Results

Progress towards the Millennium Development Goals

Countries reporting to WHO

By the end of 2004, 199 (94%) of 211 countries and territories reported case notifications for 2003 and/or treatment outcomes for patients registered in 2002. These countries include 99% of the world's population. WHO received reports from all 22 HBCs.

Case notifications and incidence

The 199 countries reporting to WHO in 2003 notified 4.4 million new and relapse cases, of which 1.9 million (44%) were new sputum smear-positive (Table 3; Figure 1). Among these notifications, 3.7 million were from DOTS areas, including 1.8 million smear-positives. A total of 17.1 million cases, and 8.6 million smear-positives, were notified by DOTS programmes between 1995 and 2003. Based on surveillance and survey data, we estimate that there were 8.8 million new cases of TB in 2003 (140 per 100 000), including 3.9 million (62 per 100 000) smear-positive cases (Table 4; Figure 2).

The African Region (24%), South-East Asia Region (35%), and Western Pacific Region (22%) together accounted for 82% of all notified cases and similar proportions of new smear-positive cases. Because DOTS emphasizes diagnosis by sputum smear microscopy, 47% of all new and relapse cases were smear-positive (45–60% expected) in DOTS areas, compared with 29% elsewhere. Similarly, 58% of new pulmonary cases were smear-positive under DOTS (55–70% expected), compared with 35% elsewhere (Table 3).

The ranking of countries by number of incident TB cases has drawn attention to the 22 HBCs, but the magnitude of the TB burden in individual

TABLE 3

Case notifications, 2003

	ALL NEW AND RELAPSE CASES		NEW SMEAR-POSITIVE		NEW SMEAR-NEGATIVE OR SMEAR UNKNOWN		NEW EXTRAPULMONARY		RE-TREATMENT CASES EXCLUDING RELAPSE		OTHER[a]		% OF NEW PULMONARY CASES SMEAR POSITIVE[b]	
	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS
1 India	836 768	236 297	372 088	61 183	305 921	153 503	112 064	20 189	102 542	13 247	–	–	55	29
2 China	553 677	62 191	257 287	10 127	206 493	42 312	27 804	2 964	64 887	2 822	–	–	55	19
3 Indonesia	178 260	–	92 566	–	77 561	–	4 047	–	–	–	–	–	54	–
4 Nigeria	44 184	–	28 173	–	13 276	–	1 525	–	2 151	–	261	–	68	–
5 Bangladesh	88 156	–	53 618	–	24 913	–	7 120	–	–	–	–	–	68	–
6 Pakistan	73 100	–	20 962	–	34 447	–	12 874	–	3 184	–	–	–	38	–
7 Ethiopia	117 600	–	39 698	–	35 141	–	40 883	–	676	–	–	–	53	–
8 South Africa	227 278	42	116 331	33	56 535	5	37 682	4	28 094	8	–	–	67	87
9 Philippines	134 375	–	72 670	–	55 942	–	1 693	–	–	–	–	–	57	–
10 Kenya	91 522	–	38 158	–	37 135	–	13 403	–	1 127	–	2 661	–	51	–
11 DR Congo	84 687	–	53 578	–	9 352	–	18 357	–	1 641	–	387	–	85	–
12 Russian Federation	21 064	102 977	6 322	22 546	12 780	72 252	1 016	3 648	–	22 512	851	4 840	33	24
13 Viet Nam	92 741	–	55 937	–	16 791	–	14 564	–	680	–	–	–	77	–
14 UR Tanzania	61 579	–	24 899	–	21 911	–	12 959	–	378	–	2 708	–	53	–
15 Brazil	16 560	63 554	9 061	30 877	4 795	18 727	1 503	9 081	799	3 663	1 256	2 690	65	62
16 Uganda	41 805	–	20 320	–	16 612	–	3 249	–	–	–	1 096	–	55	–
17 Thailand	54 504	–	28 459	–	17 596	–	6 756	–	–	–	–	–	62	–
18 Mozambique	28 602	–	16 138	–	7 847	–	3 441	–	505	–	–	–	67	–
19 Zimbabwe	53 183	–	14 488	–	28 246	–	8 916	–	–	–	3 934	–	34	–
20 Myanmar	75 744	–	27 448	–	26 006	–	17 796	–	2 451	–	–	–	51	–
21 Afghanistan	13 808	–	6 510	–	3 440	–	3 254	–	141	–	–	–	65	–
22 Cambodia	28 216	–	18 923	–	4 307	–	4 232	–	79	–	91	–	81	–
High-burden countries	**2 917 413**	**465 061**	**1 373 634**	**124 766**	**1 017 047**	**286 799**	**355 138**	**35 886**	**209 335**	**42 252**	**13 245**	**7 530**	**57**	**30**
AFR	1 061 882	10 789	503 217	6 947	319 715	2 513	193 812	1 013	39 548	403	19 902	–	61	73
AMR	142 409	85 142	82 479	43 324	31 761	24 210	19 936	11 835	4 208	4 259	5 909	3 154	72	64
EMR	206 160	3 781	80 822	191	63 703	2 099	51 417	1 488	4 015	–	178	–	56	8
EUR	142 760	195 883	44 673	50 839	64 716	96 592	16 547	12 085	7 334	25 316	22 292	54 198	41	34
SEAR	1 314 983	240 402	610 079	62 799	481 487	155 219	160 093	20 772	107 746	13 408	9 845	583	56	29
WPR	879 827	108 100	431 396	23 336	313 113	63 566	59 422	11 084	66 352	3 563	3 262	3 746	58	27
Global	**3 748 021**	**644 097**	**1 752 666**	**187 436**	**1 274 495**	**344 199**	**501 227**	**58 277**	**229 203**	**46 949**	**61 388**	**61 681**	**58**	**35**

– Indicates not applicable or not available.

[a] Cases not included elsewhere in table.

[b] Expected percentage of new pulmonary cases that are smear-positive is 65–80%.

FIGURE 1

Tuberculosis notification rates, 2003

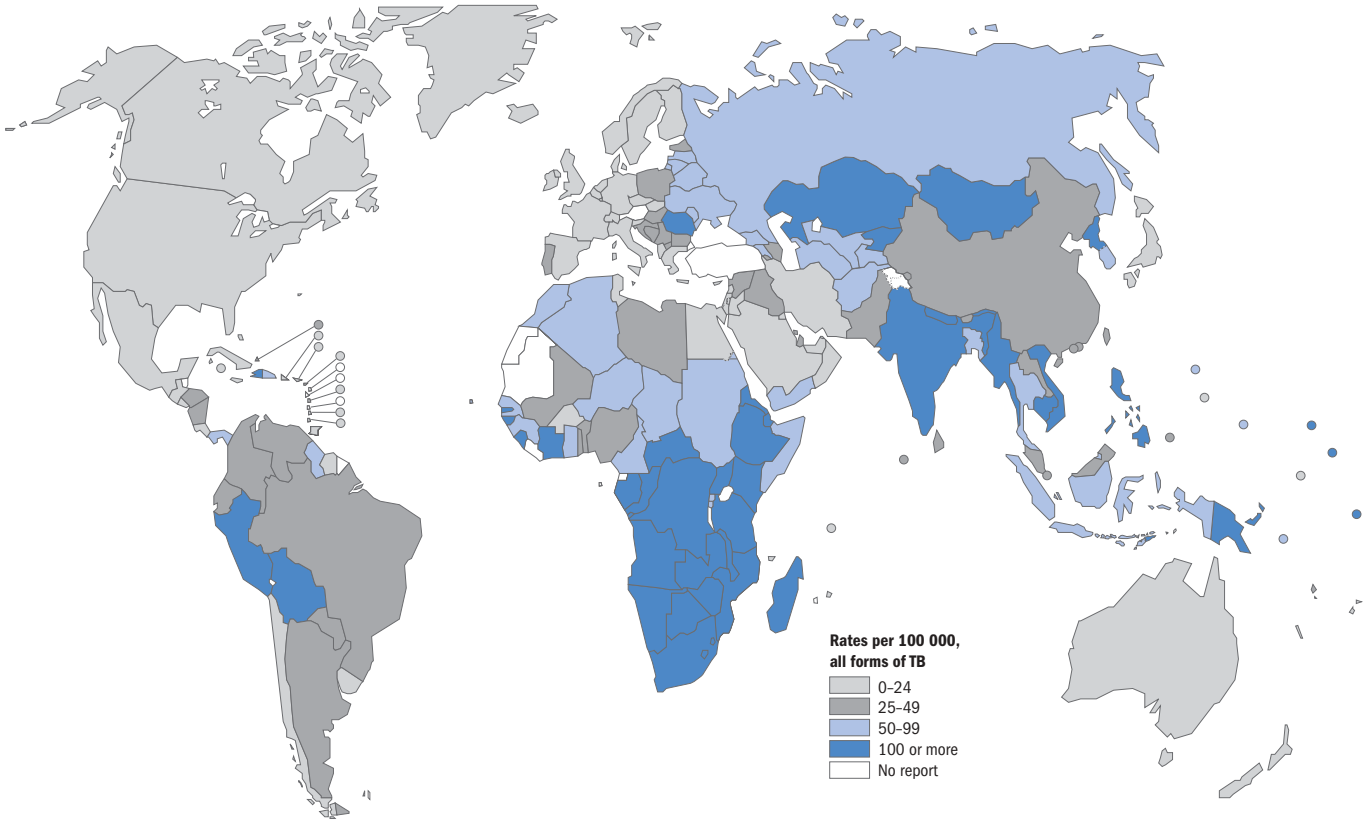


FIGURE 2

Estimated TB incidence rates, 2003

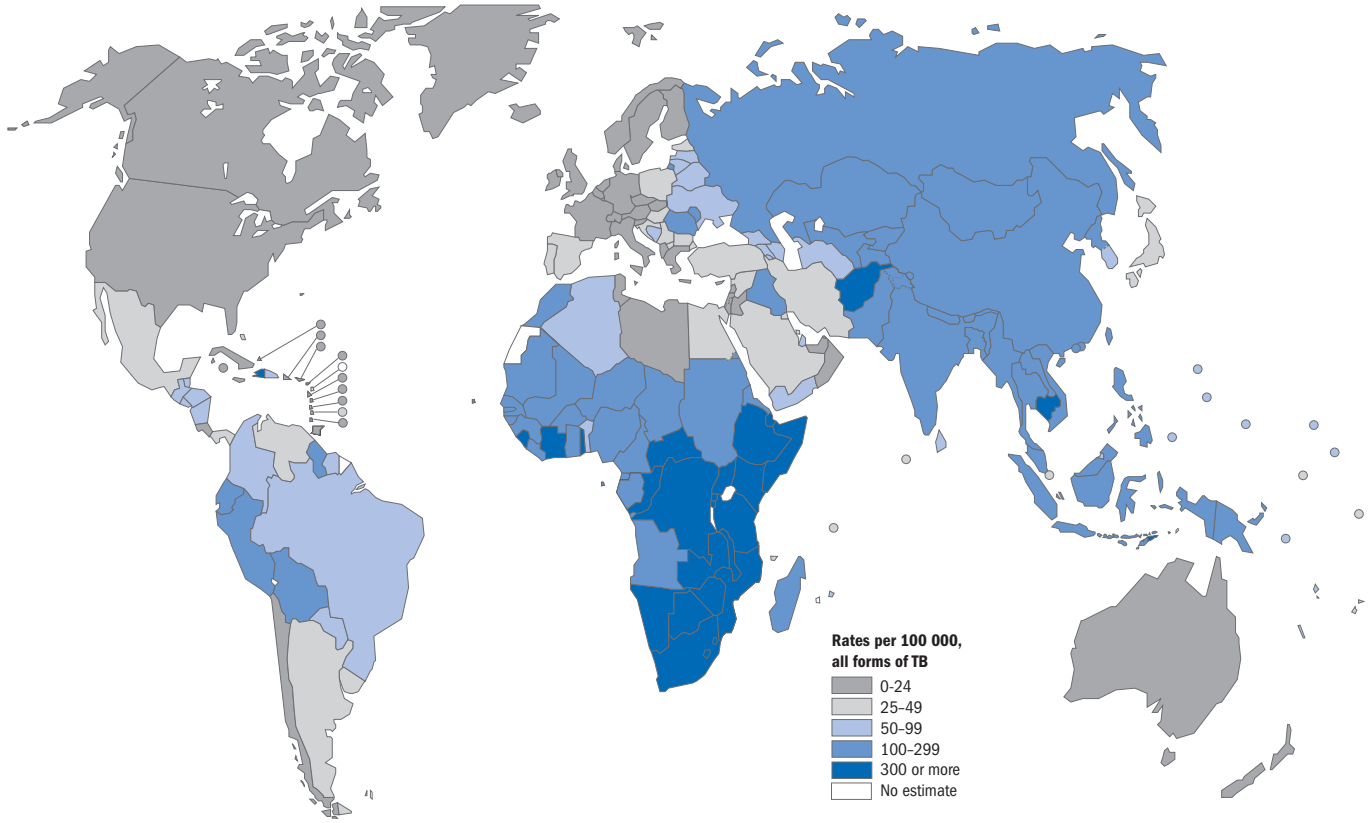


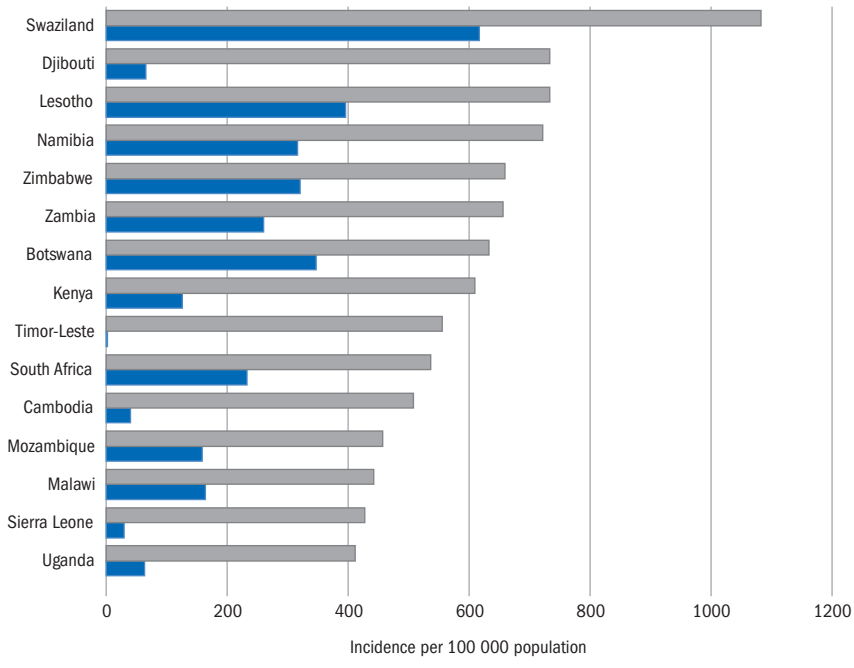
TABLE 4

Estimated TB burden, 2003

		INCIDENCE				PREVALENCE		MORTALITY	
		ALL CASES		SMEAR-POSITIVE CASES		ALL FORMS OF TB, INCLUDING IN HIV-INFECTED PEOPLE			
	POPULATION 1000s	NUMBER 1000s	RATE PER 100 000 POP.	NUMBER 1000s	RATE PER 100 000 POP.	NUMBER 1000s	RATE PER 100 000 POP.	NUMBER 1000s	RATE PER 100 000 POP.
1 India	1 065 462	1 788	168	798	75	3 086	290	352	33
2 China	1 304 196	1 334	102	600	46	3 203	246	236	18
3 Indonesia	219 883	627	285	282	128	1 484	675	143	65
4 Nigeria	124 009	363	293	156	126	677	546	105	85
5 Bangladesh	146 736	361	246	162	111	719	490	84	57
6 Pakistan	153 578	278	181	125	82	551	359	67	43
7 Ethiopia	70 678	252	356	109	155	377	533	56	79
8 South Africa	45 026	242	536	98	218	206	458	33	73
9 Philippines	79 999	237	296	107	133	366	458	39	49
10 Kenya	31 987	195	610	84	262	283	884	43	133
11 DR Congo	52 771	195	369	85	160	298	564	43	81
12 Russian Federation	143 246	161	112	72	50	229	160	29	20
13 Viet Nam	81 377	145	178	65	80	195	240	19	23
14 UR Tanzania	36 977	137	371	58	157	194	524	32	86
15 Brazil	178 470	110	62	49	28	164	92	15	8
16 Uganda	25 827	106	411	46	179	168	652	25	96
17 Thailand	62 833	89	142	40	63	130	208	12	19
18 Mozambique	18 863	86	457	36	190	120	636	24	129
19 Zimbabwe	12 891	85	659	34	265	85	660	20	153
20 Myanmar	49 485	85	171	38	76	92	187	12	25
21 Afghanistan	23 897	80	333	36	150	160	671	22	93
22 Cambodia	14 144	72	508	32	225	108	762	13	95
High-burden countries	**3 942 338**	**7 027**	**178**	**3 112**	**79**	**12 896**	**327**	**1 423**	**36**
AFR	687 405	2 372	345	1 013	147	3 487	507	538	78
AMR	867 768	370	43	165	19	503	58	54	6
EMR	518 063	634	122	285	55	1 120	216	144	28
EUR	878 902	439	50	196	22	577	66	67	8
SEAR	1 614 648	3 062	190	1 370	85	5 662	351	617	38
WPR	1 732 104	1 933	112	868	50	4 081	236	327	19
Global	**6 298 890**	**8 810**	**140**	**3 897**	**62**	**15 430**	**245**	**1 747**	**28**

FIGURE 3

Fifteen countries with the highest estimated TB incidence rates per capita (all ages, all forms; grey bars) and corresponding incidence rates of HIV-infected TB (among adults aged 15–49 years; blue bars), 2003



countries is better expressed as the incidence rate per capita. Among the 15 countries with the highest estimated TB incidence rates per capita, 12 are in Africa (Figure 3).

Case notifications from African countries show other patterns that are likely to be associated with HIV infection. First, women aged 15–24 years make up a higher proportion of TB cases in countries with higher rates of HIV infection (Figure 4a). This is consistent with the observation that HIV prevalence tends to be higher in women than men in this age range, and the difference between the sexes is bigger where HIV infection rates are higher. Second, the average age of smear-positive TB cases is typically lower where HIV infection rates are higher, especially for women (Figure 4b). This is another sign that younger rather than older women are more likely to be infected with HIV. Third, the proportion of smear-negative cases among all pulmonary TB cases tends to be higher in African countries with higher rates of HIV infection (data not shown). However, this last association is weak (R^2 = 0.16, P = 0.02) and could be confounded by the quality of diagnosis if, for example, smear microscopy has become less reliable where the number of HIV-infected TB patients has increased substantially.

Some patterns in the case notification data are striking, but not easy to explain. For example, the number of extrapulmonary TB cases as a proportion of the total reported is consistently different among WHO regions. Between 1995 and 2003, the proportion was lowest in the Western Pacific Region (mostly <5%) and highest in the Eastern Mediterranean Region (20–30%; see Figure 5). We do not know whether these are real epidemiological differences, or due to regional diagnostic biases. Surprisingly, the proportion of cases diagnosed as extrapulmonary disease has not increased in the African Region, despite the growing impact of HIV on the TB epidemic. This raises the question of whether NTPs in Africa are missing extrapulmonary cases.

Using the series of notifications of all TB cases from countries thought to have reliable data, and scaling by

FIGURE 4

(a) The proportion of notified TB patients aged 15–24 years that were women, in relation to HIV prevalence in adults aged 15–49 years (R^2 = 0.63, P<0.0001). (b) Average age of women with smear-positive TB, in relation to HIV prevalence in adults aged 15–49 years (R^2 = 0.46, P<0.0001). Data are for countries in Africa.

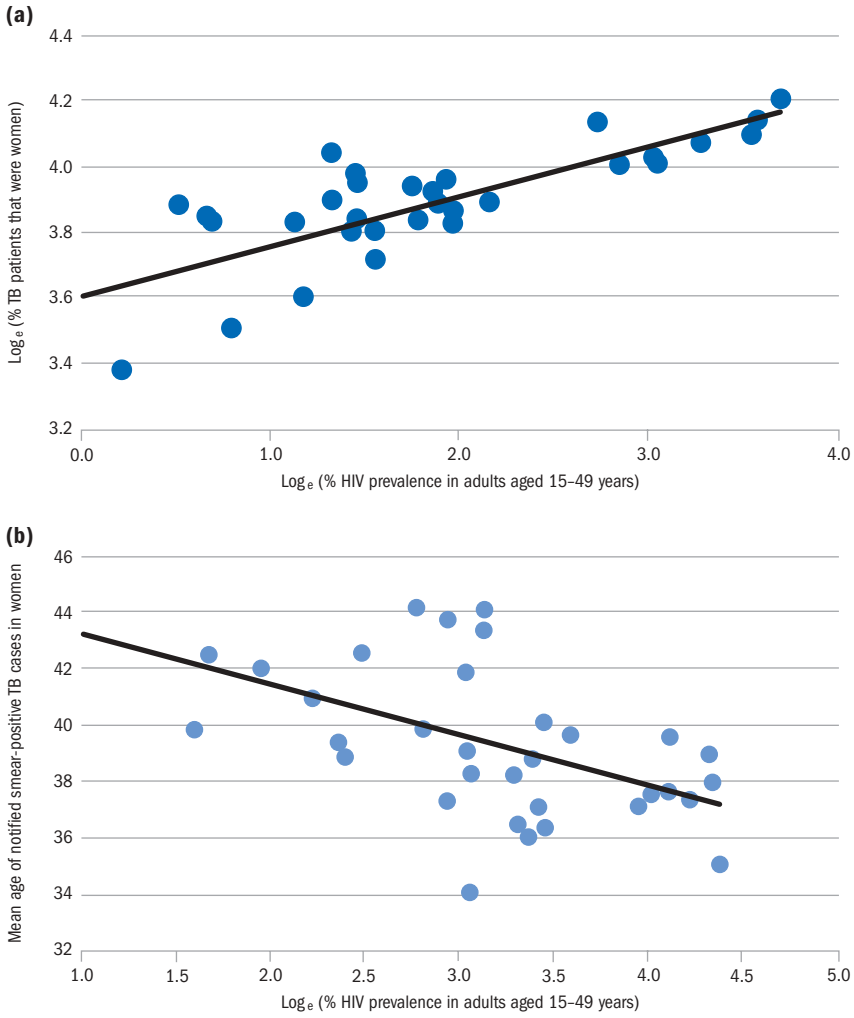


FIGURE 5

The number of extrapulmonary TB cases as a percentage of the total number of cases reported, for each of the six WHO regions

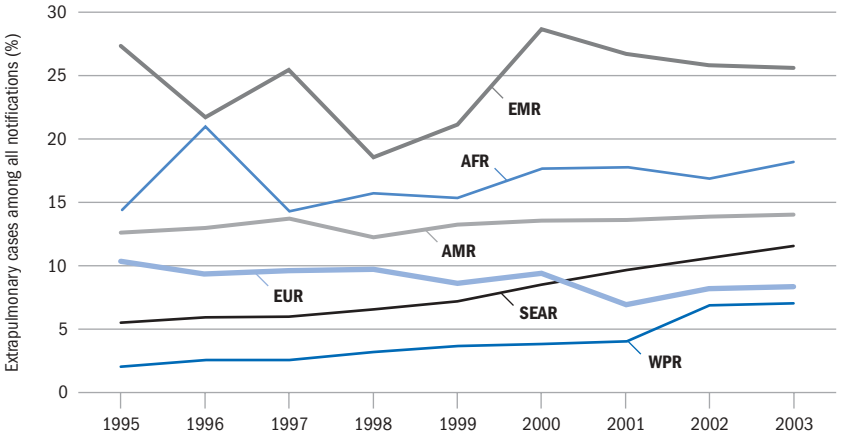
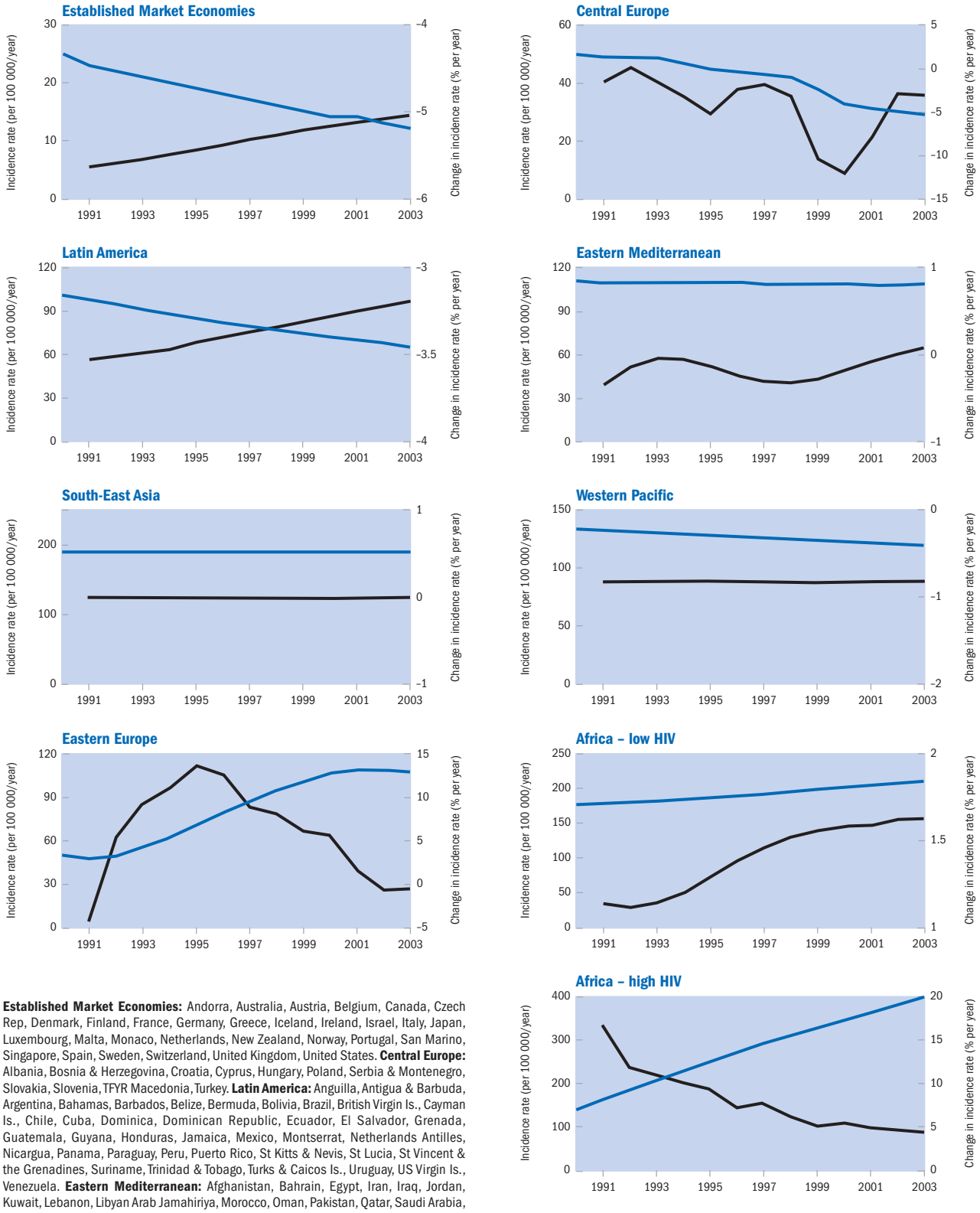


FIGURE 6

Trends in estimated TB incidence rates (all forms; blue lines), and the annual change in incidence rates (black lines), for nine groups of countries, 1990–2003



Established Market Economies: Andorra, Australia, Austria, Belgium, Canada, Czech Rep, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, Malta, Monaco, Netherlands, New Zealand, Norway, Portugal, San Marino, Singapore, Spain, Sweden, Switzerland, United Kingdom, United States. **Central Europe:** Albania, Bosnia & Herzegovina, Croatia, Cyprus, Hungary, Poland, Serbia & Montenegro, Slovakia, Slovenia, TFYR Macedonia, Turkey. **Latin America:** Anguilla, Antigua & Barbuda, Argentina, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, British Virgin Is., Cayman Is., Chile, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Montserrat, Netherlands Antilles, Nicargua, Panama, Paraguay, Peru, Puerto Rico, St Kitts & Nevis, St Lucia, St Vincent & the Grenadines, Suriname, Trinidad & Tobago, Turks & Caicos Is., Uruguay, US Virgin Is., Venezuela. **Eastern Mediterranean:** Afghanistan, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Syrian Arab Rep., Tunisia, United Arab Emirates, West Bank & Gaza Strip, Yemen. **South-East Asia:** Bangladesh, Bhutan, DPR Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, Timor-Leste. **Western Pacific:** Amerian Samoa, Brunei Darussalam, Cambodia, China, China Hong Kong SAR, China Macao SAR, Cook Is., Fiji, French Polynesia, Guam, Kiribati, Lao PDR, Malaysia, Marshall Is., Micronesia, Mongolia, Nauru, New Caledonia, Niue, N. Mariana Is., Palau, Papua New Guinea, Philippines, Rep. Korea, Samoa, Solomon Is., Tokelau, Tonga, Vanuatu, Viet Nam, Wallis & Futuan Is. **Eastern Europe:** Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, Georgia, Kazakhstan, Kyrgystan, Latvia, Lithuania, Rep. Moldova, Romania, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan. **Africa – low HIV:** Algeria, Angola, Benin, Burkina Faso, Cape Verde, Chad, Comoros, Djibouti, Equatorial Guinea, Eritrea, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Madagascar, Mali, Mauritania, Mauritius, Niger, Sao Tome & Principe, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, Togo. **Africa – high HIV:** Botswana, Burundi, Cameroon, Central African Rep., Congo, Côte d'Ivoire, DR Congo, Ethiopia, Gabon, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, UR Tanzania, Zambia, Zimbabwe.

the estimated rates of case detection, we have estimated the trends in TB incidence rate (all forms) for nine epidemiologically distinct regions of the world (Figure 6). In six of these regions, the trend in the incidence rate has been downward.

Incidence rates have been increasing for most of the period since 1990 in African countries with low and high rates of HIV infection, and in eastern Europe, although the patterns of change in the three regions are quite different. In African countries with high HIV infection, incidence has been pushed upwards by the spread of HIV, but the rate of increase has fallen from a maximum exceeding 15% per year in the early 1990s (Figure 6). In African countries with lower rates of HIV infection, the rate of increase in TB has never been as high (2–3% per year), but neither are there signs that the increase is slowing. In eastern Europe, the rate of increase reached nearly 15% annually by 1995, but the increase now appears to have been halted, and incidence is once again in decline.

The global trend is obtained by summing the estimated numbers of TB cases across all nine regions (Figure 7). Worldwide, the incidence rate of TB was growing at a maximum of around 1.5% per year in 1995, but less than 1% per year by 2003.

TB and HIV

Some countries have carried out surveys of the prevalence of HIV in TB patients, either nationally or locally, and the results have been reported via the data collection form or the supplementary TB/HIV questionnaire. Although the accuracy of the data is not known because, for example, the design of the surveys has not been fully described, a growing number of countries are testing TB patients for HIV infection.

The prevalence of HIV infection in TB patients can be derived from the incidence rate ratio (IRR). IRR is estimated from the relationship between HIV prevalence in adult TB patients and HIV prevalence in the adult population, where both have been measured together (Figure 8). The IRR derived from the national surveys in this set of data is 8.3 (95% CI, 6.1–

FIGURE 7

Trends in the estimated global TB incidence rate (blue line), and the annual change in incidence rate (black line), 1990–2003

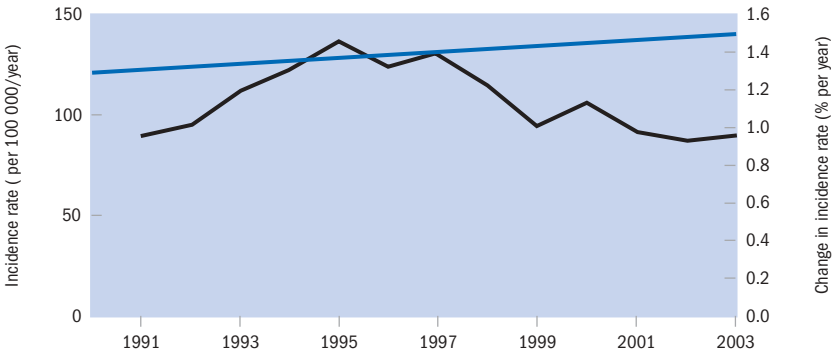


FIGURE 8

The prevalence of HIV in TB patients as measured in national surveys (blue dots) and subnational surveys (data reported to WHO; black dots), plotted against the prevalence of HIV in adults aged 15–49 years (data from UNAIDS). The incidence rate ratio is 8.3 (6.1–10.8; *P* = 0.0036) for the national survey data and 8.4 (7.9–10.0; *P* = 0.0029) for the subnational surveys. The countries are: BFA Burkina Faso; BOT Botswana; BUU Burundi; CAE Cameroon; CAF Central African Republic; CAM Cambodia; CNG Congo; COD DR Congo; DJI Djibouti; ETH Ethiopia; GHA Ghana; HAI Haiti; IVC Côte d'Ivoire; KEN Kenya; LES Lesotho; MAL Malawi; MOZ Mozambique; NIE Nigeria; RWA Rwanda; SOA South Africa; TAN UR Tanzania; ZIM Zimbabwe.

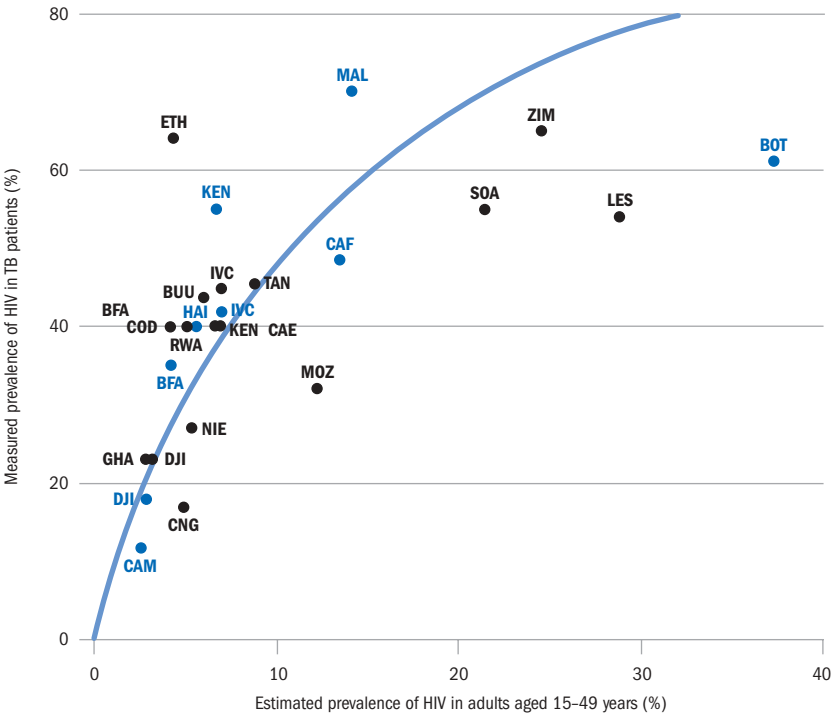


FIGURE 9

Estimated HIV prevalence in TB cases, 2003

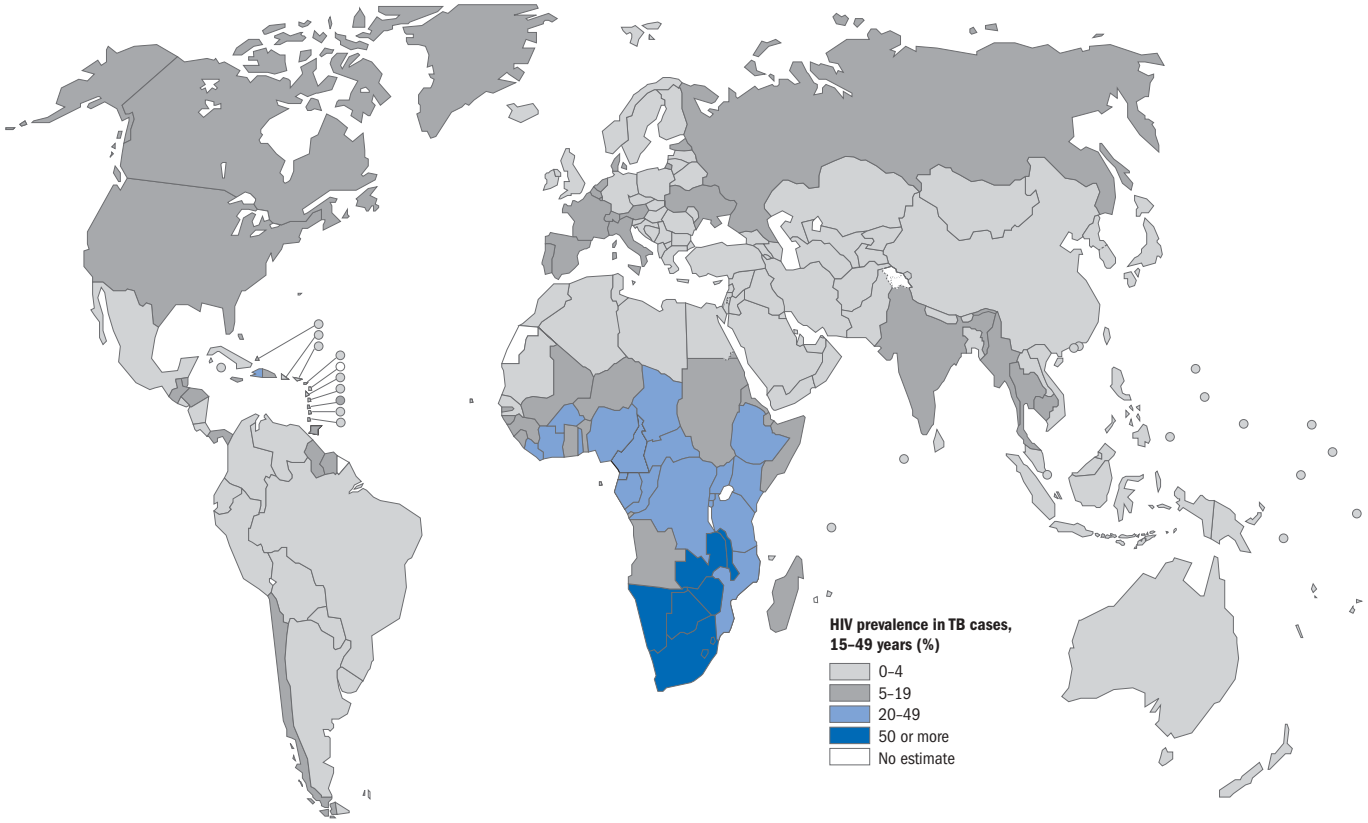


FIGURE 10

Number of countries implementing DOTS (out of a total of 211 countries), 1991–2003

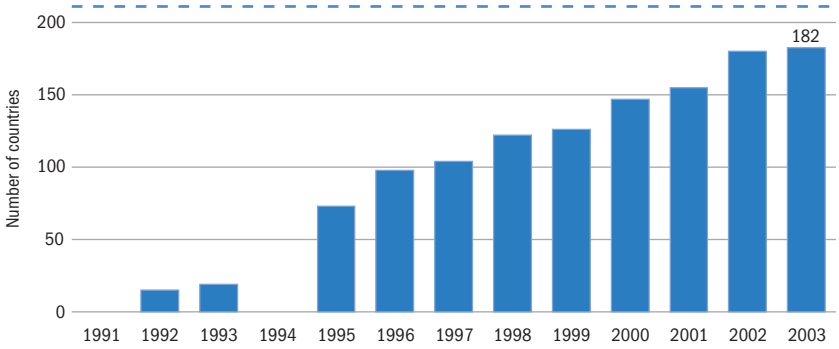
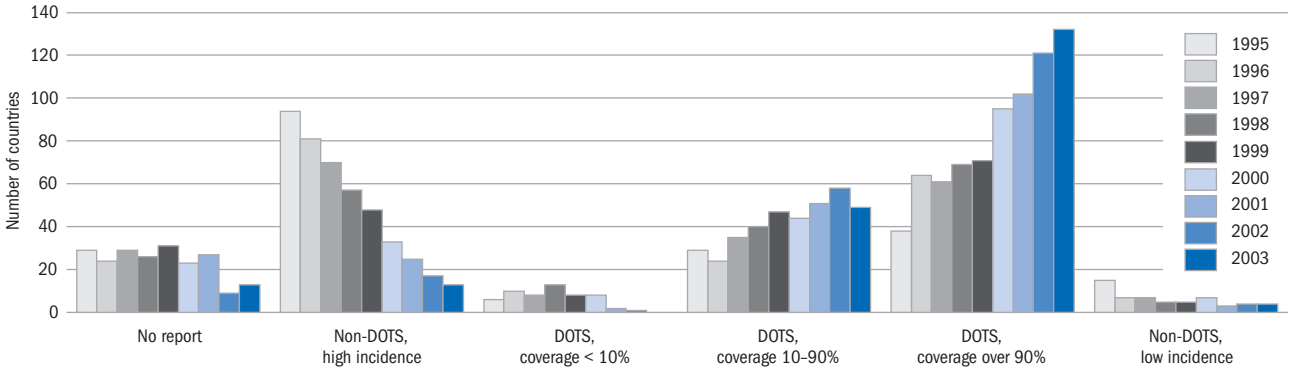


FIGURE 11

DOTS coverage, 1995–2003



10.8), which is higher than, but not significantly different from, the previously published estimate of 6.0 (3.1–8.0).[24]

Further HIV surveys among TB patients will give, once the data have been validated, better direct measures of the TB/HIV association for the countries surveyed and, through the IRR, better indirect estimates for countries that do not yet test TB patients for HIV infection, thereby improving the distribution map in Figure 9.

DOTS coverage

The total number of countries implementing DOTS increased by two during 2003, bringing the total to 182 out of 211 (Figure 10). All 22 HBCs have had DOTS programmes since 2000; many of these programmes have been established for much longer.

DOTS coverage within countries has steadily increased since 1995 (Figure 11; Table 5). By the end of 2003, 77% of the world's population lived in counties, districts, oblasts and provinces of countries that had adopted DOTS. Coverage was reported to be more than 70% in all regions except Europe (Figure 12).

Case detection

The 4.4 million cases of TB (new and relapse) notified in 2003 represent half (50%) of the 8.8 million estimated new cases; the 1.9 million new smear-positive cases notified also account for half (50%) of the 3.9 million estimated (Table 3, Table 4). In parallel with trends in case notifications, the detection rate of all TB cases, from DOTS and non-DOTS programmes, has remained stable since 1995, while the detection rate of smear-positive cases has slowly increased (Figure 13). Therefore, the proportion of all cases diagnosed as smear-positive has been rising.

DOTS programmes detected an estimated 43% of all new and relapse cases, and 45% of new smear-positive cases, in 2003. The detection rate achieved by DOTS programmes has

[24] Corbett EL et al. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Archives of Internal Medicine*, 2003, 163:1009–1021.

TABLE 5

Progress in DOTS implementation, 1995–2003

	PERCENTAGE OF POPULATION COVERED BY DOTS								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
1 India	1.5	2	2.3	9	13.5	30	45	51.6	67.2
2 China	49	60.4	64.2	63.9	64	68	68	77.6	91
3 Indonesia	6	13.7	28.3	80	90	98	98	98	98
4 Nigeria	47	30	40	45	45	47	55	55	60
5 Bangladesh	40.5	65	80	90	90	92	95	95	99
6 Pakistan	2	8	–	8	8	9	24	45	63
7 Ethiopia	39	39	48	64.4	63	85	70	95	95
8 South Africa	–	0	13	22	66	77	77	98	99.5
9 Philippines	4.3	2	15	16.9	43	89.6	95	98	100
10 Kenya	15	100	100	100	100	100	100	100	100
11 DR Congo	47	51.4	60	60	62	70	70	70	75
12 Russian Federation	–	2.3	2.3	5	5	12	16	25	25
13 Viet Nam	50	95	93	96	98.5	99.8	99.8	99.9	100
14 UR Tanzania	98	100	100	100	100	100	100	100	100
15 Brazil	–	0	0	3	7	7	32	25	33.6
16 Uganda	–	0	100	100	100	100	100	100	100
17 Thailand	–	1.1	4	32	59	70	82	100	100
18 Mozambique	97	100	84	95	–	100	100	100	100
19 Zimbabwe	–	0	0	100	11.6	100	100	100	100
20 Myanmar	–	59	60	60.3	64	77	84	88.3	95
21 Afghanistan	–	–	12	11	13.5	15	12	38	53
22 Cambodia	60	80	88	100	100	99	100	100	100
High-burden countries	**24**	**32**	**36**	**43**	**46**	**55**	**61**	**68**	**79**
AFR	43	47	56	62	56	70	70	81	85
AMR	12	48	50	55	65	68	73	73	78
EMR	23	11	18	33	51	66	72	77	86
EUR	5.4	8.2	17	22	23	26	32	40	41
SEAR	6.7	12	16	30	36	50	61	66	77
WPR	43	55	57	58	57	67	68	77	90
Global	**22**	**32**	**37**	**44**	**47**	**57**	**62**	**69**	**77**

0 Indicates that a report was received, but the country had not implemented DOTS.
– Indicates that no report was received.

FIGURE 12

DOTS population coverage by WHO region, 2003. The shaded portion of each bar shows the DOTS coverage as a percentage of the population. The numbers in each bar show the population (in millions) within (dark portion) or outside (light portion) DOTS areas.

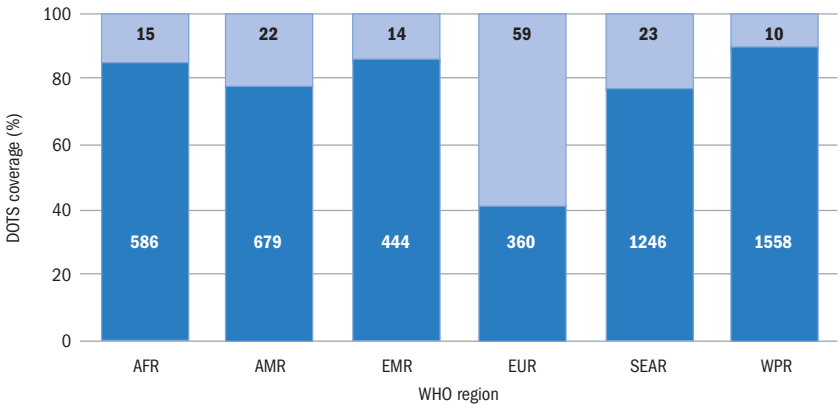
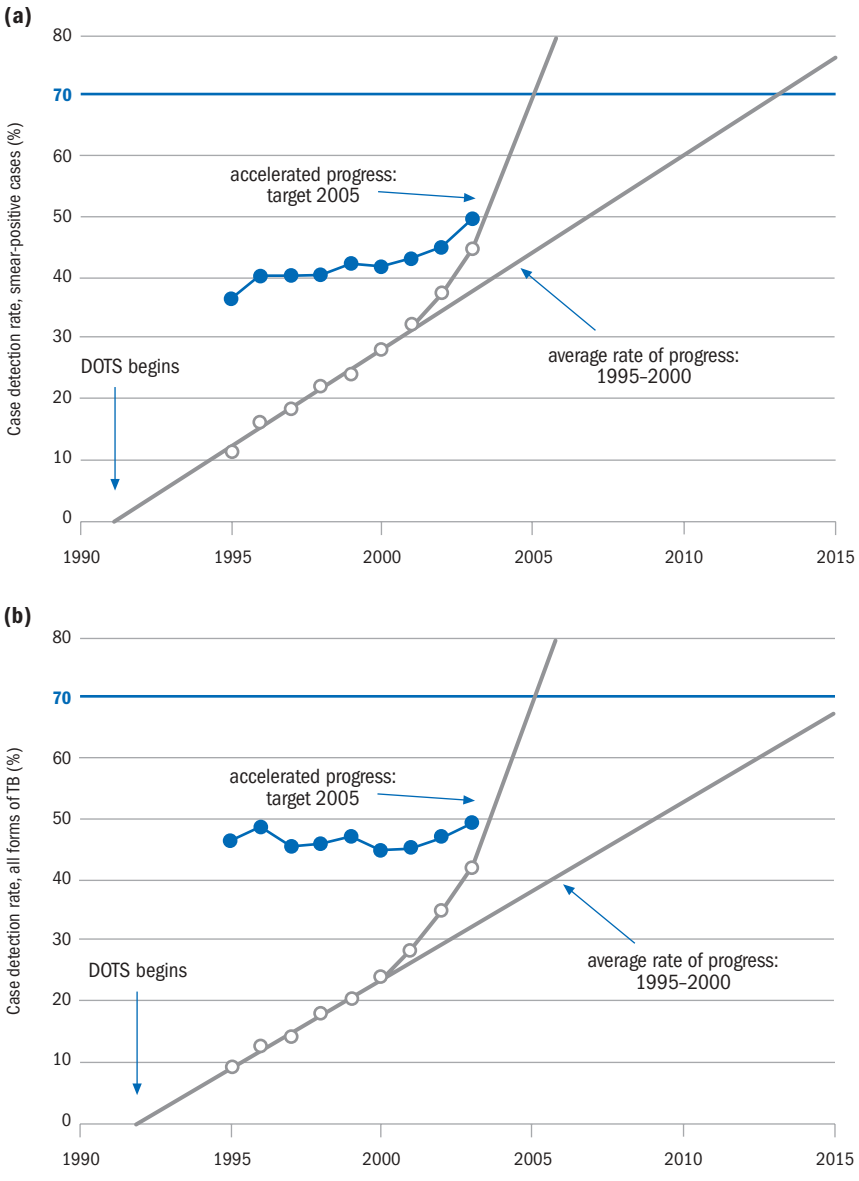


FIGURE 13

Progress towards the 70% case detection target. (a) Open circles mark the number of smear-positive cases notified under DOTS 1995–2003, expressed as a percentage of estimated new cases in each year. The solid line through these points indicates the average annual increment from 1995 to 2000 of about 134 000 new cases, compared with the increment from 2002 to 2003 of 324 000 cases; the steeper line represents a higher annual increment of approximately 488 000 cases per year needed to reach the 70% target by 2005. Closed circles show the total number of smear-positive cases notified (DOTS and non-DOTS) as a percentage of estimated cases. (b) As (a), but for all forms of TB.



been rising more quickly than the overall case detection rate, and has accelerated since 2000. The 7.5% increase in DOTS case detection between 2002 and 2003, an additional 324 000 smear-positive cases, is the largest annual increase so far reported. If this rate of increase is maintained, the estimated detection rate will be 60% in 2005. To reach the 70% target by 2005, DOTS programmes must find and treat an extra 488 000 cases in each of the two remaining years.

Because case detection under DOTS has increased faster than the overall rate of case detection, the proportion of notified smear-positive cases that were notified by DOTS programmes has also increased, reaching 90% in 2003. DOTS programmes have continued to recruit largely from the pool of patients that would have been detected anyway in the public sector.

Although more cases are recruited to DOTS programmes each year, the case detection rate within DOTS areas (measured by the ratio of case detection to population coverage) has changed little, averaging 52% worldwide between 1996 and 2003 (Figure 14). There are signs of a slow rise in the HBCs, from 35% in 1995 to 56% in 2003, due mostly to improvements in Bangladesh, India, Indonesia, Myanmar and the Philippines.

Smear-positive case detection rates by DOTS programmes in 2003 were lowest in the European Region (23%) and highest in the African Region, Region of the Americas and Western Pacific Region (all 50%; see Figure 15, Table 6). The rate of improvement in case detection by DOTS pro-

FIGURE 14

Smear-positive case detection rate within DOTS areas for high-burden countries (blue) and the world (grey), 1995–2003. DOTS case detection rate divided by DOTS coverage, expressed as percentage.

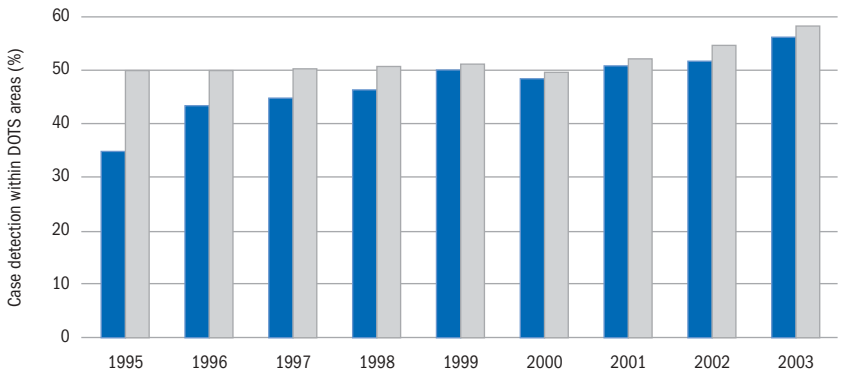


FIGURE 15

Smear-positive case detection rate by DOTS programmes, by WHO region, 1995–2003.
Heavy line shows global DOTS case detection rate.

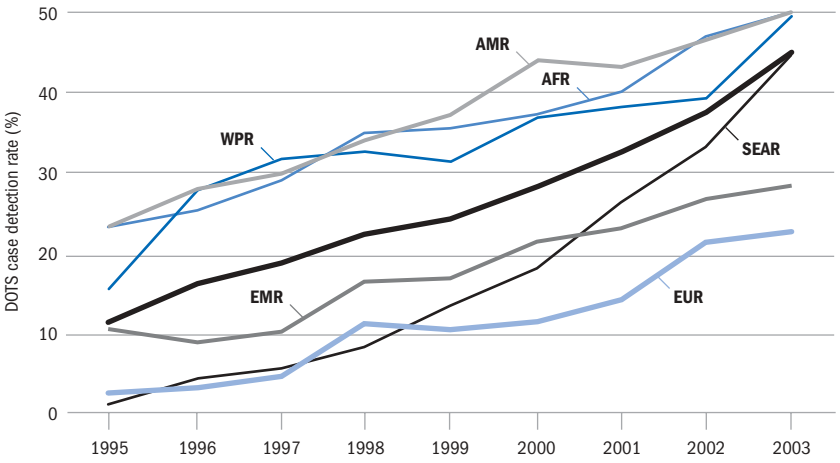


TABLE 6

Case detection rate of new smear-positive cases (%), 1995–2003

	DOTS PROGRAMMES									WHOLE COUNTRY								
	1995	1996	1997	1998	1999	2000	2001	2002	2003	1995	1996	1997	1998	1999	2000	2001	2002	2003
1 India	0.3	0.9	1.1	1.7	7.1	12	24	31	47	38	41	38	38	46	46	50	50	54
2 China	15	28	32	32	29	31	31	30	43	22	34	39	33	33	34	34	32	45
3 Indonesia	1.4	4.6	7.5	12	18	19	20	27	33	13	*	*	*	*	19	*	*	*
4 Nigeria	12	12	12	12	14	14	14	13	18	*	*	*	*	*	*	17	15	*
5 Bangladesh	6.7	14	18	23	23	23	25	29	33	15	21	23	26	25	25	26	29	*
6 Pakistan	1.0	1.8	–	3.8	2.0	2.8	5.2	13	17	2.5	*	–	14	5.5	*	9.2	13	*
7 Ethiopia	16	21	23	25	26	35	35	36	36	*	*	*	*	27	*	*	*	*
8 South Africa	–	–	6.1	22	70	75	81	105	118	41	69	80	91	93	91	95	106	118
9 Philippines	0.4	0.5	3.2	10	20	48	57	62	68	96	87	80	68	71	65	*	*	*
10 Kenya	53	54	50	54	52	44	47	46	46	*	*	*	*	*	48	*	*	*
11 DR Congo	43	49	46	57	56	53	58	57	63	47	*	*	57	*	*	*	*	*
12 Russian Federation	–	0.5	1.0	1.0	1.7	4.6	5.2	6.9	8.8	72	69	64	60	29	35	34	37	40
13 Viet Nam	30	60	79	83	84	83	84	88	86	60	77	*	86	84	*	*	88	*
14 UR Tanzania	55	54	51	52	50	47	46	43	43	*	*	*	*	*	*	*	*	*
15 Brazil	–	–	–	4.1	3.9	7.5	8.0	10	18	79	79	78	80	78	79	75	82	81
16 Uganda	–	–	58	58	58	50	46	46	44	49	54	*	*	*	*	*	*	*
17 Thailand	–	0.3	5.0	21	39	46	73	65	72	55	46	35	*	*	*	*	*	*
18 Mozambique	56	50	48	48	–	45	44	45	45	*	*	*	*	47	*	*	*	*
19 Zimbabwe	–	–	–	51	49	46	46	47	42	50	54	57	*	*	*	*	*	*
20 Myanmar	–	26	26	29	32	48	56	65	73	26	28	28	*	*	*	58	*	*
21 Afghanistan	–	–	2.0	5.9	5.3	9.0	14	19	18	–	–	*	*	*	*	*	*	*
22 Cambodia	40	34	44	47	53	49	47	55	60	*	42	*	*	*	*	*	*	*
High-burden countries	**8.5**	**14**	**17**	**20**	**23**	**27**	**31**	**35**	**44**	**33**	**37**	**37**	**37**	**39**	**39**	**41**	**43**	**48**
AFR	24	26	29	35	36	37	40	47	50	38	43	41	45	45	43	44	47	50
AMR	23	28	30	34	37	44	43	46	50	72	72	77	77	76	74	75	76	76
EMR	11	9.1	10	17	17	22	23	27	28	20	25	24	30	27	23	26	27	28
EUR	2.6	3.4	4.5	11	11	12	14	22	23	63	62	57	57	45	47	43	42	49
SEAR	1.5	4.2	5.6	8.2	14	18	27	33	45	30	30	30	30	37	39	42	45	49
WPR	16	28	32	33	31	37	38	39	50	37	45	48	44	44	43	43	43	52
Global	**11**	**16**	**18**	**22**	**24**	**28**	**32**	**37**	**45**	**37**	**40**	**40**	**40**	**42**	**42**	**43**	**45**	**50**

– Indicates not available.
* No additional data beyond DOTS report, either because country is 100% DOTS, or because no non-DOTS report was received.

FIGURE 16

Proportion of estimated new smear-positive (a) and of all estimated new cases (b) notified under DOTS (grey portion of bars) and non-DOTS (blue portion of bars), 2003.
Figures indicate the number of cases (in thousands) represented by each portion of each bar.

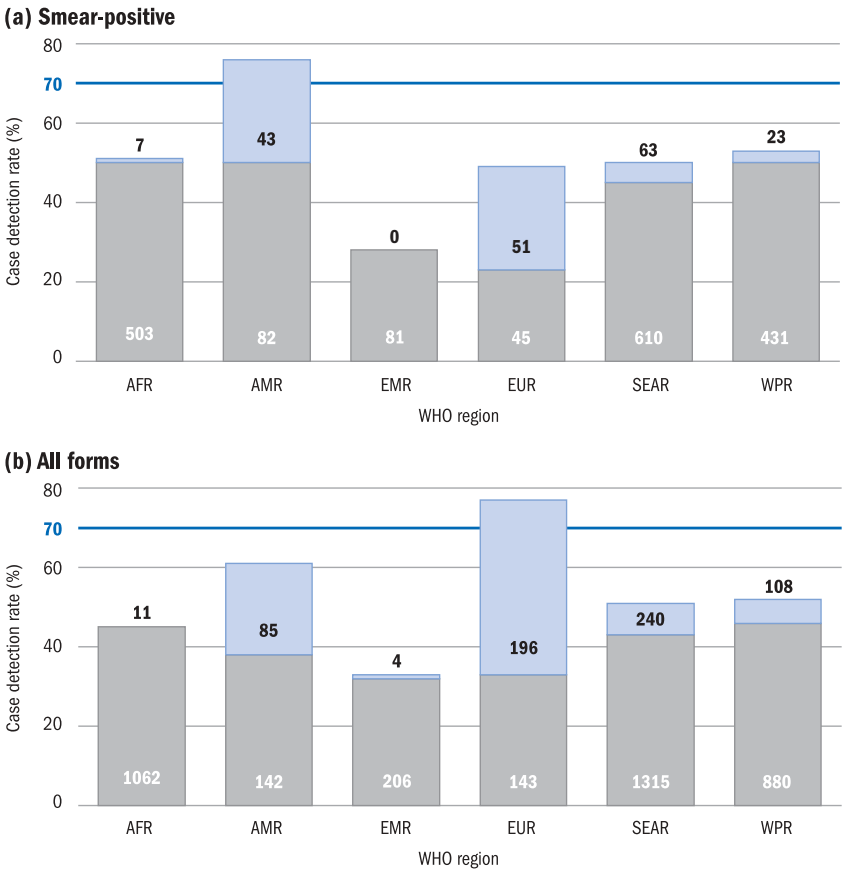
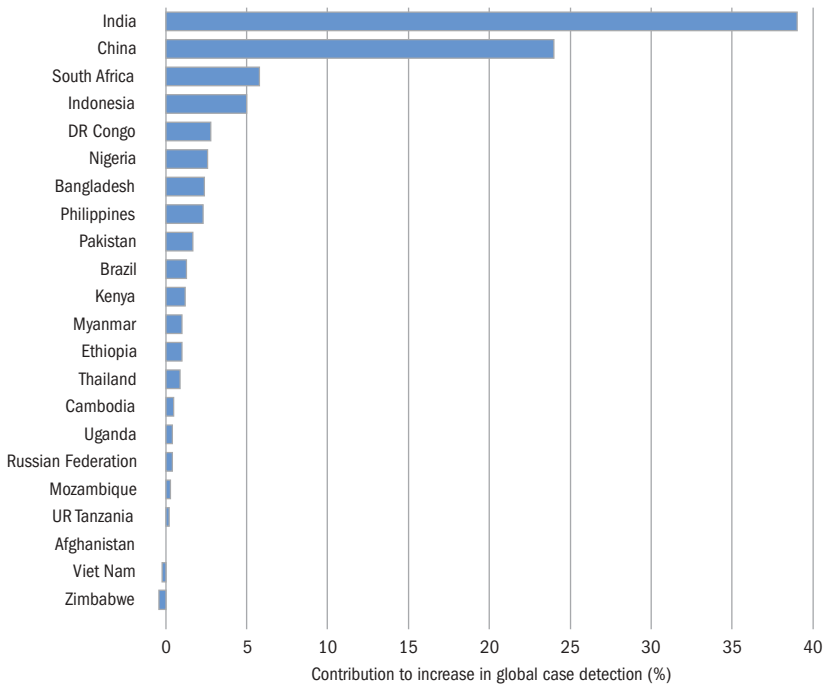


FIGURE 17

Contributions to the global increase in case detection made by high-burden countries, 2002–2003



grammes has been roughly the same in all WHO regions except the South-East Asia Region, where the acceleration in case-finding has been visible since 1998, driven mainly by DOTS expansion in India.

In the Region of the Americas, European Region and South-East Asia Region, significant numbers of smear-positive cases were reported, as usual, from outside DOTS programmes (Figure 16a). In the Region of the Americas, the estimated proportion of smear-positive cases detected from all sources exceeded 70%. Thus, the target for case detection would have been reached in this region if all patients in whom TB had been diagnosed had been treated under DOTS. There were similar differences among regions in the detection rates of all TB cases (Figure 16b).

Of the additional smear-positive cases reported by DOTS programmes in 2003 (compared with 2002), 63% were in India (39%) and China (24%; Figure 17). Although China and India have made big improvements in case detection, these two countries still account for an estimated 36% of all undetected smear-positive cases (Figure 18). They are among eight countries that together account for two thirds (67%) of all undetected cases in 2003. In order of importance, these are: India, China, Indonesia, Nigeria, Bangladesh, Pakistan, Ethiopia and the Russian Federation.

Outcomes of treatment

More than 1.4 million new sputum smear-positive cases were registered for treatment in DOTS programmes in 2002, approximately the same number that were notified that year (Table 7, Annex 2). Discrepancies between the numbers of cases notified and registered for treatment were small globally, by region and for most HBCs, the largest differences being in Kenya and the Philippines (where about 10% of notified cases were not registered for treatment) and Afghanistan (where 20% of cases registered for treatment were not notified).

The cure rate among all cases registered under DOTS was 73%, and a further 9% completed treatment (no laboratory confirmation of cure), giv-

FIGURE 18

Smear-positive TB cases undetected by DOTS programmes in six high-burden countries, 2003. Figures indicate the percentage of all cases missed globally which are missed by each country.

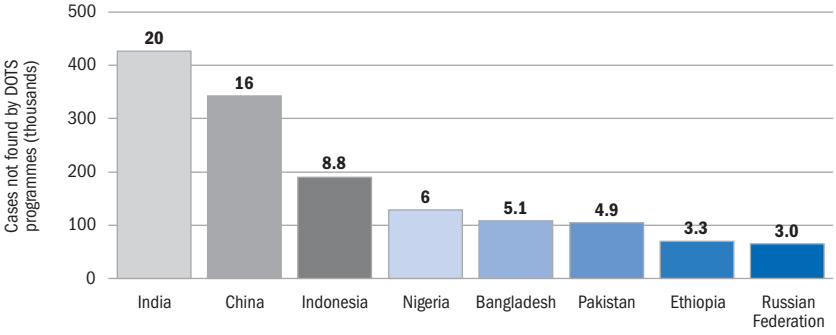


TABLE 7

Treatment outcomes for new smear-positive cases, DOTS strategy, 2002 cohort[a]

				TREATMENT OUTCOMES (%)[b]								% ESTIMATED[f] CASES
		REGISTERED[d]			COMPLETED				TRANS-	NOT	TREATMENT	SUCCESSFULLY TREATED
	NOTIFIED[c]	NUMBER	%	CURED	TREATMENT	DIED	FAILED	DEFAULTED	FERRED	EVAL[e]	SUCCESS (%)	UNDER DOTS
1 India	245 135	244 859	100	86	1.0	4.4	2.5	6.1	0.4	0.0	87 †	27
2 China	180 239	180 239	100	90	2.5	1.3	0.9	1.0	1.8	2.6	93 †	28
3 Indonesia	76 230	76 230	100	72	15	2.0	1.3	4.9	2.6	3.0	86 †	24
4 Nigeria	19 596	20 559	105	69	10	1.7	6.7	11	1.5	0.0	79	11
5 Bangladesh	45 741	46 811	102	81	2.9	4.7	0.7	7.0	3.5	0.2	84	25
6 Pakistan	15 331	14 314	93	65	13	3.0	1.2	14	3.8	0.8	77	9.1
7 Ethiopia	36 541	36 541	100	59	17	6.6	0.7	5.0	9.8	1.7	76	27
8 South Africa	97 656	98 090	100	54	14	8.5	1.3	13	9.3	0.0	68	71
9 Philippines	65 148	59 453	91	77	11	2.6	1.1	5.3	2.9	0.5	88 †	49
10 Kenya	34 337	30 966	90	65	14	4.9	0.4	8.9	6.5	0.0	79	33
11 DR Congo	44 518	45 013	101	71	7.8	6.6	1.0	7.8	4.5	1.7	78	45
12 Russian Federation	5 179	5 171	100	64	2.7	13	9.1	7.2	4.1	0.0	67	4.6
13 Viet Nam	56 698	56 590	100	90	1.8	3.4	0.8	1.5	2.0	0.0	92 †	81
14 UR Tanzania	24 136	24 136	100	76	4.3	11	0.3	4.1	4.4	0.1	80	35
15 Brazil	4 835	4 606	95	46	29	6.2	0.3	7.8	11	0.0	75	6.9
16 Uganda	19 088	19 098	100	30	31	6.2	0.4	19	6.6	7.3	60	27
17 Thailand	25 593	26 559	104	69	5.3	11	1.7	9.5	4	0.0	74	50
18 Mozambique	15 236	15 236	100	77	1.4	11	1.3	7.4	2.3	0.3	78	35
19 Zimbabwe	15 941	15 941	100	62	5.6	11	0.1	6.6	15	0.0	67	32
20 Myanmar	24 162	23 922	99	71	10	5.4	1.9	9.2	2.4	0.0	81	52
21 Afghanistan	6 509	7 780	120	60	27	4.0	1.8	4.7	2.6	0.0	87 †	20
22 Cambodia	17 258	17 396	101	89	3.0	3.8	0.3	2.4	1.1	0.0	92 †	51
High-burden countries	**1 075 107**	**1 069 510**	**99**	**76**	**7.0**	**4.6**	**1.5**	**6.2**	**3.3**	**1.0**	**83**	**29**
AFR	442 729	437 873	99	60	13	7.2	1.4	11	6.6	1.4	73	31
AMR	82 312	78 180	95	64	17	4.8	1.0	5.4	3.4	4.3	81	38
EMR	74 450	74 799	100	72	12	3.1	1.4	7.8	2.6	1.5	84	22
EUR	43 112	40 307	93	63	13	6.2	6.2	5.9	2.2	3.1	76	16
SEAR	449 615	451 162	100	81	4.3	4.4	2.1	6.3	1.5	0.5	85 †	28
WPR	340 666	339 754	100	84	6.2	2.4	1.0	2.3	2.3	1.5	91 †	35
Global (DOTS)	**1 432 884**	**1 422 075**	**99**	**73**	**8.7**	**4.8**	**1.6**	**6.7**	**3.4**	**1.4**	**82**	**30**

[a] Cases diagnosed during 2002 and treated/followed-up through 2003.

[b] See Table 2 and accompanying text for definitions of treatment outcomes.

[c] For AMR and EUR, the regional total of notified cases includes the number of laboratory confirmed (as opposed to smear-positive) cases for one country: USA and Israel, respectively.

[d] If the number registered was provided, this (or the sum of the outcomes, if greater) was used as the denominator for calculating treatment outcomes. If the number registered was missing, then the number notified (or the sum of the outcomes, if greater) was used as the denominator. The number used as the denominator is shown in column labelled "Registered".

[e] Eval: evaluated.

[f] Estimated: estimated number of cases for 2002 (as opposed to notified or registered).

† Treatment success ≥85%.

TABLE 8

Treatment outcomes for new smear-positive cases, non-DOTS strategy, 2002 cohort[a]

				TREATMENT OUTCOMES (%)[a]							
	NOTIFIED	REGISTERED[a]	REGST'D (%)	CURED	COMPLETED TREATMENT[a]	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL	TREATMENT SUCCESS (%)
1 India	150 698	41 368	27	41	17	1.5	1.4	30	9.3	0.0	58
2 China	14 733	13 681	93	85	7.4	1.1	1.0	2.4	1.2	2.2	92 †
3 Indonesia	–	–	–	–	–	–	–	–	–	–	–
4 Nigeria	2 340	–	–	–	–	–	–	–	–	–	–
5 Bangladesh	1 070	–	–	–	–	–	–	–	–	–	–
6 Pakistan	934	–	–	–	–	–	–	–	–	–	–
7 Ethiopia	–	–	–	–	–	–	–	–	–	–	–
8 South Africa	1 143	1 239	108	59	6.2	5.4	2.4	13	8.2	5.6	65
9 Philippines	–	–	–	–	–	–	–	–	–	–	–
10 Kenya	–	–	–	–	–	–	–	–	–	–	–
11 DR Congo	–	–	–	–	–	–	–	–	–	–	–
12 Russian Federation	22 686	–	–	–	–	–	–	–	–	–	–
13 Viet Nam	–	–	–	–	–	–	–	–	–	–	–
14 UR Tanzania	–	–	–	–	–	–	–	–	–	–	–
15 Brazil	36 536	24 246	66	24	57	5.9	0.3	12	0.6	0.0	81
16 Uganda	–	–	–	–	–	–	–	–	–	–	–
17 Thailand	–	–	–	–	–	–	–	–	–	–	–
18 Mozambique	–	–	–	–	–	–	–	–	–	–	–
19 Zimbabwe	–	–	–	–	–	–	–	–	–	–	–
20 Myanmar	–	–	–	–	–	–	–	–	–	–	–
21 Afghanistan	–	–	–	–	–	–	–	–	–	–	–
22 Cambodia	–	–	–	–	–	–	–	–	–	–	–
High-burden countries	**203 140**	**80 534**	**35**	**44**	**27**	**2.8**	**1.0**	**20**	**5.3**	**0.5**	**71**
AFR	11 714	9 332	80	42	22	10	7.8	10	8.5	0.8	63
AMR	49 603	30 985	62	29	49	5.8	0.5	13	2.0	0.5	78
EMR	1 323	334	25	28	49	1.5	0.6	15	4.8	0.0	78
EUR	40 450	8 622	21	47	21	4.4	4.5	6.6	0.7	15	69
SEAR	157 115	43 784	28	42	17	1.6	1.5	28	9.0	0.1	59
WPR	31 442	18 982	60	64	9.9	1.9	1.4	2.0	12	8.7	74
Global (non-DOTS)	**291 647**	**112 039**	**38**	**43**	**25**	**3.7**	**2.0**	**16**	**6.9**	**2.9**	**68**

– Indicates not available.

[a] See notes for Table 7.

ing a reported, overall treatment success rate of 82%. An estimated 30% of all smear-positive cases arising in 2002 were treated successfully by DOTS programmes. In non-DOTS areas, the quality of reporting was worse: only four HBCs provided data for the 2002 cohort (Table 8).

By WHO region, the documented treatment success rates by DOTS programmes varied from 73% in the African Region to 85% in the South-East Asia Region and 91% in the Western Pacific Region, the latter two regions having met the 85% target (Table 7, Figure 19). Fatal outcomes were most common in the African Region (7%), where a higher fraction of cases are HIV-positive, and in the European Region (6%), where a higher fraction of cases are drug resistant (eastern Europe), or occur among the elderly (western Europe). Treatment interruption (default) was most frequent in the African Region (11%) and the Eastern Mediterranean Region (8%). Transfer without follow-up was also especially high in the African Region (7%). Treatment failure was conspicuously high in the European Region (6%), mainly because a high proportion of patients in eastern Europe are recorded as failures.

DOTS treatment success exceeded 85% in seven HBCs (Table 7). It was under 70% in the Russian Federation, South Africa, Uganda and Zimbabwe. Treatment results for individual African countries once again point to the effects of HIV: cohort death rates were 9% or more in Mozambique, South Africa, the United Republic of

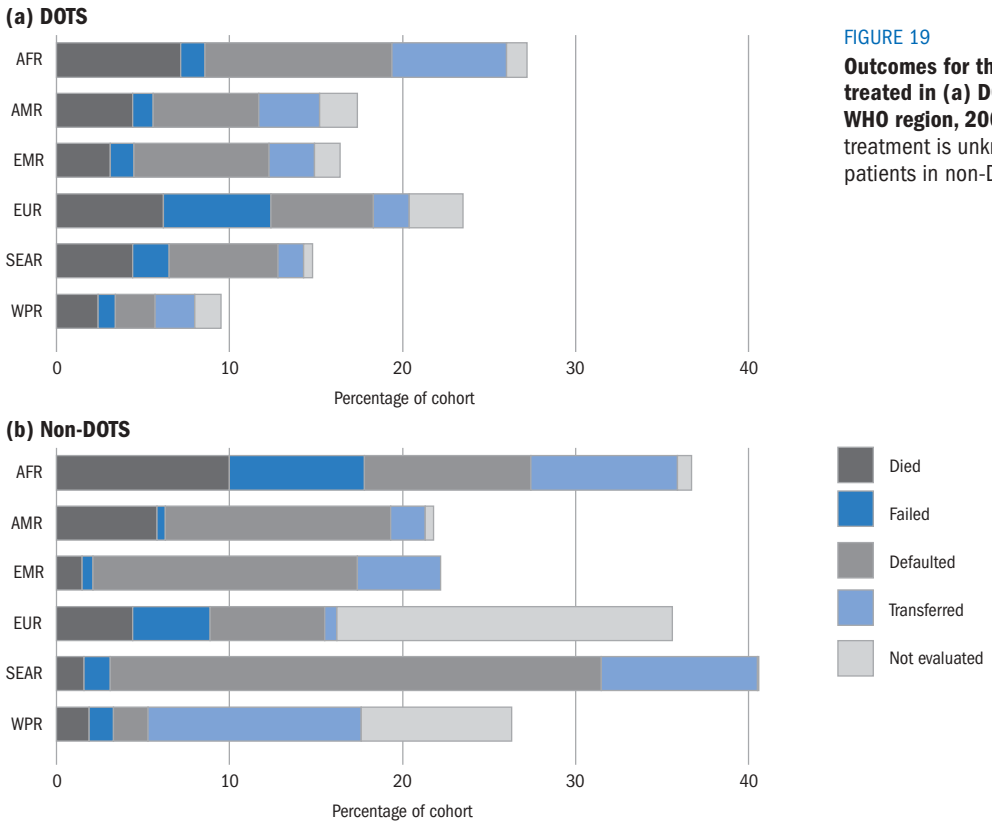


FIGURE 19

Outcomes for those patients not successfully treated in (a) DOTS and (b) non-DOTS areas, by WHO region, 2002 cohort. The true outcome of treatment is unknown for a high proportion of patients in non-DOTS areas.

TABLE 9

Treatment success for new smear-positive cases (%), 1994–2002 cohorts[a]

	DOTS PROGRAMMES									WHOLE COUNTRY								
	1994	1995	1996	1997	1998	1999	2000	2001	2002	1994	1995	1996	1997	1998	1999	2000	2001	2002
1 India	83	79	79	82	84	82	84	85	87	*	25	21	18	27	21	77	54	83
2 China	94	96	96	96	97	96	95	96	93	91	93	94	95	95	95	93	95	92
3 Indonesia	94	91	81	54	58	50	87	86	86	*	*	*	*	*	*	*	*	*
4 Nigeria	65	49	32	73	73	75	79	79	79	*	*	*	*	*	*	*	*	*
5 Bangladesh	73	71	72	78	80	81	83	84	84	*	*	63	73	77	79	81	83	*
6 Pakistan	74	70	–	67	66	70	74	77	77	69	*	–	*	23	*	*	*	*
7 Ethiopia	74	61	73	72	74	76	80	76	76	*	*	71	*	*	74	*	*	*
8 South Africa	–	–	69	73	74	60	66	65	68	78	58	61	68	72	57	63	61	68
9 Philippines	80	–	82	83	84	87	88	88	88	88	60	35	78	71	*	*	*	*
10 Kenya	73	75	77	65	77	78	80	80	79	*	*	*	*	*	79	*	*	*
11 DR Congo	71	80	48	64	70	69	78	77	78	72	74	48	64	*	*	*	*	*
12 Russian Federation	–	65	62	67	68	65	68	67	67	–	*	57	*	*	*	*	*	*
13 Viet Nam	91	91	90	85	93	92	92	93	92	*	89	89	85	92	92	*	*	*
14 UR Tanzania	80	73	76	77	76	78	78	81	80	*	*	*	*	*	*	*	*	*
15 Brazil	–	–	–	–	91	89	73	67	75	70	17	20	27	40	78	71	55	80
16 Uganda	–	–	33	40	62	61	63	56	60	–	44	*	*	*	*	*	*	*
17 Thailand	–	–	78	62	68	77	69	75	74	58	64	*	58	*	*	*	*	*
18 Mozambique	67	39	54	67	–	71	75	77	78	*	*	55	65	–	*	*	*	*
19 Zimbabwe	–	–	–	–	70	73	69	71	67	52	53	32	69	*	*	*	*	*
20 Myanmar	–	66	79	82	82	81	82	81	81	77	67	79	*	*	*	*	*	*
21 Afghanistan	–	–	–	45	33	87	86	84	87	–	–	–	*	*	86	85	*	*
22 Cambodia	84	91	94	91	95	93	91	92	92	*	*	*	*	*	*	*	*	*
High-burden countries	**87**	**83**	**78**	**81**	**83**	**81**	**84**	**84**	**83**	**83**	**53**	**50**	**56**	**62**	**60**	**81**	**72**	**83**
AFR	59	62	57	63	70	69	72	71	73	60	60	56	64	70	68	71	70	72
AMR	77	77	81	81	80	83	81	83	81	65	50	51	58	67	79	77	72	80
EMR	82	87	86	79	76	83	83	83	84	79	79	66	73	56	79	81	83	84
EUR	68	69	72	72	76	77	77	75	76	67	67	58	72	63	75	75	72	75
SEAR	80	74	77	72	72	73	83	84	85	66	33	31	29	40	34	79	63	83
WPR	90	91	93	93	95	94	92	93	91	87	80	72	91	92	91	90	91	90
Global	**77**	**79**	**77**	**79**	**81**	**80**	**82**	**82**	**82**	**75**	**57**	**54**	**60**	**64**	**64**	**80**	**73**	**81**

– Indicates not available.

* No additional data beyond DOTS report, either because country is 100%, or because no non-DOTS report was received.

[a] See notes for Table 7.

Tanzania and Zimbabwe. But programme performance also remains poor in some African countries. For example, more than 15% of patients were lost to follow-up in Ethiopia, Kenya, South Africa, Uganda and Zimbabwe. Large proportions of patients completed treatment without confirming cure (a final, negative sputum smear) in Ethiopia (17%) and Uganda (31%). Uganda reported the lowest proportion of successful treatments among the 22 HBCs (60%). The aggregated treatment results for the European Region are strongly influenced by the performance in the Russian Federation, where 13% of patients died, 9% failed treatment and 11% were lost to follow-up.

A comparison of treatment results for nine consecutive cohorts (1994–2002) shows that the overall success rates have been 80% or more in DOTS areas since 1998 (Table 9). Treatment success rates have been persistently poor outside DOTS programmes in all regions, principally because large fractions of cases are not registered or evaluated.

In DOTS areas, about 250 000 cases were registered for re-treatment in 2002 (Table 10; Annex 2). Some patients remain on treatment (included with those "not evaluated"), but the latest data give an overall treatment success rate of 72%. When the three registration types (re-treatment after relapse, failure and default) are distinguished and compared with new TB patients, three patterns emerge. First, the comparative success of re-treatment was consistent with expectations: lower on average for re-treatment (72%) than for new cases (82%), but higher for relapses (71%), intermediate for defaulters (68%) and lowest for failures (58%). The rank order relapse > default > failed held for six out of eight HBCs that provided data, and for five out of six WHO regions. Second, patients who defaulted from their first course of treatment tended to default when treated again (17% of patients that were re-treated after default failed to complete the subsequent course of treatment, compared with 11% among all re-treated patients and 7% of patients on their first course of treatment). This was true in all six WHO

TABLE 10

Re-treatment outcomes for smear-positive cases, DOTS strategy, 2002 cohort[a]

		TREATMENT OUTCOMES (%)[a]							
	REGISTERED[a]	CURED	COMPLETED TREATMENT[a]	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL	TREATMENT SUCCESS (%)
1 India	84 078	68	3.3	7.2	6.1	14	0.7	0.0	72
2 China	46 932	83	5.2	2.6	3.8	2.0	1.0	0.0	88 †
3 Indonesia	3 731	60	17	2.2	3.3	5.4	3.1	8.4	78
4 Nigeria	2 373	63	11	4.7	7.6	11	1.1	2.5	73
5 Bangladesh	4 360	66	2.6	4.3	1.9	10	2.9	12	69
6 Pakistan	2 871	33	43	4.5	1.8	11	5.2	1.9	76
7 Ethiopia	1 716	52	8.6	6.9	2.8	5.3	2.4	22	60
8 South Africa	28 755	43	10	11	2.1	17	10	6.8	53
9 Philippines	–	–	–	–	–	–	–	–	–
10 Kenya	2 476	65	12	10	0.4	6.7	5.8	0.0	77
11 DR Congo	4 618	61	5.8	9.3	3.6	9.8	7.3	3.3	67
12 Russian Federation	962	37	9.4	12	26	8.6	8.1	0.0	46
13 Viet Nam	6 079	79	5.5	4.9	5.4	2.3	2.4	0.0	85 †
14 UR Tanzania	2 081	71	6.4	13	0.7	4.6	3.7	0.5	77
15 Brazil	640	36	24	7.0	1.1	18	13	0.0	60
16 Uganda	2 555	28	27	10	0.9	16	5.3	13	55
17 Thailand	1 990	55	6.4	17	6.7	9.3	5.7	0.0	62
18 Mozambique	1 721	65	1.2	12	2.2	9.4	4.0	5.7	67
19 Zimbabwe	1 371	58	4.7	20	0.9	7.6	8.7	0.0	63
20 Myanmar	8 036	65	10	7.8	3.9	10	3.7	0.2	75
21 Afghanistan	–	–	–	–	–	–	–	–	–
22 Cambodia	875	86	2.9	5.8	1.5	2.7	1.1	0.0	89 †
High-burden countries	**208 220**	**66**	**6.5**	**6.8**	**4.5**	**11**	**2.9**	**2.4**	**73**
AFR	59 574	49	11	10	2.4	14	7.7	6.7	59
AMR	7 635	64	6.8	5.8	4.3	12	4.3	2.3	71
EMR	8 825	51	23	4.4	3.5	10	5.3	3.2	74
EUR	12 551	42	12	10	12	11	2.6	10	54
SEAR	106 423	68	4.3	7.1	5.6	13	1.3	0.8	72
WPR	57 071	81	5.6	3.1	4.0	2.3	1.8	1.9	87 †
Global	**252 079**	**64**	**7.2**	**6.9**	**4.7**	**11**	**3.2**	**3.1**	**72**

– Indicates not available.

† Treatment success ≥85%.

[a] See notes for Table 7.

regions. Third, the regional distribution of adverse re-treatment outcomes resembled the pattern observed for new cases. Thus, countries in the African Region reported high death rates (10%), and many patients were lost to follow-up (28%). Countries in the European Region reported high rates of death (10%) and treatment failure (12%).

Trends in case detection and treatment success: overview of national DOTS programmes

Data on both treatment success and case detection were provided by 177 DOTS countries. Case detection exceeded 50%, and treatment success exceeded 70%, in 75 countries (Figure 20). They include the HBCs Cambodia, the Democratic Republic of the Congo, Myanmar, the Philippines, Thailand and Viet Nam. Of these countries, 22 appear to have reached the WHO targets, but together the 75 countries accounted for only 17% of all new smear-positive cases in 2003. Viet Nam was still the only member of the current group of HBCs to have reached targets for both case detection (>70%) and treatment success (>85%), although Myanmar and the Philippines are close to these targets (Figure 21). Three HBCs – Brazil, the Russian Federation and Uganda – had low rates of both case detection (<50%) and treatment success (<70%). More details of progress in each of the 22 HBCs can be found in the profiles (Annex 1).

Of 161 countries that provided data for both the 2001 and 2002 cohorts, 91 (57%) showed higher treatment success rates for the 2002 cohort, and 68 of 172 (40%) improved case detection by more than 5%. Annex 2 tabulates case detection and treatment success rates by country over the nine years for which there are data.

Trends in prevalence and death rates

The trends in prevalence and mortality for each region are calculated from the trend in incidence (Figure 6) and from estimates of the duration of illness (e.g. time smear-positive) and the case-fatality rate. Summing estimates from across the regions gives the global trends in prevalence and

FIGURE 20

DOTS status in 2003: countries close to targets. 75 countries reported treatment success rates 70% or over and DOTS detection rates 50% or over. 22 countries (including Kiribati, Wallis & Futuna Islands and Marshall Islands, out of range of graph) have reached both targets.

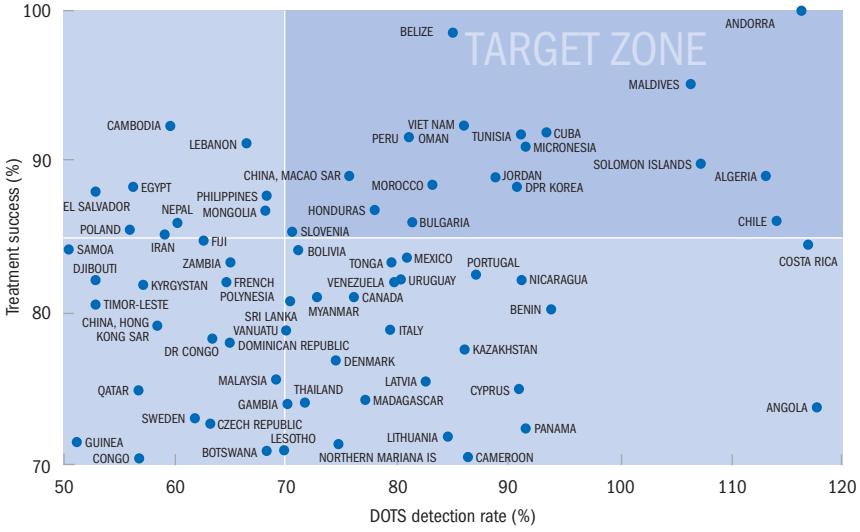


FIGURE 21

DOTS progress in high-burden countries, 2002–2003. Treatment success refers to cohorts of patients registered in 2001 or 2002, and evaluated by the end of 2002 or 2003, respectively. Countries in AFR, AMR, EMR and EUR are shown in blue; those in SEAR and WPR are shown in black.

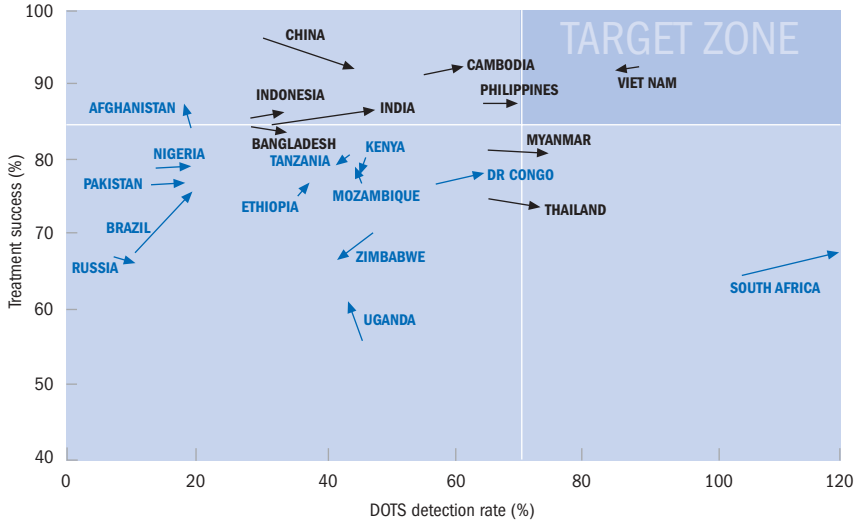
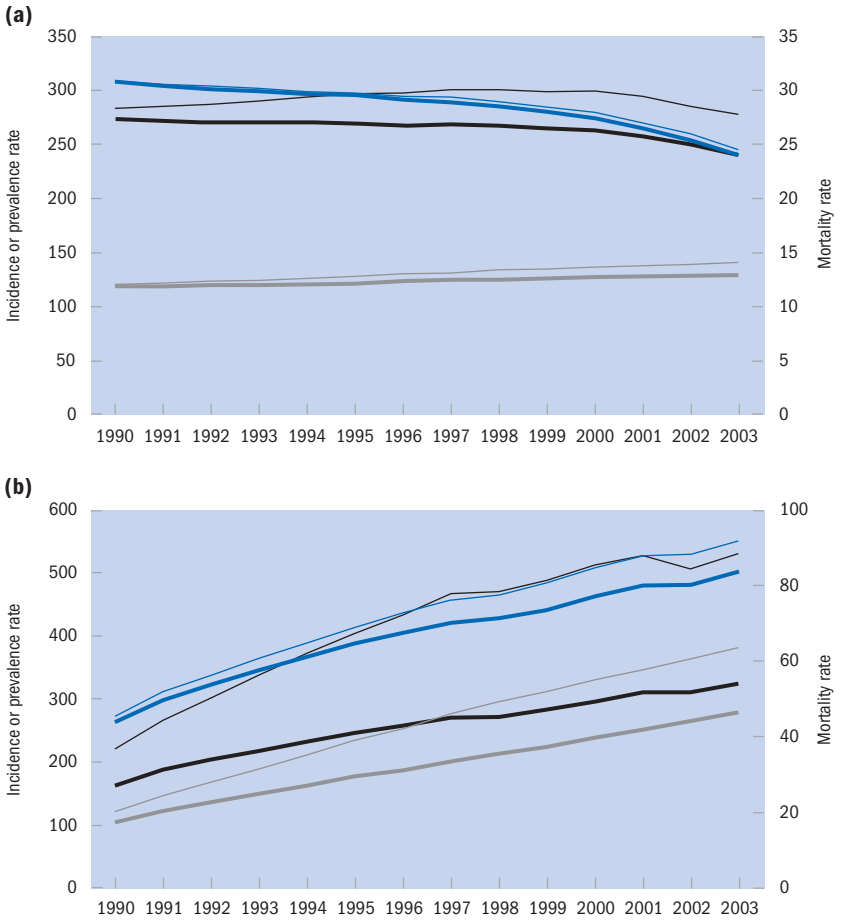


FIGURE 22

(a) Estimated global TB incidence (per 100 000 population per year; grey), prevalence (per 100 000 population; blue), and mortality rates (per 100 000 population per year; black), 1990–2003, including (thin lines) or excluding (thick lines) TB patients coinfected with HIV. (b) As for (a), but for African countries with high rates of HIV infection (≥4% in adults aged 15–49 years).



deaths, which are shown in Figure 22a with and without the contribution of HIV-positive TB patients, and in comparison with the trends in incidence (Figure 7). Although the global incidence rate was still increasing in 2003, prevalence and death rates had already begun to fall. Excluding HIV-positive TB patients, the incidence rate increased 0.6% between 2002 and 2003, prevalence fell by 5.7% and mortality by 3.5%. When TB patients coinfected with HIV are included, the incidence rate increased by 1.0%, and prevalence and mortality fell by 5.5% and 2.5%, respectively. The differential effects of HIV on incidence, prevalence and mortality are also visible, and magnified, in the trends for countries of eastern and southern Africa, where all three indicators were still increasing in 2003 (Figure 22b). Among the nine regions defined in Figure 6, TB prevalence and death rates increased between 2002 and 2003 only in the two African regions; as for incidence rates, prevalence and deaths were falling or stable in the other seven regions.

Planning and DOTS implementation

TB control in the context of the health-care system

Country profiles incorporate information from the summary planning tables that were prepared for the 2004 DEWG meeting and from the questionnaires submitted by all 22 HBCs. The health systems of many countries are still undergoing reform and restructuring. However, all HBCs except the Russian Federation and Thailand reported that TB control functions are fully integrated with essential national health services. The MoH generally provides support for TB control through a specific technical unit, although in Bangladesh, South Africa and Thailand this function needs to be strengthened. All HBCs have a national plan for TB control and many will conduct, during 2005, a new planning exercise for the next five years. A total of 15 HBCs have prepared, or are developing, a plan for human resource development (HRD) reflecting their specific needs in the context of the health system.

Constraints and remedial actions

In summary tables and questionnaires, countries reported the following constraints:

1. Shortage or inadequate capacity of staff. This remains a major constraint identified by 18 HBCs. The problem is being addressed by various means: situation assessments, development of HRD plans, intensification of training and supervision, redistribution of staff and appointment of new staff. All HBCs except Brazil, Nigeria, South Africa and Zimbabwe plan to implement projects funded by the GFATM in 2005; a shortage of managers, or inadequate managerial capacity, will almost certainly hinder these projects.
2. Inadequate central management capacity. Insufficient capacity at the highest levels delays the implementation of national plans, as reported in Bangladesh, Mozambique, South Africa, Uganda, the United Republic of Tanzania and Zimbabwe. Support from technical partners has been the main temporary remedial action.
3. Inadequate infrastructure. Lack of transportation infrastructure (roads and vehicles), poor communication networks, unreliable or non-existent electricity supplies, inadequate buildings and equipment, and weak primary health-care systems all impede TB control. A total of 12 HBCs reported deficiencies in at least one of these areas.

4. Weak political commitment. Ethiopia, Mozambique, Nigeria, South Africa, Thailand and Zimbabwe reported limited commitment to TB control from central and peripheral levels. Remedial actions include providing better support to local government following decentralization, forming provincial task forces, expanding international support through high-level advocacy missions and advocacy for TB control in civil society, especially in support of patients infected with HIV. Brazil, China and the Russian Federation reported significant progress on legislation to support TB control.

5. Weak laboratory services. The main obstacles are summarized in Table 11.

6. Nearly all HBCs had a secure supply of anti-TB drugs in 2003, thanks in large part to the Global TB Drug Facility (GDF). Mozambique reported drug shortages, but these will be rectified following a successful application to the GDF. South Africa experienced drug shortages due to the phasing in of the new drug combinations and a complete stock-out of streptomycin when the sole supplier stopped production.

7. Poor monitoring and evaluation. Timely and reliable data are essential for monitoring trends and for planning corrective actions. The Russian Federation and South Africa have addressed problems reported in 2003[13] by establishing standardized recording and reporting systems. China has introduced a new Internet-based reporting system, but the data being collected need validation.

8. Insufficient funds. A lack of money is no longer one of the major constraints identified by most HBCs. The governments of the wealthier HBCs make large contributions to TB control, international donors have increased their investments and the GFATM has begun to bridge financial gaps. As a result, some NTPs now have sufficient funding to expand DOTS programmes. However, some of the HBCs did report shortfalls in their 2004 budgets. Some of these countries still report gaps (see section on Financing DOTS Expansion), and others have problems in distributing funds from local or central governments to programmes (e.g. Nigeria). Mozambique has inadequate funds to pay salaries, and Zimbabwe is heavily affected by the country's general financial crisis.

9. Poor access to remote areas. Access to geographically remote and politically unstable areas is a challenge in Afghanistan, Bangladesh, the Philippines and Uganda. The NTP in Viet Nam, having reached the targets for DOTS implementation, has made service provision in remote areas an important part of consolidating programme success.

10. Low public awareness. Limited knowledge about TB and its treatment, and the stigma of having TB (and perhaps also HIV infection), both hamper efforts to detect and treat TB suspects. A

TABLE 11

Status of TB laboratory services, high-burden countries, 2003–2004

	POPULATION PER DIAGNOSTIC FACILITY	INSUFFICIENT EQUIPMENT OR SHORTAGE OF SUPPLIES	SHORTAGE OF STAFF (OR EXISTING STAFF IN NEED OF TRAINING)	QUALITY ASSURANCE	CULTURE	DRUG SUSCEPTIBILITY TESTING (DST)	NATIONAL REFERENCE LABORATORY (NRL)
1 India	100 000		Y	limited, planned	Y	Y	Y
2 China	500 000		Y	limited	Y	Y	Y
3 Indonesia	80 000		Y	limited	Y	Y	N, one acting
4 Nigeria	150 000	Y	Y	limited, planned			Y
5 Bangladesh	230 000			limited	limited	limited	Y
6 Pakistan	100 000	Y	Y	N	limited	limited	Y
7 Ethiopia	180 000		Y	limited	Y	Y	Y
8 South Africa	unknown[a]			Y	Y	Y	private
9 Philippines	75 000		to be trained	limited	limited	limited	Y
10 Kenya	54 000		Y	Y	Y	Y	Y
11 DR Congo	70 000	Y	Y	limited	limited	limited	Y
12 Russian Federation	25 000		to be trained	Y	Y	Y	N
13 Viet Nam	125 000			Y	limited	limited	Y
14 UR Tanzania	65 000		Y	weak	limited	limited	Y
15 Brazil	45 000		to be trained	limited	Y	Y	Y
16 Uganda	60 000		Y	planned	Y	Y	Y
17 Thailand	65 000		to be trained	Y	Y	Y	Y
18 Mozambique	60 000	Y	Y	N	limited	limited	Y
19 Zimbabwe	120 000	Y	Y	limited	limited	limited	Y
20 Myanmar	200 000		Y	weak	limited	limited	Y
21 Afghanistan	100 000	Y	Y	N	limited	limited	N
22 Cambodia	75 000		to be trained	limited	Y	N	Y

"Y" or "N" indicates whether the problem exists or the activity is undertaken.

"Limited" indicates that the activity is restricted to certain areas of the country.

[a] Laboratory services contracted out to National Health Laboratory Service in eight of nine provinces.

FIGURE 23

The number of TB cases that were tested for HIV for every 100 TB cases that were notified in 2003 for countries that reported more than 1000 cases and tested more than 1% of notified cases. The countries are: ARM Armenia; AUS Australia; AZE Azerbaijan; BOT Botswana; BRA Brazil; CAM Cambodia; CNG Congo; CUB Cuba; DJI Djibouti; ELS El Salvador; GEO Georgia; GHA Ghana; GUT Guatemala; HOK Hong Kong SAR; HON Honduras; IVC Côte d'Ivoire; KOR Republic of Korea; LIY Libyan Arab Jamahiriya; LVA Latvia; MAL Malawi; MEX Mexico; NAM Namibia; NIC Nicaragua; PAN Panama; PNG Papua New Guinea; POR Portugal; SOA South Africa; SUD Sudan; SYR Syrian Arab Republic; UZB Uzbekistan; VTN Viet Nam.

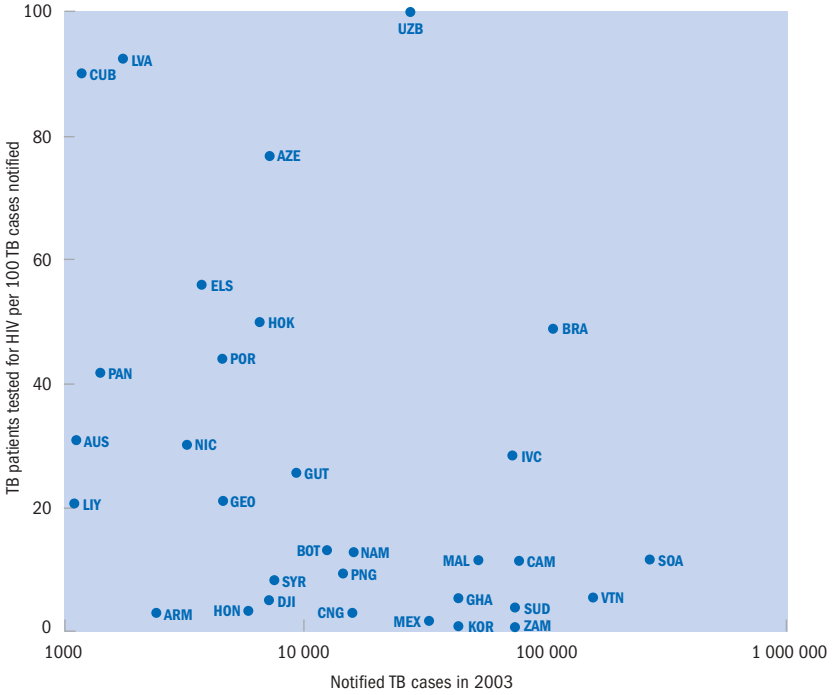
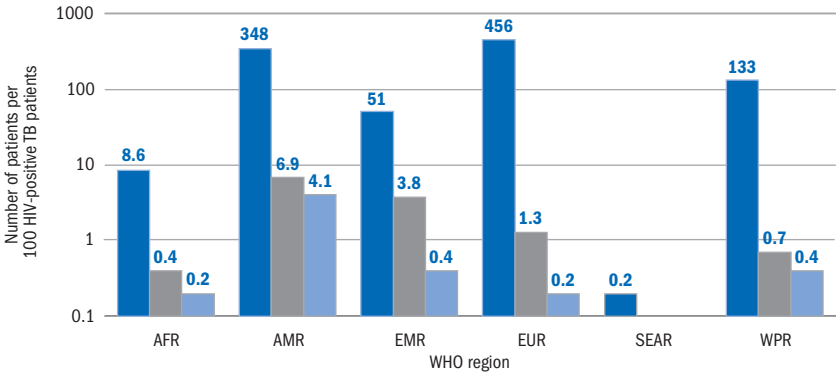


FIGURE 24

The number of TB patients tested for HIV (blue), assessed for ART (grey) and starting ART (pale blue) for every estimated 100 HIV-positive TB patients in each WHO region



total of 13 HBCs have plans to launch or intensify advocacy and communication campaigns.

Intensified support and action in countries

During 2004, the DEWG launched ISAC, an emergency initiative to reach targets for DOTS implementation by 2005 and to generate further momentum towards the MDG targets for 2015. The goal of ISAC is to rapidly increase managerial capacity for TB control at central and intermediate levels of administration. Participating countries include China, India, Indonesia, Kenya, Pakistan, Romania, the Russian Federation and Uganda.

Partnerships, coordination and advocacy

All HBCs have some mechanism for coordinating TB control activities. Most countries have an NICC that meets regularly to share information on planning and progress. This has served as a model for the creation of Global Fund Country Coordination Mechanisms (CCMs). However, in some countries (e.g. Ethiopia, Viet Nam) the CCM has become the main coordinating body. During 2004, Indonesia, Pakistan and Uganda formed and launched national partnerships to Stop TB, in order to establish collaborations among various stakeholders (NTP, WHO, technical and financial partners, NGOs, and patients' associations), and to share human and financial resources to address more effectively some of the constraints hindering NTP performance. NGOs are actively collaborating with NTPs to improve service coverage in 20 HBCs (Annex 1).

Most of the HBCs recognize the need for improved advocacy and communication on TB control. Ethiopia, India, Kenya, Pakistan, South Africa and Viet Nam reported that such activities were intensified in 2004. Cambodia, the Democratic Republic of the Congo, Indonesia, Nigeria, the Philippines, the United Repbulic of Tanzania and Uganda are planning advocacy and communication campaigns for 2005.

Management of drug resistance

Among the HBCs, Kenya (pilot site in Nairobi), the Philippines (pilot site in Manila) and the Russian Federation (Archangelsk, Ivanovo, Orel and Tomsk oblasts) have DOTS-Plus pilot projects approved by the GLC. The projects in Kenya and the Philippines are supported financially by the GFATM, as is one of the four projects in the Russian Federation (Tomsk). In 2005, applications to the GLC are expected from Bangladesh, Myanmar, the Philippines, the United Republic of Tanzania and Viet Nam.

By December 2004, the GLC had approved 30 DOTS-Plus pilot projects for a total of 10 133 MDR-TB patients in 23 countries.[25] However, only three HBCs – Brazil, the Russian Federation and South Africa – have national policies for the diagnosis and treatment of MDR-TB, and manage MDR-TB under the NTP. Even in the few countries that do have policies, MDR-TB treatment often fails to meet acceptable standards in practice. Second-line drugs are available in almost all HBCs, and are locally produced in Bangladesh, Brazil, China, Kenya, India, Indonesia, the Philippines, Pakistan, the Russian Federation, South Africa, Thailand and Viet Nam. In many countries, substandard MDR-TB treatment is available in the private sector or at specialized health centres, often for a fee.

The planning of activities related to MDR-TB is described in the individual profiles of the 22 HBCs (Annex 1).

Collaborative TB/HIV activities

Among the 199 countries that completed the WHO data collection form, 49% have a national policy of offering HIV testing to TB patients, the first step in accessing appropriate prevention and care services for HIV-positive TB patients. However, in 2003, only 3% of 4.4 million notified TB cases were reported to have been tested for HIV. Of these 199 countries, 46 (23%) indicated that HIV-positive TB patients were routinely assessed for their eligibility for ART. Only 1349 TB patients were reported to have started ART in 2003.

Figure 23 shows the breakdown of HIV testing rates among TB patients by country, for all countries that notified more than 1000 TB patients in 2003 and tested more than 1% of them for HIV. Even in Brazil, where ART is provided free of charge in the public sector, only half of the notified TB patients were reported to have been tested for HIV. Among other countries that notified more than 10 000 cases each year, Côte d'Ivoire tested less than 30%. Botswana, Cameroon, Malawi, Namibia and South Africa tested about 10%. For other high-incidence countries, the proportions tested were still lower. Some countries with low TB incidence rates, including Cuba and Latvia, tested most of their TB patients.

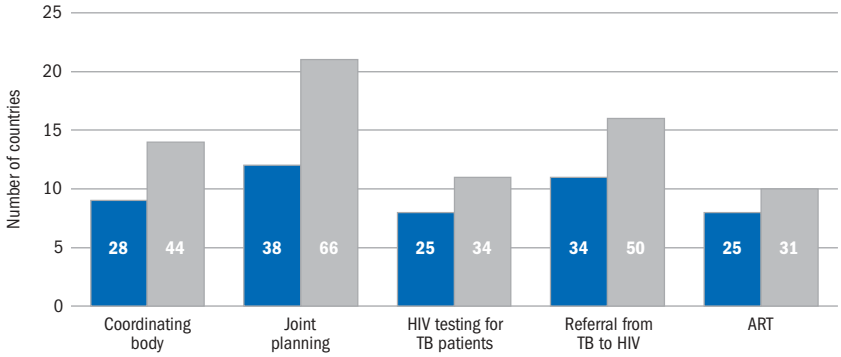
Regional differences in HIV testing, and in assessment for and provision of ART, are shown in Figure 24, where the denominator is the estimated number of new HIV-positive TB patients in 2003. Under normal circumstances, several TB patients would have to be tested in order to detect one HIV-positive patient. Thus the number of patients tested for HIV should be several times greater than the number estimated to be HIV positive, but the number tested exceeded the estimated number only in the Region of the Americas, European Region and Western Pacific Region.

By region, as by country, the number of HIV-positive TB patients who were assessed for ART is much smaller than the number who were tested for HIV. In the Region of the Americas, seven HIV-positive TB patients were assessed for ART for every 100 estimated to be HIV-positive, and most of these were in Brazil. In the African Region, the region worst affected by HIV/AIDS, only four patients were assessed for ART for every 1000 HIV-positive TB patients. The percentage of HIV-positive TB patients reported to have started ART was still lower. The Region of the Americas performed better than other regions, but fewer than four out of 1000 HIV-positive TB patients started ART.

Of the supplementary questionnaires sent to 41 high-incidence countries, 32 were returned to WHO. The data show that, between 2002 and 2003, TB/HIV collaboration had improved (Figure 25). However, implementation and recording and reporting remain weak. For example, few countries were able to report the exact numbers of TB patients or HIV-infected people that were benefiting from these activities.

FIGURE 25

Progress in developing national policy on collaborative TB/HIV activities, 2002 (blue bars) and 2003 (grey bars). Data are for the 32 countries with high numbers of people with TB who are also HIV-infected which returned the supplementary questionnaire. The bars show the number of countries that have a coordinating body, carry out joint planning for TB and HIV control activities, have a policy of testing TB patients for HIV, have a system for referring TB patients for HIV care and support and that provide ART in the public sector. The numbers in each bar give the percentage of the countries that fall into each category.



Additional strategies for DOTS expansion

Public public and public private mix for DOTS (PPM). During 2004, 13 HBCs reported improved links between the

[25] Bolivia, Costa Rica, El Salvador, Egypt, Estonia, Georgia, Haiti, Honduras, Jordan, Kenya, Kyrgyzstan, Latvia, Lebanon, Malawi, Mexico, Nepal, Nicaragua, Peru, Philippines, Romania, Russian Federation, Syrian Arab Republic and Uzbekistan.

TABLE 12

Additional strategies for DOTS expansion planned or implemented, high-burden countries

	PPM (PUBLIC-PUBLIC AND PUBLIC-PRIVATE MIX)	COMMUNITY TB CARE	PRACTICAL APPROACH TO LUNG HEALTH (PAL)
1 India	scale-up	nationwide	
2 China	referral, planned	some areas	
3 Indonesia	pilot	pilot, scale-up	planned
4 Nigeria	planned	planned	planned
5 Bangladesh	scale-up	nationwide	
6 Pakistan	pilot		
7 Ethiopia	pilot	pilot	
8 South Africa	with mining companies	community health workers	
9 Philippines	scale-up	some areas, scale-up	
10 Kenya	scale-up	pilot, scale-up	
11 DR Congo	planned	pilot, scale-up	planned
12 Russian Federation		through NGOs	planned
13 Viet Nam	planned	IEC, scale-up	planned
14 UR Tanzania	pilot	nationwide	planned
15 Brazil			
16 Uganda	planned		
17 Thailand	pilot	some areas, scale-up	planned
18 Mozambique		some areas, scale-up	planned
19 Zimbabwe	pilot	some areas, with TB/HIV	
20 Myanmar	pilot		
21 Afghanistan	planned	Kabul only	
22 Cambodia	planned	pilot	planned

NTP and other health-care providers (Table 12); 14 have established better collaborations with medical colleges; 10 have PPM pilot projects in various stages of implementation. Seven more HBCs are planning PPM initiatives for 2005, and four (India, Kenya, Myanmar and the Philippines) are attempting to implement PPM initiatives nationally. China, India, Indonesia, Kenya and Pakistan have specific plans to scale-up collaborations between NTP and non-NTP public hospitals.

Community TB care. A total of 17 HBCs reported some form of community contribution to TB care. In Bangladesh, India and Uganda, NGOs and community groups have played a vital part in expanding access to TB treatment. Communities are involved in TB care in limited parts of Afghanistan, Cambodia, China, the Democratic Republic of the Congo, Ethiopia, Indonesia, Kenya, Mozambique, the Philippines, South Africa, the United Republic of Tanzania and Viet Nam. Nigeria is planning to carry out a pilot study in 2005.

TABLE 13

Budget and expenditure data received, all countries, 2005

	NUMBER OF COUNTRIES	REPORTS RECEIVED	BUDGET DATA			EXPENDITURE DATA			NO. PATIENTS TO BE TREATED QUANTIFIED
			COMPLETE	PARTIAL	NONE	COMPLETE	PARTIAL	NONE	
AFR	46	35	26	6	3	23	5	7	33
AMR	44	29	15	6	8	12	6	11	21
EMR	22	17	5	7	5	6	5	6	15
EUR	52	16	5	9	2	8	5	3	16
SEAR	11	8	7	1	0	7	0	1	7
WPR	36	29	12	10	7	13	9	7	28
Global	**211**	**134**	**70**	**39**	**25**	**69**	**30**	**35**	**120**

TABLE 14

Budget and expenditure data received, high-burden countries, 2005

	NUMBER OF COUNTRIES	REPORTS RECEIVED	BUDGET DATA			EXPENDITURE DATA			NO. PATIENTS TO BE TREATED QUANTIFIED
			COMPLETE	PARTIAL	NONE	COMPLETE	PARTIAL	NONE	
AFR	9	8	8	0	1	6	0	3[a]	8
AMR	1	1	1	0	0	1	0	0	1
EMR	2	2	1	1[b]	0	1	1[b]	0	2
EUR[c]	1	1	1	0	0	1	0	0	1
SEAR	5	5	4	1[d]	0	4	1[d]	0	4
WPR	4	4	4	0	0	4	0	0	4
Global	**22**	**21**	**19**	**2**	**1**	**17**	**2**	**3**	**20**

[a] Kenya, South Africa and Uganda.
[b] Afghanistan.
[c] Data for the Russian Federation were prepared by WHO staff (Moscow office). See country profile for further details.
[d] Thailand.

Practical Approach to Lung Health (PAL). Cambodia, the Democratic Republic of the Congo, Indonesia, Mozambique, Nigeria, Russian Federation, the United Republic of Tanzania, Uganda and Viet Nam are planning to investigate the feasibility of implementing PAL in 2005. These studies will investigate how the syndromic approach to diagnosis and treatment can influence TB case detection and the rationalization of drug prescription practices.

Financing DOTS expansion

Data received

Financial data were received from 134 out of 211 (64%) countries (Table 13), more in total than for 2004 (123 countries), but with fewer reports from the European Region. Complete budget data were provided by 70 countries (compared with 77 in 2004), and 69 provided complete expenditure data (down from 74 in 2004). Fewer complete reports were provided by the European Region and the Western Pacific Region, perhaps because more data were requested for the present report (in particular, two years of budget data rather than one). The main improvement in reporting was in the African Region, where the number of complete budget and expenditure forms increased by 37% and 44% respectively, probably because WHO regional office staff intensively followed up on data collection with NTPs.

Data were received from all 22 HBCs except South Africa (Table 14), providing the most complete set of data since financial monitoring was introduced by WHO in 2002. Complete budget data were provided for 19 countries (up from 17 in 2004); data were missing for South Africa and only partially complete for Afghanistan and Thailand. Complete expenditure data were provided for 17 countries (up from 15 in 2004); Kenya, South Africa and Uganda provided no data, and Afghanistan and Thailand provided incomplete data. A total of 20 countries made projections of the number of cases they would treat in 2004 and 2005, compared with the 16 countries that provided projections for 2004 in last year's report. Again, the main improvement in reporting was in the African Region. Countries in the Western Pacific Region as well as India submitted, on time, exemplary data that required minimal follow-up.

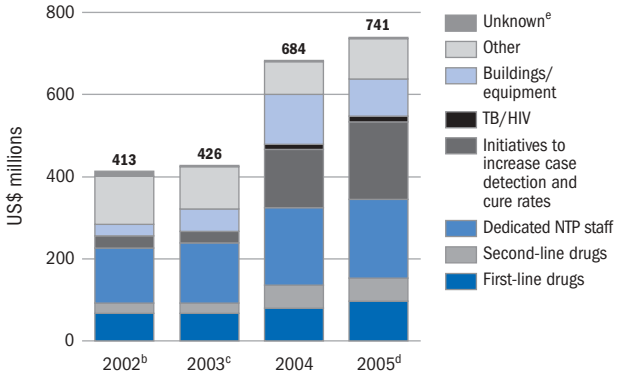
Total NTP budgets and funding in HBCs

NTP budgets in 18 of the 22 HBCs have increased during the period 2002–2005, sometimes by substantial amounts (Figure 26, Figure 27, Table 15 columns 3 and 4). The total combined budgets for 2004 and 2005 are US$ 684 million and US$ 741 million, respectively, compared with around US$ 400 million in both 2002 and 2003. The main reason why the budgets for 2004 and 2005 are higher than in previous years is that countries are aiming to detect and treat more patients. This is associated with large proposed spending increases on initiatives to increase case detection and cure rates (US$ 160 million 2002–2005, of which US$ 39 million is in China), investment in buildings and equipment (US$ 63 million 2002–2005), and dedicated NTP staff (US$ 57 million 2002–2005). Important increases are also budgeted for first and second-line drugs (both up by about US$ 30 million 2002–2005). Relatively small budgets were reported for collaborative TB/HIV activities.

The countries with by far the largest budgets for 2005 (Table 15 column 2) are the Russian Federation (US$ 316 million) and China (US$ 158 million), followed by India and Indonesia (both around US$ 45 million). Other countries reported budgets of around or less than US$ 20 million. In absolute terms, China reported the largest budgetary increase between 2002 and 2005 (an additional US$ 60 million; Table 15, column 3). China is committed to achieving the 70% case detection target in 2005, and the budgetary increases reflect plans to achieve this.

FIGURE 26

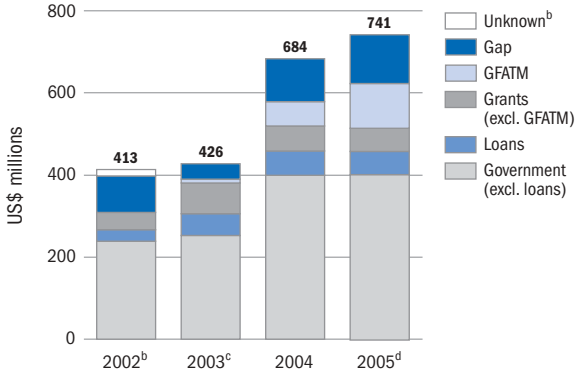
Total NTP budgets by line item 2002–2005, 21 high-burden countries,[a] 2002–2005



[a] Data not available for South Africa.
[b] Estimates assume budget 2002 equal to expenditure 2002 (Ethiopia), budget 2003 (Afghanistan, Bangladesh, Mozambique and Uganda) and expenditure 2003 (Russian Federation and Zimbabwe).
[c] Estimates assume budget 2003 equal to expenditures 2003 for Mozambique, Russian Federation and Zimbabwe.
[d] Budget data for UR Tanzania based on 2004 data.
[e] "Unknown" applies to Mozambique in 2002 and Afghanistan 2002–2005, as breakdown by line item not available.

FIGURE 27

Total NTP budgets by source of funding, 21 high-burden countries,[a] 2002–2005



[a] Data not available for South Africa.
[b] Estimates assume budget 2002 equal to expenditure 2002 (Ethiopia), budget 2003 (Afghanistan, Bangladesh, Mozambique and Uganda) and expenditure 2003 (Russian Federation and Zimbabwe). "Unknown" applies to DR Congo and Nigeria, as breakdown by funding source not available.
[c] Estimates assume budget 2003 equal to expenditures 2003 for Mozambique, Russian Federation and Zimbabwe.
[d] Budget data for UR Tanzania based on 2004 data.

TABLE 15

NTP budgets and available funding, high-burden countries, 2005

	TOTAL NTP BUDGET (US$ MILLIONS)	CHANGE FROM 2002 (US$ MILLIONS)	CHANGE FROM 2002 (%)	AVAILABLE FUNDING (US$ MILLIONS)					CHANGE IN AVAILABLE FUNDING SINCE 2002, BY SOURCE (US$ MILLIONS)				
				GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GFATM)	GFATM	GAP	GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GFATM)	GFATM	GAP
1 India	46	10	29	5	11	6	8	15	–1	–13	0.7	8	15
2 China	158	60	61	98	14	4	21	21	45	14	2	21	–22
3 Indonesia	43	9	25	24	0	4	15	0	17	0	1	15	–25
4 Nigeria[a]	12	3	35	2	0	3	0	7	0.5	0	–2	0	–0.05
5 Bangladesh[b]	22	15	210	3	6	3	8	1	–0.1	6	–0.6	8	1
6 Pakistan	19	14	257	8	0	3	0	9	5	0	2	0	7
7 Ethiopia[c]	7	2	40	0.6	0	1	5	0	–0.6	0	–3	5	0
8 South Africa[d]	–	–	–	–	–	–	–	–	–	–	–	–	–
9 Philippines	8	0.5	6	3	0	4	2	0	–0.7	0	4	2	–4
10 Kenya	14	9	177	3	0	0	3	8	2[e]	0	–3	3	7
11 DR Congo[a]	11	4.2	64	0.6	0	5	2	3	–0.4	0	–0.3	2	–0.8
12 Russian Federation[f]	316	178	129	220	25	2	30	39	90	25	–6	30	39
13 Viet Nam	12	0.4	4	9	0	0.9	2	0.3	0.5	–2	–0.1	2	0.3
14 UR Tanzania[g]	9	3	59	1	0	5	0.2	2	1	0	0.6	0.2	1
15 Brazil	21	8	59	19	0	2	0	0	6	0	2	0	0
16 Uganda[b]	6	1	22	0.7	0	0.8	0.9	4	0.6	–1	0.3	0.9	0.7
17 Thailand	5	–1	–23	3	0	0	2	0	–3	0	0	2	0
18 Mozambique[b]	7	–1	–10	0.8	0.2	2	4	0.1	0.5	0.2	–0.5	4	–5
19 Zimbabwe[f]	11	9	536	0.5	0	2	0	9	0.4	0	0.04	0	9
20 Myanmar	5	2	86	0.4	0	1	3	0.6	–0.03	0	1	3	–2
21 Afghanistan[b]	3	–0.3	–10	0.3	0	2	0.7	0	0	0	0.5	0.7	–2
22 Cambodia	7	3	60	0.7	0	4	1	1	–0.6	–0.7	3	1	0.01
High-burden countries	**741**	**328**	**59**[h]	**402**	**56**	**55**	**109**	**119**	**161**	**28**	**3**	**109**	**20**

– Indicates not available.

[a] Available funding compared with 2003, as no funding breakdown was provided in 2002; thus total of changes in available funding by source (US$ 321 million) does not equal the total shown in column 3 (US$ 328 million).

[b] Comparisons are with budget for 2003, as budget data for 2002 not available.

[c] Comparisons are with expenditure for 2002, asf budget data for 2002 not available.

[d] No data were provided by the NTP.

[e] May include some loan funding.

[f] Comparisons are with expenditure for 2003, as budget data for 2002 or 2003 not available. Figures for Russian Federation for 2005 based on estimates prepared by WHO staff (Moscow office). See country profile for further details.

[g] Latest available data are for 2004.

[h] Median value.

The increase in the Russian Federation could be larger (US$ 178 million), if it is assumed that the 2002 budget was similar to reported expenditures (budget data were not reported for 2002). In 2003, the Russian Federation developed an ambitious five-year plan to expand DOTS and to upgrade TB control in general, covering the period 2003–2007. For other countries, the budget differences between 2002 and 2005 are all US$ 15 million or less.

In relative terms, the biggest budget increases are for Bangladesh and Pakistan (both more than 200%), followed by Kenya at 177% (Table 15, column 4). Six countries reported changes of 50–100% (Brazil, Cambodia, China, the Democratic Republic of the Congo, Myanmar, the United Republic of Tanzania), and four of 25–50% (Ethiopia, India, Indonesia, Nigeria). When compared with expenditures rather than budgets, the increases since 2003 are enormous for Zimbabwe (536%) and large for the Russian Federation (129%).

These large budget increases have been accompanied by big improvements in available funding for NTPs (Table 15 columns 5–8 and 10–13; Figure 27). For all HBCs, available funding has increased by about US$ 300 million since 2002, reaching US$ 622 million in 2005. In 2005, HBC governments will provide 62% of the required funding (including loans), the GFATM 15% and grants from other sources 7%, leaving a gap equivalent to 16% of the reported budgets. However, sources of funding vary among the 22 HBCs (Figure 28), with a few countries relying mostly on government funding but most relying extensively on grants from the GFATM and other sources. Most of the increased funding since 2002 is from governments (an increase of US$ 189 million since 2002, including loans, almost all of which is in China and the Russian Federation) and the GFATM (US$ 109 million for 17 HBCs in 2005 compared with no contribution in 2002). There has been virtually no change in grant funding from sources other than the GFATM.

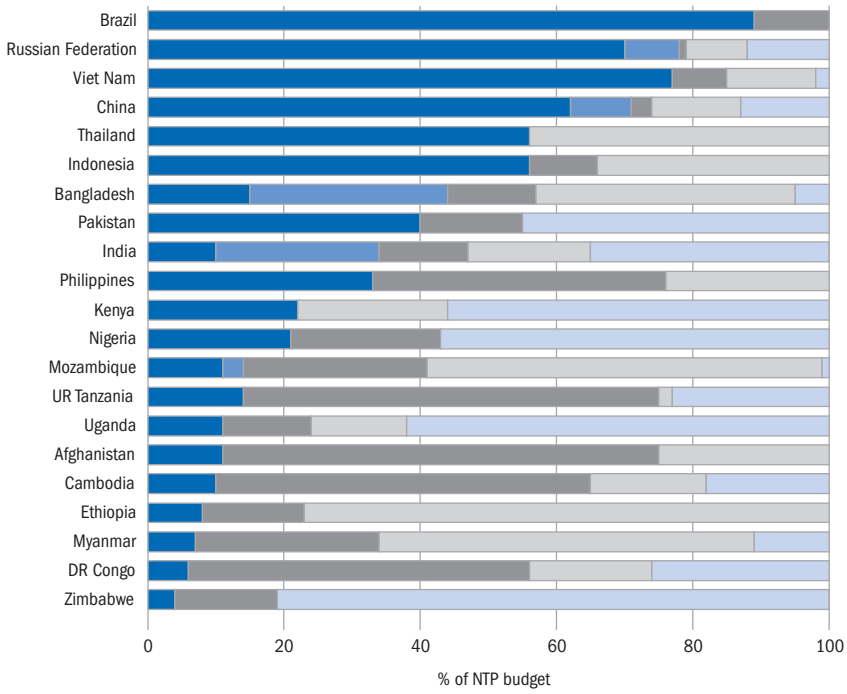
Despite this progress in securing additional funding, there is a large funding gap of US$ 119 million in 2005 (Table 15 column 9), which is higher than the gaps reported for 2003 and 2004. In absolute terms, the largest funding gaps are those reported by China, India, Pakistan, the Russian Federation and Zimbabwe

(US$ 93 million, or 78% of the total gap). The shortfall in India is associated with the end of the existing World Bank credit (1998–2004), but the balance is expected to be made up through additional grants and a new World Bank credit to be negotiated in 2005. Gaps in the other four countries are linked to the development in 2003 and/or 2004 of much more ambitious plans to expand and improve TB control. Proportionally, the largest gaps are in Kenya, Nigeria, Uganda and Zimbabwe (all more than 50% of the total NTP budget; Figure 28). These gaps are large enough to seriously constrain progress in TB control in these countries.

Further details, including charts showing trends in NTP budgets by funding source and line item for each year 2002–2005, are provided in the country profiles (Annex 1).

FIGURE 28

Sources of funding for NTP budgets, 21 high-burden countries,[a] 2005



[a] No data available for South Africa. Figures for Russian Federation based on estimates prepared by WHO staff (Moscow office). See country profile for further details.

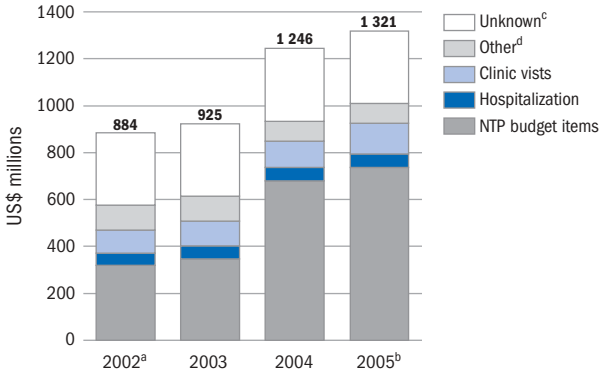
Total costs of TB control and funding in HBCs

NTP budgets include only part of the resources needed for TB control. In particular, they do not include the costs associated with general health services staff and infrastructure, which are used when TB patients are hospitalized or make outpatient clinic visits for directly observed treatment (DOT) and monitoring. For the 22 HBCs combined, the total costs of TB control are projected to be US$ 1.2 billion and US$ 1.3 billion in 2004 and 2005, respectively, compared with actual costs of around US$ 900 million in 2002 and 2003 (Figure 29, Figure 30, Table 16). These increases in projected costs are because of the large increases in planned NTP spending (described above) and because of the higher costs of clinic visits and hospitalization that are associated with treating more patients.

The largest costs are for the Russian Federation and South Africa,

FIGURE 29

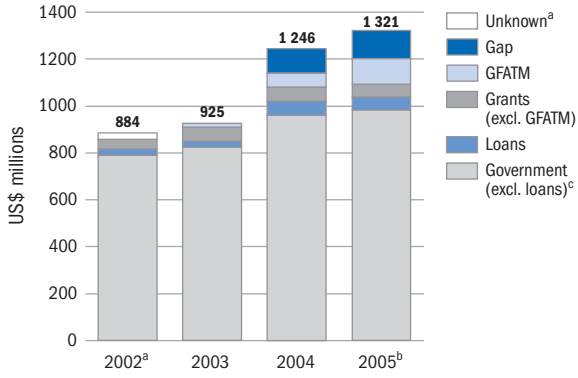
Total TB control costs by line item, 22 high-burden countries, 2002–2005



[a] Costs assumed to be as for 2003 for Afghanistan, Bangladesh, Mozambique, Russian Federation, Uganda and Zimbabwe.
[b] Estimate for UR Tanzania is based on 2004 data.
[c] Total TB control costs for Thailand and South Africa could not be broken down as for other countries, so the total is presented as "Unknown". Estimates for South Africa are based on recent costing studies.
[d] "Other" includes costs for hospitalization and fluorography in the Russian Federation not reflected in the NTP budget.

FIGURE 30

Total TB control costs by funding source, 22 high-burden countries, 2002–2005



[a] Costs assumed to be as for 2003 for Afghanistan, Bangladesh, Mozambique, Russian Federation, Uganda and Zimbabwe. "Unknown" applies to DR Congo and Nigeria, as breakdown of NTP budget by funding source not available.
[b] Estimate for UR Tanzania is based on 2004 data.
[c] Estimates of total TB control costs (2002–2005) for South Africa are based on costing studies and all costs are assumed to be funded by the government.

TABLE 16

Total TB control costs and available funding, high-burden countries, 2005

	TOTAL COST (US$ MILLIONS)	CHANGE FROM 2002[a] (US$ MILLIONS)	CHANGE FROM 2002 (%)	AVAILABLE FUNDING (US$ MILLIONS)					CHANGE IN AVAILABLE FUNDING SINCE 2002,[b] BY SOURCE (US$ MILLIONS)				
				GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GFATM)	GFATM	GAP	GOVERNMENT (EXCL. LOANS)	LOANS	GRANTS (EXCL. GFATM)	GFATM	GAP
1 India	89	28	45	48	11	6	8	15	5	–13	0.7	8	15
2 China	158	97	159	98	14	4	21	21	45	14	2	21	–22
3 Indonesia	50	28	125	31	0	4	15	0	20	0	1	15	–25
4 Nigeria	21	10	90	12	0	3	0	7	4	0	–2	0	–0.05
5 Bangladesh	27	17	169	9	6	3	8	1	2	6	–0.7	8	1
6 Pakistan	26	21	434	15	0	3	0	9	9	0	2	0	7
7 Ethiopia[c]	9	1	12	3	0	1	5	0	–1	0	–3	5	0
8 South Africa[d]	300	–	–	300	–	–	–	–	–	–	–	–	–
9 Philippines	30	9	41	25	0	4	2	0	6	0	4	2	–4
10 Kenya	18	11	170	6	0	0	3	8	–0.7	0	–3	3	7
11 DR Congo	34	14	70	24	0	5	2	3	7	0	0	2	–0.8
12 Russian Federation[e]	399	154	63	303	25	2	30	39	66	25	-6	30	39
13 Viet Nam	28	3	13	25	0	0.9	2	0.3	0.2	-2	–0.1	2	0.3
14 UR Tanzania[f]	21	5	31	13	0	5	0.2	2	2	0	0.6	0.2	1
15 Brazil	46	9	25	44	0	2	0	0	7	0	2	0	0
16 Uganda	7	5	198	1	0	0.8	0.9	4	0.7	–1	0.3	0.9	0.7
17 Thailand	11	3	31	9	0	0	2	0	0.6	0	0	2	0
18 Mozambique	9	5	139	3	0.2	2	4	0.1	0.7	0.2	–0.5	4	–5
19 Zimbabwe[e]	15	9	158	5	0	2	0	9	0.4	0	0.04	0	9
20 Myanmar	6	4	232	1	0	1	3	0.6	0.3	0	1	3	–2
21 Afghanistan	3	–1	–34	0.3	0	2	0.7	0	0	0	0.5	0.7	–2
22 Cambodia	12	4	63	5	0	4	1	1	0.3	–0.7	3	1	0.0
High-burden countries	**1321**	**437**	**70** [g]	**982**	**56**	**55**	**109**	**119**	**175**	**28**	**3**	**109**	**20**

– Indicates not available.

[a] TB control costs in 2002 were estimated using expenditure rather than budget data wherever possible. For countries that did not provide expenditure data for 2002 (Kenya and UR Tanzania), available funding was used as a proxy. Where neither budget nor expenditure data were available for 2002 (Afghanistan, Bangladesh, Mozambique, Russian Federation, Uganda and Zimbabwe), comparisons are with 2003.

[b] The sum of changes in available funding is different from the total change in TB control costs (column 3) when expenditures are lower than available funding. A further reason is that changes are calculated with respect to 2003 when a breakdown of funding was not available for 2002 (DR Congo and Nigeria).

[c] Comparisons are with expenditure data for 2002.

[d] No data were provided by the NTP; the cost per patient was estimated using recently published costing studies and multiplied by the number of patients notified in 2003 to give the estimated total cost.

[e] Comparisons are with expenditure data for 2003. Figures for Russian Federation for 2005 based on estimates prepared by WHO (Moscow office). See country profile for further details.

[f] Latest available data are for 2004.

[g] Median value.

which together account for US$ 700 million of the total cost of US$ 1.3 billion estimated for 2005. South Africa is a middle-income country, and the high costs are mainly explained by the higher prices for items such as hospitalization and outpatient visits, compared with those typical in low-income countries. The Russian Federation staffs and runs an extensive network of TB hospitals for treatment, has a large budget for second-line drugs to treat many MDR-TB patients and still carries out mass population screening by fluorography. China and India have the third and fourth highest costs, estimated at US$ 158 million and US$ 89 million respectively in 2005. Seven additional countries have total costs of US$ 25–50 million in 2005, three have costs of around US$ 20 million and the rest have costs of US$ 15 million or less.

The countries with the largest projected absolute increases in annual costs are the Russian Federation (US$ 154 million since 2003) and China (US$ 97 million since 2002). Increases of around US$ 20–30 million since 2002 are estimated for Bangladesh, India, Indonesia and Pakistan. The changes for other HBCs are around or below US$ 10 million. The biggest proportional increases are for Myanmar and Pakistan (both more than 200%), while increases are in the range 100–200% for seven additional countries.

Funding for the general health services staff and infrastructure used by TB patients during clinic visits and hospitalization is assumed to be funded by governments. This assumption, together with the implicit assumption that health systems have sufficient resources to support the treatment of growing numbers of patients in 2004 and 2005, means that the resources available for TB control are estimated to have increased from almost US$ 900 million in 2002 to US$ 1.2 billion in 2005 (Figure 30). The contribution by HBC governments to the total cost of TB control in 2005 is 79% on average, which is larger than their contribution to NTP budgets (Figure 31). This high average figure conceals important variation among countries; many HBCs are dependent on grants to cover more than one third

of the total costs of TB control, or to close large funding gaps. The share of the total costs provided by HBC governments is closely related to average income levels (Figure 32), although Viet Nam stands out as a low-income country with a very high government contribution (90%).

For all HBCs, the estimated gap between the funding already available and the total cost of TB control is US$ 119 million in 2005, i.e. the NTP budget gap reported above. Further details, including charts that show trends in total TB control costs by line item for each year 2002–2005, are provided in the country profiles.

Per patient costs and budgets

There is much variation among countries in budgets and costs per patient (Table 17). The budgets for first-line drugs are lowest in India, Myanmar and the Philippines (US$ 11–17 per patient). In most countries, the budget is in the range US$ 20–35, but higher in Bangladesh, Brazil, Indonesia, Mozambique and the Russian Federation. Higher budgets in Bangladesh and Mozambique are explained by the creation of large buffer stocks, which distort the average value in 2005. In Indonesia, the drug budget has increased to allow use of fixed-dose combinations (FDCs).

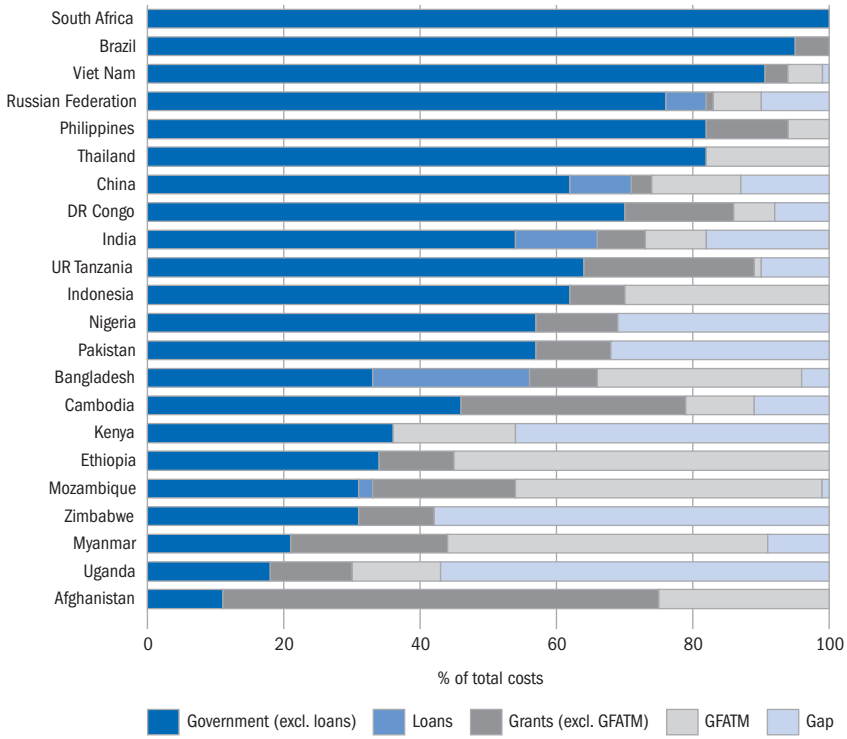
The budget per patient, including all line items, is lowest in India, at US$ 34. The budget is also relatively low in Ethiopia and the Philippines (both around US$ 50) and in Myanmar (US$ 68). Most other countries (n = 13) have budgets in the range US$ 100–200 per patient. The only low-income country with a budget above US$ 200 per patient is Mozambique. The Russian Federation has by far the highest budget per patient, for reasons explained above (the figure for South Africa may also be high, but no data are available).

The total cost per patient treated in 2005 is lowest in India (US$ 66), below US$ 100 in Ethiopia and Myanmar, and below US$ 150 in Bangladesh and Uganda. It is in the range US$ 150–300 in 11 countries,[26] and

[26] This assumes that if data for Afghanistan were available, the cost would be in this range.

FIGURE 31

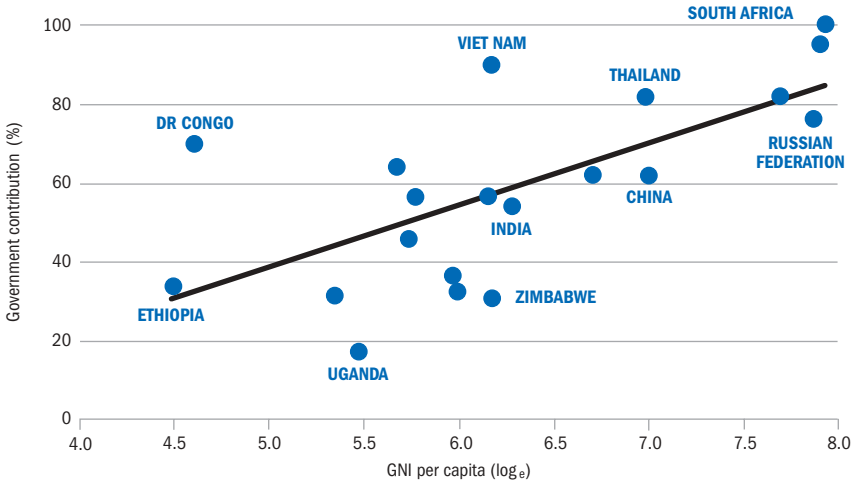
Sources of funding for total TB control costs, 22 high-burden countries,[a] 2005



[a] Figures for Russian Federation based on estimates prepared by WHO staff (Moscow office) and recent costing studies. See country profile for further details.

FIGURE 32

Government contribution to total TB control costs by GNI per capita, 20 high-burden countries,[a] 2005



[a] No information on GNI per capita available for Afghanistan or Myanmar. Figure for Russian Federation based on estimates prepared by WHO staff (Moscow office) and recent costing studies. See country profile for further details.

TABLE 17

Total costs and NTP budgets per patient, high-burden countries, 2005

	2005 (US$)			CHANGES FROM 2002 (FACTOR[a])		
	FIRST-LINE DRUGS BUDGET	NTP BUDGET	TOTAL COST	FIRST-LINE DRUGS BUDGET	NTP BUDGET[b]	TOTAL COST
1 India	11	34	66	1.1	1.0	1.1
2 China	20	188	188	1.2	1.4	1.4
3 Indonesia	47	155	182	1.5	1.3	1.3
4 Nigeria	29	159	291	0.5	1.2 [c]	1.0
5 Bangladesh[c]	45	116	146	2.2	1.5	1.3
6 Pakistan	23	153	213	0.4	3.3	2.3
7 Ethiopia	34	49	68	1.3	1.1	0.9
8 South Africa	–	–	1320 [d]	–	–	–
9 Philippines	17	48	174	0.7	0.9	1.0
10 Kenya	31	142	173	0.8	2.7	2.1
11 DR Congo	14	94	297	0.4	1.0	1.0
12 Russian Federation[e]	70	2748	3472	1.0	2.5 [c]	1.8
13 Viet Nam	31	129	299	0.9	1.1	1.2
14 UR Tanzania[f]	21	133	320	0.5	1.6	1.2
15 Brazil	47	239	516	1.0	1.4	1.1
16 Uganda[c]	20	111	120	0.4	2.3	2.1
17 Thailand	25	72 [g]	173	0.3	0.6	1.0
18 Mozambique[c]	75	241	311	3.4	3.3	2.2
19 Zimbabwe[c]	35	192	266	1.1	5.8	2.4
20 Myanmar	13	68	80	0.7	3.2	2.5
21 Afghanistan[c]	–	104	–	–	0.3	–
22 Cambodia	27	186	311	0.7	1.4	1.1
High-burden countries (median value)	**28**	**133**	**213**	**0.9**	**1.4**	**1.2**

– Indicates not available.

[a] Calculated as 2005 value divided by 2002 value.

[b] Calculated as NTP budget per patient projected in 2005 divided by NTP expenditure per patient notified in 2002. Available funding was used as a proxy for expenditures for India, Kenya, Thailand, Uganda, UR Tanzania and Viet Nam.

[c] Comparisons are with 2003 data.

[d] Estimate is based on notifications for 2003, as no projections for 2005 available.

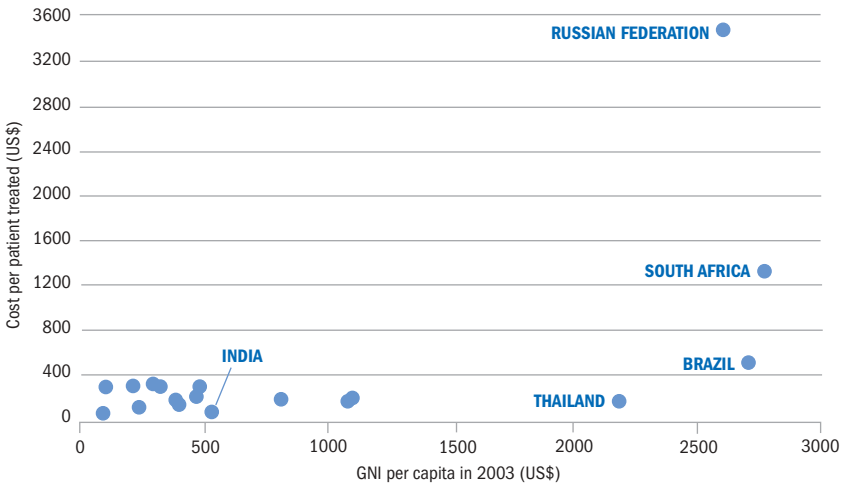
[e] Figures for 2005 based on estimates prepared by WHO staff (Moscow office). See country profile for further details. Comparison for first-line drugs is with 2004.

[f] Latest available data are for 2004. Thus comparison is of 2004 with 2002.

[g] This figure is artificially low because it is based on the central level budget only (see country profile).

FIGURE 33

Cost per patient treated by GNI per capita, 20 high-burden countries,[a] 2005



[a] No information on GNI per capita available for Afghanistan or Myanmar. Figure for Russian Federation based on estimates prepared by WHO staff (Moscow office) and recent costing studies. See country profile for further details.

slightly more than US$ 300 in three countries. There are three countries with much higher costs: Brazil, the Russian Federation and South Africa. Their higher costs are not surprising given their middle-income status and associated higher prices for inputs such as staff (Figure 33), as well as the extensive use of hospitalization in the Russian Federation.

Budgets and costs are generally stable (notably during a period of rapid DOTS expansion in India) or increasing.

Further details, including charts that show five per patient indicators (costs, budgets, available funding, expenditures and first-line drugs budget) for each year 2002–2005, are provided in the country profiles (Annex 1).

Expenditures in comparison with budgets and available funding

For countries that have received large increases in funding, the challenge now is to spend the extra money, and to translate extra spending into improved case detection and treatment success rates. The ability to spend available money can be assessed by comparing expenditures with available funding and budgets (Table 18). Complete sets of data on budgets, funds and expenditures are available for 15 HBCs in 2003 (the most recent year for which expenditure data are currently available). Expenditures were generally less than available funding. In India, costs proved to be lower than anticipated, and all planned activities were implemented. The capacity of the Tanzanian NTP to spend available money is discussed in Annex 1. For other countries, more work is needed to understand the reasons why expenditures are lower than available funding. The findings will have implications for programmes that are now benefiting from large influxes of new money. It is too early to say if large increases in spending can be translated into improved programme performance.

Budgets, funds and targets

Countries can be categorized according to whether the number of patients to be treated is consistent with meeting the 2005 targets, treatment success rates, the extent to which the

budget for the projected number of patients is funded, how the budget per patient has changed through time and whether there is evidence that the additional funding can be effectively absorbed (Table 19). India, Myanmar, the Philippines and Viet Nam are in the best financial position to reach the targets (or to maintain the programme at target levels in the case of Viet Nam). Cambodia and China are well placed to do so if they can make up the remaining funding shortfalls. Indonesia appears to have the funding required to achieve targets, and Bangladesh may come close. However, it is unclear how many more cases will actually be detected and successfully treated as a result of the additional funds now available in these two countries. For the remaining 14 HBCs, the planned programmes of treatment are less than required to meet the targets for case detection (11 countries) and/or it is not clear if they are sufficient to meet the target for treatment success, although five of these countries report no or negligible shortfalls in funding.

GFATM contribution to TB control

High-burden countries. The GFATM is the single most important source of grant funding for HBCs, and several countries are relying on the GFATM to fund more than one third of their budgets. After four rounds of proposals, the total value of approved proposals (which, with four exceptions, cover five years) is US$ 818 million (Table 20). The amounts included in the two-year grant agreements[27] total US$ 218 million, and are sometimes lower than the amounts in years 1 and 2 of the original proposals (75% for those proposals for which both the original request for years 1 and 2 and the grant agreement amount are available; the biggest discrepancy is for Indonesia).

By the end of 2004, US$ 116 million had been disbursed. For each country, we can compare the actual and expected rates of disbursal, where the expected rate assumes that disbursements should be spread evenly

TABLE 18

Budgets, available funding and expenditures (US$ millions), 15 high-burden countries, 2003

	BUDGET	AVAILABLE FUNDING	EXPENDITURES
1 India	42	42	25
2 China	95	87	80
3 Indonesia	32	29	21
4 Nigeria	13	6	6
5 Bangladesh	7	7	7
6 Pakistan	6	6	3
7 Ethiopia	11	11	8
8 Philippines	7	6	4
9 DR Congo	10	7	5
10 Viet Nam	11	11	11
11 UR Tanzania	5	5	4
12 Brazil	16	16	14
13 Mozambique	8	3	2
14 Myanmar	5	1	1
15 Cambodia	6	3	2
Total	**273**	**239**	**193**

TABLE 19

Categorization of high-burden countries according to financial criteria, 2005

CATEGORY	CRITERIA	COUNTRIES
I	Projected number of cases to be treated in 2005 sufficient to meet 70% case detection target Treatment success rate achieved or close to being achieved for 2002 cohort Budget per patient treated stable or increasing No or minor funding gap, or funding gap likely to be filled Demonstrated ability to absorb any additional funds required to achieve targets	India Myanmar Philippines Viet Nam
IIa	As for I, except that funding gap needs to be filled	Cambodia China
IIb	As for I, except that ability to absorb large increases in funding and translate them into improved detection and treatment success rates is currently unproven	Indonesia
IIc	As for IIb, but projected number of cases treated only within 10% of case detection target	Bangladesh
III	Projected cases not in line with case detection target, and/or unclear if treatment success target can be achieved, but no (or negligible) reported funding gap	Brazil Ethiopia Mozambique South Africa Thailand
IV	Projected cases not in line with case detection target (all except DR Congo) and/or treatment success, and large funding gap	Afghanistan DR Congo Kenya Nigeria Pakistan Russian Federation Uganda UR Tanzania Zimbabwe

[27] Signature of grant agreements is needed before any disbursements can take place.

TABLE 20

GFATM financing, high-burden countries, as of end 2004

	GRANT	TOTAL BUDGET APPROVED [a] (US$ MILLIONS)	TOTAL YEAR 1 AND 2 BUDGETS (AS IN PROPOSALS) (US$ MILLIONS)	FIRST 2-YEAR GRANT AGREEMENT (US$ MILLIONS)	TOTAL DISBURSEMENTS BY END 2004 (AS OF 20-DEC-2004) (US$ MILLIONS)	TOTAL DISBURSEMENTS BY END 2004 AS % OF GRANT AGREEMENT		DATE BOARD APPROVAL	DATE GRANT AGREEMENT SIGNATURE	TIME BETWEEN BOARD APPROVAL AND SIGNATURE OF GRANT AGREEMENT (MONTHS)	TIME BETWEEN GRANT AGREEMENT SIGNATURE AND FIRST DISBURSEMENT (MONTHS)
						ACTUAL RATE OF DISBURSAL	EXPECTED RATE OF DISBURSAL				
1 India	G1[b]	9	6	6	4	76	96	22-Apr-02	30-Jan-03	9	6
	G2[c]	29	13	7	2	27	42	13-Jan-03	12-Feb-04	13	2
	G3[c,d]	15	3	3	0	0	8	15-Oct-03	15-Oct-04	12	2+
	G4	27	7	Not signed yet				28-Jun-04		6+	
2 China	G1	48	25	25	25	100	96	22-Apr-02	30-Jan-03	9	2
	G2	56	28	Not signed yet				28-Jun-04		6+	
3 Indonesia		70.7	55	22	16	73	96	22-Apr-02	27-Jan-03	9	2
4 Bangladesh	G1[c]	42	17	11	5	41	21	15-Oct-03	07-Jul-04	9	0.6
	G2[c]	18	8	5	2	44	13	15-Oct-03	24-Aug-04	10	0.2
5 Pakistan	G1[c]	4	2	2	0.7	31	67	13-Jan-03	06-Aug-03	7	4
	G2[c]	13	7	6	2	33	8	15-Oct-03	12-Oct-04	12	1
6 Ethiopia[c]		21	–	11	7	59	88	22-Apr-02	18-Mar-03	11	5
7 South Africa	G1[d]	70	14	2	2	100	67	22-Apr-02	08-Aug-03	16	4
	G2[c,d]	–	–	12	9	76	67	22-Apr-02	08-Aug-03	16	4
	G3[c,d]	72	27	27	13	48	67	22-Apr-02	08-Aug-03	16	4
	G4[d]	25	8	Not signed yet				13-Jan-03		23+	
8 Philippines		11	3	3	3	77	75	13-Jan-03	11-Jun-03	5	0.6
9 Kenya		11	5	5	2	50	75	13-Jan-03	23-Jun-03	5	2
10 DR Congo[b, c]		8	6	6	6	90	75	13-Jan-03	18-Jun-03	5	1
11 Russian Federation	G1(Tomsk)[c]	11	6	6	2	28	8	15-Oct-03	14-Oct-04	12	2
	G2	92	54	Not signed yet				28-Jun-04		6+	
12 Viet Nam[c]		10	3	3	0.4	16	58	13-Jan-03	15-Oct-03	9	5
13 UR Tanzania	G1[c,d]	88	25	24	7	30	13	15-Oct-03	06-Sep-04	11	2
	G2 (Zanzibar)[c]	2	1	1	0.7	70	95	13-Jan-03	07-Sep-04	20	2
14 Uganda[c]		6	7	5	1	25	38	13-Jan-03	15-Mar-04	14	1
15 Thailand		13	7	7	3	45	79	22-Apr-02	18-May-03	13	2
16 Mozambique[c]		18	12	9	0	0	38	13-Jan-03	02-Apr-04	15	9+
17 Myanmar[c]		17	7	7	2	34	17	13-Jan-03	13-Aug-04	19	1
18 Afghanistan[b]		3	2	Not signed yet				28-Jun-04		6+	
19 Cambodia		7	3	3	1	45	58	13-Jan-03	14-Oct-03	9	2
Total		**818**	**361**	**218**	**116**	**45[e]**	**67[e]**			**11[e]**	**2[e]**

– Indicates not available.

[a] Total budget requested is for five years, unless otherwise stated.

[b] Total budget requested is for three years.

[c] Assessment of principal recipient pending.

[d] TB/HIV grant.

[e] Median value.

over the two years following the date on which the agreement is signed (Table 20, column 7). China is the only country where all funds in the two-year grant agreement have been disbursed within the expected period of two years. For eight countries and 10 grants, disbursements are better than expected.[28] For five countries, disbursements are within 20% of the expected value, and for nine countries disbursements are around 25% or more below the expected value. One example is Ethiopia, a country that is largely dependent on GFATM funds. Another is Mozambique, which is also highly dependent on the GFATM, but which has to date received no funds at all, even though the grant agreement was signed in April 2004. The GFATM web site notes that initial disbursements are often small, given the need for strengthening programme capacity and preparation of procurement plans.[29] Furthermore, low disbursement rates appear to be associated with the principal recipient; for eight countries and nine grants where the disbursements are below the expected value, the GFATM web site notes that assessments of the principal recipient are pending.

The initial delay in disbursement is caused mainly by the time taken to sign the grant agreement after proposal approval. Once grant agreements are signed, disbursements are usually made within 2 months (the exception is currently Mozambique), compared with delays of between 5 and 23 (median value 11) months between grant approval and signature.

Other countries. After four rounds of proposals, 60 non-HBCs have ap-

[28] However, the figure for Myanmar is misleading, because the NTP is a sub-recipient that had not received any funds by the end of 2004.

[29] http://www.theglobalfund.org/en/funds_raised/commitments/.

proved proposals with a total value of US$ 400 million. The amounts included in the two-year grant agreements[30] total US$ 153 million, of which US$ 65 million had been disbursed by the end of 2004. Disbursements are generally similar or higher than expected values, except in the European and South-East Asia Regions. A summary table with the same indicators as those shown for the HBCs is available upon request.

The regional distribution of GFATM grants for HBCs and other countries is shown in Figure 34.

NTP budgets by WHO region, HBCs and other countries

NTP budgets and sources of funding by WHO region in 2005 are shown for both HBCs and non-HBCs in Figure 35, based on the 55 countries that submitted data of sufficient quality. Total budgets and sources of funding are dominated by the HBCs in the South-East Asia Region and the Western Pacific Region, because the HBCs account for almost all TB cases in these regions. While non-HBCs account for a large share of cases in the European Region, Eastern Mediterranean Region and Region of the Americas, we received insufficient data to make an assessment of total budgets and funding sources, or to make any useful comparisons between HBCs and non-HBCs. For the African Region, we had budget data for countries that account for 79% of TB cases.[31] Non-HBCs add substantially to the HBC budget totals (US$ 128 million versus US$ 77 million for HBCs alone). Proportional to budgets, funding gaps are smaller in non-HBCs in the African Region, with relatively higher funding contributions from the GFATM and governments.

FIGURE 34

Regional distribution of GFATM lifetime budgets, as of end 2004

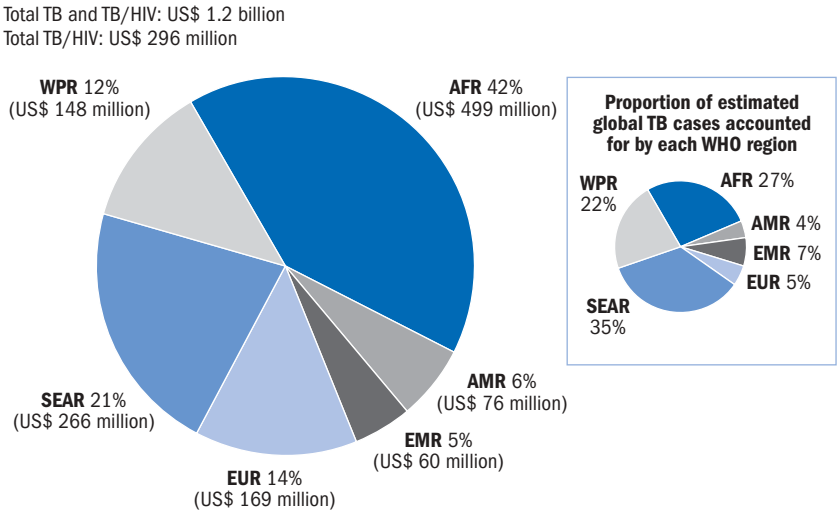
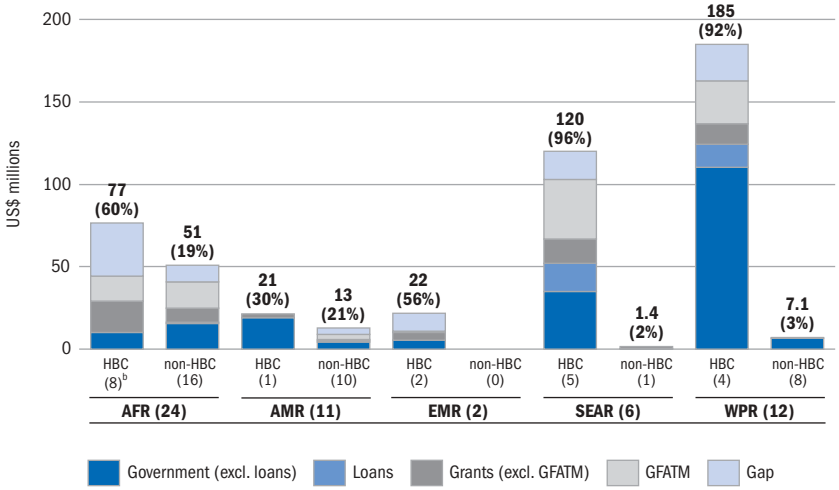


FIGURE 35

Regional distribution of total NTP budgets by source of funding, 20 high-burden and 35 non high-burden countries, 2005[a]

Figures in parentheses show the percentage of all estimated global TB cases in the region accounted for by the countries included in the bar.



[a] The European Region is excluded because the much higher budget in the Russian Federation makes it difficult to illustrate patterns in other regions. Complete data were received from three countries other than the Russian Federation: Estonia, Latvia and Republic of Moldova. For these three countries funds come entirely from the government with the exception of a GFATM grant for the Republic of Moldova.

[b] Excludes South Africa.

[30] Signature of grant agreements is needed before any disbursements can take place.

[31] If data for South Africa were available, the figure would be 89%.