

## 2. COMMENTARY

In 2003, 415,786 tuberculosis (TB) cases were notified by the 52 countries of the WHO European Region, representing 8.7% of notifications made to WHO worldwide in the same year [1]. The overall notification rate was 47.2 per 100 000 population, with increasingly diverging trends across the three geographic areas (Map 1, Figure 3). In 2003, 70%

of all TB notifications derived from the East (overall notification rate: 103.6/100,000), 15% from the Centre (48.6 per 100,000) and 15% from the EU & West (13.6 per 100,000). TB surveillance data for 2003 and recent trends are presented and commented below according to three geographic areas (see technical note).

Summary table. Tuberculosis surveillance data by geographic area, WHO European Region, 2003 \*

Table showing data by country	Geographic area								
	European Union and West		Centre		East		Total		
	N <sup>†</sup>		N <sup>†</sup>		N <sup>†</sup>		N <sup>†</sup>		
Total population (millions)	-	32 474.7	8 125.9	12 280.3	52 880.8				
<b>TB case notification</b>									
Total number of cases	1	32 64 434	8 60 957	12 290 395	52 415 786				
Notification rate per 100 000 population	1	32 13.6	7 48.6	12 103.6	51 47.2				
Mean annual change in notification rate, 1999-2003	1	32 -3.8%	7 -0.2%	12 +4.5%	51 +2.1%				
Median age group (years)	2	31 45-54	7 35-44	10 25-34	48 35-44				
Age 0-14 years	2	31 4%	7 5%	10 7%	48 6%				
Age over 64 years	2	31 23%	7 14%	10 7%	48 13%				
Sex ratio (male to female)	3	31 1.7	7 2.0	11 2.2	49 2.1				
Foreign origin	4	30 31%	7 0%	7 0%	44 6%				
Previous history of anti-TB treatment or TB	7	31 10%	8 13%	11 20%	50 18%				
Pulmonary disease ‡	8	29 77%	6 81%	9 94%	44 89%				
Sputum smear positive among pulmonary	13	29 43%	6 50%	9 39%	44 42%				
Culture positive	10	31 55%	6 21%	2 4%	39 18%				
HIV co-infection §	14	19 4.4%	2 0.5%	4 0.6%	25 2.3%				
AIDS cases with AIDS-defining TB / total TB cases	15	30 3.0%	8 0.1%	11 0.9%	49 1.2%				
<b>Anti-TB drug resistance, 2003 ¶</b>									
Isoniazid resistance, new cases (median)	21	18 6.9%	2 1.7%	0 -	20 6.7%				
Multi-drug resistance, new cases (median)	21	18 1.3%	2 0.3%	0 -	20 1.2%				
Isoniazid resistance, retreated cases (median)	22	18 16.5%	2 8.8%	0 -	20 12.3%				
Multi-drug resistance, retreated cases (median)	22	18 6.3%	2 2.5%	0 -	20 5.4%				
<b>Outcome, new definite pulmonary cases, 2002 ¶¶</b>									
Success (cure or treatment completion)	29	23 74%	5 81%	4 75%	32 77%				
Death	29	23 7%	5 4%	4 4%	32 5%				
Failure	29	23 1%	5 5%	4 10%	32 5%				
Still on treatment	29	23 3%	5 0%	4 0%	32 1%				
Other (default, transfer, unknown)	29	23 14%	5 10%	4 13%	32 12%				

\* Mean value except where 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)

§ Latest available data point (1999-2003)

¶ Countries with representative nationwide data (see technical note)

¶¶ Countries with nationwide complete cohorts (see technical note); EU & West: culture positive; Centre: culture or smear positive see Table 28; East: smear positive

## 2.1 European Union and West (EU & West)

### 2.1.1 Tuberculosis case notification

In 2003, 64,434 TB cases were notified in the EU & West, for an overall rate of 13.6 cases per 100,000 population. Rates were lower than 10 per 100,000 in 16 countries and higher than 20 per 100,000 in the Baltic States - Lithuania (82), Latvia (75), Estonia (47) - Portugal (41), Hungary (28) and Poland (26) (Table 1, Map 1). Paediatric cases (0-14 years) represented 4% of cases, while 46% of cases were aged 15-44 years, 27% were 45-64 years and 23% were over 64 years of age (Table 2). The overall male to female sex ratio was 1.7 and tended to be higher in countries with higher notification rate (Table 3). Geographic origin was not reported by Monaco and Poland. In the other countries, geographic origin was missing in 10% of cases while 59% were born in or citizens of the country of report (nationals) and 31% were of foreign origin, reaching 40% or more in 15 countries (Table 4, Map 2). Among them, 32% were from Africa, 30% from Asia (21% from the Indian subcontinent) and 25% from the Centre or East of the WHO European Region (Table 6, data from 25 countries).

In 13 countries providing recent population estimates by origin, the notification rate in the population of foreign origin was over tenfold that in nationals (57.0 versus 5.1 per 100,000), and the overall rate ratio ranged widely from 1.4 to 52.9 across countries. These variations reflect differences in migration patterns, but also the accuracy of demographic statistics by geographic origin which thus limits comparability. Age-specific notification rates in nationals increased progressively with age and were highest in cases aged over 64 years (11.1 per 100,000), while in the population of foreign origin rates peaked in the age-group 25-34 years (88.0 per 100,000) and then increased again in the elderly (Figure 7).

In 2003, 76% of the cases had no history of anti-TB treatment (new cases), 10% had a previous history of anti-TB treatment or a history of TB without information on treatment, and 14% were notified without information on previous TB history (Table 7). Excluding Spain (only respiratory or meningeal disease notifiable), 77% of the cases had pulmonary disease (range: 57 - 94%) (Table 8), and 43% of them were sputum smear positive (Table 13). Exclusive extra-pulmonary TB was more frequent in cases of foreign origin than in nationals (33% versus 20% respectively, individual data, not shown). In 20 countries with detailed site of disease, 2% of the cases had a meningeal

localisation or disseminated disease (Table 9). Culture confirmation (Table 10) varied widely across countries (mean: 55%; range: 33%-100%) and was more frequent among pulmonary cases (61%) than among extra-pulmonary cases (38%) (Table 11). No information on culture was given in 23% of cases notified, while 10 countries had 20% or more of cases reported as culture negative. Species identification (23 countries) showed *M. tuberculosis* in 80.1% of culture positive cases, *M. bovis* in 0.3% and *M. africanum* in 0.3%, while in 19.3% species was unknown (Table 12).

The overall notification rate in 2003 was 22.7% lower than in 1995. In 28 countries with uninterrupted data since 1991 (excluding Andorra, Greece, Monaco and San Marino), the average annual decrease in rates between 1999 and 2003 (-3.7%) was similar to that observed between 1995 and 1999 (-3.3%), but greater than that between 1991 and 1995 (-0.1%). Average annual rates decreased between 1999 and 2003 in all countries except Italy, Norway, and the United Kingdom (Figure 6). Most countries with decreasing notification rates had a decline in notification rates or stabilisation at low levels in the age group 0-14 years (country profiles), suggesting decreasing or low levels of transmission. Between 1997 and 2003, notification rates decreased by 5% between the ages 15 to 34 - where half the cases were of foreign origin in 2003 - but dropped much faster in the rest of the population (-26%) (Figure 8). The median age of cases in 2003 was substantially higher in nationals than in cases of foreign origin (54 and 32 years respectively).

In most countries, time-trends in the number of cases differed markedly by geographic origin (Table 5). In 15 countries with consistent data, between 1996 and 2003 the average annual decrease in the numbers of cases was more marked in nationals (-7.0%) than in cases of foreign origin (-0.5%), resulting in an increase in the proportion of cases of foreign origin from 29% to 39% (Figure 4).

### 2.1.2 Tuberculosis and HIV infection

Aggregate data on HIV sero-status of TB cases notified in recent years, were available for 19 countries (Table 14). Completeness of information varied widely due to differences in testing policies and in data collection (only HIV-positive cases being reported in some countries). The proportion of HIV-positive TB cases for the latest available year (1999-2003) was lower than 0.4% in Andorra, Czech Republic, Lithu-

ania, Poland, Slovakia and Slovenia, and highest in Spain (9.6%) and Portugal (16.2%), the European countries having the highest AIDS incidence rates (Table 15) and an adult HIV prevalence of 0.4% or more [2]. The proportion of HIV positive TB cases was relatively stable in recent years in most countries but increased in Estonia (from 0% in 1998 to 2.9% in 2003) and Latvia (from 0.5% in 1999 to 2.3% in 2003), where the spread of HIV is more recent than in Western Europe [3]. An upward trend was also observed in Belgium and Israel ( $P < 0.05$ ).

TB was reported as initial AIDS-indicative disease in 2,273 (23%) of 9,827 AIDS cases notified in 2003 (Table 15). No data on AIDS-indicative TB were available from the Netherlands. AIDS cases with TB as initial AIDS-indicative disease represented 3% of all TB cases notified in 2003, with highest proportions in Portugal (10.4%). When adjusted for reporting delays, annual numbers of AIDS cases with TB as initial AIDS-indicative disease decreased from 3,238 in 1997 to 2,155 in 2001 and stabilised thereafter (Table 16).

It should be noted that data on HIV-associated TB obtained from both TB and AIDS notification are underestimated, as reporting of HIV sero-status of TB cases is incomplete and TB occurring after initial AIDS diagnosis is not reported to AIDS notification systems.

### *2.1.3 Anti-tuberculosis drug resistance*

Data on anti-TB drug resistance surveillance (DRS) for 2003 were available from 29 countries. Drug susceptibility testing (DST) was performed in one or two laboratories in seven countries, in 3-10 laboratories in eight countries, 11-20 in five countries, 70 in Germany, 120 in France and over 200 in Italy (Table 18). In 19 countries, more than one DST method was used. Non-radiometric method on Lowenstein-Jensen media and radiometric proportion method were used in 18 and 14 countries respectively, resistance ratio in three countries and absolute concentration in four countries. Rapid methods, (Mycobacteria Growth Indicator Tube (MGIT®) and MB/BacT®) were used in 11 countries.

National external quality assurance (EQA) existed in 12 of the 21 countries with more than one laboratory performing DST, and included all or most laboratories participating in DRS. Concordance for isoniazid (INH) and rifampicin (RMP) was 90% or more in 179/185 participating laboratories overall (not shown). Apart

from Luxembourg and Greece, all national reference laboratories (NRL) had participated in international EQA for DST in the period 2002-2004. Concordance with the supranational laboratories was 100% for both INH and RMP in 12 countries, and lower for one drug (80-95%) in nine countries.

In 18 countries providing DRS data for 2003, culture confirmation was reported in more than 50% of TB cases (median: 76%; range: 57-100%) and DST results were available for over 80% of them (median: 99%; range: 82-100%) (group A, Table 19). Drug resistance was much higher in the Baltic States than in the other 15 countries (Table 20, Figure 9). Combined INH resistance and combined multi-drug resistance (MDR) were 34% (range: 31-36%) and 19% (15-23%) respectively in the Baltic States and 7% (1-18%) and 2% (0-6%) in the other countries excluding Iceland. In nearly all countries, proportions of resistant cases were higher in previously treated cases than in new cases (Tables 21-22) and in cases of foreign origin than in nationals (Tables 25-26). In the Baltic States, most foreign-born cases were from other countries of the former Soviet Union (FSU) and levels of drug resistance did not differ markedly according to birthplace. In the rest of the EU & West, drug resistance was highest in cases originating from the FSU (15.0%) - who accounted for 24% of MDR-TB cases - intermediate in Asians (2.8%) and Africans (1.7%), and lowest in cases originating from the Centre (1%) and the EU & West itself (0.5%) (Table 27).

Between 2000 and 2003, seven out of 18 countries reached their highest ever prevalence of primary MDR in 2003 (Table 24). Austria and Switzerland had a statistically significant increase in prevalence of both combined INH resistance and combined MDR (Tables 23-24, country profiles) ( $P < 0.05$ ), with an increase in cases of foreign origin. Latvia and Lithuania reported an increase in combined MDR due to inclusion of retreated cases other than relapses from 2002, while the United Kingdom had an increase in combined INH resistance associated with an outbreak in the area of London [4,5]. In Israel, both INH resistance and MDR decreased, after a peak in 2000 associated with large immigration flows from Eastern Europe [6,7].

DST data from 11 countries were classified in group B. In Andorra, Cyprus, Hungary, Ireland, Malta, Portugal, and Slovakia, DST results were matched to TB notifications but the proportion of culture posi-

tive cases was lower than 50% and/or DST result were available for less than 80% of these cases (Table 19). In France DST data from a well-established network of teaching hospital laboratories [8] showed low prevalence of primary MDR, albeit exhaustive surveys of laboratories showed an increase in combined MDR from 2002 [9]. In Greece, diagnostic DST data from the NRL and another laboratory were reported for selected cases. In Italy, data were collected from selected laboratories in several regions including a reference Centre for treatment of drug-resistant cases [10]. In Spain DST data for selected cases with isolates tested in the NRL showed levels of resistance comparable to recent regional surveys in the country (Table 17).

#### *2.1.4 Treatment outcome*

Data on treatment outcome monitoring (TOM) for 2002 were provided by 24 countries in the EU & West (Table 28). Apart from Italy, where data derived from a small group of clinical centres [11], TOM data consisted of complete cohorts of culture positive pulmonary cases notified in 2002, and were available in individual format from most countries. Among new cases (Table 29), 74% were reported as success, 7% died during treatment, 4% failed or continued treatment at 12 months and a total of 14% defaulted, were transferred or were reported as unknown. Among countries reporting over 20 new cases, success ratios ranged very widely from 59% in Hungary to 86% in the Netherlands. In countries with few unknowns (0-1%), success was over 80%, except in the Baltic States and Hungary. Success ratios decreased markedly with age as risk of dying increased (Table 31). In countries with percentage death exceeding 7%, mortality was correlated to mean age of cases. This, along with differences in co-morbidity - including HIV - and in the completeness of post-mortem reporting of TB, explains the wide range in death ratios observed (0-17%). Failures and still on treatment were numerous in Hungary (25%), probably due to definitional inconsistencies. In the Baltic States still on treatment (4-10% among new cases) and failures (1-4%) were frequent, reflecting the high MDR caseload. In the remaining countries, where the prevalence of MDR is low, still on treatment was reported in 0-6% of new cases and failures in 1%. In these countries, treatments longer than 12 months may reflect non-standard care practices, as in Portugal (A. Fonseca-Antunes, personal communication 2005) or preferential use of this category due to lack of follow-up bacteriology information needed to define failure.

Among retreated cases (Table 30), the overall success ratio was lower than among new cases (59%; range: 39-100%). Death (10%), failure (4%) and still on treatment (11%) 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 (10%) and of cases with missing outcome information (6%) contributed to lower success ratios.

## 2.2 Centre

### *2.2.1 TB case notification*

In the eight countries in the Centre, 60,957 TB cases were reported in 2003, of which 52% from Romania and 30% from Turkey (Table 1). Data from Bosnia & Herzegovina did not include those of Rep. Srpska. In the other countries the overall TB notification rate was 48.6 cases per 100,000 population, being much higher in Romania (142 per 100,000) than in the other countries (from 41 in Bulgaria to 18 in Albania). The case distribution by age and sex was not provided by Turkey. The proportion of paediatric TB cases was 5% overall but 13% in the F.Y.R. of Macedonia, suggesting over-notification of paediatric TB in this country (Table 2). Age-specific notification rates peaked at age group 45-54 years in Romania (226 per 100,000) and in Bulgaria (54) and were highest in the over 64 years in the other countries. The peak of age-specific rates at younger age indicates a higher level of TB transmission in Bulgaria and Romania, with lower rates in Bulgaria possibly resulting from incomplete reporting.

The proportion of retreated patients was much higher in Romania (20%) than in the other countries (4-12%) (Table 7). In the six countries using the pulmonary classification, pulmonary cases represented 81% of cases (range: 65-89%), of which 50% were sputum smear positive (Tables 8,13). The proportion of extra-pulmonary cases was over 20% in Albania, F.Y.R. of Macedonia and Turkey, suggesting over-diagnosis of extra-pulmonary TB. Culture results were not available in Serbia & Montenegro and Turkey, while in the other countries, the proportion of culture positive cases ranged widely from 13% in the F.Y.R. of Macedonia to 59% in the Federation of Bosnia (Table 10). The proportion of culture confirmation in Romania in 2003 (15%) was much lower than in 2002 (55%) due to incomplete information at time of data collection.

Between 1999 and 2003, annual notification rates decreased on average by 4% or more in Albania,

Croatia and Turkey, were stable in Bulgaria, and increased in the F.Y.R. of Macedonia, Romania and Serbia & Montenegro (Figure 6). In Romania, rates decreased for the first time in 2003. In countries with decreasing total notification rates in recent years, rates also decreased in cases under-45 (country profiles, no data for Turkey).

### 2.2.2 Tuberculosis and HIV infection

HIV sero-status for TB cases was only available for Albania (2002) and Romania (2003), both reporting 0.5% of cases co-infected with HIV (Table 14), a finding in agreement with the low HIV prevalence and AIDS incidence in the general population in the Centre [2, 3]. AIDS notification data were available for all countries in 2003 (Table 15). Among the 469 AIDS cases notified, information on initial AIDS-indicative diseases was missing in 250 cases (53%; most from Romania) while TB was reported in 72 cases (15%), representing a mere 0.1% of all TB notifications in 2003. Numbers of AIDS cases with initial TB were relatively stable between 1997 and 2003 (Table 16).

### 2.2.3 Anti-tuberculosis drug resistance

Six countries in the Centre provided DRS data for 2003. Of these, three participated in international EQA for DST (Table 18) and two were classified in group A (Table 19). In Romania resistance data were last provided in 2001 (Table 17), from selected patients at a time when national quality assurance for DST was not yet implemented: the results of a recent nationwide representative drug resistance survey are expected shortly. Data on cases notified in Federation of Bosnia and Croatia showed low, stable drug resistance levels between 1999 and 2003 (Tables 23-24). Among countries in group B, data from Serbia & Montenegro showed low levels of resistance in the region of Belgrade. Data from Albania, Bulgaria and the FYR of Macedonia, where culture and/or DST are not routinely used for TB diagnosis, showed combined MDR levels between 1.4% and 5.5% (Table 20).

### 2.2.4 Treatment outcome

Outcome of definite TB cases notified in 2002 were reported by all countries, with five providing complete cohorts (group A, Table 28). Among new cases, success ratios ranged between 79% and 95% deaths between 1% and 4%, defaults between 1% and 15%, while failures were elevated in Bulgaria and Romania (5%) (Table 29). Success ratios for retreated cases were much lower than those for new cases (Table 30). In incomplete cohorts (group B), success

ratios among new cases were higher than 85% in Serbia & Montenegro (region of Belgrade) and lower in Turkey (79%; 10% of cases still on treatment) and in Croatia (72%; 14% defaulters, transferred or unknown).

## **2.3 East**

### 2.3.1 TB case notification

In 2003, 290,395 cases were reported from the East, of which 52% from the Russian Federation (Table 1), ranking as fifth country worldwide in absolute number of TB notifications in 2003 [1]. The overall TB notification rate in the East continued to increase, reaching 104 cases per 100,000 in 2003, with rates higher than average in Kazakhstan (208), Kyrgyzstan (137), Rep. of Moldova (118), Georgia (117) and the Russian Federation (106) (Table 1).

Paediatric TB cases represented 7% of the cases overall (Table 2). Higher overall rates in children 5-14 years than in younger children suggested relative over-reporting in the age group 5-14 years (Figure 5). The age group 15-44 years accounted for 63% of the cases notified, while only 7% of the cases were aged over 64 years. Overall, rates were highest in the age group 25-34 years in both sexes (overall 208 per 100,000) – indicating high levels of transmission in recent years – and remained very high in older age groups in men while decreasing more rapidly in women (Figure 5). Sex ratios ranged very widely from 1.3 in four central Asian republics to over 2.5 in six other countries, suggesting possible sex-related differences in TB transmission, care or reporting between countries in the East (Table 3).

The proportion of retreated cases ranged widely from 4% to 32% (mean: 20%), reflecting differences in the definition of a notifiable case (Table 7). Notification of retreated cases was limited to relapses in Ukraine and to pulmonary, sputum-smear positive cases in Armenia, two countries with low proportion of retreated cases. In 2003, 94% of TB cases in the East had pulmonary localisation (range: 69-97%), and only 39% of them were sputum smear positive (32-54%) (Tables 8, 13). Culture results (Table 10) were rarely available as TB notification systems in this area do not collect this information or still combine positive results of direct microscopy and culture, reported together as 'BK+'. In the Russian Federation, only 2,990 (14%) out of 21,915 cases notified in DOTS areas were reported as culture positive. The low proportion of smear confirmation and the

unavailability of information on culture results attest to the delayed uptake of international recommendations for diagnosis, still heavily reliant on radiology in some countries.

Notification rates increased by 50% overall between 1996 and 2003, contributing importantly to the lack of decline in TB notifications in recent years in the whole world [12]. The mean annual increase in rates was larger between 1995 and 1999 (11%) than between 1999 and 2003 (4.5%) (Figure 6), when annual increases in excess of 10% were only reported in the Rep. of Moldova, Tajikistan and Uzbekistan, countries where DOTS implementation has been expanded during the period. Between 1999 and 2003 overall notification rates decreased in Azerbaijan, Belarus and Georgia, and stabilised in Kyrgyzstan.

TB surveillance data and 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 included in TB statistics.

### 2.3.2 Tuberculosis and HIV infection

In the four countries reporting HIV sero-status of notified TB cases in 2002-2003 HIV prevalence ranged between 0.1% and 0.7% (Table 14). The Russian Federation did not report AIDS data in 2003, while the other 11 countries together reported 2,097 AIDS cases, of which 1,860 (89%) from Ukraine (Table 15). Among AIDS cases, 1,230 (59%) had TB as initial AIDS indicative disease representing 2.7% of total TB cases in Ukraine and less than 0.7% in the other countries. In 2003, numbers of AIDS cases with AIDS-indicative TB increased markedly in the Rep. of Moldova and Kazakhstan, as well as in Ukraine, where completeness of information on AIDS-indicative diseases improved (Table 16).

The high TB morbidity among AIDS cases may reflect a high prevalence of TB infection in the HIV-infected population, an 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. Surveillance data currently available in the East are

insufficient to monitor the overlap between the HIV and TB epidemics, which are expected to increase both the TB and the MDR-TB case load in the coming years [13].

### 2.3.3 Anti-tuberculosis drug resistance

In the East, four countries provided DRS data for 2003, among which Armenia and Kyrgyzstan participated in international EQA activities (Table 18). Diagnostic DST results on selected TB cases in Armenia, Kazakhstan and Kyrgyzstan showed proportions of MDR between 11% and 13% among new cases, similar to those reported by the Baltic States (see above), and much higher than in Azerbaijan (1.3%) (Table 21). The national representativeness of these data is unknown. In spite of the variable quality of DRS data, evidence in recent years indicates that drug resistance is highly prevalent in most countries of the former Soviet Union (Table 17) [14-17]. Better documentation of the frequency of drug resistance remains a high priority and a prerequisite for proper control of MDR-TB.

### 2.3.4 Treatment outcome

Ten countries provided TOM data on 2002 cohorts of smear positive cases, four having complete nationwide cohorts (group A, Table 28). Data from Azerbaijan were nationwide but incomplete and five others reported outcome for DOTS areas alone (group B).

In group A, the success ratio among new cases was lowest in Georgia (65%; 18% defaulted and 13% transferred), while it was 74% in Turkmenistan (13% unknown), 76% in Kazakhstan (11% failures) and 82% in Kyrgyzstan (7% failures) (Table 29).

In data from group B countries, the success ratio among new cases was lowest in the Rep. of Moldova (61%; 16% cases defaulted) and in the Russian Federation (67%; 13% deaths) and higher (79-81%) in the remaining four countries. Proportions of failures were low in Armenia (3%) and Azerbaijan (1%) but higher in other countries (8-11%), indicating poor compliance (not qualifying as default) or low effectiveness of initial regimens due to primary MDR.

Among retreated cases in groups A and B (Table 30), success was lower than 65% in all countries except Kyrgyzstan, and lower than 50% in four countries, while failures ranged between 8% and 26%. Nineteen percent of cases (range: 9-52%) were classified as default, transfer or unknown.

## 2.4. Conclusions and recommendations

European TB surveillance data depict an increasingly diversified picture of TB epidemiology which clearly identifies the East 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 and probably increasing levels of transmission in the past decade. Data on drug resistance and on TB/HIV co-infection are still lacking. Available outcome data depict poor effectiveness of treatment programmes, particularly for retreated patients. Even in DOTS areas, success ratios do not reach global targets and failure is worryingly frequent, probably associated with MDR. Moreover, laboratory capacity for culture is insufficient, which limits efforts for timely diagnosis and care of MDR cases.

In the EU and West, TB incidence continues to decrease in most countries, independently of incidence levels, but less so in young adults, a large proportion of whom are of foreign origin. Cases in migrants from high TB incidence countries represent an increasing proportion of cases and a large proportion of drug resistant cases. With the notable exception of the Baltic States, the proportions of drug resistant and MDR cases remain low, indicating that its emergence on a large scale has been prevented. HIV prevalence in TB patients correlates with HIV prevalence in the general population, and is increasing in the Baltic States where HIV spread is more recent. AIDS notification data do not capture all HIV-associated tuberculosis but indicate that it 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, incomplete follow-up and, in the Baltic States, high proportions of MDR. TB prevention and control in the EU need to be targeted to high risk population groups, including migrants from high incidence areas, HIV infected individuals and the elderly. The population of metropolitan areas, where risk factors for tuberculosis concentrate, experience a higher incidence than the national average [18].

European consensus recommendations [19-21] and collaborative actions have been instrumental in harmonising TB surveillance at European level. The number of countries reporting comparable information is increasing steadily over the years. MDR-TB surveillance is being initiated in 2005 to strengthen and complete the current approach to surveillance of drug resistance.

In spite of these achievements, huge efforts are still required to improve the quality of data, particularly in the East and in the Centre. Further national uptake of agreed European surveillance recommendations and definitions should be promoted throughout the Region, by:

- adopting the European definitions for TB surveillance;
- setting up a national, computerised individual TB case reporting data set, containing the recommended essential variables, and sharing individual data at the European level;
- promoting independent, laboratory-based reporting of TB cases, and establishing quality assurance of laboratories at national and international level;
- implementing drug resistance surveillance, using either ongoing collection of initial DST results for all cases, or, in settings where culture is not routinely used by implementing prevalence surveys [22];
- implementing treatment outcome monitoring and developing additional intermediate targets for treatment results;
- monitoring of HIV prevalence among TB patients, by using information available at national level through TB and HIV/AIDS case reporting and by conducting HIV prevalence surveys in areas with high or increasing HIV prevalence [23];
- developing indicators to monitor TB control interventions in risk groups, such as screening for TB disease and infection, contact investigation and outbreak management, all crucial in low incidence countries [24].

## 2.5. References

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