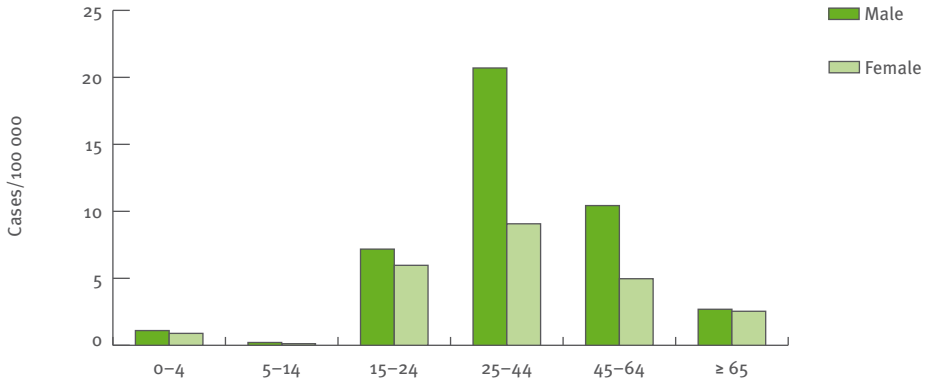
Figure 2.2.9. Rates of reported confirmed hepatitis C cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: Austria, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, 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-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	-	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

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	
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
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-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	N	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 and EEA/EFTA countries with a continued increase in the number of cases. In contrast, the number of AIDS cases diagnosed has continued to decline, although in some eastern EU countries the number of AIDS cases continues to increase.
- In 2009, 25 917 diagnosed cases of HIV infection were reported in 28 EU and EEA/EFTA Member States, a rate of 5.7 per 100 000 population.
- The highest proportion of the total number of HIV cases in Europe was reported among men who have sex with men (35 %) followed by individuals infected by heterosexual contact (24 %) and by injecting drug use (5 %).

Infection with the human immunodeficiency virus (HIV), a retrovirus, in the absence of treatment frequently leads to development of the acquired immunodeficiency syndrome (AIDS) which is usually fatal. AIDS was first recognised as a distinct entity in 1981 in the United States, and has since become a critical public health problem in many regions of the world. Major advances in the effectiveness of HIV treatment have altered the epidemiology of HIV infection outcomes and the design of prevention and control programmes.

Epidemiological situation in 2009

HIV infection

In 2009, 28 EU and EEA/EFTA countries reported 25 917 newly diagnosed cases of HIV infection, a rate of 5.7 per 100 000 population (Table 2.2.5). No data were available

Table 2.2.5. Number and rate of confirmed HIV infection cases diagnosed in EU and EEA/EFTA countries, 2004–09

Country	2009		2008		2007		2006		2005		2004	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	-	-	-	-	-	-	-	-	-	-	-	-
Belgium	1115	10.3	1082	10.1	1069	10.1	1014	9.6	1068	10.2	1000	9.6
Bulgaria	171	2.3	123	1.6	126	1.6	91	1.2	83	1.1	50	0.6
Cyprus	38	4.8	37	4.7	46	5.9	35	4.5	43	5.7	25	3.4
Czech Republic	157	1.5	148	1.4	121	1.2	91	0.9	90	0.9	72	0.7
Denmark	236	4.3	285	5.2	306	5.6	245	4.5	264	4.9	306	5.7
Estonia	411	30.7	545	40.7	633	47.2	668	49.7	621	46.1	743	55.1
Finland	183	3.4	149	2.8	190	3.6	191	3.6	143	2.7	122	2.3
France	4885	7.6	5713	8.9	5643	8.8	5662	8.9	5966	9.5	5746	9.2
Germany	2856	3.5	2843	3.5	2791	3.4	2666	3.2	2508	3.0	2225	2.7
Greece	534	4.7	585	5.2	538	4.8	486	4.4	531	4.8	490	4.4
Hungary	140	1.4	145	1.4	119	1.2	81	0.8	106	1.1	75	0.7
Ireland	395	8.9	405	9.2	391	9.0	353	8.3	326	7.8	358	8.8
Italy (a)	1951	5.5	2012	6.7	1662	6.3	1535	7.8	1496	7.7	1667	8.7
Latvia	275	12.2	358	15.8	350	15.4	299	13.1	299	13.0	323	14.0
Lithuania	180	5.4	95	2.8	106	3.1	100	2.9	120	3.5	135	3.9
Luxembourg	47	9.4	50	10.2	40	8.3	45	9.5	46	9.9	60	13.1
Malta	17	4.1	29	7.0	14	3.4	26	6.4	18	4.5	19	4.7
Netherlands	813	4.9	1155	7.0	1156	7.1	1056	6.5	1181	7.2	1131	6.9
Poland	630	1.7	753	2.0	706	1.9	721	1.9	663	1.7	644	1.7
Portugal	1055	9.9	1675	15.8	1709	16.1	1757	16.6	1729	16.4	1901	18.1
Romania	143	0.7	179	0.8	185	0.9	217	1.0	237	1.1	303	1.4
Slovakia	53	1.0	53	1.0	39	0.7	27	0.5	21	0.4	15	0.3
Slovenia	48	2.4	48	2.4	37	1.8	33	1.6	38	1.9	24	1.2
Spain (b)	2264	7.9	2524	9.9	2216	9.2	1591	9.5	1452	8.8	1521	9.3
Sweden	393	4.2	383	4.2	458	5.0	373	4.1	374	4.1	415	4.6
United Kingdom	6630	10.7	7386	12.0	7517	12.3	7586	12.5	7978	13.2	7780	13.0
EU total	**25620**	**5.7**	**28760**	**6.5**	**28168**	**6.5**	**26949**	**6.4**	**27401**	**6.6**	**27150**	**6.5**
Iceland	15	4.7	10	3.2	13	4.2	11	3.6	8	2.7	4	1.4
Liechtenstein												
Norway	282	5.8	299	6.3	248	5.3	276	5.9	219	4.7	251	5.5
Total	**25917**	**5.7**	**29069**	**6.5**	**28429**	**6.5**	**27236**	**6.4**	**27628**	**6.5**	**27405**	**6.5**

(a) Aggregate reporting. (b) Sub-national reporting system only, rate calculated based on sub-national coverage.

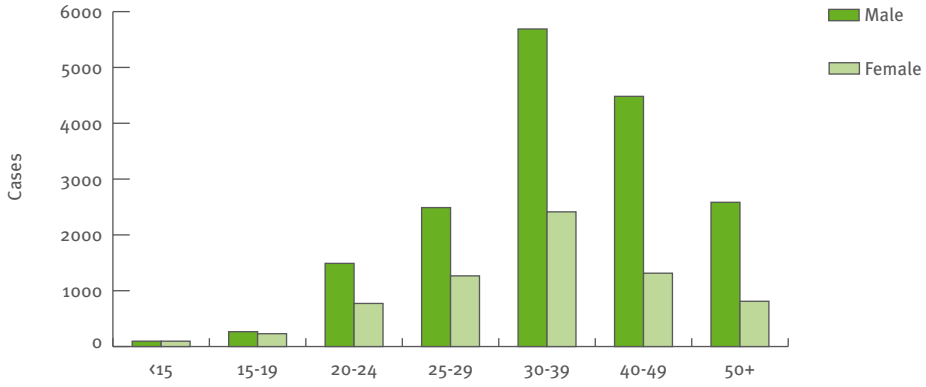
for Austria and Liechtenstein. The highest rates of HIV cases were reported by Estonia (31 per 100 000; 411 cases), Latvia (12; 275 cases), the United Kingdom (11; 6 630 cases) and Belgium (10; 1 115 cases). The lowest rates were reported by Romania (0.7; 143 cases) and Slovakia (1.0; 53 cases).

Among the 28 EU and EEA/EFTA countries that have consistently reported HIV data since 2004, the rate of diagnosed cases of HIV per 100 000 has been stable: from 6.5 per 100 000 in 2004 (27 405 cases) to 5.7 per 100 000 (25 917 cases) in 2009, without taking into account the reporting delays that will affect the numbers in the most recent years. The trend has increased in 16 countries and has decreased in 12 countries. Rates of reported cases at country level have more than tripled in Bulgaria, Iceland and Slovakia; increased by more than 50 % in Hungary and Slovenia, and decreased by more than 20 % in Denmark, Estonia, Luxembourg and Romania.

Age and gender distribution

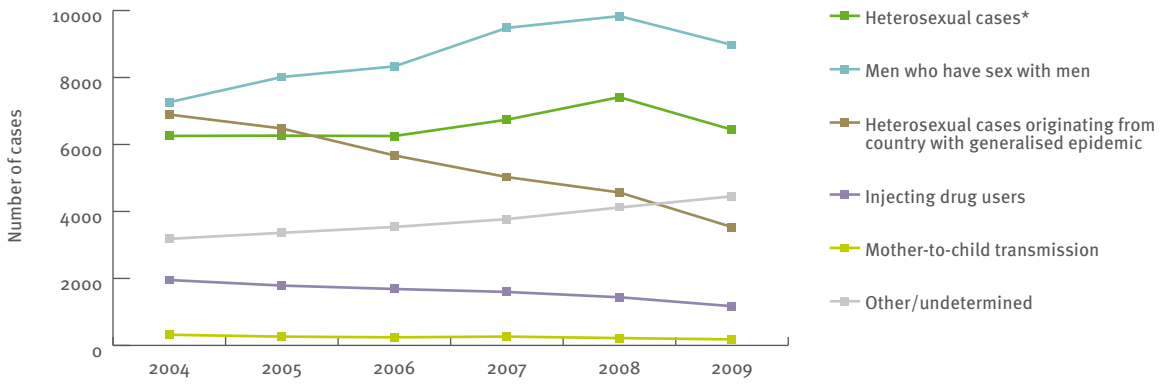
In 2009, 18 504 HIV cases were reported in men (71 %) and 7 349 in women (29 %), a rate of 8.3 and 3.2, respectively. The male-to-female rate ratio is 2.6:1. Data on age and gender were available for 25 853 cases (99.8 %). Almost one third of the newly diagnosed cases of HIV infection were reported in the age group 30–39 years for both men and women. On average, reported age among men at time of HIV diagnosis was higher than for women (Figure 2.2.10).

Figure 2.2.10. Number of newly diagnosed cases of HIV infection, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: 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.

Figure 2.2.11. Trend in reported cases of HIV infection, by transmission group and origin, in EU and EEA/EFTA countries, 2004–09



Data from Austria, Estonia and Poland not included. *Heterosexual contacts exclude cases from countries with generalised HIV epidemic.

Transmission category

Among those reported HIV cases, 4257 cases (16%) originate from countries with a generalised HIV epidemic – HIV prevalence in general population (or group reflecting it, e.g. pregnant women) is › 1%. Data on transmission mode, when HIV diagnoses in individuals from countries with generalised epidemics were excluded, indicate that sex between men is the predominant mode of transmission (35%), followed by heterosexual contact (24%), and injecting drug use with only 5%. Transmission mode was reported as 'unknown' for 5259 cases (20%). The remaining 1% included mother-to-child transmission, nosocomial infection, transfusion or use of other blood products.

Between 2004 and 2009, 26 EU EEA/EFTA countries have consistently reported data on transmission mode, and the following trends are seen (Figure 2.2.11):

- The number of heterosexually acquired cases (including cases originating from countries with generalised epidemics) has decreased by 24%. The proportion originating from countries with a generalised epidemic declined from 52% in 2004 to 38% in 2009 and largely affected the overall declining trend in heterosexually acquired cases.
- The number of cases among men who have sex with men (MSM) has increased by 24%.
- The number of cases among injecting drug users (IDU) has declined by 40%.
- The number of cases transmitted from mother to child decreased by 44% (based on low number).
- The number of cases with unknown risk factors has increased with 40%.

Trends need to be interpreted with caution as the numbers of HIV diagnoses reported in recent years (e.g. 2008/2009) will most likely increase in the coming years due to reporting delay.

AIDS diagnoses

In 2009, 4650 cases of AIDS were reported by 27 EU and EEA/EFTA countries, a rate of 1.0 cases per 100000 population. No data were available from Austria, Liechtenstein and Sweden. The highest rates were reported by Estonia (2.8 per 100000; 38 cases), Latvia (4.3; 96 cases), Portugal (2.8; 297 cases), and Spain (2.3; 1037 cases). In most EU and EEA/EFTA countries AIDS diagnoses have been reported to decrease continuously, from 9011 cases (1.9 per 100000 population) in 2004 to 4650 (1.0 per 100000) in 2009. However, an increase in the number of AIDS cases was reported in four countries: Bulgaria (36%), Estonia (31%), Latvia (8%) and Lithuania (76%).

Discussion

The data suggest evidence of continuing HIV transmission in many countries. However, the predominant transmission mode varies by country and geographical and epidemiological area and these data illustrate the wide diversity in the HIV epidemic in Europe[1].

In 2009, the highest proportion of HIV cases continues to be diagnosed in men who have sex with men (MSM). Despite the relatively low absolute number of cases diagnosed in these groups, intravenous drug users and MSM are disproportionately affected by the HIV epidemic compared with the heterosexual population because of the relatively small sizes of the populations and the increased levels of HIV in these groups. The high number of heterosexually acquired HIV infections also suggests a need for public health action as almost a third of these cases are diagnosed in individuals originating from countries with generalised HIV epidemics.

In order to monitor the epidemic and guide the public health response to control the transmission of HIV infection, countries in Europe need to continue to maintain and improve high quality surveillance of HIV and AIDS.

References

1. European Centre for Disease Prevention and Control/WHO Regional Office for Europe. HIV/AIDS surveillance in Europe 2009. Stockholm: ECDC; 2010.

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

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	
France	FR-MNOID-HIV	Cp	Co	P	C	Y	Y	Y	N	Y
Germany	DE-SURVNET@RKI7.3-HIV	Cp	Co	P	C	Y	N	N	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	-	Y	N	Y	-	N
Latvia	LV-HIV/AIDS	V	Co	P	C	N	Y	Y	N	Y
Lithuania	LT-AIDS_CENTRE	Cp	Co	P	C	Y	Y	N	N	Y
Luxembourg	LU-HIV	V	Co	P	C	Y	Y	N	N	Y
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	P	C	Y	Y	Y	N	Y
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	Y
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 2009, 18 317 cases of syphilis were reported by 28 EU and EEA/EFTA Member States resulting in an overall rate of 4.5 per 100 000 population.
- Syphilis was reported three times more frequently in men than in women, with rates of 6.6 and 2.2 per 100 000 population, respectively. Almost 70 % of the cases were diagnosed in men; this may be influenced by the ongoing epidemic in Europe among men who have sex with men. Syphilis is reported to mainly affect 25–44 year-olds, who account for almost 60 % of the cases (9.2 cases per 100 000).
- The number of cases has decreased by 9 % overall since 2006. However, in a number of countries the number of cases has increased substantially in recent years.
- In 2009, 101 cases of congenital syphilis were reported by 21 countries, of which 71 were confirmed, a rate of 3.5 per 100 000 live births. It is very likely that the true incidence of congenital syphilis is underestimated.

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

Epidemiological situation in 2009

For 2009, 18 317 cases of syphilis were reported by 27 EU and two EEA/EFTA Member States resulting in a reported case rate of 4.5 per 100 000 population (Table 2.2.6). No data was available for Liechtenstein. Almost 60 % of cases were reported by four countries (Germany, Romania, Spain and United Kingdom).

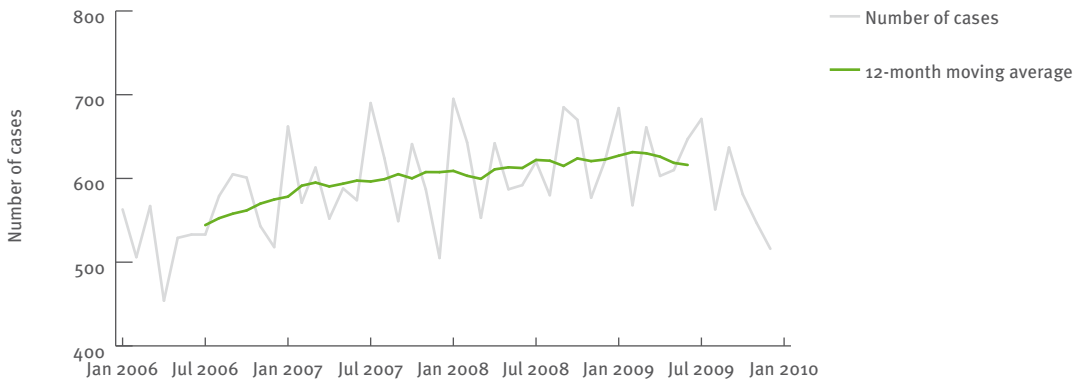
Between 2006 and 2009, the number of reported cases decreased in 10 countries and increased in 18, resulting in an overall decrease of 7 %. This is mainly due to a substantial decrease of cases in a number of countries that have reported very high rates of syphilis in the past. In other countries, substantial increases were noted; for example, a more than 100 % increase was reported by Austria, Czech Republic, Denmark, Slovakia and Slovenia.

There is a wide variation in notification rates, with the lowest (below 3 per 100 000) being reported in Greece, Iceland, Ireland, Norway, Portugal, Slovenia and Sweden, and the highest being reported in the Czech Republic, Latvia, Lithuania and Romania.

Age and gender distribution

Information on gender was available for 15 710 cases of syphilis, of which 11 883 (76 %) were reported in males and 3 827 (24 %) in females, with rates of 6.6 and 2.2 per 100 000, respectively. The highest rates for both men and women were reported by Romania (18 and 19 per 100 000, respectively) followed by Latvia (8.5 and 6.2 per 100 000) and Lithuania (12.1 and 7.7 per 100 000). The male-to-female ratio was 3.1:1, with marked differences across countries. Ratios above 10 are reported by Denmark, Norway, France, Slovenia, Germany and the Netherlands. A male-to-female ratio below one was reported by Austria, Cyprus and Romania (Figure 2.2.13).

Figure 2.2.12. Trend and number of reported confirmed syphilis cases by month, in EU and EEA/EFTA countries, 2006–09



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

Table 2.2.6. Number and rate of syphilis cases reported in EU and EEA/EFTA countries, 2006–09

Country	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	
			Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	62	-	61	-	58	-	25	-
Belgium	Y	C	486	-	480	-	403	-	288	-
Bulgaria	Y	A	420	5.5	419	5.5	440	5.7	490	6.3
Cyprus	Y	C	15	-	14	-	10	-	13	-
Czech Republic	Y	C	686	6.6	342	3.3	205	2.0	75	0.7
Denmark	Y	C	294	4.6	151	2.8	92	1.7	77	1.4
Estonia	Y	C	56	4.2	71	5.3	78	5.8	125	9.3
Finland	Y	C	194	3.6	211	4.0	185	3.5	127	2.4
France	N	C	523	-	563	-	599	-	478	-
Germany	Y	C	2550	3.1	3188	3.9	3277	4.0	3160	3.8
Greece	N	A	259	2.3	155	1.4	197	1.8	141	1.3
Hungary	Y	A	489	-	549	-	393	-	559	-
Ireland	Y	C	97	2.2	119	2.7	62	1.4	133	3.2
Italy	Y	C	916	-	923	-	1001	-	935	-
Latvia	Y	C	165	7.3	235	10.3	305	13.4	483	21.0
Lithuania	Y	C	326	9.7	326	9.7	275	8.1	336	9.9
Luxembourg	Y	C	13	2.6	12	2.5	14	2.9	10	2.1
Malta	Y	C	16	3.9	19	4.6	11	2.7	13	3.2
Netherlands	Y	C	711	-	792	-	657	-	806	-
Poland	Y	A	1255	3.3	929	2.4	847	2.2	933	2.4
Portugal	Y	C	150	1.4	98	0.9	112	1.1	124	1.2
Romania	Y	A	3229	15.0	4006	18.6	4245	19.7	5661	26.2
Slovakia	Y	C	296	5.5	228	4.2	152	2.8	89	1.7
Slovenia	Y	C	47	2.3	63	3.1	31	1.5	16	0.8
Spain	Y	A	2496	5.4	2545	5.6	1936	4.4	1711	3.9
Sweden	Y	C	179	1.9	167	1.8	237	2.6	167	1.8
United Kingdom	Y	A	2311	3.8	2304	3.7	2518	4.1	2565	4.2
EU total	**-**	**-**	**18241**	**4.6**	**18970**	**4.7**	**18340**	**4.7**	**19540**	**5.0**
Iceland	-	-	-	-	2	0.6	1	0.3	4	1.3
Liechtenstein	-	-	-	-	-	-	-		-	
Norway	Y	C	76	1.6	56	1.2	61	1.3	67	1.4
Total	**-**	**-**	**18317**	**4.5**	**19028**	**4.7**	**18402**	**4.6**	**19611**	**5.0**

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

Information on age was available for 14107 cases. The majority (58%) were reported in the age group 25–44 years (8239 cases, 9.2 per 100000), and only 17% in the age group 15–24 years (2465 cases, 6.5 per 100000).

Transmission category

In 2009, information on transmission category was available for 14 countries, providing 20% of the syphilis cases (N=3417). Of those cases, transmission category was reported as unknown for 8%, was indicated as heterosexual in 41% and as in men who have sex with men in 51% of the cases. Based on the information from the male-to-female ratio, the 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 2009, 21 EU and EEA/EFTA countries reported data on congenital syphilis: 11 countries reported zero cases and 12 countries reported 101 cases, of which 71 were confirmed. The majority of the cases have been reported from Bulgaria (30 cases), Portugal (13), Italy (12), Spain (11) and Romania (7). The rate per 100000 live births is 3.5, with the highest rates being reported by Bulgaria (37 per 100000), Portugal (13), Lithuania (11) and Latvia (9.2). For the period 2006–09 the majority of confirmed cases were reported by Bulgaria, Portugal and Spain. It must be noted that many countries do not report congenital syphilis cases and it is quite likely that the true incidence is underestimated.

Enhanced surveillance for sexually transmitted infections

The coordination of the European network on STI surveillance has been integrated into ECDC as from 1 January 2009. More details on the epidemiology and trends of syphilis and congenital syphilis can be found in the first surveillance report on 1990–2009 data[1].

Discussion

Until the mid-1990s, syphilis incidence rates were very low in western European countries. However, over the past 10 years a number of countries have experienced a dramatic rise in the rate of syphilis cases. Initially

occurring predominantly among men who have sex with men, subsequent outbreaks have been recorded among subgroups including commercial sex workers and their clients, migrant communities and among heterosexual adults.

In central European countries, high rates of syphilis were observed in the early 1990s. The increases were related to the behaviour and socioeconomic changes in this region. A decrease in incidence was then observed in the following years. Declining trends may be due to changes in healthcare systems, diagnostic capacity and reporting.

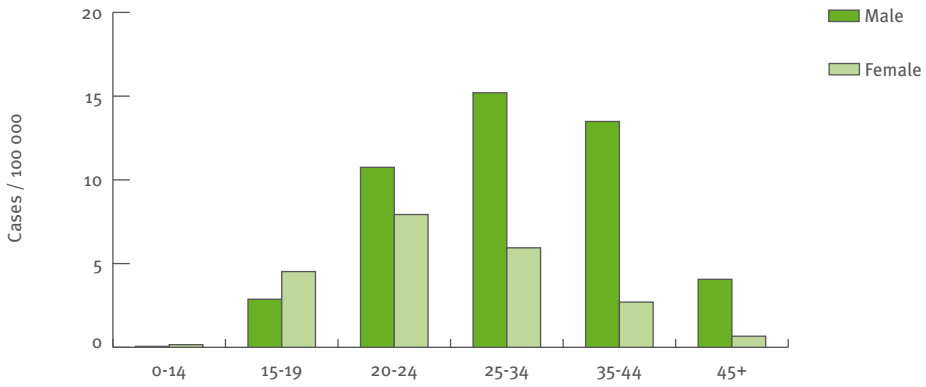
There is no consistent overall EU trend and the interpretation is confined by several factors, e.g. differences in reporting systems, reporting behaviour and probable underreporting. The overall trend is also presenting several diverging trends in a number of countries. Data presented here must be interpreted with caution because the proportion of syphilis cases that is actually diagnosed and reported is likely to differ greatly across countries.

It should be noted that five countries do not report congenital syphilis cases and it is very likely that many diagnoses were not reported, so the true prevalence is underestimated. The availability of an antenatal screening programme for syphilis in pregnant women will heavily affect the number of prevented congenital cases, however, data on the effectiveness of these national screening programmes is lacking at the moment.

References

1. European Centre for Disease Prevention and Control. Sexually transmitted infections in Europe, 1990–2009. Stockholm: ECDC; 2011.

Figure 2.2.13. Rates of reported confirmed syphilis cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: Belgium, Cyprus, Czech Republic, Denmark, Finland, Germany, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, 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	
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	P	C	Y	Y	Y	Y	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
Ireland	IE-SYPHILIS	Cp	Co	P	C	Y	Y	Y	N	Y

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	
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	N	N	N	Y
United Kingdom	UK-GUM	Cp	Co	P	A	N	N	N	Y	Y

2.3 Food- and waterborne diseases and zoonoses

Anthrax

- Anthrax remains a rare disease in the European Union. However, anthrax cases are of high public concern.
- In December 2009, UK and Germany reported cases of anthrax among injecting drug users due to contaminated heroin. This outbreak continued also into 2010.
- Anthrax infection is considered an emerging pathogen when transmitted by intravenous drug use.

Anthrax is a rare and sporadic human infection in Europe, caused by the spore-producing bacterium *Bacillus anthracis*. It is primarily an infection of herbivores, and human infection usually an occupational risk for those handling infected animals or hides and other animal products.

Epidemiological situation in 2009

In 2009, 27 EU and EEA/EFTA countries provided data (Liechtenstein, Finland and Spain did not report). Fourteen confirmed cases of anthrax were reported by four Member States: Bulgaria (2), Germany (1), Greece (1) and the United Kingdom (10). The overall confirmed case rate was 0.004 per 100 000. The low number of reported cases does not enable a meaningful analysis of the trend in incidence.

Discussion

An outbreak of anthrax infection in heroin users in Scotland was reported in December 2009, continuing into 2010 with a total of 55 cases including 21 deaths from the UK, mainly Scotland and London area, and Germany[1,2,4,5]. A link between the Scottish and German cases could not be confirmed[4]. The outbreak was officially declared over at the end of December 2010.

In contrast to the more common routes of transmission, injection with contaminated heroin was the confirmed route for these cases. Control options are limited by the lack of knowledge about drug distribution routes, low compliance of patients with authorities, and the high case fatality of this threat. In response to this outbreak, ECDC, together with the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) and EUROPOL, coordinated a risk assessment at European level and produced a joint threat assessment in 2010. Awareness was increased through alerting Member States via the Early Warning Response System (EWRS), and protocols for handling patients, corpses and samples were shared to ensure bio-safety[2,3]. More information on this threat can be found in Chapter 3.

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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	-	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	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	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	N	N	N	Y
United Kingdom	UK-ANTHRAX	Cp	Co	A	C	Y	N	Y	Y	Y

Botulism

- Botulism remains an uncommon disease in the EU, with a confirmed case rate of 0.03 per 100 000 population.
- The EU trend was stable during 2006–2009, with a range in confirmed case rate between 0.02 and 0.03 cases per 100 000 population.
- In 2009, the most affected age group, with an EU/EEA notification rate of 0.06 cases per 100 000 population, was the 0–4 year-olds.

Botulism is an uncommon disease caused by toxins produced by the spore-forming bacterium *Clostridium botulinum*. Major causes of botulism in industrialised countries are contaminated and inadequately cooked foods, and ingestion by infants of spores in the environment.

Epidemiological situation in 2009

In 2009, 185 (132 confirmed) cases of botulism were reported by 13 countries (Table 2.3.1). Sixteen EU and EEA/EFTA countries reported zero cases, while Belgium and Liechtenstein did not report. The EU and EEA/EFTA confirmed case rate was 0.03 per 100 000 population, which is slightly higher than in 2008 but similar to 2007.

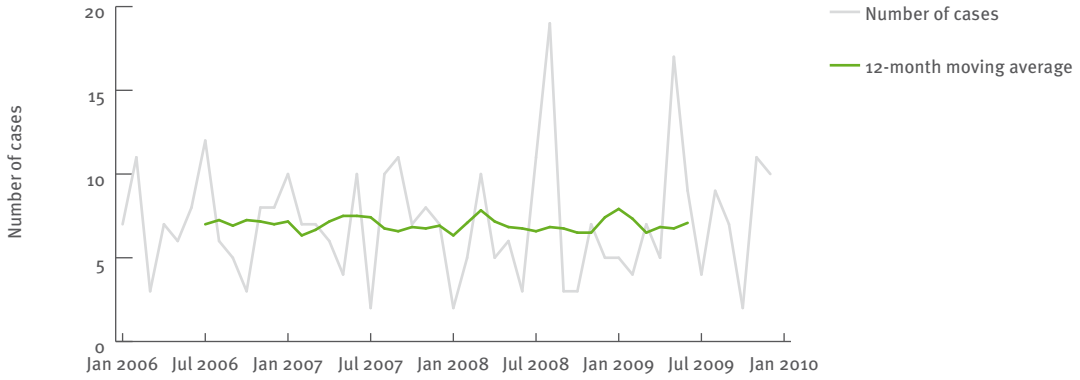
Romania (0.13 per 100 000 population), Italy (0.05), France (0.04) and Poland (0.04) reported the highest rates of confirmed cases. The highest numbers of confirmed cases were reported by Romania and Italy.

Table 2.3.1. Number and rate of botulism cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	0	0.00	0	0.00	5	0.06
Belgium	-	-	-	-	-	0	0.00	0	0.00	0	0.00
Bulgaria	Y	A	2	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
Czech Republic	Y	C	1	1	0.01	1	0.01	-	-	0	0.00
Denmark	Y	C	0	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
Finland	Y	C	0	0	0.00	0	0.00	0	0.00	-	-
France	Y	C	29	23	0.04	8	0.01	10	0.02	4	0.01
Germany	Y	C	5	5	0.01	10	0.01	9	0.01	7	0.01
Greece	Y	C	1	1	0.01	0	0.00	1	0.01	1	0.01
Hungary	Y	C	7	3	0.03	1	0.01	5	0.05	6	0.06
Ireland	Y	C	0	0	0.00	5	0.11	0	0.00	1	0.02
Italy	Y	C	32	32	0.05	23	0.04	16	0.03	12	0.02
Latvia	Y	C	0	0	0.00	1	0.04	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	2	0.06	4	0.12	-	-
Luxembourg	Y	C	0	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
Netherlands	Y	C	0	0	0.00	1	0.01	1	0.01	1	0.01
Poland	Y	C	31	15	0.04	22	0.06	24	0.06	22	0.06
Portugal	Y	C	3	3	0.03	4	0.04	10	0.09	9	0.09
Romania	Y	C	37	29	0.13	26	0.12	31	0.14	14	0.06
Slovakia	Y	C	0	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
Spain	Y	C	12	6	0.01	5	0.01	4	0.01	2	0.00
Sweden	Y	C	1	0	0.00	0	0.00	0	0.00	2	0.02
United Kingdom	Y	C	24	13	0.02	1	0.00	14	0.02	10	0.02
EU total	**-**	**-**	**185**	**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
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Total	**-**	**-**	**185**	**132**	**0.03**	**112**	**0.02**	**129**	**0.03**	**104**	**0.02**

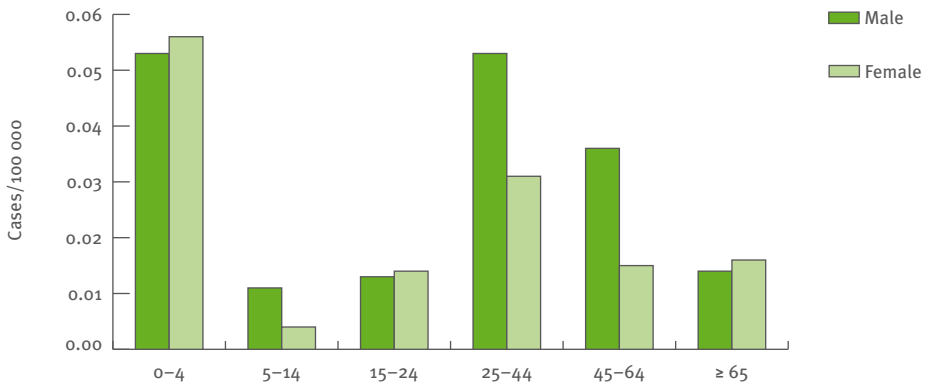
Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified.

Figure 2.3.1. Trend and number of reported confirmed botulism cases by month, in EU and EEA/EFTA countries, 2006–09



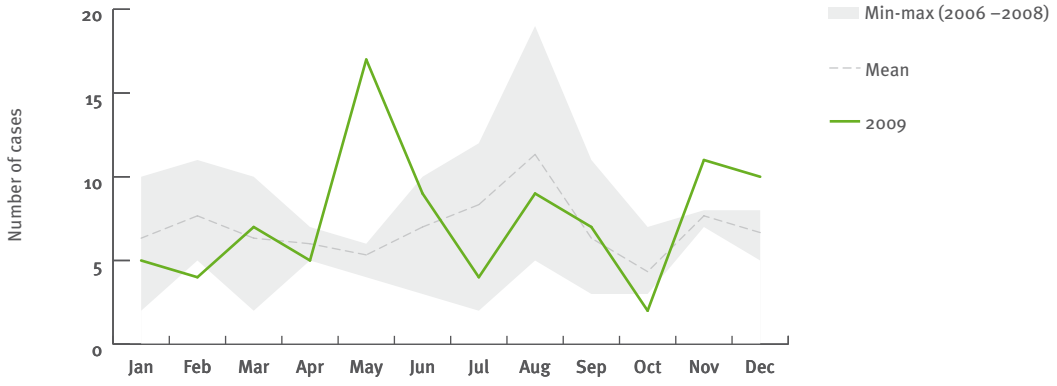
Source: Country reports: Austria, Belgium, Cyprus, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden.

Figure 2.3.2. Rates of reported confirmed botulism cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.3.3. Seasonal distribution of reported confirmed cases of botulism, in EU and EEA/EFTA countries, 2006–09



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.

Of the 87 cases for which data on importation status was available, none was reported as imported.

In 2009, information on age was available for all the 132 confirmed cases. Most cases (45%) were in the 25–44 years age group. The 0–4 years age group showed the highest confirmed case rate: 0.06 cases per 100 000 population (Figure 2.3.2). Fourteen cases in this age group comprised 10% of the total number of confirmed cases. Of these, nine cases were below one year of age.

The male-to-female ratio was 1.53:1 for confirmed cases. This ratio was higher for the age group 25–64 years. For the 4 year-olds and younger, the confirmed case rate was only slightly different between genders (approximately 0.06 per 100 000 population in females versus 0.05 per 100 000 population in males).

Trends and seasonality

The trend for the period 2006–09 is stable. A peak of cases is evident in May 2009, while for the period 2006–08 the increase appears in August (Figure 2.3.3). France accounted for 12 of the 17 cases reported in May 2009.

Discussion

The most affected age group in 2009 was 0–4 years[1], although adults cases are also frequently reported[2]. The reported cases in France increased substantially in comparison with previous years. Three cases of the 23 reported in 2009 were linked to a household outbreak in south-east France for consumption of hot-smoked whitefish (vacuum packed in Canada) purchased during a visit to Finland[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-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-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	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	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	N	N	N	Y
United Kingdom	UK-BOTULISM	Cp	Co	P	C	Y	N	Y	Y	Y

Brucellosis

- In 2009, the confirmed case rate of brucellosis was 0.08 cases per 100 000 population.
- There were 401 confirmed cases of human brucellosis reported in 2009, a decrease compared with 2008 (735).
- Reported human cases of brucellosis have followed a significant decreasing four-year trend in Europe and EEA/EFTA countries.
- Human brucellosis in 2009 was reported most commonly in males aged 25–44 years.

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 2009

In 2009, 401 confirmed cases of brucellosis were reported by 28 of the 30 EU and EEA/EFTA countries. The overall confirmed case rate was 0.08 cases per 100 000; the rate decreased by 0.07 cases per 100 000 compared with 2008 (Table 2.3.2, Figure 2.3.4).

As in previous years, southern European countries (Greece, Spain and Portugal), where brucellosis is still prevalent in sheep and goats, accounted for the majority (75 %) of confirmed reported cases (Table 2.3.2).

The gender distribution of confirmed cases for which information was provided for gender and age (n=396)

Table 2.3.2. Number and rate of brucellosis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	2	2	0.02	5	0.06	0	0	1	0.01
Belgium	Y	A	1	1	0.01	1	0.01	3	0.03	2	0.02
Bulgaria	Y	A	4	3	0.04	8	0.10	9	0.12	3	0.04
Cyprus	Y	U	0	0	0	0	0	0	0	0	0
Czech Republic	-	U	0	0	0	1	0.01	0	0	0	0
Denmark	Y	-	-	-	-	-	-	-	-	-	-
Estonia	Y	U	0	0	0	0	0	0	0	0	0
Finland	Y	U	0	0	0	0	0	2	0.04	0	0
France	Y	C	21	19	0.03	21	0.03	14	0.02	24	0.04
Germany	Y	C	18	18	0.02	24	0.03	21	0.03	37	0.04
Greece	Y	C	110	106	0.94	304	2.71	101	0.90	121	1.09
Hungary	Y	U	0	0	0	0	0	1	0.01	-	-
Ireland	Y	U	0	0	0	2	0.05	7	0.16	4	0.10
Italy	Y	C	23	23	0.04	163	0.27	179	0.30	456	0.78
Latvia	Y	U	0	0	0	0	0	0	0	0	0
Lithuania	Y	A	1	1	0.03	0	0	0	0	0	0
Luxembourg	Y	U	0	0	0	0	0	0	0	0	0
Malta	Y	U	0	0	0	0	0	0	0	0	0
Netherlands	Y	C	4	3	0.02	3	0.02	2	0.01	6	0.04
Poland	Y	C	3	2	0.01	1	0.00	1	› 0.01	0	0
Portugal	Y	C	81	80	0.75	56	0.53	74	0.70	76	0.72
Romania	Y	C	3	3	0.01	2	0.01	2	0.01	1	› 0.01
Slovakia	Y	U	0	0	0	1	0.02	0	0	0	0
Slovenia	Y	C	2	2	0.10	2	0.10	1	0.05	0	0
Spain	Y	C	139	114	0.25	120	0.26	201	0.45	196	0.45
Sweden	Y	C	7	7	0.08	8	0.09	8	0.09	4	0.04
United Kingdom	-	C	17	17	0.03	13	0.02	13	0.02	20	0.03
EU total	**Y**		**436**	**401**	**0.08**	**735**	**0.15**	**639**	**0.13**	**951**	**0.20**
Iceland	-	U	0	0	0	0	0	0	0	0	0
Liechtenstein	Y	-	-	-	-	0	0	0	0	-	-
Norway	-	U	0	0	0	0	0	0	0	3	0.06
Total	**-**	**C**		**401**	**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.

was 269 (67.9 %) males, 126 females (31.8 %) and 1 case with unknown gender (0.25 %). The male-to-female ratio was 2.1:1 in 2009. Confirmed case rates were higher for males in comparison to females in each age group. The highest confirmed case rate was in 25–44 year-olds, both male (0.17 per 100 000) and females (0.06 per 100 000) (Figure 2.3.5).

Trends and seasonality

As in previous years, in 2009 reported cases of brucellosis occurred throughout the year. However, reported cases showed some seasonality distribution, as the higher number of reported cases was in the late spring/early summer months (April–June) and largely dropped from July onwards (Figure 2.3.6).

An overall decreasing trend ($p < 0.001$) in the confirmed case rate of human brucellosis was observed during the 2006–09 period (Figure 2.6.4). This was based on data received from 25 Member States and two EEA/EFTA countries that reported consistently during these years and were included in the trend analysis. France, Germany, Italy, and Spain showed a significant decrease in the brucellosis confirmed case rate. No country observed a significant increase.

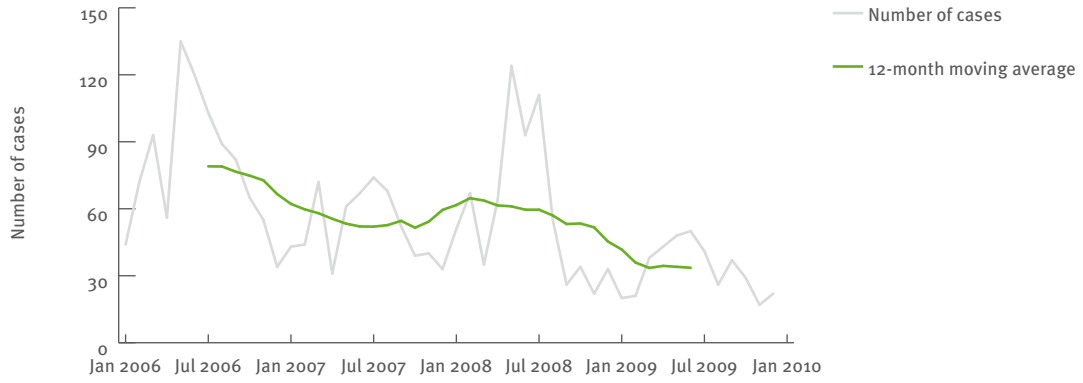
Discussion

There was a significant decreasing trend in reported numbers of human brucellosis in Europe between 2006 and 2009. This could be related to a parallel significant decrease in infection cases detected in small and large domestic ruminants due to veterinary controls in Europe[1]. Small and large ruminants are the main reservoir and hosts for *Brucella melitensis* and *Brucella abortus* to humans. These two species of *Brucella* are still prevalent in southern European countries such as Greece, Spain and Portugal. Although eradication campaigns in ruminants are ongoing in these countries, they still accounted for the majority of human cases reported.

References

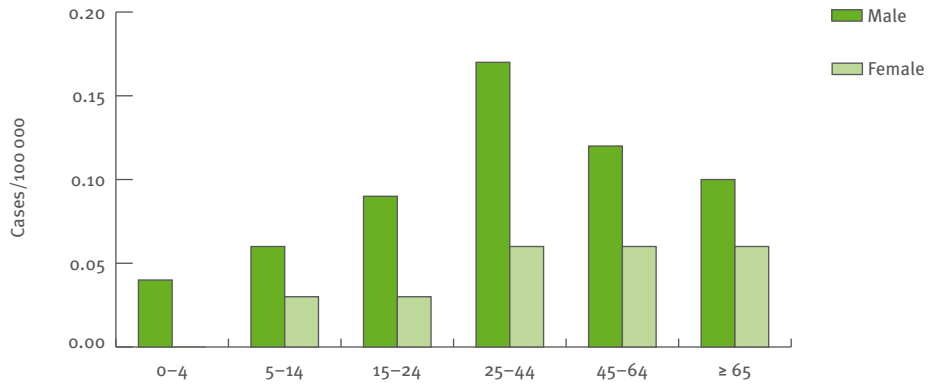
1 European Food Safety Authority (EFSA). The Community Summary Report on Trends and Sources of Zoonoses and Zoonotic Agents and Food-borne Outbreaks in the European Union in 2009. EFSA Journal 2011;9(3):2090 [378 pp.]. doi:10.2903/j.efsa.2011.2090.

Figure 2.3.4. Trend and number of reported confirmed brucellosis cases by month, in EU and EEA/EFTA countries, 2006–09



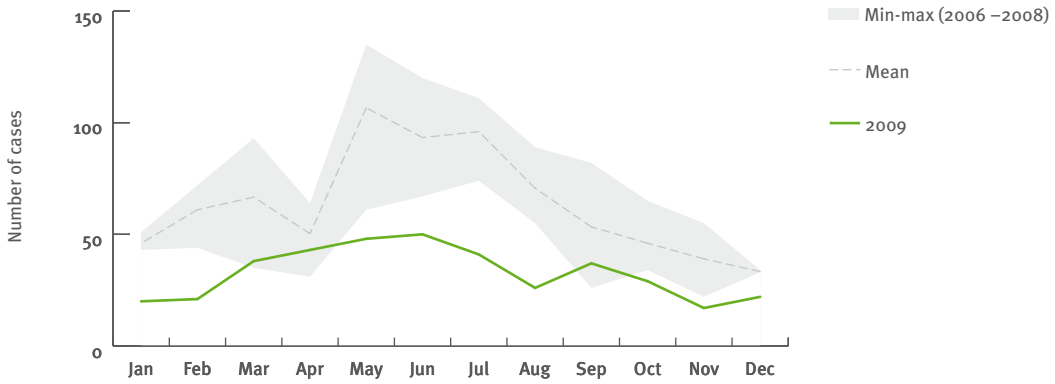
Source: Country reports: Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.3.5. Rates of reported confirmed brucellosis cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.3.6. Seasonal distribution of reported confirmed cases of brucellosis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, 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	-	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	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-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	N	N	N	Y
United Kingdom	UK-BRUCELLOSIS	O	Co	A	C	Y	N	Y	Y	Y

Campylobacteriosis

- Campylobacteriosis remains the most commonly reported infectious gastrointestinal disease in EU and EEA/EFTA countries.
- The rate of confirmed cases of human campylobacteriosis remained stable during 2006–09.
- In 2009, the confirmed case rate of campylobacteriosis was 53.07 cases per 100 000 population.
- Human campylobacteriosis was more common in children 0–4 years old, with a confirmed case rate for males of 144.34 cases per 100 000 population and for females of 114.71 cases per 100 000 population in 2009.

Infection with bacteria of the genus *Campylobacter* causes mostly sporadic cases of campylobacteriosis, but also clusters and outbreaks. Consumption of contaminated and undercooked poultry is thought to be the major risk for infection.

Epidemiological situation in 2009

In 2009, 201 605 confirmed cases of campylobacteriosis were reported by 28 EU and EEA/EFTA countries. The overall confirmed case rate was 53.07 cases per 100 000, similar to previous years (Table 2.3.3, Figure 2.3.7). 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 their sentinel surveillance systems do not cover the national population.

Table 2.3.3. Number and rate of campylobacteriosis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	1516	1516	18.14	4280	51.45	5822	70.29	5020	60.82
Belgium	Y	C	5697	5697	53.41	5111	47.91	5895	55.69	5771	54.90
Bulgaria	Y	A	26	26	0.34	19	0.25	38	0.49	75	0.97
Cyprus	Y	C	37	37	4.64	23	2.91	17	2.18	2	0.26
Czech Republic	Y	C	20370	20259	193.54	20067	193.30	24137	234.63	22571	220.18
Denmark	Y	C	3353	3353	60.84	3470	63.37	3868	71.01	3239	59.68
Estonia	Y	C	170	170	12.68	154	11.48	114	8.49	124	9.22
Finland	Y	C	4050	4050	76.04	4453	84.01	4107	77.83	3439	65.44
France	N	C	3956	3956	-	3424	-	3058	-	2675	-
Germany	Y	C	62787	62787	76.57	64731	78.73	66107	80.31	52035	63.12
Greece	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	6583	6579	65.59	5516	54.91	5809	57.71	6807	67.55
Ireland	Y	C	1819	1810	40.67	1752	39.81	1885	43.71	1812	43.05
Italy	Y	C	531	531	0.88	265	0.44	676	1.14	801	1.36
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	C	812	812	24.24	762	22.64	564	16.66	0	0.00
Luxembourg	Y	C	523	523	105.98	439	90.74	345	72.45	285	60.76
Malta	Y	C	132	132	31.91	77	18.77	91	22.31	54	13.33
Netherlands	N	C	3782	3739	-	3341	-	3289	-	3186	19.51
Poland	Y	C	360	360	0.94	270	0.71	192	0.50	156	0.41
Portugal	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	328	254	1.18	2	-	0	0.00	-	-
Slovakia	Y	C	3902	3813	70.45	3064	56.73	3380	62.67	2728	50.62
Slovenia	Y	C	952	952	46.84	898	44.67	1127	56.06	-	-
Spain	N	C	5106	5106	-	5160	-	5331	-	5883	-
Sweden	Y	C	7178	7178	77.55	7692	83.76	7106	77.97	6078	67.18
United Kingdom	Y	C	65043	65043	106.32	55609	90.90	57849	95.18	52543	86.95
EU total	**-**	**-**	**199013**	**198683**	**53.01**	**190579**	**54.36**	**200807**	**54.18**	**175284**	**48.90**
Iceland	Y	C	74	74	23.17	98	31.07	93	30.23	117	39.01
Liechtenstein	-	-	-	-	-	2	5.66	0	0.00	-	-
Norway	Y	C	2848	2848	59.34	2875	60.69	2836	60.58	2588	55.77
Total	**-**	**-**	**201935**	**201605**	**53.07**	**193554**	**54.43**	**203736**	**54.24**	**177989**	**48.99**

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

The countries with highest reported confirmed case rates were the Czech Republic and the United Kingdom (193.30 and 106.32 cases per 100 000 population, respectively) (Table 2.3.3).

Information on gender and age was provided for 197 928 confirmed cases. The male-to-female ratio was 1.1:1 in 2009. The highest confirmed case rate was in 0–4 year-old male children (144.34 per 100 000), which is almost three times more than the overall confirmed case rate (Figure 2.3.8). However, this probably reflects, at least in part, increased likelihood of medical consultation and testing for diarrhoeal illness for this age group compared with adults, although infection is common at all ages above young childhood (Fig 2.3.8).

Data on Campylobacter species were available from the zoonoses report 2009[1]. The most frequently reported *Campylobacter* species in 2009 was *Campylobacter jejuni* (36.4%), *C. coli* (2.5%), *C. lari* (0.19%) and *C. upsaliensis* (0.01%). In 2009, there was still a high proportion of confirmed cases (51%) not characterised at species level or the species were unknown.

Trends and seasonality

In the EU, human cases of campylobacteriosis followed a constant marked seasonality during the period 2006–09. Most cases were reported during June–August months (Figure 2.3.9). At EU level, the confirmed case rate of human campylobacteriosis has remained almost at a constant level during this four-year period (2006–09) (Figures 2.3.7 and 2.3.9).

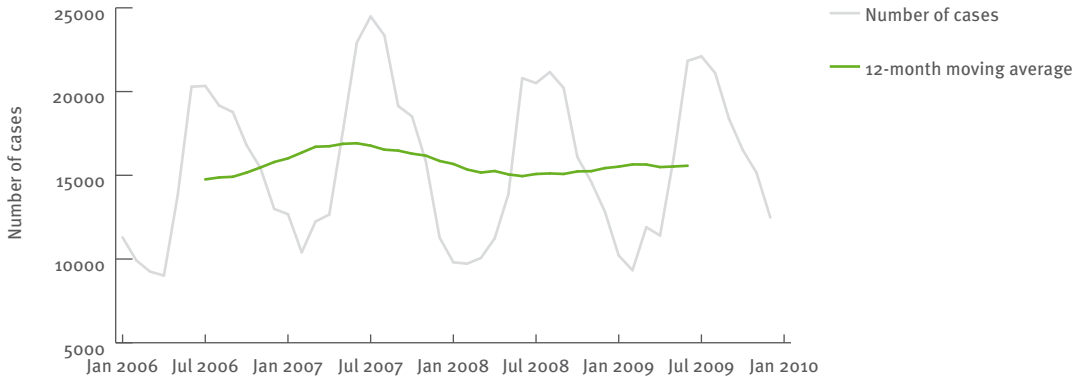
Discussion

Human campylobacteriosis remained the most commonly reported gastrointestinal disease in Europe since 2005[1]. As in previous years, the people most commonly affected by campylobacter infection were 0–4 year-old children. *Campylobacter* infection in young children is of concern as it can also lead to post-infection chronic complications[1].

References

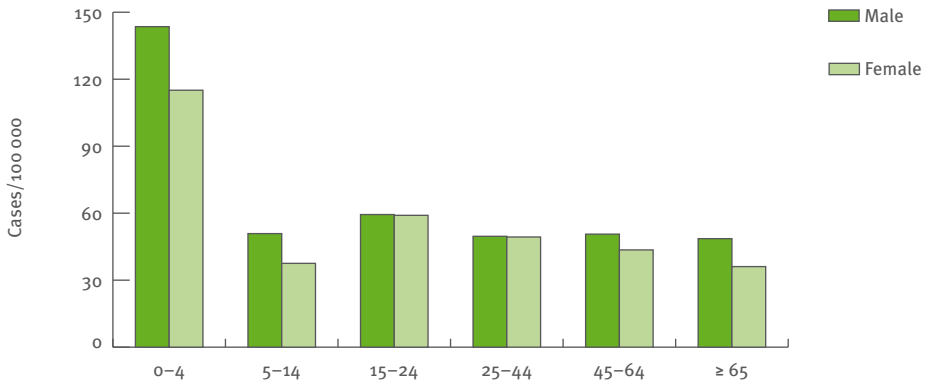
1 European Food Safety Authority (EFSA). The Community Summary Report on Trends and Sources of Zoonoses and Zoonotic Agents and Food-borne Outbreaks in the European Union in 2009. EFSA Journal 2011;9(3):2090 [378 pp.]. doi:10.2903/j.efsa.2011.2090.

Figure 2.3.7. Trend and number of reported confirmed campylobacteriosis cases by month, in EU and EEA/EFTA countries, 2006–09



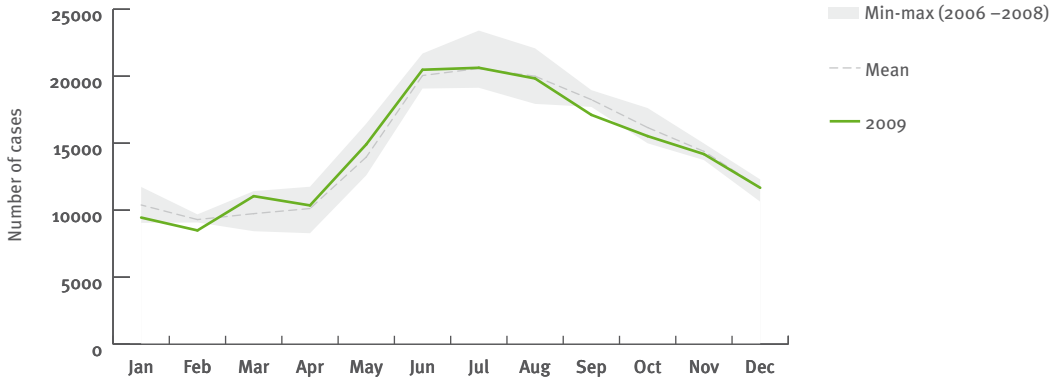
Source: Country reports: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Latvia, Luxembourg, Norway, Poland, Slovakia, Sweden, United Kingdom.

Figure 2.3.8. Rates of reported confirmed campylobacteriosis cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports from all EU and EEA/ EFTA countries except Bulgaria, France, Greece, Latvia, Netherlands, Portugal, Spain and Lichtenstein.

Figure 2.3.9. Seasonal distribution of reported confirmed cases of campylobacteriosis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Latvia, 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	-	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	N	N	N	Y
United Kingdom	UK-CAMPYLOBACTERIOSIS	O	Co	P	C	Y	N	Y	Y	Y

Cholera

- Cholera remains a rare disease in Europe.
- All cases in Europe during 2006–09 were imported.
- In 2009, the most affected age group, with a notification rate of 0.06 cases per 100 000 population, was the 0–4 year-olds.
- The trend has been stable during 2006–2009.

Cholera is an acute infection caused by the bacterium *Vibrio cholerae*. It is a rare infection in Europe, and all cases in recent years have been in travellers returning from countries where the disease is endemic.

Epidemiological situation in 2009

In 2009, 19 confirmed (22 total) cases of cholera were reported by four countries (Table 2.3.4). The United Kingdom reported 16 of these cases; France, Romania and Sweden each reported one case. Liechtenstein did not report. All reported cases were imported from outside the EU/EEA area. Given the rarity of the disease, the trend for the period 2006–09 is stable.

Information on age in 2009 was available for all the 22 reported cases. Seven cases occurred among the 0–4 year-old age group. The male-to-female ratio was 1.44:1 for all the reported cases.

Table 2.3.4. Number and rate of cholera cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	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
Bulgaria	Y	C	0	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
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	Y	C	0	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
Finland	Y	C	0	0	0.00	1	0.02	0	0.00	0	0.00
France	Y	C	1	1	<0.01	2	0.00	4	0.01	2	-
Germany	Y	C	0	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
Hungary	Y	C	0	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
Italy	Y	C	0	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
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	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	3	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
Portugal	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Romania	Y	C	1	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
Slovenia	Y	C	0	0	0.00	0	0.00	1	0.05	0	0.00
Spain	Y	C	0	0	0.00	0	0.00	2	0.00	0	0.00
Sweden	Y	C	1	1	0.01	0	0.00	0	0.00	1	0.01
United Kingdom	Y	C	16	16	0.03	16	0.03	4	0.01	1	0.00
EU total	**-**	**-**	**22**	**19**	**<0.01**	**26**	**0.01**	**16**	**0.00**	**8**	**0.00**
Iceland	Y	C	0	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	1	0.02
Total	**-**	**-**	**22**	**19**	**<0.01**	**26**	**0.01**	**17**	**0.00**	**9**	**0.00**

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

Seasonality

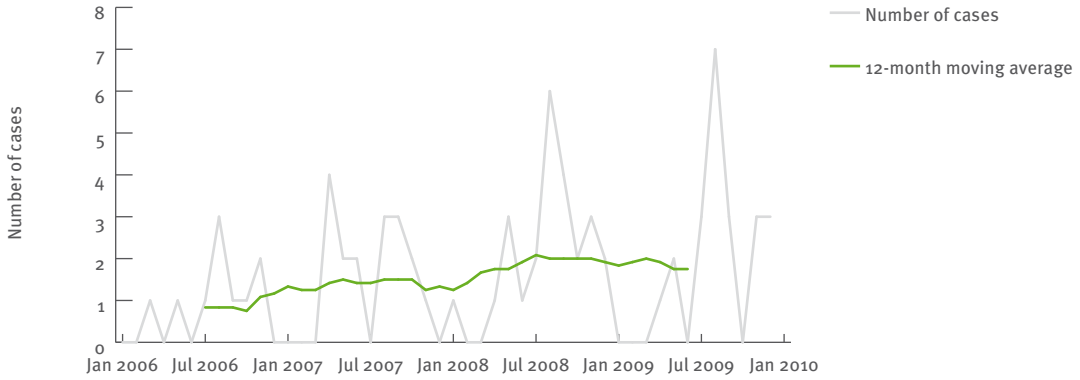
In 2009, most cases were reported in August (7 out of 22). This is consistent with previous years' reports, when summer months had the higher number of reported cases.

Discussion

As in previous years, most of the cholera cases were reported by the United Kingdom. All of them were imported and occurred among non-vaccinated persons. Most cases were reported in August. This could be attributed to people returning from holidays from endemic countries.

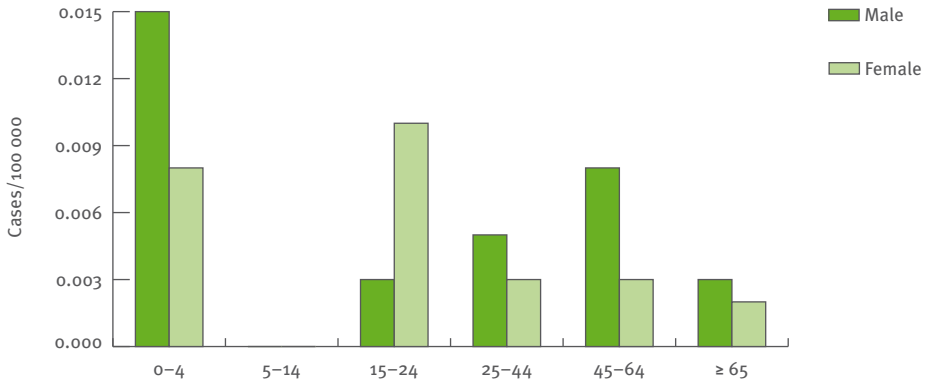
Although the EU was not directly affected by the large cholera outbreak in Haiti following the earthquake in 2009, ECDC supported Haitian authorities through provision of field epidemiology teams (see Chapter 3 for further details).

Figure 2.3.10. Trend and number of reported confirmed cholera cases by month, in EU and EEA/EFTA countries, 2006–09



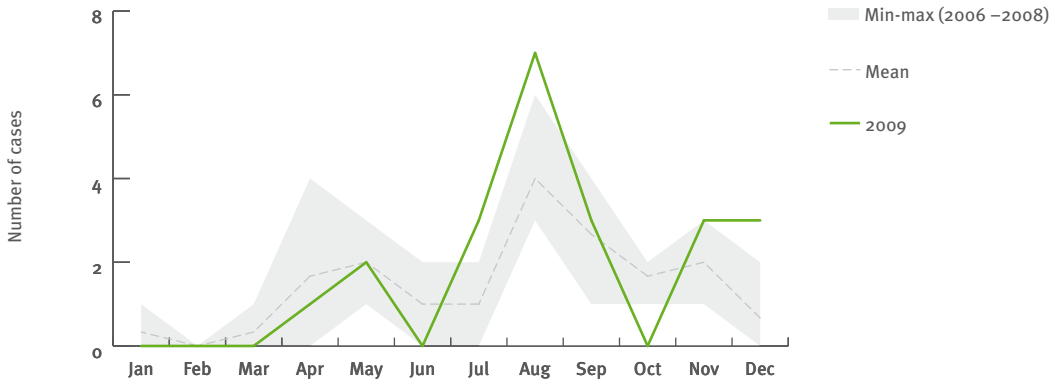
Source: Country reports: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.3.11. Rates of reported confirmed cholera cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports from France, Netherlands, Romania, Sweden and United Kingdom.

Figure 2.3.12. Seasonal distribution of reported confirmed cases of cholera, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: 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	-	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	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	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	N	N	N	Y
United Kingdom	UK-CHOLERA	O	Co	P	C	Y	N	Y	Y	Y

Cryptosporidiosis

- In 2009, the confirmed case rate of cryptosporidiosis increased to 2.74 per 100 000 population from 2.44 per 100 000 in 2008.
- The disease is likely to be underdiagnosed and underreported in several EU countries. Reports were provided by 21 out of 31 EU and EEA/EFTA countries. Zero cases were reported by eight countries.
- Cryptosporidiosis is mainly reported in children less than five years of age.
- As in previous years, a seasonal trend is observed with a peak of reported infections in late summer/early autumn, probably related to behavioural risk factors at this time of year.

Cryptosporidiosis is an infection caused by the protozoan parasite *Cryptosporidium parvum*, which infects cattle and other domestic animals. Oocysts of the parasite survive well in the environment and human infection arises from a range of environmental contacts, including contaminated water and care centres for young children.

Epidemiological situation in 2009

In 2009, 8 016 confirmed cases were reported by 13 EU and EEA/EFTA countries while a further eight countries reported zero cases. Similar to last year, the highest confirmed case rate was reported in Ireland (10.0 per 100 000 population) followed by the United Kingdom (9.3 per 100 000) and Belgium (4.1 per 100 000) (Table 2.3.5). The overall confirmed case rate was 2.74 per 100 000 population, which was an increase compared to 2.44 per 100 000 population in 2008.

Table 2.3.5. Number and rate of cryptosporidiosis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	13	0.16	9	0.11	14	0.17
Belgium	Y	C	470	470	4.37	397	3.72	259	2.45	402	3.82
Bulgaria	Y	A	1	1	0.01	0	0.00	0	0.00	4	0.05
Cyprus	Y	C	0	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
Finland	Y	C	11	11	0.21	11	0.21	11	0.21	6	0.11
France	-	-	-	-	-	-	-	-	-	-	-
Germany	Y	C	1106	1106	1.35	1014	1.23	1459	1.77	1204	1.46
Greece	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	15	15	0.15	10	0.10	6	0.06	0	0.00
Ireland	Y	C	445	445	10.00	412	9.36	611	14.17	366	8.70
Italy	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	A	9	9	0.40	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	2	0.43
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.25
Netherlands	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	A	5	5	0.01	1	0.00	0	0.00	0	0.00
Portugal	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	8	8	0.04	0	0.00	-	-	-	-
Slovakia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Slovenia	Y	C	3	3	0.15	6	0.30	1	0.05	9	0.45
Spain	N	C	197	197	-	75	-	136	-	262	-
Sweden	Y	C	159	159	1.72	148	1.61	110	1.21	103	1.14
United Kingdom	Y	C	5587	5587	9.07	4941	8.08	3653	6.01	4428	7.33
EU total	**-**	**-**	**8016**	**8016**	**2.74**	**7028**	**2.44**	**6255**	**2.42**	**6801**	**2.49**
Iceland	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**8016**	**8016**	**2.74**	**7028**	**2.44**	**6255**	**2.42**	**6801**	**2.49**

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

Age and gender distribution

Data on age was available for 7 915 cases. As in previous years, the highest confirmed case rates were observed in the 0–4 year-olds (18.6 per 100 000) followed by the 5–14 year-olds (7.4 per 100 000) (Figure 2.3.14). The male-to-female ratio was largely balanced (3.2 vs. 3.3 per 100 000; n=7 917).

Seasonality

As described in previous years, the overall monthly case distribution shows a peak in late summer and autumn in most countries (Figure 2.3.15). In Ireland, the highest number of cases was reported in April/May.

Discussion

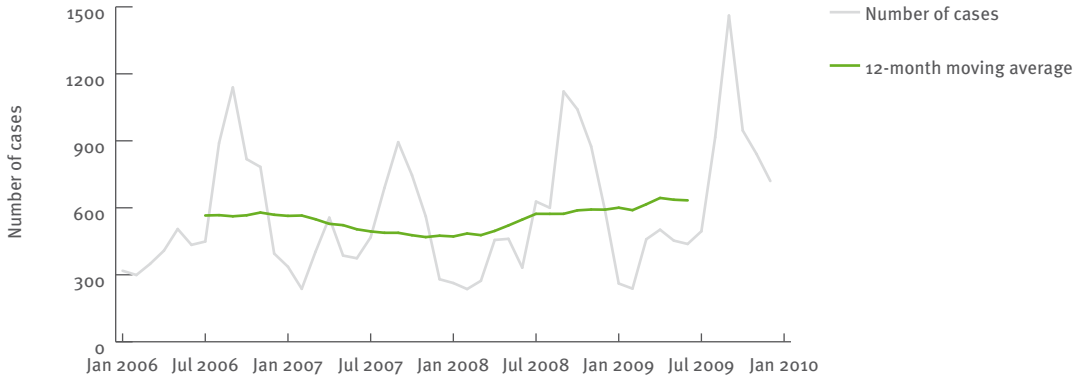
The number of reported cryptosporidiosis cases shows an increasing trend in the EU[1,2]. However, this increase was mostly due to an increase in the number of cases reported in the United Kingdom over the period. An outbreak was reported from Norway among children staying in a wild life reserve[3].

Despite the increased coverage in terms of the number of reporting countries, however, the disease is likely to be underreported. Eight countries reported zero cases and another eight did not provide any data.

References

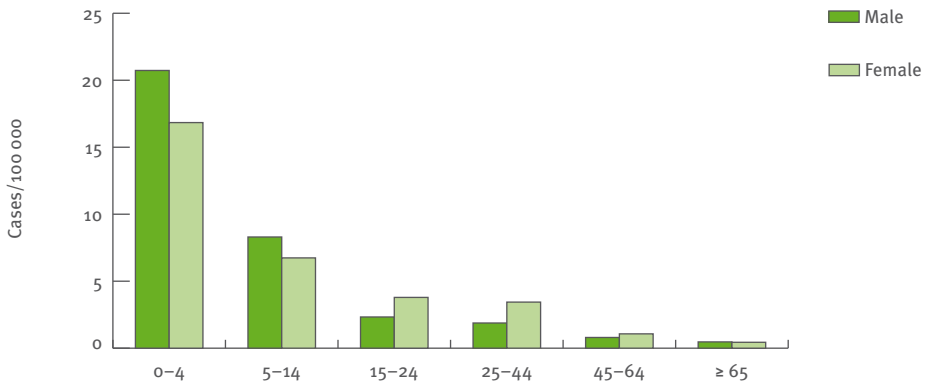
1. ANOFEL Cryptosporidium National Network. Laboratory-based surveillance for Cryptosporidium in France, 2006–2009. Euro Surveill. 2010 Aug 19;15(33):19642.
2. Gormley FJ, Little CL, Chalmers RM, Rawal N, Adak GK. Zoonotic cryptosporidiosis from petting farms, England and Wales, 1992–2009. Emerg Inf Dis 2011 Jan;17(1):151-2.
3. Rimšelienė G, Vold L, Robertson L, Nelke C, Søli K, Johansen ØH, et al. An outbreak of gastroenteritis among schoolchildren staying in a wildlife reserve: thorough investigation reveals Norway's largest cryptosporidiosis outbreak. Scand J Public health, 2011 May;39(3):287-95. Epub 2011 Feb 14.

Figure 2.3.13. Trend and number of reported confirmed cryptosporidiosis cases by month, in EU and EEA/EFTA countries, 2006–09



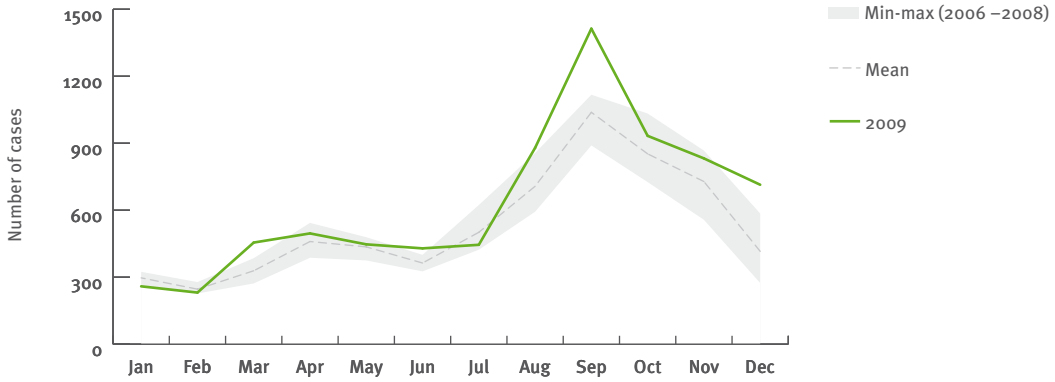
Source: Country reports: Belgium, Bulgaria, Cyprus, Estonia, Finland, Germany, Hungary, Ireland, Lithuania, Luxembourg, Malta, Poland, Slovakia, Slovenia, Sweden, United Kingdom.

Figure 2.3.14. Rates of reported confirmed cryptosporidiosis cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports with age-specific data were available from: Belgium, Bulgaria, Finland, Germany, Hungary, Ireland, Latvia, Poland, Slovenia, Spain, Sweden and United Kingdom. Austria, Cyprus, Czech Republic, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovakia reported zero cases.

Figure 2.3.15. Seasonal distribution of reported confirmed cases of cryptosporidiosis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Belgium, Bulgaria, Cyprus, Estonia, Finland, Germany, Hungary, Ireland, Lithuania, Luxembourg, Malta, Poland, 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	-	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	N	N	N	Y
United Kingdom	UK-CRYPTOSPORIDIOSIS	O	Co	P	C	Y	N	Y	Y	Y

Echinococcosis

- Echinococcosis is a rare disease, although still reported from many EU countries.
- There was a significant four-year decreasing trend in the rate of confirmed cases of human echinococcosis at EU level.
- In 2009, the confirmed case rate of echinococcosis in the EU and EEA/EFTA countries was 0.18 cases per 100 000 population.
- Bulgaria had the highest confirmed case rate, 425 cases per 100 000 population, accounting for 323 confirmed cases, 41% of the total number reported.

Echinococcosi (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 infected dogs or their environment.

Epidemiological situation in 2009

In 2009, 789 confirmed cases of human echinococcosis were reported by 26 of the 30 EU and EEA/EFTA countries. The number of reported confirmed cases decreased by 12.4% in 2009 compared to 2008 (Figure 2.3.16). The overall notification rate was 0.18 cases per 100 000 (Table 2.3.6).

Table 2.3.6. Number and rate of echinococcosis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	21	20	0.24	6	0.07	16	0.19	26	0.31
Belgium	Y	A	14	14	0.13	0	0.00	1	0.01	6	0.06
Bulgaria	Y	A	323	323	4.25	386	5.05	461	6.00	485	6.28
Cyprus	Y	C	1	1	0.13	1	0.13	4	0.51	6	0.78
Czech Republic	Y	C	1	1	0.01	2	0.02	3	0.03	2	0.02
Denmark	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	1	0.07	2	0.15	0	0.00
Finland	Y	C	1	1	0.02	1	0.02	1	0.02	0	0.00
France	Y	C	27	27	0.04	14	0.02	25	0.04	16	0.03
Germany	Y	C	106	106	0.13	102	0.12	89	0.11	124	0.15
Greece	Y	C	22	22	0.20	28	0.25	10	0.09	5	0.04
Hungary	Y	C	8	8	0.08	7	0.07	8	0.08	6	0.06
Ireland	Y	C	1	1	0.02	2	0.05	0	0.00	0	0.00
Italy	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	15	15	0.66	21	0.92	12	0.53	22	0.96
Lithuania	Y	A	36	36	1.07	32	0.95	12	0.35	0	0.00
Luxembourg	Y	C	0	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
Netherlands	N	A	25	25	-	12	-	6	0.04	31	-
Poland	Y	C	25	25	0.07	28	0.07	40	0.10	65	0.17
Portugal	Y	C	4	4	0.04	4	0.04	10	0.09	9	0.09
Romania	Y	C	42	42	0.20	119	0.55	99	0.46	-	-
Slovakia	Y	C	4	4	0.07	5	0.09	4	0.07	6	0.11
Slovenia	Y	C	9	9	0.44	7	0.35	1	0.05	3	0.15
Spain	Y	C	86	86	0.19	109	0.24	131	0.29	123	0.28
Sweden	Y	C	12	12	0.13	13	0.14	24	0.26	7	0.08
United Kingdom	Y	C	7	7	0.01	9	0.01	7	0.01	14	0.02
EU total	**-**	**-**	**790**	**789**	**0.18**	**909**	**0.22**	**966**	**0.22**	**956**	**0.24**
Iceland	-	-	-	-	-	-	-	-	-	0	0.00
Liechtenstein	-	-	-	-	-	0	0.00	0	0.00	-	-
Norway	Y	C	0	0	0.00	2	0.04	0	0.00	0	0.00
Total	**-**	**-**	**790**	**789**	**0.18**	**911**	**0.21**	**966**	**0.22**	**956**	**0.23**

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

Three countries, Bulgaria, Germany and Spain, accounted for 65.2 % of reported confirmed cases in 2009. Bulgaria and Lithuania had the highest notification rates, 4.25 and 1.07 cases per 100 000 population, respectively (Table 2.3.6).

Information on age and gender was provided for 384 confirmed cases. The male-to-female ratio was 1.1:1 in 2009. The highest confirmed case rate was in 65-year-old or older males (0.15 per 100 000), followed by 45–64-year-old male and females (0.14 per 100 000) (Figure 2.3.17).

Trends and seasonality

A statistically significant decreasing trend in the confirmed case rate of human echinococosis was detected during a four year period (2006–2009) at EU level ($p<0.001$). This was based on data received from 24 EU Member States and one EEA/EFTA country that reported consistently during these years and were included in the trend analysis (Figure 2.3.17).

Echinococcosis cases were reported throughout the year, in 2009 (Figure 2.3.18).

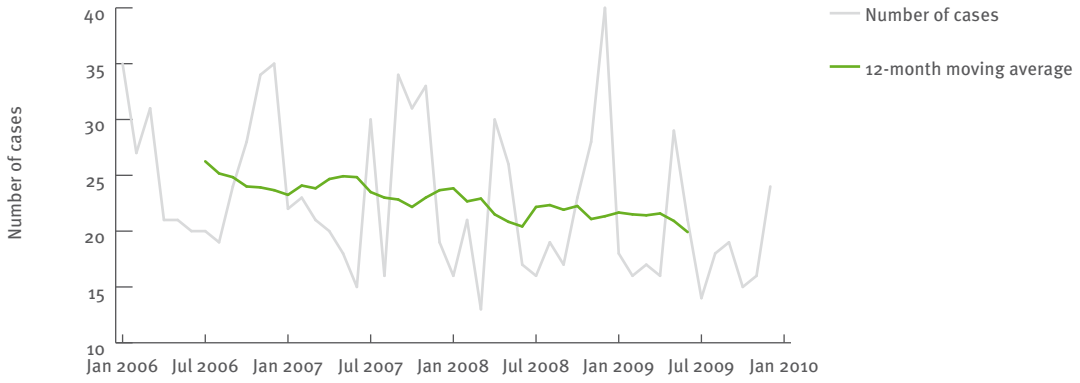
Discussion

Echinococcosis is still present in many countries of the EU. While uncommon, the rate of reported confirmed cases has followed a significant four-year decreasing trend. A contribution to this could be a decreasing prevalence over time of *Echinococcus* granulosus in farm animals and dogs, as a result of sustained eradication campaigns in several countries. However, some countries, including Romania and Bulgaria, still report an increasing proportion of positive cattle and sheep to *Echinococcus*[1].

References

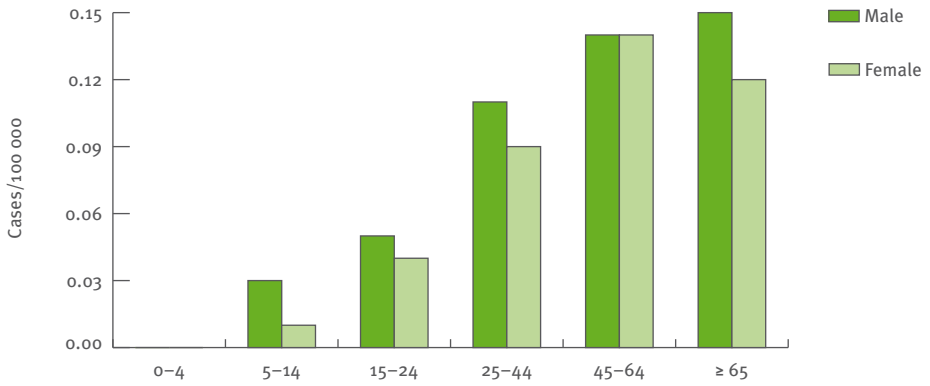
1 European Food Safety Authority (EFSA). The Community Summary Report on Trends and Sources of Zoonoses and Zoonotic Agents and Food-borne Outbreaks in the European Union in 2009. EFSA Journal 2011;9(3):2090 [378 pp.]. doi:10.2903/j.efsa.2011.2090.

Figure 2.3.16. Trend and number of reported confirmed echinococcosis cases by month, in EU and EEA/EFTA countries, 2006–09



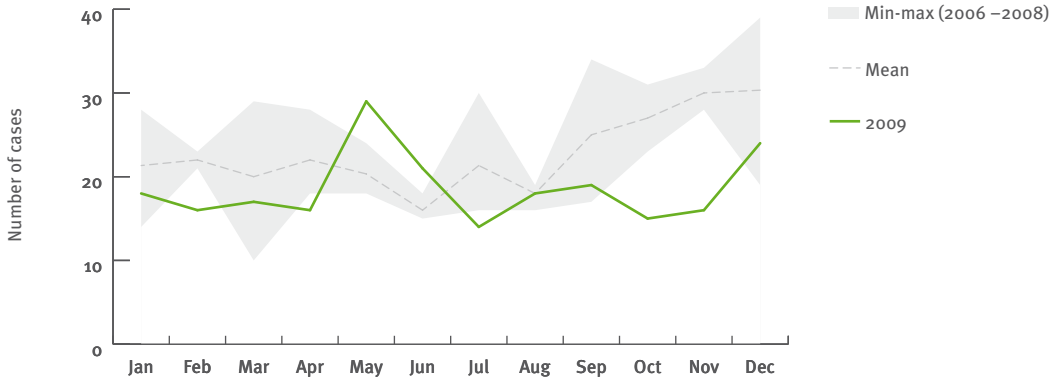
Source: Country reports: Cyprus, Czech Republic, Estonia, Finland, France, Greece, Hungary, Ireland, Latvia, Luxembourg, Malta, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.3.17. Rates of reported confirmed echinococcosis cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.3.18. Seasonal distribution of reported confirmed cases of echinococcosis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Cyprus, Czech Republic, Estonia, Finland, France, Greece, Hungary, Ireland, Latvia, Luxembourg, Malta, 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	-	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
Netherlands	NL-LIMS	V	O	P	C	Y	Y	Y	-	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
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	N	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 human cases of VTEC have followed a significant increasing four-year trend in EU and EEA/EFTA countries since 2006.
- In 2009, the notification rate of VTEC in the EU and EEA/EFTA countries was 0.86 cases per 100 000 population.
- The highest notification rate was in male children aged 0–4 years, 6.73 cases per 100 000 population;
- In 2009, the number of reported VTEC cases that developed haemolytic uremic syndrome (242) increased by 66 % compared to 2008 (146).

STEC/VTEC is a potentially fatal disease caused by infection with verocytotoxin- or Shiga toxin-producing strains of the usually innocuous bacterium *Escherichia coli*. The main hosts for these strains are cattle. Transmission occurs primarily by eating undercooked infected beef, and then, secondarily, by person-to-person transmission. The disease remains relatively uncommon in EU countries but there is concern the occurrence of severe disease may be increasing.

Epidemiological situation in 2009

In 2009, 3689 confirmed cases of STEC/VTEC were reported by 27 EU and EEA countries. The overall notification rate was 0.86 cases per 100 000, an increase of 15 % compared with 2008 (Table 2.3.7).

Table 2.3.7. Number and rate of STEC/VTEC cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	91	91	1.09	69	0.83	82	0.99	41	0.50
Belgium	Y	C	96	96	0.90	103	0.97	47	0.44	46	0.44
Bulgaria	Y	C	0	0	0.00	0	0.00	0	0.00		
Cyprus	Y	C	0	0	0.00	2	0.25	0	0.00		
Czech Republic	-	-	-	-	-	-	-	-	-	–	
Denmark	Y	C	173	160	2.90	161	2.94	156	2.86	146	2.69
Estonia	Y	C	4	4	0.30	3	0.22	3	0.22	8	0.59
Finland	Y	C	29	29	0.54	8	0.15	12	0.23	14	0.27
France	Y	C	93	93	0.14	85	0.13	58	0.09	67	0.11
Germany	Y	C	878	878	1.08	876	1.07	870	1.06	1183	1.44
Greece	-	-	-	-	-	0	0.00	1	0.01	1	0.01
Hungary	Y	C	1	1	0.01	0	0.00	1	0.01	3	0.03
Ireland	Y	C	240	237	5.33	213	4.84	115	2.67	153	3.64
Italy	Y	C	71	51	0.08	26	0.04	27	0.05	17	0.03
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	A	0	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	5	5	1.01	4	0.83	1	0.21	2	0.43
Malta	Y	C	8	8	1.93	8	1.95	4	0.98	21	5.19
Netherlands	Y	C	313	313	1.90	92	0.56	88	0.54	41	0.25
Poland	Y	C	0	0	0.00	3	0.01	2	0.01	4	0.01
Portugal	-	-	-	-	-	-	-	-	-	–	
Romania	Y	C	0	0	0.00	4	-	0	0.00	–	
Slovakia	Y	C	14	14	0.26	8	0.15	6	0.11	8	0.15
Slovenia	Y	C	12	12	0.59	7	0.35	4	0.20	30	1.50
Spain	N	C	14	14	0.03	24	0.05	19	0.04	13	0.03
Sweden	Y	C	228	228	2.46	304	3.31	262	2.87	265	2.93
United Kingdom	Y	C	1339	1339	2.19	1164	1.90	1149	1.89	1294	2.14
EU total	**-**	**-**	**3609**	**3573**	**0.75**	**3164**	**0.77**	**2907**	**0.67**	**3357**	**0.76**
Iceland	Y	C	8	8	2.50	4	1.27	13	4.23	1	0.33
Liechtenstein	-	-	-	-	-	0	0.00	-	-	-	
Norway	Y	C	108	108	2.25	22	0.46	26	0.56	50	1.08
Total	**-**	**-**	**3734**	**3689**	**0.86**	**3190**	**0.76**	**2946**	**0.67**	**3408**	**0.76**

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

Five EU Member States (United Kingdom, Germany, Netherlands, Ireland and Sweden) accounted for 81% of the total number of confirmed cases reported in 2009. The number of cases reported by the Netherlands showed a threefold increase from 2008 (92) to 2009 (313) due to a nationwide outbreak associated to consumption of contaminated beef steak tartare with VTEC O:157[1] (Table 2.3.7).

The rate of reported confirmed VTEC cases has followed a steadily increasing trend since 2007 (Figure 2.3.19). This was based on data received from 25 EU Member States and two EEA/EFTA countries that reported consistently during the four-year period. By country, only six Member States had a significant increasing trend from 2006 to 2009 (Belgium, France, Italy, Luxembourg, Malta and the Netherlands). No significant decreasing trends were observed in any countries.

The highest rate of confirmed cases was reported in 0–4 year-old males (6.98 cases per 100 000 population) followed by 0-4 year old females (5.82 cases per 100 000 population). Notification rates were remarkably lower in older groups of age (Figure 2.3.20).

Trends and seasonality

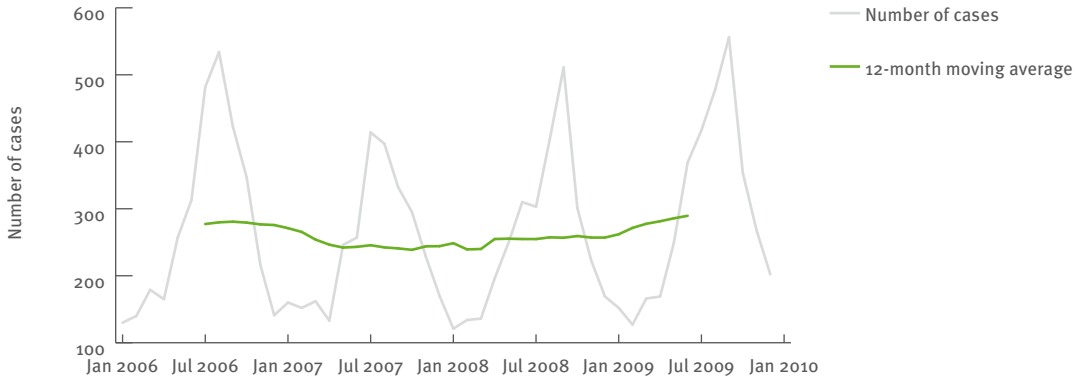
Reported cases of VTEC were distributed unevenly during the year presenting a marked seasonality with the highest number reported in late summer/early autumn (July–September) for the last four years. Moreover, the number of reported cases during September 2009 was higher than in the previous three years (Figure 2.3.21).

Enhanced surveillance

More than half (52%) of reported confirmed human VTEC infections in 2009 were associated with the O:157 serogroup. The majority of O:157-associated confirmed cases (80%) were reported by the United Kingdom and Ireland[2].

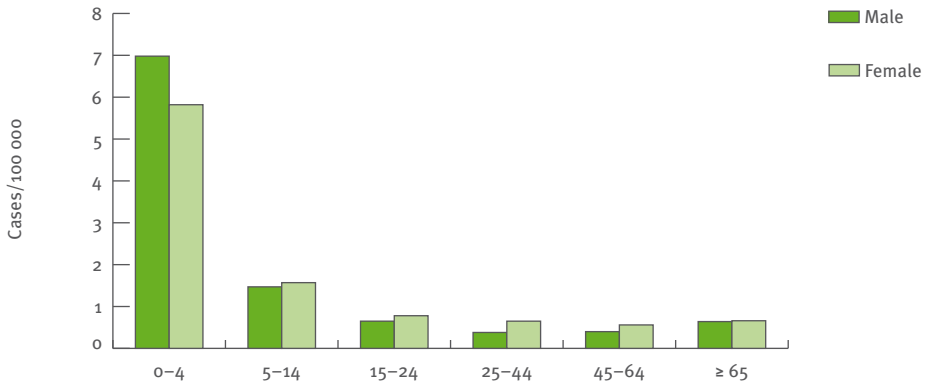
A total of 242 confirmed VTEC cases developed haemolytic uremic syndrome (HUS). This represents an increase of 66% compared with the number of HUS cases reported in 2008 (146). Sixty-three per cent of HUS cases (n=153) were reported in 0–4 year-old children[2].

Figure 2.3.19. Trend and number of reported confirmed STEC/VTEC cases by month, in EU and EEA/EFTA countries, 2006–09



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

Figure 2.3.20. Rates of reported confirmed STEC/VTEC cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: 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.

Discussion

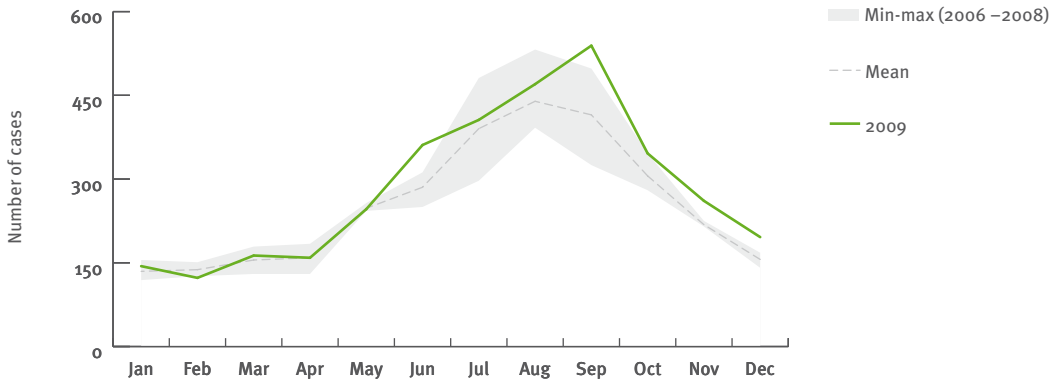
Several VTEC outbreaks were detected in the United Kingdom and the Netherlands in 2009[1,4]. One of the largest VTEC outbreaks was linked to an open farm in the United Kingdom with most of the cases (76/93) under 10 years of age[5]. In the Netherlands, this increase was mainly due to a nationwide outbreak associated to consumption of contaminated beef steak tartare with VTEC O:157[1].

These large nationwide outbreaks in two countries have contributed to the increasing trend in Europe, strengthened the seasonal pattern, and increased the number of HUS cases[2]. As in previous years, VTEC O:157 was the most commonly reported serotype; however, this may be overestimated as some countries focus surveillance on this serotype. As in previous years, two countries, the United Kingdom and Ireland, accounted for most of the reported VTEC O:157 cases.

References

1. Greenland K, de Jager C, Heuvelink A, van der Zwaluw K, Heck M, Notermans D, et al. Nationwide outbreak of STEC O157 infection in the Netherlands, December 2008–January 2009: continuous risk of consuming raw beef products. Euro Surveill. 2009;14(8):pii=19129.
2. European Food Safety Authority (EFSA). The Community Summary Report on Trends and Sources of Zoonoses and Zoonotic Agents and Food-borne Outbreaks in the European Union in 2009. EFSA Journal 2011;9(3):2090 [378 pp.]. doi:10.2903/j.efsa.2011.2090
3. European Centre for Disease Prevention and Control. Annual Threat report 2009. Stockholm: ECDC; 2010.
4. Department for Environment, Food and Rural Affairs (DEFRA – UK). Zoonoses report, UK 2009. London: DEFRA; 2011.
5. Independent Investigation Committee. Review of major outbreak of E. coli O157 in Surrey, 2009. Published June 2010. Available from: http://www.griffininvestigation.org.uk/report/full_report.pdf.

Figure 2.3.21. Seasonal distribution of reported confirmed cases of STEC/VTEC, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: 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.

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

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	
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	N	N	N	Y
United Kingdom	UK-ENTEROHAEMORHAGIC_ECOLI	O	Co	A	C	Y	N	Y	Y	Y

Giardiasis

- The rate of confirmed giardiasis cases has been relatively stable over the last four years in the EU and EEA/EFTA countries, with a rate of 5.6 per 100 000 in 2009.
- 82 % of cases were reported from Romania. However, due to uncertainty on whether the confirmed cases from Romania conform to the *Giardia lamblia* case definition, only the total number of cases is reported this year from Romania. Although the total number of cases of giardiasis reported from Romania has been decreasing since 2006, the rate is still considerably higher than for other EU and EEA/EFTA countries.

Giardiasis is the most frequently reported parasitic gastrointestinal infection in the EU. It is caused by the protozoan parasite *Giardia lamblia*. Humans are the primary reservoir, and infection arises from contact with the oocysts in various settings, including contaminated water and care centres for young children who are not toilet trained[1,2].

Epidemiological situation in 2009

In 2009, 93 375 cases were reported by 22 EU and EEA/EFTA countries (Table 2.3.8). Eighty-two per cent of the total cases were reported from Romania but due to uncertainties regarding laboratory confirmation, and inclusion of cases from screening programmes, these cases were not classified as confirmed. Therefore, only

Table 2.3.8. Number and rate of giardiasis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	65	31	0.37	47	0.56	66	0.80	84	1.02
Belgium	Y	C	1218	1218	11.42	1213	11.37	1081	10.21	1238	11.78
Bulgaria	Y	A	2096	2096	27.56	2141	28.02	0	0.00	2212	28.66
Cyprus	Y	C	2	2	0.25	7	0.89	4	0.51	6	0.78
Czech Republic	-	-	-	-	-	-	-	-	-	141	1.38
Denmark	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	207	207	15.44	264	19.69	418	31.14	469	34.88
Finland	Y	C	378	378	7.10	427	8.06	294	5.57	0	0.00
France	-	-	-	-	-	-	-	-	-	-	-
Germany	Y	C	3962	3962	4.83	4763	5.79	3651	4.44	3661	4.44
Greece	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	100	100	1.00	138	1.37	86	0.85	31	0.31
Ireland	Y	C	62	62	1.39	70	1.59	62	1.44	65	1.54
Italy	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	A	36	36	1.59	28	1.23	34	1.49	9	0.39
Lithuania	Y	A	13	13	0.39	15	0.45	23	0.68	0	0.00
Luxembourg	Y	C	2	2	0.41	1	0.21	0	0.00	0	0.00
Malta	Y	C	2	2	0.48	2	0.49	10	2.45	11	2.72
Netherlands	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	A	2280	2184	5.73	3096	8.12	2981	7.82	2875	7.53
Portugal	-	-	-	-	-	-	-	-	-	-	-
Romania[a]	Y	A	76671	-	-	-	-	-	-	-	-
Slovakia	Y	C	139	139	2.57	125	2.31	122	2.26	93	1.73
Slovenia	Y	C	9	9	0.44	14	0.70	17	0.85	-	-
Spain[b]	N	C	869	869	-	683	-	904	-	909	-
Sweden	Y	C	1210	1210	13.07	1529	16.65	1413	15.50	1282	14.17
United Kingdom	Y	C	3719	3719	6.08	3632	5.94	3257	5.36	3167	5.24
EU total	**-**	**-**	**93040**	**16239**	**5.60[c]**	**18195**	**6.38[c]**	**14423**	**4.93[c]**	**16253**	**5.44[c]**
Iceland	Y	C	27	27	8.45	33	10.46	46	14.95	39	13.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	308	308	6.42	270	5.70	290	6.20	294	6.34
Total	**-**	**-**	**93375**	**16574**	**5.61[c]**	**18498**	**6.37[c]**	**14759**	**4.96[c]**	**16586**	**5.46[c]**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified. (a) Only the total number of cases is reported, as case definition not sufficiently specific for confirmed cases. (b) Sentinel surveillance system based on a limited number of select laboratories. (c) Overall rate excludes data from Spain.

16 574 cases are reported here as confirmed across the EU/EEA area. The Romanian data has also not been included in European rate calculations for confirmed cases.

The highest rate of confirmed cases was reported by Bulgaria (28 per 100 000), followed by Estonia (15 per 100 000), Sweden (13 per 100 000) and Iceland (8 per 100 000). The overall confirmed case rate was 5.61 per 100 000 population. This reported rate has been relatively consistent over the last four years throughout the EU and EEA/EFTA.

Information on the importation status of reported cases was only available from 10 countries and for 5 371 cases. Of these, 1 629 cases (30 %) were reported as imported cases.

In Norway, 228 out of 272 cases with importation status were reported as being imported (84 %). In Germany, 1 201 out of 3 765 cases with importation status were reported as being imported (32 %).

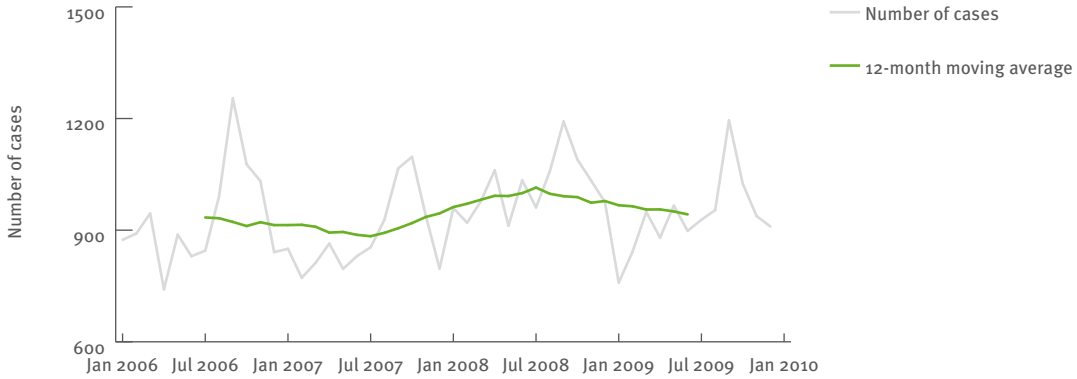
Age and gender distribution

Nineteen countries provided information on the age and gender of their cases. Age and gender data was reported for 12 077 cases. Similar to the previous years, the highest notification rate occurred in the age group 0–4 years for both males and females (Figure 2.3.23).

Seasonality

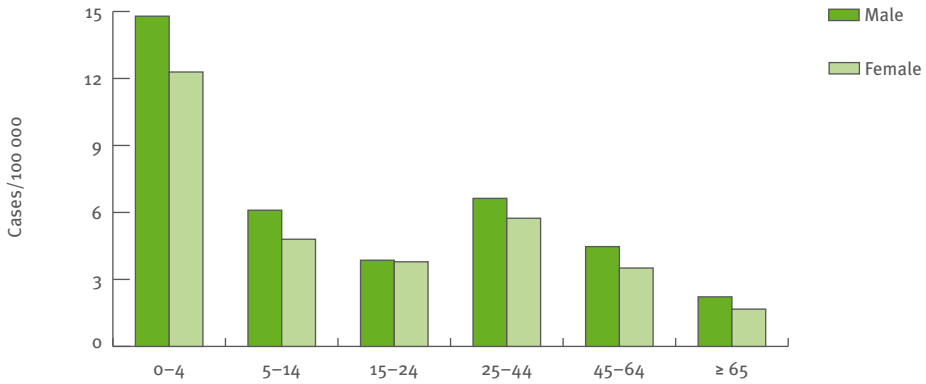
Data on seasonality for 2009 was available for 11 435 reported cases from 15 countries. Cases occur all year round, although a slight increase has consistently been observed in the autumn months. Figure 2.3.24 shows the seasonality of reported cases between 2006 and 2009.

Figure 2.3.22. Trend and number of reported confirmed giardiasis cases by month, in EU and EEA/EFTA countries, 2006–09



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

Figure 2.3.23. Rates of reported confirmed giardiasis cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Discussion

Romania reported 82 % of total cases of giardiasis in the EU/EEA region in 2009. However, reports from Romania have included screening and other cases beyond the case definition. No major threats or outbreaks of giardiasis were reported in 2009.

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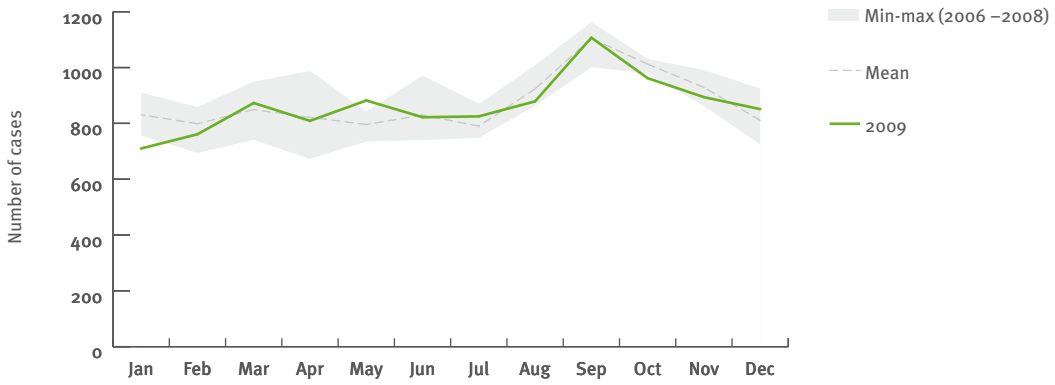
Figure 2.3.24. Seasonal distribution of reported confirmed cases of giardiasis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: 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	-	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	N	N	N	Y
United Kingdom	UK-GIARDIASIS	O	Co	P	C	Y	N	Y	Y	Y

Hepatitis A

- The overall confirmed case rate of hepatitis A in 2009, 3.4 per 100 000 population, was similar to the one in 2008 (3.3 per 100 000 population).
- As observed in previous years, children aged 5–14 years have the highest confirmed case rates. The true burden of infection in children is probably underestimated, as younger children under five years often have asymptomatic hepatitis A infection.
- In general, the second half of the year (late summer and autumn) shows the highest number of reported cases.
- The majority (82 %) of cases with information on importation status were indigenous.

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 2009

In 2009, 17 370 confirmed cases of hepatitis A (total 18 269) were reported by 29 countries in the EU and EEA/EFTA (Liechtenstein did not report) (Table 2.3.9). The overall confirmed case rate was 3.44 per 100 000 population, which is slightly higher than the rate in 2007 (2.79 per 100 000) and 2008 (3.34 per 100 000). As in 2008, Latvia (101 per 100 000) reported the highest confirmed case rate, followed by Slovakia (27 per 100 000), Romania (17 per 100 000), Bulgaria (14 per 100 000), and

Table 2.3.9. Number and rate of hepatitis A cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	27	1	0.01	4	0.05	5	0.06	1	0.01
Belgium	Y	C	130	130	1.22	365	3.42	209	1.97	225	2.14
Bulgaria	Y	A	1064	1064	13.99	907	11.87	2790	36.33	7266	94.13
Cyprus	Y	C	4	4	0.50	4	0.51	4	0.51	3	0.39
Czech Republic	Y	C	1104	1104	10.55	1649	15.88	126	1.22	131	1.28
Denmark	Y	C	45	45	0.82	44	0.80	306	5.62	42	0.77
Estonia	Y	C	19	19	1.42	13	0.97	10	0.74	5	0.37
Finland	Y	C	22	22	0.41	22	0.42	15	0.28	0	0.00
France	Y	C	1547	1547	2.40	1204	1.88	1010	1.59	1336	2.12
Germany	Y	C	929	929	1.13	1072	1.30	936	1.14	1226	1.49
Greece	Y	C	88	86	0.76	120	1.07	286	2.56	123	1.11
Hungary	Y	C	107	107	1.07	168	1.67	251	2.49	286	2.84
Ireland	Y	C	50	49	1.10	41	0.93	29	0.67	38	0.90
Italy	Y	C	1500	1500	2.50	1350	2.26	1159	1.96	890	1.51
Latvia	Y	A	2291	2276	100.65	2798	123.21	15	0.66	47	2.05
Lithuania	Y	A	16	16	0.48	20	0.59	23	0.68	0	0.00
Luxembourg	Y	C	5	5	1.01	3	0.62	1	0.21	3	0.64
Malta	Y	C	9	9	2.18	4	0.97	3	0.74	7	1.73
Netherlands	Y	C	176	154	0.93	87	0.53	165	1.01	262	1.60
Poland	Y	A	652	644	1.69	189	0.50	36	0.09	105	0.28
Portugal	Y	C	27	27	0.25	21	0.20	17	0.16	40	0.38
Romania[a]	Y	C	3840	3731	17.35	3161	14.68	4982	23.10	5351	24.76
Slovakia	Y	C	1449	1447	26.74	729	13.50	383	7.10	461	8.55
Slovenia	Y	C	12	12	0.59	17	0.85	15	0.75	10	0.50
Spain[b]	Y	C	2522	1808	3.95	1877	4.15	698	1.57	1079	2.47
Sweden	Y	C	154	154	1.66	78	0.85	68	0.75	80	0.88
United Kingdom	Y	C	437	437	0.71	794	1.30	377	0.62	417	0.69
EU total	**-**	**-**	**18226**	**17327**	**3.47**	**16741**	**3.36**	**13919**	**2.81**	**19434**	**3.94**
Iceland	Y	C	3	3	0.94	1	0.32	2	0.65	2	0.67
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	40	40	0.83	49	1.03	29	0.62	41	0.88
Total	**-**	**-**	**18269**	**17370**	**3.44**	**16791**	**3.34**	**13950**	**2.79**	**19477**	**3.91**

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

the Czech Republic (11 per 100 000). All other countries reported confirmed case rates below 5 per 100 000.

Data on the importation status of reported cases (n=4 560) was available from 13 EU Member States plus Norway and Iceland. The majority of the infections were reported as indigenous (82 % of all cases with information on importation status). Indigenous cases dominated in Spain (100 %), Malta (100 %), United Kingdom (94 %), Hungary (91 %), Greece (90 %), Ireland (74 %), France (71 %), Germany (70 %), Slovenia (67 %), Iceland (67 %) and the Netherlands (54 %). In all other reporting countries, however, imported cases accounted for more than 50 % of all cases.

In Spain, an outbreak of hepatitis A related to men who have sex with men was observed between September 2008 and March 2009, including at least 87 cases. Another outbreak of hepatitis A was continuing in Latvia from 2008.

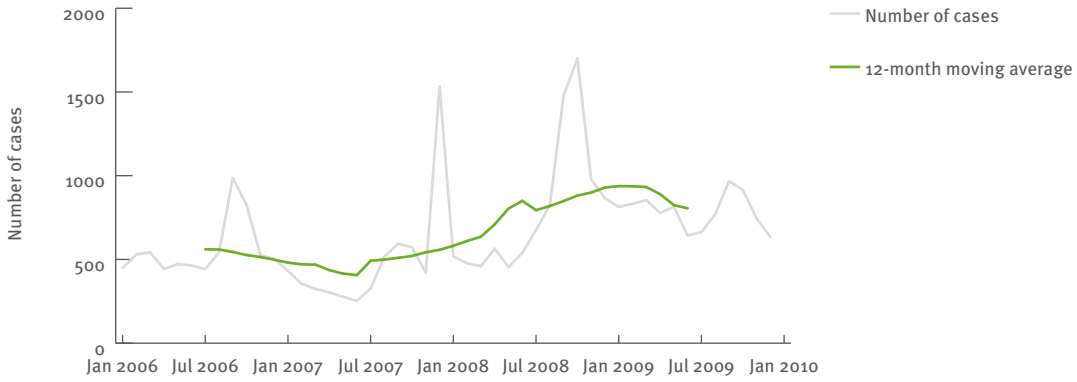
Age and gender distribution

Data on age groups were available from 28 countries. As in the previous two years, the highest confirmed case rate occurred in children 5–14 years of age (8.4 per 100 000) followed by children under five with 7.5 per 100 000 (Figure 2.3.26). Data on gender distribution was available for 16 648 cases and from 27 of 29 countries with confirmed cases of hepatitis A. The male-to-female ratio was 1.5:1, with an overall confirmed case rate of 4.3 per 100 000 among men compared with 2.8 per 100 000 among women.

Seasonality

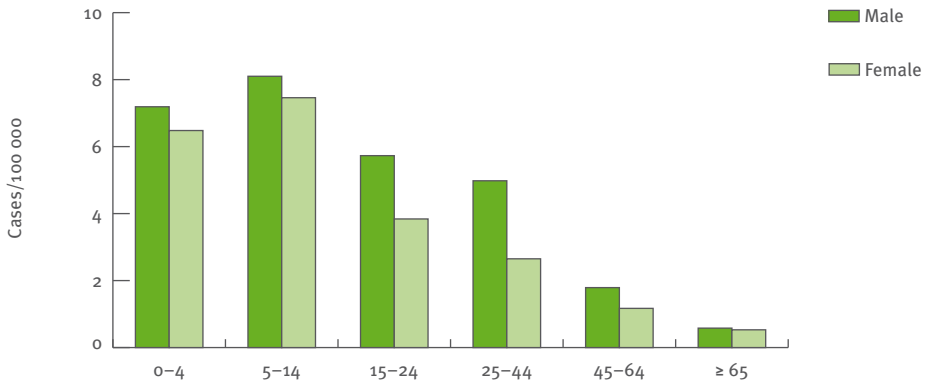
Data on seasonality was available for 12 875 cases from 25 countries (Latvia, Luxembourg, Lithuania and Poland reported unknown seasonality for all cases). In general, a peak in reported cases was observed from September to November in 2009 (Figure 2.3.27). Seasonality patterns showed considerable variations among the

Figure 2.3.25. Trend and number of reported confirmed hepatitis A cases by month, in EU and EEA/EFTA countries, 2006–09



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

Figure 2.3.26. Rates of reported confirmed hepatitis A cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: 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.

different countries, with a pronounced autumn peak in Romania, Slovenia, Bulgaria and the Czech Republic, while in Spain and Italy most cases were reported in late winter and spring.

Discussion

As in previous years, the majority of hepatitis A infections were reported as indigenous, thus confirming the relevance of hepatitis A as an endemic infection in the EU. However, epidemiologic patterns show a considerable variation among EU countries, most likely related to different routes of infection. There is increasing evidence from molecular epidemiology that many apparently indigenous cases are secondary to imported cases[1]. Besides food-borne transmission of hepatitis A, other risk factors with different transmission characteristics and risk groups may play a significant role.

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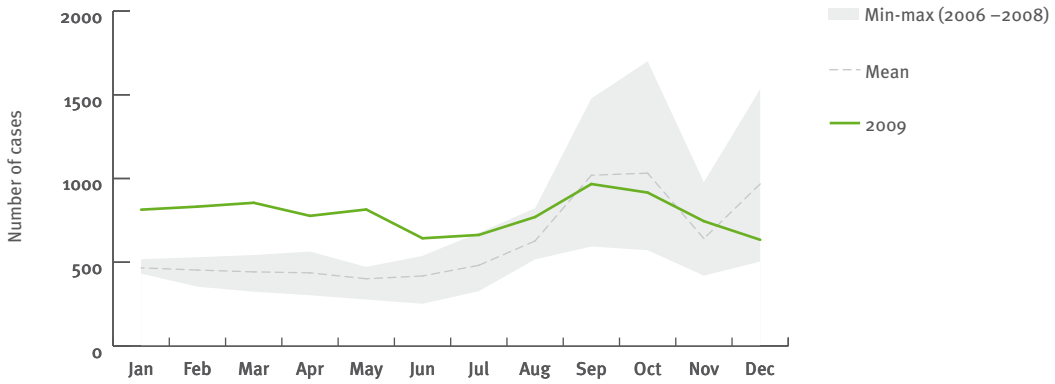
Figure 2.3.27. Seasonal distribution of reported confirmed cases of hepatitis A, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Belgium, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, 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-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	-	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

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	
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	N	N	N	Y
United Kingdom	UK-HEPATITISA	O	Co	P	C	Y	N	Y	N	Y

Leptospirosis

- In 2009, the confirmed case rate of leptospirosis slightly decreased from 0.15 per 100 000 population in 2008 to 0.14. The disease remains a relatively rare infection in EU countries.
- Men of working age were the most affected by leptospirosis, and most infections were contracted in late summer and autumn.

Leptospirosis is an uncommon infection in the EU, caused by bacteria of the genus *Leptospira*. The bacterium colonises a wide range of domestic and wild animal hosts; human infection results from contact with the urine of infected animals.

Epidemiological situation in 2009

In 2009, 544 confirmed cases were reported from 26 EU countries (Table 2.3.20). This gives an overall confirmed case rate of 0.14 cases per 100 000 population, which is slightly lower than that reported in 2008 (0.15 per 100 000).

Information on the importation status of reported cases was only available from 13 countries and for 235 cases. Of these, 51 cases (28 %) were related to travelling outside their home countries.

Age and gender distribution

Gender was reported for all 544 confirmed cases. Out of these, 437 were reported in males and 107 in females

Table 2.3.10. Number and rate of leptospirosis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	9	9	0.11	11	0.13	9	0.11	8	0.10
Belgium	Y	A	8	8	0.07	5	0.05	8	0.08	21	0.20
Bulgaria	Y	A	11	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
Czech Republic	Y	C	32	32	0.31	17	0.16	24	0.23	18	0.18
Denmark	Y	C	2	2	0.04	8	0.15	8	0.15	5	0.09
Estonia	Y	C	1	1	0.08	2	0.15	2	0.15	6	0.45
Finland	Y	C	12	12	0.23	8	0.15	2	0.04	5	0.10
France	-	-	-	-	-	-	-	-	-	-	-
Germany	Y	C	92	92	0.11	66	0.08	165	0.20	46	0.06
Greece	Y	C	31	31	0.28	12	0.11	13	0.12	16	0.14
Hungary	Y	C	9	9	0.09	15	0.15	31	0.31	27	0.27
Ireland	Y	C	25	25	0.56	29	0.66	22	0.51	18	0.43
Italy	Y	C	36	36	0.06	40	0.07	45	0.08	22	0.04
Latvia	Y	A	5	5	0.22	3	0.13	2	0.09	5	0.22
Lithuania	Y	A	5	5	0.15	2	0.06	6	0.18	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	C	3	3	0.73	2	0.49	1	0.25	1	0.25
Netherlands	Y	C	25	25	0.15	37	0.23	37	0.23	23	0.14
Poland	Y	C	5	4	0.01	2	0.01	7	0.02	3	0.01
Portugal	Y	C	33	32	0.30	15	0.14	38	0.36	35	0.33
Romania	Y	C	143	127	0.59	200	0.93	296	1.37	386	1.79
Slovakia	Y	C	16	16	0.30	23	0.43	17	0.32	22	0.41
Slovenia	Y	C	2	2	0.10	6	0.30	7	0.35	5	0.25
Spain[a]	N	C	0	0	-	5	-	3	-	3	-
Sweden	Y	C	4	4	0.04	6	0.07	1	0.01	2	0.02
United Kingdom	Y	C	53	53	0.09	76	0.12	81	0.13	56	0.09
EU Total	**-**	**-**	**562**	**544**	**0.14[b]**	**599**	**0.15[b]**	**841**	**0.22[b]**	**753**	**0.19[b]**
Iceland	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**562**	**544**	**0.14[b]**	**599**	**0.15[b]**	**841**	**0.22[b]**	**753**	**0.19[b]**

Source: Country reports. A: Aggregated data report; C: Case-based report; —: No report. (a) Sentinel surveillance system based on a limited number of select laboratories. (b) Overall rate excludes data from Spain.

(male-to-female ratio of 4.0:1). Information on age was reported for all confirmed cases. As in 2008, the confirmed case rate was highest in individuals aged between 15–64 years old. In all adult age groups, confirmed case rates in males were higher than in females (Figure 2.3.29).

Seasonality

Information on seasonality was provided for all 544 confirmed cases. In line with earlier annual reports, the majority of confirmed cases in 2009 were reported in late summer and fall (Figure 2.3.30).

Discussion

Leptospirosis still remains a relatively rare disease in EU countries. Highest incidences are reported in men of working age (25–64 years of age), most likely related to occupational exposures in some of these cases. The infection is frequently contracted by contact to contaminated water or mud, e.g. during surface water sports[1], thus explaining the seasonality observed in 2009 and the previous years. Infection can also be acquired during international travel[2].

References

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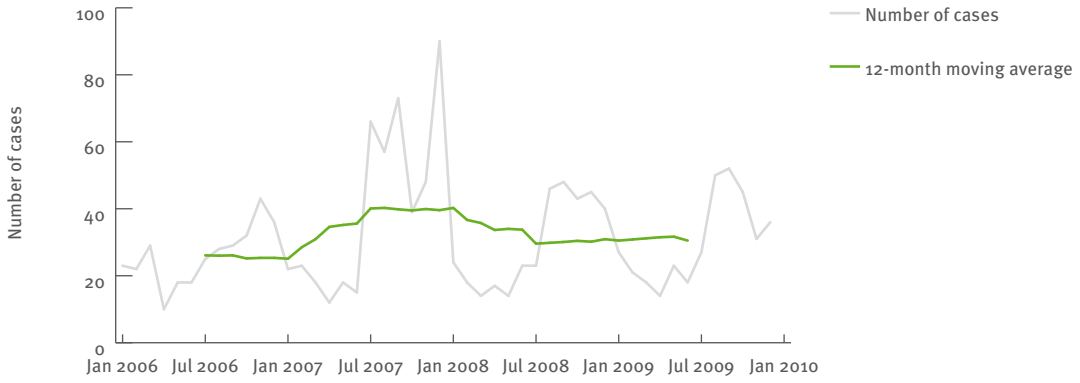
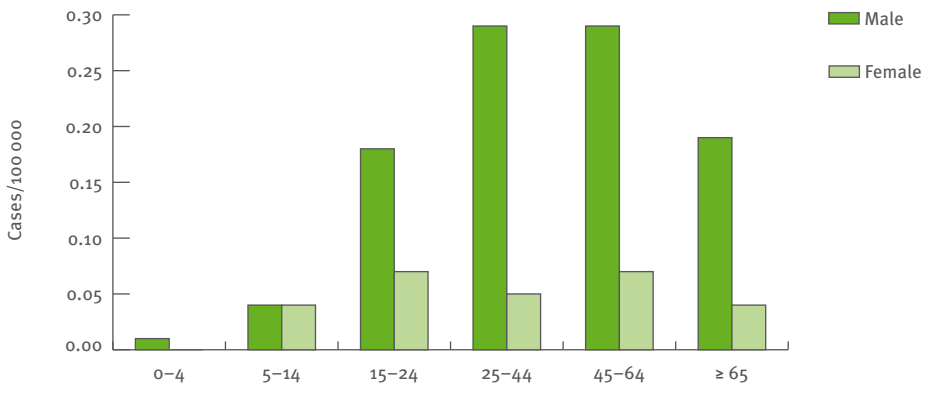
Figure 2.3.28. Trend and number of reported confirmed leptospirosis cases by month, in EU and EEA/EFTA countries, 2006–09



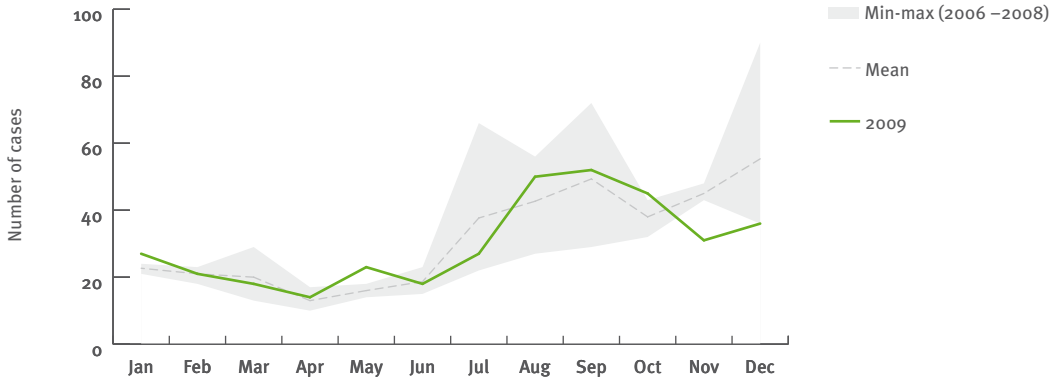
Source: Country reports: Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Sweden, United Kingdom.

Figure 2.3.29. Rates of reported confirmed leptospirosis cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: Bulgaria, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia , Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom. Cyprus and Luxembourg reported zero cases.

Figure 2.3.30. Seasonal distribution of reported confirmed cases of leptospirosis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: 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	-	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
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	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
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	N	N	N	Y
United Kingdom	UK-LEPTOSPIROSIS	O	Co	P	C	Y	N	Y	Y	Y

Listeriosis

- The EU/EEA rate of confirmed human cases of *Listeria* infection has been relatively stable in the last four years.
- Listeriosis had the highest impact among the elderly (those over 64 years) with the highest confirmed case rates and high mortality.
- Most listeriosis cases were indigenous.
- There appeared to be two main high seasons, one in summer, peaking in August–September, and one in winter, peaking in January.

Listeriosis is a disease caused by infection with the bacterium *Listeria monocytogenes*. Infection can cause meningitis, encephalitis or septicaemia in immunocompromised individuals or pregnant women, and babies may be stillborn or develop infection at or after birth. The bacterium occurs widely in the environment and its public health importance is particularly related to its potential for contamination of raw and uncooked foods.

Epidemiological situation in 2009

In 2009 1685 confirmed cases (1688 total) were reported by 28 countries (Table 2.3.11). Portugal and Liechtenstein did not report any data while Cyprus, Malta and Iceland reported zero cases. The EU/EEA confirmed case rate was 0.35 per 100 000 population, which is slightly higher than in 2008, but no significant trend was observed for the years 2006–09.

Table 2.3.11. Number and rate of listeriosis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	46	46	0.55	31	0.37	20	0.24	10	0.12
Belgium	Y	C	58	58	0.54	64	0.60	57	0.54	67	0.64
Bulgaria	Y	A	5	5	0.07	5	0.07	11	0.14	6	0.08
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.13
Czech Republic	Y	C	32	32	0.31	37	0.36	51	0.50	78	0.76
Denmark	Y	C	97	97	1.76	51	0.93	58	1.06	56	1.03
Estonia	Y	C	3	3	0.22	8	0.60	3	0.22	1	0.07
Finland	Y	C	34	34	0.64	40	0.75	40	0.76	46	0.88
France	Y	C	328	328	0.51	276	0.43	319	0.50	290	0.46
Germany	Y	C	394	394	0.48	306	0.37	356	0.43	508	0.62
Greece	Y	C	4	4	0.04	1	0.01	10	0.09	7	0.06
Hungary	Y	C	16	16	0.16	19	0.19	9	0.09	14	0.14
Ireland	Y	C	10	10	0.22	13	0.30	21	0.49	7	0.17
Italy	Y	C	88	88	0.15	118	0.20	89	0.15	59	0.10
Latvia	Y	C	4	4	0.18	5	0.22	5	0.22	2	0.09
Lithuania	Y	A	5	5	0.15	7	0.21	4	0.12	0	0.00
Luxembourg	Y	C	3	3	0.61	1	0.21	6	1.26	4	0.85
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	47	44	0.27	45	0.27	68	0.42	64	0.39
Poland	Y	C	32	32	0.08	33	0.09	43	0.11	28	0.07
Portugal	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	6	6	0.03	0	0.00	0	0.00	-	-
Slovakia	Y	C	10	10	0.18	8	0.15	9	0.17	12	0.22
Slovenia	Y	C	6	6	0.30	3	0.15	4	0.20	7	0.35
Spain[a]	N	C	121	121	-	88	-	82	-	79	-
Sweden	Y	C	73	73	0.79	60	0.65	56	0.61	42	0.46
United Kingdom	Y	C	235	235	0.38	206	0.34	260	0.43	209	0.35
EU total	**-**	**-**	**1657**	**1654**	**0.35[b]**	**1425**	**0.30[b]**	**1581**	**0.34[b]**	**1597**	**0.36[b]**
Iceland	Y	C	0	0	0.00	0	0.00	4	1.30	0	0.00
Liechtenstein	-	-	-	-	-	0	0.00	0	0.00	-	-
Norway	Y	C	31	31	0.65	34	0.72	49	1.05	27	0.58
Total	**-**	**-**	**1688**	**1685**	**0.35[b]**	**1459**	**0.31[b]**	**1634**	**0.35[b]**	**1624**	**0.37[b]**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified. (a) Surveillance system currently estimated to cover 25 % of the total population. (b) Overall rate excludes data from Spain.

The highest rates for confirmed cases were observed in the Scandinavian countries: Denmark (1.76 per 100 000), Sweden (0.79 per 100 000), Norway (0.65 per 100 000) and Finland (0.64 per 100 000), followed by Luxembourg (0.61 per 100 000). All other countries reported less than 0.60 cases per 100 000. Germany and France reported the highest number of confirmed cases.

Only 25 (2 %) of the 1 273 cases with data on importation status were reported to have been acquired outside their home country.

Age and gender distribution

Of the 1 676 confirmed listeriosis cases with information on age in 2009, the majority (58 %) occurred among individuals 65 years of age and over (Figure 2.3.32). With 1.21 cases per 100 000, this age group had the highest confirmed case rate in 2009 followed by children under the age of five and persons aged 45–64 years (both with 0.31 cases per 100 000).

The notification rates by gender were 0.39 per 100 000 in males and 0.31 per 100 000 in females. As described in previous years, this ratio varied between age groups. It is higher for older males, especially for the 65 years or older, while the rates among the age groups 15–24 and 25–44 are higher for females.

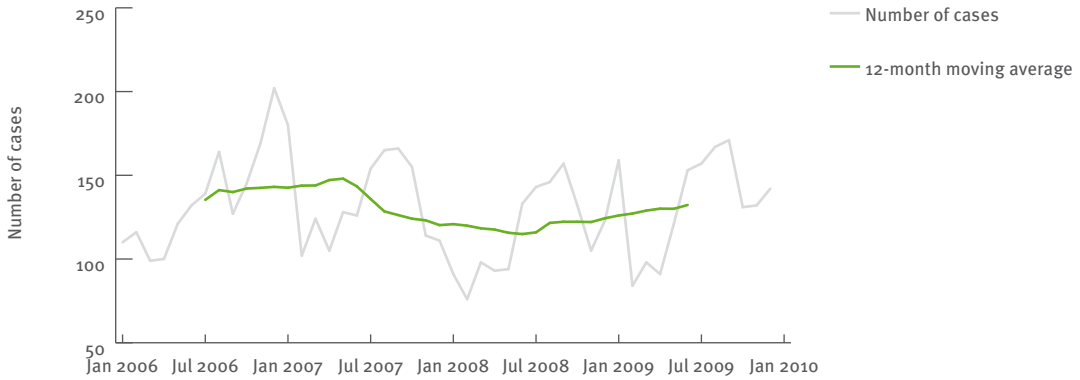
Seasonality

The seasonal trend for listeriosis in 2009 followed that of the previous three years with steadily increasing number of cases from May, peaking in August and September (Figure 2.3.33). There also appears to be a winter peak in December and January.

Enhanced surveillance

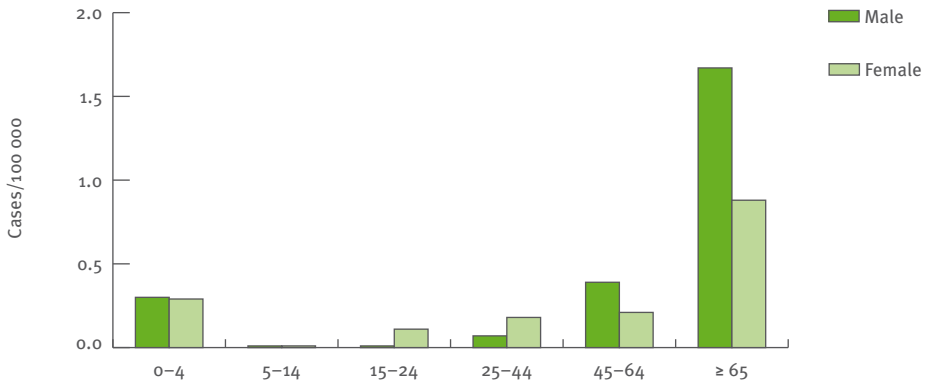
In 2009 a new variable was collected in the European Surveillance System (TESSy) – admission to hospital. Information on hospitalisation was known for only 317 cases of which 99 % had been admitted to hospital. Seventeen per cent of the cases with known outcome (785 cases) had died as a cause of the *Listeria* infection and 19 % in the oldest age group (45 years and older).

Figure 2.3.31. Trend and number of reported confirmed listeriosis cases by month, in EU and EEA/EFTA countries, 2006–09



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

Figure 2.3.32. Rates of reported confirmed listeriosis cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Information on pregnancy-associated cases was also collected in 2009. Out of the 706 cases with this information reported, 56 (8%) were pregnancy-associated.

Discussion

Listeriosis is a rare but severe disease and the risk for the elderly population, in addition to that for pregnant women, warrants increased awareness in the EU/EEA.

Denmark, which had the highest confirmed case rate reported in 2008, experienced a marked increase in 2009. This increase was seen particularly in the group of patients over 70 years of age and could not be explained by increasing number of cases in outbreaks[1]. One of the possible explanations is the increase in consumption of ready-to-eat (RTE) products in Denmark, especially in older age groups[1].

There was one multinational listeriosis outbreak identified in the EU in 2009 and continuing in 2010[2,3]. The outbreak was due to consumption of a semi-soft sour milk cheese. There were in total 34 cases identified, 25 in Austria, eight in Germany and one in the Czech Republic. The median age was 72 years and eight cases had a fatal outcome.

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2. Fretz R, Sagel U, Ruppitsch W, Pietzka AT, Stöger A, Huhulescu S, et al. Listeriosis outbreak caused by acid curd cheese 'Quargel', Austria and Germany 2009. Euro Surveill. 2010;15(5):pii=19477.
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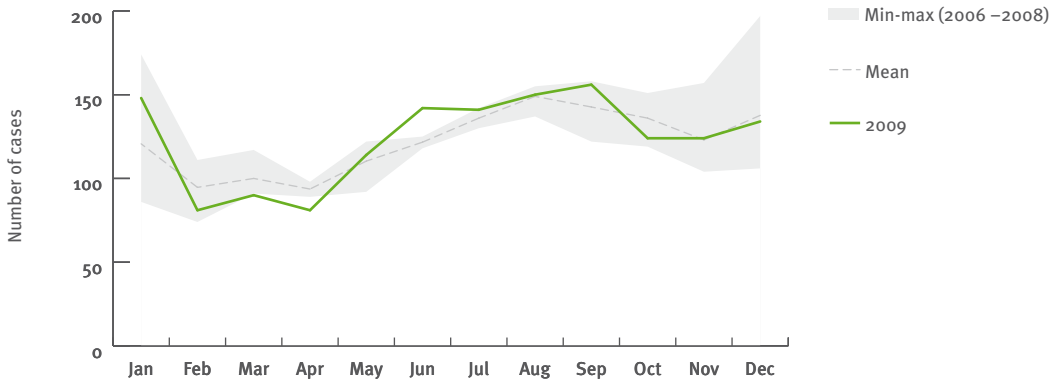
4. European Food Safety Authority (EFSA). The Community Summary Report on Trends and Sources of Zoonoses and Zoonotic Agents and Food-borne Outbreaks in the European Union in 2009. EFSA Journal 2011;9(3):2090 [378 pp.]. doi:10.2903/j.efsa.2011.2090.

Figure 2.3.33. Seasonal distribution of reported confirmed cases of listeriosis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, Malta, Netherlands, Norway, Poland, 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	-	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

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	
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	-	-	-	-	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	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	N	N	N	Y
United Kingdom	UK-LISTERIOSIS	V	Co	A	C	Y	N	Y	Y	Y

Salmonellosis

- There has been a steady decrease in the EU confirmed case rates for salmonellosis over the last four years, although it continues to be one of the most common gastrointestinal infections in the EU/EEA.
- The reported case rates are very high in children, in particular in the 0–4 year-olds (124 per 100 000 population).
- There continues to be a clear peak in cases over the summer months, although decreasing in magnitude over the years due to the general decrease of the disease.
- The number of outbreaks reported due to *Salmonella* infections continues to be large and different sources in addition to food (e.g. travel, pet products and live animal trade) were linked to multinational outbreaks in 2009.

Infection by bacteria belonging to the genus *Salmonella* continues to be one of the most common gastrointestinal illnesses reported in the EU/EEA. A rage of wild and domesticated animals host *Salmonella* species, and humans are usually infected through ingesting contaminated, undercooked food. Other means of transmission occur and outbreaks are frequent, sometime multinational in scope.

Epidemiological situation in 2009

In 2009, a total of 111 115 (non-typhoidal[i]) salmonellosis cases were reported, of which 109 885 were confirmed, by all EU and EEA/EFTA countries, except Liechtenstein (Table 2.3.12). The overall confirmed case rate was 23.6 per 100 000 population, which is a significant decrease over the last four years (Figure 2.3.34).

The Czech Republic (100.1 cases per 100 000), Slovakia (77.3), Lithuania (61.6) and Hungary (58.5) reported the highest confirmed case rates, although still lower rates than in 2008. Five countries reported fewer than 10 cases per 100 000 population: Greece, Ireland, Italy, Portugal and Romania. Over a four-year period (2006-09), 10 countries had a statistically significant decreasing trend in reported cases (Austria, Czech Republic, Germany, Greece, Hungary, Luxembourg, Poland, Portugal, Slovakia and the UK).

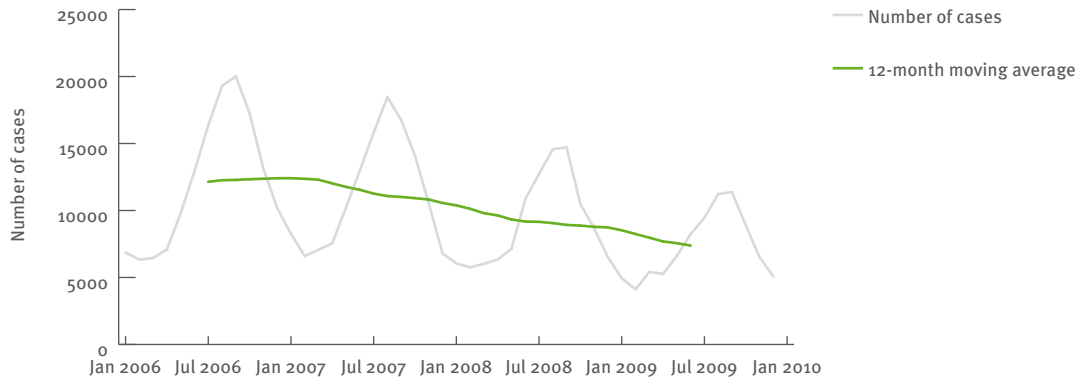
In 2009, the percentage of cases in the EU that were imported was 15 % of all confirmed cases with known importation status (n=72 440). The percentage of imported cases was highest in the Nordic countries of Finland, Sweden and Norway (over 80 %), followed by Iceland, Ireland and the United Kingdom (over 50 %). Of the imported cases, other EU and EEA/EFTA countries were mentioned as the probable country of infection in 21 % of cases where this information was available (n=9 735).

Age and gender distribution

As in previous years, the age-specific confirmed case rate in 2009 was very high in children, in particular in the 0–4 year-old age group (124 per 100 000 population) (Figure 2.3.35). The rate in the 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 a higher tendency by

i For information on typhoid and paratyphoid cases, see page 116.

Figure 2.3.34. Trend and number of reported confirmed salmonellosis cases by month, in EU and EEA/EFTA countries, 2006–09



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

Table 2.3.12. Number and rate of salmonellosis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	2775	2775	33.2	2312	27.8	3386	40.9	4787	58.0
Belgium	Y	C	3113	3113	29.2	3831	35.9	3915	37.0	3630	34.5
Bulgaria	Y	A	1315	1247	16.4	1516	19.8	1136	14.8	1056	13.7
Cyprus	Y	C	134	134	16.8	169	21.4	158	20.3	99	12.9
Czech Republic	Y	C	10670	10480	100.1	10707	103.1	17655	171.6	24186	235.9
Denmark	Y	C	2130	2130	38.6	3669	67.0	1648	30.3	1662	30.6
Estonia	Y	C	261	261	19.5	647	48.2	428	31.9	453	33.7
Finland	Y	C	2329	2329	43.7	3126	59.0	2738	51.9	2576	49.0
France	Y	C	7153	7153	11.1	7186	11.2	5313	8.3	6008	9.5
Germany	Y	C	31395	31395	38.3	42885	52.2	55399	67.3	52575	63.8
Greece	Y	C	409	403	3.6	795	7.1	706	6.3	890	8.0
Hungary	Y	C	6029	5873	58.5	6637	66.1	6578	65.3	9389	93.2
Ireland	Y	C	336	335	7.5	447	10.2	440	10.2	420	10.0
Italy	Y	C	4156	4156	6.9	6662	11.2	6731	11.4	6272	10.7
Latvia	Y	A	816	795	35.2	1229	54.1	619	27.1	781	34.0
Lithuania	Y	C	2063	2063	61.6	3308	98.3	2270	67.1	-	-
Luxembourg	Y	C	162	162	32.8	153	31.6	163	34.2	308	65.7
Malta	Y	C	125	125	30.2	161	39.2	85	20.8	63	15.6
Netherlands[a]	N	C	1205	1205	-	1627	-	1224	-	1644	10.1
Poland	Y	A	8964	8521	22.3	9148	24.0	11155	29.3	12502	32.8
Portugal	Y	C	222	220	2.1	332	3.1	438	4.1	387	3.7
Romania	Y	C	1115	1105	5.1	624	2.9	620	2.9	645	3.0
Slovakia	Y	C	4515	4182	77.3	6849	126.8	8367	155.1	8191	152.0
Slovenia	Y	C	616	616	30.3	1033	51.4	1336	66.5	-	-
Spain[b]	N	C	4304	4304	-	3833	-	3842	-	5117	-
Sweden	Y	C	3054	3054	33.0	4185	45.6	3930	43.1	4056	44.8
United Kingdom	Y	C	10479	10479	17.1	11511	18.8	13557	22.3	14124	23.4
EU total	**-**	**-**	**109845**	**108615**	**23.6[c]**	**134582**	**29.6[c]**	**153837**	**34.2[c]**	**161821**	**35.3[c]**
Iceland	Y	C	35	35	11.0	134	42.5	93	30.2	114	38.0
Liechtenstein	-	-	-	-	-		0.0	1	2.8	-	-
Norway	Y	C	1235	1235	25.7	1941	41.0	1649	35.2	1813	39.1
Total	**-**	**-**	**111115**	**109885**	**23.6[c]**	**136657**	**29.7[c]**	**155580**	**34.2[c]**	**163748**	**35.3[c]**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified. (a) Coverage by the Dutch sentinel system is about 64 %. (b) Surveillance system currently estimated to cover 25 % of the total population. (c) Rates calculated excluding the Dutch and Spanish data.

paediatricians of taking samples. There were no differences in the overall rates between males and females (ratio 1.0:1).

Seasonality

There is a clear seasonal trend for salmonellosis cases (Figure 2.3.36), with rates increasing over the summer months, peaking in August/September, and then decreasing sharply. The seasonal variation is more prominent for *S.* Enteritidis than for *S.* Typhimurium[1].

Enhanced surveillance in 2009

As in previous years, the two most common *Salmonella* serotypes in 2009 in the EU and EEA/EFTA countries were *S.* Enteritidis and *S.* Typhimurium, representing 57% and 25%, respectively, of all known serotypes (Table 2.3.13). The number of cases with *S.* Enteritidis decreased by 24 % compared with 2008, while cases with *S.* Typhimurium decreased by 12 %.

Table 2.3.13. *Salmonella* serotypes most frequently reported from EU and EEA/EFTA countries and percentage change, 2008–09

Serotype	2008	2009	Percentage change
Enteritidis	70936	53951	-24%
Typhimurium	27170	23990	-12%
Infantis	1378	1632	18%
Newport	838	788	-6%
Virchow	935	774	-17%
Derby	662	675	2%
Hadar	545	513	-6%
Saintpaul	444	473	7%
Kentucky	518	469	-9%
Stanley	619	456	-26%

Source: Country reports: 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, Sweden, Spain, United Kingdom.

Discussion

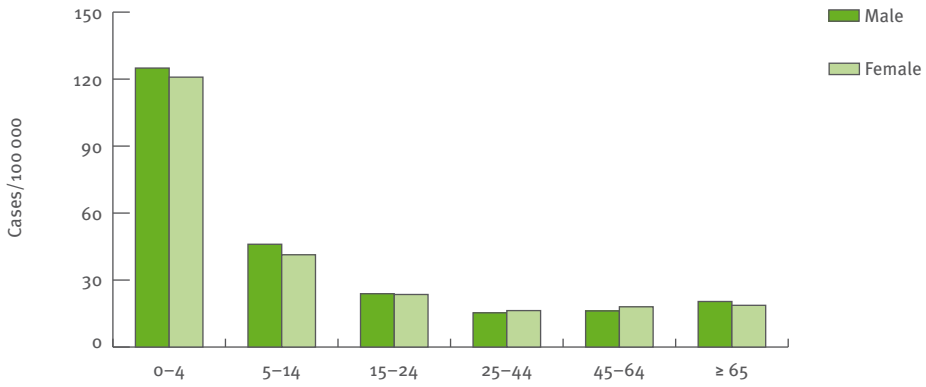
The large decrease of salmonellosis at the EU/EEA level continued in 2009. This statistically significant decreasing trend has been observed during the last four and even five years[1]. This is most likely due to the increasing implementation of control measures against *Salmonella* within the poultry industry, especially vaccination of laying hens and broilers. The large decrease observed especially in *S.* Enteritidis cases supports this observation.

Salmonellosis, however, continued to have a high confirmed case rate in the EU and EEA/EFTA countries (23.6 per 100 000 population), and *Salmonella* was the cause of a large number of food-borne outbreaks at national level in 2009. During the year, 1454 outbreaks, and of these 324 verified with 4500 cases, were reported by the EU/EEA countries[1].

Among the multinational outbreaks detected was an extensive outbreak of *S.* Goldcoast involving six EU countries[2]. The outbreak evolved into two branches – one travel-related and one possibly linked to pig trade, as a variety of pork products were involved. Another large multinational outbreak with *S.* Typhimurium definitive type (DT) 191a was also identified in 2009 with over 200 cases in the United Kingdom and more than 30 cases in the United States, where the outbreak continued into 2010[3,4,5]. Most of the cases were children and the source was eventually found to be frozen feeder mice for reptiles imported from the United States. The most common monophasic *S.* Typhimurium overall in the EU during 2009 was DT193, which continued to increase in several Member States, with several outbreaks reported[6].

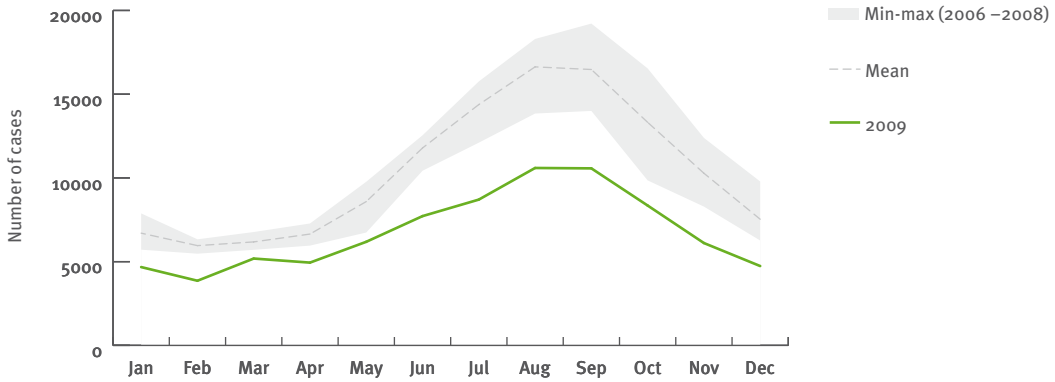
An overview of the food- and waterborne outbreaks due to *Salmonella* infections in 2010 reported through EPIS can be found in Chapter 3.

Figure 2.3.35. Rates of reported confirmed salmonellosis cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.3.36. Seasonal distribution of reported confirmed cases of salmonellosis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, Malta, Norway, Portugal, Slovakia, 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
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-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
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-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	N	N	N	Y
United Kingdom	UK-SALMONELLOSIS	O	Co	P	C	Y	N	Y	Y	Y

Shigellosis

- In 2009, the confirmed case rate of shigellosis in Europe was 1.63 cases per 100 000 population.
- Shigellosis continues to be most prevalent in children under five years old.
- Travel-associated cases, predominantly to regions outside of EU/EEA, were more frequently reported than indigenous cases.

Shigellosis is a relatively uncommon infection in the EU, caused by bacterial of the genus *Shigella*. However infections can sometimes cause severe illness and death, and outbreaks may 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 2009

In 2009, 7 261 confirmed shigellosis cases were reported in 28 EU and EEA/EFTA countries, similar to the numbers reported in 2008 (7 258) (Table 2.3.14). Shigellosis remains a relatively uncommon infection; the overall EU confirmed case rate was 1.63 cases per 100 000 population in 2009. Bulgaria reported the highest confirmed case rate with 9.87 cases per 100 000 followed by Slovakia with 6.84 and Sweden with 5.07 cases per 100 000 (Table 2.3.14). Cases reported from France increased due to changes in reporting arrangements.

Sixteen countries provided information on travel association for 2 583 cases. Of those, 1 590 were imported (62 %) compared with 993 indigenous infections (38 %). This is a higher proportion of indigenous infections compared to 2008 (22 %) but could be the result of more countries reporting geographical origin of their cases.

Table 2.3.14. Number and rate of shigellosis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	80	80	0.96	120	1.44	136	1.64	77	0.93
Belgium	Y	C	348	348	3.26	418	3.92	330	3.12	-	-
Bulgaria	Y	A	754	751	9.87	1094	14.32	1072	13.96	879	11.39
Cyprus	Y	C	2	2	0.25	1	0.13	0	0.00	2	0.26
Czech Republic	Y	C	178	177	1.69	227	2.19	331	3.22	276	2.69
Denmark	Y	C	106	106	1.92	90	1.64	-	-	-	-
Estonia	Y	C	52	52	3.88	69	5.15	114	8.49	53	3.94
Finland	Y	C	118	118	2.22	124	2.34	112	2.12	74	1.41
France	Y	C	1042	1042	1.62	517	0.81	827	1.30	-	-
Germany	Y	C	617	617	0.75	575	0.70	867	1.05	814	0.99
Greece	Y	C	37	37	0.33	19	0.17	49	0.44	26	0.23
Hungary	Y	C	42	42	0.42	43	0.43	62	0.62	73	0.72
Ireland	Y	C	71	71	1.60	63	1.43	43	1.00	53	1.26
Italy	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	68	66	2.92	102	4.49	73	3.20	73	3.18
Lithuania	Y	A	37	37	1.10	81	2.41	150	4.43	0	0.00
Luxembourg	Y	C	18	18	3.65	9	1.86	8	1.68	13	2.77
Malta	Y	C	1	1	0.24	3	0.73	0	0.00	0	0.00
Netherlands	Y	C	465	438	2.66	343	2.09	359	2.19	248	1.52
Poland	Y	A	30	21	0.06	31	0.08	53	0.14	30	0.08
Portugal	Y	C	3	3	0.03	7	0.07	12	0.11	1	0.01
Romania	Y	C	414	414	1.93	371	1.72	733	3.40	559	2.59
Slovakia	Y	C	404	370	6.84	446	8.26	525	9.73	436	8.09
Slovenia	Y	C	42	42	2.07	44	2.19	39	1.94	36	1.80
Spain	Y(a)	C	216	216	0.47	133	-	119	-	148	-
Sweden	Y	C	469	469	5.07	596	6.49	470	5.16	429	4.74
United Kingdom	Y	C	1568	1568	2.56	1595	2.61	1746	2.87	1425	2.36
EU total	**-**	**-**	**7182**	**7106**	**1.62**	**7121**	**1.78(b)**	**8230**	**2.10(b)**	**5725**	**1.79(b)**
Iceland	Y	C	2	2	0.63	3	0.95	2	0.65	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	153	153	3.19	134	2.83	148	3.16	138	2.97
Total	**-**	**-**	**7337**	**7261**	**1.63**	**7258**	**1.79(b)**	**8380**	**2.11(b)**	**5863**	**1.81(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 compared to previously estimated coverage of 25 % of the population. (b) Rates calculated excluding the Spanish data.

Ninety-six per cent of imported cases were associated with travel to non-EU/EEA countries with the highest number of cases linked to travel to Egypt (493), followed by India (231) and Morocco (70).

Age and gender distribution

As in previous years, the highest confirmed case rate was among children aged 0–4 years with 4.1 cases per 100 000. This figure was, however, substantially lower than in 2008 (9.0), mainly because Bulgaria, which normally reports very high notification rates in this age group, was not included in the 2009 rates (since it was not possible to distinguish the confirmed cases from the aggregated reporting). In addition, France and Spain, two countries with very large population but relatively low notification rates in this age group, were included in 2009. Slovakia reported the highest confirmed case rate, 69 cases per 100 000, in this age group.

There was a higher rate of confirmed cases reported in women (1.7 cases per 100 000) than in men (1.6 cases per 100 000); male-to-female ratio was 0.91:1 (based on 6 403 cases for which this information was provided) (Figure 2.3.38).

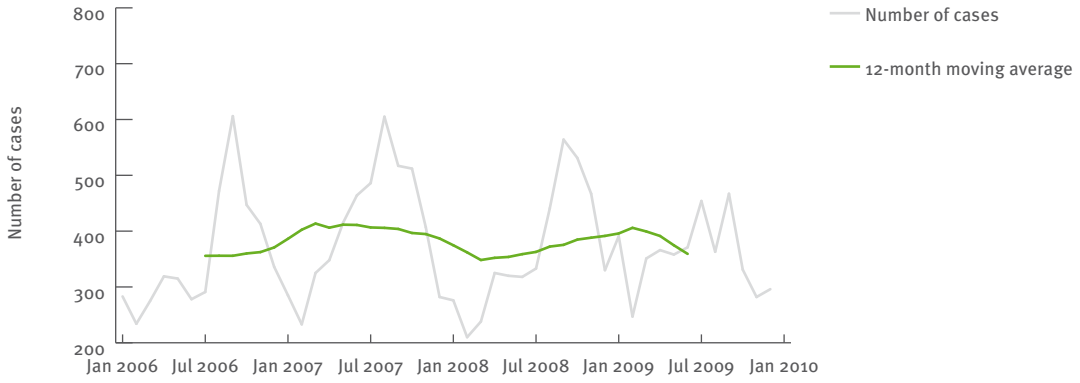
Seasonality

Shigellosis cases in the EU/EEA area normally follow a seasonal pattern with most cases reported in late summer/early autumn, peaking in September. The seasonality in 2009 differed from previous ones with more cases being reported in January and two smaller peaks observed in July and September (Figure 2.3.39).

Discussion

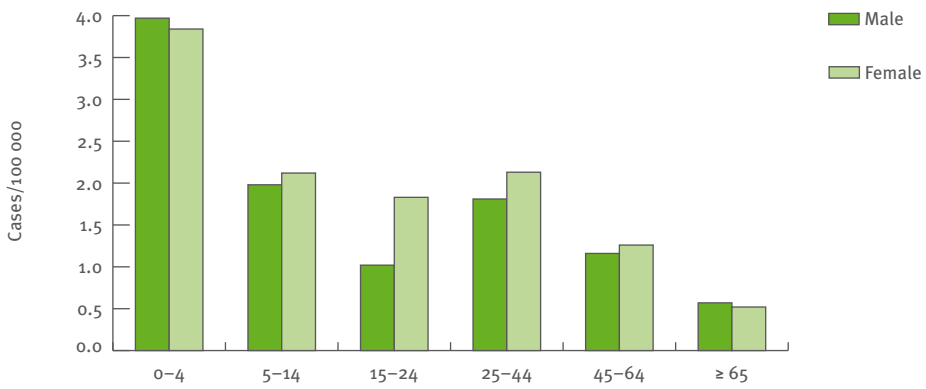
As in previous years, the highest confirmed case rate occurred in children under five. Even though travel-related cases to countries outside of Europe are the most common, a considerable proportion of cases are also indigenous. In April to May and May to June, first Denmark[1] and then Norway[2] and Sweden[3] experienced shigellosis outbreaks from sugar peas imported from Kenya, involving in total over 70 cases.

Figure 2.3.37. Trend and number of reported confirmed shigellosis cases by month, in EU and EEA/EFTA countries, 2006–09



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

Figure 2.3.38. Rates of reported confirmed shigellosis cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: 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.

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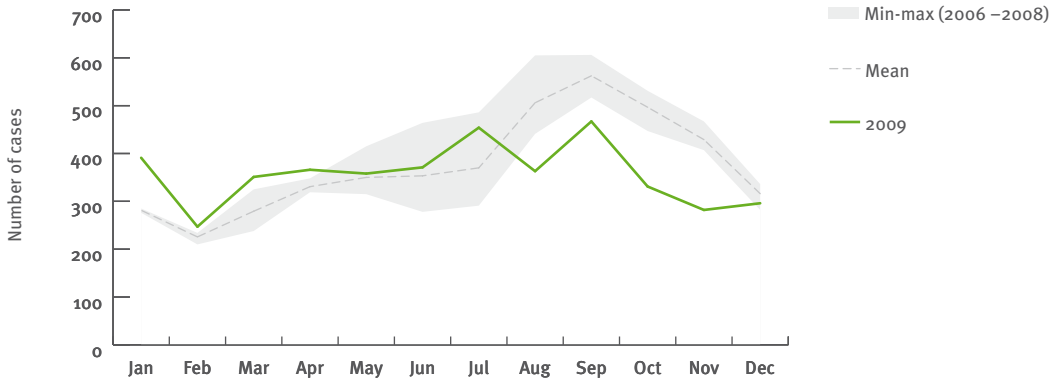
Figure 2.3.39. Seasonal distribution of reported confirmed cases of shigellosis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Cyprus, Czech Republic, Finland, Germany, Greece, Hungary, Iceland, Ireland, Luxembourg, 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)

- Toxoplasmosis remains a rare disease in EU and EEA/EFTA countries.
- In 2009, 26 congenital toxoplasmosis cases were reported by 18 EU countries.
- Nine EU countries do not conduct surveillance for toxoplasmosis.

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, abnormality or severe illness in the newborn baby.

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 ‹1 year of age.

Epidemiological situation in 2009

In 2009, 27 congenital toxoplasmosis cases (26 confirmed) were reported by 18 EU Member States. Ten countries reported zero cases (Table 2.3.15). While the United Kingdom reported the most cases, Hungary and Slovenia had the highest confirmed case rates (0.06 and 0.05 per 100 000 population). The overall EU confirmed case rate was 0.01 per 100 000 population, which is the same as the previous three years.

Table 2.3.15. Number and rate of congenital toxoplasmosis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	1	1	0.01	0	0.00	1	0.01	-	-
Belgium	-	-	-	-	-	-	-	-	-	-	-
Bulgaria	Y	C	0	0	0.00	-	-	-	-	-	-
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	-	-
Czech Republic	Y	C	2	2	0.02	2	0.02	1	0.01	2	0.02
Denmark	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	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
France	-	-	-	-	-	-	-	-	-	-	-
Germany	-	-	-	-	-	-	-	-	-	-	-
Greece	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	6	6	0.06	1	0.01	-	-	1	0.01
Ireland	Y	C	0	0	0.00	2	0.05	2	0.05	6	0.14
Italy	-	-	-	-	-	-	-	-	-	-	-
Latvia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Lithuania	Y	A	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	0	0.00
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	-	-
Netherlands	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	3	3	0.01	8	0.02	8	0.02	7	0.02
Portugal	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	3	2	0.01	-	-	-	-	-	-
Slovakia	Y	C	0	0	0.00	0	0.00	2	0.04	1	0.02
Slovenia	Y	C	1	1	0.05	0	0.00	2	0.10	2	0.10
Spain[a]	N	C	1	1	-	1	-	0	-	1	-
Sweden	-	-	-	-	-	0	0.00	0	0.00	-	-
United Kingdom	Y	C	10	10	0.02	5	0.01	3	0.00	0	0.00
EU Total	**-**	**-**	**27**	**26**	**0.01[b]**	**19**	**0.01[b]**	**20**	**0.01[b]**	**20**	**0.01[b]**
Iceland	-	-	-	-	-	0	0.00	0	0.00	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**27**	**26**	**0.01[b]**	**19**	**0.01[b]**	**20**	**0.01[b]**	**20**	**0.01[b]**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified. (a) Surveillance system currently estimated to cover 25 % of the total population. (b) Rates calculated excluding the Spanish data.

Gender distribution

Congenital cases were defined as those <1 year of age. Information on age in months is not yet collected. Data on gender were available for all 26 confirmed cases. Of these, 10 cases were male and 16 were female, giving a male-to-female ratio of 0.7:1.

Discussion

Congenital toxoplasmosis is a rare disease in the EU[1,2,3] but can result in very severe outcomes, e.g. abortion or congenital lesions in child's brains, eyes or other organs, particularly if the mother acquires her primary infection during the first trimester of pregnancy.

By harmonising the reporting at EU level to only congenital cases, it is possible to get a clearer overview of the disease situation in the EU to better assess the disease burden. Nine Member States, however, do not currently conduct surveillance for toxoplasmosis.

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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-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	-	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	-
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	N	N	N	Y
United Kingdom	UK-TOXOPLASMOSIS	V	Co	P	C	Y	N	Y	Y	Y

Trichinellosis

- Trichinellosis remains an uncommon disease in the EU/EEA overall. In 2009, the confirmed case rate of trichinellosis was 0.15 cases per 100 000 population (750 cases).
- Bulgaria and Romania accounted for 90 % of all confirmed cases reported.
- Confirmed cases in 2009 were most common in adults of both sexes (15–64 years).

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

Epidemiological situation in 2009

In 2009, 750 confirmed cases of human trichinellosis were reported by 26 of the 30 EU and EEA/EFTA countries. The overall confirmed case rate was 0.15 cases per 100 000. The rate of confirmed cases has been relatively stable over the 2006–09 period (Table 2.3.16). Bulgaria and Romania accounted for 89 % of the total number of confirmed cases reported in the EU in 2009.

The highest confirmed case rate was reported in 25–44 year-old males (0.1 cases per 100 000 population) followed by 15–24 year-old males (0.9 cases per 100 000 population) (Figure 2.3.40). There were eight reported

Table 2.3.16. Number and rate of trichinellosis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	0	0.00	0	0.00	1	0.01
Belgium	Y	C	0	0	0.00	5	0.05	3	0.03	0	0.00
Bulgaria	Y	A	443	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
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-	-	-	0	0.00
Estonia	Y	C	1	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
France	Y	C	9	9	0.01	3	0.00	1	0.00	10	0.02
Germany	Y	C	1	1	0.00	1	0.00	10	0.01	22	0.03
Greece	Y	C	2	2	0.02	0	0.00	0	0.00	0	0.00
Hungary	Y	C	9	9	0.09	5	0.05	2	0.02	-	-
Ireland	Y	C	0	0	0.00	0	0.00	2	0.05	0	0.00
Italy	Y	C	1	1	0.00	0	0.00	1	0.00	1	0.00
Latvia	Y	C	9	9	0.40	4	0.18	4	0.18	11	0.48
Lithuania	Y	A	115	20	0.60	31	0.92	8	0.24	0	0.00
Luxembourg	Y	C	0	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
Netherlands	Y	C	1	1	0.01	1	0.01	0	0.00	0	0.00
Poland	Y	C	36	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
Romania	Y	C	440	265	1.23	503	2.34	432	2.00	350	1.62
Slovakia	Y	C	0	0	0.00	18	0.33	8	0.15	5	0.09
Slovenia	Y	C	1	1	0.05	1	0.05	0	0.00	1	0.05
Spain	Y	C	7	7	0.02	27	0.06	36	0.08	18	0.04
Sweden	Y	C	0	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
EU total	**-**	**-**	**1075**	**750**	**0.15**	**670**	**0.14**	**787**	**0.16**	**688**	**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
Total	**-**	**-**	**1075**	**750**	**0.15**	**670**	**0.13**	**787**	**0.16**	**688**	**0.14**

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

confirmed cases of trichinellosis (five female and three male) in 0–4 year old children in Romania.

Seasonality

In 2009, reported cases of trichinellosis occurred mainly from January to March. It should be noted, however, that this figure is based on countries other than Bulgaria and Romania, the main reporters of these infections, as they do not provide data on occurrence by month.

Discussion

Trichinellosis is an uncommon but serious human disease that is still present in the EU. The majority of these cases occurred in four Member States: Bulgaria, Latvia, Lithuania and Romania. The human cases in these countries may be associated with traditional practices such as raising pigs in backyards for private consumption, and wild boar hunting. The risk with such practices is that meat may not have a veterinary inspection for trichinella, increasing the risk of infection and outbreaks.

In 2009, there were 31 household-associated outbreaks in Romania and a large outbreak associated to consumption of sausages made from wild boar meat in Lithuania[1,2].

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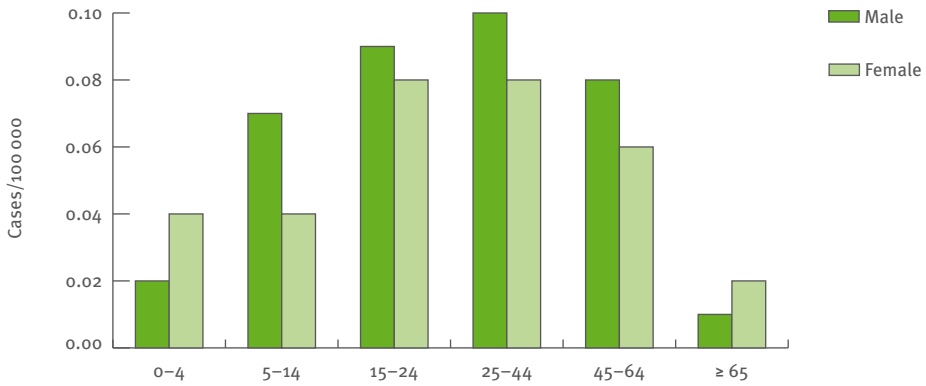
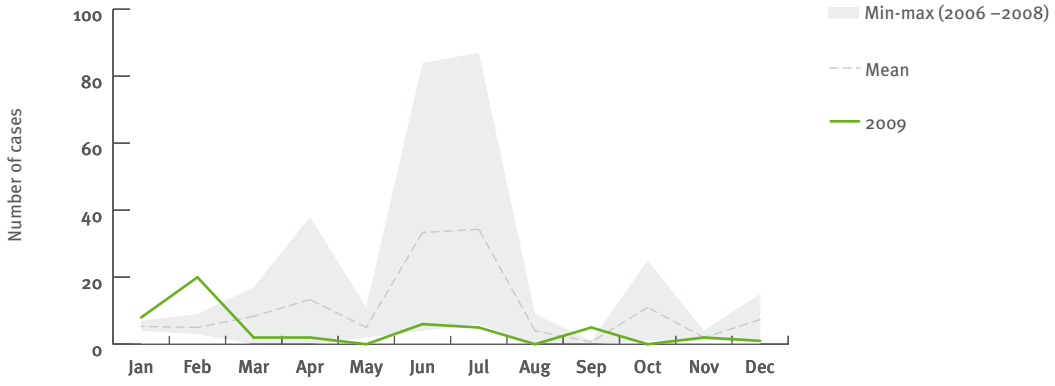
Figure 2.3.40. Rates of reported confirmed trichinellosis cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.3.41. Seasonal distribution of reported confirmed cases of trichinellosis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Cyprus, Czech Republic, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, Netherlands, 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-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	-	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	N	N	N	Y
United Kingdom	UK-TRICHINOSIS	V	Co	P	C	Y	N	Y	Y	Y

Tularaemia

- The confirmed case rate of tularaemia has remained stable since 2008.
- As observed in previous years, males older than 24 years of age were primarily affected by the disease.
- In 2009, no large outbreaks of tularaemia were reported.

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 with good antibiotic treatment.

Epidemiological situation in 2009

In 2009, 838 confirmed cases (853 in total) of tularaemia were reported from 26 countries (Table 2.3.17). The total number is slightly lower than the number of cases reported for the previous two years. Finland reported the highest confirmed case rate (7.60 per 100 000 population), followed by Sweden (2.64) and the Czech Republic (0.61). For all other countries, confirmed case rates were ‹0.5 per 100 000. The overall confirmed case rate was 0.18 cases per 100 000.

Age and gender distribution

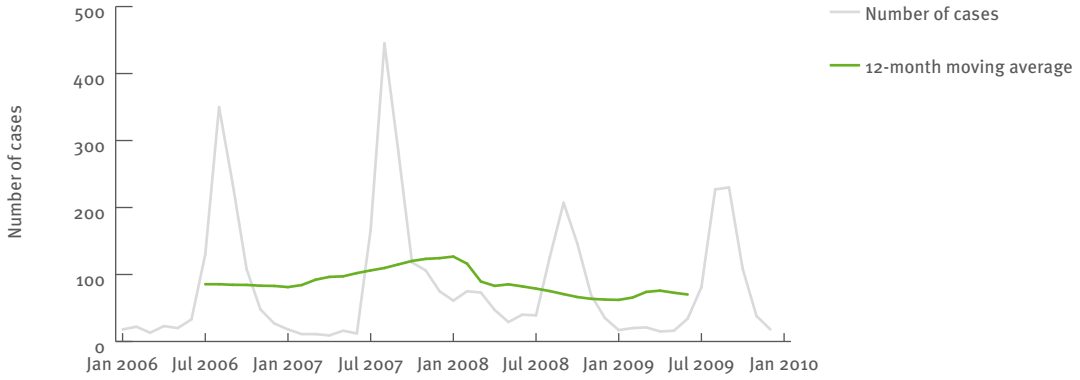
Ten countries provided information on the age and gender of their cases. Out of the 838 confirmed cases with gender information, 522 (62 %) were males and 316 were females (male-to-female ratio 1.7:1). As in previous years, the highest confirmed case rate occurred in

Table 2.3.17. Number and rate of reported confirmed tularaemia cases in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	2	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
Bulgaria	Y	A	7	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
Czech Republic	Y	C	64	64	0.61	109	1.05	51	0.50	79	0.77
Denmark	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	1	0.07	2	0.15	0	0.00
Finland	Y	C	405	405	7.60	116	2.19	403	7.64	0	0.00
France	Y	C	31	16	0.02	104	0.16	48	0.08	24	0.04
Germany	Y	C	10	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
Hungary	Y	C	38	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
Italy	Y	C	2	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
Lithuania	Y	A	1	1	0.03	2	0.06	1	0.03	0	0.00
Luxembourg	Y	C	0	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
Netherlands	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	1	1	0.00	0	0.00	1	0.00	0	0.00
Portugal	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Slovakia	Y	C	22	22	0.41	25	0.46	11	0.20	49	0.91
Slovenia	Y	C	1	1	0.05	2	0.10	1	0.05	1	0.05
Spain	Y	C	12	12	0.03	58	0.13	493	1.11	1	0.00
Sweden	Y	C	244	244	2.64	382	4.16	174	1.91	241	2.66
United Kingdom	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
EU total	**-**	**-**	**840**	**825**	**0.18**	**893**	**0.19**	**1232**	**0.27**	**557**	**0.12**
Iceland	Y	C	0	0	0.00	0	0.00	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	13	13	0.27	66	1.39	49	1.05	11	0.24
Total	**-**	**-**	**853**	**838**	**0.18**	**959**	**0.20**	**1281**	**0.28**	**568**	**0.12**

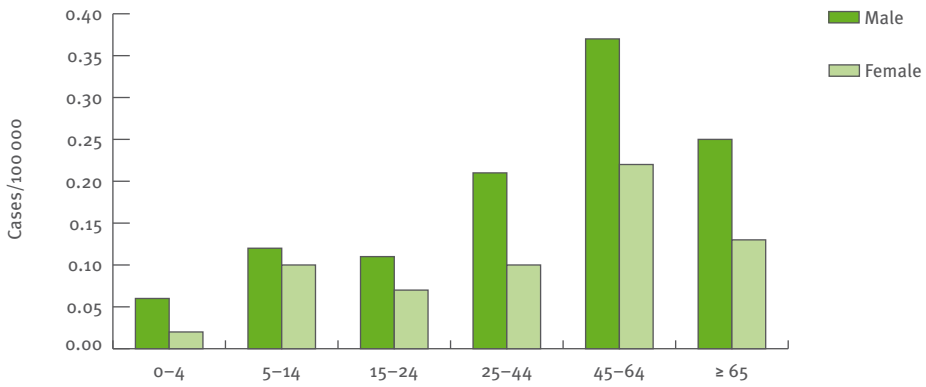
Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified.

Figure 2.3.42. Trend and number of reported confirmed tularaemia cases by month, in EU and EEA/EFTA countries, 2006–09



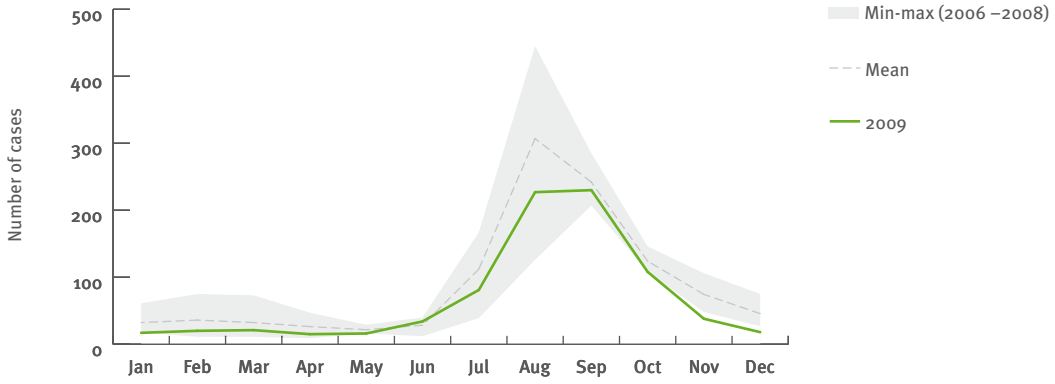
Source: Country reports: Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.3.43. Rates of reported confirmed tularaemia cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.3.44. Seasonal distribution of reported confirmed cases of tularaemia, in EU and EEA/EFTA countries, 2006–09



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

the age group 45–64 years for both males and females (Figure 2.3.43).

Seasonality

Seasonality data was provided by all countries that reported confirmed cases. As for 2006–08, the majority of the cases occur in summer and the early autumn months (Figure 2.3.44).

Discussion

When compared to 2007 and 2008, the number of cases of tularaemia reported in 2009 further decreased. There is some concern, however, regarding a possible re-emergence of the disease in Germany[1]. In Finland, the number of reported cases increased from 116 in 2008 to 405 in 2009. An outbreak was reported in Norway in 2011[2].

References

1. Splettstoesser WD, Piechotowski I, Buckendahl A, et al. Tularemia in Germany: the tip of the iceberg? Epidemiol Infect 2009 May;137(5):736-43. Epub 2008 Sep 23.
2. Larssen KW, Afset JE, Heier BT, Krogh T, Handeland K, Vikøren T, Bergh K. Outbreak of tularaemia in central Norway, January to March 2011. Euro Surveill. 2011 Mar 31;16(13). pii: 19828.

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
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	N	N	N	Y
United Kingdom	UK-TULARAEMIA	V	Co	P	C	Y	N	Y	Y	Y

Typhoid/paratyphoid fever

- In 2009, 1349 cases of typhoid and paratyphoid fever were reported in the EU/EEA region.
- Over 80% of cases were imported, mainly from South Asian countries.
- *Salmonella* Paratyphi A was the most common serotype identified in cases of paratyphoid fever.

These systemic bacterial diseases are caused by infection with *Salmonella typhi*, or *Salmonella enterica*. Humans can be short- or long-term carriers of these bacteria; transmission is by the faecal-oral route, through person-to-person contact or water or food contamination. The infection is uncommon in the EU/EEA and the majority of cases occur in travellers returning from countries where the disease is endemic.

Epidemiological situation in 2009

In 2009, 1347 confirmed cases (total 1349) of human typhoid or paratyphoid cases were reported by 25 EU Member States plus Iceland and Norway, with a confirmed case rate of 0.29 per 100 000 population (Table 2.3.18). The number of cases and confirmed case rates has been fairly stable over the last four years except for 2007 when the numbers were markedly lower. This was most likely due to the change implemented between 2006 and 2007 in the way these cases were reported to the European Surveillance System (TESSy)[i].

A high proportion (84%) of cases was imported among the 495 for which this information was provided. The

i The change meant that rather than being reported as separate diseases, typhoid and paratyphoid cases should now be reported under salmonellosis.

Table 2.3.18. Number and confirmed case rates of typhoid and paratyphoid cases in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	14	0.17	0	0.00	17	0.21
Belgium	Y	C	104	104	0.97	61	0.57	42	0.40	-	-
Bulgaria	-	-	-	-	-	-	-	-	-	0	0.00
Cyprus	Y	C	4	4	0.50	5	0.63	1	0.13	0	0.00
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	Y	C	17	17	0.31	19	0.35	14	0.26	0	0.00
Estonia	Y	C	3	3	0.22	0	0.00	2	0.15	1	0.07
Finland	Y	C	9	9	0.17	6	0.11	20	0.38	0	0.00
France	Y	C	264	264	0.41	236	0.37	167	0.26	165	0.26
Germany	Y	C	141	141	0.17	179	0.22	0	0.00	148	0.18
Greece	Y	C	4	4	0.04	1	0.01	18	0.16	15	0.13
Hungary	Y	C	0	0	0.00	3	0.03	0	0.00	2	0.02
Ireland	Y	C	17	17	0.38	13	0.30	12	0.28	9	0.21
Italy	Y	C	116	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	0	0	0.00	2	0.06	-	-	0	0.00
Luxembourg	Y	C	0	0	0.00	1	0.21	0	0.00	0	0.00
Malta	Y	C	1	1	0.24	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	62	62	0.38	63	0.38	59	0.36	54	0.33
Poland	-	-	-	-	-	-	-	-	-	5	0.01
Portugal	Y	C	36	34	0.32	21	0.20	44	0.42	41	0.39
Romania	Y	C	2	2	0.01	3	0.01	5	0.02	15	0.07
Slovakia	Y	C	0	0	0.00	0	0.00	1	0.02	3	0.06
Slovenia	Y	C	2	2	0.10	5	0.25	10	0.50	5	0.25
Spain	Y	C	26	26	0.06	21	0.05	33	0.07	44	0.10
Sweden	Y	C	38	38	0.41	49	0.53	47	0.52	12	0.13
United Kingdom	Y	C	503	503	0.82	596	0.97	20	0.03	547	0.91
EU total	**-**	**-**	**1349**	**1347**	**0.30**	**1418**	**0.31**	**678**	**0.15**	**1302**	**0.27**
Iceland	Y	C	0	0	0.00	2	0.63	0	0.00	2	0.67
Liechtenstein	-	-	-	-	-	0	0.00	0	0.00	-	-
Norway	Y	C	0	0	0.00	0	0.00	0	0.00	36	0.78
Total	**-**	**-**	**1349**	**1347**	**0.29**	**1420**	**0.31**	**678**	**0.15**	**1340**	**0.27**

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

three countries that were the most frequently reported as probable country of infection were India (153 cases), Pakistan (62) and Turkey (57).

Belgium reported the highest confirmed case rate in 2009 (0.97 per 100 000 population) followed by the United Kingdom (0.82 per 100 000).

Age and gender distribution

The highest confirmed case rate (0.74 per 100 000) was reported for those under five years of age, followed by the 5–14 year-olds (0.48 per 100 000). There was no major difference in the overall confirmed case rates of males and females (0.30 and 0.27 per 100 000, respectively; ratio: 1.12:1), although females had a slightly higher confirmed case rate among the 0–4 and 15–24 year-olds whilst males had slightly higher rates among 5–14 year-olds and above 25 years (Figure 2.3.46).

Seasonality

The seasonality for typhoid and paratyphoid fever followed that of the previous three years with a clear peak in September (Figure 2.3.47). This is most likely related to travel patterns to high risk countries, with disease reported on return.

Enhanced surveillance

In 2009, 764 cases of typhoid fever and 583 of paratyphoid fever were reported. The most common serotype of paratyphoid fever was *S.* Paratyphi A (Table 2.3.19).

Table 2.3.19. *Salmonella enterica* serotypes of typhoid and paratyphoid cases reported in EU and EEA/EFTA countries, 2009

Serotype	Number of cases
Typhi	764
Paratyphi A	293
Paratyphi B	200
Paratyphi C	5
Paratyphi (unspecified)	85
Total	**1347**

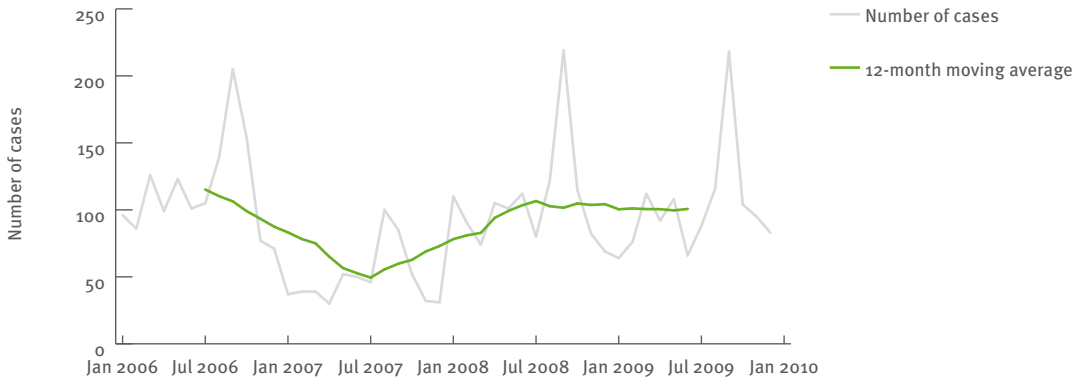
Discussion

Typhoid and paratyphoid fever remain uncommon infections in the EU and EEA/EFTA countries. The disease is mainly associated with travel to endemic areas outside of the EU[1,2,3]. The confirmed case rate is highest in young children. The age distribution, however, differs from non-typhoid salmonellosis in that the confirmed case rates for young adults are higher, which most likely is a reflection of the high proportion of travel-related cases.

References

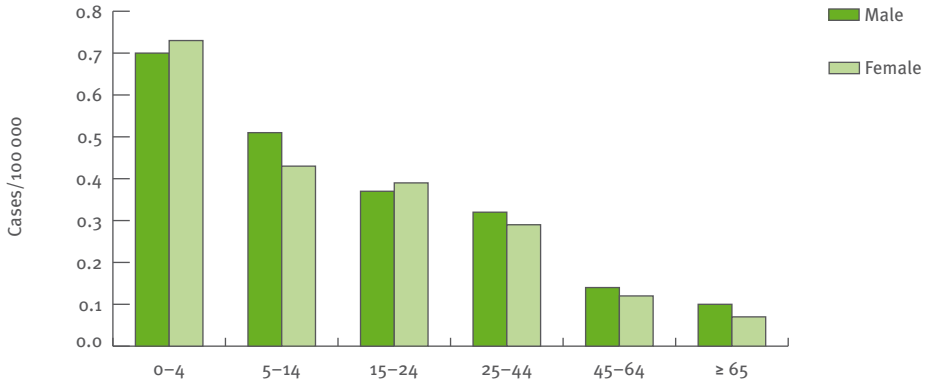
1. Clark TW, Daneshvar C, Pareek M, Perera N, Stephenson I. Enteric fever in a UK regional infectious diseases unit: a 10 year retrospective review. J Infect 2010 Feb;60(2):91-8. Epub 2009 Dec 3.
2. Gil R, Alvarez JL, Gómez C, Alvaro A, Gil A. Epidemiology of typhoid and paratyphoid fever hospitalizations in Spain (1997-2005). Hum Vaccin 2009 Jun;5(6):420-4. Epub 2009 Jun 19.
3. Keller A, Frey M, Schmid H, Steffen R, Walker T, Schlagenhauf P. Imported typhoid fever in Switzerland, 1993 to 2004. J Travel med 2008 Jul-Aug;15(4):248-51.

Figure 2.3.45. Trend and number of reported confirmed typhoid and paratyphoid fever cases by month, in EU and EEA/EFTA countries, 2006–09



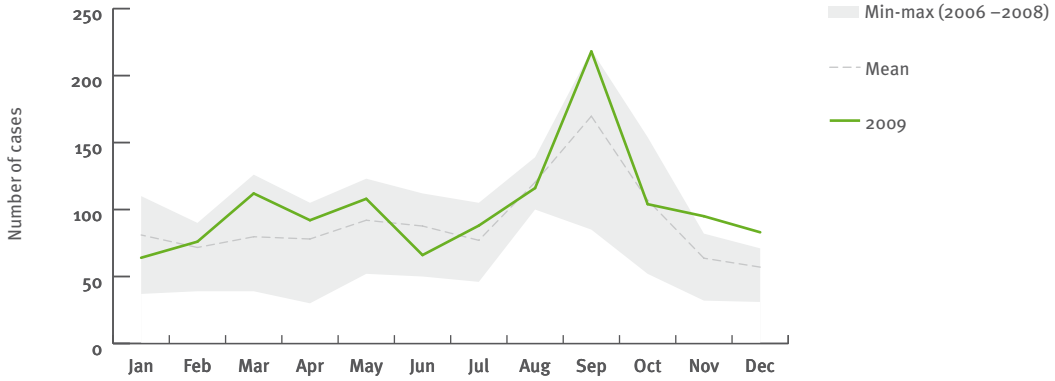
Source: Country reports: Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.3.46. Rates of reported confirmed typhoid and paratyphoid fever cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.3.47. Seasonal distribution of reported confirmed cases of typhoid and paratyphoid fever, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, 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
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
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
Greece	GR-NOTIFIABLE_DISEASES	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	-	-	-	-	-	-	-	-	-
Italy	IT-NRS	-	-	-	-	-	-	-	-	-
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
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
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	N	N	N	Y

Variant Creutzfeldt–Jakob disease

- Variant Creutzfeldt–Jakob disease (vCJD) remains a rare but fatal disease in the EU/EEA.
- Since the peak in the number of reported cases (and deaths) in year 2000, the number of deaths from vCJD in EU and EEA/EFTA countries continues to decline.

Variant Creutzfeldt–Jakob disease (vCJD) is a prion disease resulting in a fatal encephalopathy. Transmission to humans is thought to be through consumption of infected beef products; infection through blood transfusion has also been documented.

Epidemiological situation in 2009

In 2009, eight vCJD cases (including two probable cases) died in five EU Member States, which is five more than the number reported in 2008. Three cases were reported by the United Kingdom, two by France and one each in the Netherlands, Portugal and Spain. No cases were blood donors or recipients of blood or blood products. The overall mortality rate remains low at 0.01 per 1 000 000 population.

The following EUROCJD (European Creutzfeldt–Jakob Disease Surveillance Network) countries reported zero deaths in 2009: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Greece, Iceland, Ireland, Israel, Italy, Latvia, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Sweden and Switzerland.

Age and gender distribution

The age of cases ranged between 16 and 54 years. Two of the cases were male and six female.

Discussion

Countries throughout Europe continue surveillance of vCJD through the collaboration within the EuroCJD network[1]. Methods for case classification have been harmonised and the EU case definition is fully adopted by all reporting countries. The transmission of variant CJD through prions in the food to humans has had profound political, humanitarian, social and economic implications.

A recent scientific opinion by the European Food Safety Authority (EFSA) and ECDC has highlighted the uncertainty related to transmissibility of other animals' transmissible spongiform encephalopathies (TSEs, such as atypical scrapie) to humans[2].

References

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Yersiniosis

- In 2009, the confirmed case rate of yersiniosis in the EU/EEA was 2.02 cases per 100 000 population.
- There were 7 686 confirmed cases of human yersiniosis reported in 2009, decreasing from the 8 193 cases reported in 2008.
- The highest confirmed case rate was detected in 0–4 year-old males, 12.89 cases per 100 000 population.

Yersiniosis is a disease caused by the bacteria *Yersinia enterocoliticus* or *Yersinia pseudotuberculosis*. It is not an uncommon cause of gastroenteritis (sometimes mimicking appendicitis) in a number of EU and EEA/EFTA countries. Pigs are important reservoirs, and many cases are considered to be related to the consumption of undercooked infected pork.

Epidemiological situation in 2009

In 2009, 7 686 confirmed cases of yersiniosis were reported by 26 EU and EEA/EFTA countries (overall confirmed case rate 2.02 per 100 000 population). As in previous years, Germany accounted for the highest proportion of reported cases (48.54 %). Lithuania and Finland were the countries with the highest confirmed case rates, 14.42 and 11.88 cases per 100 000 population respectively (Table 2.3.20).

Table 2.3.20. Number and rate of yersiniosis cases in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	140	140	1.68	93	1.12	142	1.71	158	1.91
Belgium	Y	C	238	238	2.23	273	2.56	248	2.34	264	2.51
Bulgaria	Y	A	8	8	0.11	10	0.13	8	0.10	5	0.06
Cyprus	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Czech Republic	Y	C	463	463	4.42	557	5.37	576	5.60	534	5.21
Denmark	Y	C	238	238	4.32	331	6.04	274	5.03	215	3.96
Estonia	Y	C	54	54	4.03	42	3.13	76	5.66	42	3.12
Finland	Y	C	633	633	11.88	608	11.47	480	9.10	795	15.13
France	N	A	208	208	-	0	-	-	-	-	-
Germany	Y	C	3731	3731	4.55	4352	5.29	4987	6.06	5161	6.26
Greece	-	-	-	-	-	-	-	-	-	-	-
Hungary	Y	C	51	51	0.51	40	0.40	55	0.55	38	0.38
Ireland	Y	C	3	3	0.07	3	0.07	6	0.14	1	0.02
Italy	Y	C	11	11	0.02	-	-	-	-	0	0.00
Latvia	Y	C	70	66	2.92	50	2.20	41	1.80	92	4.01
Lithuania	Y	A	483	483	14.42	536	15.92	569	16.81	0	0.00
Luxembourg	Y	C	36	36	7.29	17	3.51	22	4.62	5	1.07
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-	-	-	-	-
Poland	Y	C	288	288	0.76	214	0.56	182	0.48	111	0.29
Portugal	-	-	-	-	-	-	-	-	-	0	0.00
Romania	Y	C	32	32	0.15	9	0.04	0	0.00	-	-
Slovakia	Y	C	168	167	3.09	68	1.26	71	1.32	82	1.52
Slovenia	Y	C	27	27	1.33	31	1.54	32	1.59	79	3.94
Spain	N	C	291	291	-	315	-	381	-	375	-
Sweden	Y	C	397	397	4.29	546	5.95	567	6.22	558	6.17
United Kingdom	Y	C	61	61	0.10	48	0.08	86	0.14	59	0.10
EU total	**-**	**-**	**7631**	**7626**	**2.03**	**8143**	**2.69**	**8803**	**2.91**	**8574**	**2.43**
Iceland	-	-	-	-	-	-	-	-	-	0	0.00
Liechtenstein	-	-	-	-	-	0	0.00	-	-	-	-
Norway	Y	C	60	60	1.25	50	1.06	71	1.52	86	1.85
Total	**-**	**-**	**7691**	**7686**	**2.02**	**8193**	**2.67**	**8874**	**2.88**	**8660**	**2.42**

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

There has been a significant decreasing trend in the rate of confirmed cases of yersiniosis in the EU and EEA/EFTA countries over 2006–09 (Figure 2.3.48). By country, confirmed case rates decreased significantly in Germany, Slovenia, Sweden and Norway, while increasing in Luxembourg, Slovakia and Poland.

The gender distribution of confirmed cases for which information was provided (n=6 886), was 53.8 % males and 46.2 % females. The male-female ratio was 1.2:1 in 2009. Confirmed case rates were higher for males in comparison to females in the age group 0–24 years while reminded fairly similar in both gender groups from 25 years and over. The highest confirmed case rates were detected in 0–4 year-old children, both in males (11.89 cases per 100 000) and females (10.59 cases per 100 000) (Figure 2.3.49).

Yersinia enterocolitica was, as in previous years, the most common *Yersinia* species reported in human cases, 93.7 % of all confirmed cases in 2009 followed by *Y. pseudotuberculosis* in 1.3 % of cases[1].

Seasonality

Cases of yersiniosis were reported throughout the year with no marked seasonality.

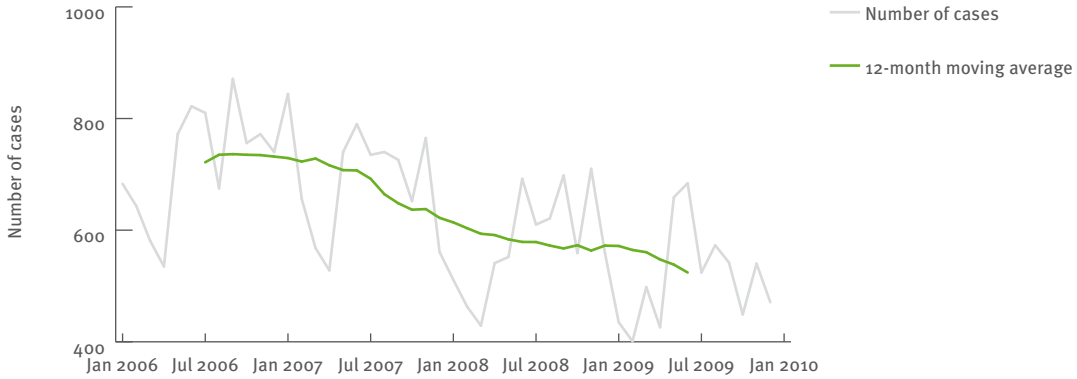
Discussion

Human yersiniosis is still a relatively commonly reported gastrointestinal disease in Europe although the trend is declining. Pigs are considered the main reservoir of *Yersinia enterocolitica* as the bacterium is mainly detected in pork meat and pigs[1]. The most frequent route of transmission to humans is consumption of undercooked contaminated pork.

References

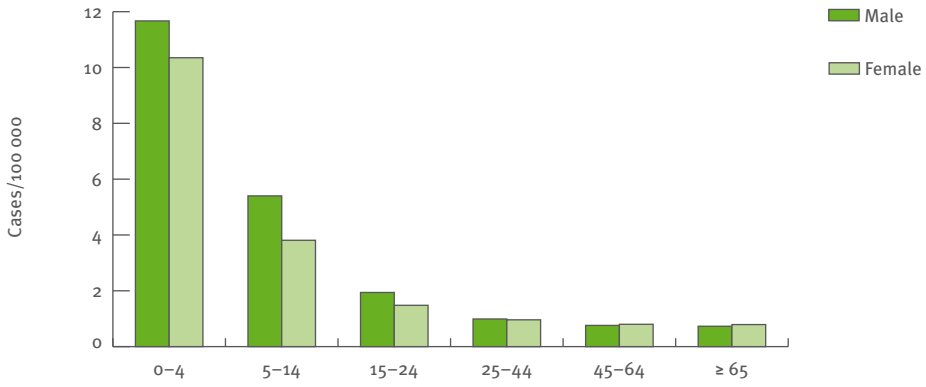
1. European Food Safety Authority (EFSA). The Community Summary Report on Trends and Sources of Zoonoses and Zoonotic Agents and Food-borne Outbreaks in the European Union in 2009. EFSA Journal 2011;9(3):2090 [378 pp.]. doi:10.2903/j.efsa.2011.2090.

Figure 2.3.48. Trend and number of reported confirmed yersiniosis cases by month, in EU and EEA/EFTA countries, 2006–09



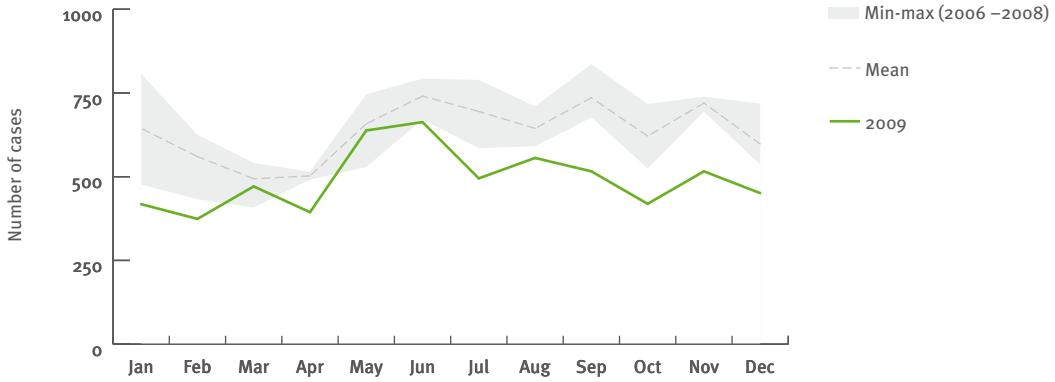
Source: Country reports: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Ireland, Latvia, Luxembourg, Malta, Norway, Poland, Portugal, Slovakia, Slovenia, Sweden, United Kingdom.

Figure 2.3.49. Rates of reported confirmed yersiniosis cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: All countries except France, Greece, Iceland, Liechtenstein, Netherlands and Portugal.

Figure 2.3.50. Seasonal distribution of reported confirmed cases of yersiniosis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: 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	-	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	N	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 and EEA/EFTA countries remains stable, fluctuating around one per 100 000 population.
- 99.5 % of cases (where origin is specified) are imported; these are reported by EU and EEA/EFTA countries that have strong traditional ties with endemic areas (France and United Kingdom). Greece forms an exception, with nearly 16 % of indigenous cases.

Malaria is caused by infection with protozoa of the genus *Plasmodium*, transmitted through the bite of an infected mosquito. In the EU almost all cases are seen in travellers returning from countries where the disease is endemic.

Epidemiological situation in 2009

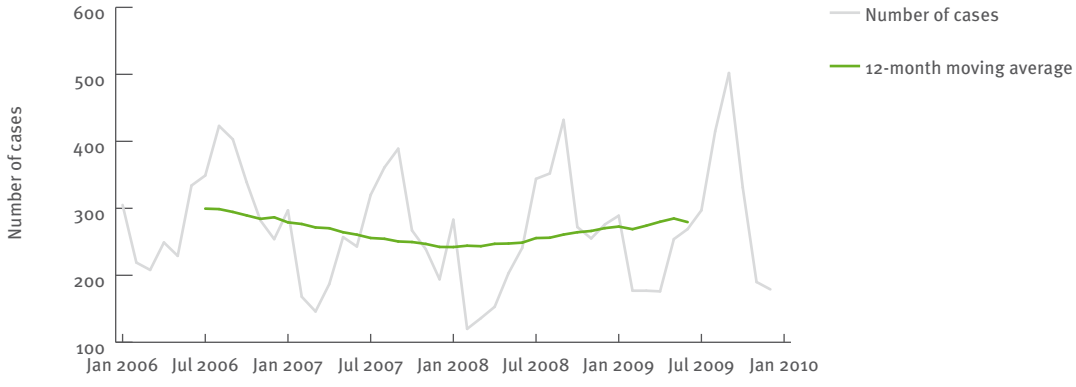
In 2009, 6 049 confirmed cases of malaria were reported by 26 EU and one EEA/EFTA countries in continental Europe[i]. Eighty per cent of the cases are reported by four countries (France, United Kingdom, Italy and Germany) (Table 2.4.1). Highest rates of confirmed cases were reported by the United Kingdom (2.4 per 100 000 population), Ireland (2.0), the Netherlands (1.4) and Belgium (1.3). Data were not available for Denmark, Iceland and Liechtenstein.

The overall confirmed case rate was 0.89 per 100 000 in 2009. The individual country rates varied between ‹0.1 and 2.44 cases per 100 000 population (United Kingdom). These figures are smaller than the ones observed in 2008.

Most of the malaria cases are reported as imported – the definition of imported cases refers to cases imported to continental Europe, and does not include cases reported in overseas départements and territories. Information on the probable country of infection was not consistently

i The term ‘continental Europe’ is used to mean EU and EEA/EFTA countries on the European continent, i.e. it excludes overseas territories, protectorates or départements.

Figure 2.4.1. Trend and number of reported confirmed malaria cases by month, in EU and EEA/EFTA countries, 2006–09



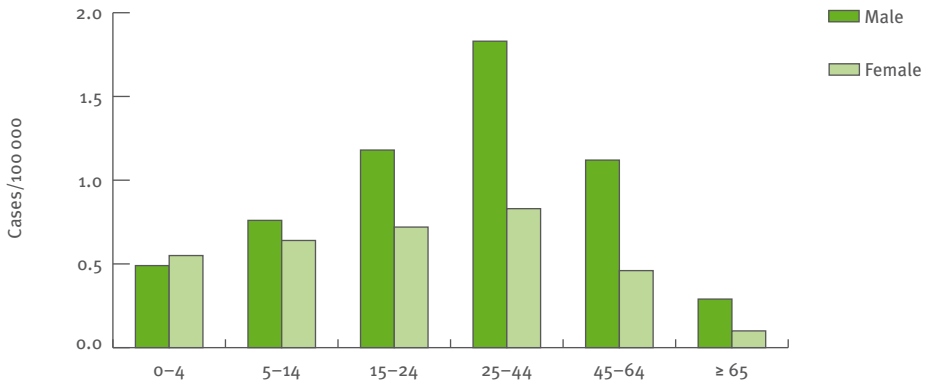
Source: Country reports: Austria, Belgium, Cyprus, Czech Republic, Estonia, Finland, Greece, Hungary, Ireland, Italy, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom. Data excludes overseas territories, protectorates or départements.

Table 2.4.1. Number and rate of malaria cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	44	44	0.53	57	0.69	34	0.41	50	0.61
Belgium	Y	C	144	144	1.35	181	1.70	193	1.82	195	1.86
Bulgaria	Y	A	8	8	0.11	0	0.00	4	0.05	14	0.18
Cyprus	Y	C	1	1	0.13	0	0.00	1	0.13	1	0.13
Czech Republic	Y	C	10	10	0.10	22	0.21	23	0.22	16	0.16
Denmark	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	4	4	0.30	0	0.00	5	0.37	6	0.45
Finland	Y	C	34	34	0.64	42	0.79	22	0.42	0	0.00
France	N	A	2199	2199	-	2246	3.51	-	-	-	-
Germany	Y	C	523	523	0.64	547	0.67	540	0.66	566	0.69
Greece	Y	C	51	51	0.45	39	0.35	21	0.19	22	0.20
Hungary	Y	C	8	8	0.08	5	0.05	7	0.07	18	0.18
Ireland	Y	C	90	90	2.02	82	1.86	71	1.65	94	2.23
Italy	Y	C	632	632	1.05	586	0.98	501	0.85	630	1.07
Latvia	Y	A	6	6	0.27	2	0.09	3	0.13	4	0.17
Lithuania	Y	A	3	3	0.09	3	0.09	4	0.12	0	0.00
Luxembourg	Y	C	3	3	0.61	2	0.41	4	0.84	4	0.85
Malta	Y	C	1	1	0.24	3	0.73	3	0.74	1	0.25
Netherlands	Y	C	238	237	1.44	229	1.40	210	1.28	250	1.53
Poland	Y	C	22	22	0.06	22	0.06	11	0.03	19	0.05
Portugal	Y	C	44	44	0.41	42	0.40	43	0.41	48	0.45
Romania	Y	C	12	12	0.06	13	0.06	24	0.11	16	0.07
Slovakia	Y	C	0	0	0.00	2	0.04	1	0.02	10	0.19
Slovenia	Y	C	7	7	0.34	3	0.15	9	0.45	3	0.15
Spain	Y	C	356	356	0.78	290	0.64	385	0.87	338	0.77
Sweden	Y	C	81	81	0.88	91	0.99	89	0.98	93	1.03
United Kingdom	Y	C	1495	1495	2.44	1371	2.24	1548	2.55	1758	2.91
EU total	**-**	**-**	**6016**	**6015**	**0.89**	**5880**	**1.19**	**3756**	**0.88**	**4156**	**0.98**
Iceland	-	-	-	-	-	-	-	1	0.33	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	34	34	0.71	32	0.68	28	0.60	44	0.95
Total	**-**	**-**	**6050**	**6049**	**0.89**	**5912**	**1.19**	**3785**	**0.88**	**4200**	**0.98**

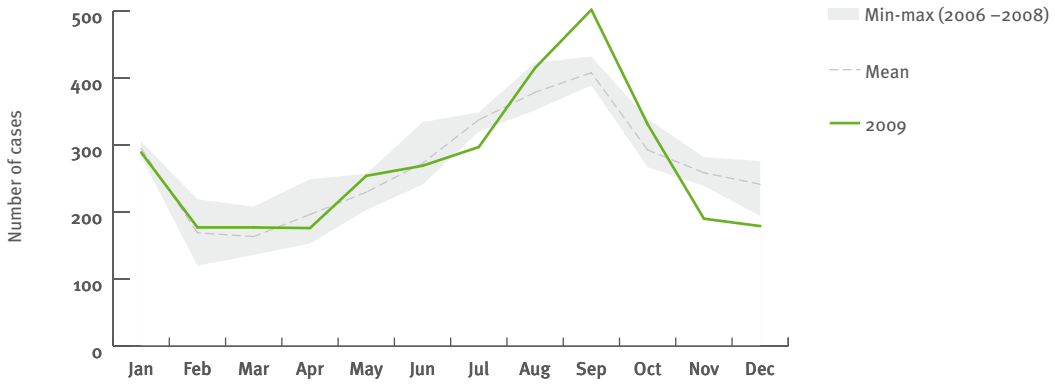
Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified. Data excludes overseas territories, protectorates or départements.

Figure 2.4.2. Rates of reported confirmed malaria cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, United Kingdom. Slovakia reported 0 cases. Data excludes reports from cases resident in overseas territories, protectorates or départements.

Figure 2.4.3. Seasonal distribution of reported confirmed cases of malaria, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Belgium, Cyprus, Czech Republic, Estonia, Finland, Greece, Hungary, Ireland, Italy, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom. Data excludes overseas territories, protectorates or départements.

available. Eleven cases were confirmed indigenous cases (eight from Greece, one from Cyprus, one from Ireland and one from the Netherlands). The two latter ones could be 'airport malaria' cases. Indigenous cases of malaria have been reported sporadically in continental Europe over the last 10 years[1–4].

Outside continental Europe, some countries or territories are endemic for malaria (e.g. Mayotte and French Guiana) for which data are not collected at this level. The caseload on these territories is high and the Institut de Veille Sanitaire in France reports that in 2009 there were 2 800 confirmed cases reported in French Guiana, some of which may have been imported from neighbouring countries (Brazil and Suriname), 88 indigenous cases and 268 imported cases notified in Mayotte, which represents a decrease in indigenous cases (from 600 in 2003) and also a decrease in overall incidence, and 94 imported cases notified in La Réunion[5].

Age and gender distribution

The confirmed case rate of malaria is twice as high in males as in females (1.19 and 0.56 per 100 000, respectively), giving a male-to-female ratio of 2.13:1 (98.5 % of cases). Information on age group was available for 61 % of the cases. The age group 25–44 years had the highest rates (1.37 per 100 000, 1.84 in males and 0.83 in females) (Figure 2.4.2). This is consistent with the picture described in 2008 and likely reflects population travel patterns rather than other risk factors[6].

Seasonality

Information on month of report was available for 61 % of cases. A clear seasonal trend in monthly reports is observed across all countries, with cases increasing during the summer holiday months (June–October) and peaking in September, and with a lower increase in January, possibly related to the winter holiday period (Figure 2.4.3). These observations most likely reflect travel to malaria-endemic countries.

Discussion

Historically, malaria was endemic in Europe but it has been eliminated in most parts of the EU and EEA/EFTA. Cases of indigenous transmission of malaria have been reported over the last 10 years[1–4,7], but sustained local transmission has not been identified to date. However, a cluster of *vivax* malaria infected patients from Lakonia, in Greece, has been reported in the summer of 2009. This report indicated that local transmission remains possible and stresses the need for surveillance and prevention also by improving sanitary conditions of seasonal workers[6].

In 2010, the first indigenous cases of malaria due to *Plasmodium vivax* were reported from Spain after being malaria-free since 1964 (for more details see Chapter 3).

The overall rate of reported confirmed malaria cases diagnosed in the EU and EEA/EFTA decreased in 2009 compared to 2008, reaching a rate comparable to the one of 2007, despite integration of French data since 2008, thus indicating a decreasing trend in all countries.

Nowadays, travellers visiting friends and relatives constitute the most significant group for malaria importation in developed countries. They demonstrate travel and behavioural patterns that render them at high risk for infection[8]. However, the annual number of imported malaria cases shows a continuing declining trend, even with an increasing number of travellers visiting malaria endemic countries[9]. Seasonality, age and gender distribution of cases are similar to those observed in previous years. Surveillance of malaria continues to be important both in identifying possible indigenous transmission within EU and EEA/EFTA countries, but also to support assessment of prophylaxis recommendations for travel medicine[8,9].

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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	-	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	N	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 the EU and EEA/EFTA region during 2009.

Plague is a bacterial infection of rodents and their fleas, which can transfer the bacterium (*Yersinia pestis*) to humans. 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 2009

No cases of plague were reported by 29 EU and EEA/EFTA countries in 2009. Data was not available for Liechtenstein.

Discussion

Plague is still endemic in several countries in Africa, in the former Soviet Union, the Americas and Asia[1]. A confirmed plague outbreak was reported by WHO in China on the 11 August 2009: a cluster outbreak of pulmonary plague cases in the remote town of Ziketan, Qinghai province[2]. In North Africa, in 2009, an outbreak of bubonic plague was reported in Tobruk, Libya[3,4].

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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-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	-	Y	Y	N	Y
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y
Estonia	EE-VHF	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	Y	Y	Y	N	Y
Portugal	PT-PLAGUE	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	N	N	N	Y
United Kingdom	UK-PLAGUE	O	Co	P	C	Y	N	Y	Y	Y

Q fever

- A total of 1988 confirmed Q fever infections were reported in 2009 from 25 EU and EEA/EFTA countries.
- Most of these cases were reported from the Netherlands. The outbreak in the Netherlands since 2007 is the largest community outbreak of Q fever ever reported in the literature.
- Small outbreaks and sporadic cases were reported from some other countries.

Q fever is an infection caused by the rickettsia *Coxiella burnetti*. It occurs in a range of domesticated and wild animals, and humans acquire the infection by inhalation of dusts containing *Coxiellae*. It is particularly an occupational risk for those working with animals and animal tissues (abattoirs, etc.). It is usually a relatively uncommon disease in the EU and EEA/EFTA, although large outbreaks have been reported from the Netherlands in recent years.

Epidemiological situation in 2009

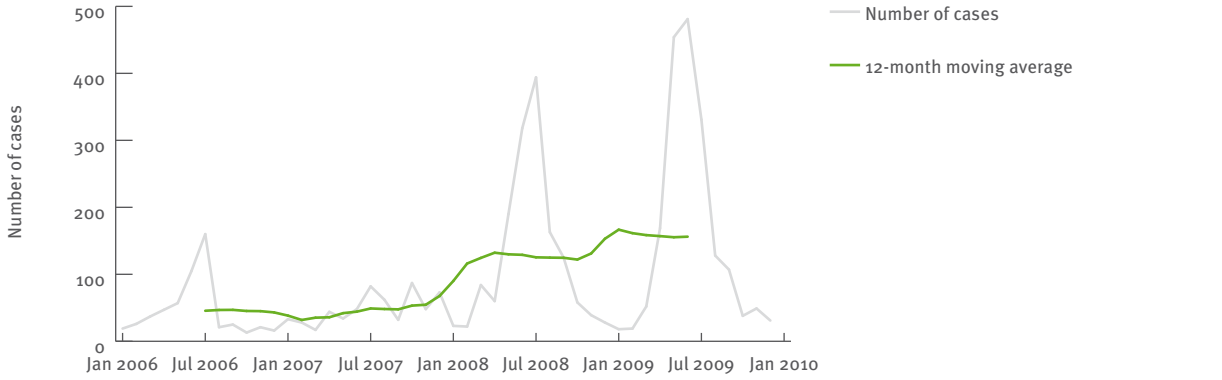
Twenty-five EU and EEA/EFTA countries reported 2687 cases of Q fever in 2009 (10 countries reported zero cases), of which 1988 were confirmed (Table 2.4.2). No data were reported from Austria, Denmark, France, Italy and Liechtenstein. The overall confirmed case rate was 0.61 per 100 000 population. The Netherlands reported the highest rate (9.8 per 100 000), and accounted for 82 % of all confirmed cases reported in 2009, due to an ongoing outbreak[1,2]. Other European countries reported

Table 2.4.2. Number and rate of Q fever cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	-	-	-	-	-	-	-	-	-	-	-
Belgium	Y	A	33	33	0.31	27	0.25	14	0.13	8	0.08
Bulgaria	Y	A	24	22	0.29	17	0.22	33	0.43	27	0.35
Cyprus	Y	C	3	2	0.25	31	3.93	8	1.03	2	0.26
Czech Republic	Y	C	0	0	0.00	0	0.00	-	-	-	-
Denmark	-	-	-	-	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Finland	Y	C	1	1	0.02	2	0.04	2	0.04	0	0.00
France	-	-	-	-	-	-	-	-	-	-	-
Germany	Y	C	191	191	0.23	370	0.45	83	0.10	204	0.25
Greece	Y	C	3	3	0.03	3	0.03	0	0.00	2	0.02
Hungary	Y	C	19	19	0.19	11	0.11	7	0.07	12	0.12
Ireland	Y	C	17	17	0.38	10	0.23	4	0.09	8	0.19
Italy	-	-	-	-	-	-	-	-	-	0	0.00
Latvia	Y	C	0	0	0.00	1	0.04	0	0.00	1	0.04
Lithuania	Y	A	0	0	0.00	0	0.00	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00	-	-	-	-
Malta	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	2317	1623	9.84	1007	6.14	132	0.81	12	0.07
Poland	Y	C	3	3	0.01	4	0.01	0	0.00	0	0.00
Portugal	Y	C	14	14	0.13	12	0.11	8	0.08	9	0.09
Romania	Y	C	4	2	0.01	3	0.01	6	0.03	0	0.00
Slovakia	Y	C	0	0	0.00	0	0.00	1	0.02	0	0.00
Slovenia	Y	C	0	0	0.00	0	0.00	93	4.63	3	0.15
Spain[a]	N	C	34	34	-	119	-	159	-	145	-
Sweden	Y	C	5	5	0.05	7	0.08	0	0.00	1	0.01
United Kingdom	Y	C	19	19	0.03	56	0.09	62	0.10	146	0.24
EU total	**-**	**-**	**2687**	**1988**	**0.62**	**1680**	**0.50**	**612**	**0.15**	**580**	**0.12**
Iceland	Y	C	0	0	0.00	0	0.00	-	-	-	-
Liechtenstein	-	-	-	-	-	0	0.00	-	-	-	-
Norway	Y	C	0	0	0.00	0	0.00	0	0.00	-	-
Total	**-**	**-**	**2687**	**1988**	**0.61**	**1680**	**0.49**	**612**	**0.15**	**580**	**0.12**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified. (a) Sentinel surveillance system based on a limited number of selected laboratories.

Figure 2.4.4. Trend and number of reported confirmed Q fever cases by month, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Cyprus, Estonia, Finland, Germany, Greece, Hungary, Ireland, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden. Data excludes overseas territories, protectorates or départements.

variable trends for Q fever cases, including some small outbreaks.

Fourteen of the 1815 confirmed cases with information on importation status were imported.

Age and gender distribution

The highest rates were seen in the age group 45–64 years, with confirmed case rates of 1.09 per 100 000 population (Figure 2.4.5). Only 38 of the 1964 cases (2.6 %) for which information was available were reported among children under the age of 15. The overall rate was higher in men than in women (0.76 and 0.48 per 100 000, respectively), with a male-to-female ratio of 1.58:1 (1.85:1 in 2008).

Seasonality

Most cases occurred in May, June and July (65 %). This was earlier and case numbers higher than in previous years, reflecting the dominance of the Netherlands outbreak in the 2009 reports.

Discussion

Q fever is generally an underreported disease due to its non-specific clinical features. Increased awareness due to the ongoing outbreak the Netherlands (since 2007) may have contributed to enhanced case detection also in other countries.

In 2009, the main outbreak occurred in the Netherlands between May and mid-September with a peak during weeks 20–24 (mid-May to mid-June)[1]. In 2008, the majority of cases occurred during June and August. The 2009 outbreak started earlier and was much stronger, causing public health concern in the Netherlands. The outbreak was also more widespread than in 2008 but still mainly affecting the province of Noord Brabant. Proximity (‹ 5 km) to infected dairy goat farms was proven to be the major risk factor for getting the infection.

In the Netherlands, veterinary public health measures were taken. Since June 2008, case notification of Q fever in goats and sheep (abortion clusters) was made mandatory and the exact location of farms with animals that had clinical Q fever was reported to the municipal health service. Such measures facilitated the detection of related human cases or clusters. Stringent hygiene protocols and vaccination of dairy goats and sheep has become mandatory since 2009 and selective culling of pregnant goats from infected premises was implemented in addition from December 2009[1,2].

Several measures to prevent infection or severe outcome in humans were also implemented, including possible vaccination of at-risk populations. The sharp decrease in case numbers in the second half of 2009 may be the consequence of the implemented measures[1,3]. Risk assessments of Q fever were produced by the European Food Safety Authority (EFSA) and ECDC[4,5]. Other European countries have reported variable trends of Q fever, including a number of outbreaks[6].

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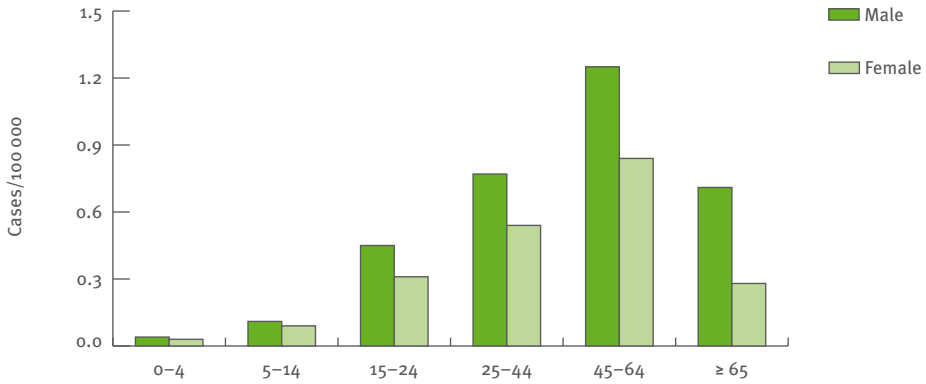
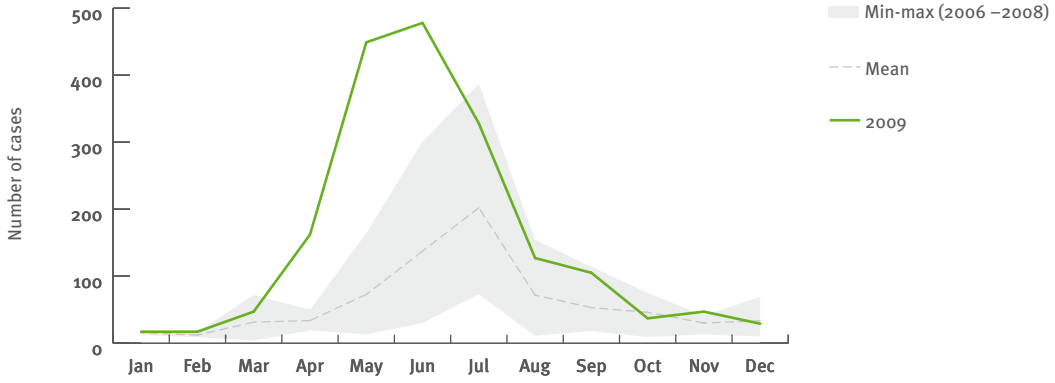
Figure 2.4.5. Rates of reported confirmed Q fever cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: Belgium, Cyprus, Finland, Germany, Greece, Hungary, Ireland, Netherlands, Poland, Portugal, Romania, Spain, Sweden and United Kingdom. Czech Republic, Iceland, Estonia, Latvia, Lithuania, Luxembourg, Malta, Norway, Slovakia and Slovenia reported zero cases. Data excludes overseas territories, protectorates or départements.

Figure 2.4.6. Seasonal distribution of reported confirmed cases of Q fever, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Cyprus, Estonia, Finland, Germany, Greece, Hungary, Ireland, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden. Data excludes overseas territories, protectorates or départements.

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	-	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	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
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	-
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	N	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 will re-emerge in epidemic form.
- SARS has been shown to spread rapidly worldwide; therefore surveillance should be maintained during the post-epidemic period.

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 Hong Kong spread globally with over 8 000 known cases and a case fatality rate of about 10 %. The last known community case occurred in 2003, but SARS is not eradicated and may still be present in its natural animal host reservoirs.

Epidemiological situation in 2009

For 2009, despite ongoing surveillance, there were zero reports of the SARS virus infection in humans from 29 EU and EEA/EFTA countries (no report from Liechtenstein). Nor were there any reports of SARS virus infection 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 in different studies[1–3].

The SARS outbreak illustrates the importance of sensitive detection tools in the response to public health threats[4]. Studies since the SARS outbreak suggest that many novel viruses exist in animals and some may present a risk to humans[5].

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Smallpox

- There were no reports of smallpox or potential smallpox in the EU and EEA/EFTA countries (or worldwide) in 2009.

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

Epidemiological situation in 2009

There were no reports of smallpox or potential smallpox in the EU and EEA/EFTA countries (or worldwide) in 2009.

Discussion

Mass smallpox vaccination campaigns have ceased after eradication. Therefore, the population that is immunologically naïve to orthopoxviruses has increased significantly. Thirty years after cessation of vaccination, human monkeypox (a related orthopoxvirus present in Central Africa) incidence has dramatically increased, for example in rural Democratic Republic of Congo. Improved surveillance and epidemiological analysis is needed to better assess the public health burden and develop strategies for reducing the risk of wider spread of this monkeypox infection[1].

Smallpox viruses are considered one of the viruses with potential use as a biological weapon. Legitimately, the virus exists in only two WHO reference laboratories in the world. Any new case of smallpox would have to be the result of human accidental or deliberate release.

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Viral haemorrhagic fevers (VHF)

- In 2009, the reporting of viral haemorrhagic fevers has been divided into the following groups of diseases: hantavirus infections, Crimean–Congo haemorrhagic fever, dengue fever, Rift Valley fever, Ebola and Marburg infection and Lassa fever.
- For hantavirus infection, 2471 cases of have been reported from 23 countries, which is nearly half the cases reported in 2008, but it is still the most commonly reported disease with potential haemorrhagic features in the EU and EEA/EFTA.
- Three cases of Crimean–Congo have been reported by Bulgaria (one of unknown origin) and Germany (two imported cases).
- Some 522 confirmed cases of dengue fever were notified by EU and EEA/EFTA countries, and none was confirmed to be indigenous.
- Two cases of Lassa fever imported from Nigeria and Mali have been reported by the United Kingdom.

Hantavirus

Epidemiological situation in 2009

In 2009, 2459 reports of confirmed hantavirus infection were received from 23 EU and EEA/EFTA countries. Five countries reported no cases (Table 2.4.3). Data were not available from Cyprus, Denmark, France, Italy, Portugal, Iceland or Liechtenstein.

The overall confirmed case rate was 1.68 per 100 000 population, varying from 0.01 to 36.18 in Finland (Finland reported 80 % of all cases). Information about the source of infection was not available. All or most cases from Austria, Czech Republic, Estonia, Germany, Hungary and Romania were indigenous; six cases of hantavirus infection were identified as imported cases.

Age and gender distribution

Hantavirus infections are predominantly reported in adults, with 77 % of cases in the age groups 25–44 and 45–64 years. A few cases are reported in children (2.5 % of the cases) with a confirmed case rate of 0.09 per 100 000 in the 0–4 year age group and 0.14 per 100 000 population for the 5–14 year-olds.

The highest incidence is observed in the 45–64 year-old group (1.24 per 100 000 population) followed by the 25–44 year-olds (0.95 per 100 000 population) (Figure 2.4.7). The incidence is higher among males (0.92 per 100 000 population) than females (0.65 per 100 000 population) and the male-to-female ratio is 1.41:1.

Seasonality

Cases are reported all year round with a significant peak in January and a decreasing trend until April. This

Table 2.4.3. Number and rate of hantavirus cases reported in EU and EEA/EFTA countries, 2008–09

Country	2009					2008	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate
Austria	Y	C	29	29	0.35	1	0.01
Belgium[a]	Y	C	187	187	1.75	336	3.15
Bulgaria	Y	A	5	2	0.03	2	0.03
Cyprus	-	-	-	-	-	-	-
Czech Republic	Y	C	6	6	0.06	-	-
Denmark	-	-	-	-	-	-	-
Estonia	Y	C	17	17	1.27	11	0.82
Finland	Y	C	1927	1927	36.18	3259	61.48
France	-	-	-	-	-	-	-
Germany	Y	C	181	181	0.22	243	0.30
Greece	Y	C	2	2	0.02	2	0.02
Hungary	Y	C	11	11	0.11	3	0.03
Ireland	Y	C	0	0	0.00	0	0.00
Italy	-	-	-	-	-	-	-
Latvia	Y	A	1	1	0.04	1	0.04
Lithuania	Y	C	0	0	0.00	0	0.00
Luxembourg	Y	C	1	1	0.20	0	0.00
Malta	Y	C	0	0	0.00	0	0.00

Country	2009					2008	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate
Netherlands	Y	C	8	1	0.01	0	0.00
Poland	Y	A	5	4	0.01	0	0.00
Portugal	-	-	-	-	-	-	-
Romania	Y	C	9	8	0.04	4	0.02
Slovakia	Y	C	3	3	0.06	1	0.02
Slovenia	Y	C	5	5	0.25	45	2.24
Spain	Y	C	0	0	0.00	2	0.00
Sweden	Y	C	53	53	0.57	569	6.20
United Kingdom	Y	C	0	0	0.00	0	0.00
EU total	**-**	**-**	**2450**	**2438**	**0.68**	**4479**	**1.29**
Iceland	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-
Norway	Y	C	21	21	0.44	50	1.06
Total	**-**	**-**	**2471**	**2459**	**0.68**	**4529**	**1.29**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified. (a) Sentinel surveillance system based on a limited number of selected laboratories.

distribution of the cases reflects primarily the epidemiological situation in Finland, which reported 80% of all cases (Figure 2.4.8).

Discussion

Hantavirus infections are widely distributed across Europe, with the exception of some Mediterranean countries[1], and are particularly prevalent in Scandinavia. Haemorrhagic fever with renal syndrome is caused by different viruses, mostly Puumala virus carried by bank voles and Dobrava virus by yellow-necked mice.

Extension of the known endemic area may occur during epidemic years, as reported in 2005 in several west European countries[2]. Hantavirus infections are still underdiagnosed in some areas.

The number of cases and incidence rates have decreased significantly in the more affected countries (Finland, Belgium, Germany and Sweden) compared to 2008. In south-western Germany, Puumala virus incidence is significantly linked with bank vole habitats, vole food supply, climate factors and human population density[3].

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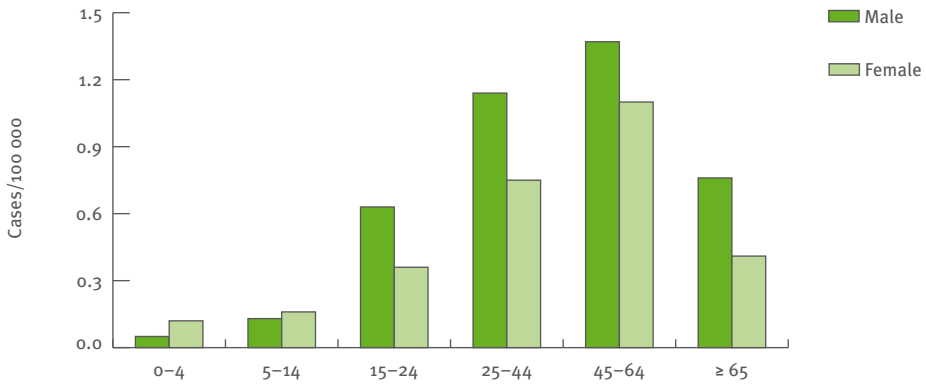
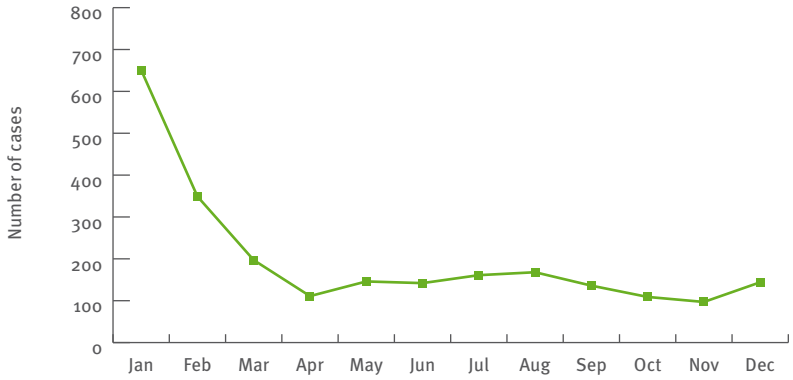
Figure 2.4.7. Rates of reported confirmed hantavirus infection cases in EU and EEA/EFTA countries, by age and gender, 2009



Sources: Country reports: Finland, Germany, Greece, Hungary, Ireland, Lithuania, Malta, Netherlands, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom. Data excludes overseas territories, protectorates or départements.

Figure 2.4.8. Seasonal distribution of reported confirmed cases of hantavirus infections in the EU and EEA/EFTA countries, 2009



Sources: Country reports: Finland, Germany, Greece, Hungary, Ireland, Lithuania, Malta, Netherlands, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom.
Data excludes overseas territories, protectorates or départements.

Crimean–Congo haemorrhagic fever

Epidemiological situation in 2009

Six cases (one confirmed) of Crimean–Congo haemorrhagic fever (CCHF) have been reported from Bulgaria, and two confirmed cases from Germany.

Discussion

CCHF is endemic in the Balkan region – cases have been previously reported from Kosovo[i], Albania, Bulgaria[1] and Greece in 2008[2]. The cases in Germany were imported: one from Afghanistan and one from Turkey[3]. In Turkey, where the disease first emerged in 2002–03, 1300 cases were reported in 2009, including 62 deaths[4].

Potential reasons for the emergence or re-emergence of CCHF include climate changes, which may have a significant impact on the reproduction rate of the vector *Hyalomma* ticks, as well as anthropogenic factors (e.g. changes in agricultural and hunting activities). There are models that show the probability of CCHF extending to other countries around the Mediterranean basin, suggesting that vector, veterinarian and human surveillance should be enhanced[5].

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i UN Administered Province of Kosovo in accordance with Security Council Resolution 1244 (1999).

Dengue fever

Epidemiological situation in 2009

In 2009, 577 cases of dengue fever (522 confirmed) were reported by 12 of 23 EU and EEA/EFTA countries (Table 2.4.4). All were probably imported (40 of unknown origin). Data were not available for Bulgaria, Cyprus, Denmark, Netherlands, Portugal, Liechtenstein and Norway. Nevertheless, a case of imported dengue in Norway has been described in the literature[1].

The overall confirmed case rate was 0.11 per 100 000. The individual country rates varied between <0.01 and 1.08 cases per 100 000 population. The higher rates reported by Sweden (1.08 per 100 000) and Finland (0.66 per 100 000) reflect predominant choices of travel destinations to countries where dengue fever is endemic. The data below vary rather widely as some countries reported all diagnosed dengue fever cases while others only reported dengue haemorrhagic fever.

Age and gender distribution

The confirmed case rate was similar in males (0.11 cases per 100 000) and females (0.10 per 100 000), with a male-to-female ratio of 1.1:1. The age-groups with the highest rates were 25–44 years (0.19 cases per 100 000), 15–24 years (0.17 per 100 000) and 45–65 (0.11 per 100 000); these are most likely related to preferences for travel to tropical countries among these age groups (Figure 2.4.9).

Seasonality

Cases were reported more frequently in the European colder months, reflecting probably also travel-related exposure (Figure 2.4.10).

Discussion

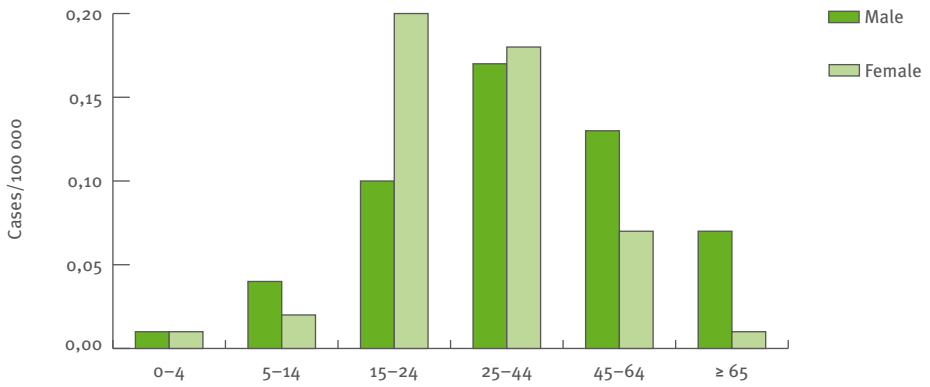
The number of persons who visit countries endemic for dengue is continually rising, and dengue infection is the second most frequent reason, after malaria, for hospitalisation after their return. Cases reported in 2009 related

Table 2.4.4. Number and rate of dengue fever cases reported in EU and EEA/EFTA countries, 2008–09

Country	2009					2008	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate
Austria	Y	C	0	0	0.00	0	0.00
Belgium	Y	A	53	53	0.50	60	0.56
Bulgaria	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-
Czech Republic	Y	C	0	0	0.00	-	-
Denmark	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00
Finland	Y	C	35	35	0.66	35	0.66
France	Y	C	64	13	0.02	15	0.02
Germany	Y	C	298	298	0.36	273	0.33
Greece	Y	C	0	0	0.00	0	0.00
Hungary	Y	C	1	1	0.01	6	0.06
Ireland	Y	C	0	0	0.00	0	0.00
Italy	Y	C	10	10	0.02	12	0.02
Latvia	Y	A	1	1	0.04	0	0.00
Lithuania	Y	C	0	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-
Poland	Y	C	4	0	0.00	0	0.00
Portugal	-	-	-	-	-	-	-
Romania	Y	C	0	0	0.00	1	0.00
Slovakia	Y	C	0	0	0.00	0	0.00
Slovenia	Y	C	4	4	0.20	6	0.30
Spain	Y	C	4	4	0.01	0	0.00
Sweden	Y	C	100	100	1.08	73	0.79
United Kingdom	Y	C	3	3	0.00	6	0.01
EU total	**-**	**-**	**577**	**522**	**0.11**	**487**	**0.11**
Iceland	Y	C	0	0	0.00	-	-
Liechtenstein	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-
Total	**-**	**-**	**-**	**-**	**-**	**-**	**-**

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

Figure 2.4.9. Rates of reported confirmed dengue fever cases in EU and EEA/EFTA countries, by age and gender, 2009



Source: Country reports: Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Poland, Slovakia, Slovenia, Spain, Sweden. Data excludes overseas territories, protectorates or départements.

mainly to travel to Thailand, India and Indonesia. It is cogent to consider whether introduction of these viruses is likely to lead to indigenous and even endemic transmission in Europe, where there is evidence that conditions are already suitable for transmission[5].

During 2010, two indigenous cases of dengue fever were indeed reported from metropolitan France (Nice), living in the same neighbourhood. The first indigenous case of dengue fever was reported in a returning traveller from Croatia, in addition to 14 indigenous cases living in the same area in Croatia (for further information see Chapter 3).

Although this report concerns continental Europe[i], dengue fever is endemic in most tropical regions. According to the Pan American Health Organization, in the three French départements in the Americas, 5191 confirmed cases of dengue fever have been reported for 2009 with an incidence ranging from 107.3 per 100000 population in Guadeloupe, to 57.9 in Martinique and 2200 in French Guiana[2]. The year 2009 was characterised by a high dengue virus activity especially in French Guiana (the estimated number of cases is 13900 for a population of 206000) and a lower activity in Martinique. In the Indian Ocean, La Réunion island reported one confirmed imported case of dengue fever in 2009 (DEN2 case) and 11 probable cases (including three imported cases)[3]; the island is therefore still in an interepidemic situation. In 2009, WHO also reported the first outbreak of dengue in Cape Verde[4].

i The term 'continental Europe' is used to mean EU and EEA/EFTA countries on the European continent, i.e. it excludes overseas territories, protectorates or départements.

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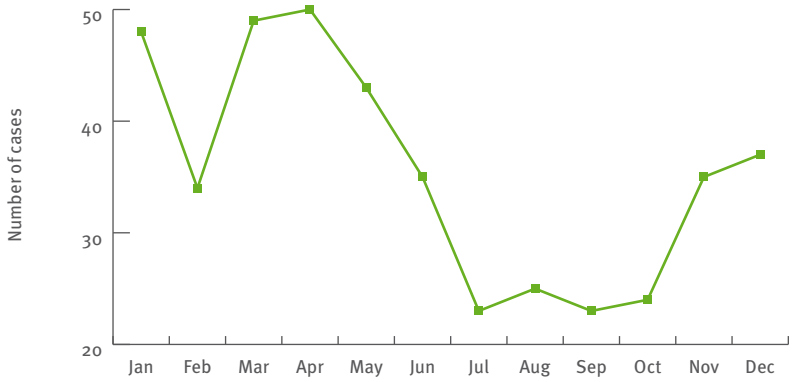
Figure 2.4.10. Seasonal distribution of reported confirmed dengue cases in the EU and EEA/EFTA countries, 2009



Source: Country reports: Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Poland, Slovakia, Slovenia, Spain, Sweden. Data excludes overseas territories, protectorates or départements.

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	-	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

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	
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	N	N	N	Y
United Kingdom	UK-DENGUE	V	Co	A	C	Y	N	Y	Y	Y

Rift Valley fever

Epidemiological situation in 2009

No cases were reported in continental Europe[i] in 2009.

Discussion

In 2009, the outbreak in Madagascar continued and two smaller outbreaks occurred in South Africa (Kwazulu-Natal in March and the Northern Cape Province in mid-October); all laboratory confirmed human cases (n=25) in 2008–09 in South Africa had very close contact with infected animals and/or their tissues, including the two most recent cases in Northern Cape[1,2].

The Rift Valley fever outbreak continued into 2010 in several regions of South Africa, and peaked prior to the FIFA football World Cup in (European) summer 2010. No EU citizen was affected (for more information on surveillance during the World Cup, see Chapter 3).

References

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i The term 'continental Europe' is used to mean EU and EEA/EFTA countries on the European continent, i.e. it excludes overseas territories, protectorates or départements.

Marburg and Ebola virus

Epidemiological situation in 2009

No imported cases have been reported in continental Europe[ii] in 2009.

In Germany, a case of needle stick injury has been reported with a needle used to inject Ebola into mice, but contamination has not been proven. The person was given an experimental vaccine and did not show any symptoms of the disease[1].

No further cases of Marburg virus infections were reported in Africa. However, an outbreak of Ebola virus (32 cases, 15 deaths) was notified by WHO in the Democratic Republic of Congo, Province of Kasai Occidental[2]. It was declared to have ended on 16 February 2009; the last person infected by the virus died on 1 January 2009.

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ii The term 'continental Europe' is used to mean EU and EEA/EFTA countries on the European continent, i.e. it excludes overseas territories, protectorates or départements.

Lassa fever

Epidemiological situation in 2009

Two cases of imported Lassa fever have been reported in the United Kingdom in 2009. The first case of Lassa fever was imported from Nigeria[1], and the second was imported from Mali[2]. Both patients died. Seven contacts were considered to be at high risk of infection in the second incident and were actively monitored for 21 days.

Discussion

Lassa fever is known to be endemic in parts of West Africa, with most cases reported from Guinea, Liberia, Sierra Leone 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.

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Chikungunya fever

Epidemiological situation in 2009

In 2009, 94 confirmed cases of chikungunya fever were reported by 22 EU and EEA/EFTA countries, which is nearly four times more than the case number for 2008 (Table 2.4.5). No data were provided by Bulgaria, Cyprus, Denmark, Netherlands, Portugal, Iceland, Liechtenstein or Norway.

Cases were reported by Austria (eight cases), Finland (nine cases), France (13 cases), Germany (54 cases), Italy (three cases), Spain (six cases) and the United Kingdom (56 cases, of which eight confirmed). All cases were imported (three were of unknown origin). Information regarding the probable country of infection was not available.

Age and gender

The notification rate is identical in males and females (0.02 per 100 000). Most of the cases were identified in the age group 25–44 years (0.04 cases per 100 000) and 45–65 (0.03 per 100 000), most likely related to these age groups' preferences for travel to tropical countries (Figure 2.4.11).

Seasonality

Cases were reported especially in the autumn (Figure 2.4.12) in relation with travel to countries where active transmission was occurring.

Discussion

Reported confirmed case numbers showed a significant increase in 2009, especially in Austria, France, Germany and the United Kingdom. Notification rates are higher in 25–64 year-old females than in males. Cases were detected in travellers returning mostly from India, the Maldives and Thailand.

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. The absence of reported indigenous cases in the previously affected region may be due to the inability of the virus to sustain transmission in temperate climate, possibly in combination with important vector control activities.

During 2008 and 2009 only imported cases of chikungunya were reported from EU and EEA/EFTA countries. In 2010, indigenous transmission was reported for the second time in Europe with the first two indigenous cases identified in metropolitan France in autumn 2010 through enhanced surveillance (see Chapter 3).

From the beginning of 2008 and also in 2009, increasing numbers of cases of chikungunya fever were also reported in several countries in Asia, such as Indonesia, Malaysia, Sri Lanka, Thailand and India. In La Réunion, a French département in the Indian Ocean where a major outbreak occurred during 2005–06, five confirmed cases (four indigenous) and three probable cases (one imported) were reported in 2009. The island is still considered to be in interepidemic situation[1].

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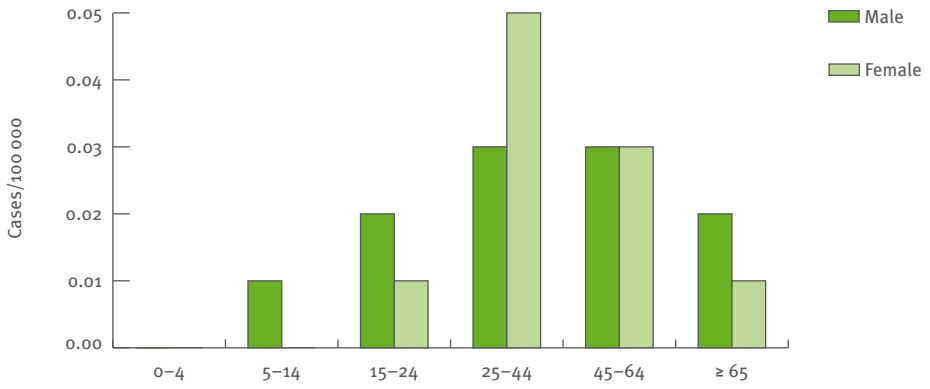
Table 2.4.5. Number and rate of reported cases of chikungunya fever in EU and EEA/EFTA countries, 2008–09

Country	2009					2008	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate
Austria	Y	C	8	8	0.10	0	0.00
Belgium	Y	C	0	6	0.06	0	0.00
Bulgaria	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-
Czech Republic	Y	C	0	0	0.00	0	0.00
Denmark	-	-	-	-	-	-	-
Estonia	Y	C	0	0	0.00	0	0.00
Finland	Y	C	3	3	0.06	0	0.00
France	Y	C	13	13	0.02	1	0.00
Germany	Y	C	54	54	0.07	17	0.02
Greece	Y	C	0	0	0.00	0	0.00
Hungary	Y	C	0	0	0.00	0	0.00
Ireland	Y	C	0	0	0.00	0	0.00
Italy	Y	C	3	2	0.00	1	0.00
Latvia	Y	C	0	0	0.00	0	0.00
Lithuania	Y	C	0	0	0.00	0	0.00
Luxembourg	Y	C	0	0	0.00	0	0.00
Malta	Y	C	0	0	0.00	0	0.00
Netherlands	-	-	-	-	-	-	-
Poland	Y	C	0	0	0.00	0	0.00
Portugal	-	-	-	-	-	-	-
Romania	Y	C	0	0	0.00	0	0.00
Slovakia	Y	C	0	0	0.00	0	0.00
Slovenia	Y	C	0	0	0.00	0	0.00
Spain[a]	N	C	6	6	-	5	-
Sweden	Y	C	0	0	0.00	-	-
United Kingdom	Y	C	56	8	0.01	1	0.00
EU Total	**-**	**-**	**143**	**94**	**0.02**	**25**	**0.00**
Iceland	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-
Total	**-**	**-**	**143**	**94**	**0.02**	**25**	**0.00**

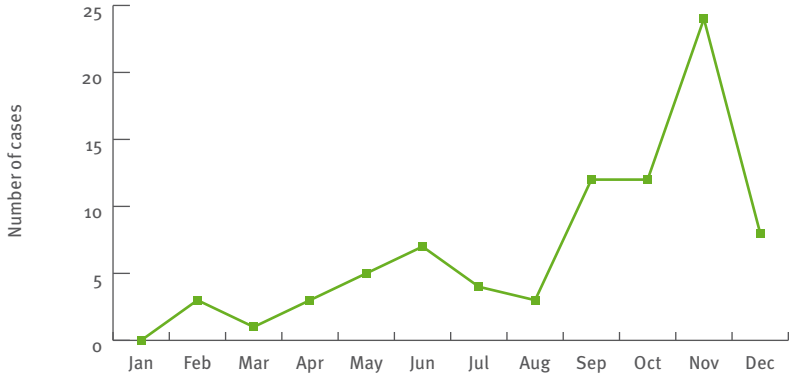
Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified. (a) Sentinel surveillance system based on a limited number of selected laboratories.

Figure 2.4.11. Rates of reported confirmed chikungunya cases reported in EU and EEA/EFTA countries, by age and gender, 2009



Source: Country reports: Austria, Belgium, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom. Data excludes overseas territories, protectorates or départements.

Figure 2.4.12. Seasonal distribution of reported confirmed chikungunya cases in EU and EEA/EFTA countries, 2009



Source: Country reports: Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia, Sweden, United Kingdom. Data excludes overseas territories, protectorates or départements.

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	-	Y	Y	Y	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 28 confirmed cases of West Nile virus infection were reported across the EU and EEA/EFTA countries in 2009: 18 cases in Italy (two imported), seven cases in Hungary, two cases in Romania and one imported case in France.

West Nile fever is a disease caused by an arthropod-borne virus (genus *Flavivirus*) whose reservoir is shared by wild birds and mosquitoes. Transmission to humans is primarily through mosquito bites. The disease can lead to serious illness in some cases, and no treatment or vaccination is available; prevention is primarily avoidance of mosquito bites. The West Nile virus (WNV) was first recognised in Europe in a large outbreak in Romania in 1996.

Epidemiological situation in 2009

Twenty-eight confirmed cases of WNV infection were reported in 2009 by 24 EU and EEA/EFTA countries. No data were available from Bulgaria, Denmark, Germany, Iceland, Liechtenstein or Portugal.

Eighteen confirmed cases were reported by Italy, seven cases by Hungary, two cases by Romania and one by France. Trends are increasing, as only four cases were reported in 2006. At country level, this is particularly true for Italy and, to a lesser extend, for Hungary. The overall confirmed case rate in Europe was below 0.01 and the highest rate was 0.07 per 100 000 reported by Hungary. The surveillance in Italy and France does not cover the whole country. Most cases were indigenous, but the French case and two Italian cases were imported.

Age and gender distribution

As in 2008, most cases in 2009 occurred in individuals older than 45 years, but some young females were also affected. The majority of cases (n=18) were male (male-to-female ratio=1.8:1).

Seasonality

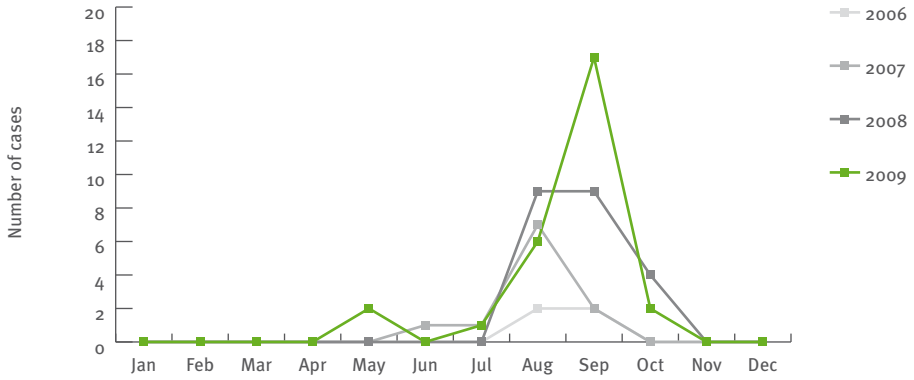
Although the numbers were small, most cases were reported between July and October 2009. The majority of cases (17) was reported in September, which is consistent with observations from 2006 to 2008 (Figure 2.4.13).

Discussion

Since the first large outbreak of West Nile fever in Romania in 1996[1], in which 835 patients were hospitalised and 393 cases laboratory-confirmed with West Nile fever, WNV has been recognised as a public health concern in Europe.

Sporadic cases have been reported in recent years in several countries in southern and eastern Europe. The large outbreak in horses and humans in 2008 in Northern Italy clearly demonstrated that West Nile virus can occur in regions that combine high densities of competent vectors, suitable amplifying hosts (birds) and susceptible human and horse populations. Further investigations in Italy confirmed WN infection in a total of 16 clinical cases in 2009[2], mostly in the 2008 outbreak area. The re-occurrence of WNV transmission in 2009 in areas far from localities with a high density of migratory birds and the positive virological results consistently obtained from sampled resident birds suggest the establishment

Figure 2.4.13. Number of reported confirmed West Nile fever cases by month, in EU and EEA/EFTA countries, by month, 2006–09



Source: Country reports: Belgium, Cyprus, Estonia, Finland, France, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

of an efficient local overwintering mechanism with the possible involvement of these bird species[3].

Six new human cases of West Nile neuroinvasive disease were identified in the Veneto region, following the six cases already reported in 2008. A human WNV isolate was obtained for the first time from an asymptomatic blood donor, which showed a new mutation, a trait associated with avian virulence, increased virus transmission and the occurrence of outbreaks in humans[4].

In 2010, the WNV affected areas with confirmed human cases further spread and the number of confirmed cases of infection in humans in Europe increased markedly to 340 (compared to 28 in 2009). The majority of cases were reported from Greece (242). Other countries affected were Hungary, Romania and Italy and, for the first time, Spain (see Chapter 3 for more information).

Continued close monitoring of the situation (in terms of human, veterinary and entomological surveillance) is required. Personal protective measures against mosquito bites need to be considered by residents or persons visiting these areas in the months when transmission occurs. Early detection is crucial for appropriate control measures particularly regarding blood and organ donations[5].

The WNV circulation in Italy coincided with the first detection in the same areas of two cases of Usutu virus infections, another flavivirus transmitted by mosquitoes among birds[6,7], which could represent an emerging threat to human health.

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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-Reflab	V	O	P	C	Y	N	N	N	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	-	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	N	N	N	Y
United Kingdom	UK-WEST_NILE_FEVER	V	Co	A	C	Y	N	Y	Y	Y

Yellow fever

- One case of imported yellow fever was reported by Spain in 2009.
- While imported cases are rare, non-vaccinated travellers visiting affected areas without the effective protection of yellow fever 17D vaccination expose themselves to risk of infection.

Yellow fever occurs due to infection with the yellow fever virus (genus *Flavivirus*). Transmission to humans is through the bite of an infected mosquito. Cases in the EU occur occasionally in travellers returning from countries where the disease is endemic.

Epidemiological situation in 2009

One case of yellow fever was reported by Spain among 29 reporting EU and EEA/EFTA countries in 2009 (data not available from Liechtenstein). The case had travelled to Spain from Ghana.

Discussion

In 2009, WHO reported 75 laboratory-confirmed cases for Africa and Central and South Americas, including 21 deaths. Eleven outbreaks were reported, occurring in Guinea, Côte d'Ivoire, Republic of Congo, Liberia, Cameroon and Central African Republic, reflecting intense virus circulation across the western and central parts of Africa. Targeted immunisation campaigns were conducted in these countries as a result[1–6].

Yellow fever is commonly underreported in the affected areas since the symptoms may be easily misinterpreted and most areas lack effective surveillance systems. WHO estimates that there are approximately 200 000 cases of yellow fever every year, resulting in 30 000 deaths[1].

In November 2009, the largest-ever yellow fever mass vaccination campaign commenced across three African countries. The week-long event targeted 11.9 million people across Benin, Liberia and Sierra Leone, all three of which are at high risk of yellow fever outbreaks.

Between 2007 and 2010, 57 million people were vaccinated against yellow fever in 10 countries at risk in Africa, and during the same period, 17 million people were protected through emergency vaccination[7]. Furthermore, thirty-seven countries in Africa and the Americas have introduced yellow fever vaccine in their routine childhood immunisation schedule up from 12 countries a decade ago. However, 160 million people could still be at risk in Africa if further funding is not secured for the emergency stockpile and preventive vaccination in remaining high-risk countries, especially as yellow fever is re-appearing in countries that have not reported cases in many years[8].

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2.5 Vaccine-preventable diseases

Diphtheria

- In 2009, 16 cases of diphtheria were reported across the EU with an overall rate of confirmed cases of ‹0.01 per 100 000 population.
- The most affected age group was the 45–64 year-olds (n=7, incidence rate=0.01 per 100 000) followed by the 65-year-olds or older (n=4, ‹0.01 per 100 000).
- Although diphtheria is a rare disease in the EU, the indigenous transmission of the disease persists in certain countries and underlines the need for maintaining a high coverage through the childhood vaccination programmes of the European Union.
- High vaccination coverage must be sustained, adult booster coverage increased, and epidemiological surveillance and laboratory capacity maintained despite the small number of cases.

Diphtheria is a very rare respiratory infection in the EU, caused by the bacterium *Corynebacterium diphtheriae*. Some strains are toxin-producing and can cause fatal illness. The disease is subject to WHO elimination targets for the European region.

Epidemiological situation in 2009

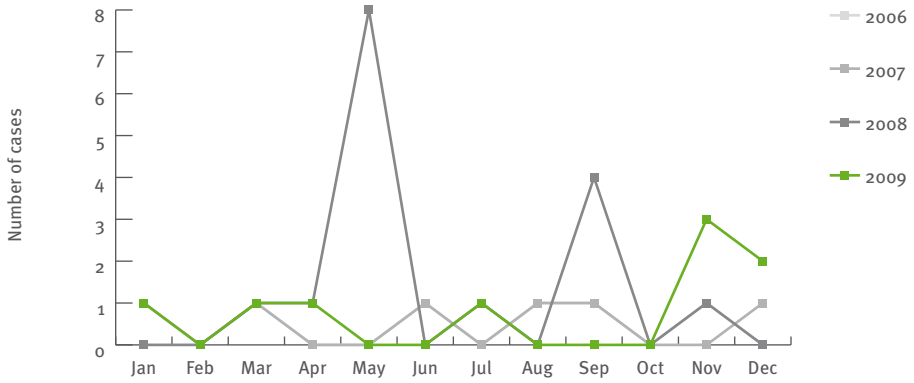
Twenty-nine EU and EEA/EFTA countries provided reports, four countries reported case-based data and one country (Latvia) reported aggregated data.

Five countries reported 15 confirmed diphtheria cases and one probable case in 2009 (Table 2.5.1).

Although historically diphtheria was more common in the winter months, in the post-epidemic period cases seem to be distributed throughout the year (Figure 2.5.1). Detailed analysis of seasonality is not possible due to the small number of reported cases.

Corynebacterium diphtheriae accounted for 11 cases in 2009. The majority (n=6) were reported by Latvia (confirmed case rate of 0.22 cases per 100 000 population). One case was reported by Sweden, two by Germany and two by the United Kingdom.

Figure 2.5.1. Number of reported confirmed diphtheria cases by month, in EU and EEA/EFTA countries, 2006–09



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

C. ulcerans cases were reported by the United Kingdom (2) and France (1), and two cases with unspecified diphtheria pathogen were reported by Germany.

The overall rate of confirmed cases of diphtheria is similar in the last three years (Table 2.5.1). At present, these rates include both diseases caused by *C. diphtheriae* and by *C. ulcerans*.

Age and gender distribution

The most affected age group (including both diseases) was the 45–64 year-olds (n=7, incidence rate=0.01/100 000) followed by the 65+ (4, <0.01 per 100 000). The higher number of cases among 45–64 year-olds could be attributed to the low level of immunity in this age group. Ten of the 15 confirmed cases were female.

Discussion

In this report, disease caused by both *C. ulcerans* and *C. diphtheriae* have been analysed together even though one is more of a zoonosis while the other involves human-to-human transmission. Although the aggregated data format currently used for these diseases has limitations, the data still shows that diphtheria appears to be under control in the EU.

The indigenous transmission of the disease continues in Latvia and suggests that epidemic diphtheria could return to any country in the EU. Therefore, high vaccination coverage must be sustained, adult booster coverage increased, and epidemiological surveillance and laboratory capacity maintained.

Future diphtheria surveillance activities are aimed at integrating surveillance programmes, which cover all diphtheria diseases caused by toxigenic *C. diphtheriae* and *C. ulcerans*, from both an epidemiology and laboratory point of view.

References

1. Centers for Disease Control and Prevention(CDC). Respiratory diphtheria-like illness caused by toxigenic Corynebacterium ulcerans – United States, 2010. MMWR 2011/60(03);77.
2. Centers for Disease Control and Prevention(CDC). Recommended adult immunization schedule – United States, 2010. MMWR 2010;59 (1).

Table 2.5.1. Number and rate of diphtheria cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification 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
Belgium	Y	C	0	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
Cyprus	Y	C	0	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
Denmark	Y	C	0	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
Finland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
France	Y	C	1	1	0.00	5	0.01	1	0.00	3	0.00
Germany	Y	C	4	4	0.00	0	0.00	2	0.00	0	0.00
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	0	0.00
Ireland	Y	C	0	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
Latvia	Y	A	6	5	0.22	29	1.28	15	0.66	64	2.79
Lithuania	Y	C	0	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
Malta	Y	C	0	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
Poland	Y	C	0	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
Romania	Y	C	0	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
Slovenia	Y	C	0	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	-	-
Sweden	Y	C	1	1	0.01	1	0.01	0	0.00	0	0.00
United Kingdom	Y	C	4	4	0.01	6	0.01	3	0.00	3	0.00
EU total	**-**	**-**	**16**	**15**	**0.00**	**43**	**0.01**	**21**	**0.00**	**70**	**0.02**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	4	0.08	0	0.00	0	0.00
Total	**-**	**-**	**16**	**15**	**0.00**	**47**	**0.01**	**21**	**0.00**	**70**	**0.02**

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	-	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	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	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	N	N	N	Y
United Kingdom	UK-DIPHTHERIA	O	Co	P	C	Y	N	Y	Y	Y

Invasive *Haemophilus influenzae* disease

- The incidence of invasive *Haemophilus influenzae* remains stable in Europe, with a notification rate of 0.39 per 100 000 population in 2009.
- The highest rates in the EU for 2009 were reported by Sweden and Norway.
- All EU countries have the Hib vaccine included in the national immunisation schedule, and routine vaccination continues to have a great impact on the reduction of incidence of the disease due to serotype b.

This is a systemic infection due to the bacterium *Haemophilus influenza*, often presenting as meningitis. With widespread vaccine use in early childhood, it is now an uncommon disease.

Epidemiological situation in 2009

In 2009, 2 016 confirmed cases of invasive *Haemophilus influenzae* disease (all serotypes) were reported by 29 countries (see Table 2.5.2). The overall confirmed case rate was 0.39 per 100 000 in 2009, similar to 2008 (0.41 per 100 000). These figures cannot be compared with 2006 data, as only serotype b (Hib) was included in that year.

The highest rates in 2009 were reported by Sweden (1.58 per 100 000) and Norway (1.48 per 100 000), followed by the United Kingdom (1.21 per 100 000), Ireland (0.97 per 100 000) and Finland (0.88 per 100 000).

Table 2.5.2. Number and rate of invasive *Haemophilus influenzae* disease cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	14	14	0.17	5	0.06	4	0.05	7	0.08
Belgium	Y	C	76	76	0.71	49	0.46	55	0.52	-	-
Bulgaria	Y	A	15	15	0.20	14	0.18	19	0.25	-	-
Cyprus	Y	C	2	2	0.25	0	0.00	0	0.00	-	-
Czech Republic	Y	C	10	10	0.10	7	0.07	13	0.13	11	0.11
Denmark	Y	C	31	31	0.56	40	0.73	15	0.28	4	0.07
Estonia	Y	C	1	1	0.07	1	0.07	2	0.15	7	0.52
Finland	Y	C	47	47	0.88	45	0.85	54	1.02	32	0.61
France	N	C	417	417	-	442	-	658	-	103	0.16
Germany	Y	C	199	199	0.24	312	0.38	93	0.11	55	0.07
Greece	Y	C	13	13	0.12	4	0.04	7	0.06	3	0.03
Hungary	Y	C	3	3	0.03	12	0.12	2	0.02	-	-
Ireland	Y	C	43	43	0.97	22	0.50	31	0.72	34	0.81
Italy	Y	C	56	56	0.09	50	0.08	33	0.06	23	0.04
Latvia	Y	C	1	1	0.04	2	0.09	0	0.00	-	-
Lithuania	Y	C	2	1	0.03	3	0.09	0	0.00	2	0.06
Luxembourg	Y	C	0	0	0.00	0	0.00	1	0.21	0	0.00
Malta	Y	C	3	3	0.73	0	0.00	1	0.25	-	-
Netherlands	Y	C	0	0	0.00	0	0.00	-	-	121	0.74
Poland	Y	C	19	19	0.05	28	0.07	39	0.10	19	0.05
Portugal	Y	C	8	8	0.08	5	0.05	16	0.15	17	0.16
Romania	Y	C	22	22	0.10	2	0.01	-	-	-	-
Slovakia	Y	C	5	5	0.09	8	0.15	6	0.11	0	0.00
Slovenia	Y	C	18	18	0.89	12	0.60	13	0.65	0	0.00
Spain	N	C	53	53	-	73	-	66	-	-	-
Sweden	Y	C	146	146	1.58	163	1.78	144	1.58	112	1.24
United Kingdom	Y	C	742	742	1.21	773	1.26	696	1.15	624	1.03
EU total	**-**	**-**	**1946**	**1945**	**0.38**	**2072**	**0.40**	**1968**	**0.36**	**1174**	**0.30**
Iceland	Y	C	0	0	0.00	0	0.00	1	0.33	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	71	71	1.48	75	1.58	83	1.77	73	1.57
Total	**-**	**-**	**2017**	**2016**	**0.39**	**2147**	**0.41**	**2052**	**0.37**	**1247**	**0.31**

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

Age and gender distribution

In 2009, the disease was predominantly found in infants younger than five years and in the oldest age group, 65 years old and older. The rate of confirmed cases for children under five years of age was 1.3 per 100 000 population (1.2 per 100 000 for males and 1.0 per 100 000 for females). Adults aged 65 years or older had a confirmed case rate of 1.0 per 100 000 population (1.4 per 100 000 for males and 0.9 per 100 000 for females), with highest rates reported by Sweden (4.80 per 100 000), Norway (4.40 per 100 000) and the United Kingdom (3.42 per 100 000). The male to female ratio was 1.08:1.

Seasonality

The distribution of observed invasive *Haemophilus influenzae* cases clearly follows a seasonal pattern, with the highest number reported in the winter months, followed by a steady decrease until August and a further increase to a peak in January. The pattern is the same for the years 2006–08, as shown in Figure 2.5.3.

Discussion

The disease was predominantly reported in infants younger than one year old and in the oldest age group (65 years and older).

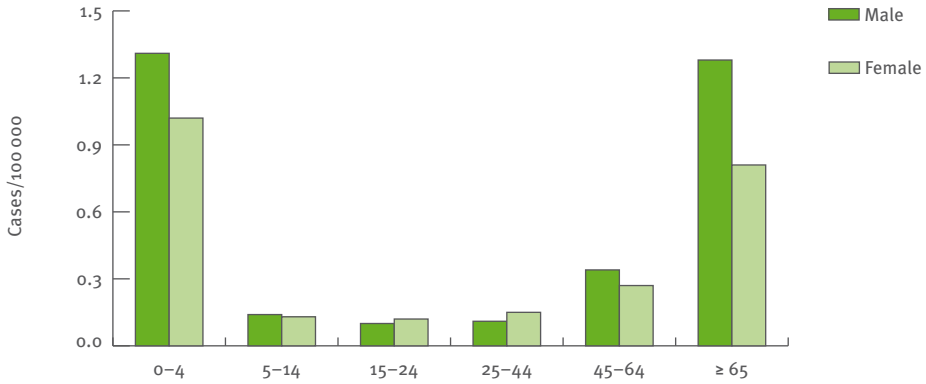
The enhanced surveillance data show that the disease was dominated by non-capsulated and non-b serotype.

The variations between countries reflect real differences in disease incidence, but are also influenced by substantial differences in health and surveillance systems, and variations in methods used for confirming probable cases[1].

References

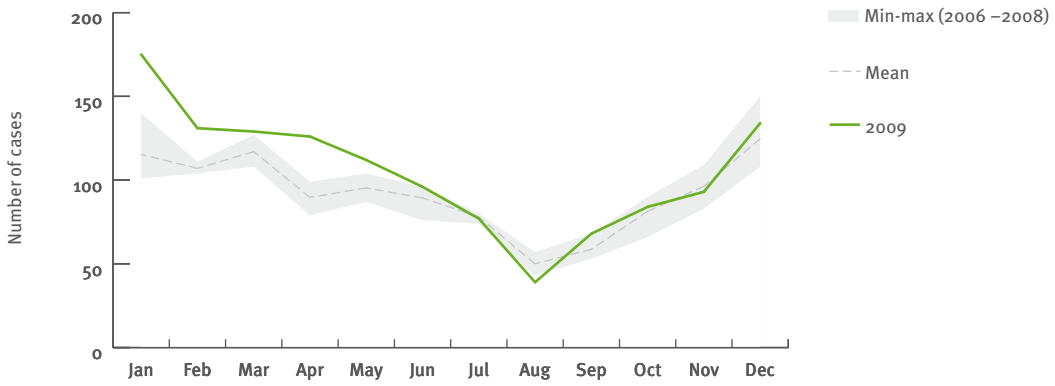
1. European Centre for Disease Prevention and Control. Surveillance of invasive bacterial diseases in Europe 2008/2009. Stockholm: ECDC; 2011.

Figure 2.5.2. Rates of reported confirmed invasive *Haemophilus influenzae* disease cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.5.3. Seasonal distribution of reported confirmed cases of invasive *Haemophilus influenzae* disease, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, 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	Y	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	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
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	N	N	N	Y
United Kingdom	UK-HIB	O	Co	P	C	Y	N	Y	Y	-

Invasive meningococcal disease

- The confirmed case rate of meningococcal disease remains low across Europe (0.89 per 100 000), and appears to have stabilised over recent years, following a major decrease since 1999 (1.9 per 100 000) mainly due to meningococcal C (MenC) vaccine introduction.
- Most invasive meningococcal infections are caused by the serogroups B and C. Commonly used vaccines in Europe cover only serogroup C.
- Infants and children under four years old are at greatest risk, with relatively few cases above 25 years of age.

This is an uncommon but severe acute systemic bacterial disease, appearing as meningitis or septicaemia. Rates have decreased by about one half as a result of introduction of childhood vaccination against one of the main serogroups. Case fatality rates, however, remain about 5–10 %, despite modern diagnosis and treatment.

Epidemiological situation in 2009

In 2009, 4 495 confirmed cases of invasive meningococcal disease were reported. Twenty-nine EU and EEA/EFTA countries provided reports with an overall confirmed case rate of 0.89 per 100 000. Ireland and the United Kingdom reported the highest rates of confirmed cases with 3.01 per 100 000 and 1.93 per 100 000, respectively. The lowest confirmed case rates were reported by Cyprus (0.13), Bulgaria (0.21) and Latvia (0.22) (Table 2.5.3).

Table 2.5.3. Number and rate of invasive meningococcal disease cases reported in EU and EEA/EFTA, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	100	89	1.07	84	1.01	61	0.74	68	0.82
Belgium	Y	C	104	104	0.97	110	1.03	158	1.49	137	1.30
Bulgaria	Y	A	25	16	0.21	20	0.26	24	0.31	39	0.51
Cyprus	Y	C	1	1	0.13	4	0.51	4	0.51	3	0.39
Czech Republic	Y	C	80	80	0.76	82	0.79	75	0.73	75	0.73
Denmark	Y	C	73	71	1.29	131	2.39	78	1.43	75	1.38
Estonia	Y	C	5	5	0.37	6	0.45	11	0.82	11	0.82
Finland	Y	C	33	33	0.62	28	0.53	43	0.81	45	0.86
France	Y	C	618	614	0.95	673	1.05	680	1.07	575	0.91
Germany	Y	C	493	493	0.60	904	1.10	436	0.53	544	0.66
Greece	Y	C	81	77	0.68	78	0.70	106	0.95	98	0.88
Hungary	Y	C	37	37	0.37	30	0.30	43	0.43	32	0.32
Ireland	Y	C	150	134	3.01	152	3.45	162	3.76	173	4.11
Italy	Y	C	181	181	0.30	178	0.30	178	0.30	127	0.22
Latvia	Y	C	9	5	0.22	13	0.57	15	0.66	9	0.39
Lithuania	Y	C	65	39	1.16	48	1.43	50	1.48	44	1.29
Luxembourg	Y	C	3	3	0.61	2	0.41	2	0.42	2	0.43
Malta	Y	C	4	4	0.97	6	1.46	6	1.47	14	3.46
Netherlands	Y	C	153	150	0.91	323	1.97	195	1.19	171	1.05
Poland	Y	C	304	301	0.79	321	0.84	335	0.88	185	0.48
Portugal	Y	C	66	65	0.61	60	0.57	98	0.92	103	0.97
Romania	Y	C	111	102	0.47	99	0.46	145	0.67	-	-
Slovakia	Y	C	40	39	0.72	48	0.89	35	0.65	36	0.67
Slovenia	Y	C	15	15	0.74	24	1.19	18	0.90	8	0.40
Spain	Y	C	533	533	1.16	590	1.30	619	1.39	595	1.36
Sweden	Y	C	65	65	0.70	49	0.53	49	0.54	51	0.56
United Kingdom	Y	C	1246	1190	1.93	1355	2.21	1522	2.50	1220	2.02
EU total	**-**	**-**	**4595**	**4446**	**0.89**	**5418**	**1.09**	**5148**	**1.04**	**4440**	**0.94**
Iceland	Y	C	5	5	1.57	4	1.27	4	1.30	3	1.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	44	44	0.92	36	0.76	30	0.64	34	0.73
Total	**-**	**-**	**4644**	**4495**	**0.89**	**5458**	**1.09**	**5182**	**1.04**	**4477**	**0.94**

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

Following the introduction of meningococcal C vaccine around 1999, there has been a steady decline in confirmed case rates across Europe[1,2]. Since 2006, however, rates have been stable, with no further decrease in incidence of reported cases (see Table 2.5.3 and Figure 2.5.4).

Age and gender distribution

Children younger than five years of age continue to experience the highest confirmed case rates of invasive meningococcal disease (7.37 per 100 000), followed by the 15–24 years age group (1.44 per 100 000) (Figure 2.5.5). In the older age groups, the disease is extremely rare.

In the youngest age group (<5 years old), the confirmed case rate was highest in Ireland (21 per 100 000), in the United Kingdom (17 per 100 000) and in Lithuania (11 per 100 000). The highest confirmed case rate among 15–24 year-olds was reported by Ireland (5.24 per 100 000), Iceland (4.24 per 100 000) and Austria (2.64 per 100 000).

Information on gender was available for 4445 cases. The incidence rates among males (0.97 per 100 000) and females (0.82 per 100 000) are comparable, with a slightly higher rate among males. The male-to-female ratio was 1.12:1.

Seasonality

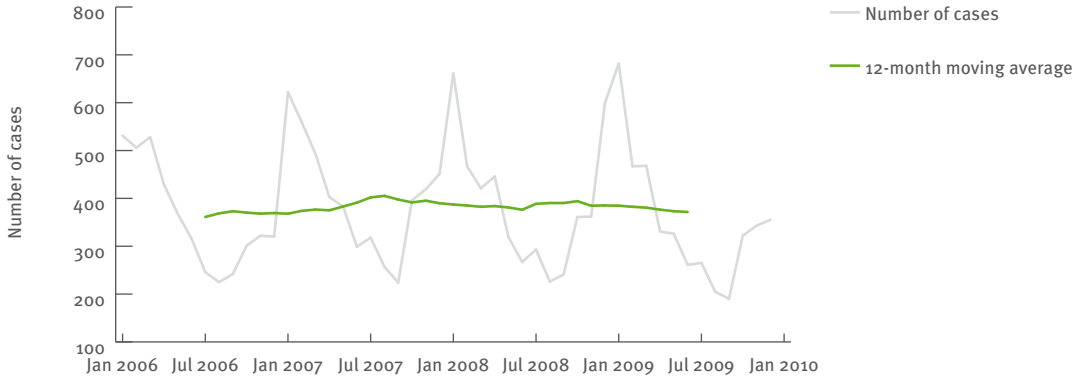
Information on seasonal distribution was available for 4637 cases. Reported cases peak in winter months (January 2009, n=748), declining by late summer (September 2009, n=214) (Figure 2.5.6).

Discussion

The reported rate of confirmed cases of meningococcal disease varies widely across countries, ranging from 0.13 to 3.01 per 100 000. In addition to real differences in incidence, reported figures also reflect differences between surveillance systems and in methods used for confirming cases.

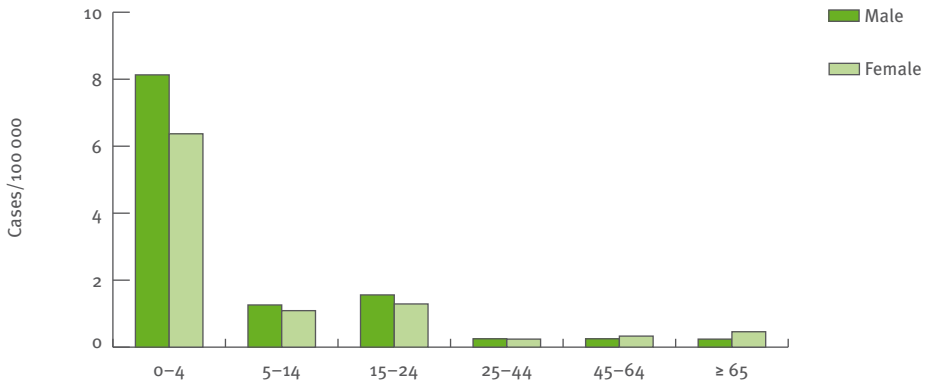
While reported incidence decreased by about half following widespread introduction of MenC vaccine from around 1999, confirmed case rates have been stable over recent years.

Figure 2.5.4. Trend and number of reported confirmed invasive meningococcal disease cases by month, in EU and EEA/EFTA countries, 2006–09



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

Figure 2.5.5. Rates of reported confirmed invasive meningococcal disease cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: 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.

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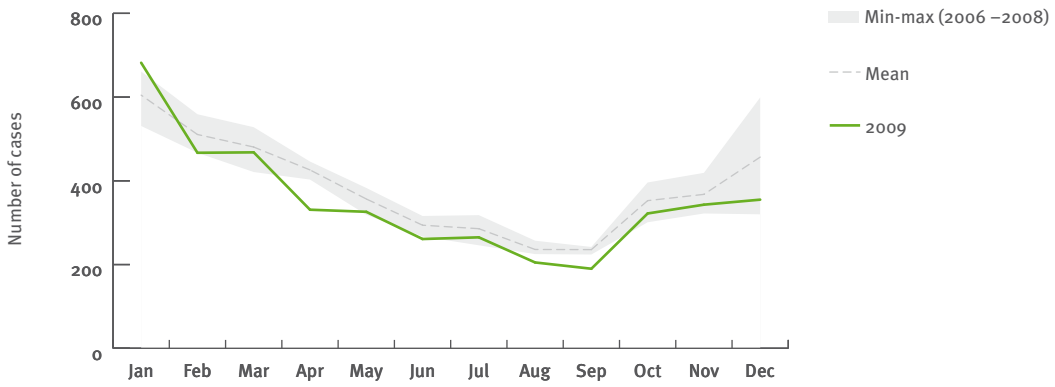
3. EU-IBIS Network. Invasive Neisseria meningitidis in Europe 2006. Health Protection Agency, London 2006. Available from: www.euibis.org.

Figure 2.5.6. Seasonal distribution of reported confirmed cases of invasive meningococcal disease, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Belgium, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, 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	Y	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-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-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	N	N	N	Y
United Kingdom	UK-MENINGOCOCCAL	O	Co	P	C	Y	N	Y	Y	Y

Invasive pneumococcal disease (IPD)

- The overall confirmed case rate of invasive pneumococcal disease (IPD) in 24 EU and EEA/EFTA Member States was 4.3 per 100 000 population in 2009.
- There is a wide heterogeneity of IPD surveillance systems in the EU, particularly in the type of surveillance systems in place, their coverage and the case definition used; in some countries there are no surveillance systems in place.

Despite good access to antibiotics, the bacterium *Streptococcus pneumoniae* is still a significant cause of illness and death in EU and EEA/EFTA countries. Very young children and the elderly are most at risk. Conjugate vaccines have been introduced into the childhood vaccination schedule in a number of EU and EEA/EFTA countries.

Epidemiological situation in 2009

In 2009, 14 352 cases were reported, of which 14 272 (99 %) were confirmed. Six countries did not provide data. The overall rate for reporting countries was 4.3 per 100 000, with highest rates being reported by Belgium (19 per 100 000), Sweden (17), Norway (16), Finland (16) and Slovenia (12). The Netherlands reported the lowest confirmed case rate in 2009, 0.21 per 100 000.

The rate of confirmed cases has decreased since 2006 (Table 2.5.4). Compared to the previous year, there were

Table 2.5.4. Number and rate of invasive pneumococcal disease cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	296	296	3.54	133	1.60	361	4.36	141	1.71
Belgium	Y	A	2 051	2 051	19.23	1875	17.58	1728	16.33	1484	14.12
Bulgaria	Y	A	46	46	0.60	35	0.46	39	0.51	1	0.01
Cyprus	Y	C	10	9	1.13	21	2.66	6	0.77	7	0.91
Czech Republic	Y	C	143	143	1.37	117	1.13	89	0.87	-	-
Denmark	Y	C	129	129	2.34	120	2.19	101	1.85	92	1.70
Estonia	Y	C	14	14	1.04	32	2.39	36	2.68	37	2.75
Finland	Y	C	855	855	16.05	925	17.45	791	14.99	0	0.00
France	-	-	-	-	-	-	-	-	-	-	-
Germany	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	66	66	0.59	63	0.56	-	-	-	-
Hungary	Y	C	49	49	0.49	65	0.65	57	0.57	56	0.56
Ireland	Y	C	436	359	8.07	400	9.09	313	7.26	407	9.67
Italy	Y	C	738	738	1.23	694	1.16	-	-	-	-
Latvia	Y	A	6	5	0.22	3	0.13	4	0.18	0	0.00
Lithuania	Y	A	16	16	0.48	18	0.53	32	0.95	10	0.29
Luxembourg	-	-	-	-	-	0	0.00	2	0.42	0	0.00
Malta	Y	C	8	8	1.93	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	35	35	0.21	0	0.00	0	0.00	-	-
Poland	Y	C	274	274	0.72	212	0.56	250	0.66	196	0.51
Portugal	-	-	-	-	-	-	-	-	-	-	-
Romania	Y	C	123	122	0.57	0	0.00	-	-	-	-
Slovakia	Y	C	29	29	0.54	36	0.67	37	0.69	44	0.82
Slovenia	Y	C	253	253	12.45	204	10.15	192	9.55	13	0.65
Spain	N	C	1 339	1 339	-	1648	-	1428	-	2 587	-
Sweden	Y	C	1 618	1 618	17.48	1789	19.48	1 441	15.81	1 334	14.74
United Kingdom	Y	C	5 019	5 019	8.20	5 514	9.01	5 624	9.25	5 820	9.63
EU total	**-**	**-**	**13 553**	**13 473**	**4.10**	**13 904**	**4.15**	**12 531**	**5.49**	**12 229**	**5.50**
Iceland	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	799	799	16.65	855	18.05	958	20.47	1 006	21.68
Total	**-**	**-**	**14 352**	**14 272**	**4.30**	**14 759**	**4.37**	**13 489**	**5.82**	**13 235**	**5.92**

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

increases in the confirmed case rate of invasive pneumococcal disease reported by Belgium (17 in 2008 to 19 per 100 000 in 2009), Slovenia (from 10 to 12), and Austria (from 1.60 to 3.54), which are most likely due to recent improvements in the effectiveness of their surveillance systems. Some other countries show a modest decrease in comparison to 2008 (Cyprus, Estonia, Finland, Norway, Sweden and United Kingdom).

Considering the absence of surveillance of invasive pneumococcal disease in several countries, the heterogeneity of the existing systems and variable application of case definitions in place across the Member States, country comparisons should be made with caution (Table 2.5.4). In addition, some countries collect data on pneumococcal meningitis only[1].

Age and gender distribution

The most affected age groups were the youngest (under five years old), with a case rate of 6.57 cases per 100 000, and the oldest (over 64 years old), with a confirmed case rate of 9.84 cases per 100 000 (Figure 2.5.8). However, a decrease in this last group is observed, from 12.10 in 2008 to 9.84 in 2009.

The confirmed case rate was slightly higher for males (4.61 per 100 000) than females (3.96 per 100 000), giving an overall male-to-female ratio of 1.16:1.

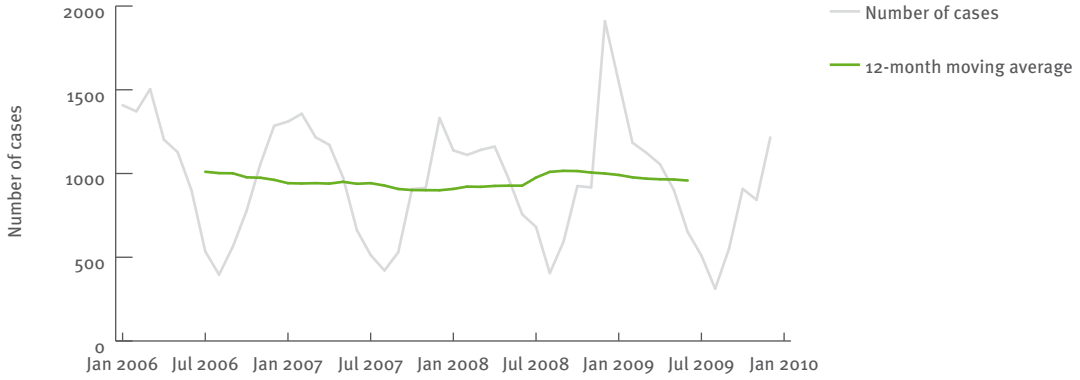
Seasonality

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, increasing rapidly with the onset of autumn and winter. This pattern was similar in 2006–08 (Figure 2.5.9).

Discussion

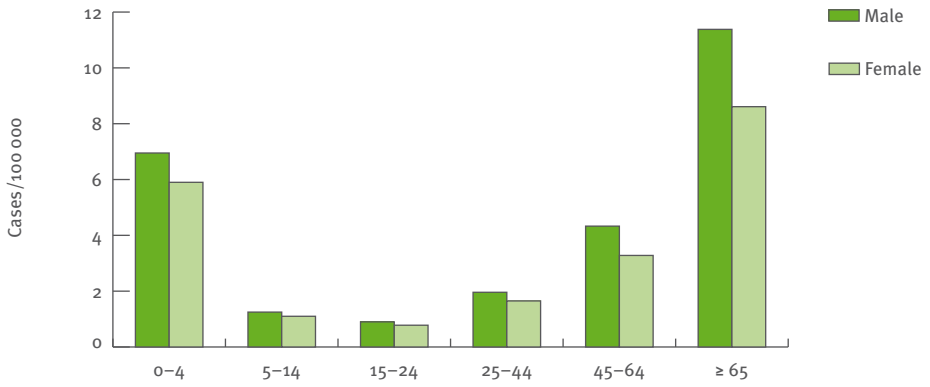
The confirmed case rate varied widely across countries, ranging from 0.21 to 19 per 100 000, probably reflecting not only true intercountry variation in incidence but also significant differences in the application of case definitions and operation of national surveillance systems[1].

Figure 2.5.7. Trend and number of reported confirmed invasive pneumococcal disease cases by month, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Cyprus, Denmark, Finland, Hungary, Ireland, Malta, Norway, Romania, Slovakia, Slovenia, Sweden, United Kingdom.

Figure 2.5.8. Rates of reported confirmed invasive pneumococcal disease cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

There are concerns regarding the possibility that, after introduction of the conjugate vaccine PCV7, serotypes covered by the vaccine could be replaced by serotypes not covered by it, as this has already been observed in some EU countries[1–3]. Moreover, the introduction of new conjugate vaccines in 2010 (PCV10, PCV13) requires close monitoring. For this purpose, more enhanced surveillance, also involving laboratory surveillance, is being introduced in the EU by ECDC.

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2. Hanquet G, Kissling E, Fenoll A, George R, Lepoutre A, Lernout T, et al. Pneumococcal serotypes in children in 4 European countries. Emerg Infect Dis 2010;16(9):1428-39.
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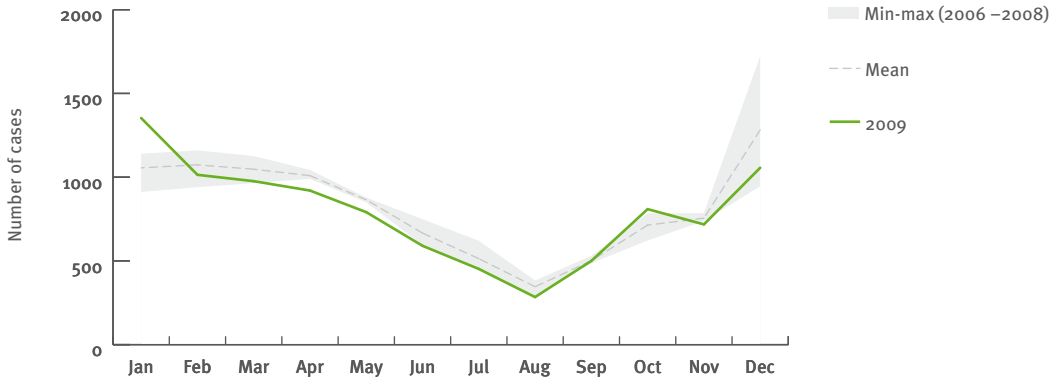
Figure 2.5.9. Seasonal distribution of reported confirmed cases of invasive pneumococcal disease, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Cyprus, Denmark, Finland, Hungary, Ireland, Malta, Norway, 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	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
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-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-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-PNEUMOCOCCAL	O	Co	P	C	Y	N	Y	Y	Y

Measles

- The number of measles cases reported in the EU and EEA/EFTA countries in 2009 was lower than the previous year but still too high to reach the goal of eliminating measles in the EU in 2010.
- A total of 4 238 confirmed cases were reported in 2009, with an overall rate of 0.84 per 100 000.
- Only three countries (representing about 1.5 % of the EU and EEA/EFTA population) have been measles-free during the last five years.

Measles is an acute illness caused by the measles virus, of the genus *Morbillivirus*. It is one of the most contagious diseases known, and clusters and outbreaks of disease are common. Infection can sometimes cause significant disability and death. It is included in the childhood vaccination schedule in all EU countries, and WHO Europe Region has a target for elimination of indigenous measles by 2015.

Epidemiological situation in 2009

A total of 4 238 confirmed measles cases were reported in 2009 (6 698 in total), with an overall confirmed case rate of 0.84 per 100 000 population (Table 2.5.5). Eight countries (Cyprus, Estonia, Iceland, Latvia, Lithuania, Luxembourg, Slovakia and Slovenia) reported zero cases, and 18 countries reported rates below one per million inhabitants. The highest confirmed case rates were reported by Bulgaria (9.15 per 100 000), Ireland (2.31 per 100 000) and the United Kingdom (1.91 per 100 000).

Table 2.5.5. Number and rate of measles cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	53	31	0.37	156	1.88	20	0.24	15	0.18
Belgium	Y	D	33	24	0.22	98	0.92	0	0.00	15	0.14
Bulgaria	Y	D	2 249	696	9.15	1	0.01	1	0.01	1	0.01
Cyprus	Y	C	0	0	0.00	1	0.13	0	0.00	0	0.00
Czech Republic	Y	C	5	5	0.05	2	0.02	0	0.00	7	0.07
Denmark	Y	C	6	6	0.11	14	0.26	2	0.04	27	0.50
Estonia	Y	C	0	0	0.00	0	0.00	1	0.07	27	2.01
Finland	Y	C	2	2	0.04	5	0.09	0	0.00	0	0.00
France	Y	C	1544	832	1.29	305	0.48	24	0.04	45	0.07
Germany	Y	C	574	534	0.65	779	0.95	485	0.59	1475	1.79
Greece	Y	C	2	1	0.01	1	0.01	0	0.00	257	2.31
Hungary	Y	C	1	1	0.01	0	0.00	0	0.00	1	0.01
Ireland	Y	C	162	103	2.31	13	0.30	20	0.46	24	0.57
Italy	Y	C	705	705	1.17	5 311	8.91	595	1.01	563	0.96
Latvia	Y	D	0	0	0.00	3	0.13	0	0.00	6	0.26
Lithuania	Y	C	0	0	0.00	1	0.03	0	0.00	0	0.00
Luxembourg	Y	D	0	0	0.00	1	0.21	0	0.00	8	1.71
Malta	Y	C	1	1	0.24	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	11	8	0.05	109	0.66	4	0.02	1	0.01
Poland	Y	C	115	62	0.16	89	0.23	30	0.08	90	0.24
Portugal	Y	D	3	3	0.03	1	0.01	0	0.00	0	0.00
Romania[a]	Y	C	8	8	0.04	0	0.00	345	1.60	3524	16.31
Slovakia	Y	C	0	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
Spain	Y	C	42	42	0.09	198	0.44	224	0.50	363	0.83
Sweden	Y	C	3	3	0.03	25	0.27	1	0.01	19	0.21
United Kingdom	Y	C	1177	1169	1.91	1442	2.36	1026	1.69	762	1.26
EU total	**-**	**-**	**6696**	**4236**	**0.85**	**8555**	**1.72**	**2778**	**0.56**	**7230**	**1.47**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	2	2	0.04	4	0.08	17	0.36	0	0.00
Total	**-**	**-**	**6698**	**4238**	**0.84**	**8559**	**1.70**	**2795**	**0.56**	**7230**	**1.45**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; D: Data from disease surveillance network; –: No report; U: Unspecified.
(a) A more specific case definition was implemented in 2009.

The situation in terms of total reported cases has slightly decreased when compared to 2008. In some countries a decline in the number of cases was reported (including Italy, Spain, Netherlands, Austria), while others have reported an increase in cases (including Bulgaria, France, Ireland). Outbreaks and sustained virus circulation were reported in Bulgaria[1,2], France[3], Austria[4], and Ireland[5].

Only Slovenia and Iceland have maintained their status as consistently reporting zero cases (since 2004) while Slovakia has achieved uninterrupted 'zero-reporting' since 2005.

Age and gender distribution*

Age was reported in 3511 confirmed cases. The most affected age group was the 0–4 year-olds (4.02 cases per 100 000) followed by the 5–14 year-olds (2.20 per 100 000) and the 15–24 year-olds (1.34 per 100 000). No significant differences in gender overall or within age groups were observed (Figure 2.5.11). Gender was reported in 3486 of all confirmed measles cases.

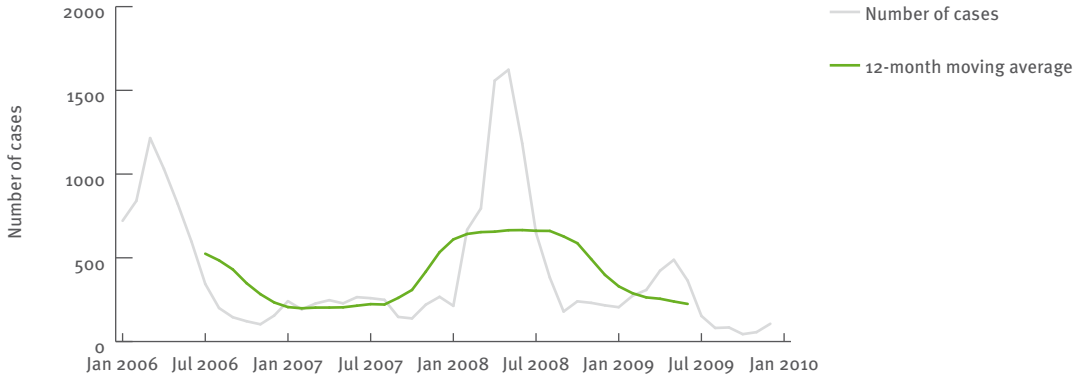
Seasonality

In 2009 there appeared to be a seasonal pattern of measles with a peak in spring/early summer (February–June). The pattern was the same in the countries with the highest numbers of cases. Figure 2.5.12 gives the monthly distribution of cases from 2006 to 2009.

Enhanced surveillance in 2009

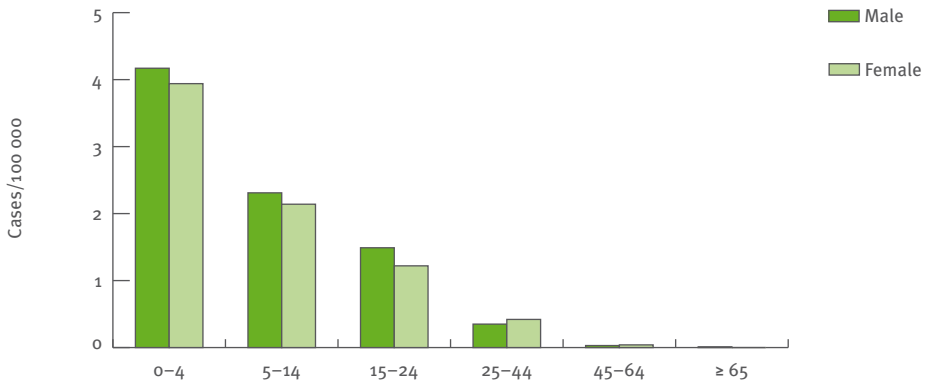
A total of 7175 cases of measles were reported by the surveillance community network for vaccine preventable infectious diseases (EUVAC.NET) in 2009 for EU and EFTA countries[6]. Of these, 91% occurred in five countries: Bulgaria, France, Switzerland (not reporting to ECDC), the United Kingdom and Germany. Fifty-two per cent of the cases were laboratory-confirmed, 23% epidemiologically linked and 24% were only clinically diagnosed. Importation status was known for 72% of the cases. Only 2% of these (101 cases) had a known importation status.

Figure 2.5.10. Trend and number of reported confirmed measles cases by month, in EU and EEA/EFTA countries, 2006–09



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

Figure 2.5.11. Rates of reported confirmed measles cases, by age and gender, in EU and EEA/EFTA countries, 2009



Source: Country reports: Austria, 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.

Vaccination status was known for 82% of all reported cases. Of these, 77% were unvaccinated. According to the EUVAC.NET report[6], 10 measles-related deaths (all but one laboratory confirmed) were reported by Bulgaria (seven deaths), France (two deaths) and the Netherlands (one case). Eight cases were complicated with encephalitis (Bulgaria: three; France: two; the United Kingdom: two; Switzerland: one). Three had not been vaccinated against measles while two had received one dose. The vaccination status was unknown in the other cases.

Discussion

The number of measles cases in EU and EEA/EFTA countries has slightly decreased in 2009 compared with 2008. Large increases in the number of cases were reported in some countries while in others a decrease was observed. Outbreaks were reported in Bulgaria, France, Austria, Ireland and the United Kingdom.

However, measles activity again increased markedly in 2010, with the highest number of reported cases and deaths (overall incidence 5.15 cases per 100 000 population) for at least five years. The measles outbreak in Bulgaria continued into 2010, and accounted for the majority of cases. Several clusters in other EU countries were linked to this outbreak. In addition several outbreaks and clusters unrelated to the Bulgarian outbreak were reported from other EU countries (see Chapter 3 for more information).

Only two countries (Iceland and Slovenia) have maintained 'zero-reporting' since 2004. The goal of eliminating indigenous measles in Europe was not reached in 2010. Efforts by all countries to increase and maintain vaccination coverage at a high level in order to achieve elimination of measles will need to be strengthened.

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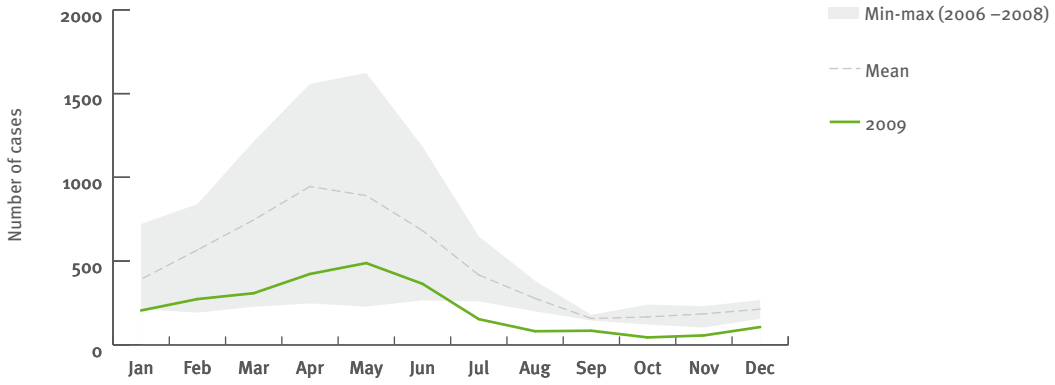
Figure 2.5.12. Seasonal distribution of reported confirmed cases of measles, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, 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
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-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
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
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-MEASLES	O	Co	P	C	Y	N	Y	Y	Y

Mumps

- Mumps is one of the vaccine-preventable viral infections that continue to occur frequently across Europe.
- The number of mumps cases reported in EU and EAA/EFTA countries in 2009 was 17558, while 11384 were confirmed; rate of confirmed cases was 3.2 per 100000 population.
- The age group most frequently affected was the 15–24 year-olds.
- Larger outbreaks were mainly noted in Ireland, Luxembourg and the United Kingdom.
- Enhanced surveillance showed that 40% of mumps cases were unvaccinated, 31% had received one dose, 23% had received at least two doses and in 6% the number of doses was unknown.
- Breakthrough infections occurred after vaccination with one and two doses 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*. It is not an uncommon infection, although serious complications are rare. Outbreaks can occur, and it is included in the primary vaccination schedule of all EU countries.

Epidemiological situation in 2009

A total of 11384 confirmed cases of mumps (17558 total cases) were reported in 2009 by 27 EU and EEA/EFTA countries, with an overall confirmed case rate of 3.2 per 100000 population. This rate is similar to the rate for 2008 (2.8 per 100000). There has been a decrease in the rate of confirmed cases since 2006 (8.7 per 100000).

Only Malta reported zero cases in 2009. Eight countries reported confirmed case rates below one per million inhabitants: Finland, Greece, Hungary, Latvia, Malta, Slovakia, Portugal and Norway. The highest confirmed case rates were reported from Ireland (31.0 per 100000), the United Kingdom (13.0) and Luxembourg (5.1). Further details are reported on larger outbreaks in the first two quarters of 2009 in England and Wales, mainly occurring in school or college settings[1].

Several EU and EEA/EFTA countries did not confirm cases (see Table 2.5.6).

Age and gender distribution

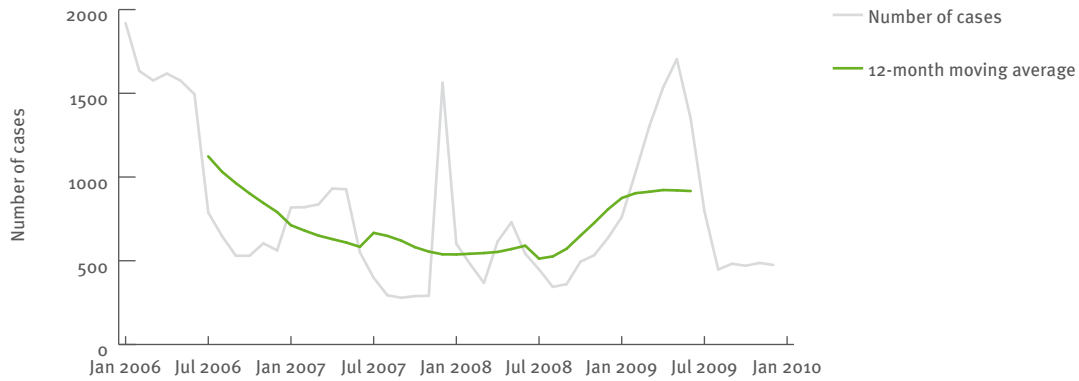
Age was reported in 11085 (97%) of reported confirmed mumps cases. Mumps occur in all age groups, but the most affected were 15–24 year-olds (18 per 100000), 5–14 year-olds (4.3), 0–4 year-olds (3.2) and 25–44 year-olds (2.8), although the pattern differed among countries.

Gender was reported in 11027 (97%) of all reported confirmed mumps cases. The confirmed case rates were higher in males in age groups up to 44 years: 0–4 years (3.8 per 100000 for males versus 2.4 per 100000 in females), 5–14 years (5.0 versus 3.4), 15–24 years (19.3 versus 16.6) and 25–44 years (3.0 versus 2.5).

Seasonality

Information on month of infection was available for 10982 of all reported confirmed mumps cases (96%). The previously observed winter-spring outbreaks in 2006–07 were also seen in 2009.

Figure 2.5.13. Trend and number of reported confirmed mumps cases by month, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Cyprus, Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Italy, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Table 2.5.6. Number and rate of mumps cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	14	14	0.17	22	0.26	7	0.08	227	2.75
Belgium	Y	A	43	43	0.40	50	0.47	68	0.64	35	0.33
Bulgaria	Y	D	1111	185	2.43	1155	15.12	875	11.39	911	11.80
Cyprus	Y	C	5	3	0.38	3	0.38	5	0.64	0	0.00
Czech Republic	Y	C	357	279	2.67	260	2.50	735	7.14	3969	38.72
Denmark	Y	C	17	17	0.31	24	0.44	12	0.22	11	0.20
Estonia	Y	C	11	11	0.82	14	1.04	18	1.34	17	1.26
Finland	Y	C	1	1	0.02	5	0.09	6	0.11	0	0.00
France	-	-	-	-	-	-	-	-	-	-	-
Germany	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	20	3	0.03	1	0.01	3	0.03	3	0.03
Hungary	Y	C	5	5	0.05	11	0.11	16	0.16	7	0.07
Ireland	Y	C	1832	1381	31.03	698	15.86	69	1.60	209	4.97
Italy	Y	C	1021	1021	1.70	1387	2.33	1312	2.22	1406	2.39
Latvia	Y	D	1	1	0.04	3	0.13	2	0.09	3	0.13
Lithuania	Y	A	74	74	2.21	82	2.44	81	2.39	0	0.00
Luxembourg	Y	D	25	25	5.07	26	5.37	0	0.00	0	0.00
Malta	Y	D	0	0	0.00	0	0.00	2	0.49	0	0.00
Netherlands	Y	C	32	31	0.19	7	0.04	0	0.00	-	-
Poland	Y	A	2954	1	0.00	0	0.00	0	0.00	20	0.05
Portugal	Y	D	154	9	0.08	15	0.14	48	0.45	34	0.32
Romania[a]	Y	C	741	104	0.48	2302	10.69	5291	24.53	14671	67.89
Slovakia	Y	C	5	5	0.09	5	0.09	3	0.06	13	0.24
Slovenia	Y	C	27	3	0.15	13	0.65	9	0.45	4	0.20
Spain	Y	C	1114	185	0.40	1012	2.23	3147	7.08	1440	3.29
Sweden	Y	C	32	21	0.23	51	0.56	47	0.52	60	0.66
United Kingdom	Y	C	7946	7946	12.99	2644	4.32	2702	4.45	6129	10.14
EU total	**-**	**-**	**17542**	**11368**	**3.22**	**9790**	**2.79**	**14458**	**4.14**	**29169**	**8.81**
Iceland	Y	D	4	4	1.25	0	0.00	1	0.33	29	9.67
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	12	12	0.25	16	0.34	23	0.49	24	0.52
Total	**-**	**-**	**17558**	**11384**	**3.18**	**9806**	**2.75**	**14482**	**4.09**	**29222**	**8.69**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; D: Data from disease surveillance network; –: No report; U: Unspecified. (a) A more specific case definition was implemented in 2009.

Enhanced surveillance in 2009

A total of 21048 mumps cases in 26 countries (25 EU/EEA countries and Croatia) were reported through the surveillance community network for vaccine preventable infectious diseases (EUVAC.NET) in 2009. Of the 19273 cases reported by those countries that carry out laboratory confirmation, 10856 cases (56%) were laboratory confirmed.

Vaccination status was known for 14792 of reported mumps cases (reports from 25 countries). Of these, 5904 (40%) were unvaccinated, 4646 (31%) were vaccinated with one dose, 3355 (23%) were vaccinated with at least two doses, and 887 (6%) were vaccinated with an unspecified number of doses.

In total 664 (4%) reported mumps cases were hospitalised in 20 countries reporting and among those, 459 of cases developed complications (reports from 17 countries). The distribution of complications and the outcome is not known[2].

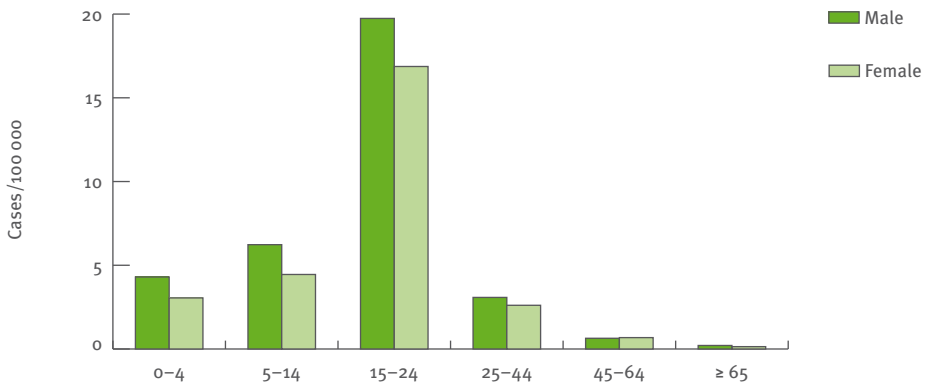
Discussion

An overall decrease in the number of reported mumps cases has been observed during the past three years, a reduction from 8.7 per 100000 in 2006 to 3.2 per 100000 in 2009. This is at least in part due to the greater uptake of mumps-containing vaccines throughout EU and EEA/EFTA countries. However, high confirmed case rates were still observed in Ireland, Luxembourg and the United Kingdom.

The disease has shifted up in age groups to mainly affect the 15–24 year-olds, largely influenced by a large outbreak among university-age students in the United Kingdom, related to the history of vaccine schedule development in that country[1]. Waning immunity leading to secondary vaccine failure has also been suggested to further contribute to these outbreaks[1].

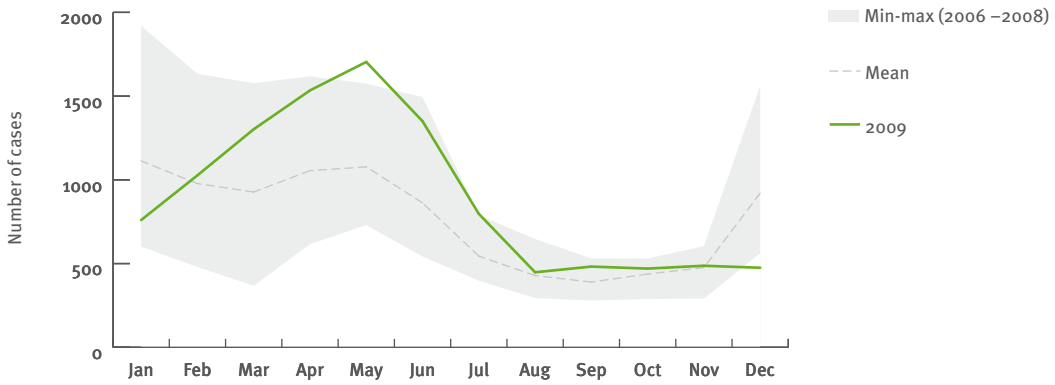
Of specific interest is the high number of individuals with breakthrough infections reported in the enhanced surveillance after one or more doses of mumps-containing

Figure 2.5.14. Rates of reported confirmed mumps cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.5.15. Seasonal distribution of reported confirmed cases of mumps, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Austria, Cyprus, Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Italy, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

vaccine. Mismatch between the circulating wild-type mumps virus genotype and the genotype of the vaccine strain has been suggested to influence the vaccine effectiveness[3]. Studies to further analyse cross-immunity between different mumps strains are needed since results may influence the formulation of future mumps-containing vaccines or the current immunisation schedules.

Little is known about the severity of disease in the mainly affected age groups, but complications are according to the literature more frequently reported in young adults compared to younger children. Interestingly, the clinical severity of cases that previously have been immunised according to recommendations and then develop clinical symptoms compatible with classic mumps disease have in general been milder than in non-immune individuals[4].

The possibility of providing a third dose of mumps-containing vaccine in certain outbreak situations in closed settings, as successfully tested in the Luxembourg outbreak among military personnel, may be considered[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-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	-	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	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
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	N	N	N	Y
United Kingdom	UK-MUMPS	O	Co	A	C	Y	N	Y	Y	Y

Pertussis

- The increase in the number of reported cases (observed since 2003) continued until 2009, when a slight decrease was observed. The overall confirmed case rate in 2009 was 4.89 per 100 000 population.
- There is heterogeneity of pertussis surveillance in the EU and EEA/EFTA area, particularly in the surveillance systems, coverage, laboratory methods used and case definition applied.

Pertussis is an acute respiratory infection caused by the bacterium *Bordetella pertussis*. It is an endemic infection common to children everywhere and included in the primary vaccination schedule of all EU countries. It is often unrecognised, and may be increasingly occurring in adults.

Epidemiological situation in 2009

In 2009, 17 596 confirmed cases (20 233 total cases), were reported by 28 EU and EEA/EFTA countries. Germany and Liechtenstein did not report. The overall confirmed case rate remains low with 4.89 per 100 000, slightly decreasing over the previous year (Table 2.5.7).

As in previous years, Norway reported the highest confirmed case rate with 115.52 per 100 000; Estonia and the Netherlands followed with 47 and 35 per 100 000, respectively. Overall, Norway, Estonia (36 in 2008), Slovenia (8.06 in 2008 to 17 in 2009), Slovakia (1.83 in 2008 to 5.32 in 2009), Lithuania (1.51 in 2008 to 6.96 in 2009) and Italy (0.56 in 2008 to 1.01 in 2009) reported an increase in their confirmed case rates, whereas Austria (2.1 in 2008 to 0.02 in 2009), Finland (9.64 in 2008 to 5.01 in 2009), Spain (0.44 in 2008 to 0.27 in

Table 2.5.7. Number and rate of pertussis cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	2	2	0.02	175	2.10	136	1.64	78	0.94
Belgium	Y	A	160	160	1.50	174	1.63	214	2.02	197	1.87
Bulgaria	Y	D	251	133	1.75	130	1.70	235	3.06	335	4.34
Cyprus	Y	C	8	5	0.63	3	0.38	9	1.16	3	0.39
Czech Republic	Y	C	954	953	9.10	763	7.35	184	1.79	233	2.27
Denmark	Y	C	91	91	1.65	106	1.94	94	1.73	54	0.99
Estonia	Y	C	629	629	46.93	485	36.17	409	30.47	153	11.38
Finland	Y	D	267	267	5.01	511	9.64	480	9.10	0	0.00
France	N	C	83	82	-	55	-	61	-	125	-
Germany	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	27	16	0.14	10	0.09	6	0.05	5	0.04
Hungary	Y	C	33	31	0.31	33	0.33	48	0.48	17	0.17
Ireland	Y	C	78	61	1.37	71	1.61	47	1.09	38	0.90
Italy	Y	C	604	604	1.01	336	0.56	795	1.34	796	1.35
Latvia	Y	D	8	8	0.35	7	0.31	15	0.66	10	0.44
Lithuania	Y	A	233	233	6.96	51	1.51	17	0.50	4	0.12
Luxembourg	Y	D	1	1	0.20	2	0.41	4	0.84	0	0.00
Malta	Y	D	0	0	0.00	0	0.00	0	0.00	0	0.00
Netherlands	Y	C	6 461	5 751	34.88	8 557	52.16	7 185	43.92	4 174	25.55
Poland	Y	A	2 390	1 056	2.77	1 272	3.34	1 667	4.37	1 368	3.59
Portugal	Y	D	64	63	0.59	68	0.64	20	0.19	21	0.20
Romania	Y	C	10	10	0.05	0	0.00	2	0.01	14	0.06
Slovakia	Y	C	288	288	5.32	99	1.83	21	0.39	21	0.39
Slovenia	Y	C	441	351	17.27	162	8.06	533	26.51	446	22.26
Spain	Y	C	473	126	0.27	200	0.44	151	0.34	102	0.23
Sweden	Y	C	281	279	3.01	459	5.00	690	7.57	795	8.79
United Kingdom	Y	C	852	852	1.39	1 051	1.72	65	0.11	3	0.00
EU Total	**-**	**-**	**14 689**	**12 052**	**3.39**	**14 780**	**4.19**	**13 088**	**3.17**	**8 992**	**2.19**
Iceland	Y	D	0	0	0.00	1	0.32	2	0.65	3	1.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	5 544	5 544	115.52	3 887	82.05	5 373	114.78	6 587	141.95
Total	**-**	**-**	**20 233**	**17 596**	**4.89**	**18 668**	**5.22**	**18 463**	**4.42**	**15 582**	**3.75**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; D: Data from disease surveillance network; –: No report; U: Unspecified.

2009) and the Netherlands (52 in 2008 to 35 in 2009) showed a decrease.

The Netherlands reported the highest total number of cases (n=6 461), representing 31.9 % of the total reported number of cases, followed by Norway (n=5 544, 27.4 %) and Poland (n=2 390, 11.8 %). Malta and Iceland reported zero cases.

Age and gender distribution

Information on age and gender was available for 88 % of the confirmed cases (compared to 69 % in 2008). Similar to previous years, the most affected group was the 5–14 year-olds with a confirmed case rate slightly above 17 per 100 000 (Figure 2.5.17), which is mainly due to this group having been the most affected age group in countries reporting the highest confirmed case rates, mainly northern countries. For most of the remaining countries, the most affected group were young children under five years old, with a confirmed case rate of near 10 per 100 000. Overall, females (5.86 per 100 000) were slightly more often affected than males (4.99 per 100 000) for all the age groups, with a male-to-female ratio of 0.85:1.

Seasonality

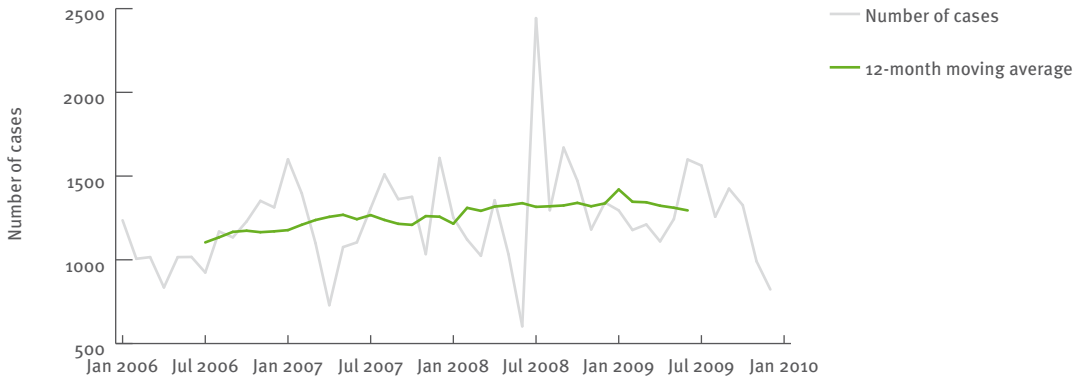
Reported pertussis cases show a slight seasonality, with a usually modest increase in cases in the summer and autumn.

Discussion

There was a wide variation across countries in reported rates of confirmed cases, ranging from 0.02 to 115.52 per 100 000, with northern countries reporting higher confirmed case rates; a picture also seen in previous years. The most affected age group in these countries is 5–14 year-old children and adolescents. Some of the countries recently introduced additional booster doses of the vaccine to cover this age group. Norway, for example, introduced a booster for seven-year-olds in 2006, although it is still early to assess the impact of this policy change[1].

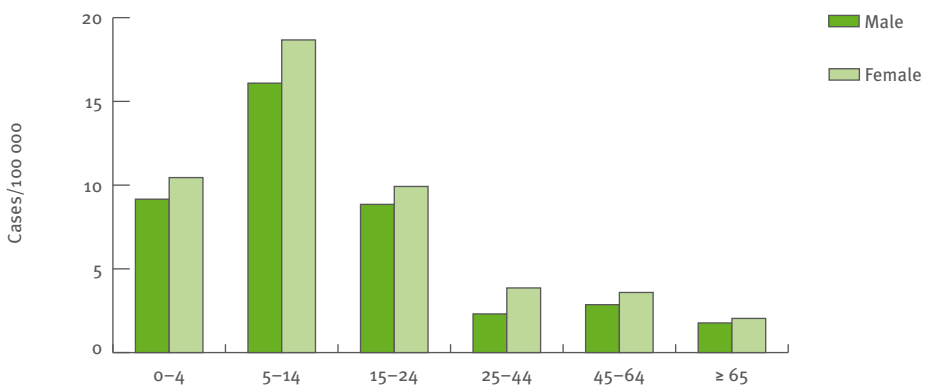
Comparisons between countries should be made with caution. The variation in rates in different countries may in part be related by different vaccination policies, but also to different levels of awareness towards the clinical presentation of the disease (that is very often not perceived as pertussis), differences in reporting procedures and surveillance systems[2,3], the case definition in

Figure 2.5.16. Trend and number of reported confirmed pertussis cases by month, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Cyprus, Czech Republic, Denmark, France, Greece, Hungary, Iceland, Ireland, Italy, Netherlands, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

Figure 2.5.17. Rates of reported confirmed pertussis cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

use and the different extent of use and methods in place for laboratory confirmation; or to real differences in disease incidence. All these aspects have an impact on the variation in the reported confirmed case rates and which of these possible explanations contributes most to the observed variation remains unclear.

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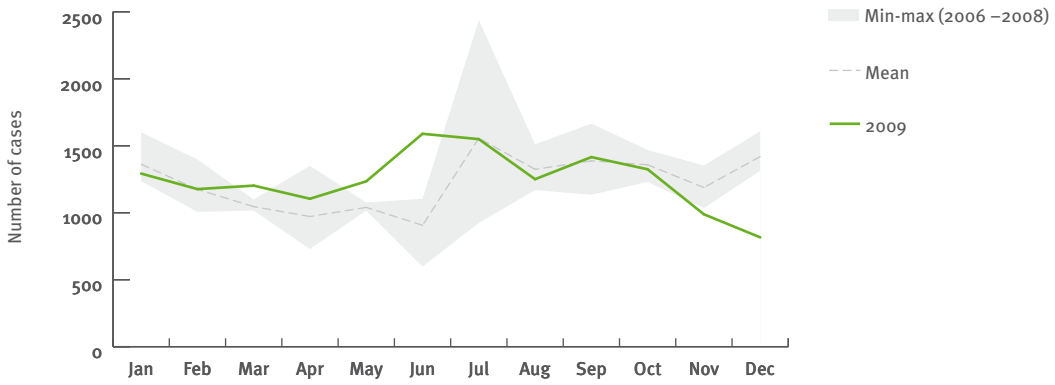
Figure 2.5.18. Seasonal distribution of reported confirmed cases of pertussis, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Cyprus, Czech Republic, Denmark, Greece, Hungary, Iceland, Ireland, Italy, 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-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	-	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
France	FR-RENACOQ	V	Se	P	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
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
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
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-PERTUSSIS	O	Co	P	C	Y	N	Y	Y	Y

Polio

- Prior to vaccination, poliomyelitis was a common childhood disease, sometimes causing meningitis and paralysis.
- Inactivated poliovirus vaccines are used in all EU and EEA/EFTA countries.
- Oral live attenuated vaccines are still used in a majority of countries worldwide. Besides the wild-type polioviruses causing natural disease, live attenuated vaccine viruses may cause vaccine-associated polio paralysis (VAPP).
- The WHO European Region was declared polio-free in 2002 and neither wild-type nor vaccine-type associated poliomyelitis cases were reported in EU EEA/EFTA countries in 2009.
- However, persistent pockets of wild-type and vaccine-type poliovirus transmission were reported from several African and Asian countries in 2009. Imported wild-type and vaccine-type polioviruses still remain a threat to unvaccinated European populations and, in fact, in 2010 an outbreak occurred in the eastern WHO European region (mainly Tajikistan) with nearly 500 confirmed cases.

Poliomyelitis is a disease caused by polioviruses (serotype 1–3). Prior to vaccination, it was a common childhood disease, sometimes causing meningitis and paralysis. WHO Europe was declared polio free in 2002.

Epidemiological situation in 2009

No cases of poliomyelitis disease were reported in any of the 29 reporting EU and EAA/EFTA countries in 2009. There was no report from Lichtenstein.

Inactivated poliovirus vaccines containing all three serotypes are offered within the EU/EEA. Current immunisation programmes provide an excellent immune response.

Enhanced surveillance in 2009

The Global Polio Laboratory Network (GPLN), comprising 145 laboratories in 100 countries and operating in EU and EEA/EFTA 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.

Screening of sewage water samples for wild-type and vaccine-type polioviruses is performed in seven EU and EEA/EFTA countries. During 2009 infectious vaccine-type polio viruses of all serotypes were recurrently isolated from sewage water in Tampere, Finland[1,2]. The isolated strains were highly divergent and more virulent than the corresponding vaccine strains. Molecular analysis revealed that all strains originated from an oral live attenuated vaccine dose given more than 10 years ago. In addition, it is most likely that all three divergent serotypes originally were established in one single individual who is a chronic carrier of the three poliovirus strains. Such carriers have occasionally been described in the scientific literature and commonly are immunosuppressed and, therefore, unable to mount an immune response and clear the viruses[3]. Of further significance is that the three isolated strains were shown to be neurovirulent in transgenic susceptible mice inducing paralysis or death in at least some of the animals and, therefore, most likely capable of inducing poliomyelitis in susceptible humans exposed to this contaminated sewage water. The risk for sewage workers, as well as close contacts to the chronic carrier, may be reduced by booster vaccinations. The situation requires careful and continued monitoring.

Discussion

Persistent pockets of wild-type and vaccine-type poliovirus transmission were reported in 2009 in African and Asian countries; mainly in Afghanistan, India, Nigeria and Pakistan where both wild-type poliovirus type 1 and 3 and vaccine-types were identified. In addition, 15 other countries were affected by outbreaks: Angola, Benin, Burkina Faso, Central African Republic, Chad, Democratic Republic of Congo, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Mali, Niger, Togo, Sudan and Uganda.

The WHO European Region was declared polio-free in 2002. However, imported wild-type and vaccine-type polioviruses through individuals excreting polioviruses in their stools still remain a threat to unvaccinated European individuals. This is the reason for an outbreak of polio occurring in undervaccinated populations in the eastern WHO European region in 2010 with nearly 500 confirmed cases. This outbreak mainly affected Tajikistan, but also its neighbouring countries, and challenged the polio free certification status of Europe. Major supplementary immunisation activities (still ongoing) were required to stop transmission. No cases in EU and EEA/EFTA countries were reported in 2010 (more information on this outbreak can be found in Chapter 3).

Furthermore, several EU countries have identified vaccine-derived poliovirus strains in their sewage water originating either from newly vaccinated visitors or immigrants to Europe or chronic carriers. This needs to be further monitored and immunity in the European populations must be ensured including among sewage workers.

High vaccination coverage using inactivated poliovirus vaccines is obtained in all EU and EEA/EFTA countries, and needs to be maintained in view of the continuing 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

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	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-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	N	N	N	Y
United Kingdom	UK-POLIMYELITIS	O	Co	P	C	Y	N	Y	Y	Y

Rabies

- One autochthonous human case was reported in 2009 in the EU and EEA/EFTA.
- Rabies is still endemic in wild and domestic animals in different areas of the EU. Thirty-seven cases in bats have been reported.

Rabies is an infection caused by the rabies virus, which is hosted by a wide range of domestic and wild animals. It is a rare disease in the EU, although usually fatal. The infection is transmitted by the bite of a rabies-infected animal. Vaccination should be given as soon as possible after exposure.

Epidemiological situation in 2009

In 2009, one confirmed human case of rabies was reported in 29 EU and EEA/EFTA countries (Liechtenstein did not report). The case was an elderly Romanian citizen, living in a rural area close to a forest, who sought medical attention when symptoms, compatible with rabies, started. She had been bitten by a fox in her left forearm and hand one month before, however, she had not consulted nor notified the incident. Laboratory results were positive. Despite treatment, the patient died four days later.

Animal cases of rabies in the EU

In 2009, 859 cases of rabies were reported in animals in the EU, mainly from Romania, Latvia, Italy, Bulgaria and Lithuania: 151 in domestic animals, 671 in wild animals and 37 in bats. Bats were mainly reported from France (13) and the Netherlands (11). The number of cases in animals shows a slight decrease compared to previous years[1].

Discussion

Although the incidence of human rabies is very low, the risk is still present in Europe. A few sporadic severe human cases are still reported in EU and EEA/EFTA countries, often travellers that were exposed to rabid animals outside Europe. Autochthonous cases also occur occasionally, as rabies is still prevalent in wildlife (foxes and racoons) in several central and eastern Member States.

This is the second year that Romania has notified an indigenous case of rabies. Because of the high fatality rate, the prevention of rabies infection is of utmost importance[2]. This case highlights the importance of continuous monitoring for this disease in wildlife reservoirs. Insectivorous bats can also play a significant role throughout the entire European territory, even though it is difficult to assess the real magnitude of this phenomenon because surveillance and monitoring of rabies in animals vary greatly between Member States.

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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	-	-	-	-	-
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-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	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	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	N	N	N	Y
United Kingdom	UK-RABIES	O	Co	A	C	Y	N	Y	Y	Y

Rubella

- The number of reported and laboratory-confirmed rubella cases decreased between 2008 and 2009.
- The overall proportion of laboratory-confirmed cases is very low (6 % of all cases) 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 increasing reports of these diseases, including congenital rubella infection.

Epidemiological situation in 2009

In 2009, 492 rubella cases were confirmed out of 8827 cases reported from 26 EU and EEA/EFTA countries (Table 2.5.8). Belgium, France, Germany and Liechtenstein did not report. In several countries the surveillance system is not national; in Germany, for example, mandatory reporting of rubella cases is established in some federal states, whereas nationwide mandatory reporting is restricted to congenital rubella.

The number of rubella cases has significantly decreased, since 2006, but most of these cases are not laboratory-confirmed. Only 5.5 % of the reported cases were laboratory confirmed in 2009 (492 out of 8827), in comparison to 32.5 % in 2008 (6355 out of 19559) and 14.8 % in

Table 2.5.8. Number and rate of rubella cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	308	247	2.96	5	0.06	14	0.17	-	-
Belgium	-	-	-	-	-	-	-	-	-	-	-
Bulgaria	Y	D	44	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
Czech Republic	Y	C	5	0	0.00	2	0.02	0	0.00	5	0.05
Denmark	Y	C	0	0	0.00	4	0.07	0	0.00	0	0.00
Estonia	Y	C	1	1	0.07	4	0.30	10	0.74	5	0.37
Finland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
France	-	-	-	-	-	-	-	-	-	-	-
Germany	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	4	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	2	0.02
Ireland	Y	C	20	1	0.02	2	0.05	3	0.07	1	0.02
Italy	Y	C	205	205	0.34	6183	10.37	758	1.28	252	0.43
Latvia	Y	D	7	1	0.04	2	0.09	1	0.04	2	0.09
Lithuania	Y	C	0	0	0.00	0	0.00	13	0.38	0	0.00
Luxembourg	Y	D	0	0	0.00	0	0.00	0	0.00	0	0.00
Malta	Y	D	0	0	0.00	3	0.73	0	0.00	0	0.00
Netherlands	Y	C	7	2	0.01	2	0.01	4	0.02	5	0.03
Poland	Y	A	7587	8	0.02	70	0.18	153	0.40	103	0.27
Portugal	Y	D	3	3	0.03	1	0.01	1	0.01	0	0.00
Romania	Y	C	605	2	0.01	0	0.00	2958	13.72	0	0.00
Slovakia	Y	C	0	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
Spain	Y	C	20	7	0.02	40	0.09	14	0.03	27	0.06
Sweden	Y	C	1	1	0.01	0	0.00	2	0.02	3	0.03
United Kingdom	Y	C	10	10	0.02	36	0.06	34	0.06	36	0.06
EU total	**-**	**-**	**8827**	**492**	**0.14**	**6354**	**1.86**	**3968**	**1.17**	**690**	**0.21**
Iceland	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	0	0	0.00	1	0.02	0	0.00	2	0.04
Total	**-**	**-**	**8827**	**492**	**0.14**	**6355**	**1.84**	**3968**	**1.15**	**692**	**0.21**

Source: Country reports. Y: Yes; N: No; A: Aggregated data report; C: Case-based report; D: Data from disease surveillance network; –: No report; U: Unspecified.

2007 (3968 out of 26823). Poland reported the highest number of clinical rubella cases, with almost all of them not being laboratory confirmed (eight out of 7587). Austria reported a large increase in cases due to an outbreak of over 300 cases (247 confirmed) in 2009. Italy reported a decrease in total cases from 6183 in 2008 to 205 in 2009 (all confirmed).

Age and gender distribution

This section relates to confirmed cases only, and should be interpreted with caution due to the low and variable laboratory confirmation rate of cases between countries and years.

The age group (males and females) with the highest confirmed case rate was the group of adolescents and young adults between 15 and 24 years of age (0.68 per 100000), and then very young children aged 0–4 years (rate of 0.60 per 100000) (Figure 2.5.19).

Seasonality

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 2.5.20).

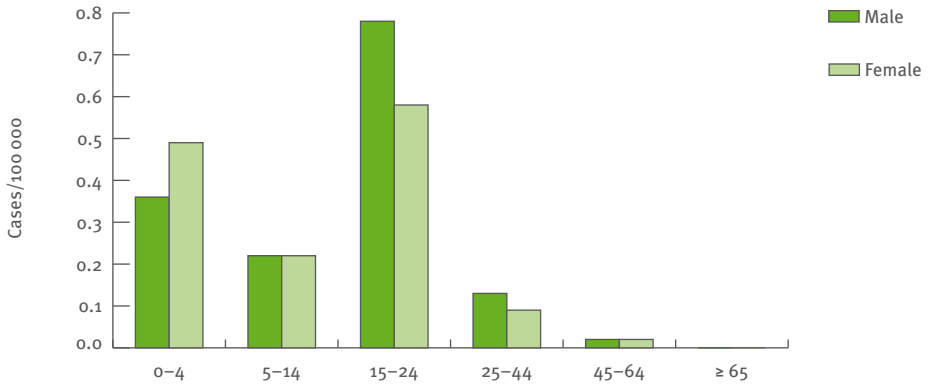
Enhanced surveillance in 2009

A total of 8951 rubella cases (391 laboratory confirmed) were reported by 28 countries to the enhanced surveillance network EUVAC.NET in 2009[1]. The vaccination status was known for 7031 reported rubella cases (81%): 57% were unvaccinated, 41% were vaccinated with one dose, and 2% were vaccinated with at least two doses.

Discussion

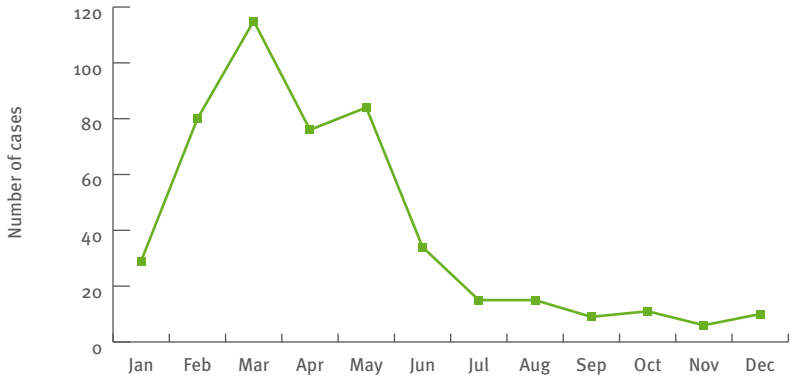
The main aim of rubella vaccination is the prevention of congenital rubella infection (CRI). Many countries originally had started to selectively vaccinate adolescent girls. After introduction of the measles-mumps-rubella vaccine (MMR) most countries moved to vaccinating all young children. The emphasis of the vaccination

Figure 2.5.19. Rates of reported confirmed rubella cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.5.20. Seasonal distribution of reported confirmed cases of rubella, in EU and EEA/EFTA countries, 2009



Source: Country reports: Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Norway, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

programme changed from protecting the individual woman directly to indirect protection by creating herd immunity. To keep herd immunity sufficiently high, vaccination coverage is essential.

Austria experienced a rubella outbreak in two regions in 2009, and the most affected age group was young adults between 15 and 24 years of age[2,3]. Rubella has been a notifiable disease since 2007 in Austria. Italy, Poland and Romania have reported a decrease in the total number of cases.

The overall proportion of laboratory-confirmed cases represented only 5.5 % of the total cases. This appears low in the context of the rubella elimination and prevention of congenital rubella infection that was set for 2010. Strengthening laboratory capacity in order to ensure investigation of clinical rubella cases appears a key element to reach the goal of elimination.

References

1. EUVAC.NET. Rubella surveillance report 2008. Available from: http://www.euvac.net/graphics/euvac/pdf/rubella_report_2008.pdf.
2. Kasper S, Allerberger F, Aberle S, Holzmann H, Redlberger M, Daghofer E, et al. Rubella in Austria 2008–2009: no longer a typical childhood disease. Pediatr Infect Dis J 2010 May;29(5):448-52.
3. D Schmid, S Kasper, H Kuo, S Aberle, H Holzmann, E Daghofer, et al. Ongoing rubella outbreak in Austria, 2008-2009. Euro Surveill. 2009;14(16):pii=19184.

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	-	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
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
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-RUBELLA	O	Co	P	C	Y	N	Y	Y	Y

Tetanus

- Tetanus appears to be under control in all EU and EEA/EFTA countries thanks to good general public health and hygiene supported by effective universal vaccination in all countries.
- The overall confirmed case rate remains very low (0.02 per 100 000 population) and a slightly decreasing trend can be observed in recent years.
- In the EU and EEA/EFTA countries, no cases of neonatal tetanus were reported.
- The most affected group was elderly women (65 years or older). Additional efforts should be put in place in order to improve the immunisation status of the adult and elderly population.

Tetanus is a sporadic and relatively uncommon infection in EU and EEA/EFTA 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 2009

In 2009, 128 cases, including 79 confirmed cases, were reported by 25 EU and EEA/EFTA countries. Austria, Finland, Germany, Iceland and Liechtenstein did not report. Italy, Poland, Romania, France, United Kingdom, Spain, Portugal and Hungary reported most of the cases.

Table 2.5.9. Number and rate of tetanus cases reported in EU and EEA/EFTA countries, 2006–09

Country	2009					2008		2007		2006	
	National Coverage	Report type	Total cases	Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate		Confirmed cases and notification rate	
				Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	-	-	-	-	-	-	-	-	-	-	-
Belgium	Y	C	0	0	0.00	1	0.01	1	0.01	1	0.01
Bulgaria	Y	C	0	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
Czech Republic	Y	C	0	0	0.00	0	0.00	0	0.00	0	0.00
Denmark	Y	C	0	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
Finland	-	-	-	-	-	-	-	-	-	-	-
France	Y	C	8	8	0.01	3	0.00	7	0.01	17	0.03
Germany	-	-	-	-	-	-	-	-	-	-	-
Greece	Y	C	2	0	0.00	0	0.00	8	0.07	5	0.04
Hungary	Y	C	6	0	0.00	0	0.00	0	0.00	7	0.07
Ireland	Y	C	0	0	0.00	2	0.05	1	0.02	0	0.00
Italy	Y	C	58	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
Lithuania	Y	C	0	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
Malta	Y	C	0	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	-	-
Poland	Y	C	19	1	0.00	14	0.04	19	0.05	22	0.06
Portugal	Y	C	6	0	0.00	1	0.01	9	0.08	7	0.07
Romania	Y	C	9	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
Slovenia	Y	C	0	0	0.00	1	0.05	1	0.05	4	0.20
Spain	Y	C	7	3	0.01	10	0.02	8	0.02	13	0.03
Sweden	Y	C	3	0	0.00	0	0.00	0	0.00	1	0.01
United Kingdom	Y	C	8	1	0.00	0	0.00	0	0.00	3	0.00
EU Total	**-**	**-**	**127**	**78**	**0.02**	**101**	**0.03**	**126**	**0.03**	**163**	**0.04**
Iceland	-	-	-	-	-	0	0.00	0	0.00	0	0.00
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	1	1	0.02	2	0.04	0	0.00	0	0.00
Total	**-**	**-**	**128**	**79**	**0.02**	**103**	**0.03**	**126**	**0.03**	**163**	**0.04**

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

The overall confirmed case rate remains very low at 0.02 per 100 000 population. The highest rate was reported by Italy (0.10 per 100 000). No cases of neonatal tetanus were reported.

Age and gender distribution

The most affected group was the elderly (≥ 65 years) with 80 of the 97 (82 %) reported cases with this information (0.12 per 100 000), followed by the age group 45–64 years with 12 cases. One case from Romania was reported in the age group 5–14 years. Females accounted for 68 % of the reported cases, almost all of them in the ≥ 65 years group.

Seasonality

A peak of tetanus confirmed cases is seen from June to October, even though the number of cases is low. This is probably related to more outdoor activities during this period.

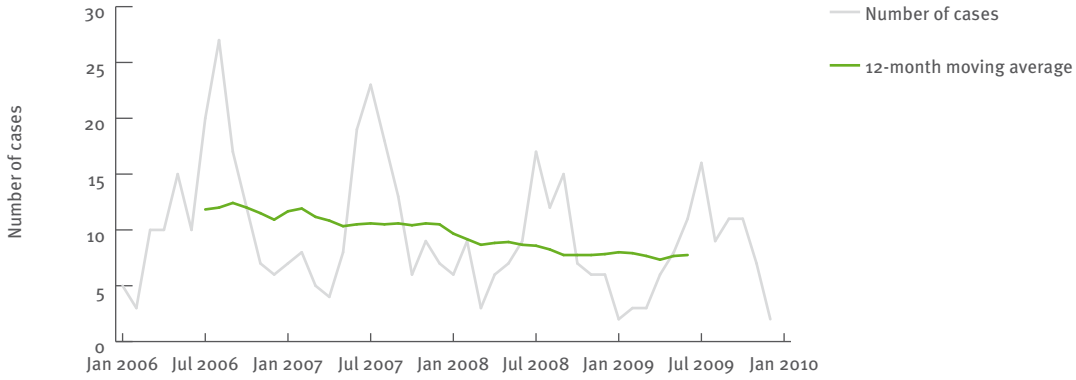
Discussion

The confirmed case rate for tetanus remains very low in the EU, and the number of reported cases shows a slightly decreasing trend over the last few years. The cases reported in the elderly were probably related to lower coverage or waning immunity. 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[1]. This emphasizes the need to maintain high vaccination rates in all age groups and to implement catch-up strategies in those countries with higher rates of disease.

References

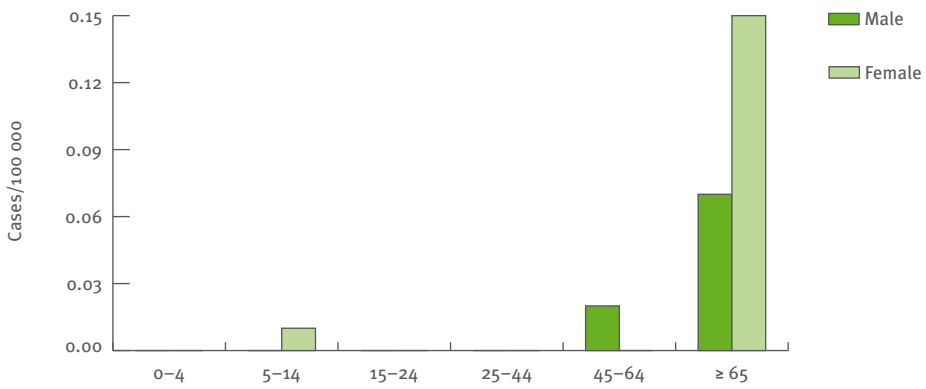
1. Reed DB, Westneat SC. Exposure risks and tetanus immunization status in farmers ages 50 and over. South Med J 2009;102(3):251-5.

Figure 2.5.21. Trend and number of reported confirmed tetanus cases by month, in EU and EEA/EFTA countries, 2006–09



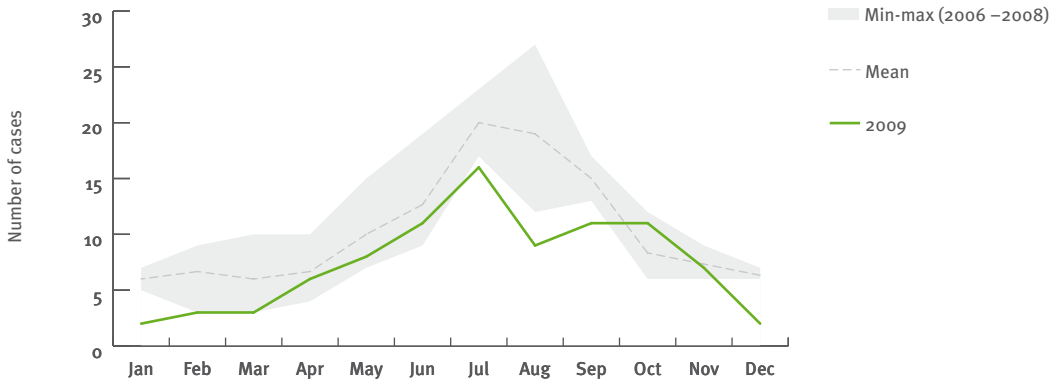
Source: Country reports: Cyprus, Czech Republic, Denmark, Estonia, France, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden.

Figure 2.5.22. Rates of reported confirmed tetanus cases, by age and gender, in EU and EEA/EFTA countries, 2009



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

Figure 2.5.23. Seasonal distribution of reported confirmed cases of tetanus, in EU and EEA/EFTA countries, 2006–09



Source: Country reports: Cyprus, Czech Republic, Denmark, Estonia, France, Greece, Hungary, 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	-	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
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-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	N	N	N	Y
United Kingdom	UK-TETANUS	O	Co	P	C	Y	N	Y	Y	Y

2.6 Antimicrobial resistance and healthcare-associated infection

Antimicrobial resistance

- Antimicrobial resistance constitutes an increasingly important human health hazard in Europe.
- Resistance in *Escherichia coli*, the most common cause of bacteraemia by Gram-negative bacteria and of urinary tract infections, increases Europe-wide for all antimicrobial classes under surveillance.
- Combined resistance to several antimicrobials continues to increase in some bacteria (e.g. *Escherichia coli, Pseudomonas aeruginosa* and *Klebsiella pneumoniae*) and further reduces the available treatment options.
- The occurrence of meticillin-resistant *Staphylococcus aureus* (MRSA) shows a decrease in some countries, although the MRSA proportions remain above 25 % in more than one third of the reporting countries.
- The use of antimicrobials shows wide variations across Europe, however, penicillins remain the most frequently prescribed antimicrobial class in all countries.
- Prevention and control of antimicrobial resistance call for international cooperation and concerted, multidisciplinary efforts at the national level.

The data presented in this section were collected by the European Antimicrobial Resistance Surveillance Network (EARS-Net, previously EARSS) which is coordinated by ECDC. EARS-Net collects data on antimicrobial resistance in seven invasive pathogens of public health importance (*Streptococcus pneumoniae, Staphylococcus aureus, Enterococcus faecalis, Enterococcus faecium, Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa*). The surveillance is based on national networks collecting data from clinical laboratories and reporting these data to ECDC. At present EARS-Net includes more than 900 public health laboratories serving over 1400 hospitals in Europe and providing services to an estimated population of 100 million European citizens. The maps and trend figures presented in this summary show the occurrence of antimicrobial resistance in selected bacteria causing invasive infections and are based on laboratory results reported by countries participating in EARS-Net. For more detailed information on EARS-Net and EARS-Net surveillance results please refer to the EARS-Net Annual Report 2009 and the EARS-Net website (http://ecdc.europa.eu/en/activities/surveillance/EARS-Net).

Escherichia coli

Escherichia coli is the most frequent cause of bacteraemia by Gram-negative bacteria, as well as community- and hospital-acquired urinary tract infections.

The occurrence of antimicrobial resistance in *E. coli* continues to increase Europe-wide for both multidrug resistance and for single antimicrobials under surveillance.

The occurrence of resistance to third-generation cephalosporins in *E. coli* in 2009 is displayed in Figure 2.6.1. Nine of 28 countries reported third-generation cephalosporin resistance higher than 10 % and ranging up to 19.2 %. Among 19 countries reporting less than 10 % resistance, the lowest proportions were reported by Iceland (1.8 %), Estonia (2.2 %) and Norway (2.3 %).

Third-generation cephalosporin resistance in *E. coli* increased significantly during the last four years in more than half of the 28 reporting countries (Figure 2.6.2). A high proportion (85–100 %) of the isolates was identified as producing an extended-spectrum beta-lactamase (ESBL). These data indicate that ESBL production is highly prevalent in third-generation cephalosporin-resistant *E. coli* in European hospitals.

Meticillin-resistant *Staphylococcus aureus*

Meticillin-resistant *Staphylococcus aureus* (MRSA) is the most important cause of antimicrobial-resistant healthcare-associated infections worldwide. In 2009, nine countries reported less than 10 % MRSA, nine countries

reported between 10 % and 25 %, another nine countries reported between 25 % and 50 %, while one country reported proportions above 50 % (Figure 2.6.3). Eight countries reported decreasing trends for MRSA while only one country reported an increase (Figure 2.6.4).

Although proportions of MRSA seem to stabilise, or even decrease in some European countries, MRSA remains a public health priority, since the proportion of MRSA is still above 25 % in more than one third of the reporting countries.

Klebsiella pneumoniae

Klebsiella pneumoniae is an important cause of urinary and respiratory tract infections, especially in patients with impaired immune systems. Regarding *K. pneumoniae*, high proportions of resistance to third-generation cephalosporins (Figure 2.6.5), fluoroquinolones and aminoglycosides are reported in central and south-eastern European countries. Many of these isolates have acquired resistance to all of the above mentioned antimicrobial classes.

Pseudomonas aeruginosa

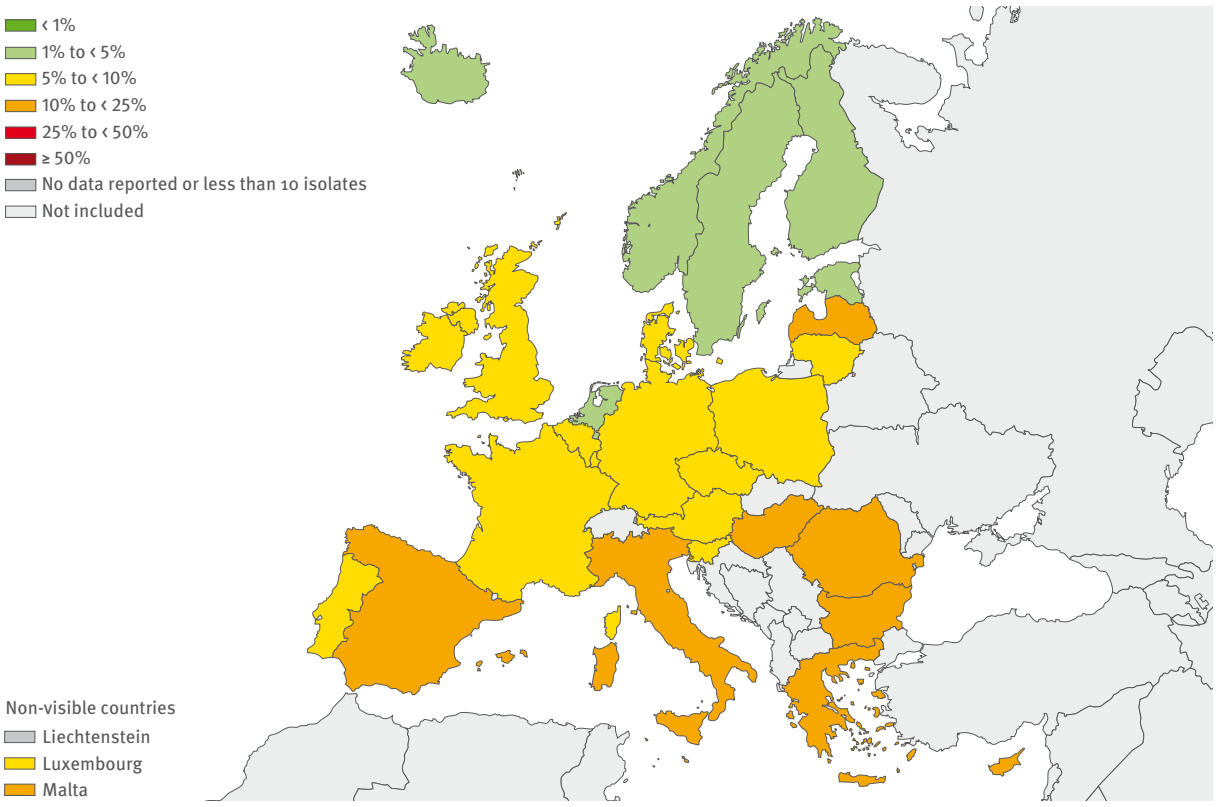
Pseudomonas aeruginosa is an important cause of infection among patients with impaired immune systems. High proportions of resistance to several antimicrobials in *P. aeruginosa* isolates have been reported by many countries, especially in southern and eastern Europe. Multidrug resistance is frequent and resistance to carbapenems is above 10 % in more than half of the reporting countries (Figure 2.6.6).

Discussion

In 2009, the most concerning resistance results come from the rapidly decreasing susceptibility of invasive *Escherichia coli* to basically all antimicrobial agents included in the EARS-Net surveillance except carbapenems, and from the high prevalence of resistance in *Klebsiella pneumoniae* to third-generation cephalosporins, fluoroquinolone and aminoglycosides. In half of the reporting countries, the proportion of multiresistant *K. pneumoniae* isolates (combined resistance to third-generation cephalosporins, fluoroquinolones and aminoglycosides) is above 10 %, and a few countries are now also reporting high proportions of resistance to carbapenems. These antibiotics have been widely used in many countries due to the increasing rate of extended-spectrum beta-lactamase (ESBL)-producing Enterobacteriaceae with a consequent impact on the emergence of carbapenemase production (VIM, KPC and NDM-1), especially in *K. pneumoniae*.

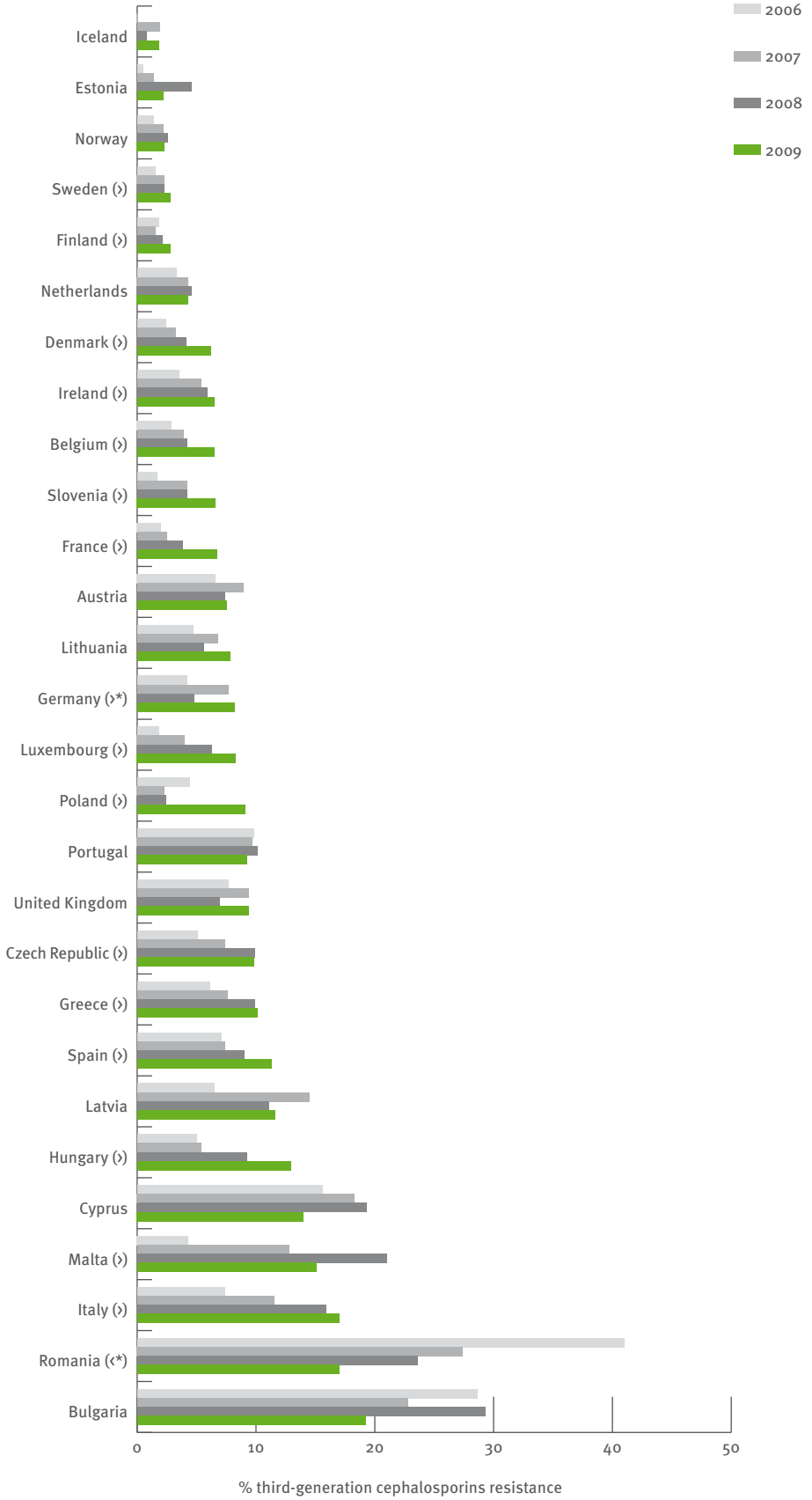
The first detection of Enterobacteriaceae carrying the New Delhi metallo-beta-lactamase (NDM-1) carbapenemase enzyme, which is an enzyme resulting in extensive antibiotic resistance, was reported in 2008. In 2010, a Lancet article about the spread of NDM-1 was published raising considerable concern. The results of an ad-hoc

Figure 2.6.1. *Escherichia coli*: invasive isolates resistant to third-generation cephalosporins, 2009



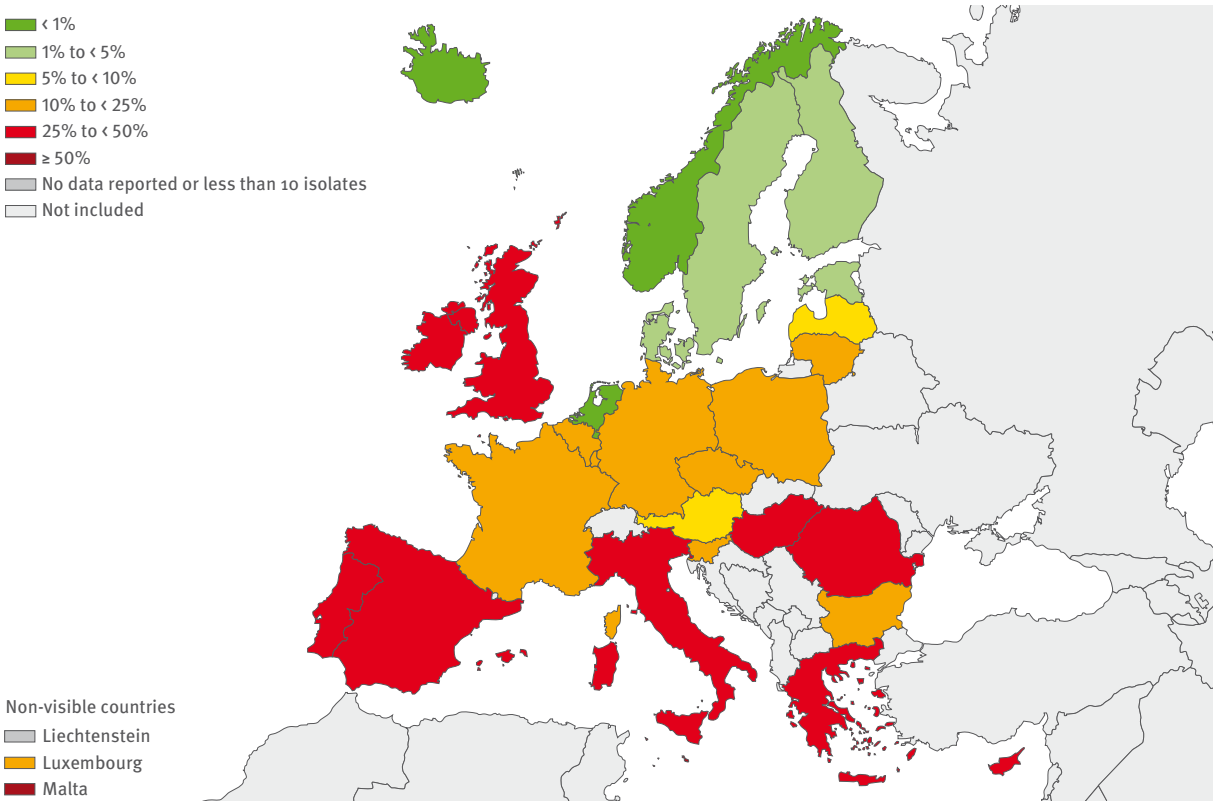
Source: EARS-Net. Only data from countries reporting more than 10 isolates are shown.

Figure 2.6.2. ***Escherichia coli*: trends in the proportion of invasive isolates resistant to third-generation cephalosporins, by country, 2006–09**



Source: EARS-Net. Only countries reporting 20 isolates or more per year were included. The symbols › and ‹ indicate a significant increasing and decreasing trend, respectively. The symbol * indicates that the significant trend in the overall data was not supported by data from laboratories that consistently reported for all four years.

Figure 2.6.3. ***Staphylococcus aureus*: invasive isolates resistant to meticillin (MRSA), 2009**



Source: EARS-Net. Only data from countries reporting more than 10 isolates are shown.

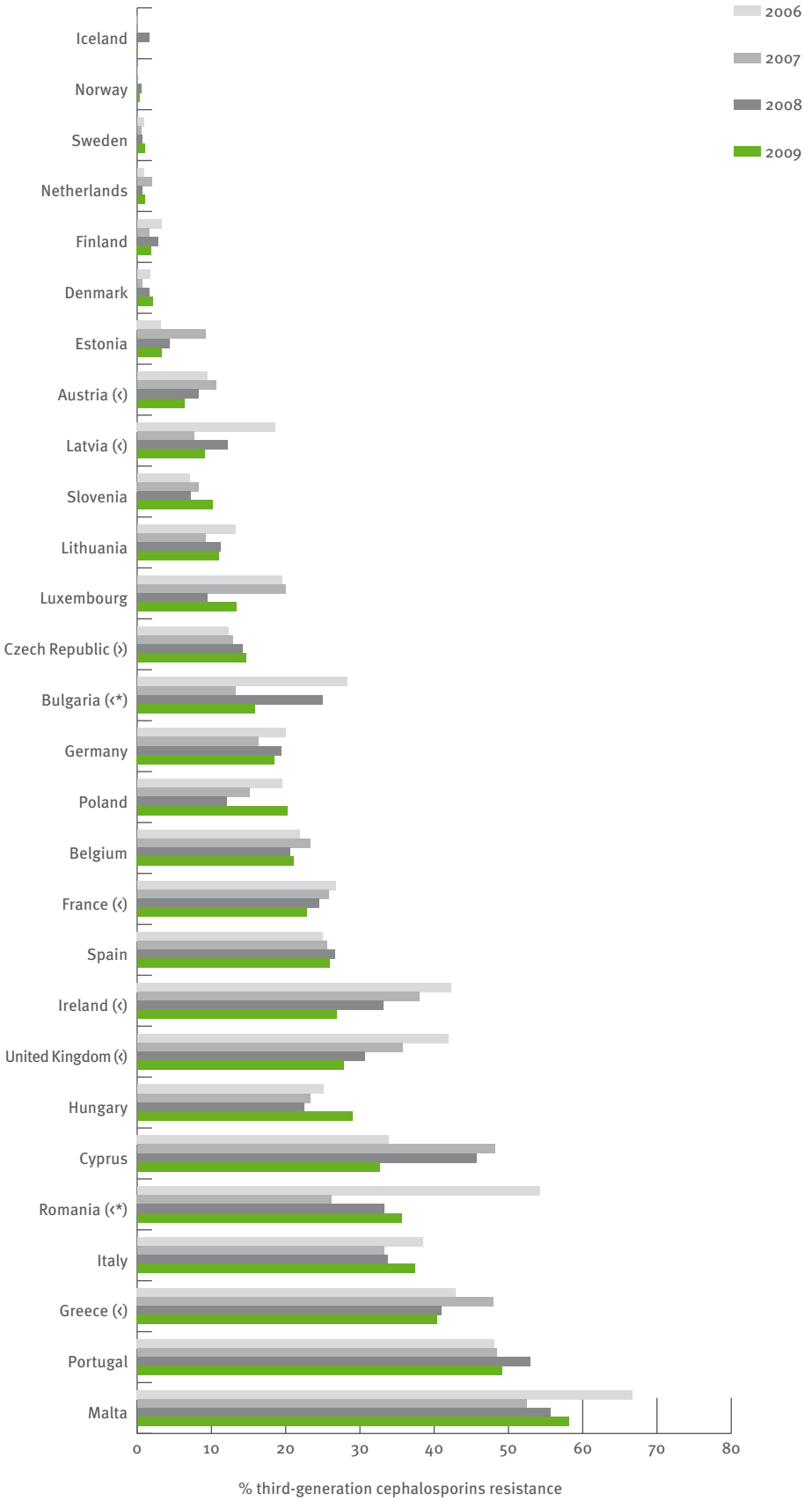
survey in EU countries in 2010 revealed that among 77 NDM-1 cases identified between 2008 and 2010, 39 were isolated during 2010 in 13 EU countries (for more information see Chapter 3).

Other trends in the occurrence of resistance reported to EARS-Net bring hope that national efforts on infection control and efforts targeted at containment of resistance may in some cases bring the development of resistance to a halt, or even reverse undesirable resistance trends, as exemplified by the development for meticillin-resistant *Staphylococcus aureus* (MRSA). Even though the proportion of MRSA among *Staphylococcus aureus* is still above 25 % in 10 out of 28 countries, the occurrence of MRSA is stabilising or decreasing in some countries and a sustained decrease was observed in Austria, France, Ireland, Latvia and the United Kingdom.

Reference

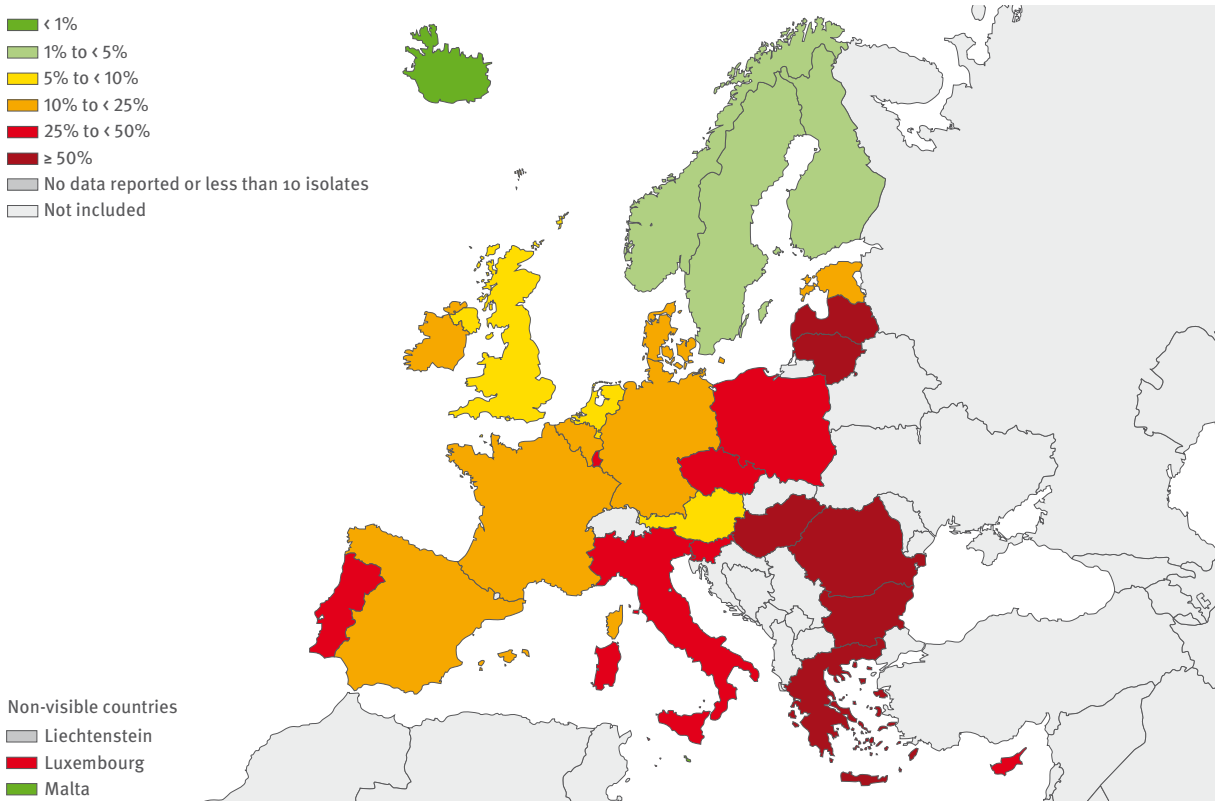
European Centre for Disease Prevention and Control (ECDC). Antimicrobial resistance surveillance in Europe 2009. Annual Report of the European Antimicrobial Resistance Surveillance Network (EARS-Net). Stockholm: ECDC; 2010.

Figure 2.6.4. ***Staphylococcus aureus*: trends in the proportion of invasive isolates resistant to meticillin (MRSA) by country, 2006–09**



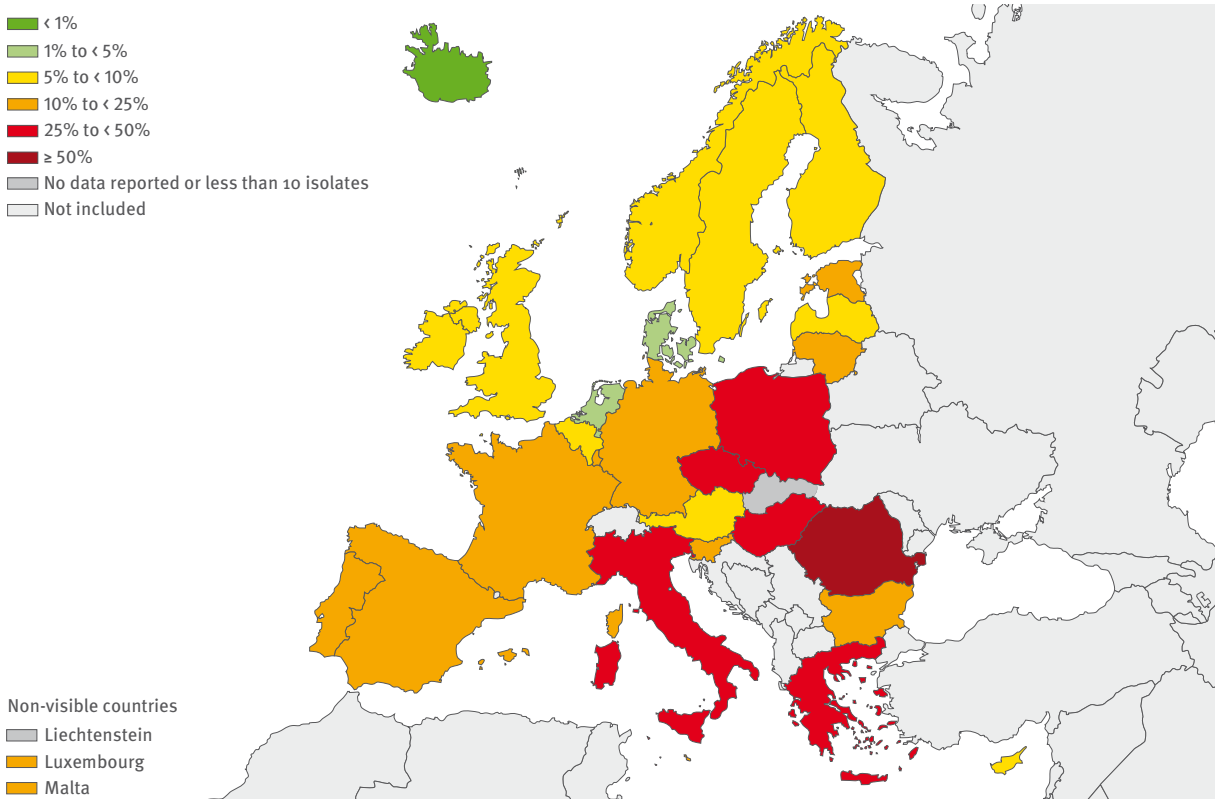
Source: EARS-Net. Only countries reporting 20 isolates or more per year were included. The symbols › and ‹ indicate a significant increasing and decreasing trend, respectively. The symbol * indicates that the significant trend in the overall data was not supported by data from laboratories that consistently reported for all four years.

Figure 2.6.5. ***Klebsiella pneumoniae*: invasive isolates resistant to third-generation cephalosporins, 2009**



Source: EARS-Net. Only data from countries reporting more than 10 isolates are shown.

Figure 2.6.6. ***Pseudomonas aeruginosa*: invasive isolates resistant to carbapenems, 2009**



Source: EARS-Net. Only data from countries reporting more than 10 isolates are shown.

Antimicrobial use in the EU

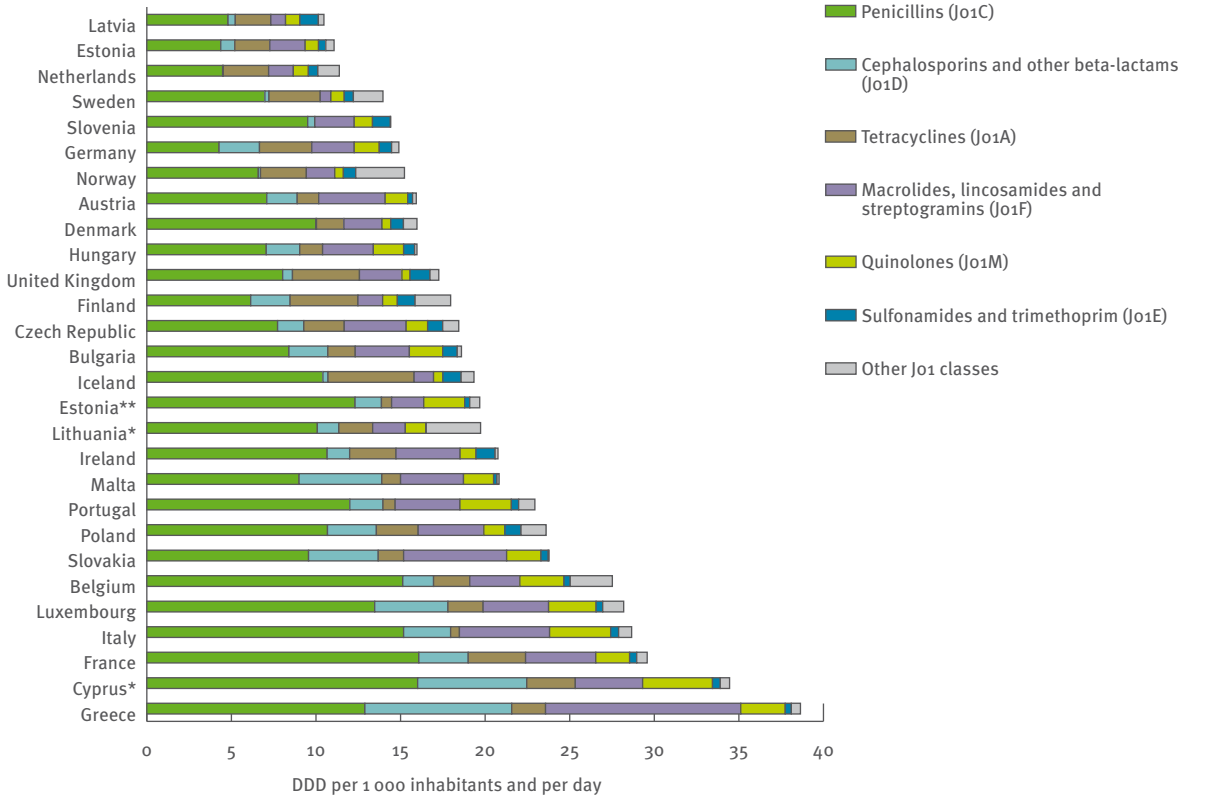
Data on antibiotic use are currently available from 28 EU and EEA/EFTA countries and were collected by the European Surveillance of Antimicrobial Consumption (ESAC) project, coordinated by the University of Antwerp, Belgium. ESAC is funded by ECDC.

Figure 2.6.7 shows antibiotic use measured in defined daily doses (DDD) per 1000 inhabitants and per day according to the Anatomical Therapeutical Chemical (ATC)/DDD index[1]. Each bar refers to a specific country while the colours show the recorded volume of use of the different antimicrobial classes used in that country. The reported data refer to antibiotic use outside hospitals (outpatient use), which accounts for the largest proportion of human consumption of antibiotics.

Total outpatient antibiotic use ranged from 10.5 DDD per 1000 inhabitants and per day in Latvia to 38.6 DDD per 1000 inhabitants and per day in Greece. As in previous years, penicillins were the most frequently prescribed antibiotic class in all countries, ranging from 28.7% (Germany) to 66% (Slovenia) whereas the proportion of use of other antibiotic classes varied widely among the countries, e.g. cephalosporins, from 4.5% (Sweden) to 29.9% (Greece); macrolides, from 2.8% (United Kingdom) to 13.3% (Portugal); and quinolones, from 0.02% (Slovenia) to 26.3% (Iceland).

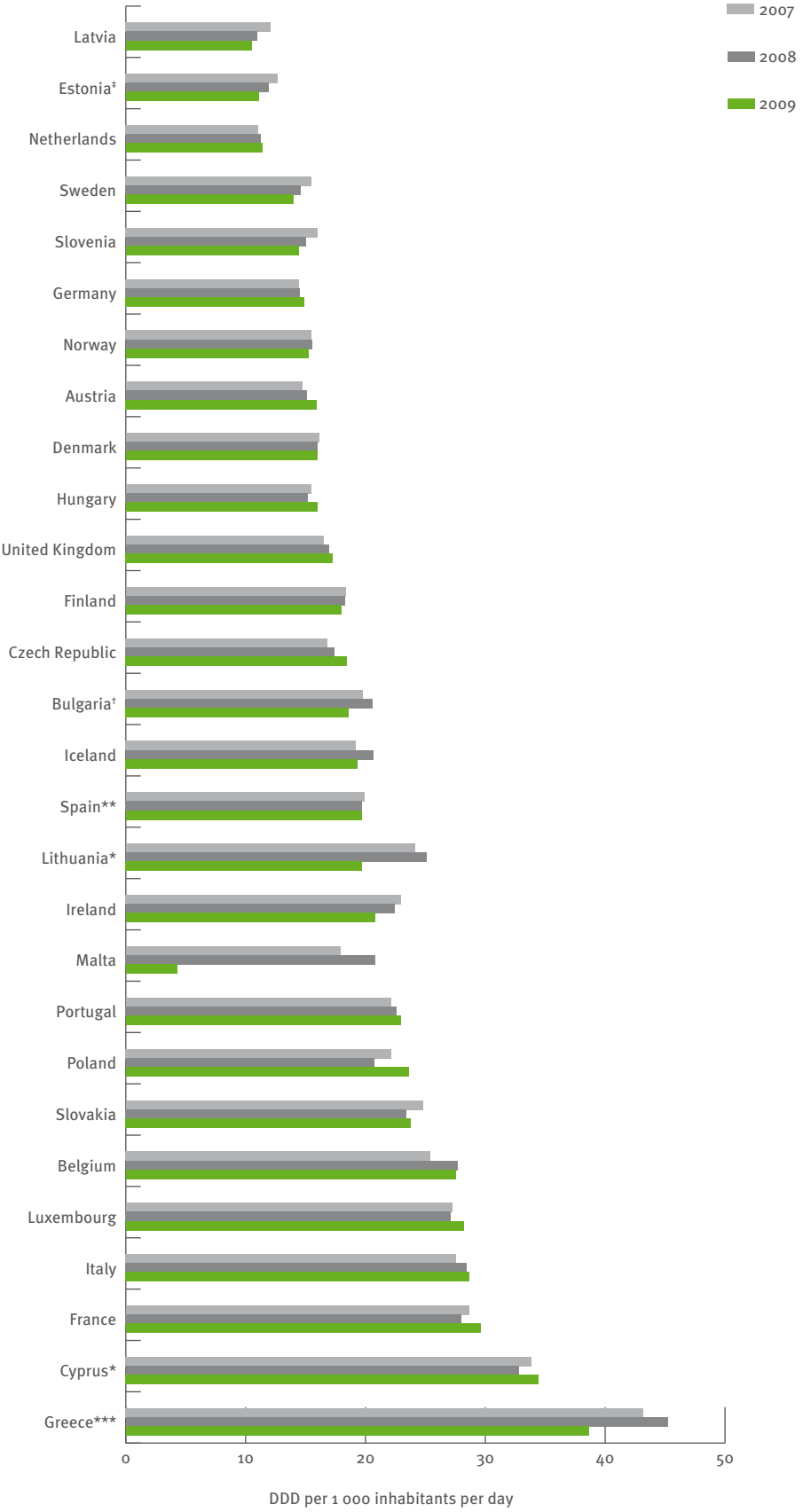
Temporal trends in total outpatient antibiotic consumption from 2007 to 2009 are presented in Figure 2.6.8. Six countries (Lithuania, Bulgaria, Greece, Ireland, Estonia, Iceland) showed a decrease of more than 5% of DDD per 1000 inhabitants and per day between 2008 and 2009, while six other countries – Poland, France, Austria (although antibiotic consumption data in 2009 versus total care data in 2008), Hungary, Czech Republic and Cyprus – showed an increase of more than 5% during the same period. Total outpatient antibiotic use continuously decreased during the last three years (2007 to 2009) in six countries (Estonia, Ireland, Latvia, Sweden, Slovenia and Spain).

Figure 2.6.7. Outpatient antibiotic (ATC group J01) use subdivided into major antibiotic classes according to the Anatomical Therapeutical Chemical (ATC) classification, EU and EFA/EFTA countries, 2009



Source: ESAC. * Total use, i.e. including inpatients, for Cyprus and Lithuania. ** Reimbursement data, i.e. not including over-the-counter sales without a prescription, for Spain.

Figure 2.6.8. Trends in total outpatient antibiotic consumption (ATC group J01) in EU and EEA/EFTA Member States, from 2007 (top bar) to 2009 (green bottom bar)



Source: ESAC. * CY, LT: total care data. ** ES: Reimbursement data, which do not include over-the-counter sales without a prescription. *** EL: Total care data for 2007 and 2008

Discussion

Antimicrobial consumption and in particular the consumption of antibacterials for systemic use expressed in DDD per 1000 inhabitants per day is a potential indicator[2] for healthcare professionals and national policymakers to improve the prudent use of antibiotics through national infection control strategies. Irresponsible use of antibiotics has shown to be associated with the development and spread of antimicrobial resistance.

However, the broad variation of outpatient use of antibacterials for systemic use in 2009 in EU and EEA/EFTA countries (Figure 2.6.7), which measures between 10.5 DDD per 1000 inhabitants and per day and a 3.7-fold higher consumption of 38.6 DDD per 1000 inhabitants per day (median 19.0), should be interpreted with caution for comparison of data between countries. It arises from the facts that some countries reported data on overall consumption, covering both outpatient and hospital care, or data sources may have changed over the time. Consolidating a continuous collection of comprehensive antimicrobial consumption data appears difficult and there are still differences in the national data sources used and in the disposability of national registers of available antibiotics, which are a prerequisite for correct calculations of DDD per 1000 inhabitants and per day.

Based on reliable data on antimicrobial use, a future option is to link these data with surveillance data on antimicrobial resistance, e.g. from the European Antimicrobial Resistance Surveillance Network (EARS-Net), to evaluate the timely association between antimicrobial use and the occurrence resistant bacteria.

References

1. WHO Collaborating Centre for Drug Statistics Methodology [website]. Oslo (Norway): Norwegian Institute of Public Health. Available from: http://www.whocc.no/atc_ddd_index/
2. Coenen S, Ferech M, Haaijer-Ruskamp FM, Butler CC, Vander Stichele RH, Verheij TJ, et al. European Surveillance of Antimicrobial Consumption (ESAC): quality indicators for outpatient antibiotic use in Europe. Qual Saf Health Care. 2007 Dec;16(6):440-5.

Healthcare-associated infections

- For the first time since the transition of the coordination of the healthcare-associated infections (HAI) surveillance to ECDC in July 2008, data were collected through ECDC's surveillance system (TESSy) (2009 data with follow-up until 31 December 2010). Seventeen countries submitted data for at least one of the HAI surveillance components.
- Decreasing trends previously observed for surgical site infections following hip prosthesis were confirmed in 2009.
- The distribution of micro-organisms associated with infections acquired in intensive care units showed a high proportion of third-generation cephalosporin-resistant Enterobacteriaceae (in particular, *Klebsiella* spp. and *Enterobacter* spp.) isolates.

During January–February 2011, surveillance data for healthcare-associated infections (HAI) were for the first time collected through the European Surveillance System (TESSy) (2009 data with partial follow-up until 31 December 2010). This followed the integration of European surveillance of surgical site infections (formerly HELICS-SSI) and of infections acquired in intensive care units (formerly HELICS-ICU) during the second half of 2010. More information about HAI-Net is available on the ECDC website (http://www.ecdc.europa.eu/en/activities/surveillance/hai).

Data for at least one of the HAI-Net surveillance modules were received from 17 countries and 20 surveillance networks.

Surveillance of surgical site infections

Data on surveillance of surgical site infections (SSIs) in 2009 were collected using the patient-based methodology described in the 2009 edition of this report.

Two indicators were used to express the risk of SSI: the cumulative incidence, which is the crude percentage of surgical interventions resulting in a SSI, and the incidence density, which is the number of SSI 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 numerator and denominator. Comparisons are therefore less affected by variation in length of post-operative stay or intensity of post-discharge case-finding. However, the incidence density can only be calculated when the discharge date is known.

SSI surveillance data for 2009 (with partial follow-up of patients who had undergone orthopaedic surgery until December 2010) were received from 16 networks and 13 countries and included 339702 surgical interventions from 1407 hospitals (compared with 315935 surgical interventions from 1434 hospitals in 2008). Finland submitted data for 2008 and 2009. The types and numbers of surgical interventions reported by each country are shown in Table 2.6.1.

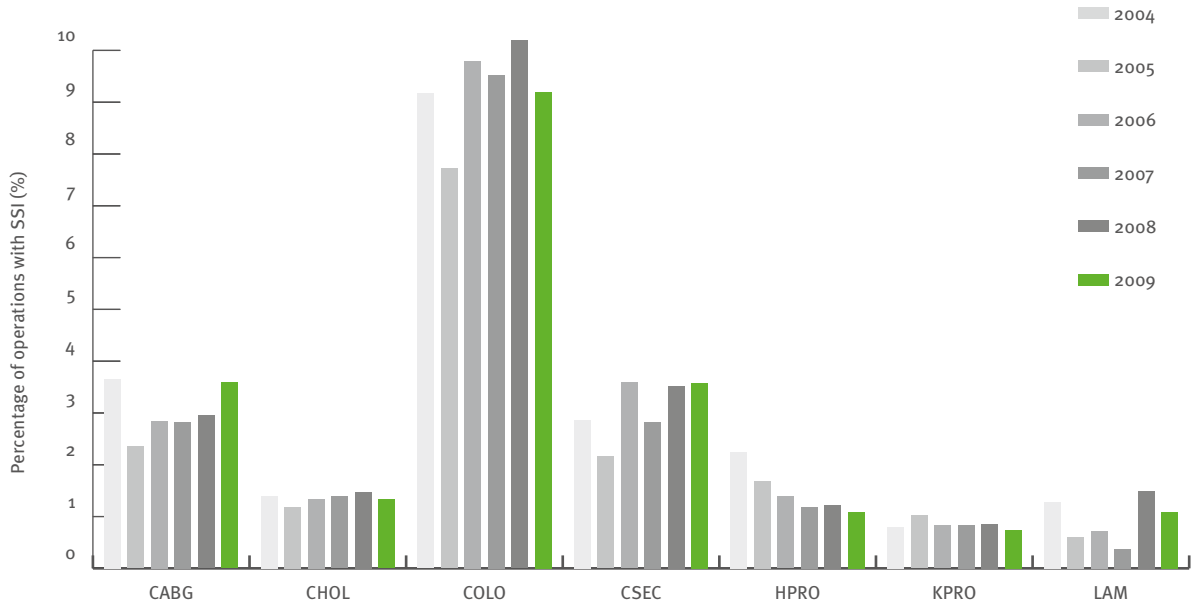
The percentage of SSI varied according to the type of surgical intervention with the highest rates in colon surgery (9.2%) and the lowest rates in knee prosthesis (0.7%). Similarly to 2008, the SSI cumulative incidence for hip prosthesis (HPRO) interventions showed a significant decreasing trend ($p < 0.001$) as shown in Figure 2.6.9.

Table 2.6.1. Number of interventions included in the surveillance of surgical site infections by category and country, 2009

	Number of hospitals	CABG	CHOL	COLO	CSEC	HPRO	KPRO	LAM	Total
Austria	31	40	372	81	3301	4467	297	37	**8595**
Germany	247	8579	10472	6435	9700	27412	15177	2543	**80318**
Finland	11					6060	4641		**10701**
France	579	910	10293	5537	14666	19842	9090	1289	**61627**
Hungary	29	201	2534	108	3290	325	331	246	**7035**
Italy	82	170	2320	1679	3766	1273	315	253	**9776**
Lithuania	20	603	986	323	2043	539	385		**4879**
Malta	1	276							**276**
Netherlands	31		1598	1179	1664	5182	3490		**13113**
Norway	54	746	412	219	2171	2530			**6078**
Portugal	20		1951	807	2283	964	584	122	**6711**
Spain	31	578	855	975	759	1830	1308	450	**6755**
United Kingdom[a]	271	5756	0	2762	24462	43914	46944	0	**123838**
Total	**1407**	**17859**	**31793**	**20105**	**68105**	**114338**	**82562**	**4940**	**339702**

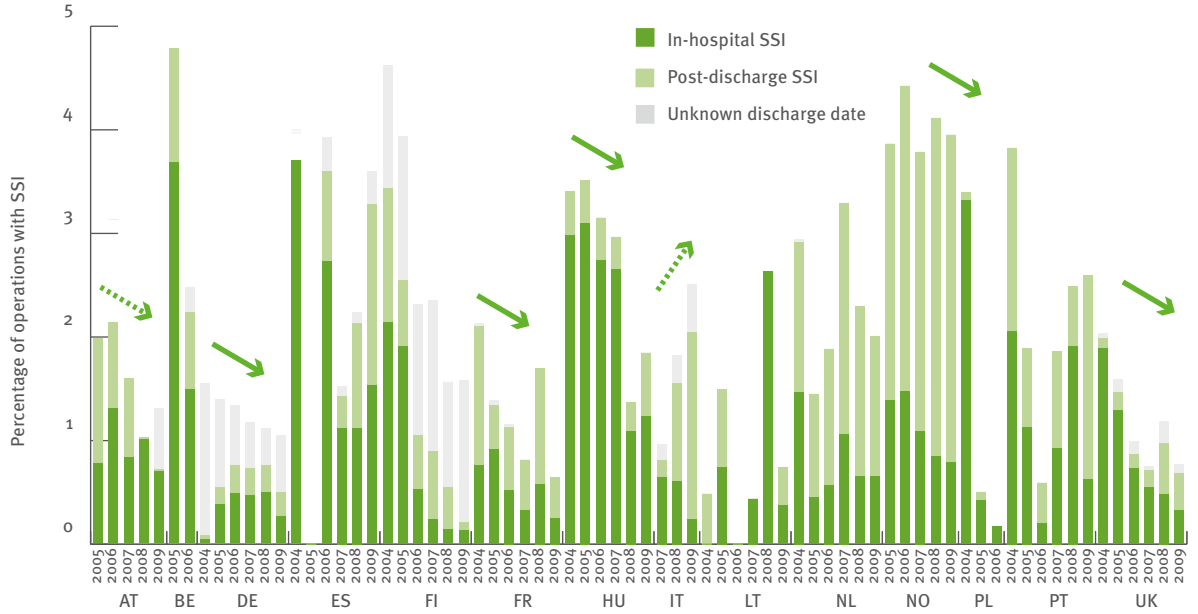
Source: HAI-Net SSI. CABG: coronary artery bypass graft; CHOL: cholecystectomy; COLO: colon surgery; CSEC: Caesarean section; HPRO: hip prosthesis; KPRO: knee prosthesis; LAM: laminectomy; –: no data. (a) Comprises data from England, Northern Ireland, Scotland and Wales.

Figure 2.6.9. Trends in cumulative incidence of surgical site infections in Europe by category of surgical intervention, 2004–09



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. Since data of all countries were pooled, methodological variations between and within countries may account for a part of the observed trends (see Discussion).

Figure 2.6.10. Trends in cumulative incidence of surgical site infections in hip prosthesis (HPRO) by country, 2004–09



Source: HAI-Net SSI. Belgium and Poland did not submit data for 2008–09 and trends for these countries were not analysed. New surveillance network in Spain since 2006. Arrows indicate statistically significant trends from 2004 to 2009, full line $p < 0.001$, dotted line $p < 0.05$. Interpretation of the data should be done with caution because on inter- and intra-country variations in methodology.

Intra-country trends for SSI rates associated with hip prosthesis from 2004 to 2009 were analysed both for cumulative incidence adjusting for case-mix (risk index) and to eliminate the effect of post-discharge surveillance, for infections detected before patient discharge adjusting for the length of stay in the hospital (and the risk index) using Poisson regression analysis (trend analysis of incidence density). Significant risk-adjusted decreasing trends for SSI cumulative incidence after hip prosthesis were observed in Austria ($p=0.026$), Germany ($p<0.001$), Finland ($p<0.001$), France ($p<0.001$), Hungary ($p<0.05$) and the United Kingdom ($p<0.001$, despite an increase in 2008), but an increasing trend was observed in Italy ($p=0.019$).

The trend analysis of the in-hospital incidence density showed decreasing trends in Finland, Germany, Hungary, Spain and the United Kingdom. In Germany, the percentage of data for which the hospital discharge date was unknown further decreased in 2009 (Figure 2.6.10). The

increasing trend of SSI cumulative incidence after hip prosthesis in Italy was not confirmed by incidence density analysis as it was entirely explained by an increase of the proportion of post-discharge infections while the in-hospital incidence decreased.

Overall, the percentage of SSI detected after discharge from the hospital in 2009 was 48% (all intervention categories combined), and the highest in Caesarean section (79%) and the lowest in colon surgery (13%). After hip prosthesis, the percentage of SSI detected post-discharge was the highest in Norway (80%), Portugal (76%), Italy (72%), the Netherlands (67%) and France (61%), and increased markedly in Italy and Portugal (Figure 2.6.10).

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 in England only started with infections detected at re-admission in 2009).
- Differences in post-operative length of stay (because infections 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 HAI-Net SSI.
- Differences in the mix of hospitals that participated each year.
- Differences in patient case-mix and mix of types of intervention, although these are partly taken into account by the risk index (e.g. some countries perform more total hip prosthesis interventions and less partial hip prosthesis interventions (the latter have a higher intrinsic risk of infection), which affects the mix of interventions within the HPRO category).
- Different interpretations of the same case definitions, resulting in different reported percentages of superficial infections.
- Follow-up of orthopaedic surgery until one year after surgery, as foreseen in the case definition of surgical site infections, is not implemented consistently in all countries or data until one year after the operation were not available for all operations/hospitals within a country at the time of the data collection. Surgical site infections detected after 30 days until one year of follow-up represented 12% of all SSI reported in HPRO and KPRO, varying between 2% until more than 30%, according to the country.
- Organisational aspects such as mandatory participation with public disclosure of SSI indicators (e.g. in the United Kingdom).

Surveillance of infections acquired in intensive care units

There are two protocols for surveillance of infections acquired in intensive care units (ICUs) as part of HAI-Net ICU: 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, infected or not. In unit-based surveillance, denominator data, i.e. patient days, are collected for the entire ICU.

In 2009, 13 countries (Austria, Belgium, Estonia, France, Germany, Italy, Lithuania, Luxembourg, Malta, Portugal, Slovakia, Spain and UK-Scotland) contributed data from 846 hospitals and 1007 ICUs on 10512 episodes of ICU-acquired pneumonia and 5653 episodes of ICU-acquired bloodstream infections. Two countries (Germany and Malta) only provided unit-based data and two countries (Belgium and Slovakia) 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 the ICU. Therefore, data from Germany were only included in the descriptive analysis of the ICU-acquired infections and excluded from the calculation of infection rates. Estonia provided data for a single ICU, which was not included in the analysis.

Of 70648 patients staying more than two days in the ICU (patient-based data), 7.1% acquired a pneumonia

Table 2.6.2. Intubation-associated pneumonia rates by country, 2009

	Number of patients	Average length of ICU stay (days)	Intubation days per 100 patient days	Intubation-associated pneumonia episodes per 1000 intubation days				
				Pooled country mean	Mean of ICUs	25th percentile	Median	75th percentile
Austria	6975	10.2	59.1	13.5	10.9	0.0	7.6	20.5
Belgium	3209	7.7	37.1	17.4	21.7	4.7	23.4	30.0
France	24533	11.8	60.8	13.7	13.1	7.8	12.1	17.8
Italy	929	10.7	65.7	12.8	11.2	7.6	10.7	14.4
Lithuania	2311	8.3	40.3	10.8	8.2	0.0	2.3	10.9
Luxembourg	2307	9.8	31.4	3.4	3.6	0.7	4.5	5.9
Portugal	3472	12.2	74.4	13.0	13.0	6.0	10.7	17.2
Slovakia	176	9.5	82.4	11.6	11.3	6.8	11.2	14.8
Spain	21609	9.6	46.9	14.3	15.5	6.4	12.9	23.8
United Kingdom[a]	1154	6.8	50.2	13.5	13.5	13.5	13.5	13.5
Total	**66675**	**10.4**	**54.9**	**12.2**	**13.5**	**6.1**	**11.7**	**19.9**

Source: HAI-Net ICU. ICUs that reported data on less than 20 patients were excluded. Patients with discordant exposure data excluded. (a) Data from Scotland only.

(intubation-associated in 91% of the cases). The mean incidence density was 7.8 pneumonia episodes per 1 000 patient-days, varying from 5.4 in ICUs with less than 30 % intubated patients to 7.3 in ICUs with 30–59% intubated patients, and 8.8 in ICUs with ≥60% intubated patients. The mean device-adjusted rate was 14.5 intubation-associated pneumonia episodes per 1000 intubation-days and varied between 3.9 per 1000 intubation-days in Luxembourg to 19.1 per 1000 intubation-days in Belgium (Table 2.6.2).

The most frequently isolated micro-organisms from ICU-acquired pneumonia, bloodstream infections and urinary tract infections are shown in Tables 2.6.3, 2.6.4 and 2.6.5.

Overall, the most frequently isolated micro-organisms in ICU-acquired pneumonia episodes were *Pseudomonas aeruginosa* and *Staphylococcus aureus* with an average proportion of meticillin-resistant isolates (MRSA) of 34.6%. Inter-country differences showed higher relative frequencies of *Acinetobacter* spp. in Italy, Lithuania, Portugal, Slovakia and Spain, while *Enterobacter* spp. was more frequent in Belgium and Luxembourg. *Enterococcus* spp. was more frequently reported in Austria, Germany and Italy. The high percentage of *Candida* spp. reported by ICUs in Austria, Germany and Slovakia may indicate different diagnostic practices for ICU-acquired pneumonia in these countries or reflect differences in reporting this micro-organism, which is often isolated in respiratory samples but only rarely involved in the pathogenesis of pneumonia.

On average, ICU-acquired bloodstream infections occurred in 4.7% of patients staying more than two days in the ICU. Bloodstream infections were catheter-related in 41.3% cases, secondary to another infection in 35.7% cases and of unknown origin in 23.0% cases. For cases where the bloodstream infection was secondary, the primary infection site was pulmonary in 46.3% cases, the gastrointestinal tract in 22.1% cases, the urinary tract in 12.4% cases, a surgical site in 4.1% cases, skin and soft tissue in 5.6% cases and other/unknown in 9.4% cases. The mean device-adjusted rate in patients staying more than two days in the ICU was 4.2 central line-associated bloodstream infection episodes per 1000 central line-days (25th percentile: 0.5, median: 2.8, 75th percentile: 5.6). The central vascular catheter (CVC) utilisation rate was on average 70.1 CVC days per 100 patient days (lowest: Luxembourg, 58.5; highest Portugal, 87.6).

The most frequently isolated micro-organisms in bloodstream infection episodes were coagulase-negative staphylococci, followed by *Enterococcus* spp., *S. aureus* (proportion of MRSA: 47%), *P. aeruginosa* and *Candida* spp. (Table 2.6.4). As in pneumonia episodes, the percentage of *Acinetobacter* spp. was higher in Italy, Lithuania, Slovakia and Spain. The large differences in the proportion of coagulase-negative staphylococci probably indicate differences in reporting skin contaminants isolated from blood cultures.

Urinary tract infections (UTIs) were reported in 4.0% of patients staying more than two days in the ICU, with 98.5% of the infections associated with use of a urinary catheter. The mean device-adjusted was 4.7 catheter-associated UTI episodes per 1000 urinary catheter-days (25th percentile: 1.1, median: 3.3, 75th percentile: 6.4). Urinary catheters were used in 79% of the patient days on average. The most frequently isolated micro-organisms in UTI episodes were *E. coli*, *Enterococcus* spp. and *Candida* spp. (Table 2.6.5).

Overall proportions of resistant isolates in selected micro-organisms associated with ICU-acquired infections were the following: 36% oxacillin resistance (MRSA) in *S. aureus* isolates, 2.7% vancomycin resistance in *Enterococcus* spp. isolates, 26% ceftazidime resistance in *P. aeruginosa* isolates, 16% ceftriaxone or cefotaxime resistance in *E. coli* isolates (increasing from 12% in 2008), 28% ceftriaxone or cefotaxime resistance in *Klebsiella* spp. isolates (increasing from 23% in 2008) and 51% ceftriaxone or cefotaxime resistance in *Enterobacter* spp. isolates (increasing from 44% in 2008).

The six countries (Belgium, Italy, Malta, Portugal, Slovakia and Spain) that collected detailed resistance data from micro-organisms associated with ICU-acquired infections reported 4.6% carbapenem resistance in *Klebsiella* spp.,

Table 2.6.3. Ten most frequently isolated micro-organisms in ICU-acquired pneumonia by country, 2009

	Austria	Belgium	France	Germany	Italy	Lithuania	Luxembourg	Malta	Portugal	Slovakia	Spain	United Kingdom	Total
Number of isolates	797	684	3259	4834	101	151	30	420	33	101	1961	93	12363
Pseudomonas aeruginosa	20.2%	18.1%	21.8%	12.4%	19.8%	15.2%	40.0%	26.4%	27.3%	19.8%	19.5%	15.3%	17.5%
Staphylococcus aureus	8.3%	7.5%	18.2%	15.1%	6.9%	13.2%	6.7%	20.7%	3.0%	6.9%	12.9%	18.4%	14.8%
Candida spp.	18.4%	2.8%	4.1%	15.1%	5.9%	6.0%	3.3%	4.0%	24.2%	5.9%	7.0%	12.2%	9.8%
Escherichia coli	4.4%	10.2%	10.3%	10.6%	1.0%	9.9%	3.3%	4.8%	3.0%	1.0%	6.2%	7.1%	9.1%
Klebsiella spp.	11.0%	7.5%	6.0%	10.1%	7.9%	13.9%	13.3%	9.0%	27.3%	7.9%	6.4%	11.2%	8.4%
Enterobacter spp.	8.0%	11.8%	7.2%	6.9%	3.0%	2.0%	13.3%	5.5%	0.0%	3.0%	6.1%	6.1%	7.1%
Stenotrophomonas spp.	3.0%	6.1%	3.3%	3.1%	3.0%	2.0%	3.3%	5.5%	0.0%	3.0%	4.3%	9.2%	3.6%
Acinetobacter spp.	0.8%	2.0%	2.6%	1.4%	21.8%	11.3%	0.0%	8.3%	9.1%	21.8%	9.8%	0.0%	3.6%
Haemophilus spp.	2.0%	2.6%	5.1%	1.9%	0.0%	3.3%	0.0%	3.6%	0.0%	0.0%	4.6%	9.2%	3.3%
Enterococcus spp.	6.3%	1.3%	1.2%	5.2%	8.9%	2.0%	3.3%	1.0%	3.0%	8.9%	1.7%	1.0%	3.2%

Source: HAI-Net ICU.

0.8% in *E. coli* and 4.7% in *Enterobacter* spp. isolates. In these countries, the percentage of carbapenem-resistant isolates in *P. aeruginosa* and *Acinetobacter baumannii* was 40.5% and 80.0%, respectively. Among isolates that were tested for colistin susceptibility, colistin resistance was reported in 4.5% of *A. baumannii*, 2.8% of *P. aeruginosa* and 30.0% of *Stenotrophomonas maltophilia* isolates.

Discussion

For the first time, HAI-Net surveillance data on surgical site infections and infections acquired in intensive care units in 2009 were collected through ECDC's TESSy system. Seventeen countries submitted data for at least one surveillance component, which is similar to last year's report[1]. However, the number of surgical interventions included in HAI-Net (2009 data) increased by 9.6% and the number of participating ICUs increased by 22.7% compared to last year (2008 data).

The decreasing overall trend of surgical site infection after hip prosthesis reported last year (2008 data) was confirmed when including 2009 data. This illustrates the contribution of HAI surveillance, including inter-hospital, risk-adjusted comparisons of HAI rates, to prevention and control of HAIs. However, inter-country differences in surveillance methods persist and further emphasis should be put on harmonisation.

Data from the surveillance in intensive care units showed a steady increase of several antimicrobial resistance markers in Gram-negative bacteria. Resistance to last resort antimicrobials such as carbapenems and colistin was also reported.

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 hospitals and network coordination centres, organising training courses and performing country visits for on-site technical support.

References

1. European Centre for Disease Prevention and Control. Annual epidemiological report on communicable diseases in Europe 2010. Stockholm: ECDC; 2010 p. 174–178.

Table 2.6.4. Ten most frequently isolated micro-organisms in ICU-acquired bloodstream infections by country, 2009

	Austria	Belgium	France	Germany	Italy	Lithuania	Luxembourg	Malta	Portugal	Slovakia	Spain	United Kingdom	Total
Number of isolates	280	130	902	1783	25	41	51	53	286	15	2298	83	5947
Coagulase-negative staphylococci	51.8%	17.7%	16.7%	28.5%	28.0%	26.8%	7.8%	5.7%	23.8%	20.0%	29.7%	26.5%	27.4%
Enterococcus spp.	10.4%	10.8%	7.2%	17.5%	8.0%	7.3%	17.6%	20.8%	8.0%	6.7%	10.2%	10.8%	12.0%
Staphylococcus aureus	6.4%	8.5%	13.4%	15.0%	0.0%	0.0%	9.8%	11.3%	12.2%	0.0%	4.7%	13.3%	9.9%
Pseudomonas aeruginosa	4.6%	11.5%	12.4%	4.6%	8.0%	4.9%	7.8%	35.8%	13.3%	26.7%	9.0%	3.6%	8.4%
Candida spp.	8.6%	13.1%	7.1%	7.5%	8.0%	0.0%	15.7%	3.8%	8.0%	0.0%	8.3%	4.8%	7.9%
Klebsiella spp.	3.6%	10.8%	6.3%	5.6%	4.0%	14.6%	11.8%	7.5%	8.4%	13.3%	6.7%	9.6%	6.5%
Escherichia coli	3.9%	8.5%	11.3%	5.3%	0.0%	7.3%	13.7%	1.9%	4.9%	6.7%	4.7%	15.7%	6.1%
Enterobacter spp.	2.1%	10.0%	9.1%	3.9%	8.0%	4.9%	9.8%	3.8%	7.3%	0.0%	5.0%	1.2%	5.3%
Acinetobacter spp.	0.0%	0.8%	1.3%	0.8%	8.0%	17.1%	0.0%	0.0%	4.9%	13.3%	5.6%	0.0%	3.0%
Serratia spp.	0.4%	1.5%	1.9%	1.3%	8.0%	7.3%	0.0%	1.9%	2.8%	0.0%	2.8%	0.0%	2.0%

Source: HAI-Net ICU.

Table 2.6.5. Ten most frequently isolated micro-organisms in ICU-acquired urinary tract infections by country, 2009

	Austria	Belgium	France	Germany	Italy	Lithuania	Luxembourg	Portugal	Slovakia	Spain	Total
Number of isolates	531	45	1406	880	63	42	39	86	34	1034	4161
Escherichia coli	16.6%	24.4%	33.8%	26.7%	14.3%	21.4%	33.3%	23.3%	0.0%	22.4%	26.2%
Enterococcus spp.	21.1%	15.6%	12.4%	22.5%	14.3%	11.9%	30.8%	11.6%	14.7%	13.6%	16.2%
Candida spp.	22.6%	20.0%	11.9%	8.9%	7.9%	23.8%	12.8%	23.3%	23.5%	23.4%	16.0%
Pseudomonas aeruginosa	16.8%	11.1%	15.1%	14.5%	15.9%	7.1%	15.4%	16.3%	17.6%	12.4%	14.5%
Klebsiella spp.	5.6%	13.3%	7.0%	8.4%	9.5%	7.1%	0.0%	5.8%	29.4%	7.0%	7.3%
Enterobacter spp.	3.0%	6.7%	5.1%	5.8%	4.8%	2.4%	5.1%	7.0%	2.9%	2.5%	4.3%
Proteus spp.	2.1%	0.0%	3.8%	4.8%	0.0%	9.5%	0.0%	5.8%	2.9%	3.4%	3.7%
Coagulase-negative staphylococci	6.0%	0.0%	2.6%	1.1%	15.9%	2.4%	0.0%	0.0%	0.0%	1.9%	2.6%
Acinetobacter spp.	0.0%	0.0%	0.6%	0.1%	4.8%	11.9%	0.0%	3.5%	5.9%	4.0%	1.5%
Citrobacter spp.	1.1%	2.2%	1.9%	1.3%	1.6%	0.0%	2.6%	0.0%	0.0%	0.7%	1.3%

Source: HAI-Net ICU.

3 Annual threat report: Analysis of potential communicable disease threats to public health in the European Union, 2010

3.1 Descriptive analysis of emerging threats

Temporal analysis

Threats monitored through daily epidemic intelligence activities

From June 2005 to December 2010, ECDC actively monitored 889 threats, with a minimum of 93 threats in 2010 and a maximum of 251 threats in 2008 (Figure 3.1). A median of 12 threats were monitored per month with a range of 3–39. The seasonal distribution of threats shows a tendency to peak around summer and autumn. The peaks are mainly due to legionellosis and food- and waterborne disease threats (Figure 3.2).

In 2010, ECDC monitored 93 threats, of which 83 were created in 2010, five were carried over from 2009 (influenza A(H1N1) pandemic, measles outbreak in Bulgaria affecting mainly Roma, Q-fever in the Netherlands, *Salmonella* Goldcoast in several EU countries, and anthrax in heroin users in the United Kingdom and Germany), while few threats are being followed on a continuous basis since

Figure 3.1. Number of monitored threats by ECDC, 2005–10

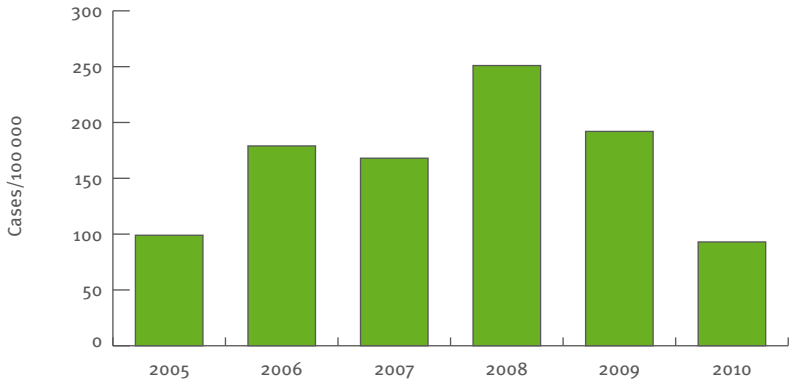
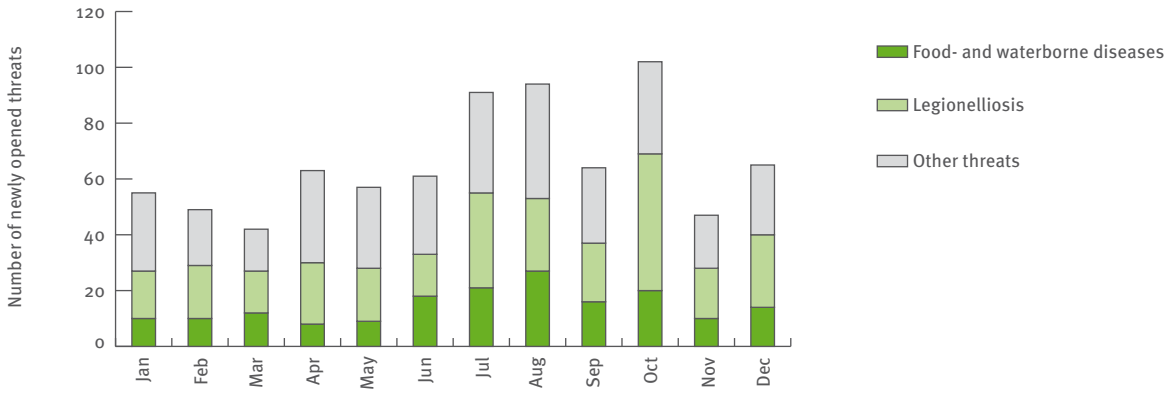


Figure 3.2. Seasonal distribution of threats monitored by ECDC, by month and group of disease, January 2006–December 2010



2006 (cholera and dengue fever) and since 2005 (chikungunya fever, poliomyelitis and influenza A(H5N1)).

The 93 threats monitored in 2010 represent a 52% decrease of monitored threats compared with 2009. This decrease is largely related to the decision not to open a threat for every reported travel-associated legionellosis cluster, as the European Legionnaires' Disease Surveillance Network (ELDSNet) has been transferred and fully integrated to ECDC in 2010 and the EU action following each legionellosis threat is coordinated through a well-organised network and there is little role for additional action. Due to this transition, the number of monitored legionellosis threats in ECDC decreased from 92 in 2009 to 28 in 2010 (70% decrease).

The median duration of monitored threats increased from three days in 2009, (mean 6.8 days, range 0–42 days) to 10 days (mean 20.4 days, range 0–184 days) in 2010. This was again mainly due to the fact that fewer legionellosis threats were monitored in 2010. The median time for monitoring legionellosis threats in the five-year observation period was one day (mean 5.4 days, range 0–284 days). Threats which were carried over to the next year (eight) or with inconsistent information (six legionellosis threats and one threat related to meningitis) were excluded from this analysis.

One third of threats monitored through the daily ECDC activities (29/93) met the Early Warning and Response System (EWRS) reporting criteria in 2010.

Messages circulated in EWRS

From January 2005 until the end of 2010, 1023 new message threads were posted in the EWRS, of which 982 were related to threats and 41 were not and, therefore, excluded from further analysis. In 2010, the number of message threads was similar to previous years, excluding the ones related to influenza (Figure 3.3). The 1911 comments posted as reply to messages in 2010 were also similar to other years, excluding the year 2009, when messages and comments were significantly higher due to the influenza A(H1N1) pandemic (Table 3.1 and Figure 3.3). Consistently, in all five years of observation, most message threads were posted on Fridays (24%) and fewest during the weekends.

During the five-year observation period, 34% of selective messages stated contact tracing (CT) in the title. In 2010, this proportion was similar (36%). CT related to air travel accounted for 25% of CT threats and CT related to cruise ships, for 11%. There was no further specification in 64% of all threats related to CT in 2010.

Between 2005 and 2010, four countries (France, Germany, Spain and Sweden) posted more than 200 message threats each, including comments and selective messages; 12 countries between 100 and 200; and the remaining 14 countries, less than 100.

Table 3.1. Distribution of Early Warning and Response System (EWRS) messages, by year of posting, 2005–10

Year of posting	Message threads posted	Message threads (related to threats)	Excluded messages (not related to threats)	Comments posted	Selective exchange messages posted
2005	103	88	15	131	2
2006	138	135	3	223	50
2007	85	79	6	300	208
2008	99	93	6	230	169
2009	509	502	7	820	720
2010	89	85	4	227	211
Total	**1023**	**982**	**41**	**1931**	**1360**

Figure 3.3. Distribution of message threats monitored by ECDC related to influenza and other pathogens, by year of posting, 2005–10

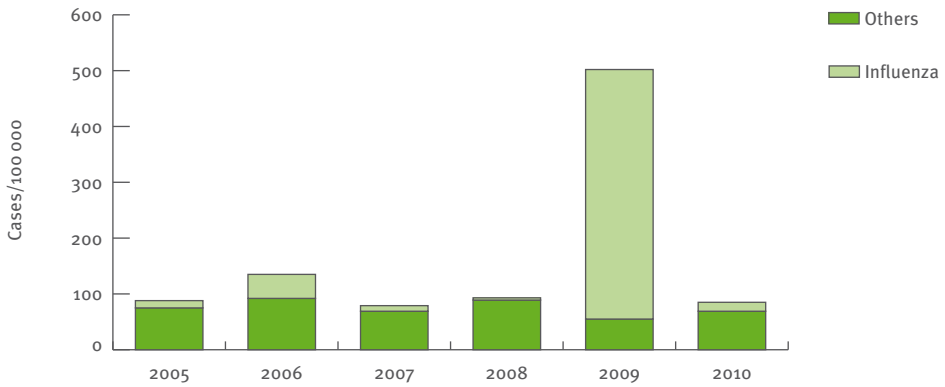


Figure 3.4. Proportion of message threads monitored by ECDC, by weekday of posting, 2005–10

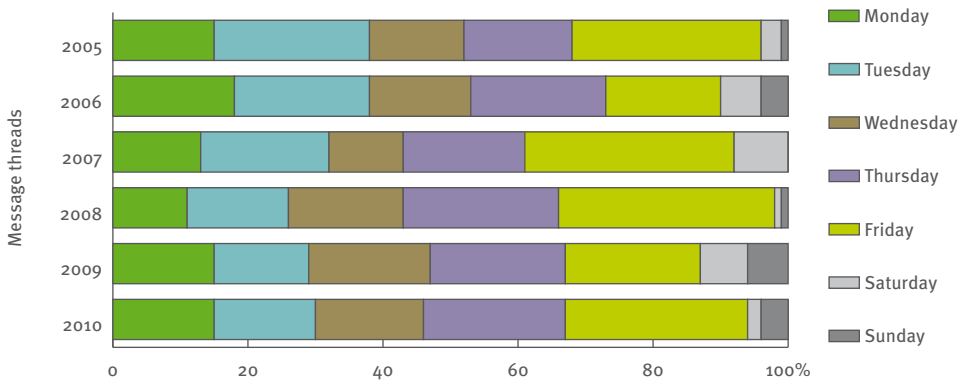


Table 3.2. Number of message threads, comments and selective messages posted, by country of posting, 2010 and 2005–10

	2010					2005–10
	Message threads posted	Comments posted	Selective messages posted	Selective messages received	Total number of messages posted	Total number of messages posted
Austria	1	2	16	27	19	164
Belgium	2	3	4	9	9	132
Bulgaria	2	5	3	8	10	50
Cyprus		9		1	9	53
Czech Republic		5	6	17	11	104
Denmark	1	4	3	8	8	160
Estonia		5	1	2	6	84
Finland	4	3	5	15	12	97
France	10	10	16	42	36	212
Germany	8	8	13	40	29	240
Greece	3	4	4	10	11	66
Hungary	3	7	5	11	15	86
Iceland	1	4	2	3	7	66
Ireland	1	5	5	8	11	131
Italy	6	4	12	24	22	169
Latvia		4	2	3	6	95
Liechtenstein			0	0	0	
Lithuania	1	10	2	6	13	119
Luxembourg		2		0	2	54
Malta	1	2	1	2	4	54
Netherlands		4	10	25	14	138
Norway	2	4	1	12	7	82
Poland	1	1	4	8	6	69
Portugal	2	19	4	9	25	177
Romania	2	7	4	7	13	174
Slovakia	7	2	11	26	20	122
Slovenia	2	3		1	5	61
Spain	4	10	29	55	43	205
Sweden	5	14	19	31	38	204
United Kingdom	6	13	15	40	34	165
European Commission	14	52	13	50	79	720
ECDC		2	1	74	3	41
Total	**89**	**227**	**211**	**574**	**527**	**4294**

Analysis by disease group

During the 5.5-year monitoring period, the number of food- and waterborne disease (FWD) threats constantly decreased from 42 in the second half of 2005 to 9 in 2010. In contrast, the number of diseases related to environmental and zoonotic origin (EVD) increased from 20 in 2005 to 44 in 2010, with the highest number of 114 EVD monitored threats in 2009. This increase was mainly due to monitored legionellosis threats, which are included in the EVD programme. The transition of the European Working Group on *Legionella* Infections (EWGLINET) to the European Legionnaire's Disease Surveillance Network (ELDSNet) within ECDC contributed significantly to this change (Figure 3.5).

The other groups of diseases remained similar when compared to previous years: 13 vaccine-preventable and invasive bacterial diseases (VPD) threats were monitored in 2010 (range in previous years 11–28). For the first time during the observation period, no threat related to tuberculosis was monitored in 2010.

In 2010, nearly half of monitored threats were of environmental and zoonotic origin (47%), followed by vaccine-preventable and invasive bacterial diseases (13%), food- and waterborne diseases (10%) and influenza (8%) (Table 3.3). Among the 18 monitored threats not related to any of the disease-specific programmes of ECDC, eight were related to the FIFA World Cup in South Africa, four to other large international mass gathering events, and one each to deaths linked to cold weather in Europe, heatwave and forest fires in Russia, flooding in Pakistan, the volcanic eruption of the Eyjafjallajökull in Iceland, the earthquake in Haiti and iodine contamination in soya milk in Japan and Australia.

The decision was taken to intensely monitor the FIFA World Cup in South Africa due to ongoing measles and Rift Valley fever outbreaks and the start of the influenza season in the Southern Hemisphere. This resulted in an increase of monitored threats related to mass gathering events from three in 2009 to 12 in 2010.

Figure 3.5. Proportion of threats related to disease-specific programmes in ECDC, by year, June 2005–December 2010

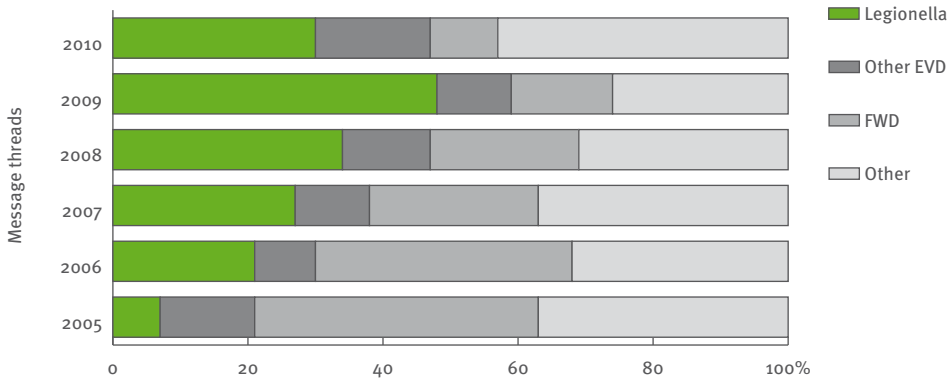


Table 3.3. Percentage of threats monitored by ECDC, by year and group of disease, EU/EEA, 2005–2010

ECDC disease-specific programmes	2005 (%)	2006 (%)	2007 (%)	2008 (%)	2009 (%)	2010 (%)
Antimicrobial resistance and healthcare-associated infections	3	2	1	0	0	1
Food- and waterborne diseases	42	38	25	22	15	10
Hepatitis, HIV, STI, blood-borne diseases	1	1	1	1	2	2
Influenza	6	3	2	4	7	8
Other environmental or zoonotic diseases	20	30	38	47	59	47
Tuberculosis	2	2	10	5	4	0
Vaccine-preventable and invasive bacterial diseases	13	6	10	11	9	13
Not applicable	12	18	13	9	3	19
Number of monitored threats per year	**99**	**179**	**168**	**251**	**192**	**93**

Analysis by initial source of notification

Confidential sources are defined as sources with restricted access, like disease-specific surveillance networks, EWRS or information sent to ECDC by Member States or the World Heath Organization (WHO). All sources publicly accessible on the internet are considered public sources. In 2010, the main source of new threats was the European Legionnaires' Disease Surveillance Network (ELDSNet) previously called European Working Group on *Legionella* Infections (EWGLINET) in relation to clusters of travel-associated legionellosis. ELDSNet/EWGLINET accounted for 30 % (25 threats) and EWRS for 19 % (16 threats) of threats from all sources. The proportion of newly monitored threats originating from confidential sources was 76 % in 2010 (range 70–80 % excluding the incomplete year 2005 (Table 3.4).

Table 3.4. Initial sources of information for newly opened threats, by year, EU/EEA, 2005–2010

Origin of new threats	2005 (%)	2006 (%)	2007 (%)	2008 (%)	2009 (%)	2010 (%)	Total (%)
Confidential sources							
EPIS for food- and waterborne diseases						2	2
EWGLI/ELDSNet	2	18	28	34	49	30	29
EWRS	23	32	30	32	24	19	28
WHO	17	9	4	1	2	6	5
Information from Member States	1	3	1	3	1	5	2
European disease surveillance networks	9	7	6	2	3	2	4
Other confidential sources		1	3	4	2	11	3
Total (%)	**53**	**70**	**71**	**77**	**80**	**76**	**72**
Public sources							
PROMED	36	9	14	4	3	1	10
MedISYS	2	3			4		2
GPHIN	4	12	3		2		4
Eurosurveillance	0	1	1				0
Public reports available on the Internet	5	6	8	7	5	8	7
Other public sources			2	11	6	14	6
Total (%)	**47**	**30**	**29**	**23**	**20**	**24**	**27**
Total number of new threats	**99**	**163**	**142**	**228**	**174**	**83**	**889**

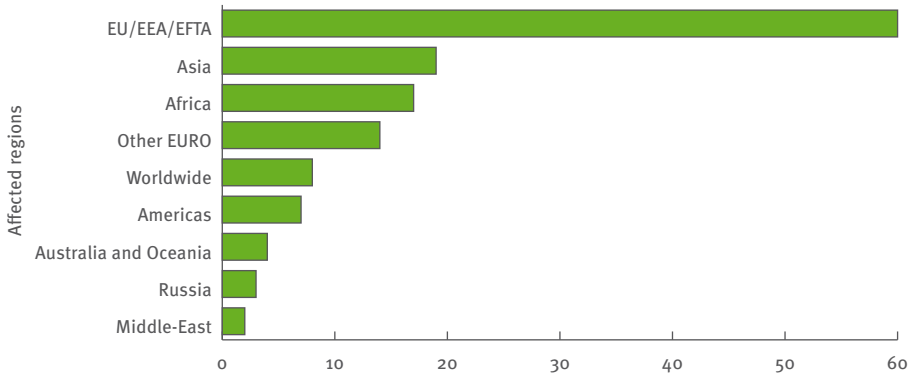
The number of threats in this table does not correspond to the number of threats monitored as only threats opened in the respective year are considered.

Analysis by region of origin and affected countries

Forty-five per cent of monitored threats in 2010 affected EU and EEA/EFTA Members States, followed by Asia (14 %), Africa (13 %) and other European countries (10 %) (Figure 3.6).

Fourteen of the 30 EU and EEA/EFTA countries were affected by the monitored threats, excluding the non-infectious disease threats. Italy was the country affected by the highest number of events (6 threats), followed by Spain and France (5 each), Greece and United Kingdom (4 each), Germany (3), the Netherlands and Portugal (2 each) and Austria, Bulgaria, Finland, Iceland, Ireland and Latvia (1 each).

Figure 3.6. Number of monitored threats in 2010, by affected region(s)



The number of affected regions and countries is different from the number of monitored threats, as a threat may affect several countries or regions.

3.2 Response to threats

Published rapid risk assessments

In 2010, 33 rapid risk assessments (RRA) were produced and shared with the Member States: 23 original assessments and 10 updates. While the majority of the RRAs were directly related to communicable diseases – such as the measles outbreak in Bulgaria, the polio outbreak in Tajikistan or emergence of vector-borne diseases (e.g. West Nile virus in Europe, indigenous cases of dengue fever in Croatia and France, indigenous cases of chikungunya fever in metropolitan France) – assessments were also prepared for the health impact of the volcano eruption in Iceland or the summer wildfires in Russia and for narcolepsy being a suspected adverse event of a pandemic influenza vaccine (Table 3.5). RRAs were spread throughout the year, with exception of June and July, when no RRA was published. All RRAs were distributed to Member State authorities using the EWRS restricted

Table 3.5. Distribution of ECDC rapid risk assessments by month of publication, subject and number of updates, 2010

Month of publication	Subject	Number of updates
January	Meningitis case on an international flight	
	Human cases of anthrax among intravenous drug users in the United Kingdom and Germany	1
	Outbreak of listeriosis in Austria and Germany	
February	Human cases of West Nile virus infection in Portugal	
	Outbreak of hepatitis A associated to consumption of sun-dried tomatoes in France and the Netherlands	
March	Measles outbreak in Bulgaria	
	Norovirus outbreaks associated with oyster consumption with cases reported from Norway, France, Ireland, Denmark and the Netherlands	
	Rabies in animals in northern Italy	
	Forward look risk assessment for seasonal influenza following the pandemic	1
April	Ash plume after Icelandic volcano eruption	1
	Rift Valley fever imported case from South Africa	
May	Polio in Tajikistan	4
	Hand, foot and mouth disease epidemic in Asia	
August	Human cases of West Nile virus infection in Greece	1
	Health impact of heatwave and wild fires in Russia	
	New Delhi metallo-beta-lactamase (NDM-1) carbapenemase-producing Enterobacteriaceae related to the Indian subcontinent	
	Reports of cases of narcolepsy in children in the context of pandemic influenza and pandemic influenza vaccination reported from Finland, Sweden, France	1
September	West Nile virus infection in Europe	1
	Autochthonous cases of dengue virus transmission in France	1
	Autochthonous cases of chikungunya fever in France	
	Autochthonous dengue fever case in Croatia	
October	Malaria (*P. vivax*) case in Spain	
November	Cholera in Haiti	
December	Severe clinical presentation of influenza in the United Kingdom	
Total number of rapid risk assessments and updates	**24**	**11**

platform, and three were published on the ECDC website (anthrax in intravenous drug users, human cases of West Nile virus infections in Greece and hand, foot and mouth disease in Asia).

Mobilisation of expertise

ECDC may support a Member States in the coordination of the investigation for threats involving other Member States. In 2010, this was for example the case for the outbreak of *Salmonella* Goldcoast, for which cases were reported by six Member States. Field visits to support the Member States from the European perspective in their response to outbreaks were carried out in Bulgaria for measles and in Greece and Romania for West Nile virus. Additionally, two European Programme for Intervention Epidemiology Training (EPIET) fellows supported Portugal and Serbia during mass gathering activities.

Finally, the European Commission's Directorate-General for Humanitarian Aid and Civil Protection (DG ECHO) requested support from ECDC outside of the EU, following the cholera outbreak in Haiti. ECDC facilitated the mobilisation of Member State experts and sent two teams of EPIET fellows through the office of the Pan American Health Organization (PAHO) to strengthen rapid alert investigation teams in the country. In addition, three ECDC staff members were dispatched to the ECHO office in Port-au-Prince to contribute to a support mission of the EU Centre for Information Monitoring (MIC).

Targeted expert consultations

In 2010, ECDC organised two expert consultations on emerging threats, for which the final reports can be downloaded from the ECDC website[1,2]. An expert consultation on tick-borne diseases with emphasis on Lyme borreliosis (LB) and tick-borne encephalitis (TBE) with 34 participants from EU Member States and relevant institutions was held in November 2010 in Stockholm. The consultation concluded that ECDC should propose a case definition for LB based on the European Concerted Action on Lyme Borreliosis (EUCALB) definition and a case classification to conform to the system applied with notifiable diseases. Furthermore, the value and the limitations of the different laboratory tests used for LB and for TBE should be further assessed and quality standards should be defined[1]. A follow-up meeting is planned for the end of 2011 to finalise the case definition for TBE and to work on the harmonisation of the case definition for LB. A study on epidemiology and surveillance of LB in the EU using the EUCALB case definition is currently underway and the results are expected by the end of September 2011.

An expert consultation on mosquito-borne disease transmission risk in Europe was held in Paris in November 2010[2], following the West Nile virus outbreak in Greece and the emergence of indigenous cases of chikungunya fever in France and dengue fever in Croatia and France. The meeting was attended by 28 participants from EU Member States, WHO and ECDC. The meeting participants concluded that the recent notifications of vector-borne diseases in the EU Member States in 2010 where unusual but not unexpected. The early detection of the presence of vectors such *Aedes albopictus* and *Aedes aegypti* would increase the chance for control, although the effectiveness of vector control methods to prevent and contain West Nile virus and other mosquito-borne virus outbreaks is not well known. Increased awareness is needed to timely detect importation of viruses other than chikungunya and dengue (e.g. St Louis encephalitis virus) as well as other viruses transmitted in enzootic cycles (e.g. Usutu virus). The risk of transmission through blood, cells and tissues needs further consideration.

3.3 Threats of particular interest

The selection of threats in this section covers threats of particular interest, characterised by:

- continuous close monitoring (e.g. influenza, food- and waterborne diseases);
- unexpectedness (e.g. outbreak of anthrax in injecting drug users);
- (re)-emergence (e.g. mosquito-borne and vaccine preventable diseases); and
- non-infectious nature by origin with a potential for infectious disease outbreaks (e.g. mass gathering events, natural disasters).

Food- and waterborne threats

The Food- and Waterborne Diseases and Zoonoses (FWD) network consists of a network of epidemiologists and microbiologists in EU and EEA/EFTA Member States, Australia, Canada, Japan, New Zealand, South Africa, Switzerland, Turkey and the United States. One objective of the network is to identify multicountry FWD outbreaks at an early stage through sending urgent inquiries (UI) in a web-based application named Epidemic Intelligence Information System (EPIS), launched in March 2010. EPIS-FWD is currently targeting six priority diseases (salmonellosis, campylobacteriosis, verocytotoxin-producing *Escherichia coli* (VTEC) infection, listeriosis, yersiniosis and shigellosis) but the platform aims at covering all human diseases related to food, water and animals.

General overview

In 2010, 31 UIs were issued, compared to 28 in 2009 and 33 in 2008. The number of UIs reported has remained stable in spite of their transfer to the EPIS-FWD platform in 2010.

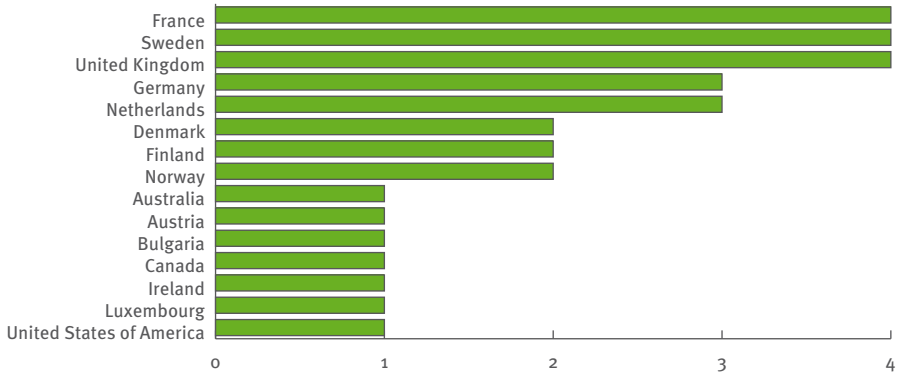
Fifteen different countries have posted UIs (Figure 3.7) in 2010. Twenty-eight (90 %) were initiated by EU and EEA/EFTA Member States and three were initiated by Australia[i], Canada and the United States[ii]. In 2010, France (4), Sweden (4) and the United Kingdom (4), posted most UIs, followed by Germany (3) and the Netherlands (3).

The number of UIs launched by EU and EEA/EFTA countries slightly increased from 2009 (n=23) to 2010 (n=28).

i This urgent inquiry was launched by Australia in 2009, however the cases in Europe were identified in 2010 and the urgent inquiry was re-launched.

ii The United States launched an urgent inquiry related to the cholera outbreak in Haiti with the objective to share laboratory information.

Figure 3.7. Number of urgent enquiries launched by country, 2010 (n=31)



Three hundred messages (initial posts and replies) were posted, with an average of nine replies per UI (range 0–17) in 2010 (Figure 3.8).

Twenty-nine of the 38 FWD network member countries (76%) were active[iii] in 2010. Of these, 24 were EU and EEA/EFTA countries.

Pathogens and vehicles of infection

In 2010, the majority (61%) of the UIs was related to *Salmonella* spp. infections, with *Salmonella* Typhimurium and *Salmonella* Enteritidis being the most represented (32% and 16% of *Salmonella* spp. respectively). For comparison, *Salmonella* Typhimurium and *Salmonella* Enteritidis were also the serotypes most represented in 2008 and 2009 and all other *Salmonella* serotypes that were discussed in 2010 were different compared to 2009.

UIs on *Salmonella* spp. were followed by UIs on *Cryptosporidium* spp. and *Listeria monocytogenes*, representing 10% and 7% of the total of UIs, respectively. The detailed breakdown of pathogens associated with UIs is shown in Table 3.6.

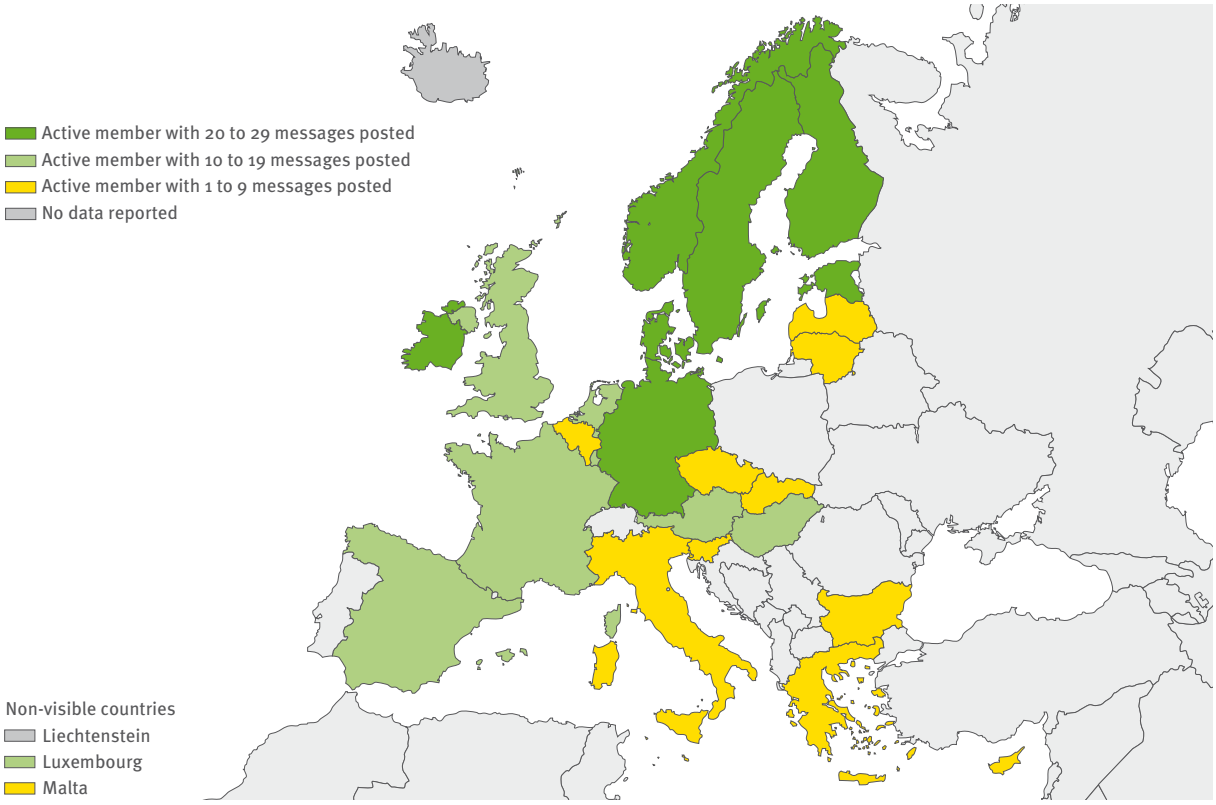
Nine pathogen groups were included in the UIs in 2010, which are four groups more than in 2009. New pathogen groups discussed in 2010 were norovirus, staphylococcus, *Vibrio cholerae* and marine biotoxin.

Table 3.6. Distribution of pathogens associated with urgent inquiries and suspected and confirmed vehicles, 2010

Pathogen	Number of urgent inquiries	Suspected or confirmed vehicle of infection
Salmonella spp.	19 (61.3%)	
S. Typhimurium	6	Meat and meat products (beef, pork, other), eggs
S. Enteritidis	3	Pork meat
S. Bareilly	1	Bean sprout
S. Java	1	Salad and herbs
S. Kottbus	1	-
S. Mbandaka	1	Eggs
S. Montevideo	1	Dietary supplement
S. Napoli and *S.* Poona	1	-
S. Newport	1	Salad and herbs
S. Panama	1	Pork meat
S. Senftenberg	1	Seeds and nuts
S. Urbana	1	-
Cryptosporidium spp.	3 (9.7%)	Drinking water, salad and herbs
Listeria monocytogenes	2 (6.5%)	Fish
VTEC/STEC	2 (6.5%)	-
Hepatitis A virus	1 (3.2%)	Semi-dried tomatoes
Norovirus	1 (3.2%)	Frozen raspberries
Staphylococcus	1 (3.2%)	Pastry
Vibrio cholerae	1 (3.2%)	Drinking water
Marine biotoxin	1 (3.2%)	Mussels

iii A country is considered as active when it has posted or replied to at least one urgent inquiry in 2010.

Figure 3.8. EPIS-FWD active members in the EU/EEA countries, 2010



For 74 % of the UIs, a vehicle of infection was suspected or confirmed. This is a slight increase compared to 2009 (69 %).

In 2010, no UI was related to exposure to pet reptiles and domestic animals and a decrease in UI related to travel has been observed (from four in 2009 to one in 2010). Countries reported new suspected vehicles of infection such as fish and seafood products, eggs and drinking water (see Tables 3.6 and 3.7).

Table 3.7. Distribution of urgent inquiries by vehicle/ origin of infection, 2010

Suspected or confirmed vehicle of infection	Number of urgent inquiries
Fruits and vegetables	6 (19 %)
Meat and meat products	6 (19 %)
Fish and seafood	3 (10 %)
Eggs	2 (6 %)
Drinking water	2 (6 %)
Travel associated	1 (3 %)
Other	3 (10 %)
No vehicle identified	8 (26 %)

Affected countries

In 2010, 22 UIs (71 %) involved a single country compared to 17 (61 %) in 2009. Twenty-seven (87 %) were limited to EU and EEA/EFTA countries and 4 (13 %) involved non-EU or EEA/EFTA country. Compared to 2009, the number of UI involving only EU and EEA/EFTA countries increased to 27 in 2010 compared to 19 in 2009.

In 2010, UIs involving at least one non-EU or EEA/EFTA country were related to infection with hepatitis A virus, *Salmonella* Typhimurium DT8, VTEC and *Vibrio cholerae*.

Almost one third (9 out of 31) of UIs launched in 2010 were considered multinational, affecting more than one country. For the following analysis of the multistate UIs, we excluded the UI on *Vibrio cholerae* posted by the United States as this UI was not related to the posting country and none of the affected countries are FWD network members.

EWRS and Rapid Alert System for Food and Feed (RASFF)

For eight of the 31 UIs launched in 2010, a notification was issued through the European Rapid Alert System for Food and Feed (RASFF). For four of these events, the RASFF notifications were issued before the launch of the UI in EPIS-FWD. Twice the RASFF notifications and the UIs were issued at the same time and twice the UIs were launched first.

Five (16 %) of the UIs launched in 2010 were also reported through the EWRS. Of these five, the UI was launched once prior to the EWRS, twice UIs and EWRS were launched on the same day and twice the EWRS alerts were launched first.

For the hepatitis A outbreak related to semi-dried tomatoes from a country outside the EU, the World Health Organization sent an international alert through the International Food Safety Authorities Network (INFOSAN) and a notification through the International Health Regulation (IHR) mechanism.

Legionellosis threats

On 1 April 2010, the European Legionnaires' Disease Surveillance Network (ELDSNet) was transferred to ECDC. In 2009 and up to April 2010, all notified travel-associated Legionnaires' disease (TALD) clusters were monitored as an open threat in the Threat Tracking Tool (TTT). After the transition, only rapidly evolving TALD clusters or clusters with a particular international dimension, e.g. the ones fulfilling the EWRS criteria, led to the opening of a threat in the TTT.

In 2010, 863 travel-associated cases of Legionnaires' disease (TALD) were reported compared to 824 in 2009. This increase is of the same magnitude as the whole tourist industry experienced in 2010. *Legionella pneumophilia* serogroup 1 was found in a majority of the cases. The peak month for onset of disease was August, when more than 150 cases fell ill and the ratio males versus females was 2.6:1, which is in line with previous years. The case fatality rate was 4.7 % (males 5.4 %, females 2.8 %).

France, the United Kingdom, the Netherlands and Italy reported 74 % of all TALD in 2010. A total of 1272 accommodation sites were reported in 2010. Italy, with 279 sites, was the country with most accommodation sites associated with a TALD, followed by France with 236 sites and Spain with 135 sites. Accommodations sites in these three countries account for more than 50 % of all reported sites.

One hundred clusters were reported in 2010 which is an increase from the 88 reported in 2009. However, the number of clusters inside Europe (75 clusters) remained the same as in the previous year, while the number of clusters outside Europe (25 clusters) almost doubled compared with 2009. The size of TALD clusters was 2.4 cases on average. The largest cluster, with 14 TALD, was associated with a cruise ship, affecting citizens of seven different countries. Six rapid evolving clusters were reported. The added value of a European surveillance is noted since 44 % of the clusters were detected only through the network.

Emergence of New-Delhi metallo-beta-lactamase (NDM-1) in Enterobacteriaceae

Enterobacteriaceae are a part of the normal gut flora but frequently cause community-acquired and health-care-associated infections, such as urinary tract, bloodstream and intra-abdominal infections. These bacteria can acquire mobile genetic elements that

encode beta-lactamases. Dependent on the type, these enzymes make them resistant to various classes of beta-lactam antibiotics (e.g. penicillins, cephalosporins, carbapenems) used as the main treatment for these infections. New Delhi metallo-beta-lactamase (NDM-1) is a carbapenemase enzyme which was first detected in 2008 in *Klebsiella pneumoniae* and *E. coli* isolates from a patient repatriated to Sweden after being treated in a hospital in New Delhi, India[3]. The majority of NDM-1-producing bacteria described to date are extensively antibiotic-resistant and only susceptible to two antibiotics: colistin and, less consistently, tigecycline[3,4]. This severely limits the therapeutic options for serious infections caused by NDM-1-producing bacteria. Other types of carbapenemase-producing *K. pneumoniae*, carrying enzymes such as VIM (Verona integron-encoded metallo-beta-lactamase) and KPC (*Klebsiella pneumoniae* carbapenemase), have caused outbreaks in healthcare settings and later spread to the community[5]. Although rarely occurring in the majority of European countries, carbapenem-resistant strains cause a high proportion of invasive *K. pneumoniae* infections in Greece (44 %) and Cyprus (17 %)[6].

On 11 August 2010, The Lancet Infectious Diseases published an article describing the spread of Enterobacteriaceae carrying NDM-1 between India, Pakistan and United Kingdom, which attracted significant media attention worldwide. On 17 August 2010, ECDC published a epidemiological update on its website and on 27 August 2010, an ECDC risk assessment was posted on the EWRS. ECDC requested information about the situation in EU and EEA/EFTA Member States and the results were published in Eurosurveillance on 16 November 2010.

Thirteen EU and EEA/EFTA Member States reported 77 NDM-1 cases including seven fatal cases since 2008 of which 39 were diagnosed in 2010: United Kingdom (51), France (4), Belgium (3), Austria (3), Germany (3), Italy (2), Netherlands (2), Norway (2), Slovenia (2), Sweden (2), Denmark (1), Finland (1), and Spain (1). Forty per cent of the pathogens carrying the NDM-1 were *K. pneumoniae* (31) and 21 % *E. coli* (16). Thirty-one (56 %) of the 55 case patients with available travel history had received healthcare or travelled to India or Pakistan while five had received healthcare in the Balkans. In 13 cases, secondary nosocomial transmission in Europe was presumed. National guidelines for detection of carbapenemases, including NDM-1, were available in 14 EU and EEA/EFTA Member States and guidelines for their control were available in 11 Member States.

It was concluded that NDM-1 carrying Enterobacteriaceae pose a significant public health risk due to the limited therapeutic options, genetic mobility and international dissemination. There is need for further research on molecular epidemiology, reservoirs, mode of transmission, clinical relevance and case fatality. Preparedness and enhanced surveillance at national level should be implemented, and monitoring and exchange of information at EU level is necessary. Risk factors for infection and disease, accuracy of detection methods and effectiveness of control interventions need to be further assessed. In addition, this event underlined the need for an EU system of rapid exchange of information on the emergence and cross-border spread of extensively drug-resistant pathogens.

Influenza

The end of the 2009 pandemic

The ECDC crisis response to the 2009 influenza pandemic was de-escalated on 18 January, as by then transmission was minimal in Europe. Public health event operations were stopped and the response was handled by the disease-specific programme with support from epidemic intelligence activities[7]. Cases and deaths from EU Member States continued to be reported or announced during the following months but active surveillance of national websites ceased at the end of March. After indicators of community transmission and severe illness in the EU suggested no more continued transmission, the ECDC focus moved to the Southern Hemisphere countries to assess the future development of the pandemic and the next seasonal wave to be expected in Europe. This monitoring and information was used to inform the *ECDC Forward Look Risk Assessment* published in March and updated in October.

On 10 August 2010, following advice from the International Health Regulation Emergency Committee, the WHO Director-General declared that the 2009 (H1N1) pandemic had entered the post-pandemic phase. This advice was based on a review of the current epidemiological situation indicating that influenza activity worldwide had returned to levels that are normally seen for seasonal influenza.

Adverse events following immunisation with a pandemic vaccine

On 17 August 2010, the Swedish regulatory agency for medicinal products issued a statement upon receiving six reports of narcolepsy as a suspected adverse reaction following vaccination with one pandemic vaccine, Pandemrix®[8]. The following day, ECDC was made aware of similar cases reported from Finland. Following these reports, national studies to investigate a possible causal link between pandemic vaccine and narcolepsy were initiated. On August 24, Finland suspended the use of Pandemrix® as a precautionary measure[9]. The European Medicines Agency (EMA) evaluated the data available and rapidly issued an opinion on the use of the vaccine stating that 'although the cases of narcolepsy have been reported in temporal association with the use of Pandemrix, it is at present not known if the vaccine caused the disorder'[10]. ECDC assessed the available evidence from a public health perspective and produced a threat assessment on 25 August 2010 concluding that further studies are needed.

To supplement the national studies, a multicountry study was subsequently initiated within the ECDC Vaccine

Adverse Event Surveillance & Communication (VAESCO) project. The interim report of the Finnish retrospective study was published on 1 February 2011 indicating a 9.2 fold relative risk of developing narcolepsy among the Pandemrix® vaccinated children between 4–15 years of age in comparison to those not vaccinated in the same age group though the absolute risk of developing narcolepsy in an immunised child is likely to be low. These results were thoroughly examined by EMA, which on 18 February 2011 concluded that 'the new evidence added to the concern arising from case reports in Finland and Sweden, but that the data were still insufficient to establish a causal relationship between Pandemrix® and narcolepsy'[11].

On 24 February 2011, ECDC issued an update of the rapid risk assessment stating that 'caution should be exercised when considering the use of Pandemrix® until more data from pharmacoepidemiological studies become available. Its use in situations when trivalent seasonal vaccines are not available or are likely to be ineffective (e.g. in immunodeficient patients) should be based on careful benefit–risk assessments at individual or population level'. In addition, ECDC published a public health development on the website concluding that 'immunisation against seasonal influenza is important and prevents many severe influenza cases and fatalities. When it comes to the choice of vaccines, seasonal vaccines are what should be used to prevent seasonal influenza as they will cover the different viruses involved. Assuring the highest standards of vaccine safety requires constant monitoring and systematic epidemiological assessments. This is an essential component of safe and effective vaccination programmes. It is also important in retaining the confidence of the public and professionals in the safety and effectiveness of vaccines'[9].

These were preliminary results until mid-June 2011, the final results of all of these studies are expected by the end of 2011. The impact of investigations on the possible association between pandemic vaccines and narcolepsy caused significant media and political attention in some countries. The impact of this, and controversies over the need for the pandemic vaccine in some countries, on vaccination programmes in some EU Member States is as yet unknown and will be assessed in the annual Vaccine Europe New Integrated Collaboration Effort (VENICE) surveys of influenza immunisation and national evaluations of childhood vaccination.

Severe clinical cases in Europe during the start of the 2010–2011 season

Following the start of the 2010–11 influenza season in Western Europe, ECDC was informed on 13 December 2010 of reports of severe illness among patients infected with the 2009 influenza A(H1N1) strain requiring intensive care. ECDC produced a threat assessment on the situation on 13 December 2010, concluding that patterns of illness appeared to be similar to the pandemic waves seen during the previous year, but that an increase in the number of severe cases could not be ruled out at that stage. Subsequently, critical care services in the United Kingdom and Ireland were under heavy pressure during their peak weeks of the season with more intensive treatment unit bed occupancy (›1.0 cases per 100 000 population) than during the pandemic. This resulted in some local disruption of services. ECDC subsequently published a risk assessment and the same pattern was repeated in some other Member States though at lower population rates apart from in Greece.

Influenza A(H5N1)

During 2010, WHO acknowledged 48 national reports of cases of influenza A(H5N1) in humans, 24 of which had fatal outcomes. These are the second lowest figures reported since 2005. The majority of cases were reported from Egypt (29), Indonesia (9) and Vietnam (7), while few cases were detected in China (2) and Cambodia (1). None were reported to be parts of clusters. All these are countries where A(H5N1) is considered entrenched in the domestic poultry population. Almost all of the cases were reported to have had contact with sick or dying poultry before disease onset. Monitoring of individual cases of influenza A(H5N1) remains important for ECDC because of the high case–fatality rate and the pandemic potential of this influenza, but individual cases like these seem inevitable. A higher priority is to monitor for human cases in other countries which might indicate extension of infection and clusters and outbreaks which could indicate more human-to-human transmission than has been observed so far[12].

Mosquito-borne diseases

West Nile virus in Europe in 2010

On 23 July July 2010, Portugal reported the existence of a suspected case of neuro-invasive illness following West Nile virus (WNV) infection in an adult woman in the Vale do Tejo region, close to Lisbon, through the EWRS. Even though this case could not be confirmed, this EWRS message signalled the start of the European WNV season in 2010.

On 7 August 2010, the Greek authorities reported 11 probable cases of WNV human infection, two of which were confirmed following the EU West Nile virus infection case definition, in the northern region of Central Macedonia. Between 5 August and 18 November 2010, a total of 262 human cases were diagnosed of which 191 (73 %) had central nervous system (CNS) involvement (meningitis/encephalitis) and 71 (27 %) had mild symptoms, including febrile illness. More than half of the human cases with CNS involvement resided in urban areas of Central Macedonia. The median age was 72 years and 5 % were under 30 years of age. *Culex pipiens* was most likely the predominant vector of this outbreak[13]. A high prevalence of seropositive horses and donkeys were confirmed in the prefecture of Thessaloniki, and for the first time encephalitis due to WNV was identified in horses in Greece. A series of preventive and control measures, including enhanced human and animal surveillance, were implemented by the Greek authorities. Four other

EU Member States (Hungary, Romania, Italy and Spain) reported confirmed WNV infection cases up to the end of December 2010.

This was the first report of human confirmed cases of WNV infection with clinical neuro-invasive disease in Spain since 2004[14]. In total, 340 cases were reported in EU and EEA/EFTA Member States, the majority of which were neuro-invasive clinical presentation of this viral infection (Figure 3.8) with a total of 41 deaths (35 in Greece, five in Romania and one in Hungary). The incidence of new human cases of WNV infection in Greece was highest among all reporting EU Member States in 2010 and is the largest human outbreak of WNV infection reported at the EU level since 1996[15].

Analysis of viral isolates from mosquito pools, infected horses and humans throughout the EU showed that WNV strains from different lineages circulated. The genetic sequence of the Greek lineage 2 WNV was similar to virus isolated from wild birds in previous years in Hungary and Austria[13,16,17] and to antibodies found in corvids six to eight months prior to the human epidemic in Greece. Comparatively, the Romanian lineage 2 WNV was genetically similar to viruses isolated in outbreaks in the Volgograd region of Russia in 2007 and 2010[18]. In 2010, in both Italy and Spain the circulating WNV was found to belong to lineage 1 and was similar to strains identified in the Mediterranean region in previous years[19,20].

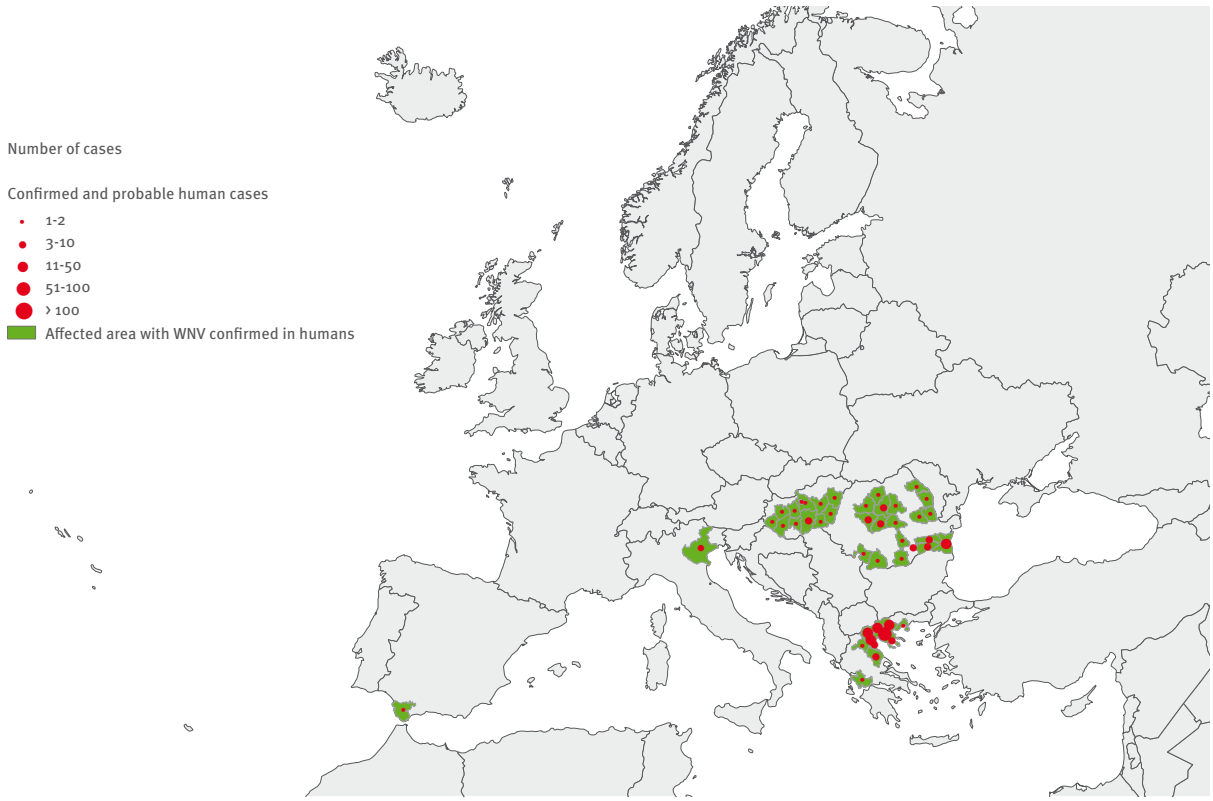
The increased reports of WNV circulation among humans between June and December 2010 in the EU were in the context of similar increased circulation being reported in donkeys and horses in Bulgaria, horses in Morocco, humans in Israel (where WNV is considered endemic with annual outbreaks), Russia (Volgograd region) and Turkey, all of which were detected through ECDC epidemic intelligence activities.

ECDC's concern during the summer of 2010 in relation to WNV was focused on determining what caused the different patterns of WNV epidemiology in EU Member States and to ensure that preparedness for the disease was strengthened in countries reporting human cases of WNV infection or countries at risk of such outbreaks.

Dengue in Croatia and France

On 13 September 2010, the French Ministry of Health reported the first indigenous case of dengue fever in metropolitan France. The case was detected through the routine enhanced surveillance system in place from May to October in areas infested by *Aedes albopictus* in south-eastern France[13]. The information was made available on the public website of the Ministry of Health and through EWRS on the same day.

Figure 3.9. Probable and confirmed human cases of West Nile virus infection detected through ECDC epidemic intelligence activities, 2010



The cases displayed for Greece and Italy are only West Nile virus neuroinvasive infections (either probable or confirmed) and for Hungary, Romania and Spain all confirmed cases are displayed (neuroinvasive and non-neuroinvasive).

The case, residing in Nice (département of Alpes-Maritimes) developed symptoms on 23 August 2010 and fully recovered after hospitalisation. Laboratory tests performed in early September 2010 confirmed the infection. The case had no history of recent international travel and no blood transfusion.

A second case from the same neighbourhood, presenting onset of symptoms at the beginning of September, was laboratory confirmed on 17 September 2010. These two indigenous cases of dengue fever were clustered in space and time and suggested ongoing local transmission of dengue. In response to this event, the French authorities have strengthened entomological surveillance in the infested regions and vector control activities in the areas where the cases were reported. Active case finding in the neighbourhood where cases were residing were implemented; communication campaigns for the general public and health professionals took place[14].

On 30 September 2010, the German health authorities notified through EWRS a laboratory-confirmed case of dengue fever in a German citizen returning from Croatia. The patient spent two weeks in the beginning of August in Podobuce/Orebić on the Pelješac peninsula, 60 km northwest from Dubrovnik, in the southern part of the country. Considering the onset of symptoms and the incubation period of the disease, the patient was most likely infected during his stay in Croatia[15]. The national health authorities of Croatia took adequate control measures, including awareness raising among health professionals, strengthening of human and vector surveillance, enhancing of vector surveillance, implementation of control measures and communication of personal protective measures to the public. On 22 October 2010, one more case with febrile illness was identified through active case finding in the same village where the infected tourist resided. In addition, nine of 14 blood samples of healthy individuals living in close vicinity suggested recent infection with dengue virus[16]. Further evidence of indigenous transmission was suggested following a seroprevalence survey using a random sample of the population living in the area. Five per cent of tested individuals presented laboratory indication of recent infection[17].

On 15 September 2010, ECDC shared a threat assessment for the EU conducted in collaboration with national and disease-specific experts with EU Member States through the EWRS. It was concluded that the detection of two indigenous cases of dengue fever in France and the first indigenous case in Croatia were significant public health events, but not unexpected. The described events have been the first locally acquired dengue cases reported in continental Europe since 1927–1928, when large dengue outbreaks occurred in Greece. All cases in 2010 occurred in areas known to be infested by *Aedes albopictus* mosquitoes. Previous events, including the chikungunya fever outbreak in Italy, the occurrence of vector-borne diseases around airports and other ports of entry and a previous risk assessment on dengue introduction in the EU[18] indicate that indigenous transmission of dengue in continental Europe is possible, as confirmed by these events. At the end of the period of mosquito activity, usually in October–November, the risk of establishment of sustained transmission of dengue in south-eastern France and in southern Croatia and further spread in Europe during 2010 appeared very limited. These two events highlighted the need to further strengthen vector monitoring, active surveillance for imported and indigenous human cases, awareness of healthcare providers, and laboratory capacities in countries where *Aedes albopictus* is present, and rapid exchange of information among countries.

Chikungunya fever in France

On 24 September 2010, the French Ministry of Health reported the first indigenous case of chikungunya fever in metropolitan France and on 27 September the French authorities confirmed a second case[21]. Both cases were detected through enhanced surveillance, which is implemented from May to November in south-eastern France where *Aedes albopictus* mosquito populations have established progressively since 2004[22].

The cases, two 12-year-old girls, resident in Fréjus (département of Var), developed symptoms on 18 September 2010, including fever, arthralgia, myalgia, rash and headache. The two girls were living in the same neighbourhood and frequenting the same local school. Both cases had no recent history of travel in an endemic/epidemic area or blood transfusion[23].

The possible index case was a 7-year-old child, with a travel history to India, who was residing in the same street as the second indigenous case. This imported case had onset on 29 August 2010 and was notified in the surveillance system on 6 September. Measures of vector control (mosquito control) had taken place around his home and school.

ECDC published a threat assessment on 28 September 2010 and concluded that together with the earlier reported cases of dengue in the region, and also taking into account the Italian chikungunya fever outbreak of 2007, the possibility of indigenous transmission of tropical mosquito-transmitted viruses in continental Europe was again confirmed. These events stress the need to strengthen preparedness plans in EU Member States where the *Aedes albopictus* vector is established, in terms of enhanced human and vector surveillance, as well as with regards to the timely response once cases have been identified, to limit further spread. In addition, in Member States or regions where the vector is not (yet) established (Figure 3.10), vigilance and adequate measures to avoid and monitor the vector's establishment are important.

Malaria in Spain

A laboratory-confirmed case of *Plasmodium vivax* malaria was reported in October 2010 by the Spanish health authorities of Aragon in a woman with no travel history to endemic or epidemic areas and no contact

with persons visiting or residing in such areas. This resulted to be the first indigenous case of malaria in the country since 1961. Malaria was officially eradicated from Spain in 1964[24].

The case was confirmed by the national health authorities and additional information was shared with ECDC and EU Member States through EWRS. *Anopheles atroparvus*, a potential vector for malaria, had been described in the area where the case was identified; local control measures were immediately implemented. ECDC produced a threat assessment in collaboration with the national and disease-specific experts. Based on this evaluation, it was considered that there was a negligible risk for further local transmission in the involved area, although the identification of sporadic cases in the future could not be excluded.

In January 2011, the Spanish health authorities shared through EWRS more details on the investigation done at local level reinforcing the hypothesis of an indigenous transmission. The risk assessment from ECDC and the country remained the same.

During the expert consultation on mosquito-borne disease transmission in Paris in November 2010, it was concluded that sporadic indigenous malaria cases in Europe can occur in places where the presence of the *Anopheles* vector coincides with imported malaria cases. To ensure early detection and prompt treatment, increased awareness of clinicians is needed. Risk area mapping and special attention to the situation of specific groups such as migrants, which may be asymptomatic carriers, would be of value[25].

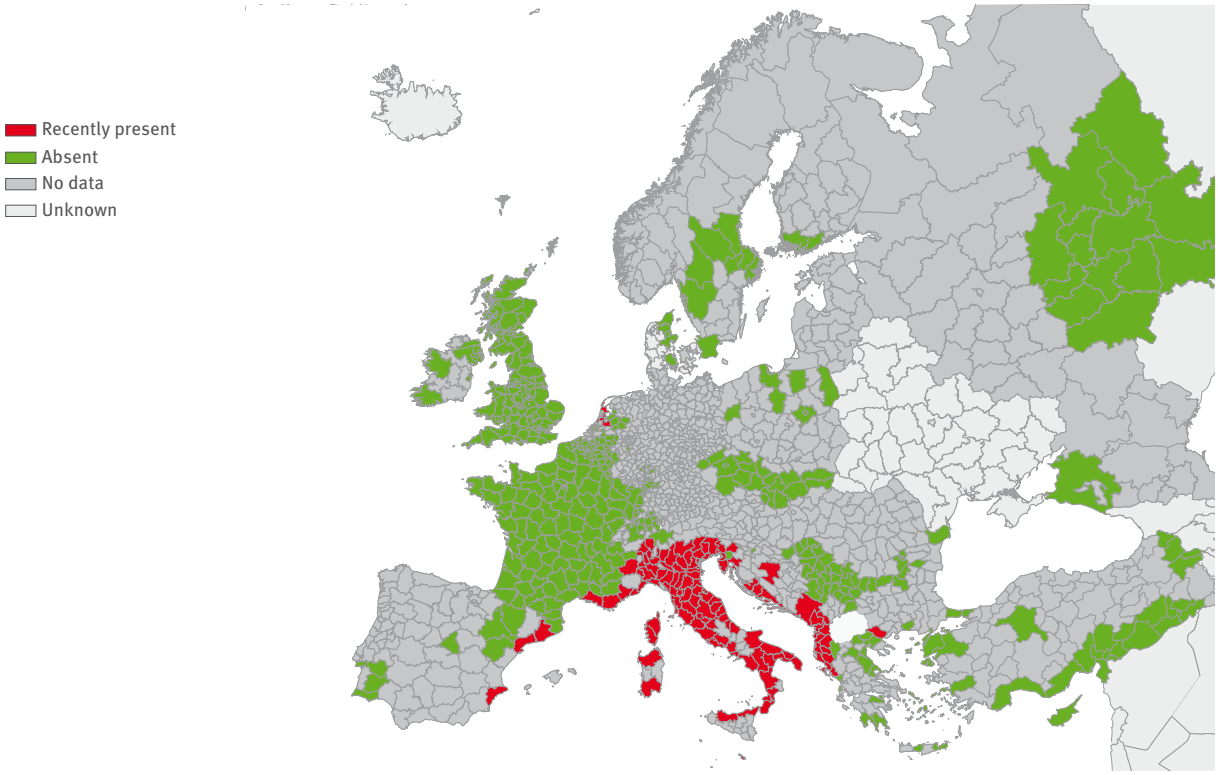
Vaccine-preventable disease outbreaks

Measles outbreak in Bulgaria with spread to other countries

The likely index case of the large measles outbreak in Bulgaria was a 24-year-old Bulgarian citizen who returned from Hamburg, Germany, in March 2009. He transmitted measles to his 1-year-old daughter and at least 13 other friends and relatives with whom he had contact during his infectious period. The outbreak rapidly spread among the Roma population, which accounted for more than 90% of all cases related to this outbreak; the majority of them were unvaccinated individuals. Between March 2009 and December 2010, 24254 cases, including 24 deaths, were reported in Bulgaria and the previously case-based reporting had to be switched to aggregate reporting due to the high workload. A joint international expert team from ECDC and WHO Regional Office for Europe supported the national authorities in the investigation of the outbreak.

This outbreak was not limited to Bulgaria; clusters with epidemiological links were reported from several other EU and EEA/EFTA Member States: Greece reported 126 measles cases between January and July 2010[26] and 149 until the end of 2010[27]. Of these, 38% were Roma with Greek citizenship, 35% Greek non-Roma citizens, 26%

Figure 3.10. Distribution of *Aedes albopictus* mosquitoes in Europe, June 2010



Bulgarian citizens and 2% from other countries. Eight per cent of them were children under one year of age, and thus not eligible for vaccination, and 33% were 15 years and older. Interestingly, 83% of cases with Bulgarian citizenship and Greek Roma were under 15 years of age whereas among the Greek non-Roma cases 79% were 15 years and older[28].

Between June and August 2010, 48 measles cases, including one case suffering from encephalitis, were reported around Munich, Germany. The likely index case was a 39-year-old Bulgarian citizen belonging to the Roma ethnic group. The outbreak spread to the general population and 18 cases were reported in non-Roma citizens (38%). Nearly half of the cases (48%) were aged age 18 years or older (range nine months to 36 years of age), suggesting high susceptibility levels in adults[29].

Ireland reported 320 measles cases between August 2009 and March 2010[30] and a total of 406 cases in 2010[27], two thirds of them were unvaccinated individuals. In the early stages of the Irish outbreak some cases were reported among the Roma community and other citizens from Eastern Europe, as well as a substantial number of cases linked to the Irish Traveller community[30]. In March 2010, Slovenia, after 10 years being measles free, reported a nosocomial cluster involving three cases where the index case was an Irish traveller. He reported that his brother was hospitalised one week prior in Rome, Italy. No information on secondary cases is available. Spain reported 46 cases from January to May 2010. The likely index case was a 1-month-old Bulgarian Roma baby.

Vulnerable populations have limited access to healthcare, which partly explains the high number of unvaccinated individuals and the high number of deaths (1:1000) despite the often high vaccine coverage among the general population in the affected countries.

Polio in Tajikistan

On 10 April 2010, the World Health Organization Country Office in Tajikistan was informed about a multidistrict increase in the number of acute flaccid paralysis (AFP) cases in the country. Sixty-three cases of AFP were reported in a four-month period with the first date of onset on 26 December 2009, compared to an annual average of 35 AFP cases, usually peaking in July and October. On 23 April 2010, WHO announced the confirmation of wild poliovirus serotype 1 (WPV1) in seven AFP cases[31]. The virus was most likely imported from Uttar Pradesh, India. The outbreak resulted in 476 confirmed cases from five countries: Tajikistan (458), Russia (14), Turkmenistan (3; in one of which wild poliovirus type 3 was found), Kyrgyzstan (1) and Kazakhstan (1). Also bordering Uzbekistan reported a high number (130) of AFP cases: although samples from 15 patients were sent to the WHO Regional Reference laboratory in Moscow, poliovirus was not confirmed in any of them.

The number of AFP cases was much higher in all of the affected countries than the number of confirmed polio cases: until 16 December 2010, Tajikistan reported 709 AFP cases, of which 40 were negative and two with pending results. Fifteen AFP cases were reported since the onset of symptoms of the last confirmed case in Tajikistan on 28 June; Russia reported 379 AFP cases and the onset of paralysis of the last confirmed polio case of this outbreak was on 25 September, Turkmenistan 46, Kazakhstan 94, and Kyrgyzstan 56 AFP cases (49 negative and six with pending results).

As response to this multicountry outbreak, at least two rounds of supplementary immunisation activities were conducted in all six countries. Monovalent oral poliovaccine type 1 was predominantly used and the reported achieved coverage was 95% or higher in the target groups in all six countries[32]. This was the first outbreak of polio in the WHO European Region since it has been certified polio free in 2002. It did not result in indigenous transmission as this is defined by WHO as uninterrupted transmission occurring for more than 12 months.

Anthrax in injecting drug users, follow-up

In December 2009, two fatal cases of anthrax in injecting drug users (IDU) were reported from Glasgow, Scotland, who had developed symptoms in the first week of December. The initial cluster of five cases in Scotland increased to 47 cases with 16 fatalities until the outbreak was declared over.

In January 2010, one fatal case of anthrax in an IDU was reported from Germany. Even though the strains identified in Germany and Scotland were indistinguishable, no link to Scotland could be established. Two further cases were subsequently identified in Germany. On 5 February 2010, cases started to be reported also in England, the first case coming from the London area. Since the beginning of the outbreak in December 2009, 55 cases of anthrax in injecting drug users have been reported (Scotland 47, England 5, Germany 3), 21 of them fatal (Scotland 16, England 4, Germany 1), resulting in a case fatality of 38%. The last case was reported from Kent, United Kingdom, on 3 November 2010. On 23 December 2010, the outbreak was officially declared over.

In Scotland and England, information was sent out to hospitals, general practitioners, emergency departments, microbiologists and drug services to raise awareness and to request that cases of severe soft tissue infection or sepsis affecting an IDU were reported to their local public health authority. Samples of heroin were tested in Scotland in order to identify a possible contaminated batch, but did not yield any positive results. Considering the complex international distribution chain of heroin and the laboratory-confirmed link between strains of *Bacillus anthracis* in Scotland and Germany, the exposure to a contaminated batch of heroin distributed in several EU Member States seemed probable. However, the source could not be identified and additional cases occurred over the course of the year from the three initially affected areas. Even though skin and soft tissue

infections in IDUs are common, anthrax as the cause of such infection, especially when fatal, is rare, and very few cases have been described so far[33,34].

Immediately after the first notifications through EWRS, ECDC and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) issued a joint threat assessment and alerted their networks to gather additional information and to strengthen surveillance to detect possible additional cases in Europe. The threat assessment was updated after the reports about additional cases from England, which suggested a potentially wider spread of the possible source. Europol, the European law enforcement agency, had been informed and supported EU Member States in attempts to identify a possible source of contamination.

Cholera in Haiti

On 21 October 2010, the Haitian National Public Health Laboratory confirmed the first outbreak of cholera in the country in at least a century[35]. The first cases were identified in the Artibonite department. The *Vibrio cholerae* strain responsible for the outbreak in the country is similar to recent South Asian strains. The way of introduction has been strongly debated but still needs confirmation[36].

More than two months into the epidemic, on 31 December 2010, the Haitian Ministry of Health reported 145 405 cases of cholera seen in the country, out of which 83 189 had been hospitalised and 3 352 had died (case fatality of 2.3 %)[37]. Cases were reported country-wide, from all 10 departments. The worst affected departments were the Nord-Ouest and Artibonite, with an attack rate of 3.8 % and 3.2 % respectively. In absolute numbers, Artibonite (52 257 cases) and Port-au-Prince (28 776 cases) carried the heaviest case load. Mortality rates per department, reaching 13.5 % in the Sud-Est and 11.0 % in Nippes, illustrated the great challenges ahead at the end of the year.

A large international response was mobilised, establishing cholera treatment centres (CTC) and units (CTU) all over the country. However, considering the remoteness and limited accessibility of some villages, both prevention and the rapid treatment of new cases through oral rehydration distribution points in the communities proved to be difficult. Access to clean water and latrines, and coordination among all actors were identified as priority[38].

ECDC supported the international response through close collaboration with the Pan American Health Organization/World Health Organization, through the mobilisation of three EU Member State experts and four EPIET fellows. In addition, three ECDC experts were deployed to support the European Commission's Humanitarian Aid and Civil Protection (ECHO) office in Port-au-Prince. This support through the mobilisation of expertise continued in 2011.

Non-infectious disease threats

Mass gathering events during 2010

In 2010, ECDC supported several mass gathering events with different levels of involvement. Fellows of the European Field Epidemiology Training Programme (EPIET) were sent to support the local authorities during two mass gathering events, which both took place in August: the '50th Guča trumpet festival' in Serbia with 500 000 Serbian and 10 000 visitors from EU and EEA/EFTA countries, and the 'Boom' festival, a psychedelic music festival, in Indanha-a-Nova, Portugal, with 30 000 participants, half of them from abroad. A small outbreak of gastroenteritis involving 20 persons was reported during the event in Serbia and one measles case in an English citizen who developed symptoms during the event in Portugal. No secondary measles cases were reported. Most patients who sought healthcare during these events were related to traumatic events.

The Winter Olympics and Paralympic Games, held on 12–26 February and 12–21 March 2010 in Vancouver and Whistler, Canada, resulted in no major public health problems. A measles outbreak began in Vancouver coincident in time with the games but no known cases occurred among participating athletes[39].

Between 11 June and 11 July 2010, the FIFA Football World Cup took place in nine cities in South Africa and 350 000 foreign spectators attended the event. An outbreak of measles, which started in 2009 and peaked prior to the games, affected all provinces with 12 089 reported cases in 2010. Despite mass vaccination campaigns, it resulted in several cases due to genotype B3 among attendees[40]. A Rift Valley fever (RVF) outbreak with 238 cases including 26 deaths in 2010 also peaked before the games. The majority of RVF cases (93 %) reported contact with infected ruminants[41] and the risk for tourist was considered to be low in a risk assessment prepared by ECDC prior to the games. One alert of a possible case of RVF in a returning passenger from an EU Member State was identified to be African tick-bite fever, which is also endemic in South Africa. The games took place during the beginning of the influenza season in the Southern Hemisphere, but the season started later and was milder than usual. Influenza A(H3N2) and B predominated during the season and there was little pandemic influenza A(H1N1) activity[40]. Five food-borne outbreaks were reported, which mainly affected volunteers. No major outbreak was reported among foreign visitors.

Natural disasters

A volcano under Iceland's Eyjafjallajökull glacier erupted on 14 April 2010 for the second time in a month, spewing clouds up to 10 000 metres into the air, which had a significant impact on air travel in Europe. ECDC prepared a threat assessment upon request of the European Commission[42]. The main conclusions were that populations in the close vicinity of the volcanic eruption directly exposed to the ashes might have been at risk due to noxious gas and the high concentration of ashes

in the atmosphere. In the rest of Europe, the population was considered to be exposed only to very low concentrations of ashes. The public health impact of such low exposure was considered negligible. Some Member States advised risk groups, such as asthmatics, to carry inhalers with them and avoid excessive outdoor activity in case of exacerbated symptoms. Several EU and EEA/EFTA Member States implemented syndromic surveillance but no reports of human disease related to this event were reported.

During the 2010 summer, starting in June, Russia experienced a severe heatwave. A new temperature record was set in Yashkul, Kamlykia with 44°C and Moscow reported a night-time temperature of 36°C, the highest since 1947. During the month of July, a large portion of European Russia was more than 7°C warmer than normal. This heat wave triggered several hundred wild fires across the country; some of them were reported close to nuclear power plants. The carbon monoxide (CO) levels in Moscow exceeded 6.6 times the permissible limits in August and the suspended particulate levels, 2.2 times. An increase of gastrointestinal diseases was reported from 52 of 83 regions of Russia. The Moscow city health officials quoted a daily mortality rate of 700 deaths per day, which was double the seasonal average. The media widely discussed the health effects of the heatwave, air pollution and re-suspension of Chernobyl-related radio nuclides.

Upon request from the European Commission, a threat assessment was conducted by ECDC to assess the risk of the wild fires to human health. It was concluded that there was a significant increased risk for respiratory diseases such as asthma, chronic obstructive pulmonary disease and acute bronchitis, especially for infants, those aged 65 years and older and persons with underlying chronic respiratory and cardiovascular disease in the affected areas due to poor air quality and increased temperature. The effect of newly released Chernobyl fallout radioactivity was considered negligible[43] and, therefore, unlikely to result in any acute or long-term health effects[44]. Higher mortality was observed in previous heatwaves[45,46] and other health effects such as eye irritation, anxiety and depression were expected to be observed. The decrease of the water quality and the malfunctioning of the cold chain for food were considered to result in a further increase of gastrointestinal diseases lasting for some time. Nevertheless, the risk for EU countries related to the Russian wild fires was considered to be very limited.

Cold waves also account for significant excess mortality during winter months and countries not used to cold weather are considered to be more at risk[47,48]. In 2010, deaths due to cold weather were reported by media from the following countries: Czech Republic (6), Romania (22), Poland (202), and the Ukraine (250). Most deaths affected poor and homeless populations. Data from health authorities were available only for few countries such as Poland, reporting 176 deaths since November 2009[49]. Media in the United Kingdom reported an estimated 40 000 excessive winter deaths.

On 12 January 2010, Haiti was hit by an earthquake magnitude of 7.3 on the Richter scale, which resulted in estimated 222 570 deaths and 300 000 persons with injuries[50]. Ten months later, on 21 October 2010, a cholera outbreak was confirmed by the Haitian National Public Health Laboratory and by 19 November the outbreak had reached every department of the country (see 'Cholera in Haiti')[50].

3.4 Discussion

The key sources of epidemic intelligence remain restricted networks like the European Legionnaires' Disease Surveillance Network (ELDSNet) and the confidential communication platform of EWRS. These sources reported three quarters of the monitored threats, indicating the value of the networks.

The decreasing trend of the monitored threats in 2010 compared to the previous year is mainly due to the integration of the travel-associated legionellosis network into regular ECDC activities. This change introduced in April 2010 led to a remarkable decrease of threats monitored in the Threat Tracking Tool (TTT). Nevertheless, in ELDSNet, a total of 103 new travel-associated clusters and 38 cluster updates were reported during 2010, which is slightly more compared to previous years and will explain the reduced number of threats monitored during 2010.

The EWRS system usage in 2010 was similar to previous years excluding 2009, when it was extensively used during the pandemic. The different levels attributed to messages is neither reflecting the need for timeliness of information exchange nor the need for action and its necessity has been discussed among the stakeholders of the system during 2010. The fact that most of the original message threads are constantly posted on Fridays may suggest that Member States are ensuring timely distribution of information rather than postponing it to after weekends.

During 2010, the epidemic intelligence information system (EPIS), a restricted platform for exchange of technical information related to food- and waterborne diseases (FWD) was fully implemented in April 2010. The transfer of the urgent inquiries to the EPIS-FWD platform has allowed smooth and transparent information sharing of potential food- and waterborne related outbreaks affecting more than one country. There was no reduction in the number of urgent inquiries compared to 2009, which demonstrates a good level of acceptance of the EPIS-FWD tool by the FWD network. The fact that the scope of the pathogens to be reported through the FWD network is broader than in 2009 might suggest that the expertise within the FWD network is growing and that EPIS-FWD is seen as a useful tool to identify potential multicountry outbreaks of rare FWD pathogens and not just the 'usual suspects' such as *Salmonella* spp.

The single threat related to antimicrobial resistance that was monitored in 2010 highlights the need for concerted European action to ensure patient safety. The EU Member States collaborated effectively to assess the situation related to this emerging drug resistance. The worldwide dissemination of highly resistant bacterial strains producing carbapenemases and the difficulty of coordinating control measures in the global healthcare marketplace underline the need for close monitoring of this threat.

The ambitious goal of measles elimination in 2010 in the WHO European Region was not achieved in the EU. In contrast, the year 2010 has the highest ever reported incidence of the disease in EU and EEA/EFTA countries since measles surveillance was implemented in a systematic way in Europe through the EUVAC.NET[51–59]. The preliminary number of reported measles cases in EU and EEA/EFTA countries for 2010 was 30 259 as of 9 March 2011[60]. This was mainly due to the huge measles outbreak in Bulgaria (22 005 cases in 2010) which also resulted in clusters in several other EU countries. But it was not only the Bulgarian outbreak alone that accounted for the high incidence, several other EU countries are far from having eliminated measles (one country reported more than 5 000 cases, two countries reported between 500 and 1 000 cases and five countries reported between 100 and 500 cases). In 2010, less than one third (8/29) EU and EEA/EFTA Member States (excluding Liechtenstein) did not report any case. Between 2005 and 2010 the number of EU and EEA/EFTA countries reporting zero cases varied between six in 2008 and nine in 2007.

The deadline to reach the elimination status has been postponed by five more years by the WHO Regional Committee for Europe but to reach the goal additional ambitious efforts are necessary. Political commitment

is of utmost importance to ensure that all the necessary resources are provided. Nevertheless, the main strategy for elimination of measles and rubella remains to reach and maintain high vaccination coverage with two doses of measles- and rubella-containing vaccine in all subpopulations (e.g. vulnerable populations, hard-to-reach groups, healthcare workers, etc.) and all districts.

The large polio outbreak in Tajikistan reminded us that the risk for outbreaks following importation of this devastating disease is still present in Europe. In 1996, Albania reported 138 laboratory-confirmed cases of WPV1 including 16 deaths and 24 cases were recorded from the bordering United Nations Administered Province of Kosovo, following the migration resulting from opening of Albania's borders in 1992[61]. The last outbreak in the EU, with 71 confirmed cases including two deaths due to WPV3, affected the Netherlands in 1992 and 1993 in a community objecting vaccination[62].

Furthermore, the huge measles outbreak in Bulgaria may lead to the conclusion that the susceptibility for measles is a proxy for susceptibility to polio. If so, outbreaks may occur in hard-to-reach populations following seeding events through importation and rapidly spread. Detection may be late, especially as only one in a hundred infected polio cases is symptomatic. The fact that several EU and EEA/EFTA Member States have other effective surveillance strategies rather than AFP surveillance in place, such as enterovirus surveillance and/or environmental surveillance[63], might contribute to late detection.

These arguments underline the need for reliable vaccine coverage data by age group, subpopulation and district. In addition, measuring susceptibility to poliovirus through sero-surveys of subpopulations, such as hard-to-reach populations, explicitly but not exclusively Roma, and groups objecting vaccinations for whatever reason, might be indicated.

The indigenous transmission of dengue fever and chikungunya fever in continental Europe was not totally unexpected. In recent years, large outbreaks of dengue and chikungunya were reported from endemic areas, including areas of EU touristic interest and EU overseas territories. *Aedes albopictus*, a known Asian vector for these viruses, is currently established in several areas in Europe[64]. The described events clearly indicated that indigenous transmission of dengue and chikungunya in continental Europe is possible in areas where competent vectors are well established. The risk of establishment of sustained transmission in the affected areas can be considered still limited but there is a clear need to further strengthen vector monitoring, surveillance of imported and locally acquired cases and increased awareness of health professionals in all the EU countries where the vectors are described or might be present.

The outbreak of West Nile virus (WNV) infection in Europe was unusual but also not unexpected. However, the transmission cycle for WNV is extremely complex (between birds, mosquitoes and humans and equidae) in addition to a variety of other factors, of which the influence on WNV circulation, in the European context, is not yet well understood (including meteorological factors, bird migration routes, viral strains, etc.). Therefore, no clear theory for increased viral circulation and transmission to humans in 2010 has been determined.

VBORNET, a network of medical entomologists and public health experts, provide regularly updated maps of distribution of *Aedes albopictus* mosquitoes in the EU on ECDC's website. In addition, following an ECDC-sponsored expert consultation on WNV (in collaboration with the Greek Centre for Disease Control and Prevention and the WHO Regional Office for Europe) upcoming operational tools are being prepared and will be made available to Member States to facilitate preparedness planning for WNV throughout the EU.

The number of threat assessments increased by 30 %, from 25 in 2009 to 33 in 2010. Similar to the monitored threats, the highest request for rapid risk assessments was in the late summer and early autumn period. All rapid risk assessments were distributed through the restricted EWRS system to all EU Member States.

For the first time since its establishment, ECDC was requested to closely collaborate with other EU bodies like the EU Humanitarian Aid department (ECHO) and the EU Centre for Information Monitoring (MIC) in humanitarian assistance during the cholera outbreak. This support was continued for several months focussing both on coordination and direct field support. Deployed experts were from Member States, fellows of the European Programme for Intervention Epidemiology Training (EPIET) and ECDC experts.

The close collaboration with local health authorities during mass gathering events is not only limited to activities during the event but also during the preparatory phase as, for example, for the EURO 2012 which will be held in Poland and the Ukraine.

ECDC's focus for non-infectious disease threats related to natural disasters remains on possible consequences related to infectious diseases (e.g. cholera in Haiti).

3.5 Conclusions

ECDC has now gained five years of experience in epidemic intelligence and threat assessment and has continuously enhanced its tools. In 2010, ECDC organised an expert meeting where common guiding principles for epidemic intelligence were discussed with experts from EU Member States, international organisations and third countries. These principles together with epidemic intelligence tools such as MediSys, which has been strengthened in collaboration with the Commission's Joint Research Centre (JRC), were made available for Member States' use.

The EPIS tool for food- and waterborne diseases has been successfully implemented in 2010 and the number of posted urgent inquiries increased, suggesting that the implementation has been smooth. In 2011, EPIS is planned to be implemented for sexually transmitted infections, antimicrobial resistance and vaccine-preventable diseases. The experience gained through the transition process of food- and waterborne diseases will hopefully ease the transition of the other disease-specific networks to ECDC.

In 2011, EUVAC.NET, the network for surveillance and outbreak monitoring of vaccine-preventable diseases targeted for elimination (measles and rubella), but also covering other vaccine-preventable diseases (e.g. pertussis, mumps, varicella), will be transferred to ECDC. Maintaining the currently well-working network will be a challenge but also an opportunity to enhance communication on clusters and outbreaks and implemented control measures to the European network.

ECDC, in collaboration with experts in the Member States, is developing a series of practical tools that aim to facilitate the coordination in the investigation of outbreaks. In order to support European-level outbreak investigations, a 'toolkit' is being developed for events that involve at least two EU Member States, for both food- and waterborne diseases and for Legionnaire's disease. In addition, evidence-based operational European guidelines for assessing the risk of transmission of communicable diseases in aircrafts (RAGIDA) addressing measles and rubella as well as viral haemorrhagic fevers were published in 2010[65].

Even though none of the monitored mass gathering events in 2010 has been associated with large communicable disease outbreaks, the risk of such outbreaks remains. In today's globalised world, the possibility of communicable disease outbreaks following mass gathering events always has to be taken into consideration and preparedness for such events is crucial. ECDC continues to further develop tools and to support Member States in its preparedness activities.

The added value of ECDC in the detection and control of communicable disease threats in 2010 has not only been proven by the number of threat assessments requested, the involvement in support missions for outbreaks and the number of expert meetings organised but also by the rapid distribution of relevant information through weekly bulletins and postings on its website.

In 2011, ECDC will continue on this path, providing even more sophisticated tools for the rapid detection and control of communicable diseases for the European Union community.

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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 and 2009/539/EC.

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

3 Special health issues

3.1 Nosocomial infections

3.2 Antimicrobial resistance

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