

2. COMMENTARY

In 2002, 404,628 tuberculosis (TB) cases were notified by the 52 countries of the WHO European Region, representing 9.9% of notifications made to WHO worldwide in the same year [1]. TB surveillance data for 2002 and recent trends are presented and commented below in three geographic areas, which have changed from previous years to account for the enlargement of the European Union

(EU) in 2004 (see technical note, page 119). In 2002, 67% of TB notifications derived from the East (overall notification rate 97 per 100,000), 17% from the EU & West (rate 14 per 100,000) and 16% from the Centre (rate 54 per 100,000). The overall notification rate was 46 per 100,000 population, with a clear West–East gradient (Figure 1) and diverging trends (Figure 4).

Summary table. Tuberculosis surveillance data by geographic area, WHO European Region, 2002*

Table showing data by country	Enlarged European Union and West (32 countries)		Centre (8 countries)		East (12 countries)		Total (52 countries)	
	N†		N†		N†		N†	
Population (total, million)	-	32 473.9	8 120.8		12 281.0		52 875.7	
TB case notification								
Total number of cases	1	32 66 877	8 64 902		12 272 849		52 404 628	
Notification rate per 100 000 population	1	32 14.1	8 51.9		12 97.1		52 46.2	
Mean of annual changes in notification rate, 1998-2002	1	32 -4.0%	8 +0.2%		12 +5.8%		52 +2.7%	
Median age group (years)	2	32 45-54	7 35-44		11 35-44		50 35-44	
Age 0-14 years	2	32 4%	7 5%		11 5%		50 5%	
Age over 64 years	2	32 23 %	7 14%		11 6%		50 10%	
Sex ratio (M:F)	3	32 1.7	7 2.1		11 2.2		50 2.1	
Foreign origin	4	31 29%	6 0.5%		2 0.4%		39 7%	
History of anti-TB treatment or TB	7	32 10%	8 17%		11 14%		51 13%	
Pulmonary disease ‡	8	30 78%	5 88%		8 88%		43 85%	
Sputum smear positive among pulmonary	13	30 4%	5 53%		8 42%		43 45%	
Culture positive	10	32 5%	7 55%		2 11%		41 41%	
HIV-infected TB cases	14	17 6% §	1 0.5%		3 0.4%		21 5%	
AIDS defining TB / total TB cases	15	30 3%	8 0.2%		10 0.5%		48 1.2%	
Anti-TB drug resistancell								
Primary isoniazid resistance	19	20 10% ††	2 1%		1 43%		22 §§ 9%	
Primary multi-drug resistance	19	20 3% ††	2 0.4%		1 14%		22 §§ 3%	
Acquired isoniazid resistance	20	20 39% ††	2 4%		1 68%		22 §§ 35%	
Acquired multi-drug resistance	20	20 29% ††	2 2%		1 56%		22 §§ 26%	
Treatment success (2001)**								
New pulmonary cases ††	28,30	20 74%	4 75%		7 75%		31 75%	
Retreated pulmonary cases ††	29,31	20 57%	3 44%		7 61%		30 54%	

* Mean value except when otherwise indicated; for definition of geographic areas see technical note.

† Number of countries with available data and included in the statistics

‡ Countries using the pulmonary classification (see technical note)

§ 2002 or latest available year (1999-2001)

|| Countries providing representative nationwide data (group A, see technical note); totals do not include data from the East (sample survey)

** Cure or treatment completion; countries providing data on nationwide complete cohorts (group A, see technical note)

†† EU & West: culture positive cases; Centre & East: smear positive cases

‡‡ Mean prevalence much higher in the Baltic States than in the other countries (see Tables 19-20)

§§ Not including the East

2.1 European Union and West (EU & West)

Tuberculosis case notification

In the 32 countries of the EU & West, 66,877 TB cases were notified in 2002, for an overall rate of 14 cases per 100,000 population. Rates were lower than 10 per 100,000 in 17 countries and were higher than 20 in the three Baltic States (Lithuania: 82; Latvia: 80; Estonia: 53), Portugal (46), Hungary (30) and Poland (27) (Table 1, Figure 1). The overall TB notification rate in 2002 was higher in the 10 countries which joined the EU in 2004 (28.9 per 100,000) than in the 15 previous EU countries (11.5 per 100,000), resulting in a 25% increase of the overall rate in the enlarged EU (14.4 vs. 11.5 per 100,000).

The overall notification rate in 2002 was 22% lower than in 1995. Average annual rates decreased between 1998 and 2002 in all countries except Belgium, Norway, the Netherlands and the United Kingdom (Figure 5). The average annual decrease between 1998 and 2002 (-4.0%) was greater than that observed between 1995 and 1998 (-2.8%), and between 1990 and 1995 (-0.1%). Most countries with decreasing notification rates between 1998 and 2002 had a decline in notification rates or stabilisation at low levels in the age groups 0-14 and 15-44 years (country profiles), suggesting decreasing or low level transmission in these age-groups.

In most countries, trends in numbers of cases differed markedly by geographic origin (Table 5). In 16 countries with consistent data between 1996 and 2002, average annual decreases in the numbers of cases were more marked in nationals (-7.0%) (ie cases born in or citizens of the country of report) than in foreigners (-0.6%) (ie cases born outside or not having citizenship of the country of report), resulting in an increase in the proportion of cases in foreigners from 29% to 36% (Figure 7). In 2002, in 13 countries providing population estimates by origin, age-specific notification rates in nationals increased progressively with age and were highest over 64 years (11.9 per 100,000), while in foreigners rates peaked in the age-group 25-34 years (85 per 100,000) and then increased again in the elderly (Figure 3). In these countries, overall rates were ten times higher in foreigners than in nationals (55.0 versus 5.4 per 100 000) and rate ratios ranged from 2 to 36 between countries. This wide variation reflects different migration patterns, and possibly also differences in demographic statistics by geographic origin, a factor which limits comparability of rates. Twenty-nine percent of cases in 2002 were

foreigners, reaching 40% or more in ten countries (Table 4, Figure 2). Among foreigners, 39% were from Africa, 28% from Asia (16% from the Indian subcontinent), 20% from the other areas of the WHO European Region (Centre or East), and 5% from a country of the EU & West other than the country of notification (Table 6).

Overall, 78% of cases had a pulmonary localisation (range: 62 – 100%) (Table 8), and 44% of them were sputum smear positive (Table 13; excluding Spain, respiratory classification). Extra-pulmonary TB represented 21% of cases overall and was more frequent in foreigners than in nationals (32% versus 20% respectively, individual data, not shown). Culture confirmation (Table 10) varied widely across countries (mean: 50%; range: 29%-100%), with higher proportions in the 16 countries with laboratory reporting of TB cases than in the 11 countries with no laboratory reporting (58% versus 41%). It was more frequent in pulmonary cases than in extra-pulmonary cases (54% versus 29% respectively, Table 11). Species identification, available for 19 countries (Table 12), showed *M. tuberculosis* in 90.3% of culture positive cases, *M. bovis* in 0.5% and *M. africanum* in 0.2% of the cases while in 9% species was unknown.

Tuberculosis and HIV infection

Aggregate data on HIV serostatus of notified TB cases in recent years, derived from TB notification forms or from matching of TB and HIV case reporting data sets, were provided by 17 of 27 countries participating in a specific survey (Table 14). In 2001 or 2002, the estimated proportion of TB cases tested for HIV ranged very widely across countries from 4% to 100% (median: 39%), reflecting differences in testing policies. In the latest available year, HIV prevalence in TB patients was less than 1% in five of the new EU countries, 1-6% in seven countries and highest in Spain (12%) and in Portugal (15%), the western European countries where AIDS incidence rates (Table 15) and HIV prevalence in the general population are highest. An increase in HIV prevalence was observed in Estonia (from 0.1 in 1998 to 2.8% in 2002) and in Latvia (from 0.5 to 1.4%), reflecting recent HIV epidemics [2].

In European AIDS reporting data for 2002 (source: EuroHIV), TB was reported as initial AIDS-indicative disease in 2,756 of 11,501 AIDS cases in the EU & West (24%) (Table 15). AIDS cases with TB as initial AIDS indicative disease represented 3.3% of total TB cases notified in 2002, with highest proportions in

Portugal (9.9%) and Spain (8.3%, pulmonary TB). Both TB and AIDS notification data represent underestimates of HIV-associated TB (see technical note).

Anti-tuberculosis drug resistance

Data on anti-TB drug resistance surveillance (DRS) in 2002 were available for 28 countries in the EU & West. Drug susceptibility testing (DST) was performed in a laboratory abroad in Cyprus, Iceland and Malta, in a single national laboratory in eight countries, in 2-10 laboratories in 10 countries, 11-20 in six countries, 70 in Germany, 120 in France and over 200 in Italy (Table 16). In 16 countries, more than one DST method was used. Radiometric and non-radiometric proportion methods were used in 21 and 17 countries respectively, including Mycobacteria Growth Indicator Tube (MGIT) or MB/BacT in nine countries. Resistance ratio (3 countries) and absolute concentration (5 countries) were less commonly used.

National external quality assurance (EQA) for DST existed in 9 of the 20 countries with more than one laboratory performing DST (limited to the DRS network in Italy) and showed at least 90% concordance for rifampicin (RMP) and isoniazid (INH) in 146/151 participating laboratories overall (not shown). In 22 countries, the national reference laboratory (NRL) had participated in international EQA for DST in the period 2001-2003. Concordance with the supranational laboratory was 100% for INH and RMP in 15 countries, and lower (87-97%) for one or both drugs in six countries.

Of the 28 countries providing DRS data, 21 were classified in **group A**, and seven in **group B** (technical note, Table 17). In group A, data from United Kingdom were not linked with TB case notifications. In the 20 other countries, culture positive cases represented a median of 65% of notified cases (range: 45-100%). DST results were available for 90% of culture positive cases, with highest proportions of cases with missing information in the Czech Republic (33%), Ireland (27%), Belgium (21%), and Lithuania (13%). The prevalence of total, primary and acquired drug resistance for each drug, and of multidrug resistance (MDR), was much higher in the Baltic States than in the other 17 countries (Tables 18-20). Among new cases, the prevalence of primary isoniazid (INH) resistance was almost five times higher in the Baltic States (25.1%) than in the other countries (5.5%) and MDR was nine times more frequent (10.8% vs 1.2%). Similar differences were observed for acquired resistance among cases previ-

ously treated, of which 47.8% were MDR in the Baltic States compared with 7% in the other countries.

In the Baltic States, the prevalence of resistance did not differ significantly by geographic origin, most foreign-born cases being from other countries of the former Soviet Union (FSU) (Tables 23-24). In the other countries, the prevalence of drug resistance was higher among foreigners (MDR: 3.0%) than among nationals (0.7%). Among foreigners, prevalence was much higher in cases from the FSU (12.7%) - who accounted for 42% of all notified MDR-TB cases - than in cases from Africa (2.2%) or from the rest of Asia (1.3%).

In most of the 21 countries with at least three years of comparable DRS data between 1998 and 2002, trends in the prevalence of INH resistance and MDR were relatively stable when analysed by treatment history (Tables 21-22, country profiles) and geographic origin (Tables 25-26) and did not reach statistical significance (χ^2 test for trend). An increase of primary INH resistance was observed between 1998 and 2001 in the United Kingdom, associated with a large INH resistant TB outbreak in the London area [3]. In Israel, levels of primary drug resistance decreased sharply after a peak in 2000, which was associated with large immigration flows from Eastern Europe [4, 5].

DST data from seven additional countries were considered non-representative and classified in **group B**. In Cyprus, Hungary and Portugal, DST results were matched to TB notifications but the proportion of culture positive cases was low and/or DST result were available for less than 50% of these cases. In France DST data from a well-established network of teaching hospital laboratories show low prevalence of primary resistance [6], confirmed by exhaustive surveys of multidrug resistant isolates [7] but the representativeness of this network has not been formally assessed. In Italy, DST data are collected from selected laboratories in several regions including a large reference Centre for treatment of drug-resistant cases [8]. In Spain DST data are available on cases with isolates referred to the NRL. In Greece, culture and DST are not routinely used and DST data, provided from laboratories, represent diagnostic testing of selected cases and are not matched to TB notifications.

Treatment outcome

Data on treatment outcome monitoring (TOM) for 2001 were provided by 24 countries in the EU & West

(Table 27), an increase of four countries from 2000. In 21 countries TOM data were available for complete cohorts of notified pulmonary culture positive and/or smear positive TB cases notified (group A, technical note). Cohorts were incomplete in Denmark and in the United Kingdom, where cases with missing information on outcome were excluded from cohorts, and were collected from a small convenience sample of clinical centres in Italy (group B) [9]. Culture positive cohorts were larger than smear positive cohorts (mean ratio: 1.5) and had comparable success ratios overall. In new culture positive cases (Table 30), success ratios were 85% or higher in six countries, 74-80% in seven countries and lower than 70% in seven countries, mainly due to high proportions of cases with unknown outcome (over 10% in 5 countries). Death was reported in 7% of new cases (range: 0-14%). This wide range may be due differences in the proportion of elderly cases, which have much higher mortality ratios, co-morbidity, including HIV, or completeness of reporting of post-mortem diagnoses of TB. Failures represented 1% of the cases, ranging from zero in 12 countries to 10% in Hungary, while defaults represented 5% (range: 0-14%). The newly introduced category "still on treatment" represented 3% of cases overall, with highest proportions in the Baltic States (range: 7-11%, mainly MDR-TB cases) and in Hungary. In countries with low prevalence of drug resistance, treatments longer than 12 months may reflect non-standard care practices or the lack of follow-up information on bacteriology results needed to define failure.

Among retreated cases (Table 31), the overall success ratio was 57%, lower than among new cases. Deaths (10%), failures (4%) and still on treatment (10%) were more frequently reported than among new cases, due to the higher prevalence of drug resistance in this group and to the longer duration of re-treatment regimens. High proportions of defaulters (11%) and of cases with missing outcome information (6%) contributed to lower success ratios.

2.2 Centre

TB case notification

In the eight countries of the Centre, 64,902 TB cases were reported in 2002, of which 53% from Romania and 29% from Turkey. The TB notification rate was 52 per 100,000 population overall, and ranged from less than 30 per 100,000 in Albania, Serbia & Montenegro and Turkey to a very high rate of 153 per 100,000 in Romania. Between 1998 and 2002,

notification rates decreased on average by 3-9% yearly in five countries, stabilised in Serbia & Montenegro and increased in the F.Y.R. of Macedonia (4%) and in Romania (8%) (Figure 5). In Romania, the very high notification rates in all age groups indicate persisting high level of TB transmission, making this country distinct from others in the Centre. The sustained increase in rates may partly be explained by increasing proportions of cases diagnosed clinically and increasing inclusion of re-treatment patients. In Bulgaria and in Turkey, the amount of TB surveillance data available remains insufficient to assess the TB situation (country profiles).

The proportion of paediatric TB cases (0-14 years) was 5% overall and was highest in the FYR of Macedonia (17%) and in Albania (8%), suggesting over-notification of paediatric TB in these countries (Table 2). Excluding Romania and Turkey, age specific rates among adults increased markedly in men but less so in women, resulting in large sex differences in the middle age groups. Apart from Bulgaria, countries with decreasing total notification rates between 1998 and 2002 (Figure 5) also reported a decline in rates in the under-45 population (country profiles), suggesting decreasing transmission in recent years.

In the five countries using the pulmonary classification, pulmonary cases represented 88% of cases (range 67-90%), of which 53% were sputum smear positive. Over half of the total cases were culture confirmed, except in Albania (38%), the FYR of Macedonia (19%) and Turkey (no data).

Tuberculosis and HIV infection

In the Centre, HIV prevalence and AIDS incidence are low in the general population [2]. HIV prevalence data for notified TB cases were provided only from Albania (0.5% in 2002, Table 14), whereas TB data from AIDS notification were available for all countries (Table 15). Among the 399 AIDS cases notified in 2002 in the Centre, the mean proportion of cases with TB as initial AIDS indicative disease was 26% (range: 0-33%). AIDS cases with TB as initial AIDS indicative disease represented only 0.2% of all TB notifications in 2002.

Anti-tuberculosis drug resistance

Apart from Turkey, all countries in the Centre provided DRS data for 2002. Albania, Bosnia & Herzegovina, Croatia and Romania participated in international EQA for DST (Table 16). Only DRS data from

Bosnia & Herzegovina, limited to the Federation of Bosnia in 2002, and from Croatia were classified in group A (Table 18). Drug resistance levels were low in both countries, in the range of those reported from EU countries other than the Baltic States, and stable between 1998 and 2002. Among countries in group B, data from Serbia & Montenegro, linked to TB notifications but limited to the region of Belgrade, showed low level of resistance. Diagnostic DST data from Albania, Bulgaria and the FYR of Macedonia, were not representative of the national situation, as culture and/or DST are not routinely used for TB diagnosis. In Romania, where a nationwide representative survey was implemented in 2003-2004 (results not yet available), DST data were provided only for 25% of culture positive cases notified and are not presented.

Treatment outcome

TOM data for TB cases notified in 2001 were provided on complete cohorts from Albania, FYR of Macedonia, Romania and Turkey (group A, Table 27). Success ratios in new smear positive cases were higher than 85% in Albania and the FYR of Macedonia, where very few deaths were reported suggesting underreporting of cases diagnosed post-mortem or who died before treatment; 75% in Romania (where 7% of cases failed) and 72% in Turkey (where 9% of the cases were reported as still on treatment) (Table 28). Data for retreated cases (Table 29) were not available for Turkey. In the other countries, success ratios were much lower than for new cases, with higher proportions of defaulters and, in Romania, 17% failures, a finding deserving further investigation. In group B, data from Serbia & Montenegro were limited to the region of Belgrade and data from Bulgaria were provided for DOTS areas only.

2.3 East

TB case notification

In 2002, 272,849 cases were reported from the East, of which 49% from the Russian Federation, ranking as fifth country worldwide in absolute number of TB notifications in 2002 [1]. The mean TB notification rate in the East was 97 cases per 100 000 population, with rates higher than 100 per 100,000 in Kazakhstan (213), Kyrgyzstan (134), Georgia (123) and Uzbekistan (105) (Table 1). Notification rates were 70% higher in 2002 than in 1995. The increasing incidence in countries of the East contributed substantially to the absence of a decline of tuberculosis in recent years in the whole world [10]. The mean annual increase in rates was 6% between 1998 and 2002

(Figure 5), down from 11% between 1995 and 1998. Average increases in rates in the most recent years were lower than those between 1995 and 1998 in all countries except the Republic of Moldova, Tajikistan and Uzbekistan. Between 1998 and 2002 rates stabilised in Armenia, Belarus and Georgia.

Paediatric TB cases represented more than 10% of cases notified in Turkmenistan and Uzbekistan, suggesting over-notification of paediatric TB (Table 2). Higher rates in children 5-14 years than in younger children in several countries also suggests relative over-reporting in the age group 5-14 years (country profiles). The age group 15-44 years accounted for 63% of the cases notified, while only 6% of the cases were aged over 64 years. Rates were highest in the age group 25-34 years in women and 25-54 years in men (Figure 6). The peak in notification rates in young adults indicates high levels of recent transmission. Between 1999 and 2002, age specific TB notification rates increased in the age-group 15-44 years in Kazakhstan, the Rep. of Moldova, Tajikistan and Ukraine, but decreased in the Russian Federation. On the other hand, in countries with available data, rates in children tended to be more stable.

Trends in the East have to be interpreted with caution, as in several countries TB notification has been variably affected by global changes in health and in TB control systems since the early 1990s. TB cases diagnosed in specific population groups (e.g. prisoners in the Russian Federation since 1998), and retreated cases other than relapses (e.g. Uzbekistan since 2002) were increasingly notified while 'case detection' increased in the context of expanding DOTS implementation in some countries (e.g. Tajikistan).

In 2002, 88% of cases in the East were pulmonary (range: 79-96%), and 42% of pulmonary cases were sputum smear positive (33-48%). Culture results were only available from Azerbaijan and Kazakhstan. The use of culture is still limited in several countries due to financial/logistic reasons, preference of direct microscopy (as in countries implementing DOTS) or radiology-based diagnosis. TB notification systems in this area do not yet collect information on culture results or are still unable to distinguish between cases confirmed by direct microscopy or by culture, still reported together as 'BK+'.

Tuberculosis and HIV infection

In the East, information on HIV serostatus of notified TB cases was provided from three countries showing HIV prevalence below 1% (Table 14). AIDS report-

ing data for 2002 were not available from Kazakhstan and the Russian Federation (Table 15). In the other 10 countries, a total of 1,501 AIDS cases were reported in 2002, of which 1,385 (92%) from Ukraine. Among AIDS cases, 721 (48%) were reported without information on initial AIDS indicative diseases and 487 (32%) had TB. TB as initial AIDS indicative disease represented 1.1% of total TB cases in Ukraine and less than 0.5% in the other countries.

The high TB morbidity among AIDS cases may reflect a high prevalence of TB infection in the HIV-infected population, earlier appearance of TB over other AIDS-defining diseases in countries with recent HIV epidemics or easier diagnosis compared with other AIDS-indicative diseases. On the other hand, low absolute numbers of AIDS cases reported with TB may also be due to AIDS underreporting. Overall, HIV/TB surveillance data available in the East are insufficient to monitor the overlap between the two epidemics, expected to increase both TB and MDR-TB case load in the coming years [11].

Anti-tuberculosis drug resistance

In the East, seven countries provided DRS data for 2002. Participation in international EQA activities was only reported from Kazakhstan (Table 16). DRS data were provided from seven countries (Tables 17-19). Data from a nationwide representative survey done in Kazakhstan in 2001 [12] were classified in **group A**. In this survey, 42.6% of new cases were resistant to INH and 14.2% were MDR (67.7% and 56.4% respectively among retreated cases), a situation comparable to that in the Baltic States. Data from diagnostic DST at the start of treatment, done for selected TB cases, were provided from Kazakhstan and from six other countries and were classified in **group B**. These data add to existing evidence that drug resistance is highly prevalent in most countries of the former Soviet Union [12-14].

Treatment outcome

In the East, seven countries provided TOM data on complete 2001 cohorts of smear positive cases (**group A**) and three for DOTS areas (**group B**). In group A (Table 28), the success ratio among new cases was 75% overall (range: 64-81%). In the Republic of Moldova, outcomes other than treatment completion were only reported from DOTS areas (19% of cases), which explains the high proportion of unknown outcomes, a category not reported from the other countries in the East. In the other countries, 5% of cases died range (2-14%) and 11% failed (range: 6-12%). The higher proportions of failures compared to the other areas of the Region may

indicate poor compliance (not qualifying as default) or low effectiveness of initial regimens due to drug resistance or poor drug quality. Among retreated cases (Table 29), the average success ratio was 62%, while 10% of cases died and 14% failed. Compliance to newly introduced outcome categories was low, with only one country reporting the category still on treatment and two countries reporting the category still on treatment and two countries reporting the category unknown.

2.4 Conclusions and recommendations

TB surveillance data presented in this report depict an increasingly diversified picture of TB epidemiology, indicating the countries of the former Soviet Union as the priority area for TB control in Europe. In the East, TB notification rates continue to increase in most countries and are highest in young adults indicating high levels of transmission. However, recent trends are difficult to interpret, as in many countries TB notification has become more complete after the mid 1990s and the wider implementation of the recommended DOTS strategy [15] and increased funding of TB control programmes may have resulted in more complete enrolment of patients. TB/HIV surveillance data are insufficient to detect the feared impact of spreading HIV epidemics on TB incidence. Drug resistance data remain very incomplete but suggest that MDR-TB is highly prevalent throughout the area, which may contribute to the high proportions of failures observed (11% in new cases). The improvement of surveillance and programme monitoring should be considered essential components of a more effective approach to TB control.

In most countries of the enlarged European Union, TB incidence is decreasing while cases in migrants from high incidence areas represent an increasing proportion of cases. With the notable exception of the Baltic States, the prevalence of anti-TB drug resistance remains low, suggesting that TB control efforts have prevented its emergence on a large scale. Migrants from the FSU carry a disproportionately high risk of MDR-TB. HIV prevalence in TB patients is higher in countries with higher HIV prevalence in the general population, and it is increasing in the Baltic States. AIDS notification data indicate that AIDS-associated TB represents a non-negligible proportion of TB incidence. Treatment success remains below global targets in most countries, as a result of high mortality in the elderly and incomplete information. The collection of individual TOM information, piloted in 2003, will enable more appropriate

analysis of this core indicator of the effectiveness of TB control efforts. TB prevention and control need to be strengthened in the EU, and to be targeted to high risk population groups, including migrants from high incidence areas, HIV infected individuals and the elderly. Geographic distribution within countries needs also to be addressed, as incidence is higher than national average in several metropolitan areas, where risk factors for TB concentrate and specific approaches are required [16].

European consensus papers [17-19] and collaborative actions including EuroTB have been instrumental in driving standardisation of surveillance at the European scale. The number of countries providing information on TB cases notified, on drug resistance and treatment outcome, based on standardised definitions has been steadily increasing over the years. However, efforts are still required to improve the quality of currently available data. The following aspects are highlighted:

- Further national uptake of agreed European definitions should be promoted to enable more reliable international comparisons.
- A computerised individual TB case reporting data set containing the recommended essential variables, already provided to EuroTB by 29 countries, should be available at national level in all countries and shared at European level.
- Laboratory reporting of TB cases should complement clinician reporting in all countries, to improve completeness of reporting and information on laboratory evidence of diagnosis. This should be accompanied by wider quality assurance of laboratories.
- Drug resistance surveillance should be implemented in all countries, using either ongoing collection of initial DST results for all cases, which proves feasible in most countries of the EU, or periodic prevalence surveys [20].
- Treatment outcome monitoring should be implemented in all countries and specific indicators developed to monitor trends in treatment results.
- The surveillance of HIV prevalence among TB patients should be improved by using information available at national level through TB, HIV and AIDS case reporting and by conducting HIV prevalence surveys in areas with high or increasing HIV prevalence [21].

European TB surveillance data should be adapted in the near future to improve the description of risk groups for TB and the assessment of programme performance, and to take into account recent advances in diagnostics (e.g. DNA-based tests).

2.5 References

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