

Rapid communications

TUBERCULOSIS IN THE EU AND EEA/EFTA COUNTRIES - WHAT IS THE LATEST DATA TELLING US?

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Since 1 January 2008, the European Centre for Disease Prevention and Control (ECDC) and the World Health Organization Regional Office for Europe (WHO/Europe) jointly coordinate the tuberculosis (TB) surveillance activities in Europe. The data collected provides an opportunity for a comprehensive analysis of the TB situation. We aimed at analysing the EU and EEA/EFTA data to identify general TB trends and to provoke some discussion regarding the challenges and needs for monitoring the epidemic.

Background

Since 1 January 2008, the European Centre for Disease Prevention and Control (ECDC) and the World Health Organization Regional Office for Europe (WHO/Europe) coordinate jointly the tuberculosis (TB) surveillance activities in Europe. The aim of this coordinated surveillance is to ensure a high quality of TB standardized data covering all 53 countries in the WHO European Region* and Liechtenstein. Designated national surveillance institutions are responsible for reporting the data. The surveillance data are submitted to and are validated in separate systems maintained by each organisation, which then feed into a joint database for the analysis.

The data provided by the 27 European Union (EU) Member States and three European Economic Area and European Free Trade Association (EEA/EFTA) countries (Iceland, Norway and Liechtenstein) provide an opportunity for assessing the TB epidemiological situation in more detail. In this paper we analyse in more detail the case-based data submitted to The European Surveillance System (TESSy) managed by the ECDC, including cases notified during 2007 and the updated data for treatment outcome monitoring for cases starting treatment in 2006.

The objective of this analysis is to identify general TB trends and to provoke some discussion regarding the challenges and needs for monitoring the epidemic that, despite a high level of heterogeneity among EU Member States, has shown a steadily declining trend over the past 10 years. To help understand better whether this decline is supported by other epidemiological indicators, a summary analysis of the case reporting, treatment outcomes and TB mortality, as well as trends in reported TB drug resistance, are presented.

TB case reporting and trends

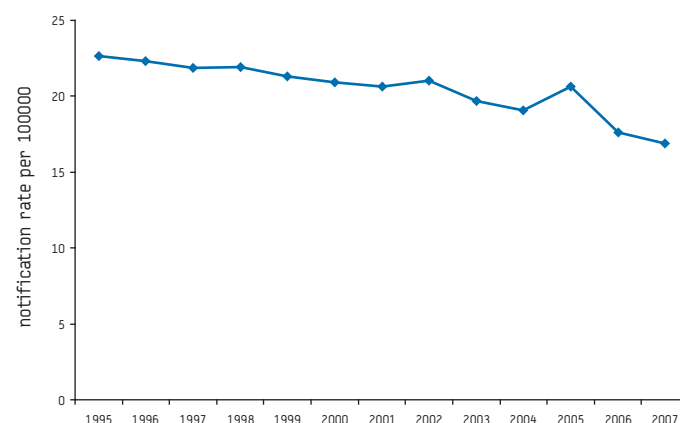
The 27 countries of the EU, plus Iceland, Norway and Liechtenstein reported 84,917 TB cases in 2007, representing

18% of the total number of cases in the WHO European Region (53 countries and Liechtenstein). TB notification rates were highest in Romania (118 per 100,000) and Bulgaria (40) – both countries joined the EU in 2007 – and in the Baltic States (range 36-71). The overall rate for the EU and EEA/EFTA countries was 17 per 100,000.

Between 2003 and 2007, the overall notification rates decreased by a mean of 3.8% annually (Figure 1). However, substantial increases were observed in Malta (+61% mean per year) and Iceland (+37% mean per year) while some increases were also reported in Ireland and Greece (+2%), United Kingdom (+3% mean per year) and Sweden (+5% mean per year), although in the latter two countries this trend has reversed in recent years.

Paediatric TB cases represented 4% of notified cases of both national and foreign origin. This proportion of TB cases in children has been stable for the last 10 years. In contrast, the middle-aged (45-64 years) and the elderly (>64 years) together represented

FIGURE 1
Trend of TB notification rate for the 27 EU and Iceland and Norway, 1995-2007



Source: EuroTB (up to 2006) and ECDC (from 2006). Population figures from EUROSTAT.
Note: LIECHTENSTEIN data not available for the whole period and therefore not included

more than half of the cases of national origin (natives) but only 28% of the cases of foreign origin.

Overall the trend of the proportion of TB cases attributable to foreign origin has remained stable over the period 2005, 2006 and 2007. However in the same period, a decrease of over 4% was recorded in Germany, Italy and Lithuania. In 2007, 21% of cases (range: 0-78% for all countries) were of foreign origin, two-thirds of whom originated from Asia or Africa and 6% from the former Soviet Union (FSU). Most cases of foreign origin were reported among younger adults, especially in the 25-44 year age group (53%).

Over the period 2003 to 2007, the rate of TB meningitis in children under 5 years remained below 1.0 per 10 million general population in most EU and EEA/EFTA countries. Rates above 1.0 for two consecutive years or more were reported by Austria (TB

case rate of 10.5/100,000 in 2007 for all forms of TB), as well as Lithuania, and Romania (total TB rates >30).

Treatment outcomes and mortality trends

In 21 countries with outcome data considered to be complete (for 2006), treatment success was reported in 80% of new definite pulmonary cases, representing a 7% increase from 2001 (Figure 2). The proportion of cases lost to follow up has decreased since 2001 but was more frequent among foreign-born cases than nationals (35% vs 16% respectively in 2006, all pulmonary cases) while death was less frequently reported (4% vs 8%).

In all EU countries, TB mortality rates have decreased or remained stable over recent years. A net decrease exceeding 10% per year over four consecutive years was observed in the Czech Republic, Finland, Greece, and Hungary.

TABLE 1

Tuberculosis cases, case rates per 100,000 population and mean annual change in rates, EU and EFTA/EEA countries, 2003-2007

Country	2003		2004		2005		2006		2007		Mean annual % change in rate, 2003-2007
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	
Austria	980	12.1	1,061	13.0	999	12.1	873	10.5	874	10.5	-3.1%
Belgium	1,117	10.8	1,198	11.5	1,107	10.6	1,127	10.7	1,028	9.7	-2.4%
Bulgaria	3,263	41.7	3,232	41.5	3,302	42.7	3,232	42.0	3,052	39.8	-1.1%
Cyprus	35	4.8	30	4.1	37	4.9	37	4.8	42	5.3	3.4%
Czech Republic	1,162	11.4	1,057	10.3	1,007	9.8	973	9.5	871	8.4	-7.2%
Denmark*	393	7.3	385	7.1	422	7.8	377	6.9	391	7.2	-0.2%
Estonia	623	46.0	594	44.0	519	38.6	455	33.9	487	36.3	-5.4%
Finland	412	7.9	331	6.3	361	6.9	299	5.7	313	5.9	-6.1%
France	6,098	9.8	5,514	8.8	5,374	8.6	5,336	8.4	5,588	8.8	-2.6%
Germany	7,166	8.7	6,542	7.9	6,020	7.3	5,402	6.6	5,020	6.1	-8.4%
Greece	620	5.6	774	7.0	769	6.9	681	6.1	659	5.9	2.0%
Hungary	2,582	25.5	2,340	23.2	1,964	19.5	1,894	18.8	1,752	17.4	-9.0%
Iceland	5	1.7	12	4.1	11	3.7	13	4.3	14	4.5	37.2%
Ireland	407	10.2	432	10.6	450	10.8	458	10.7	478	10.9	1.8%
Italy	4,518	7.8	4,220	7.3	4,137	7.1	4,387	7.4	4,527	7.6	-0.6%
Latvia	1,726	74.2	1,610	69.6	1,443	62.7	1,328	58.0	1,255	55.1	-7.1%
Liechtenstein	0	-	0	-	0	-	0	-	5	14.2	-
Lithuania	2,821	81.7	2,514	73.2	2,574	75.4	2,559	75.4	2,408	71.3	-3.2%
Luxembourg	54	12.0	31	6.8	37	8.0	33	7.0	39	8.1	-5.3%
Malta	7	1.8	19	4.7	25	6.2	30	7.4	38	9.3	61.4%
Netherlands	1,321	8.1	1,344	8.3	1,155	7.1	1,021	6.2	960	5.9	-7.7%
Norway	337	7.4	302	6.6	288	6.2	294	6.3	307	6.5	-2.9%
Poland	10,124	26.5	9,493	24.9	9,280	24.3	8,593	22.5	8,616	22.6	-3.9%
Portugal	4,148	39.7	3,854	36.7	3,573	33.9	3,423	32.3	3,127	29.5	-7.2%
Romania	31,039	142.8	31,034	143.1	29,289	135.4	27,319	126.5	25,491	118.3	-4.5%
Slovakia	983	18.3	705	13.1	760	14.1	730	13.5	682	12.6	-7.8%
Slovenia	293	14.7	263	13.2	278	13.9	215	10.7	218	10.8	-6.7%
Spain	7,467	17.8	7,766	18.2	7,820	18.0	8,029	18.2	7,767	17.3	-0.6%
Sweden	408	4.6	461	5.1	559	6.2	497	5.5	491	5.4	4.9%
United Kingdom	7,220	12.1	7,609	12.7	8,317	13.8	8,498	14.0	8,417	13.8	3.4%
Total	97 329	19.8	94 727	19.1	91 877	18.5	88,113	17.7	84,917	16.9	-3.8%

Drug resistance

Twenty nine countries, (all except Poland) reported resistance data for cases notified in 2007. Data from 22 countries that performed culture and Drug Sensitivity Testing (DST) routinely in 2007, or provided DST results as part of a national case-linked dataset, were considered to be representative. Multi-drug resistance (MDR) remained more frequent in the Baltic States, with the proportion of combined MDR cases (all MDR cases regardless of previous treatment history) ranging from 10 to 21%, than in the other countries (range: 0-4%). Rates have remained relatively stable over the past years in the Baltic countries and it remains to be seen if the recent decreases observed in Estonia and Latvia are

sustained. However a decrease in the trends of MDR-TB among re-treated cases is starting to appear in this region.

Conclusions

This data demonstrates that most countries of the EU and EEA/EFTA have continued to experience a steady decrease in the overall TB notification rate over the last few decades, even if this trend was briefly reversed in certain countries in the early 1990s. Several epidemiological indicators, such as age distribution, notifications of paediatric TB cases and paediatric TB meningitis trends suggest that the downward trend is real and sustained over the past five years. Additionally, TB mortality rates remain comparatively low.

However this picture should be interpreted with caution. It does not mean that TB is no longer a threat in this part of the world. A number of epidemiological challenges still exist and need to be addressed:

- Within the heterogeneous epidemiological setting described, the number of high/intermediate TB incidence countries remained the same. Serious attention to the evolution of the TB epidemic in these countries is needed.
- The quality of treatment monitoring and reporting remains quite poor and could hamper the effectiveness of TB control.
- Low incidence countries are experiencing a shift of the epidemic towards more vulnerable populations, particularly foreign-born.
- The quality of drug resistance testing and reporting needs to be assessed and further improved. As rates decline, the contribution of drug resistance in slowing down the declining trend of the epidemic will become increasingly important.

TABLE 2

Characteristics of tuberculosis data in EU & EFTA/EEA, 2007

	EU & EFTA/EEA	
	N ^b	
Total population (millions)	30	496.3
Demographic and clinical features of TB cases, 2007		
Total number of cases	30	84 917
TB cases / 100 000 population	30	16.9
Mean annual % change in notification rate (2003-2007)	30	-3.8%
Foreign origin	30	21%
Sex ratio (male to female), nationals	30	2.0
Sex ratio (male to female), foreign born / citizens	30	1.4
Age over 64 years, nationals	30	21%
Age over 64 years, foreign born / citizens	30	9%
Pulmonary disease	30	80%
Pulmonary sputum smear-positive cases / 100 000 population	30	6.7
Previously untreated (diagnosed) for TB	30	79%
Culture positive	30	45%
HIV infection among TB cases (latest available data 2003-2007)	20	2.6%
TB deaths / 100 000 (median, latest available rates 2002-2006)	26	0.9
Multidrug resistance (MDR), 2006^c		
Primary MDR (median)	19	1.5%
Nationals, combined MDR (median)	21	0.6%
Foreign-born/citizens, combined MDR (median)	20	3.9%
Outcome, new definite pulmonary cases, 2005^{c,d}		
Success (cure or treatment completion)	21	80%
Death	21	7%
Failure	21	2%
Still on treatment	21	2%
Loss to follow-up (default, transfer, unknown)	21	9%

^a Mean value unless otherwise indicated; for definition of geographic areas see Technical Note

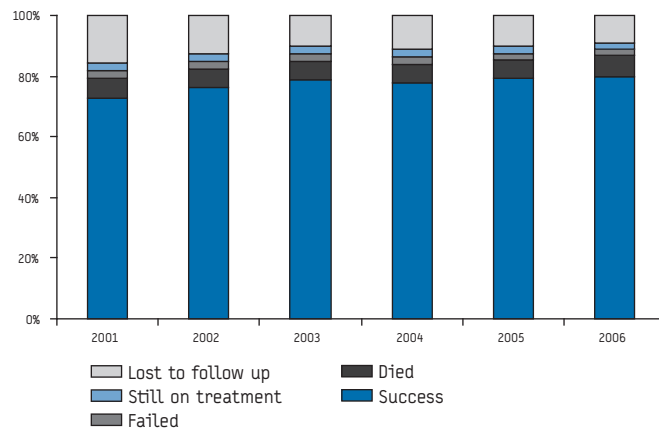
^b Number of countries with available data and included in the statistics. Liechtenstein is included in the report, but is only presented as EEA/EFTA country (it does not belong to WHO European Region)

^c Including only countries with complete/representative nationwide data (see Technical Note)

^d Among culture positive pulmonary cases in 21 EU/EEA/EFTA countries; in other countries defined by smear or combination of smear and culture Primary MDR: among previously untreated cases; Combined MDR: among all cases tested (see Technical Note)

FIGURE 2

Treatment outcome in previously untreated laboratory confirmed pulmonary cases, EU and EFTA/EEA countries 2001 – 2006



Data source: country reports from: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia and United Kingdom

- Certain epidemiological and surveillance patterns in selected countries need to be evaluated in more detail. This would include further assessment of sustained increases in paediatric cases and/or overall notifications.

Finally, the trend suggesting a slow but sustained decline in the TB epidemic in the EU, highlights the need to identify a valid impact target to assess the epidemiological progress of the TB prevention and control work.

Outcome and impact indicators for Global TB control are well defined and supported by the existence of the Millennium Development Goals for TB and the Stop TB Partnership Targets. However this framework for measuring quantitative progress towards elimination of tuberculosis at a global level has not proven to be an effective stimulus in low/intermediate incidence settings [1]. Additionally some intermediate/high incidence countries will find it very hard to achieve these targets as they have experienced increasing rates since 1990. The current definition of TB elimination within a population is an incidence rate of less than 1 case per million population per year. This is different when compared with other infectious diseases, where elimination is defined as the lack of active transmission within a population, a definition that more accurately indicates the ability to prevent disease from spreading in a given population [2]. It has, however, been argued that it might be unrealistic to apply such a definition for TB elimination.

This discussion is unlikely to meet expert consensus in the near future. However, the wealth of quality epidemiological information being collected should be carefully analysed and monitored to better understand and predict the direction of the TB epidemic in the EU & EEA/EFTA setting.

Finally it should be remarked that the threat of drug resistance remains ever real. Progress made by the Baltic States in dealing with this problem may provide an example that can be of use for countries outside the EU to study and adopt in such forum as the forthcoming WHO ministerial meeting in Beijing [3].

*Countries of the WHO European Region: Andorra, Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia & Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Macedonia FYR, Malta, Moldova, Republic of, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Turkey, Turkmenistan, Ukraine, United Kingdom and Uzbekistan.

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