

## Tuberculosis

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### Key facts

- Tuberculosis (TB) remains a common infection in EU/EEA countries.
- In 2014, 58 008 cases of TB were reported in 29 EU/EEA countries (excluding Italy and Liechtenstein).
- Notification rates are decreasing in most countries but annual rates of decline are still too small to envisage TB elimination by 2050 in European low-incidence countries.
- Twenty-seven per cent of TB cases were in people of foreign origin, most of them residing in low-incidence countries.
- Multidrug-resistant TB (MDR TB) was reported for 4.0% of 36 380 cases with drug susceptibility testing results and continues to be most prevalent in the three Baltic countries.
- Of all TB cases with a known HIV status, 4.9% were co-infected with the virus.

### Methods

[Click here for a detailed description of the methods used to produce this annual report](#)

Since 1 January 2008, ECDC and the WHO Regional Office for Europe (WHO/Europe) have jointly coordinated the collection and analysis of TB surveillance data in Europe.

For the purpose of this report, only data from EU/EEA countries were included.

Multidrug resistance (MDR) indicates resistance to at least isoniazid and rifampicin. Extensive drug resistance (XDR) indicates resistance to (i) isoniazid and rifampicin (i.e. MDR), and (ii) resistance to a fluoroquinolone, and (iii) resistance to one or more of the following injectable drugs: amikacin, capreomycin or kanamycin.

A summary of national surveillance system characteristics is available in the Annex at the bottom of this page.

### Epidemiology

In 2014, 58 008 cases of TB were reported in 29 EU/EEA countries (Table 1). As in previous years, three countries (Poland, Romania and the United Kingdom) accounted for approximately 50% of all reported cases, with Romania alone accounting for 27%. The EU/EEA notification rate in 2014 was 12.8 per 100 000 population, which was very similar to 2013, interrupting the continuous decrease observed since 2002. This stagnation is mainly attributable to the absence of 2014 data for Italy, a country with a large population and low notification rate (5.3 per 100 000 in 2013).

Similar to 2012 and 2013, country-specific notification rates in 2014 differed more than 30-fold, ranging from 2.5 in Iceland to 79.7 per 100 000 in Romania (Table 1 and Figure 1). Rates were above 20 per 100 000 population in Bulgaria, Latvia, Lithuania, Portugal and Romania.

In a majority of countries, the notification rates have steadily declined during the period 2010–2014.

**Table 1. Numbers and rates of TB cases per 100 000 population by country and year, EU/EEA, 2010–2014**

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Country	2010		2011		2012		2013		National data	Report type	2014			
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate			Reported cases	Rate	ASR	Confirmed cases
Austria	691	8.3	684	8.2	646	7.7	649	7.7	Y	C	582	6.8	6.8	443
Belgium	1086	10	1019	9.3	976	8.8	963	8.6	Y	C	959	8.6	8.8	729
Bulgaria	2649	35.7	2406	32.6	2280	31.1	1932	26.5	Y	C	1872	25.8	25.2	891
Croatia	695	16.2	619	14.4	570	13.3	522	12.2	Y	C	497	11.7	11.1	394
Cyprus	61	7.4	54	6.4	69	8	41	4.7	Y	C	41	4.8	4.7	34
Czech Republic	668	6.4	600	5.7	597	5.7	497	4.7	Y	C	514	4.9	4.7	367
Denmark	366	6.6	381	6.9	389	7	356	6.4	Y	C	320	5.7	5.9	271
Estonia	333	25	339	25.5	289	21.8	287	21.7	Y	C	246	18.7	18.4	194
Finland	317	5.9	324	6	274	5.1	273	5	Y	C	259	4.8	4.6	213
France	5116	7.9	4991	7.7	4978	7.6	4939	7.5	Y	C	4845	7.4	7.6	2518
Germany	4390	5.4	4310	5.3	4210	5.1	4319	5.3	Y	C	4488	5.6	5.6	3206
Greece	487	4.4	489	4.4	558	5	540	4.9	Y	C	519	4.7	4.6	342
Hungary	1741	17.4	1445	14.5	1223	12.3	1045	10.5	Y	C	851	8.6	8.3	334
Iceland	22	6.9	9	2.8	11	3.4	11	3.4	Y	C	8	2.5	2.4	6
Ireland	420	9.2	412	9	359	7.8	376	8.2	Y	C	316	6.9	7.4	230
Italy	4692	7.9	3521	5.9	3142	5.3	3153	5.3	.	.	.	.	.	.
Latvia	935	44.1	885	42.7	993	48.6	904	44.7	Y	C	761	38	38.1	603
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lithuania	1938	61.7	1904	62.4	1781	59.3	1705	57.4	Y	C	1607	54.6	54	1267
Luxembourg	29	5.8	26	5.1	45	8.6	38	7.1	Y	C	24	4.4	4.5	17
Malta	32	7.7	33	8	42	10.1	50	11.9	Y	C	46	10.8	10.9	30
Netherlands	1068	6.4	1004	6	956	5.7	844	5	Y	C	823	4.9	5	523
Norway	336	6.9	354	7.2	374	7.5	401	7.9	Y	C	325	6.4	6.6	267
Poland	7509	19.7	8478	22.3	7542	19.8	7250	19	Y	C	6698	17.6	17.4	4781
Portugal	2715	25.7	2609	24.7	2606	24.7	2403	22.9	Y	C	2226	21.3	20.8	1255
Romania	21059	103.8	19202	95.1	18190	90.5	16692	83.4	Y	C	15906	79.7	79	10469
Slovakia	439	8.1	399	7.4	345	6.4	401	7.4	Y	C	336	6.2	6.3	159
Slovenia	172	8.4	192	9.4	138	6.7	140	6.8	Y	C	144	7	6.6	127
Spain	7239	15.6	6798	14.6	6070	13	5588	12	Y	C	5048	10.9	10.7	3374
Sweden	667	7.1	580	6.2	623	6.6	639	6.7	Y	C	670	6.9	7.3	528
United Kingdom	8398	13.4	8915	14.1	8714	13.7	7863	12.3	Y	C	7077	11	11.3	4301
<b>EU/EEA</b>	<b>76270</b>	<b>15</b>	<b>72982</b>	<b>14.3</b>	<b>68990</b>	<b>13.5</b>	<b>64821</b>	<b>12.7</b>	.	<b>C</b>	<b>58008</b>	<b>12.8</b>	<b>12.8</b>	<b>37873</b>

ASR: age-standardised rate, C: case-based

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

**Figure 1. Number of TB cases per 100 000 population by country, EU/EEA, 2014**



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

### Previous treatment, laboratory confirmation and TB site

The distribution of cases by treatment history in 2014 was very similar to the distribution observed in previous years: 44 204 (76.2%) of 58 008 TB cases reported in 2014 were newly diagnosed, 6 683 (11.5%) had been previously treated for TB, and 7 121 (12.3%) had an unknown previous treatment status.

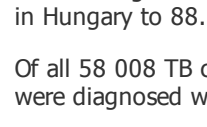
The TB diagnosis was confirmed by a positive laboratory test for 37 873 (65.3%) of 58 008 cases. Country-specific proportions of laboratory-confirmed cases ranged from 39.2% in Hungary to 88.2% in Slovenia.

Of all 58 008 TB cases reported in 2014, 41 076 (70.8%) were diagnosed with only pulmonary TB, 12 672 (21.8%) were diagnosed with extrapulmonary TB, 3 982 (6.9%) were diagnosed with a combination of both, and no TB site was reported for 278 (0.5%).

### Age and gender

Of 57 999 TB cases reported with information on age, 38 490 (66.4%) were between 25 and 64 years old. The highest notification rate was observed in the 25–44 years age group at 16.5 per 100 000 (20.9 per 100 000 in males and 12.0 in females, Figure 2). In males, the highest notification rate was observed in the 45–64 years age group at 22.1 per 100 000. The overall male-to-female ratio was 1.8:1.

**Figure 2. Number of TB cases per 100 000 population by age and gender, EU/EEA, 2014**



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

### Origin of cases

Of the 58 008 TB cases reported in 2014, 40 828 (70.4%) were born in or citizens of the reporting country (referred to as 'native'), 15 565 (26.8%) were of foreign origin, and 1 615 (2.8%) were of unknown origin. Country-specific proportions of foreign-origin TB cases ranged from below 1% in Bulgaria, Poland and Romania to above 80% in Cyprus, Iceland, Luxembourg, Malta, Norway, and Sweden. Four countries (France, Germany, Spain and the United Kingdom) accounted for 75% of cases in people of foreign origin.

### Drug resistance

Multidrug-resistant TB (MDR TB) was reported in 4.0% (1 463 of 36 380 cases) of cases with drug susceptibility testing results; in Estonia, Latvia and Lithuania, MDR TB was reported in between 12% and 26% of all cases tested for drug susceptibility. The rate of notified MDR TB cases has remained unchanged over the past five years at 0.3 per 100 000 population. Extensively drug-resistant TB (XDR TB) was reported for 194 (17.5%) of 1 111 MDR TB cases that had undergone second-line drug susceptibility testing.

### HIV co-infection

HIV status was reported for 21 243 (64.6%) of 32 892 TB cases from 21 countries. Of 21 243 cases with known HIV status, 1 051 (4.9%) were reported as HIV positive. Among countries with at least 50% reporting completeness for HIV status, the proportion of co-infected cases was highest in Latvia, Malta and Portugal at 19.5%, 17.1%, and 14.7%, respectively.

### Treatment outcome

Of the 56 189 TB cases notified in 2013 with a treatment outcome reported in 2014, 41 559 (74.0%) were treated successfully, 4 279 (7.6%) died, 682 (1.2%) experienced treatment failure, 3 053 (5.4%) were lost to follow-up, 2 095 (3.7%) were still on treatment in 2014, and 4 521 (8.0%) were not evaluated.

Treatment success had been achieved in 77.6% of new and relapse pulmonary cases, 57.4% of previously treated pulmonary other than relapse cases, 40.7% of MDR TB, and 34.0% of XDR TB cases.

## Discussion

In 2014, the overall TB notification rate in the EU/EEA was similar to 2013, interrupting the continuous decrease observed since 2002. The absence of data for Italy, a populous country with a low notification rate in recent years, is probably the main explanation for this levelling off. The next data update should confirm the downward trend. As in previous years, a small number of countries accounts for the vast majority of cases. For example, Romania accounts for 27% of all reported cases.

The decreasing notification rates observed in most countries are reassuring, but annual rates of decline are still too small to envisage TB elimination by 2050 in low-incidence European countries [1].

The estimated TB mortality rate in the EU/EEA was 0.8 deaths per 100 000 population in 2014, approximately 4 000 deaths.

In 2014, notification rates of MDR TB showed no sign of decline confirming the findings of a recent analysis looking at the 2007–2012 period [2].

Finally, treatment success rates have remained unchanged over the past 10 years at approximately 75%. This unsatisfactory finding is paralleled by a constantly high proportion of cases reported as not evaluated, which leads to the suspicion that the proportion of successful outcomes is perhaps underestimated. The main predictor of treatment failure is drug resistance and associated factors such as relapse or history of previous treatment [3].

## Public health conclusions

Tuberculosis remains a common disease and an important cause of morbidity and mortality in Europe.

To achieve TB elimination in low-incidence countries, further efforts to address the most vulnerable and hard-to-reach groups will be necessary. As advocated by a recent paper, the monitoring of high-risk groups using data on social determinants routinely collected by national tuberculosis programmes could improve the efficiency of elimination programmes [4].

## References

1. Lönnroth K, Migliori GB, Abubakar I, D'Ambrosio L, de Vries G, Diel R, et al. Towards tuberculosis elimination: an action framework for low-incidence countries. *Eur Respir J*. 2015 Apr;45(4):928–52.
2. van der Werf MJ, Ködmön C, Hollo V, Sandgren A, Zucs P. Drug resistance among tuberculosis cases in the European Union and European Economic Area, 2007 to 2012. *Eurosurveillance*. 2014;19(10).
3. Faustini A, Hall AJ, Perucci CA. Tuberculosis treatment outcomes in Europe: a systematic review. *Eur Respir J*. 2005 Sep;26(3):503–10.
4. de Colombani P, Hovhannessian A, Wolfheze Working Group on Social Determinants of TB and Drug Resistant TB. Social determinants and risk factors for tuberculosis in national surveillance systems in Europe. *Public Health Action*. 2015 Sep 21;5(3):194–201.

## Additional information

ECDC Surveillance Atlas of Infectious Diseases

### Previous reports

European Centre for Disease Prevention and Control/WHO Regional Office for Europe. Tuberculosis surveillance and monitoring in Europe 2015. Stockholm: European Centre for Disease Prevention and Control; 2015. Available from: <http://ecdc.europa.eu/en/publications/Publications/tuberculosis-surveillance-monitoring-Europe-2015.pdf>

### Peer-reviewed articles by ECDC epidemiologists

van der Werf MJ, Ködmön C, Hollo V, Sandgren A, Zucs P. Drug resistance among tuberculosis cases in the European Union and European Economic Area, 2007 to 2012. *Eurosurveillance*. 2014;19(10). Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20733>

Sandgren A, Hollo V, van der Werf MJ. Extrapulmonary tuberculosis in the European Union and European Economic Area, 2002 to 2011. *Eurosurveillance*. 2013;18(12). Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20431>

Sandgren A, Hollo V, Huitric E, Kodmon C. Epidemiology of tuberculosis in the EU/EEA in 2010: monitoring the progress towards tuberculosis elimination. *Eurosurveillance*. 2012;17(12). Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20124>

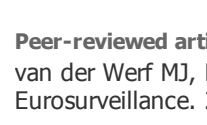
Hollo V, Zucs P, Ködmön C, Sandgren A, Manissero D. Marking 15 years of efforts towards a comprehensive European TB surveillance system: the epidemiological situation of TB in the EU/EEA in 2009. *Eurosurveillance*. 2011;16(12). Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19822>

Sandgren A, Hollo V, Quinten C, Manissero D. Childhood tuberculosis in the European Union/European Economic Area, 2000 to 2009. *Eurosurveillance*. 2011;16(12). Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19825>

## Annex

### Table. Tuberculosis, surveillance systems overview, 2014

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\* The European Surveillance System (TESSy) is a system for the collection, analysis and dissemination of data on communicable diseases. EU Member States and EEA countries contribute to the system by uploading their infectious disease surveillance data at regular intervals.