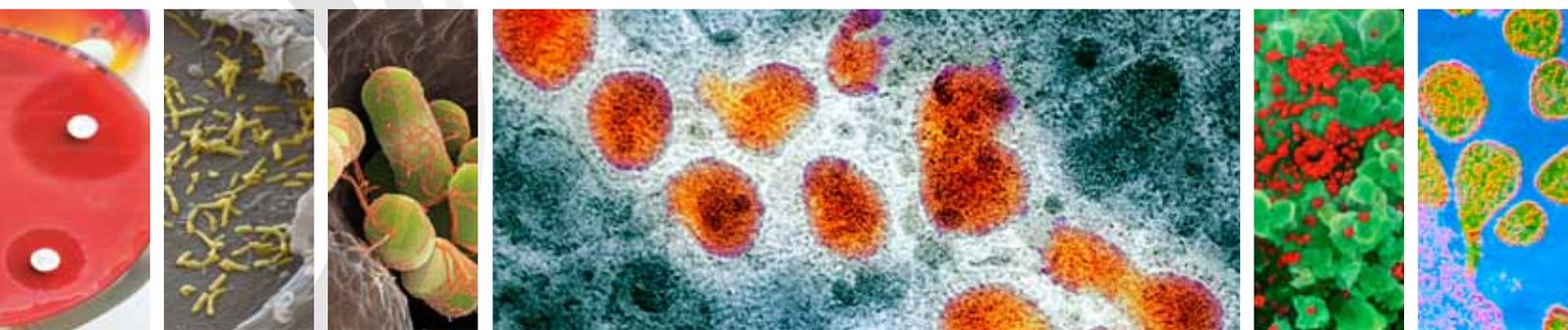


## SURVEILLANCE REPORT



# Annual epidemiological report

## Respiratory tract infections – tuberculosis

# 2014

ECDC SURVEILLANCE REPORT

# Annual epidemiological report

Respiratory tract infections - tuberculosis

2014



This report of the European Centre for Disease Prevention and Control (ECDC) was coordinated by Catalin Albu, Sergio Brusin, Joanna Gomes Dias and Bruno Ciancio.

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In order to facilitate more timely publication, this year's edition of the Annual Epidemiological Report is being first published a disease group at a time and will later be compiled into one comprehensive report. This report presents the epidemiological situation for tuberculosis as of 2012. Other respiratory tract infections are dealt with in a separate section of Chapter 2.1, available at <http://www.ecdc.europa.eu/en/publications/Publications/Respiratory-tract-infections-annual-epidemiological-report-2014.pdf>.

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## Abbreviations

AFB	Acid-fast bacilli
ASR	Age-standardised rate
DST	Drug susceptibility testing
EWRS	Early Warning and Response System
EU/EEA	European Union/European Economic Area
IHR	International Health Regulations
MDR TB	Multidrug-resistant tuberculosis
TB	Tuberculosis
TESSy	The European Surveillance System
WHO	World Health Organization
XDR TB	Extensively drug-resistant tuberculosis

# Introduction

## A note to the reader

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

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

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

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

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

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

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

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

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

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

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

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

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

## Description of methods

### Data sources: indicator-based surveillance (disease cases)

All EU Member States and three EEA countries (Iceland, Liechtenstein and Norway) send information at least annually from their surveillance systems to ECDC relating to occurrences of cases of the 52 communicable diseases and health issues under mandatory EU-wide surveillance. Reports are sent according to case definitions established by the EU<sup>1</sup>.

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

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

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

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

### Data sources: event-based surveillance

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

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

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

<sup>1</sup> 2002/253/EC: Commission Decision of 19 March 2002 laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council. Official Journal, OJ L 86, 03.04.2002, p. 44–62.

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

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

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

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

## Data analysis

### General principles

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

### Population data

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

### Presentation of analyses

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

### Summary table

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

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<sup>i</sup> 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.

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

This table presents an overview of the number and rates (including age-standardised rates) of confirmed cases or total cases depending on the disease reported by the Member States surveillance systems for the period 2008–12. The total number of reported cases (independent of case classification) for 2012 is also shown. Confirmed case rates are given per 100 000 persons (the number of reported confirmed cases divided by the official Eurostat estimate of the population for that year multiplied by 100 000). Countries that made no report for a disease are excluded from the calculation for overall European rates for that disease. Country reports from systems with less than national coverage (e.g. where only some regions of the country report nationally) are also excluded from calculation of overall EU case rates.

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

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

where  $r_i$  is the specific rate for the age group  $i$  in the population being studied, and  $p_i$  is the population of age group  $i$  in the standard population. The standard population considered in this report was based on the average population of the EU27 Member States for the period 2001–2010 (Table). This standard population was defined to reflect the current age structure of Europe.

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

### *Aspects of descriptive epidemiology at EU/ EEA level*

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

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

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

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

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

## Data protection

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

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

# Respiratory tract infections

## Tuberculosis

- In 2012, 29 EEA countries, 27 of which were EU countries, reported 68 423 cases of tuberculosis (TB), giving an overall rate of 13.5 cases per 100 000 population; 42 364 (62%) of these cases were laboratory-confirmed.
- Of 68 423 cases reported, 48 395 (71%) were diagnosed with pulmonary TB, 15 706 (23%) with extrapulmonary TB, 4 112 (6%) with a combination of both, and for 210 (0.3%) of all cases, no site was reported.
- Between 2008 and 2012, the reported TB rate decreased significantly by an annual average of 5%, with a more pronounced decrease in 21 countries.
- The highest rates per 100 000 population in 2012 were reported by Romania (85.2), Lithuania (59.2), Latvia (48.6), Bulgaria (31.1), Portugal (25.2) and Estonia (21.6).
- In 2012, 18 358 (27%) of all notified TB cases were reported as being of foreign origin.
- Multidrug-resistance (MDR) remained most prevalent in the Baltic States (14%–26%) and Romania (9%).
- In 20 countries reporting drug susceptibility testing results for second-line anti-TB drugs, 14% of the MDR TB cases tested were extensively drug-resistant (XDR).
- Among new culture-confirmed pulmonary TB cases, 77% had a successful treatment outcome at 12 months, as opposed to 55% of previously treated pulmonary TB cases and 34% of all culture-confirmed MDR TB cases at 24 months.

Tuberculosis (TB) is an infectious bacterial disease caused by *Mycobacterium tuberculosis* complex. It typically affects the lungs (pulmonary TB), but can also cause disease at other sites (extrapulmonary TB). TB is mainly spread through droplet transmission, for example a person suffering from pulmonary TB expels bacteria by coughing. In general, a relatively small proportion of people infected with *M. tuberculosis* complex will go on to develop TB disease, but the likelihood of developing disease is much higher with impaired immunity. Standard care involves antibiotic treatment for at least six months. Treatment success is hampered by increasing MDR TB rates.

## Epidemiological situation in 2012

In 2012, 68 423 possible, probable and confirmed<sup>i</sup> TB cases were reported by 27 EU countries, Iceland and Norway (Table 1). The reported TB rate was 13.5 per 100 000 population in 2012. Rates higher than 20 per 100 000 were reported by Romania (85.2), Lithuania (59.2), Latvia (48.6), Bulgaria (31.1), Portugal (25.2), and Estonia (21.6). Cases reported in these six high-incidence countries accounted for 38% of all reported cases. TB case rates in 18 countries were below 10 per 100 000 (Figure 1).

The overall rate in 2012 was 6% lower than in 2011, reflecting a decrease in 19 countries. The overall average annual decrease between 2008 and 2012 was 5.0% with a net decrease in 21 countries. Rates remained stable or increased in Cyprus, Iceland, Luxembourg, Norway, Sweden and the United Kingdom, all of them low-incidence countries reporting over 70% of their TB cases as being of foreign origin.

<sup>i</sup> A TB case is reported to ECDC according to the European Commission case definition; cases are categorised as 'possible' (based on clinical criteria only), 'probable' (additional detection of acid-fast bacilli (AFB) in sputum, *M. tuberculosis* complex in nucleic acid, or granulomata in histology) and 'confirmed' (by culture or by detection of both positive AFB in sputum and *M. tuberculosis* complex in nucleic acid).

**Table 1. Numbers and rates of total reported TB cases, EU/EEA, 2008-2012\***

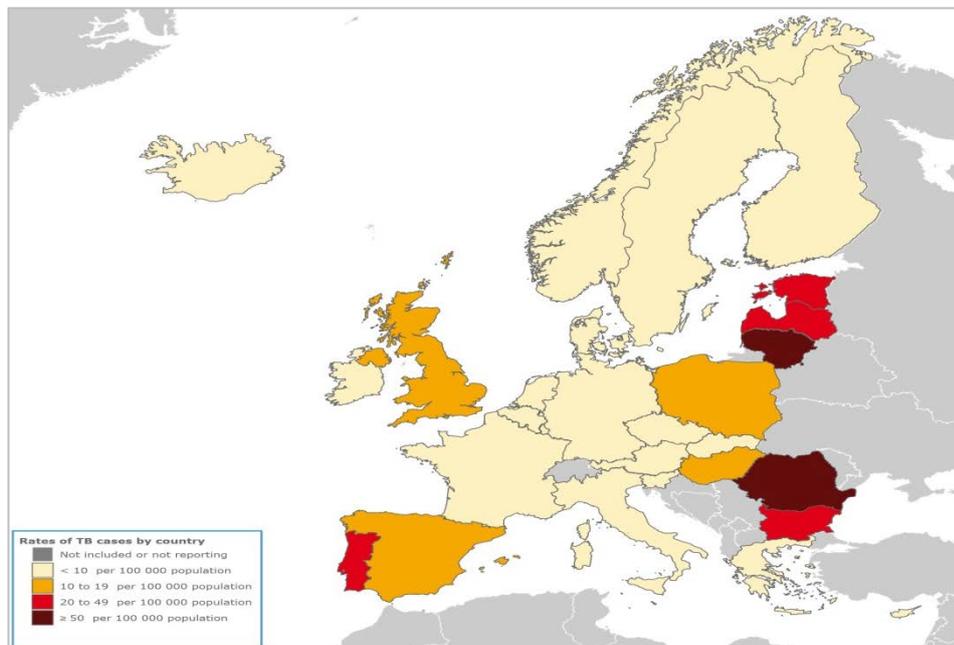
Country	2012						2011		2010		2009		2008	
	National data	Report type	Cases	Rate	ASR	Confirmed cases	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	Y	C	648	7.7	7.6	413	690	8.2	691	8.3	696	8.3	817	9.8
Belgium	Y	C	987	8.9	9.1	776	1019	9.3	1086	10.0	994	9.2	990	9.3
Bulgaria	Y	C	2280	31.1	30.6	1092	2406	32.6	2649	35.0	2910	38.3	3150	41.2
Cyprus	Y	C	69	8.0	7.8	50	54	6.4	61	7.4	55	6.9	50	6.3
Czech Republic	Y	C	605	5.8	5.6	421	600	5.7	668	6.4	694	6.7	864	8.3
Denmark	Y	C	389	7.0	7.1	301	381	6.9	366	6.6	334	6.1	380	6.9
Estonia	Y	C	290	21.6	21.5	239	339	25.3	333	24.8	411	30.7	444	33.1
Finland	Y	C	274	5.1	5.0	223	324	6.0	320	6.0	413	7.8	341	6.4
France	Y	C	4978	7.6	7.9	2338	4991	7.7	5116	7.9	5276	8.2	5758	9.0
Germany	Y	C	4220	5.2	5.0	3040	4317	5.3	4387	5.4	4444	5.4	4523	5.5
Greece	Y	C	557	4.9	4.9	225	489	4.3	487	4.3	589	5.2	664	5.9
Hungary	Y	C	1223	12.5	11.9	538	1445	14.7	1741	17.7	1407	14.2	1619	16.4
Ireland	Y	C	366	8.0	8.4	277	414	9.1	420	9.4	479	10.8	468	10.6
Italy	Y	C	3142	5.2	5.3	677	3521	5.8	4692	7.8	4244	7.1	4418	7.4
Latvia	Y	C	993	48.6	48.8	778	885	42.7	935	41.6	977	43.2	1070	47.1
Lithuania	Y	C	1781	59.2	59.4	1368	1904	62.4	1938	58.2	2081	62.1	2250	66.8
Luxembourg	Y	C	45	8.6	8.6	33	26	5.1	29	5.8	27	5.5	28	5.8
Malta	Y	C	43	10.3	10.4	16	33	7.9	32	7.7	44	10.7	53	13.0
Netherlands	Y	C	958	5.7	5.9	662	1003	6.0	1068	6.4	1158	7.0	1015	6.2
Poland	Y	C	7542	19.6	19.7	5070	8478	22.0	7509	19.7	8236	21.6	8080	21.2
Portugal	Y	C	2590	25.2	24.2	1711	2612	25.3	2727	26.1	2871	27.5	3002	28.8
Romania	Y	C	18197	85.2	89.6	11974	19205	89.7	21059	98.1	23164	107.8	24680	114.6
Slovakia	Y	C	345	6.4	6.6	181	399	7.4	439	8.1	506	9.4	633	11.7
Slovenia	Y	C	138	6.7	6.5	126	192	9.4	172	8.4	188	9.3	213	10.6
Spain	Y	C	5991	13.0	12.5	3845	6798	14.7	7239	15.7	7592	16.6	8216	18.1
Sweden	Y	C	632	6.7	6.9	504	580	6.2	667	7.1	617	6.7	546	5.9
United Kingdom	Y	C	8751	14.2	14.1	5200	8899	14.3	8397	13.6	8900	14.4	8532	14.0
<b>EU Total</b>	-	-	<b>68034</b>	<b>13.6</b>	<b>13.5</b>	<b>42078</b>	<b>72004</b>	<b>14.4</b>	<b>75228</b>	<b>15.1</b>	<b>79307</b>	<b>15.9</b>	<b>82804</b>	<b>16.7</b>
Iceland	Y	C	11	3.4	3.5	5	9	2.8	22	6.9	9	2.8	6	1.9
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	Y	C	378	7.6	7.8	281	354	7.2	336	6.9	358	7.5	313	6.6
<b>EU/EEA Total</b>	-	-	<b>68423</b>	<b>13.5</b>	<b>13.4</b>	<b>42364</b>	<b>72367</b>	<b>14.3</b>	<b>75586</b>	<b>15.0</b>	<b>79674</b>	<b>15.8</b>	<b>83123</b>	<b>16.6</b>

\* Confirmed, probable and possible cases

ASR: Age-standardised rate

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

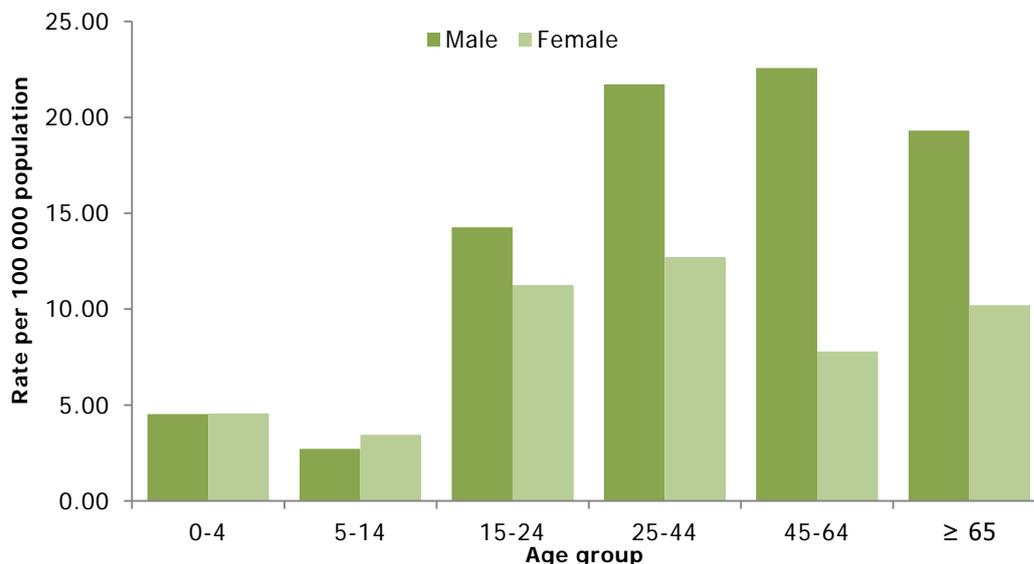
**Figure 1. Rates of reported TB cases by country, EU/EEA, 2012**



### Age and gender distribution

In 2012, male cases exceeded female cases in all age groups of 15 years and older (Figure 2) with an overall male-to-female ratio of 1.79. Males were overrepresented among cases in all EU/EEA Member States except Iceland, and TB was reported at least twice as frequently in males by Estonia, Greece, Latvia, Lithuania, Malta and Poland. Males were also over-represented in all adult age groups, with the greatest gender imbalance in the notification rate for those aged 45 to 64 years. The highest notification rate was reported in those aged 25 to 44 years. Children under 15 years of age accounted for 2 845 (4%) of 68 363 TB cases with known age corresponding to a notification rate of 3.6 per 100 000.

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



\* Excludes 60 cases with unknown age and 45 cases with unknown gender.

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

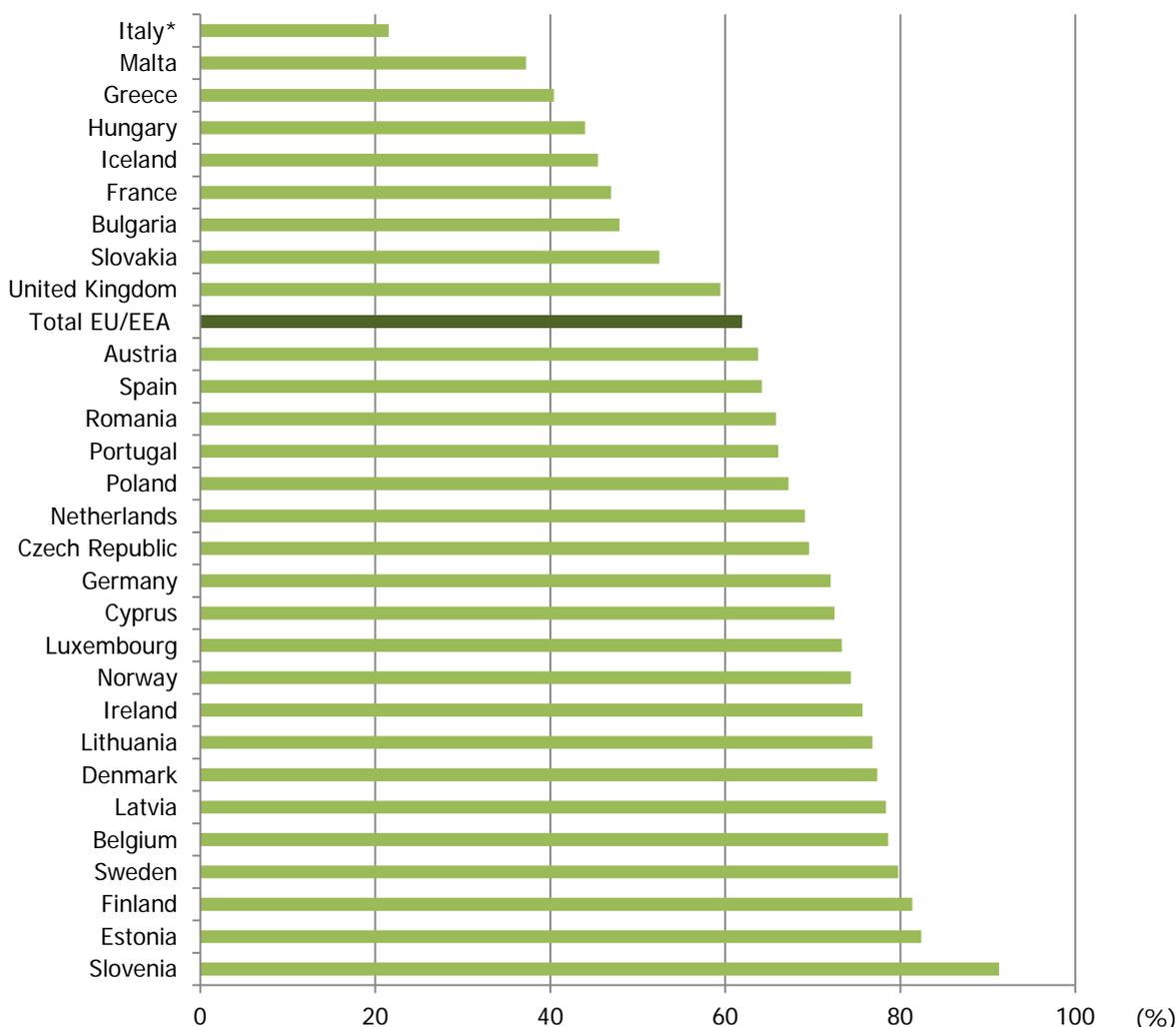
## Enhanced surveillance in 2012

### Previous treatment and laboratory confirmation

Similar to the figures in 2011 and 2010, 80% (54 541) of 68 423 TB cases reported in 2012 were newly diagnosed, 12% (8 139) had been previously treated for TB and 8% (5 743) had an unknown previous treatment status. The proportion of new cases in each country ranged from 52% in Italy to 95% in the Netherlands. The Member States with the lowest proportions of new cases had the highest proportions of cases with unknown previous treatment status.

Laboratory confirmation was reported for 42 364 (62%) of all 68 423 cases (Figure 3) and for 28 673 (70%) of new pulmonary cases. All laboratory-confirmed cases but 61 (0.1%) were confirmed by culture. The rest were confirmed by microscopy and nucleic acid amplification test. Country-specific proportions of laboratory-confirmed cases ranged from 22% in Italy (provisional data) to 91% in Slovenia. Overall, the trend in case confirmation by culture, nucleic acid detection and sputum smear has increased steadily since 1995.

**Figure 3. Proportion of confirmed cases among all reported TB cases, EU/EEA, 2012**



\* Provisional data

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

### *Site of TB*

Of 68 423 cases reported in 2012, 52 507 (77%) suffered from pulmonary TB, including 4 112 (6%) with additional extrapulmonary manifestations. Purely extrapulmonary TB affected 15 706 (23%), whereas for 210 (0.3%) of all reported cases the site was not reported. Country-specific proportions of extrapulmonary TB in 2012 ranged from 3% in Hungary to 47% in the United Kingdom. The overall reported rate for extrapulmonary TB has been stable at 3.1 to 3.2 per 100 000 since 2002.

In children under 15 years of age, extrapulmonary TB accounted for 1 242 (44%) of 2 824 cases with site information, and in adults aged 15 years and above for 14 356 (22%) of 65 044 cases.

### *Origin of TB cases*

In 2012, 48 801 (71%) of 68 423 reported TB cases were born or had citizenship in the reporting EU/EEA Member State, 18 358 (27%) were of foreign origin<sup>i</sup> and 1 264 (2%) were of unknown origin. Of all foreign TB cases, 6 452 (32%) were from Asia (outside of the WHO European Region), 5 516 (32%) from Africa, 2 207 (12%) from other EU/EEA countries, 1 842 (11%) from non-EU/EEA countries of the WHO European Region, 836 (5%) from the Americas and 1 505 (8%) from other or unknown countries. In 11 Member States, cases of foreign origin accounted for the majority, reaching 85% in Sweden and Norway. Overall, the proportion of foreign cases has been on the rise since 2001. In some countries this was due to a real increase, whereas in others, it was attributable to the sizeable drop in native cases.

### *TB and HIV infection*

HIV status was reported for 21 602 (61%) of 35 620 TB cases from 16 countries. Two countries only reported HIV-positive cases and were therefore excluded from the analysis. Of the 21 602 cases with known HIV status, 1 188 (5%) were reported as HIV-positive. Among Member States with at least five HIV-co-infected TB cases, a co-infection prevalence of more than 10% among TB cases with known HIV status was reported by Estonia (17% HIV positive, 94% HIV status known), Portugal (15% HIV positive, 75% HIV status known), Ireland (14% HIV positive, 27% HIV status known) and Latvia (14% HIV positive, 85% HIV status known).

### *Drug-resistant TB*

MDR TB was found in 1 421 (5%) of 31 004 cases with drug susceptibility testing (DST) results (Table 2). Among pulmonary cases with known previous TB treatment status, MDR was found in 499 (3%) of 18 933 new TB cases and 718 (19%) of 3 812 cases having previously received TB treatment. As in previous years, MDR TB was most frequently observed in the three Baltic countries with 11 to 21% of all new pulmonary cases being MDR TB. Among previously treated pulmonary cases, MDR TB, reached 33–50% in the Baltic States, but also affected some low-incidence countries. In cases of extrapulmonary TB, MDR was less prevalent, affecting 56 (1%) of 4 110 cases with known DST results.

In 2012, extensively drug-resistant tuberculosis (XDR TB) was reported for 134 (14%) of 978 MDR TB cases including 127 (15%) of 853 pulmonary MDR TB cases having undergone second-line drug susceptibility testing.

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

**Table 2. Number and percentage of reported MDR and XDR TB cases, EU/EEA, 2012**

Country	Laboratory- confirmed TB cases with FL DST*	Total MDR TB		Total MDR with SL DST**	XDR TB	
		N	%		N	%***
Austria	392	27	(6.9)	27	7	(25.9)
Belgium	735	20	(2.7)	20	2	(10.0)
Bulgaria	829	49	(5.9)	49	5	(10.2)
Cyprus	49	0	(0.0)	0	0	-
Czech Republic	397	4	(1.0)	2	1	(50.0)
Denmark	298	1	(0.3)	1	0	(0.0)
Estonia	239	61	(25.5)	55	4	(7.3)
Finland	222	3	(1.4)	3	1	(33.3)
France	-	-	-	-	-	-
Germany	2 794	60	(2.1)	8	0	(0.0)
Greece	-	-	-	-	-	-
Hungary	449	11	(2.4)	10	2	(20.0)
Ireland	265	5	(1.9)	1	0	(0.0)
Italy	2 439	74	(3.0)	50	5	(10.0)
Latvia	766	106	(13.8)	106	17	(16.0)
Lithuania	1 368	271	(19.8)	210	52	(24.8)
Luxembourg	29	0	(0.0)	-	-	-
Malta	14	0	(0.0)	-	-	-
Netherlands	656	11	(1.7)	-	-	-
Poland	4 659	31	(0.7)	4	0	(0.0)
Portugal	1 321	17	(1.3)	9	1	(11.1)
Romania	5 966	530	(8.9)	284	32	(11.3)
Slovakia	181	1	(0.6)	1	0	(0.0)
Slovenia	126	0	(0.0)	-	-	-
Spain	871	37	(4.2)	37	1	(2.7)
Sweden	503	14	(2.8)	14	2	(14.3)
United Kingdom	5151	81	(1.6)	80	2	(2.5)
<b>Total EU</b>	<b>30 719</b>	<b>1414</b>	<b>(4.6)</b>	<b>971</b>	<b>134</b>	<b>(13.8)</b>
Iceland	5	1	(20.0)	1	0	(0.0)
Liechtenstein	-	-	-	-	-	-
Norway	280	6	(2.1)	6	0	(0.0)
<b>Total EU/EEA</b>	<b>31 004</b>	<b>1421</b>	<b>(4.6)</b>	<b>978</b>	<b>134</b>	<b>(13.7)</b>

\* FL DST – drug susceptibility testing for first-line drugs

\*\* SL DST – drug susceptibility testing for second-line drugs

\*\*\* Percentages calculated from cases with second-line drug susceptibility testing (SL DST)

### Treatment outcome

Of 63 366 TB cases notified in 2011 with treatment outcome reported in 2012, 47 229 (75%) had been treated successfully, 4 714 (7%) had died, 940 (1%) had experienced treatment failure, 3 811 (6%) had defaulted, 1 921 (3%) were still on treatment and 4 751 (7%) had been transferred or had an unknown outcome. France, Greece and Italy did not report treatment outcome.

Treatment success had been achieved in 77% of new laboratory-confirmed pulmonary TB cases, 55% of previously treated cases, 34% of MDR TB and 25% of XDR TB cases.

### Discussion

Reported TB cases and rates per 100 000 population have declined over the last five years, both in high- and low-incidence countries. The few exceptions with stable or even increasing case rates are Cyprus, Iceland, Luxembourg, Norway, Sweden and the United Kingdom; these are low-incidence countries with high proportions of foreign-origin TB cases. The increasing case rates may be due to more effective case detection and increased immigration from countries where TB is highly endemic rather than low-incidence countries.

High-incidence countries continue to account for the highest proportions of TB drug resistance among those countries providing relevant surveillance data, and also for a high and increasing level of HIV co-infection prevalence. This remains alarming, especially against the backdrop of an economic crisis and budgetary pressures on public health. Nonetheless, the declining notification rates in these countries probably testify to the continued basic effectiveness of their TB programmes.

The follow-up to the Framework Action Plan to fight Tuberculosis in the European Union has set targets of confirming 80% of new pulmonary TB cases by culture and testing all of these for first-line drug susceptibility. In 2012, only 11 of 29 reporting countries achieved the first target and seven countries the second one. Thus, although the reported prevalence of MDR TB among new culture-positive cases with drug susceptibility testing (DST) results seems to have been stable in recent years, this information is based on incomplete data. Information about XDR TB is even poorer, with only 60% of all MDR TB cases testing results for resistance to second-line drugs being reported. For the prevention and control of MDR TB and XDR TB, high-quality information about the size and location of the epidemic is indispensable.

In 2011, the treatment success rate of new pulmonary TB cases reported reached 75%; however, the reported treatment success rate of previously treated cases was 55%, and for MDR TB cases was 34%, which is unacceptably low. Most countries thus remain far below the Framework Action Plan targets of 85% treatment success in confirmed new pulmonary TB cases and 70% in MDR TB.

## 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					Case definition used
						Laboratories	Physicians	Hospitals	Others	National coverage	
Austria	AT-TUBERKULOSEGESETZ	Cp	Co	A	C	Y	Y	Y	Y	Y	EU Case Definition (legacy/deprecated)
Belgium	BE-TUBERCULOSIS	Cp	Co	A	C	Y	Y	N	N	Y	EU Case Definition (legacy/deprecated)
Bulgaria	BG-MOH	Cp	Co	A	C	Y	N	Y	N	-	Not specified/unknown
Cyprus	CY-NOTIFIED_DISEASES	Cp	Co	P	C	N	Y	N	N	Y	EU-2008
Czech Republic	CZ-TUBERCULOSIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU-2008
Denmark	DK-MIS	Cp	Co	P	C	N	Y	N	N	Y	Other
Estonia	EE-TBC	Cp	Co	P	C	Y	Y	Y	Y	Y	EU-2008
Finland	FI-NIDR	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
France	FR-MANDATORY_INFECTIOUS_DISEASES	Cp	Co	P	C	Y	Y	Y	Y	Y	Other
Germany	DE-SURVNET@RKI-7.1/6	Cp	Co	P	C	Y	Y	Y	Y	Y	Other
Greece	GR-NOTIFIABLE_DISEASES	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Hungary	HU-TUBERCULOSIS	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Iceland	IS-TUBERCULOSIS	Cp	Co	A	C	Y	Y	Y	N	Y	EU Case Definition (legacy/deprecated)
Ireland	IE-TB	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2008
Italy	IT-NRS	Cp	Co	P	C	N	Y	Y	N	Y	Other
Latvia	LV-TB	Cp	Co	P	C	Y	Y	Y	N	Y	EU Case Definition (legacy/deprecated)
Lithuania	LT-TB_REGISTER	Cp	Co	A	C	Y	Y	Y	Y	Y	EU Case Definition (legacy/deprecated)
Luxembourg	LU-SYSTEM1	Cp	Co	P	C	N	Y	N	N	Y	EU-2002
Malta	MT-DISEASE_SURVEILLANCE	Cp	Co	A/P	C	Y	Y	Y	Y	Y	EU-2012
Netherlands	NL-NTR	Cp	Co	P	C	Y	Y	N	N	Y	EU-2008
Norway	NO-MSIS_A	Cp	Co	P	C	Y	Y	Y	N	Y	EU-2012
Poland	PL_CR	Cp	Co	P	C	Y	Y	Y	N	Y	EU Case Definition (legacy/deprecated)
Portugal	PT-TUBERCULOSIS	Cp	Co	P	C	N	Y	N	Y	Y	EU-2008
Romania	RO-NTBSy	Cp	Co	P	C	N	Y	N	Y	Y	EU Case Definition (legacy/deprecated)
Slovakia	SK-NRT	Cp	Co	-	C	Y	Y	Y	N	Y	Other
Slovenia	SI-TUBERCULOSIS	Cp	Co	A	C	Y	Y	N	N	Y	EU Case Definition (legacy/deprecated)
Spain	ES-STATUTORY_DISEASES	Cp	Co	P	C	N	Y	Y	N	Y	EU-2008
Sweden	SE-SweTReg	Cp	Co	P	C	Y	Y	Y	N	Y	Not specified/unknown
United Kingdom	UK-TUBERCULOSIS	Cp	Co	A	C	Y	N	Y	Y	Y	EU Case Definition (legacy/deprecated)

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