

## SURVEILLANCE REPORT

Annual Epidemiological Report for 2015

# Tuberculosis

### Key facts

- Tuberculosis (TB) remains a common infection in EU/EEA countries.
- In 2015, 60 195 cases of TB were reported in 30 EU/EEA countries (excluding Liechtenstein).
- Notification rates are decreasing in most countries, but annual rates of decline are still too small to ensure TB elimination by 2050 in European low-incidence countries.
- Thirty 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 4.1% of 32 721 cases with drug susceptibility testing results; the three Baltic countries continue to have the highest proportion of MDR TB cases.
- Of all TB cases with known HIV status, 4.6% were co-infected with the virus.

### Methods

This report is based on data for 2015 retrieved from The European Surveillance System (TESSy) on 3 October 2016. 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 [1].

An overview of the national surveillance systems is available online [2].

A subset of the data used for this report is available through the interactive *Surveillance atlas of infectious diseases* [3].

Since 1 January 2008, ECDC and the WHO Regional Office for Europe have jointly coordinated the collection and analysis of TB surveillance data in Europe. This report only includes data from EU/EEA countries.

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.

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## Overall trends

In 2015, 60 195 cases of TB were reported in 30 EU/EEA countries (Table 1). As in previous years, Poland, Romania and the United Kingdom accounted for almost 50% of all reported cases, with Romania alone accounting for 25%. The EU/EEA notification rate in 2015 was 11.7 per 100 000 population, continuing the downward trend observed since 2002. Over the 2011–2015 period, the average decline in annual notification rates was 5.3%.

Similar to 2014, country-specific notification rates in 2015 differed more than 35-fold, ranging from 2.1 in Iceland to 76.5 per 100 000 in Romania (Table 1 and Figure 1). Rates were above 50 per 100 000 in Lithuania and Romania.

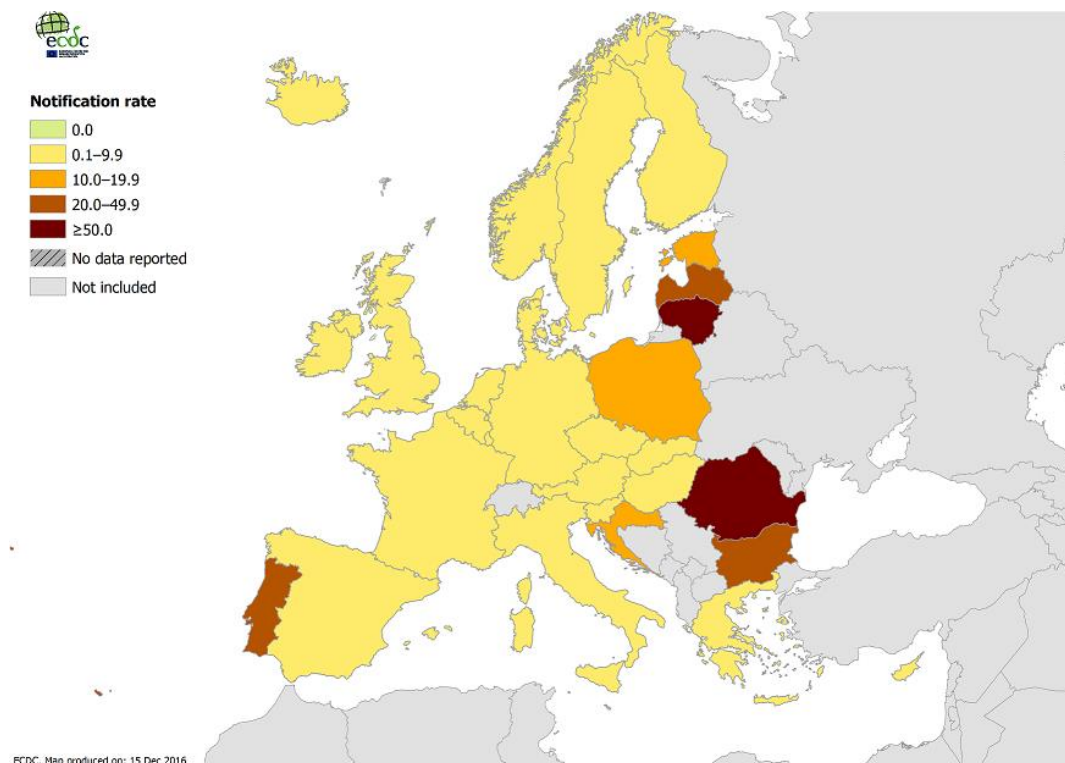
In a majority of countries, the notification rates steadily declined during the period 2011–2015. The decline was more moderate in several low-incidence countries, and increasing rates were observed in five countries (Cyprus, Germany, Greece, Luxembourg and Sweden).

**Table 1. TB cases per 100 000 population: number and rate, EU/EEA, 2011–2015**

Country	2011		2012		2013		2014		National coverage	2015			Confirmed cases
	Reported cases		Reported cases		Reported cases		Reported cases			Reported cases			
	Number	Rate	Number	Rate	Number	Rate	Number	Rate		Number	Rate	ASR	
Austria	684	8.2	646	7.7	653	7.7	586	6.9	Y	583	6.8	6.8	451
Belgium	1019	9.3	976	8.8	963	8.6	949	8.5	Y	988	8.8	9.0	775
Bulgaria	2406	32.6	2280	31.1	1932	26.5	1872	25.8	Y	1660	23.0	22.4	782
Croatia	619	14.4	575	13.4	517	12.1	499	11.7	Y	486	11.5	10.9	385
Cyprus	54	6.4	69	8.0	41	4.7	41	4.8	Y	63	7.4	7.2	42
Czech Republic	600	5.7	597	5.7	497	4.7	511	4.9	Y	518	4.9	4.8	401
Denmark	381	6.9	389	7.0	356	6.4	320	5.7	Y	357	6.3	6.5	279
Estonia	339	25.5	289	21.8	290	22.0	248	18.8	Y	217	16.5	16.0	180
Finland	324	6.0	274	5.1	273	5.0	263	4.8	Y	271	5.0	4.8	215
France	4991	7.7	4975	7.6	4934	7.5	4827	7.3	Y	4788	7.2	7.5	2492
Germany	4309	5.4	4213	5.2	4325	5.4	4533	5.6	Y	5865	7.2	7.5	4123
Greece	489	4.4	558	5.0	540	4.9	519	4.7	Y	482	4.4	4.2	305
Hungary	1445	14.5	1223	12.3	1045	10.5	851	8.6	Y	906	9.2	8.8	413
Ireland	412	9.0	359	7.8	374	8.1	311	6.8	Y	312	6.7	7.2	199
Italy	4461	7.5	4252	7.2	3973	6.7	3916	6.4	Y	3769	6.2	6.3	2609
Latvia	885	42.7	993	48.6	904	44.7	761	38.0	Y	721	36.3	35.9	592
Lithuania	1904	62.4	1781	59.3	1705	57.4	1607	54.6	Y	1507	51.6	50.9	1221
Luxembourg	26	5.1	45	8.6	38	7.1	24	4.4	Y	30	5.3	5.5	24
Malta	33	8.0	42	10.1	50	11.9	46	10.8	Y	32	7.5	7.6	24
Netherlands	1004	6.0	956	5.7	845	5.0	814	4.8	Y	867	5.1	5.3	578
Poland	8478	22.3	7542	19.8	7250	19.0	6698	17.6	Y	6430	16.9	16.7	4630
Portugal	2609	24.7	2606	24.7	2410	23.0	2278	21.8	Y	2124	20.5	19.8	1324
Romania	19202	95.1	18190	90.5	16689	83.4	15879	79.6	Y	15195	76.5	75.4	10382
Slovakia	399	7.4	345	6.4	401	7.4	336	6.2	Y	317	5.8	5.9	158
Slovenia	192	9.4	138	6.7	140	6.8	144	7.0	Y	130	6.3	6.0	119
Spain	6798	14.6	6070	13.0	5632	12.1	4917	10.6	Y	4191	9.0	8.9	2861
Sweden	580	6.2	623	6.6	639	6.7	659	6.8	Y	821	8.4	8.9	697
United Kingdom	8915	14.1	8714	13.7	7866	12.3	7025	10.9	Y	6240	9.6	10.0	3787
<b>EU</b>	<b>73558</b>	<b>14.6</b>	<b>69720</b>	<b>13.8</b>	<b>65282</b>	<b>12.9</b>	<b>61434</b>	<b>12.1</b>	.	<b>59870</b>	<b>11.8</b>	<b>11.8</b>	<b>40048</b>
Iceland	9	2.8	11	3.4	11	3.4	9	2.8	Y	7	2.1	2.1	3
Liechtenstein	.	.	.	.	.	.	.	.	.	.	.	.	.
Norway	354	7.2	374	7.5	392	7.8	324	6.3	Y	318	6.2	6.3	247
<b>EU/EEA</b>	<b>73921</b>	<b>14.5</b>	<b>70105</b>	<b>13.8</b>	<b>65685</b>	<b>12.9</b>	<b>61767</b>	<b>12.1</b>	.	<b>60195</b>	<b>11.7</b>	<b>11.8</b>	<b>40298</b>

ASR: age-standardised rate

Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France (provisional data for 2015) Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain (provisional data for 2015), Sweden, and the United Kingdom.

**Figure 1. Number of TB cases per 100 000 population by country, EU/EEA, 2015**

Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the 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, and the United Kingdom.

## Previous treatment, laboratory confirmation and TB site

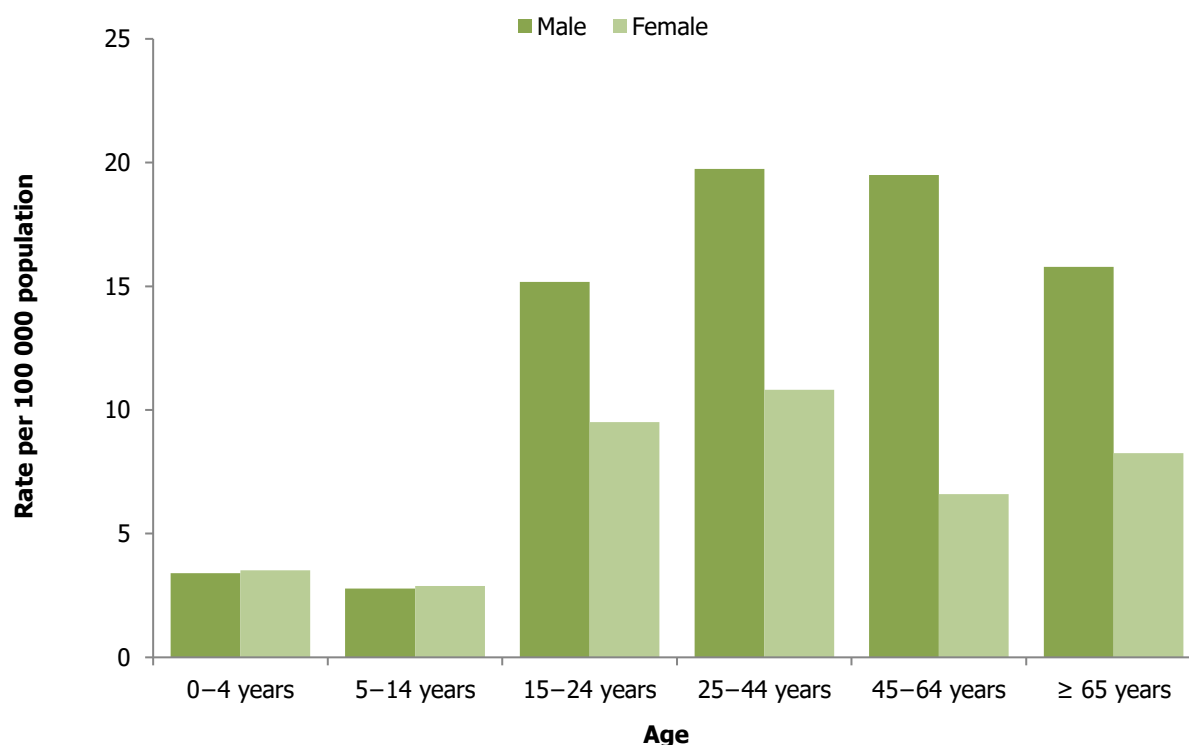
The distribution of cases by previous treatment history in 2015 was very similar to that observed in previous years: 44 066 (73.2%) of 60 195 TB cases reported in 2015 were newly diagnosed, 6 657 (11.1%) had been previously treated for TB, and 9 472 (15.7%) had an unknown previous treatment status. Proportions of previously treated cases were above 10% in ten countries (Bulgaria, Denmark, Estonia, Hungary, Latvia, Lithuania, Norway, Poland, Romania, and Slovakia).

The TB diagnosis was confirmed by a positive laboratory test for 40 298 (66.9%) of 60 195 cases. Country-specific proportions of laboratory-confirmed cases ranged from 42.9% in Iceland to 91.5% in Slovenia.

Of all 60 195 TB cases reported in 2015, 42 558 (70.7%) were diagnosed with pulmonary TB, 13 347 (22.2%) with extrapulmonary TB, 4 096 (6.8%) with a combination of both, and no TB site was reported for 194 (0.3%).

## Age and gender

Of 60 168 TB cases reported with information on age, 39 463 (65.6%) were between 25 and 64 years old. The highest notification rate was observed in the age group 25–44 years: 14.4 cases per 100 000 population; 19.7 per 100 000 in males and 10.8 in females (Figure 2). The overall male-to-female ratio was 1.5:1.

**Figure 2. Rate of TB per 100 000 population, by age and gender, EU/EEA, 2015**

Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, the 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, and the United Kingdom.

## Origin of cases

Of the 60 195 TB cases notified in 2015, 39 711 (66.0%) were in people who were either born in the reporting country or have acquired citizenship of the reporting country (both groups are referred to as 'native'), 17 913 (29.8%) were of foreign origin and 2 571 (4.3%) were of unknown origin. Of the 17 913 cases of foreign origin in 2015, 8 281 (46.2%) were reported by Germany and the United Kingdom. Country-specific proportions of TB cases of foreign origin ranged from below 1% in Bulgaria, Poland and Romania to above 80% in Cyprus, Iceland, Norway and Sweden.

## Drug resistance

MDR TB was reported for 1 339 (4.1%) of 32 721 cases with drug susceptibility testing results. In Estonia, Latvia and Lithuania, MDR TB was reported in 11% to 21% of all cases tested for drug susceptibility. The rate of notified MDR TB cases remained unchanged between 2011 and 2015 at 0.3 cases per 100 000 population. XDR TB was reported for 202 (19.7%) of 1 027 cases that had undergone second-line drug susceptibility testing.

## HIV co-infection

HIV status was reported for 20 720 (67.8%) of 30 555 TB cases from 19 countries. Of these 20 720 cases, 958 (4.6%) 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 17.4%, 15.4%, and 14.5%, respectively. The proportion of HIV-co-infected TB cases observed in 2015 was similar to that in 2013 and 2014.

## Treatment outcome

Of the 52 435 TB cases notified in 2014 with a treatment outcome reported in 2015, 37 733 (72.0%) were treated successfully, 4 039 (7.7%) died, 647 (1.2%) experienced treatment failure, 2 678 (5.1%) were lost to follow-up, 2 043 (3.9%) were still on treatment in 2015, and 5 295 (10.1%) had not been evaluated. Treatment success was achieved in 74.4% of new and relapsed cases, 40.4% of MDR TB cases notified in 2013, and 24.3% of XDR TB cases notified in 2012.

The estimated TB mortality rate in the EU/EEA was 0.9 deaths per 100 000 population in 2015, with approximately 4 000 deaths overall.

## Discussion

In 2015, the overall TB notification rate in the EU/EEA continued its decline observed since 2002. As in previous years, a small number of countries accounted for the vast majority of 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 [4].

In 2015, notification rates of MDR TB remained stable at a relatively low level, confirming the findings of a recent analysis of the 2007–2012 period [5].

Finally, treatment success rates have remained largely unchanged over the past 10 years at approximately 75%, with persistently poor outcomes for MDR TB cases. Yet, surveillance data suggest that treatment success rates for both MDR and XDR TB have improved over the past five years. The main predictor of treatment failure is drug resistance and associated factors such as relapse or history of previous treatment [6].

## Public health implications

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 and the analysis of data on social determinants routinely collected by national tuberculosis programmes could improve the efficiency of elimination programmes [7].

## References

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